



Financial Statements

December 31, 2023

BRGAAP

(A free translation of the original in Portuguese)



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Vale S.A.

(A free translation of the original in Portuguese)

Independent auditor's report

To the Board of Directors and Shareholders
Vale S.A.

Opinion

We have audited the accompanying parent company financial statements of Vale S.A. (the "Company"), which comprise the statement of financial position as at December 31, 2023 and the income statement, statements of comprehensive income, changes in equity and cash flows for the year then ended, as well as the accompanying consolidated financial statements of Vale S.A. and its subsidiaries ("Consolidated"), which comprise the consolidated statement of financial position as at December 31, 2023 and the consolidated income statement, statements of comprehensive income, changes in equity and cash flows for the year then ended, and notes to the financial statements, including material accounting policies and other explanatory information.

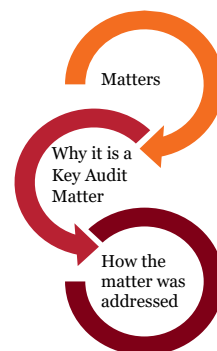
In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Vale S.A. and of Vale S.A. and its subsidiaries as at December 31, 2023, and the financial performance and the cash flows for the year then ended, as well as the consolidated financial performance and the cash flows for the year then ended, in accordance with accounting practices adopted in Brazil and with the International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB) (currently described as "IFRS Accounting Standards" by the IFRS Foundation).

Basis for opinion

We conducted our audit in accordance with Brazilian and International Standards on Auditing. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Parent Company and Consolidated Financial Statements section of our report. We are independent of the Company and its subsidiaries in accordance with the ethical requirements established in the Code of Professional Ethics and Professional Standards issued by the Brazilian Federal Accounting Council, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Key Audit Matters

Key Audit Matters are those matters that, in our professional judgment, were of most significance in our audit of the financial statements of the current period. These matters were addressed in the context of our audit of the parent company and consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters





Vale S.A.

Why it is a Key Audit Matter

How the matter was addressed in the audit

Provisions for de-characterization of dams (Note 27(a))

Resulting from the Brumadinho dam failure, the Company has been working on the de-characterization of its tailing dams built under the upstream method, as well as certain "centerline structures" and dikes located in Brazil. The provision for the de-characterization of dams balance as of December 31, 2023 is R\$ 16,704 million.

The provision for the de-characterization of dams involves a high degree of critical judgment by management, as well as high degree of complexity in the determination of engineering solutions and assumptions, as the referred dams and structures present different characteristics and are under different stages of project engineering maturity, some of them on the conceptual engineering phase.

The measurement of the provision takes into consideration the evaluation of several significant assumptions like: (i) volume of waste to be removed; (ii) location availability and distance for disposal of waste; (iii) engineering methods and solutions; (iv) security levels; (v) productivity of the equipment used; (vi) advances in geological studies and new hydrological information; (vii) discount rate update.

In addition, for the determination of the provision, the Company relies on specialized engineering and geology advisors to carry on specific aspects of the de-characterization process, which are relevant for the determination and confirmation of the solutions and significant assumptions, as well as in relation to the estimate of future costs.

Due to the nature of the measurement uncertainties of this provision, the amounts recorded and disclosed as of December 31, 2023, must be reviewed and could come to be changed significantly in future periods, as new facts and circumstances come to be known.

Accordingly, this matter remains an area of focus in our audit.

Our audit procedures included, among others, the update of our understanding and evaluation of the design and operating effectiveness of the significant internal controls put in place by management in relation to the recognition and monitoring of the provision for the de-characterization of dams and corresponding disclosures in the financial statements.

We have discussed with management regarding the technical engineering rationale and main assumptions used on the most relevant de-characterization projects, aiming to evaluate the reasonableness of the future costs estimate made by the Company's management.

With the support of our engineering specialists we have evaluated the competency, ability and objectivity of the engineering and geology specialists engaged by management to support certain aspects of the de-characterization process.

We have obtained, on a sample basis, the supporting documentation of the costs incurred, and we have evaluated the reasonableness of the calculation models and the significant assumptions used in the engineering projects and technical alternatives, with the involvement of our engineering specialists.

As a result of the procedures performed, we consider that the method and assumptions adopted by the Company's management for the aim to calculate and account for these provisions are reasonable and consistent with the information obtained during our audit work and with the disclosures made in the financial statements.



Vale S.A.

Provision for tax contingencies (Notes 8(d) and 28)

The Company and its subsidiaries have relevant tax matters under discussion at several procedural levels, for which, based on the opinion of their internal and external legal advisors, a provision for tax contingencies in the amount of R\$ 441 million was recorded.

The definition of the provided amount mentioned above, as well as the contingent liabilities and uncertain tax positions disclosed depend on critical judgments by management regarding the settlement term, likelihood of loss and amount.

In addition, considering the significance of the amounts involved, any changes in estimates or assumptions, which influence the determination of the likelihood of loss, could have significant impacts on the Company's financial statements.

Accordingly, this matter was maintained as an area of focus in our audit.

Our audit procedures included, among others, the evaluation of the design and operating effectiveness of the significant internal controls related to the process of determining tax contingencies, as well as the assessment of significant information technology systems that support this process.

For tax positions related to income taxes, we have met with management to discuss and evaluate the circumstances of the relevant matters in relation to the Interpretation ICPC 22/IFRIC 23, as well as to understand the internal controls related to the identification and monitoring of uncertainty tax treatments and measurement and recognition of the obligation, when applicable.

Based on the list provided by management, we have requested and obtained confirmation from all the legal advisors, internal and external, who are responsible for the Company's tax claims, confirming amounts and estimates used by the Company's management.

Also, when applicable, for the most significant tax proceedings, we have obtained the opinions of other tax advisors, aiming to assess the reasonableness of the estimates determined by the lawyers responsible for the respective claims, and analyze the arguments and case law adopted by the Company's legal advisors.

We consider that the method and assumptions adopted by management for determining provisions, as well as disclosures, are consistent with the assessment of legal advisors.



Vale S.A.

Liabilities related to associates and joint ventures (Note 26)

In November, 2015, a tailings dam owned by Samarco Mineração S.A. ("Samarco"), a joint venture between Vale S.A. and BHP Billiton Brasil Ltda. ("BHPB"), collapsed. Since the incident, the Company and BHPB have assumed subsidiary responsibility, in a proportion of fifty percent each, for the obligations generated that cannot be financially fulfilled by Samarco itself, the primary responsible party. On December 31, 2023, the Company revised the estimate for the provision related to the collapse of the Samarco dam, which was supplemented by R\$5,841 million, totaling R\$21,431 million.

The aforementioned provision requires the use of estimates that can significantly change its value due to: (i) scope and cost to complete the repair programs; (ii) the potential definitive settlement of the public civil action filed by the Federal Public Prosecution Office; (iii) the extent to which Samarco will be able to directly pay its future obligations; (iv) resolution of potential and existing lawsuits, and (v) discount rate updates.

Considering the magnitude of the amounts involved, any changes in estimates may have relevant impacts on the Company's financial statements, as well as the incurred expenses may differ from the amounts provided when the obligations are settled.

Due to these aspects, this matter was considered as an area of focus in our audit.

Our audit procedures included, among others, updating the understanding and evaluation of the relevant internal controls established by the Company's management related to the recording and monitoring of the provision related to the Samarco dam collapse and corresponding disclosures in the financial statements.

We have requested and obtained confirmation and positions from the external and internal legal advisors involved in the related legal actions and in the negotiations for a potential agreement, in addition to discussing the topic with the Company's executive directors.

We have evaluated the reasonableness of the models, the data, the discount rate applied and other assumptions used to form the provision estimate, with the involvement of our internal experts. Such procedures involved sensitivity analysis of the main assumptions used and the impacts of their possible changes on the calculated provision.

Additionally, we have evaluated the accounting treatment adopted by the Company to recognize the provision and its remeasurement in the year ended December 31, 2023.

As a result of the procedures carried out, we consider that the models, data and assumptions adopted by the Company's management for the calculation and accounting of the provision, are reasonable and consistent with the information obtained in our work and with the disclosures made in the financial statements.

Other matters

Value Added Statement

The parent company and consolidated Value Added Statements for the year ended December 31, 2023, prepared under the responsibility of the Company's management and presented as supplementary information for IFRS Accounting Standards purposes, were submitted to audit procedures performed in conjunction with the audit of the Company's financial statements. For the purposes of forming our opinion, we evaluated whether these statements are reconciled with the financial statements and accounting records, as applicable, and if their form and content are in accordance with the criteria defined in Technical Pronouncement CPC 09 - "Statement of Value Added". In our opinion, these Value Added Statements have been properly prepared in all material respects, in accordance with the criteria established in the Technical Pronouncement, and are consistent with the parent company and consolidated financial statements taken as a whole.



Vale S.A.

Other information accompanying the parent company and consolidated financial statements and the auditor's report

The Company's management is responsible for the other information that comprises the Management Report.

Our opinion on the parent company and consolidated financial statements does not cover the Management Report, and we do not express any form of audit conclusion thereon.

In connection with the audit of the parent company and consolidated financial statements, our responsibility is to read the Management Report and, in doing so, consider whether this report is materially inconsistent with the financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated. If, based on the work we have performed, we conclude that there is a material misstatement in the Management Report, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of management and those charged with governance for the parent company and consolidated financial statements

Management is responsible for the preparation and fair presentation of the parent company and consolidated financial statements in accordance with accounting practices adopted in Brazil and with the International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB) (currently described as "IFRS Accounting Standards" by the IFRS Foundation), and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the parent company and consolidated financial statements, management is responsible for assessing the ability of the Company and its subsidiaries, as a whole, to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Company and its subsidiaries, as a whole, or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Company's financial reporting process.

Auditor's responsibilities for the audit of the parent company and consolidated financial statements

Our objectives are to obtain reasonable assurance about whether the parent company and consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Brazilian and International Standards on

Auditing will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Brazilian and International Standards on Auditing, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the parent company and consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.



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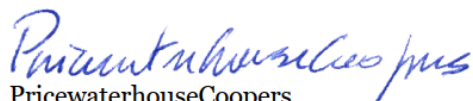
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the internal control of the Company and its subsidiaries.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management. Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the ability of the Company and its subsidiaries, as a whole, to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the parent company and consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Company and its subsidiaries, as a whole, to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the parent company and consolidated financial statements, including the disclosures, and whether these financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the parent company and consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

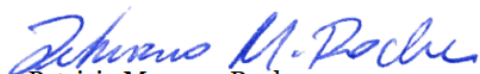
We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, actions taken to eliminate threats to our independence or safeguards applied.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the financial statements of the current period and are therefore the Key Audit Matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

Rio de Janeiro, February 22, 2024


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


Patricio Marques Roche
Contador CRC 1RJ081115/O-4

Income Statement

In millions of Brazilian reais, except earnings per share

	Notes	Consolidated			Parent Company	
		Year ended December 31,				
		2023	2022	2021	2023	2022
Continuing operations						
Net operating revenue	4(b)	208,066	226,508	293,524	135,434	141,510
Cost of goods sold and services rendered	5(a)	(120,016)	(124,195)	(117,267)	(63,738)	(61,518)
Gross profit		88,050	102,313	176,257	71,696	79,992
Operating expenses						
Selling and administrative	5(b)	(2,758)	(2,658)	(2,601)	(1,542)	(1,343)
Research and development		(3,598)	(3,411)	(2,964)	(1,735)	(1,663)
Pre-operating and operational stoppage	27	(2,249)	(2,466)	(3,467)	(2,158)	(2,344)
Equity results and others results from subsidiaries		-	-	-	10,410	41,110
Other operating expenses, net	5(c)	(7,422)	(8,901)	(16,591)	(6,938)	(8,768)
Impairment reversal (impairment) and results on disposal of non-current assets, net	19	(1,317)	3,833	(2,352)	(1,195)	(1,056)
Operating income		70,706	88,710	148,282	68,538	105,928
Financial income	6	2,159	2,685	1,822	979	1,830
Financial expenses	6	(7,276)	(6,156)	(6,787)	(8,946)	(6,430)
Other financial items, net	6	(4,601)	14,849	22,777	(4,123)	6,235
Equity results and other results in associates and joint ventures	15 and 26	(5,434)	1,616	(6,947)	(5,434)	1,616
Income before income taxes		55,554	101,704	159,147	51,014	109,179
Income taxes	8(a)	(15,000)	(15,185)	(25,320)	(11,074)	(13,255)
Net income from continuing operations		40,554	86,519	133,827	39,940	95,924
Net income attributable to noncontrolling interests		614	413	591	-	-
Net income from continuing operations attributable to Vale's shareholders		39,940	86,106	133,236	39,940	95,924
Discontinued operations						
Net income (loss) from discontinued operations	16(l)	-	9,818	(12,484)	-	-
Loss attributable to noncontrolling interests		-	-	(476)	-	-
Net income (loss) from discontinued operations attributable to Vale's shareholders		-	9,818	(12,008)	-	-
Net income		40,554	96,337	121,343	39,940	95,924
Net income attributable to noncontrolling interests		614	413	115	-	-
Net income attributable to Vale's shareholders		39,940	95,924	121,228	39,940	95,924
Basic and diluted earnings per share from continuing operations						
Common share (R\$)	9	9.15	18.57	26.58	9.15	20.67
Basic and diluted earnings per share attributable to Vale's shareholders						
Common share (R\$)	9	9.15	20.67	24.18	9.15	20.67

The accompanying notes are an integral part of these financial statements.

Statement of Comprehensive Income

In millions of Brazilian reais

	Notes	Consolidated			Parent Company	
		2023	2022	2021	Year ended December 31,	
		2023	2022	2021	2023	2022
Net income		40,554	96,337	121,343	39,940	95,924
Other comprehensive income:						
Items that will not be reclassified to income statement						
Retirement benefit obligations		(331)	1,380	2,631	(195)	105
Fair value adjustment to investment in equity securities		63	-	2,188	63	-
Equity results		-	-	-	(136)	1,275
		(268)	1,380	4,819	(268)	1,380
Items that may be reclassified to income statement						
Translation adjustments		(2,794)	(7,696)	5,133	(2,243)	(7,666)
Net investment hedge	20	683	447	(646)	683	447
Cash flow hedge	20	(88)	50	47	21	(21)
Equity results		-	-	-	(109)	71
Reclassification of cumulative translation adjustment to income statement	15 and 16	-	(23,690)	(26,501)	-	(23,690)
		(2,199)	(30,889)	(21,967)	(1,648)	(30,859)
Comprehensive income		38,087	66,828	104,195	38,024	66,445
Comprehensive income attributable to noncontrolling interests		63	383	383		
Comprehensive income attributable to Vale's shareholders		38,024	66,445	103,812		

Items above are stated net of tax and the related taxes are disclosed in note 8.

The accompanying notes are an integral part of these financial statements.

Statement of Cash Flows

In millions of Brazilian reais

	Notes	Consolidated			Parent Company	
		Year ended December 31,				
		2023	2022	2021	2023	2022
Cash flow from operations	10(a)	86,220	95,793	178,815	74,490	74,232
Interest on loans and borrowings paid	10(c)	(3,695)	(4,067)	(3,820)	(6,208)	(4,432)
Cash received (paid) on settlement of derivatives, net	20(a)	2,798	(425)	(1,118)	2,256	771
Payments related to Brumadinho event	25	(6,597)	(5,604)	(7,633)	(6,597)	(5,604)
Payments related to de-characterization of dams	27	(2,275)	(1,806)	(1,822)	(2,275)	(1,806)
Interest on participative shareholders' debentures paid	22	(1,172)	(1,835)	(2,317)	(1,172)	(1,835)
Income taxes paid (including settlement program)		(9,374)	(24,068)	(23,607)	(8,094)	(22,662)
Net cash generated by operating activities from continuing operations		65,905	57,988	138,498	52,400	38,664
Net cash generated (used) by operating activities from discontinued operations	16(l)	-	213	(1,732)	-	-
Net cash generated by operating activities		65,905	58,201	136,766	52,400	38,664
Cash flow from investing activities:						
Capital expenditures	4(c)	(29,446)	(28,184)	(27,301)	(19,899)	(19,005)
Payments related to Samarco dam failure	26	(2,728)	(1,777)	(2,282)	(2,728)	(1,777)
Additions to investments		(95)	(1)	(237)	(711)	(1,184)
Proceeds (payments) from disposal of investments, net	10(b)	(697)	3,014	3,785	(697)	815
Dividends received from associates and joint ventures		1,010	1,154	1,043	1,901	11,588
Short-term investment		613	1,309	2,671	(129)	896
Other investing activities, net		(82)	843	(491)	(473)	(5,602)
Net cash used in investing activities from continuing operations		(31,425)	(23,642)	(22,812)	(22,736)	(14,269)
Net cash used in investing activities from discontinued operations	16(l)	-	(534)	(12,476)	-	-
Net cash used in investing activities		(31,425)	(24,176)	(35,288)	(22,736)	(14,269)
Cash flow from financing activities:						
Loans and borrowings from third parties	10(c)	9,585	6,764	5,165	2,308	2,016
Payments of loans and borrowings from third parties	10(c)	(3,215)	(11,764)	(10,759)	(458)	(3,783)
Payments of leasing	24	(1,159)	(1,154)	(1,152)	(443)	(410)
Dividends and interest on capital paid to Vale's shareholders	30(e)	(27,759)	(34,092)	(73,112)	(27,759)	(34,092)
Dividends and interest on capital paid to noncontrolling interest		(208)	(65)	(175)	-	-
Shares buyback program	30(c)	(13,593)	(30,640)	(29,121)	(7,015)	(14,581)
Acquisition of stake in VOPC	16(e)	(653)	-	-	-	-
Net cash used in financing activities from continuing operations		(37,002)	(70,951)	(109,154)	(33,367)	(50,850)
Net cash used in financing activities from discontinued operations	16(l)	-	(54)	(72)	-	-
Net cash used in financing activities		(37,002)	(71,005)	(109,226)	(33,367)	(50,850)
Net decrease in cash and cash equivalents		(2,522)	(36,980)	(7,748)	(3,703)	(26,455)
Cash and cash equivalents in the beginning of the year		24,711	65,409	70,086	7,896	34,266
Effect of exchange rate changes on cash and cash equivalents		(1,314)	(3,657)	3,071	-	-
Effect of transfer PTVI to non-current assets held for sale	16(b)	(3,401)	-	-	-	-
Cash and cash equivalents from subsidiaries sold, net		-	(61)	-	-	85
Cash and cash equivalents at end of the year		17,474	24,711	65,409	4,193	7,896

The accompanying notes are an integral part of these financial statements.

Statement of Financial Position

In millions of Brazilian reais

	Notes	Consolidated		Parent Company	
		December 31, 2023	December 31, 2022	December 31, 2023	December 31, 2022
Assets					
Current assets					
Cash and cash equivalents	21	17,474	24,711	4,193	7,896
Short-term investments	21	250	320	14	15
Accounts receivable	11	20,317	22,537	37,114	47,380
Other financial assets	14	1,311	1,788	1,107	1,160
Inventories	12	22,679	23,386	8,097	7,817
Recoverable taxes	8(f)	4,355	6,639	3,377	5,270
Judicial deposits	28(d)	2,956	-	2,956	-
Other		2,146	1,628	4,398	1,906
		71,488	81,009	61,256	71,444
Non-current assets held for sale	16(b)	19,041	-	-	-
		90,529	81,009	61,256	71,444
Non-current assets					
Judicial deposits	28(d)	3,861	6,338	3,532	6,092
Other financial assets	14	2,874	1,462	2,697	1,125
Recoverable taxes	8(f)	6,652	5,793	4,574	3,564
Deferred income taxes	8(b)	46,307	56,195	42,268	48,697
Other		6,089	5,316	3,678	2,579
		65,783	75,104	56,749	62,057
Investments	15	9,061	9,381	123,846	122,573
Intangibles	17	56,309	53,421	40,366	36,640
Property, plant, and equipment	18	234,302	234,472	141,409	136,322
		365,455	372,378	362,370	357,592
Total assets		455,984	453,387	423,626	429,036
Liabilities					
Current liabilities					
Suppliers and contractors	13	25,523	23,278	15,983	14,248
Loans and borrowings	23	3,986	1,604	3,374	673
Leases	24	954	948	406	425
Other financial liabilities	14	8,113	8,725	21,802	31,681
Taxes payable	8(f)	6,361	2,454	5,615	1,828
Settlement program ("REFIS")	8(d)	2,071	1,934	2,071	1,934
Liabilities related to Brumadinho	25	5,119	4,926	5,119	4,926
Liabilities related to associates and joint ventures	26	4,050	9,973	4,050	9,973
De-characterization of dams and asset retirement obligations	27	5,011	3,450	4,516	2,954
Provisions for litigation	28	554	551	554	551
Employee benefits	29	4,665	4,851	3,367	3,381
Dividends payable		-	7,214	-	7,200
Other		1,827	2,570	2,513	2,608
		68,234	72,478	69,370	82,382
Liabilities associated with non-current assets held for sale	16(b)	2,714	-	-	-
		70,948	72,478	69,370	82,382
Non-current liabilities					
Loans and borrowings	23	56,389	56,737	13,016	14,809
Leases	24	6,075	7,041	1,024	1,253
Participative shareholders' debentures	22	13,912	14,218	13,912	14,218
Other financial liabilities	14	16,332	14,835	65,803	63,176
Settlement program ("REFIS")	8(d)	8,343	9,753	8,343	9,753
Deferred income taxes	8(b)	4,210	7,372	-	-
Liabilities related to Brumadinho	25	9,695	12,356	9,695	12,356
Liabilities related to associates and joint ventures	26	17,381	7,355	17,381	7,355
De-characterization of dams and asset retirement obligations	27	32,409	34,019	22,375	23,421
Provisions for litigation	28	4,283	6,187	3,871	5,810
Employee benefits	29	6,688	6,572	2,620	2,331
Streaming transactions	7	9,499	8,411	-	-
Other		1,495	1,159	5,251	5,060
		186,711	186,015	163,291	159,542
Total liabilities		257,659	258,493	232,661	241,924
Equity					
Equity attributable to Vale's shareholders	30	190,965	187,112	190,965	187,112
Equity attributable to noncontrolling interests		7,360	7,782	-	-
Total equity		198,325	194,894	190,965	187,112
Total liabilities and equity		455,984	453,387	423,626	429,036

The accompanying notes are an integral part of these financial statements.

Statement of Changes in Equity

In millions of Brazilian reais

	Notes	Share capital	Capital reserve	Profit reserves	Treasury shares	Other reserves	Cumulative translation adjustments	Retained earnings	Equity attributable to Vale's shareholders	Equity attributable to noncontrolling interests	Consolidated shareholders' equity
Balance as of December 31, 2020		77,300	3,634	36,598	(6,452)	(7,307)	82,012	-	185,785	(4,799)	180,986
Net income		-	-	-	-	-	-	121,228	121,228	115	121,343
Other comprehensive income		-	-	-	-	4,660	(22,076)	-	(17,416)	268	(17,148)
Fair value reclassification of Mosaic shares	16(j)	-	-	-	-	(2,911)	-	2,911	-	-	-
Dividends and interest on capital of Vale's shareholders	30(d)	-	-	(22,935)	-	-	-	(43,834)	(66,769)	(148)	(66,917)
Acquisitions and disposals of noncontrolling interest	16(l)	-	-	-	-	(1,666)	-	-	(1,666)	9,219	7,553
Appropriation to undistributed retained earnings		-	-	80,305	-	-	-	(80,305)	-	-	-
Shares buyback program	30(c)	-	-	-	(29,121)	-	-	-	(29,121)	-	(29,121)
Share-based payment program	29(b)	-	-	-	-	325	-	-	325	-	325
Treasury shares canceled	30(b)	-	-	(6,347)	6,384	-	-	-	-	-	37
Balance as of December 31, 2021		77,300	3,634	87,621	(29,189)	(6,899)	59,936	-	192,403	4,655	197,058
Net income		-	-	-	-	-	-	95,924	95,924	413	96,337
Other comprehensive income		-	-	-	-	1,541	(31,020)	-	(29,479)	(30)	(29,509)
Dividends and interest on capital of Vale's shareholders	30(d)	-	-	(17,849)	-	-	-	(23,428)	(41,277)	-	(41,277)
Dividends of noncontrolling interest		-	-	-	-	-	-	-	-	(36)	(36)
Acquisitions and disposals of noncontrolling interest	16(l)	-	-	-	-	-	-	-	-	2,780	2,780
Appropriation to undistributed retained earnings		-	-	72,496	-	-	-	(72,496)	-	-	-
Shares buyback program	30(c)	-	-	-	(30,640)	-	-	-	(30,640)	-	(30,640)
Share-based payment program	29(b)	-	-	-	-	82	-	-	82	-	82
Treasury shares canceled	30(b)	-	-	(34,055)	34,154	-	-	-	99	-	99
Balance as of December 31, 2022		77,300	3,634	108,213	(25,675)	(5,276)	28,916	-	187,112	7,782	194,894
Net income		-	-	-	-	-	-	39,940	39,940	614	40,554
Other comprehensive income		-	-	-	-	(420)	(1,496)	-	(1,916)	(551)	(2,467)
Dividends and interest on capital of Vale's shareholders	30(d)	-	-	(2,265)	-	-	-	(18,310)	(20,575)	-	(20,575)
Dividends of noncontrolling interest		-	-	-	-	-	-	-	-	(187)	(187)
Acquisitions and disposals of noncontrolling interest	16(e)	-	-	-	-	15	-	-	15	(298)	(283)
Appropriation to undistributed retained earnings		-	-	21,630	-	-	-	(21,630)	-	-	-
Shares buyback program	30(c)	-	-	-	(13,593)	-	-	-	(13,593)	-	(13,593)
Share-based payment programs	29(b)	-	-	-	132	(150)	-	-	(18)	-	(18)
Treasury shares canceled	30(b)	-	-	(21,397)	21,397	-	-	-	-	-	-
Balance as of December 31, 2023		77,300	3,634	106,181	(17,739)	(5,831)	27,420	-	190,965	7,360	198,325

The accompanying notes are an integral part of these financial statements.

Value Added Statement

In millions of Brazilian reais

	Consolidated		Parent Company	
	2023	2022	Year ended December 31,	
			2023	2022
Generation of value added				
Gross revenue				
Revenue from products and services	209,993	228,850	137,361	143,747
Revenue from the construction of own assets	7,981	8,405	6,871	6,652
Other revenues	2,687	1,922	2,065	1,357
Less:				
Cost of products, goods and services sold	(42,578)	(40,875)	(27,511)	(23,510)
Material, energy, third-party services and other	(49,070)	(51,861)	(18,734)	(18,849)
Impairment reversal (impairment and disposals) of non-current assets, net	(1,317)	3,833	(1,195)	(1,056)
Expenses related to Brumadinho event	(4,598)	(5,581)	(4,598)	(5,581)
De-characterization of dams	(750)	(375)	(750)	(375)
Other costs and expenses	(14,528)	(16,086)	(9,044)	(11,086)
Gross value added	107,820	128,232	84,465	91,299
Depreciation, amortization and depletion	(15,300)	(16,386)	(9,015)	(8,761)
Net value added	92,520	111,846	75,450	82,538
Received from third parties				
Equity results	(5,434)	1,616	4,976	42,726
Financial expenses	(204)	(606)	(1,632)	(1,029)
Total value added from continuing operations to be distributed	86,882	112,856	78,794	124,235
Value added from discontinued operations to be distributed	-	(1,733)	-	-
Total value added to be distributed	86,882	111,123	78,794	124,235
Personnel and charges				
Direct compensation	7,079	6,944	3,727	3,818
Benefits	3,159	2,502	2,380	1,637
FGTS	504	461	442	414
Taxes and contributions				
Federal taxes	20,864	22,625	16,805	19,859
State taxes	4,701	4,461	3,966	3,970
Municipal taxes	200	138	127	78
Remuneration of third-party capital				
Interest (net derivatives and monetary and exchange rate variation)	8,455	(12,809)	10,125	(3,441)
Leasing	1,366	2,015	1,282	1,976
Remuneration of own capital				
Reinvested net income from continuing operations	39,940	86,106	39,940	95,924
Net income attributable to noncontrolling interest	614	413	-	-
Distributed value added from continuing operations	86,882	112,856	78,794	124,235
Distributed value added from discontinued operations	-	(1,733)	-	-
Distributed value added	86,882	111,123	78,794	124,235

The accompanying notes are an integral part of these financial statements.

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

1. Corporate information

Vale S.A. (the "Parent Company") is a public company headquartered in the city of Rio de Janeiro, Brazil. Vale's share capital consists of common shares, traded on the stock exchange.

In Brazil, Vale's common shares are listed on B3 under the code VALE3. The Company also has American Depositary Receipts (ADRs), with each representing one common share, traded on the New York Stock Exchange (NYSE) under the code VALE. Additionally, the shares are traded on LATIBEX under the code XVALO, which is an unregulated electronic market established by the Madrid Stock Exchange for the trading of Latin American securities. The Company's shareholding structure is disclosed in note 30.

Vale, together with its subsidiaries ("Vale" or the "Company"), is one of the world's largest producers of iron ore and nickel. The Company also produces iron ore pellets and copper. Nickel and copper concentrates contain by-products such as platinum group metals (PGM), gold, silver, and cobalt. Most of the Company's products are sold to international markets, through the Company's main trading Company, Vale International S.A. ("VISA"), a wholly owned subsidiary located in Switzerland.

The Company is engaged in greenfield mineral exploration in six countries, including Brazil, USA, Canada, Chile, Peru and Indonesia. It also operates extensive logistics systems in Brazil and other regions worldwide, including railways, maritime terminals, and ports integrated with mining operations. Additionally, the Company has distribution centers to support its iron ore shipments globally.

As part of its strategy, Vale also holds investments in energy businesses through associates and joint ventures to meet energy consumption needs through renewable sources.

The Company also used to produce and sell thermal and metallurgical coal until April 2022, when Vale concluded the sale of this operation. The results from the coal operation by the closing of the disposal process are presented in these financial statements as "discontinued operations". Further details in note 16(l).

The Company's operations are organized into two operational segments: "Iron Ore Solutions" and "Energy Transition Metals" (note 4).

Iron Ore Solutions – Comprise iron ore extraction and iron ore pellet production, as well as the north, south, and southeast transportation corridors in Brazil, including railways, ports and terminals linked to mining operations.

- **Iron ore:** Currently, Vale operates three systems in Brazil for the production and distribution of iron ore. The Northern System (Carajás, State of Pará, Brazil) is fully integrated and comprises three mining complexes and a maritime terminal. The Southeast System (Quadrilátero Ferrífero, Minas Gerais, Brazil) is fully integrated, consisting of three mining complexes, a railway, a maritime terminal, and a port. The Southern System (Quadrilátero Ferrífero, Minas Gerais, Brazil) consists of two mining complexes and two maritime terminals. In July 2022, the Company concluded the sale of the Midwestern System (note 16g).
- **Iron ore pellets:** Vale operates six pelletizing plants in Brazil and two in Oman.
- **Manganese:** In January 2022, the Company concluded the sale of its ferroalloy operations and, therefore, Vale is no longer a producer of manganese (note 16i).

Energy Transition Metals – Includes the production of nickel, copper and its by-products. In 2023, the Company transferred the assets related to this segment to a new entity, "Vale Base Metals Limited." In July 2023, Vale entered into agreements with Manara Minerals and Engine No. 1 to sell a minority stake in this business, in line with its strategy for this segment (notes 3 and 16c).

- **Nickel:** The Company's primary nickel operations are conducted by Vale Canada Limited ("Vale Canada"), which owns mines and processing plants in Canada and Indonesia and nickel refining facilities in the United Kingdom and Japan. In November 2023, the Company signed an agreement for the divestment of PT Vale Indonesia Tbk ("PTVI"), which will result in the loss of control over this operation (note 16b). Vale also has nickel operations in Onça Puma, located in the State of Pará.
- **Copper:** In Brazil, Vale produces copper concentrates at Sossego and Salobo in Carajás, State of Pará. In Canada, Vale produces copper concentrates and copper cathodes associated with its nickel mining operations in Sudbury (located in Ontario), Voisey's Bay (located in Newfoundland and Labrador), and Thompson (located in Manitoba).

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

- **Cobalt, PGM, and other precious metals:** The ore extracted by Vale Canada in Sudbury yields cobalt, PGMs (Platinum Group Metals), silver, and gold as by-products, which are processed at refining facilities in Port Colborne, Ontario. In Canada, Vale Canada also produces refined cobalt at its Long Harbour facilities in Newfoundland and Labrador. The copper operations in Sossego and Salobo in Brazil also yield silver and gold as by-products.

2. Basis of preparation of financial statements

The consolidated financial statements of the Company ("financial statements") have been prepared and are presented in accordance with International Financial Reporting Standards ("IFRS") as issued by International Accounting Standards Board ("IASB") (currently referred to by the IFRS Foundation as "IFRS Accounting Standards"), including Interpretations developed by the IFRS Interpretations Committee (IFRIC[®] Interpretations) or its predecessor body, the Standing Interpretations Committee (SIC[®] Interpretations) and implemented in Brazil by the Brazilian Accountant Pronouncements Committee ("CPC"), approved by the Brazilian Securities Exchange Commission ("CVM"). All relevant information for the preparation of these financial statements, and only this information, are presented and correspond to those used by the Company's Management.

The financial statements have been prepared on a historical cost basis and adjusted to reflect: (i) the fair value of certain financial assets and liabilities (including derivative instruments), as well as pension plans assets and (ii) assets impairment. Assets held for sale are measured at the lower of carrying amount and fair value less costs to sell.

These financial statements were authorized for issue by the Board of Directors on February 22, 2024.

a) New accounting standards and amendments

Amendments to IAS 12/CPC 32 – OECD Pillar Two Rules

In December 2021, the Organization for Economic Co-operation and Development ("OECD") released the Pillar Two model rules to reform international corporate taxation. Multinational economic groups within the scope of these rules are required to calculate their effective tax rate in each country where they operate, the "GloBE effective tax rate".

When the effective GloBE rate of any entity in the economic group, aggregated by jurisdiction where the group operates, is lower than the minimum rate defined at 15%, the multinational group must pay a supplementary amount of tax on profit, referring to the difference between its rate effective GloBE and the minimum tax rate.

In May 2023, the IASB made amendments to IAS 12/CPC 32 – Income Taxes, which provide a temporary relief from the requirement to recognize and disclose deferred taxes arising from enacted or substantively enacted tax law that implements the Pillar Two model rules.

For the Company, Pillar Two rules will be adopted from 2024 in the Netherlands, Switzerland, United Kingdom, Japan and Luxembourg. The Company has applied the temporary relief from the requirement to recognize and disclose deferred taxes related to Pillar Two effects and, therefore, there was no impact in these financial statements for the year ended December 31, 2023.

The Company is still assessing the impacts it may have on current income tax expenses for future reporting periods however, the Company currently does not expect any material impacts in its financial statements from the Pillar Two rules.

Amendments to IAS 12/CPC 32 – Deferred Tax related to Assets and Liabilities arising from a Single Transaction

The change is effective for annual years beginning on or after January 1, 2023, and requires the recognition of a deferred tax asset and a deferred tax liability when a single transaction generates taxable and deductible temporary differences at the same time. The adoption of the amendment did not result in any impact in the Company's financial position nor in the income statement. However, the Company started presenting separately both deferred tax asset and the deferred tax liability arising from decommissioning of assets, environmental obligations, and leasing as presented in note 8(b).

Other recently issued or amended accounting standards

Certain other new accounting standards, amendments and interpretations have been published that are not mandatory for December 31, 2023, reporting periods or have not materially impacted these financial statements. The Company did not early adopt any of these standards and does not expect them to have a material impact in future reporting periods.

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

b) Statement of Value Added

The presentation of the parent company and consolidated statements of value added is required by the Brazilian corporate legislation and the accounting practices adopted in Brazil for listed companies, while it is not required by IFRS. Therefore, under the IFRS, the presentation of such statements is considered supplementary information, and not part of the set of financial statements. The Statement of Value Added was prepared in accordance with the criteria defined in Technical Pronouncement CPC 09 - "Statement of Value Added".

c) Principles of Consolidation

The Company's financial projections reflect the assets, liabilities and transactions of the Parent Company and its direct and indirect subsidiaries ("subsidiaries"). Intercompany balances and transactions, which include unrealized profits, are eliminated. A list of the most relevant companies, including subsidiaries, affiliates, joint ventures, and the financial policies applied in preparing the consolidated financial projections are described in note 15.

d) Functional currency and presentation currency

The functional currency of the Parent Company and its associates and joint ventures in Brazil, is the Brazilian real ("R\$"), which is the currency of the primary economic environment in which the entity operates ("functional currency"). The functional currency of direct subsidiaries operating in an international economic environment is the US dollar ("US\$").

The income statement and cash flows statements of the investees, with a different functional currency from the Parent Company, are translated into Brazilian real at the average monthly exchange rate, the assets and liabilities are translated at the final rate and the other equity items are translated at the historical rate. All monetary exchange differences are recognized in comprehensive income as "Translation adjustments".

When a foreign operation is totally or partially disposed, the monetary exchange differences that were recorded in the equity are recognized in the income statement for the year, see accounting policy in note 15 of these financial statements.

The main exchange rates used by the Company to translate its foreign operations are as follows:

	2023	2022	Closing rate 2021	2023	2022	Average rate 2021
US Dollar ("US\$")	4.8413	5.2177	5.5805	4.9954	5.1655	5.3956
Canadian dollar ("CAD")	3.6522	3.8550	4.3882	3.7026	3.9705	4.3042
Euro ("EUR")	5.3516	5.5694	6.3210	5.4023	5.4420	6.3784

e) Critical accounting estimates and judgments

The preparation of financial statements requires the use of critical accounting estimates and Management also needs to exercise judgement in applying the Company's accounting policies.

The Company makes estimates about the future based on assumptions. Accounting estimates and judgments are continually evaluated and are based on management's experience and knowledge, information available at the date of the financial statements and other factors, including expectations of future events that are considered reasonable under the circumstances. Accounting estimates, by definition, will seldom equal the actual results.

The areas involving significant estimates or judgements or complexity, and of items which are more likely to be materially adjusted due to estimates and assumptions are presented in the following notes:

Note	Significant estimates and judgments
7	Streaming transactions
8	Deferred income taxes and uncertain tax positions
15	Consolidation
18	Mineral reserves and mines useful life
19	Impairment of non-current assets
20	Fair values estimate
25	Liabilities related to Brumadinho
26	Liabilities related to associates and joint ventures
27	Provision for de-characterization of dam structures and asset retirement obligations
28	Litigation
29	Employee post-retirement obligation

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

f) Material accounting policies

The material accounting policies applied in the preparation of these financial statements have been included in the respective notes and are consistent in all years presented.

g) Financial information related to sustainability

The Company intends to integrate sustainability into its business through a comprehensive approach, based on systematic planning and execution, prioritizing risk and impact management as well as establishing a social, economic and environmental legacy.

The investments announced by the Company's and its strategy for sustainability initiatives were assessed in the context of the Company's critical accounting judgments and key estimates. Future changes in this strategy or in the global scenario may affect the Company's main estimates and may result in material impacts on the income statement and on assets and liabilities of the Company in future reporting periods.

Strategy	Impact on Financial Statements
Reduction of greenhouse gas ("GHG") emissions by increasing the energy efficiency of processes and development of solutions based on the substitution of fossil energy sources with renewable or lower emission intensity alternatives	- Investing in subsidiaries, associates, and joint ventures - Expenses along the value chain to support decarbonization - Impairment of assets
Investment in renewable energy sources to reduce GHG emissions	- Power Purchase Agreement ("PPA") - Property, plant, and equipment - Expenses along the value chain to support decarbonization
Limited use of high-integrity carbon credits to eventually meet the Scope 3 GHG emissions reduction target	- Intangible - Expense of carbon credit - Investing in subsidiaries, associates, and joint ventures
Community safety	- Liabilities related to Brumadinho - Provision for de-characterization of dam structures and asset retirement obligations - Liabilities related to associates and joint ventures
Support for small suppliers	- Suppliers and contractors
Compensation programs aligned with Environmental, Social and Governance ("ESG") linked business strategy	- Employee benefits

The main actions taken or announced to date, which have already resulted or will result in a direct impact on the Company's financial statements are described below. Other initiatives are detailed in the Integrated Report, made available at the Company's website, which were not incorporated by reference.

Environmental pillar

Climate changes

In a global context where extreme climate events are becoming more frequent and the average global temperature exceeds historical averages (according to the World Meteorological Organization – WMO), the mapping of these risks and their effects, as well as mitigation actions, becomes crucial for analyzing the Company's strategies. Similarly, governments and regulatory authorities are advancing and tightening their policies.

The Company intends to reduce greenhouse gas emissions from its operations, in line with the Paris Agreement objective of limiting global warming to well below 2°C (3.6 °F). The Company's strategy considers as main objectives:

- 33% reduction in absolute Scope 1 and 2 emissions by 2030 (based on the emissions from the year 2017) and 100% of electricity consumption from renewable sources by 2030 globally;
- Net zero Scope 1 and 2 emissions by 2050; and
- 15% net reduction by 2035 of indirect emissions in the value chain by 2035, aligned with the scenario of limiting global warming to 2°C.

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

Decarbonization plan

The Company has a plan to meet the target for reducing Scopes 1 and 2 and expects to invest an amount ranging from R\$20 billion (US\$4 billion) to R\$30 billion (US\$6 billion) by 2030 to develop low carbon solutions, such as electrification, of the use of biofuels and the utilization of renewable energy. The current portfolio of initiatives encompasses over 40 projects, prioritizing the most cost-competitive initiatives to meet the 2030 target.

To increase renewable energy sources, in November 2022, the Company announced the operational start-up of the Sol do Cerrado solar project. In July 2023, the Company received the last authorization needed from the National Electric Energy Agency ("ANEEL") for the operation. As of December 31, 2023, the Property, plant, and equipment of Sol do Cerrado was R\$3.000 (US\$590 million).

The Company also has Power Purchase Agreements ("PPAs") with renewable energy suppliers, reducing its Scope 2 emissions. These supply contracts were entered into and continue to be held to own use and, therefore, it falls outside the scope of IFRS 9/CPC 48 - Financial Instruments. The PPAs are accounted for as executory contracts and the expenses are recorded as incurred.

Additionally, Vale has assessed its decarbonization goals considering the criteria for provision in accordance with IAS 37/CPC 25 - Provisions, Contingent Liabilities, and Contingent Assets and it did not record any provision since these commitments are not deemed a legal nor constructive obligation.

Carbon pricing

All investment decisions are subjected to analysis, considering the internal carbon price per ton of CO₂ equivalent. Vale adopts an internal price of US\$50/tCO₂e, established in accordance with the Carbon Pricing Leadership Coalition ("CPLC"). The internal carbon price is used in the decision-making process for resource allocation in the Company's current and capital projects.

Incorporating a cost for GHG in the feasibility analysis provides a clear demonstration of how these emissions can influence the evaluation of a project during the decision-making process. By assigning a direct financial consequence to emissions, portfolio projects can be assessed more holistically, considering the environmental impact alongside more traditional financial metrics. This practice, in addition to promoting investments in GHG reduction, also positions the Company for a scenario with more stringent regulations.

Aiming to incentivize the voluntary carbon market, Vale and the Algar Group signed an agreement for the purchase of high-integrity forest carbon credits until 2030. The agreement stipulated Vale's purchase of approximately 133.000 credits, equivalent to the protection of approximately 50.000 hectares of forest this year. Each carbon credit corresponds to one metric ton of carbon dioxide equivalent that was not emitted into the atmosphere, in the case of this forest protection project.

For each transaction, Vale assesses the business model concerning carbon credits for subsequent classification, recognition, and measurement of its asset. Carbon credits will be recorded as intangible assets and measured at cost in accordance with IAS 38/CPC 04 - Intangible assets. Carbon credits acquired for resale will be recorded as inventories and measured at fair value less costs to sell according to IAS 2/CPC 16 - Inventories. The Company also analyses whether there are embedded derivatives in the sale and purchase contracts of carbon credits as required by IFRS 9/CPC 48 - Financial Instruments. For the year ended December 31, 2023, the Company recorded expenses of R\$20 (US\$4 million) in relation to carbon credits.

Impact of transition risks related to climate changes on asset carrying values

During the development of its strategic plan, the Company assesses scenarios related to climate change and establishes the baseline to guide its business positioning, as well as to test resilience against other exploratory scenarios. The Company's approach to climate change is shaped by an analysis of global megatrends through a scenario-building tool. These scenarios not only provide insights into the future of mining but also influence commodity price forecasts, capital allocation, portfolio decisions, business strategies, and can be associated with the increase in global temperature.

In this context, the Company observes the persistence of the typical cycles in the mining industry over the coming decades, driven by an energy transition that unfolds asynchronously and unevenly across different sectors and regions. Vale conducted an analysis of the resilience of its product portfolio in the face of climate change scenarios, based on the International Energy Agency's scenarios.

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

The potential financial impacts on the Company of climate change and the transition to a low carbon economy have been considered in the assessment of the Company's critical accounting estimates, which includes indicators of impairment, such as demand for the Company's commodities decreasing, due to policy, regulatory (including carbon pricing mechanisms), legal, technological, market or reputational responses to climate change.

The impairment test undertaken by the Company for these financial statements did not result in any asset impairment due to this matter. However, given the complexity of modeling, identification of additional risks, and the planning and execution of actions in response to identified risks, transition risks may result in material impacts on the Company's financial statements in future reporting periods.

Physical risk impacts related to climate changes on asset carrying values

The Company's operations are exposed to events related to climate change. Therefore, the Company assessed the potential impacts of physical risks related to climate change on the models used for the impairment testing of the assets, such as operational disruptions caused by increased frequency or severity of extreme weather events, and those related to chronic risks resulting from longer-term changes in climate patterns.

The Company did not identify any impairment indicators for assets in these financial statements due to the physical risks considered in the assessment. However, given the complexity of physical risk modeling and the ongoing nature of the Company's physical risk assessment process, the identification of additional risks or detailed development of the response to identified risks may result in material impacts on the Company's financial statements in future reporting periods.

Social pillar

Sustainable mining

- In March 2023, the Company started operations at the Gelado Project, which will produce pellet feed from the reutilization of tailings dam deposited at the site for almost four decades. As of December 31, 2023, the Company invested R\$250 (US\$50 million) (2022: R\$334 (US\$65 million)) in capital investment in the Gelado Project to make the value chain increasingly sustainable. Due to the high quality of the pellets manufactured on-site, our steelmaking customers can reduce their carbon emissions compared to using lower-quality products.
- In June 2022, the Company announced the creation of an operation of Corporate Venture Capital ("Vale Ventures"), the objective is to invest approximately R\$484 (US\$100 million) in sustainable mining initiatives. The Company's objective is to acquire minority stakes in startups that are focused on decarbonization initiatives within the mining value chain, zero waste mining, energy transition metals and other technologies.

In 2023, Vale Ventures invested R\$95 (US\$19 million) in the acquisition of minority stakes. Among these investments are the transformative biology startup Allonia, LLC ("Allonia") and the Boston Electrometallurgical Company ("Boston Metal"), whose objective is developing technology focused on steel decarbonization.

Also in 2023, Vale Ventures invested R\$13 (US\$3 million) in venture capital funds, represented by Evok Fund II Limited Partnership ("Evok Innovations") and Cathay Innovation Global Fund III ("Cathay Innovation").

- The Company performs the filtration of tailings with its treatment for solid-state stacking, reducing or eliminating disposal in tailings dams. Tailings filtration plants began to be installed by Vale in 2019, with investments in dry stacking and processing systems totaling R\$721 (US\$144 million) in 2023 (2022: R\$1,598 (US\$305 million)).
- The implementation and execution of future use projects, after the decommissioning, is not required by law. However, the Company has been studying a governance to assess the future use, considering its aptitudes, post-operational usage intention, socio-economic development of the community and the characteristics of the physical and biotic environments in which Vale operates. Any future commitments, if assumed by Vale, may result in material impact on the amount of the asset retirement obligation provision.
- In October 2022, the Company established the company Co-log Logística de Coprodutos S.A ("Agera") to develop and expand the Sustainable Sand business. Agera receives sand produced from the treatment of tailings generated by Vale's iron ore operations and promotes its commercialization and distribution. The new company also invests in research and development of new solutions for the product. The Company disbursed R\$4 (US\$1 million) in 2023, which is recorded as research and development expenses.

Notes to the Financial Statements

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Communities

- In 2023, the Company entered into a Cooperation and Commitment Agreement with the Krenak indigenous community to support initiatives focused on ethnodevelopment and education. In 2023, the Company disbursed R\$27 (US\$5 million), and these expenditures were directly recognized in the financial results as other operating expenses.
- In 2023, Vale continued the implementation of the Environmental Basic Plan with the indigenous communities Tupiniquim and Guarani, which includes initiatives for institutional and cultural strengthening, ethnodevelopment, and management. Examples include conducting project management courses, entrepreneurship workshops, biofertilizer production, coffee cultivation, tourism management, among other actions. In 2023, the Company disbursed R\$8 (US\$2 million), and these expenditures were directly recognized in the financial results as other operating expenses. Future expenses will be recorded in the period in which they occur.
- Three indigenous communities neighboring Vale's operations in have signed agreements for the development of their consultation protocols, or territorial and environmental management plans, or life plans: Kayapó in Pará, Ka'apor, and Guajajara from the Caru Indigenous Land in Maranhão, in line with the Company's Social Ambition. The Company disbursed R\$33 (US\$7 million) in 2023, and these expenditures were directly recognized in the financial results as other operating expenses. Future expenses will be recorded in the period in which they occur.
- To contribute with its suppliers' development, the Company has created a website with financial institutions aiming to enable small and medium suppliers to anticipate their receivables with better interest rates. As of December 31, 2023, the outstanding balances related to these suppliers were R\$1.073 (US\$221 million) (2022: R\$1.058 (US\$202 million)).

Governance pillar

The Company intends to align compensation programs with the business strategy and to the objective of making Vale a safer company. Since 2020, the Company has been following new standards for executive compensation. For short-term compensation, at least 30% of performance targets are driven by ESG metrics and directly related to safety, risk management and sustainability goals, and for long-term compensation target is at least 25% of targets performance should be based on ESG metrics and health and safety (note 29).

3. Significant events and transactions related to 2023 financial statements

- **Acquisition of equity interest in Anglo American Minério de Ferro Brasil S.A. ("Anglo American Brasil")** – In February 2024 (subsequent event), the Company entered into an agreement for the acquisition of 15% interest in Anglo American Brasil of which Vale will contribute with Serra da Serpentina iron ore resources and a cash contribution of R\$762 (US\$157.5 million). The closing of the transaction is subject to the usual conditions precedent and is expected to occur in 2024. Further details are presented in note 16(a) of these financial statements.
- **Shareholders remuneration** – During 2023, the Company paid dividends and interest on capital to its shareholders in the amount of R\$27,759 (US\$5,513 million). On February 22, 2024 (subsequent event), the Board of Directors approved remuneration to its shareholders in the amount of R\$11,722 (US\$2,364 million). The total amount was approved as dividends and recorded in equity as "Additional remuneration reserve". The payment is expected in March 2024. Further details are presented in note 30(e) of these financial statements.
- **Provision related to the Samarco dam failure** – In December 2023, the Company reviewed its estimates of outflows to resolve all aspects of the reparation and compensation of the Samarco dam failure. As a result, the Company recognized an addition to the provision in the amount of R\$5,841 (US\$1,200 million), recorded in the income statement as "Equity results and other results in associates and joint ventures". Further details are presented in note 26(c) of these financial statements.
- **Divestment of PT Vale Indonesia Tbk ("PTVI")** – In November 2023, the Company signed a Heads of Agreement with PT Mineral Industri Indonesia ("MIND ID") and Sumitomo Metal Mining Co., Ltd. ("SMM") regarding the divestment obligation in PTVI, with completion expected in 2024 and subject to usual conditions precedent.

With the completion of the transaction, Vale will lose control over PTVI and it will account the investment through the equity method. Therefore, the carrying amount of this subsidiary is presented in these financial statements as "held for sale". Further details are presented in note 16(b) of these financial statements.

Notes to the Financial Statements

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- **Streaming transactions** - In November 2023, the first phase of the Salobo III expansion project was completed and Vale received R\$1,791 (US\$370 million) from Wheaton Precious Metals Corp ("Wheaton"). If Salobo's production reaches a processing capacity exceeding 35 million tons of copper per year by January 1, 2031, Vale will receive an additional amount estimated between R\$242 (US\$50 million) and R\$775 (US\$160 million), depending on the year such processing capacity is achieved. Further details are provided in note 7 of these financial statements.
- **Share buyback program** - In October 2023, the Board of Directors approved a new common shares buyback program, over 18 months, limited to a maximum of 150 million common shares or their respective ADRs, that aims to continue the previous share buyback program. During 2023, the Company repurchased 184,697,102 common shares or their respective ADRs, corresponding to the total amount of R\$13,593 (US\$2,714 million). Further details are presented in note 30(c) of these financial statements.
- **Strategic partnership on the Energy Transition Metals business** - In July 2023, the Company separately signed two agreements, one with Manara Minerals and the other with Engine No. 1, for the sale of a combined 13% equity interest in Vale Base Metals Limited, for the aggregated amount of R\$17 billion (US\$3.4 billion). These agreements shall be accounted for as an equity transaction with any result being recognized in shareholder's equity upon closing of the transaction. Further details are presented in note 16(c) of these financial statements.
- **Notes offering and bond tender offers** - In June 2023, Vale issued notes of R\$7,277 (US\$1,500 million), maturing in 2033. Of this amount, Vale redeemed notes in the total amount of R\$2,426 (US\$500 million), maturing in 2026, 2036 and 2039. As a result, Vale paid a premium of R\$106 (US\$22 million), recorded in the income statement and presented as "Bond premium repurchase" in note 6 – Financial results. Further details are presented in note 10(c) of these financial statements.
- **Reversal of deferred income tax related to the Renova Foundation** - In May 2023, the Company has entered, together with BHP Billiton Brasil Ltda. ("BHPB"), Samarco Mineração S.A. ("Samarco") and certain creditors of Samarco, into a binding agreement to setting the parameters of Samarco's debt restructuring that was implemented through a consensual restructuring plan.

Under the agreement, contributions made, from May 2023, by Vale and BHPB to the Renova Foundation will be converted into capital contributions to Samarco, which is primarily responsible for payments to the Foundation. Therefore, following the change in the procedure to provide these contributions, Vale will no longer deduct these cash outflows from its income tax computation, resulting in the reversal of the deferred tax asset in the amount of R\$5,468 (US\$1,078 million), recorded in the income statement as "Income taxes". Further details are presented in note 26(e) of these financial statements.

- **Sale of Companhia Siderúrgica do Pecém ("CSP")** - In March 2023, the Company completed the sale of its interest in CSP to ArcelorMittal Brasil S.A. The transaction has resulted in a net cash outflow for the Company in the amount of R\$346 (US\$67 million) and the reversal of the liability recorded in relation to the financial guarantee granted to CSP. Therefore, the completion of the transaction resulted in a gain of R\$160 (US\$31 million), recorded as "Equity results and other results in associates and joint ventures". Further details are provided in note 16(f) of these financial statements.

4. Information by business segment and geographic area

The segments are aligned with products and reflect the structure used by Management to evaluate the Company's performance. The responsible bodies for making operational decisions, allocating resources and evaluating performance are the Executive Committee and Board of Directors. Accordingly, the performance of the operating segments is assessed based on a measure of adjusted EBITDA, among other measures.

The Company's adjusted EBITDA is calculated based on the operating income or loss (i) increased by dividends received and interest from associates and joint ventures; excluding (ii) depreciation, depletion, and amortization; and (iii) impairment reversal (impairment) and results on disposal of non-current assets.

Due to the reorganization of assets and the governance established by the Company for the Energy Transition Metals segment (notes 15 and 16), the Company is reviewing the items currently included in the EBITDA under "Other", especially the expenditures related to general and administrative expenses, research and development, and the results from associates and joint ventures. As a result, starting from 2024, the Company will reclassify some of these items currently classified under "Other" to Iron Ore Solutions and Energy Transition Metals segments.

Notes to the Financial Statements

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In 2022, the Company allocated the financial information of the Midwestern System to “Other” as this operation was no longer analyzed by the chief operating decision maker as part of the performance of the Iron Ore Solutions business segment due to the binding agreement to sell this operation (note 16g). The comparative information was reclassified to reflect the revision in the allocation criteria.

Segment	Main activities
Iron Ore Solutions	Comprise the extraction and production of iron ore, iron ore pellets, other ferrous products, and its logistic related services.
Energy Transition Metals	Includes the extraction and production of nickel and its by-products (gold, silver, cobalt, precious metals and others), and copper, as well as its by-products (gold and silver).
Coal (discontinued operation)	Comprise the extraction and production of metallurgical and thermal coal and its logistic related services.
Other	Includes the revenue and cost of other products, services, research and development, investments in joint ventures and associates of other business and corporate expenses unallocated to the reportable segments, as well as the financial information related to Midwestern system and costs related to the Brumadinho event.

a) Adjusted EBITDA

	Notes	Consolidated		
		Year ended December 31,		
		2023	2022	2021
Iron ore (i)		73,979	81,043	142,275
Iron ore pellets		15,584	18,809	26,181
Other ferrous products and services		575	612	738
Iron Ore Solutions		90,138	100,464	169,194
Nickel		4,299	9,876	8,643
Copper		5,475	2,990	8,738
Energy Transition Metals		9,774	12,866	17,381
Other (ii)		(10,506)	(11,273)	(18,519)
Adjusted EBITDA from continuing operations		89,406	102,057	168,056
Depreciation, depletion and amortization		(15,300)	(16,386)	(16,379)
Impairment reversal (impairment) and results on disposal of non-current assets, net and other (ii)	16 and 19	(2,390)	3,833	(2,352)
Dividends received and interest from associates and joint ventures (iii)		(1,010)	(794)	(1,043)
Operating income		70,706	88,710	148,282
Equity results and other results in associates and joint ventures	15	(5,434)	1,616	(6,947)
Financial results	6	(9,718)	11,378	17,812
Income before income taxes		55,554	101,704	159,147

(i) Includes the reclassification of the EBITDA of Midwestern System from the Iron Ore Solutions segment to “Other” in the amounts of R\$381 (US\$77 million) and R\$578 (US\$109 million) for the years ended December 31, 2022 and December 31, 2021, respectively.

(ii) Includes adjustments of R\$1,073 (US\$216 million) for the year ended December 31, 2023, to reflect the performance of the streaming transactions at market prices.

(iii) In 2022, the Company received R\$360 (US\$65 million) in dividends from California Steel Industries related to the sale transaction of this investment, which was treated as part of the result of the transaction (note 16h) and, therefore, this amount was not included in the adjusted EBITDA.

	Notes	Consolidated		
		Year ended December 31,		
		2023	2022	2021
Adjusted EBITDA from discontinued operations (coal)		-	874	(1,024)
Depreciation, depletion and amortization		-	-	(359)
Impairment and results on disposals of non-current assets, net		-	(2,867)	(17,178)
Dividends received and interest from associates and joint ventures		-	-	(424)
Operating loss	16(l)	-	(1,993)	(18,985)
Equity results and other results in associates and joint ventures		-	-	(144)
Financial results		-	14,603	2,309
Derecognition of noncontrolling interest		-	(2,783)	-
Income (loss) before income taxes from discontinued operations (coal)	16(l)	-	9,827	(16,820)

Notes to the Financial Statements

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b) Net operating revenue by shipment destination

	Consolidated						
	Year ended December 31, 2023						
	Iron Ore Solutions			Energy Transition Metals			
	Iron ore	Iron ore pellets	Other ferrous products and services	Nickel and other products	Copper	Other	Total
China	102,485	12	-	3,178	1,447	-	107,122
Japan	11,738	1,383	4	2,916	-	-	16,041
Asia, except Japan and China	10,496	2,011	53	2,564	1,327	-	16,451
Brazil	6,848	8,410	2,498	318	-	677	18,751
United States of America	-	1,309	-	6,818	-	-	8,127
Americas, except United States and Brazil	5	2,000	7	2,288	198	-	4,498
Germany	1,226	285	6	2,318	2,960	-	6,795
Europe, except Germany	5,208	1,885	-	5,436	5,903	-	18,432
Middle East, Africa, and Oceania	-	11,676	-	173	-	-	11,849
Net operating revenue	138,006	28,971	2,568	26,009	11,835	677	208,066

	Consolidated						
	Year ended December 31, 2022						
	Iron Ore Solutions			Energy Transition Metals			
	Iron ore	Iron ore pellets	Other ferrous products and services	Nickel and other products	Copper	Other	Total
China	106,356	209	28	7,990	377	-	114,960
Japan	13,212	1,072	3	3,929	23	-	18,239
Asia, except Japan and China	10,460	2,009	65	2,494	806	225	16,059
Brazil	6,701	10,271	2,302	310	-	1,683	21,267
United States of America	-	1,121	-	7,347	-	3	8,471
Americas, except United States and Brazil	-	2,436	27	3,081	-	625	6,169
Germany	1,827	85	-	3,114	2,883	-	7,909
Europe, except Germany	7,158	1,643	-	5,824	5,146	-	19,771
Middle East, Africa, and Oceania	-	13,405	-	137	-	121	13,663
Net operating revenue	145,714	32,251	2,425	34,226	9,235	2,657	226,508

	Consolidated						
	Year ended December 31, 2021						
	Iron Ore Solutions			Energy Transition Metals			
	Iron ore (i)	Iron ore pellets	Other ferrous products and services	Nickel and other products	Copper	Other	Total
China	146,987	874	292	4,908	1,006	-	154,067
Japan	18,826	2,618	2	2,776	177	-	24,399
Asia, except Japan and China	16,095	2,804	124	3,203	2,014	-	24,240
Brazil	9,520	12,949	2,288	297	-	2,624	27,678
United States of America	125	1,981	1	6,216	-	-	8,323
Americas, except United States and Brazil	24	3,900	154	1,975	205	656	6,914
Germany	3,002	266	69	3,567	4,099	-	11,003
Europe, except Germany	11,632	1,046	20	6,126	6,476	-	25,300
Middle East, Africa, and Oceania	7	11,513	-	80	-	-	11,600
Net operating revenue	206,218	37,951	2,950	29,148	13,977	3,280	293,524

(i) Includes the reclassification of the revenues of Midwestern System from the Iron Ore Solutions segment to "Other" in the amounts of R\$1,161 (US\$231 million) and R\$2,024 (US\$377 million) for the years ended December 31, 2022 and December 31, 2021, respectively.

The revenue from a single customer from the Iron Ore Solutions segment amounted to R\$20,881 (US\$4,239 million), individually representing 10% of the Company's total revenue for the year ended December 31, 2023. In 2022 and 2021, no customer individually represented 10% or more of the Company's revenue.

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c) Assets by segment

	December 31, 2023				Consolidated December 31, 2022			
	Iron Ore Solutions	Energy Transition Metals	Other	Total	Iron Ore Solutions	Energy Transition Metals	Other	Total
Investments in associates and joint ventures	6,525	-	2,536	9,061	6,762	-	2,619	9,381
Property, plant and equipment and intangibles	185,789	88,795	16,027	290,611	172,435	102,552	12,906	287,893
Capital expenditures								
Sustaining capital (i)	12,644	7,990	598	21,232	11,610	7,886	525	20,021
Project execution	6,063	1,781	370	8,214	4,464	1,740	1,959	8,163
	18,707	9,771	968	29,446	16,074	9,626	2,484	28,184

(i) According to the Company's shareholders remuneration policy, dividends are calculated based on 30% of the adjusted EBITDA less sustaining capital investments. The calculation also considered the investments made on the coal discontinued operation (note 16), which was R\$201 (US\$38 million) for the year ended December 31, 2022.

d) Assets by geographic area

	December 31, 2023				Consolidated December 31, 2022			
	Investments in associates and joint ventures	Intangible	Property, plant and equipment	Total	Investments in associates and joint ventures	Intangible	Property, plant and equipment	Total
Brazil	9,061	47,551	163,485	220,097	9,381	43,783	147,191	200,355
Canada	-	8,751	57,563	66,314	-	9,624	58,325	67,949
Americas, except Brazil and Canada	-	-	22	22	-	-	20	20
Indonesia (i)	-	-	285	285	-	6	14,251	14,257
China	-	4	71	75	-	5	98	103
Asia, except Indonesia and China	-	-	3,539	3,539	-	-	4,102	4,102
Europe	-	1	3,281	3,282	-	-	3,897	3,897
Oman	-	2	6,056	6,058	-	3	6,588	6,591
Total	9,061	56,309	234,302	299,672	9,381	53,421	234,472	297,274

(i) The reduction refers substantially to the reclassification of PTVI's assets presented in these financial statements as "held for sale" in accordance with IFRS 5/CPC 31 – *Non-current Assets Held for Sale and Discontinued Operations*.

Accounting policy

Revenue from sales – Revenue from sales is recognized when control of a good or service is transferred to a customer. Given the diverse shipping terms associated with Vale's sales, revenue may be recognized at various stages: (i) when the product is available at the loading port, (ii) upon loading onto the ship, (iii) at the port of discharge, or (iv) at the customer's warehouse.

A substantial portion of Vale's sales operates under Cost and Freight ("CFR") and Cost, Insurance, and Freight ("CIF") Incoterms. In these instances, where the Company provides shipping services after the transfer of control, such services are treated as a distinct performance obligation. A portion of the transaction price is allocated and recognized over time as the shipping services are rendered.

Typically, contract payment terms involve upfront payments or the utilization of letters of credit. These terms generally do not have a significant financing component. Occasionally, sale prices are provisionally set at the sale date, with subsequent adjustments based on market fluctuations or contractual terms until the final pricing date.

Revenue recognition is based on the estimated fair value of the total consideration receivable. The provisional pricing mechanism embedded in these sales arrangements is deemed to have the characteristics of a derivative. Consequently, the fair value of the final sale price adjustment is continuously reassessed, and any changes are recognized as operational revenue in the income statement.

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5. Costs and expenses by nature

a) Cost of goods sold, and services rendered

	Consolidated			Parent Company	
	Year ended December 31,				
	2023	2022	2021	2023	2022
Freight (i)	21,116	24,494	24,744	220	212
Services	20,569	18,691	15,543	13,025	11,604
Personnel	14,626	13,857	13,639	9,786	8,953
Depreciation, depletion and amortization	14,533	15,753	15,430	8,356	8,254
Materials	13,615	11,662	10,908	8,768	7,526
Acquisition of products	11,252	13,247	12,214	6,559	5,885
Fuel oil and gas	8,120	8,446	5,472	5,336	5,996
Royalties	6,397	6,576	7,372	6,187	6,199
Energy	3,893	3,709	3,446	2,262	1,784
Others	5,895	7,760	8,499	3,239	5,105
Total	120,016	124,195	117,267	63,738	61,518

(i) The reduction in freight costs in 2023 was mainly due to the decrease of the price of bunker fuel, which is included in the freight price.

Mineral Resources Inspection Fare ("TFRM") – Certain Brazilian states, including the Brazilian States of Minas Gerais, Pará and Maranhão, impose the TFRM, a fee calculated based on mineral production.

In 2021, through an administrative decree, the State of Pará increased the TFRM rate from one fiscal unit of R\$2.11 (US\$0.39) to three fiscal units of R\$11.19 (US\$2.07) per metric ton, updated annually and with immediate requirement. However, the Company did not adopt the new rate in 2021, based on the Principle of Anteriority, which establishes that the rate increase would become due from the year following the publication of the decree.

In 2022, the Company joined the "Programa Estrutura Pará", which aims to promote infrastructure investments in the State of Pará and adopted the rate of three fiscal units prospectively. The program also establishes the conversion of 50% of TFRM payments into the execution of works of constructed assets will be delivered to society and, therefore, will not be owned by the Company. In 2023, the Company disbursed R\$2,253 (US\$451 million) related to TFRM (2022: R\$2,292 (US\$459 million)).

b) Selling and administrative expenses

	Consolidated			Parent Company	
	Year ended December 31,				
	2023	2022	2021	2023	2022
Personnel	1,216	1,186	1,175	729	687
Services	770	737	673	372	333
Depreciation and amortization	235	211	227	172	91
Advertisement	128	114	145	122	109
Other	409	410	381	147	123
Total	2,758	2,658	2,601	1,542	1,343

c) Other operating expenses, net

	Notes	Consolidated			Parent Company	
		Year ended December 31,				
		2023	2022	2021	2023	2022
Expenses related to Brumadinho event	25	4,598	5,581	4,632	4,598	5,581
Expenses related to de-characterization of dams	27(a)	750	375	9,747	750	375
Asset decommissioning obligations	27(b)	25	115	682	55	200
Provision for litigations	28(a)	1,138	793	531	1,092	753
Profit sharing program		742	677	674	584	456
Disposals of materials and inventories		364	240	22	-	183
COVID-19 expenses		-	-	238	155	-
Other		(195)	1,120	65	(296)	1,220
Total		7,422	8,901	16,591	6,938	8,768

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

6. Financial results

	Notes	Consolidated			Parent Company	
		2023	2022	2021	Year ended December 31,	
		2023	2022	2021	2023	2022
Financial income						
Short-term investments		1,547	2,272	1,222	928	1,660
Other		612	413	600	51	170
		2,159	2,685	1,822	979	1,830
Financial expenses						
Loans and borrowings gross interest	10(c)	(3,718)	(3,158)	(3,628)	(6,325)	(4,807)
Capitalized loans and borrowing costs	10(d)	96	240	318	96	240
Interest on REFIS		(737)	(788)	(294)	(737)	(788)
Interest on lease liabilities	24	(310)	(325)	(338)	(61)	(69)
Bond premium repurchase	10(c)	(106)	(568)	(354)	-	-
Interest on accounts payable		(1,009)	(265)	(242)	(631)	(111)
Other		(1,492)	(1,292)	(2,249)	(1,288)	(895)
		(7,276)	(6,156)	(6,787)	(8,946)	(6,430)
Other financial items, net						
Foreign exchange and indexation gains (losses), net		(8,185)	(5,217)	718	(7,693)	(4,980)
Participative shareholders' debentures (i)	22	(871)	3,285	(3,691)	(871)	3,285
Financial guarantees (i)	32(b)	-	2,488	1,536	-	2,488
Derivative financial instruments, net	20	4,455	6,018	(153)	4,441	5,442
Reclassification of cumulative translation adjustments to the income statement	15(a) and 16	-	8,275	24,367	-	-
		(4,601)	14,849	22,777	(4,123)	6,235
Total		(9,718)	11,378	17,812	(12,090)	1,635

(i) Items reclassified in comparative to maintain consistency of disclosure.

Accounting policy

Transactions in foreign currencies are translated into the functional currency using the exchange rate effective on the date of the transaction. The foreign exchange gains and losses resulting from the translation at the exchange rates prevailing at the end of the year are recognized in the income statement as "financial income or expense". The exceptions are transactions related to qualifying net investment hedges, cash flow hedge or items that are attributable to the net investment in a foreign operation, for which gains, and losses are recognized as a component of other comprehensive income.

The accounting policies related to the other items of the financial result are shown in the notes, "15. Investments in subsidiaries, associates, and joint ventures", "22. Participative shareholders' debentures", "23. Loans, borrowing, cash and cash equivalents and short-term investments" and "24. Leases".

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7. Streaming transactions

a) Statement of Financial Position

	December 31, 2023			Consolidado December 31, 2022		
	Current liabilities	Non-current liabilities	Total	Current liabilities	Non-current liabilities	Total
	Gold streaming	329	7,364	7,693	278	6,179
Cobalt streaming	107	2,135	2,242	145	2,232	2,377
Total contract liabilities	436	9,499	9,934	423	8,411	8,834

b) Effects on the income statement

	Year ended December 31,		
	2023	2022	2021
Cobalt streaming	70	252	297
Gold streaming	669	192	232
Fixed revenue – Contract liabilities realized	739	444	529
Cobalt streaming	15	55	65
Gold streaming	465	382	442
Variable revenue – Additional payments received	480	437	507

Gold streaming

Vale have sold to Wheaton Precious Metals Corp. (“Wheaton”) an aggregate of (i) 75% of the by-product gold contained in concentrate from our Salobo copper mine, in Brazil, for the life of mine, and (ii) 70% of the by-product gold from our Sudbury nickel mines, in Canada, for 20 years. Regarding these streaming transactions:

Vale received upfront payments of (i) R\$4 billion (US\$1.9 billion) in 2013, (ii) R\$2.8 billion (US\$900 million) in 2015 and (iii) R\$2.6 billion (US\$800 million) in 2016. Vale also receives ongoing payments of the lesser of US\$400 per ounce and the prevailing market price, for each ounce of gold that the Company deliver under the agreement.

As per the Salobo gold by-product stream purchase agreement, Vale was entitled to receive an additional cash payment if the Company expanded its capacity to process Salobo copper ores to more than 28 Mtpy before 2036. In March 2023, Vale agreed with Wheaton to amend this agreement to adjust the additional cash payment terms. These conditions are linked to the “Salobo III” project, which is the brownfield expansion of Salobo through the increase in copper processing capacity.

In November 2023, the first phase of the Salobo III expansion project was completed and Vale received R\$1,791 (US\$370 million), which was recorded in the streaming liability. If Salobo's production reaches a processing capacity exceeding 35 million tons of copper per year by January 1, 2031, Vale will receive an additional amount estimated between R\$242 (US\$50 million) and R\$775 (US\$160 million), depending on the year such processing capacity is achieved. In addition, Wheaton will be required to make annual payments between R\$24.7 (US\$5.1 million) and R\$41.2 (US\$8.5 million) from 2024 to 2034, as long as the Salobo complex continues to produce within certain copper grades.

Cobalt streaming

In June 2018, Vale sold to Wheaton and Cobalt 27 Capital Corp. (“Cobalt 27”) a combined 75% of the cobalt produced as a by-product at its Voisey’s Bay mine from January 1, 2021, for the amount of R\$2.6 billion (US\$690 million). Vale also receives additional payments of 20%, in average, of cobalt prices upon delivery. In February 2021, the stream originally sold to Cobalt 27 was assigned to Anglo Pacific Group.

Notes to the Financial Statements

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Accounting policy

The Company bifurcates both streaming transactions in two identifiable components: (i) the sale of the mineral rights and (ii) extraction services.

Sale of mineral rights – The amount allocated to this component is recognized as revenue in the income statement when the Company transfers ownership of the mineral rights to the counterparty. The cost related to the component sold is recognized in the income statement at the same moment.

Extraction services – The Company recognizes contract liabilities in the event it receives payments from customers before a sale meets criteria for revenue recognition. Proceeds received under the terms of the streaming transaction allocated to this component are accounted for as “streaming transactions” and included within liabilities.

Contract liability is initially recognized at fair value, net of transaction costs incurred, and is subsequently carried at amortized cost and updated using the effective interest rate method. Contract liability is released to the income statement based on the units of production, that is, revenue is calculated based on volume produced compared to the total proved and probable reserves of gold or cobalt, which are reviewed and remeasured annually.

Critical accounting estimates and judgments

Defining the result on sale of mineral interest and the contractual liabilities portion of the streaming transaction it is required the use of critical accounting estimates including, but not limited to: (i) allocation of costs between the product and the by-product based on relative prices; (ii) expected margin for the independent components (sale of mineral rights and service for gold and cobalt extraction); and (iii) discount rates used to measure the present value of future inflows and outflows.

8. Taxes

a) Income tax reconciliation

The reconciliation of the taxes calculated according to the nominal tax rates and the amount of taxes recorded is shown below:

	Notes	Consolidated			Parent Company	
		2023	2022	2021	Year ended December 31,	
		2023	2022	2021	2023	2022
Income before income taxes		55,554	101,704	159,147	51,014	109,179
Income taxes at statutory rate (34%)		(18,888)	(34,579)	(54,110)	(17,345)	(37,121)
Adjustments that affect the taxes basis:						
Tax incentives		5,310	6,414	15,092	4,572	5,890
Income tax benefit from interest on capital		3,934	2,828	1,400	3,934	2,828
Equity results		423	431	896	4,067	14,916
Addition of tax loss carryforward		1,991	4,718	3,629	1,452	(321)
Reclassification of cumulative adjustments to the income statement		-	2,814	8,285	-	-
Reversal of deferred income tax related to Renova Foundation	26(e)	(5,468)	-	-	(5,468)	-
Liabilities related to associates and joint ventures	26(c)	(1,975)	-	-	(1,975)	-
Other		(327)	2,189	(512)	(311)	553
Income taxes		(15,000)	(15,185)	(25,320)	(11,074)	(13,255)
Current tax		(6,869)	(10,259)	(30,079)	(4,938)	(8,845)
Deferred tax		(8,131)	(4,926)	4,759	(6,136)	(4,410)
Income taxes		(15,000)	(15,185)	(25,320)	(11,074)	(13,255)

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Expressed in millions of Brazilian reais, unless otherwise stated

b) Deferred income tax assets and liabilities

Tax loss carryforward does not expire in the Brazilian jurisdiction and their compensation is limited to 30% of the taxable income for the year. The local profits of foreign subsidiaries are also taxed in Brazil and there is no restriction on their offset against tax losses generated previously by the foreign entity.

	Consolidated				Parent Company			
	Deferred tax assets		Deferred tax liabilities		Deferred tax assets		Deferred tax liabilities	
	Year ended December 31,							
	2023	2022	2023	2022	2023	2022	2023	2022
Taxes losses carryforward	27,614	30,827	-	-	23,706	22,254	-	-
Temporary differences:								
Asset retirement obligations and other liabilities (i)	20,164	25,439	(3,908)	(3,725)	16,431	23,209	(2,337)	(2,062)
Fair value of financial instruments	3,558	4,378	-	-	3,557	4,403	-	-
Employee post-retirement obligation	2,314	2,149	-	-	1,178	1,022	-	-
Provision for litigation	1,482	1,896	-	-	1,470	1,891	-	-
Fair value of property, plant and equipment in business combination	-	-	(9,845)	(11,506)	-	-	-	-
Goodwill amortization	-	-	(2,782)	(2,704)	-	-	-	-
Other	3,500	2,069	-	-	1,045	684	(2,782)	(2,704)
	58,632	66,758	(16,535)	(17,935)	47,387	53,463	(5,119)	(4,766)
Financial position								
Assets	46,307	56,195	-	-	42,268	48,697	-	-
Liabilities	-	-	(4,210)	(7,372)	-	-	-	-

(i) Following the adoption of the amendment to IAS 12/CPC 32 – Deferred Taxes related to Assets and Liabilities Arising from a Single Transaction, the Company started disclosing separately the deferred tax assets and deferred tax liabilities arising from the decommissioning of assets, environmental obligations, and leases, which resulted in an increase of R\$3,908 (US\$807 million) in deferred tax assets and deferred tax liabilities. Comparative information was restated to reflect the effects of the adoption, resulting in an increase of R\$3,725 (US\$714 million) in deferred tax assets and deferred tax liabilities. Therefore, there has been no impact on the deferred tax balances recorded in the Company's financial statements.

The following table shows the changes in deferred tax assets and liability:

	Consolidated		Parent Company	
	Assets	Liabilities	Deferred taxes, net	Deferred taxes, net
Balance as of December 31, 2021	63,847	10,494	53,353	54,119
Taxes losses carryforward	(331)	-	(331)	(523)
Provision for asset retirement obligations and other liabilities	(2,617)	486	(3,103)	(1,959)
Fair value of financial instruments	(3,240)	-	(3,240)	(3,240)
Allocated goodwill	-	(3,202)	3,202	-
Other	(1,454)	-	(1,454)	1,312
Effect in income statement	(7,642)	(2,716)	(4,926)	(4,410)
Employee post-retirement obligation	(595)	-	(595)	(55)
Fair value of financial instruments	393	-	393	(22)
Other comprehensive income	(202)	-	(202)	(77)
Transfer between assets and liabilities	800	800	-	-
Translation adjustment	(608)	(1,059)	451	-
Sale of California Steel Industries	-	(147)	147	-
Merger	-	-	-	(935)
Balance as of December 31, 2022	56,195	7,372	48,823	48,697
Taxes losses carryforward	(3,061)	-	(3,061)	1,453
Provision for asset retirement obligations and other liabilities	(5,524)	378	(5,902)	(7,050)
Fair value of financial instruments	(845)	-	(845)	(847)
Allocated goodwill	-	(323)	323	-
Other	1,354	-	1,354	308
Effect in income statement	(8,076)	55	(8,131)	(6,136)
Employee post-retirement obligation	165	-	165	99
Fair value of financial instruments	158	-	158	1
Other comprehensive income	323	-	323	100
Transfer between assets and liabilities	(1,794)	(1,794)	-	-
Translation adjustment	(341)	(392)	51	-
Merger	-	-	-	(393)
Transfer to asset to held for sale	-	(1,031)	1,031	-
Balance as of December 31, 2023	46,307	4,210	42,097	42,268

Notes to the Financial Statements

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c) Tax incentives

In Brazil, the Company has tax incentives to partially reduce the income tax generated by the operations conducted in the North region that includes iron ore, copper, and nickel. The incentive is calculated based on the taxable income of the incentive activity (tax operating income) and considers the allocation of tax operating income into different incentives applicable to different tranches of production during specified periods for each product, usually 10 years.

In addition to these incentives, the income tax payable can be reduced by investing in the acquisition of new machinery and equipment, subject to subsequent approval by the Superintendence for the Development of the Amazon ("SUDAM").

As determined by the Brazilian law, the tax savings obtained because of these incentives must be recorded in the retained earnings reserve in equity and cannot be distributed as dividends to shareholders.

The Company's tax incentives will mostly expire in 2024 and the last tax incentive is expiring in 2027. The effects on the income statement are presented as "tax incentives" in note 8(a).

d) Income taxes – Settlement program ("REFIS")

	December 31, 2023	Consolidated December 31, 2022
Current liabilities	2,071	1,934
Non-current liabilities	8,343	9,753
REFIS liabilities	10,414	11,687
SELIC rate	11.75%	13.75%

The balance mainly relates to the settlement program of claims regarding the collection of income tax and social contribution on equity gains of foreign subsidiaries and affiliates from 2003 to 2012. This amount bears SELIC interest rate (Special System for Settlement and Custody) and will be paid in monthly installments until October 2028 and the impact of the SELIC over the liability is recorded under the Company's financial results (note 6).

e) Uncertain tax positions ("UTP")

The Company is engaged in administrative and judicial discussions with tax authorities in Brazil in relation to certain tax positions adopted by the Company for calculating income tax and social contribution on net income. The final determination is uncertain and depends on factors not controlled by the Company, such as changes in case law and changes in tax laws and regulations. The Company is subject to the assessment of income tax by local tax authorities in a range up to 10 years depending on jurisdiction where the Company operates.

The amount under discussion with the tax authorities is R\$26,194 (US\$5,408 million) as of December 31, 2023 (2022: R\$22,032 (US\$4,223 million)), which includes the reduction of tax losses in the amount of R\$3,656 (US\$754 million) as of December 31, 2023 (2022: R\$2,942 (US\$564 million)), if the tax authority does not accept the tax treatment adopted by the Company in relation to these matters.

	December 31, 2023			Consolidated December 31, 2022		
	Assessed (i)	Not in dispute (ii)	Total	Assessed (i)	Not in dispute (ii)	Total
UTPs not recorded on statement of financial position (iii)						
Transfer pricing over the exportation of ores to a foreign subsidiary	10,383	14,571	24,954	6,207	13,525	19,732
Expenses of interest on capital	7,319	-	7,319	6,720	-	6,720
Proceeding related to income tax paid abroad	2,481	-	2,481	2,288	-	2,288
Goodwill amortization	2,934	922	3,856	3,018	1,162	4,180
Payments to Renova Foundation	807	2,597	3,404	150	2,763	2,913
Other	2,270	-	2,270	3,649	-	3,649
	26,194	18,090	44,284	22,032	17,450	39,482
UTPs recorded on statement of financial position						
Deduction of CSLL in Brazil	885	-	885	813	-	813
	885	-	885	813	-	813

(i) Includes the tax effects arising from the reduction of the tax losses and negative basis of the CSLL, without fines and interest.

(ii) Includes the principal, without fines and interest.

(iii) Based on the assessment of its internal and external legal advisors, the Company believes that the tax treatment adopted for these matters will be accepted in decisions of the higher courts on last instance.

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Transfer pricing calculation over the exportation of ores to a foreign subsidiary – The Company was assessed for the IRPJ and CSLL, for the years of 2015 and 2018 since the tax agent has disregarded the intermediation cost and other adjustments used in the calculation of the transfer pricing over the exportation of iron ore, pellets, manganese, and copper to its foreign controlled company. The Company is challenging these assessments at the administrative level and a decision is pending.

The Company maintains the method of calculating the transfer pricing, as it considers it to be the most appropriate tax treatment for interpreting the rules in force and applicable to the subject and is discussing the charges at the administrative level.

The total amount in dispute is R\$7,893 (US\$1,630 million) as of December 31, 2023 (2022: R\$4,324 (US\$829 million)), excluding the corresponding tax impact without fines and interests of R\$2,490 (US\$514 million) as of December 31, 2023 (2022: R\$1,883 (US\$361 million)), totaling R\$10,383 (US\$2,144 million) (2022: R\$6,207 (US\$1,190 million)). The amount involved for the fiscal years of 2019 to 2023, which are not in dispute, is R\$14,571 (US\$3,010 million) as of December 31, 2023 (2022: R\$13,525 (US\$2,592 million)).

Expenses of interest on equity capital (“JCP”) – Vale received assessments for the collection of IRPJ, CSLL and fines, on the grounds that the deduction of JCP was improper, referring to the base years of 2017 and 2018, due to failure to comply with the accrual basis and absence of individualized accounting credit per shareholder. The amount under discussion is R\$6,620 (US\$1,367 million) as of December 31, 2023 (2022: R\$6,021 (US\$1,154 million)), excluding the corresponding tax impact without fines and interests of R\$699 (US\$144 million) as of December 31, 2023 (2022: R\$699 (US\$134 million)), totaling R\$7,319 (US\$1,511 million) (2022: R\$6,720 (US\$1,288 million)). The Company presented administrative defenses for these assessments and is awaiting a decision.

Proceeding related to income tax paid abroad – Vale received a tax assessment for the collection of R\$2,481 (US\$512 million) (2022: R\$2,288 (US\$439 million)) due to the disregard of taxes paid abroad that were offset by the IRPJ debt in 2016. Tax authorities allege the Company has failed to comply with the applicable rules relating to the offset, in Brazil, of income taxes paid abroad. The Company had filed an administrative appeal, and a decision is pending.

Goodwill amortization – The Company received tax assessments for the collection of IRPJ and CSLL for the periods between 2013 and 2019, due to the disregard of the deduction of goodwill amortization expenses recorded in the acquisition of controlled companies, after its merger by the Company.

The Company is discussing the charges at the administrative level and the amount under discussion is R\$2,614 (US\$540 million) as of December 31, 2023 (2022: R\$2,698 (US\$517 million)), excluding the corresponding tax impact without fines and interests of R\$320 (US\$66 million) as of December 31, 2023 (2022: R\$320 (US\$61 million)), totaling R\$2,934 (US\$606 million) (2022: R\$3,018 (US\$578 million)). The amount involved for the years 2020 to 2023, which are not assessed, is R\$922 (US\$190 million) (2022: R\$1,162 (US\$223 million)).

Payments to Renova Foundation – The Company deducted payments made to Renova Foundation arising from the obligation entered into the Transaction and Conduct Adjustment Agreement (“TTAC”) and from its subsidiary liability in the agreement when Samarco did not make these payments directly. Vale understands that the deduction of such expenses is adequate, since its liability is objective, arising from the obligation entered into in the TTAC and its status as a shareholder.

The mentioned payments were deducted until April 2023 when Vale entered into a binding agreement jointly with BHPB, Samarco, and certain creditors of Samarco, establishing the parameters for the restructuring of Samarco's debt. This restructuring was implemented through a consensual reorganization plan, which was approved by the Judicial Recovery Court in September 2023. According to the agreement, contributions made by Vale to the Renova Foundation from May 2023 onward will be converted into capital contributions to Samarco and, therefore, will no longer be deductible. Further details on Samarco's judicial recovery are provided in note 26(a) of these financial statements.

The Company received tax assessment notices for the periods 2016 to 2018, for the collection of IRPJ and CSLL on the grounds that expenses incurred with Renova Foundation were unduly deducted for allegedly not being considered necessary. The total amount assessed is R\$676 (US\$140 million) for the year ended December 31, 2023 (2022: R\$126 (US\$24 million)), excluding the corresponding tax impact without fines and interests of R\$131 (US\$27 million) as of December 31, 2023 (2022: R\$24 (US\$5 million)), totaling R\$807 (US\$167 million) (2022: R\$150 (US\$29 million)). For the fiscal years 2019 to 2023, the amount not assessed is R\$2,597 (US\$536 million) (2022: R\$2,763 (US\$530 million)).

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Deduction of CSLL from the taxable income - In 2004, a definitive decision of the Superior Court of Justice ("STJ") granted to the Company the right to deduct the Social Contribution on Net Income ("CSLL") from the taxable base of the corporate income tax ("IRPJ"). The Federal Government filed a rescission action ("*ação rescisória*") in 2006, seeking to reverse the 2004 decision. In 2019, the Federal Court of Appeals ("TRF") upheld the rescission action and, although the decision was not final, the Company decided not to deduct the CSLL from the taxable income since then.

Meanwhile, the Federal Supreme Court ("STF") is judging two extraordinary appeals with impact to all taxpayers. These appeals are discussing how long a court decision related to a tax matter would remain valid if the STF had subsequently issued a contrary decision. Due to the developments of this matter in the STF during 2023 and based on the updated assessment of its legal advisors, the Company concluded that the tax treatment previously adopted will probably not be accepted by the tax authority and, therefore, it recognized a liability as "Taxes payable" for the year ended December 31, 2022. The amount for the year ended December 31, 2023, is R\$885 (US\$183 million) (2022: R\$813 (US\$155 million)).

Non-occurrence of IRPJ and CSLL on SELIC rate in the repetition of undue payment - In September 2021, the Federal Supreme Court ("STF") decided in a judgment with general repercussion, that the incidence of IRPJ and CSLL on amounts referring to the SELIC rate received as a result of repetition of tax overpayment is unconstitutional. After the publication of the decision of the leading case judgment with a conclusion favorable to the taxpayers, the Company recognized a gain of R\$192 (US\$34 million) in the income statement for the year ended December 31, 2021.

f) Recoverable and payable taxes

	Consolidated					
	December 31, 2023			December 31, 2022		
	Current assets	Non-current assets	Current liabilities	Current assets	Non-current assets	Current liabilities
Value-added tax ("ICMS")	1,126	26	121	1,364	5	242
Brazilian federal contributions ("PIS" and "COFINS") (i)	1,719	4,890	2,979	3,602	3,861	182
Income taxes	1,463	1,733	2,076	1,614	1,927	1,156
Financial compensation for the exploration of mineral resources ("CFEM")	-	-	449	-	-	284
Other	47	3	736	59	-	590
Total	4,355	6,652	6,361	6,639	5,793	2,454

(i) In December 2023, a judicial decision was issued in a lawsuit related with Brazilian federal contributions ("PIS" and "COFINS"), which is fully guaranteed by a judicial deposit, determining the conversion of part of the judicial deposit to the Government, resulting in the reclassification of the amount to payable taxes. Further details are presented in note 28 of these financial statements.

ICMS included in PIS and COFINS computation tax base - Vale discussed the issue of the exclusion of ICMS from the taxable basis of the contribution to PIS and COFINS in two lawsuits filed before March 2017. One of the lawsuits includes the triggering events from March 2012 onwards and has a favorable definitive decision. This amount was calculated based on the assumption that the ICMS to be excluded from the taxable bases is the one paid. With the definition of the subject by the Federal Supreme Court in the leading case, with binding effects to all taxpayers, which determined that the ICMS to be excluded is the one highlighted in the invoices, the Company recognized an additional gain of R\$146 (US\$26 million) for the year ended December 31, 2021.

The lawsuit that covers the triggering events that occurred between December 2001 and February 2012, resulted in the recognition of a gain in the amount of R\$808 (US\$145 million) for the year ended December 31, 2021, of which R\$372 (US\$67 million) refers to the principal recorded as "Other operating expenses, net" and R\$436 (US\$78 million) refers to monetary restatement as "Other financial items, net", due to the favorable decision obtained by the Company and in line with the judgment of the Federal Supreme Court in the aforementioned leading case.

Accounting policy

The Brazilian corporate tax law requires the taxation of income generated by foreign subsidiaries, and as a result, the income tax charge is computed using the tax rate enacted at the end of the reporting period in Brazil. The impact of the income tax calculation in the consolidated financial statements is determined by applying the differential between the Brazilian income tax rate and the local income tax rate of each jurisdiction where the Company's subsidiaries operate and generate taxable income.

Management regularly assesses positions taken in tax returns concerning situations where applicable tax regulations are subject to interpretation. Provisions are recorded, as needed, based on expected amounts payable to tax authorities. Liabilities related to uncertain tax positions are recorded only when it is deemed, with a more-likely-than-not probability, that these positions will not withstand challenges, if any, from taxing authorities, based on input from internal and external legal advisors.

Notes to the Financial Statements

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Deferred income taxes are recognized for temporary differences between the carrying amount and the tax basis of assets and liabilities, as well as tax losses carryforwards. However, deferred tax liabilities arising from the initial recognition of goodwill are not recognized. Additionally, deferred income tax is not accounted for if it arises from the initial recognition of an asset or liability in a transaction unrelated to a business combination that, at the time of the transaction, has no impact on accounting or taxable profit or loss. Offset of deferred tax assets and liabilities occurs when there is a legally enforceable right to offset current tax assets and liabilities, and when the deferred tax balances pertain to the same taxation authority.

Deferred tax assets resulting from tax losses and temporary differences are not recognized when it is not probable that future taxable profit will be available against which these differences and/or tax losses can be utilized.

Current and deferred tax is recognized in profit or loss unless it relates to items recognized in other comprehensive income or directly in equity. In such cases, the tax is also recognized in other comprehensive income or directly in equity, respectively.

Critical accounting estimates and judgments

Deferred income tax - Significant judgements, estimates and assumptions are required to determine the amount of deferred tax assets that are recognized based on the likely timing and future taxable profits. Deferred tax assets arising from tax losses carryforward and temporary differences are recognized considering assumptions and projected cash flows. Deferred tax assets may be affected by factors including, but not limited to: (i) internal assumptions on the projected taxable income, which are based on production and sales planning, commodity prices, operational costs and planned capital costs; (ii) macroeconomic environment; and (iii) trade and tax scenarios.

Uncertain tax positions - The Company applies significant judgement in identifying uncertainties over income tax treatments, which could impact the consolidated financial statements. The Company operates in multiple jurisdictions where uncertainties arise in the application of complex tax regulations. The Company and its subsidiaries are subject to reviews of income tax filings and other tax payments, and disputes can arise with the taxing authorities over the interpretation of the applicable laws and regulations.

9. Basic and diluted earnings (loss) per share

The basic and diluted earnings (loss) per share are presented below:

	Year ended December 31,		
	2023	2022	2021
Net income attributable to Vale's shareholders			
Net income from continuing operations	39,940	86,106	133,236
Net income (loss) from discontinued operations	-	9,818	(12,008)
Net income	39,940	95,924	121,228
Thousands of shares			
Weighted average number of common shares outstanding	4,366,130	4,637,794	5,012,424
Weighted average number of common shares outstanding and potential ordinary shares	4,369,961	4,642,432	5,016,848
Basic and diluted earnings per share from continuing operations			
Common share (US\$)	9.15	18.57	26.58
Basic and diluted earnings (loss) per share from discontinued operations			
Common share (US\$)	-	2.12	(2.40)
Basic and diluted earnings per share			
Common share (US\$)	9.15	20.67	24.18

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

10. Cash flows reconciliation

a) Cash flow from operating activities

	Notes	Consolidated			Parent Company	
		Year ended December 31,				
		2023	2022	2021	2023	2022
Cash flow from operating activities:						
Income before income taxes		55,554	101,704	159,147	51,014	109,179
Adjusted for:						
Equity results and others results from subsidiaries	15	-	-	-	(10,410)	(41,110)
Equity results and other results in associates and joint ventures	15	5,434	(1,616)	6,947	5,434	(1,616)
Impairment (impairment reversal) and results on disposal of non-current assets, net	19	1,317	(3,833)	2,352	1,195	1,056
Provisions related to Brumadinho	25	2,255	2,078	1,140	2,255	2,078
Provision for de-characterization of dams	27	750	375	9,747	750	375
Depreciation, depletion and amortization		15,300	16,386	16,379	9,015	8,761
Financial results, net	6	9,718	(11,378)	(17,812)	12,090	(1,635)
Changes in assets and liabilities:						
Accounts receivable	11	1,591	(1,812)	4,604	5,695	(1,175)
Inventories	12	(1,116)	211	(2,572)	(918)	(69)
Suppliers and contractors	13	3,098	2,283	1,286	2,088	3,647
Other assets and liabilities, net		(7,681)	(8,605)	(2,403)	(3,718)	(5,259)
Cash flow from operations		86,220	95,793	178,815	74,490	74,232

b) Cash flow from investing activities

	Notes	Consolidated			Parent Company	
		Year ended December 31,				
		2023	2022	2021	2023	2022
Disbursement related to VNC sale	16(m)	-	-	(3,134)	-	-
Proceeds from disposal of Mosaic shares	16(j)	-	-	6,919	-	-
Cash received from the sale of California Steel Industries	16(h)	-	2,269	-	-	-
Cash received from the sale of Companhia Siderúrgica do Pecém	16(f)	5,637	-	-	5,637	-
Cash contribution to Companhia Siderúrgica do Pecém	16(f)	(5,983)	-	-	(5,983)	-
Cash received from the sale of Midwestern System	16(g)	-	745	-	-	815
Disbursement related to MRN sale	16(d)	(351)	-	-	(351)	-
Proceeds (payments) from disposal of investments, net		(697)	3,014	3,785	(697)	815

Notes to the Financial Statements

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c) Reconciliation of debt to cash flows arising from financing activities

	Consolidated			
	Quoted in the secondary market	Debt contracts in Brazil	Debt contracts on the international market	Total
December 31, 2021	44,501	2,120	21,346	67,967
Additions	-	-	6,764	6,764
Payments (i)	(7,338)	(1,151)	(3,275)	(11,764)
Interest paid (ii)	(3,353)	(237)	(477)	(4,067)
Cash flow from financing activities	(10,691)	(1,388)	3,012	(9,067)
Effect of exchange rate	(2,417)	(86)	(1,829)	(4,039)
Interest accretion	2,507	815	451	3,773
Non-cash changes	90	729	(1,378)	(559)
December 31, 2022	33,900	1,461	22,980	58,341
Additions	7,277	-	2,308	9,585
Payments (i)	(2,637)	(248)	(330)	(3,215)
Interest paid (ii)	(2,254)	(123)	(1,318)	(3,695)
Cash flow from financing activities	2,386	(371)	660	2,675
Effect of exchange rate	(2,261)	-	(2,204)	(4,465)
Interest accretion	2,157	121	1,546	3,824
Non-cash changes	(104)	121	(658)	(641)
December 31, 2023	36,182	1,211	22,982	60,375

	Parent Company			
	Quoted in the secondary market	Debt contracts in Brazil	Debt contracts on the international market	Total
December 31, 2021	5,182	2,123	10,837	18,142
Additions	-	-	2,016	2,016
Payments	(871)	(630)	(2,282)	(3,783)
Interest paid (ii)	(610)	(218)	(204)	(1,032)
Cash flow from financing activities	(1,481)	(848)	(470)	(2,799)
Effect of exchange rate	(198)	-	(478)	(676)
Interest accretion	367	185	263	815
Non-cash changes	169	185	(215)	139
December 31, 2022	3,870	1,460	10,152	15,482
Additions	-	-	2,308	2,308
Payments	(211)	(247)	-	(458)
Interest paid (ii)	(244)	(123)	(631)	(998)
Cash flow from financing activities	(455)	(370)	1,677	852
Effect of exchange rate	(176)	-	(876)	(1,052)
Interest accretion	257	121	730	1,108
Non-cash changes	81	121	(146)	56
December 31, 2023	3,496	1,211	11,683	16,390

(i) Includes bond premium repurchase.

(ii) Classified as operating activities in the statement of cash flows.

Funding

- In September 2023, the Company contracted a loan of R\$727 (US\$150 million) with Citibank, indexed to Secured Overnight Financing Rate ("SOFR") with spread adjustments and maturing in 2028.
- In June 2023, Vale issued notes of R\$7.277 (US\$1,500 million) with a coupon of 6.125% per year, payable semi-annually, and maturing in 2033. The notes were sold at a price of 99.117% of the principal amount, resulting in a yield to maturity of 6.245%.
- In March 2023, the Company contracted a loan of R\$1,524 (US\$300 million) with the Industrial and Commercial Bank of China Limited, Panama Branch ("ICBC") indexed to SOFR with spread adjustments and maturing in 2028.
- In July 2022, the Company contracted the credit line of R\$805 (US\$150 million) with SMBC Bank indexed to SOFR with spread adjustments and maturing in 2027.
- In May 2022, the Company contracted a loan of R\$967 (US\$200 million) with MUFG Bank indexed to SOFR with spread adjustments and maturing in 2027.

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- In January 2022, the Company contracted two loans of R\$2,361 (US\$425 million) with The Bank of Nova Scotia, indexed to SOFR with spread adjustments and maturing in 2027.

Payments

- In June 2023, Vale redeemed notes with maturity date in 2026, 2036 and 2039, in the total amount of R\$2,426 (US\$500 million) and paid a premium of R\$106 (US\$22 million), recorded as "financial expenses" in the income statement for the year period ended December 31, 2023.
- In January 2023, the Company paid principal and interest of debentures, in the amount of R\$124 (US\$24 million).
- In August 2022, the Company settled its infrastructure debentures of the 2nd series, by a payment of R\$865 (US\$170 million).
- In June 2022, the Company repurchased R\$6,520 (US\$1,291 million) of its Bonds and paid a premium of R\$568 (US\$113 million), which has been recorded and is presented as "Other expenses" in the financial results for the year ended December 31, 2022.
- In January 2022, the Company prepaid R\$993 (US\$200 million) of a loan maturing in 2023 with The Bank of Nova Scotia.

d) Non-cash transactions

	Consolidated			Parent Company	
	Year ended December 31,			2023	2022
	2023	2022	2021		
Non-cash transactions:					
Additions to PP&E – capitalized loans and borrowing costs	96	240	318	96	240

11. Accounts receivable

	Notes	Consolidated			Parent Company	
		December 31, 2023	December 31, 2022	December 31, 2023	December 31, 2022	
Receivables from contracts with customers						
Third parties						
Iron Ore Solutions		16,489	16,346	1,352	634	
Energy Transition Metals		3,598	5,135	-	7	
Other		15	180	59	100	
Related parties	31	428	1,102	35,770	46,700	
Accounts receivable		20,530	22,763	37,181	47,441	
Expected credit loss		(213)	(226)	(67)	(61)	
Accounts receivable, net		20,317	22,537	37,114	47,380	

Provisionally priced commodities sales – The Company is mainly exposed to iron ore and copper price risk. The Company's primary exposure lies in iron ore and copper price risk. The determination of the final sales price for these commodities is based on the pricing period outlined in the sales contracts, typically occurring after the revenue recognition date. Consequently, the Company initially recognizes revenue using a provisional invoice. Subsequently, the receivables associated with provisionally priced products are measured at fair value through profit or loss (note 20). Any fluctuations in the value of these receivables are reflected in the Company's net operating revenue.

The sensitivity of the Company's risk related to the final settlement of provisionally priced accounts receivables is detailed below:

	Thousand metric tons	Provisional price (US\$/ton)	Variation	December 31, 2023
				Effect on Revenue (R\$ million)
Iron ore	29,594	139	+/-10%	+/- 2.040
Copper	95	8,026	+/-10%	+/- 381

Notes to the Financial Statements

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Accounting policy

Accounts receivable represent the aggregate amount receivable from the sale of products and services by the Company. Initially recognized at fair value, they are subsequently measured at amortized cost using the effective interest method, except for the component of provisionally priced commodities sales that are subsequently measured at fair value through profit or loss.

The Company applies the IFRS 9/CPC 48 – Financial Instruments simplified approach for measuring expected credit losses. This approach utilizes a lifetime expected loss allowance for all accounts receivable. A provision matrix, established by the Company, forms the basis for this measurement. The matrix incorporates historical credit loss experience, adjusted for forward-looking factors specific to the economic environment, and considers any financial guarantees associated with these accounts receivables.

12. Inventories

	Consolidated		Parent Company	
	December 31, 2023	December 31, 2022	December 31, 2023	December 31, 2022
Finished products				
Iron Ore Solutions	11,893	11,091	5,429	4,927
Energy Transition Metals	3,096	3,396	-	224
	14,989	14,487	5,429	5,151
Work in progress	2,748	4,175	3	144
Consumable inventory	5,614	5,272	2,819	2,790
Net realizable value provision (i)	(672)	(548)	(154)	(268)
Total of inventories	22,679	23,386	8,097	7,817

(i) In 2023, the effect of provision for net realizable value was R\$265 (US\$54 million) (2022: R\$229 (US\$44 million)).

The cost of goods sold is presented in note 5(a).

Accounting policy

Inventories are stated at the lower of cost and net realizable value. Inventory production cost comprises variable and fixed costs, direct and indirect costs of production and are assigned to individual items of inventory based on weighted average costs method. At the end of the reporting period, net realizable value of inventories are assessed and a provision for losses on obsolete or slow-moving inventory may be recognized. The write-downs and reversals are recognized as "Cost of goods sold, and services rendered".

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

13. Suppliers and contractors

	Notes	Consolidated			Parent Company
		December 31, 2023	December 31, 2022	December 31, 2023	December 31, 2022
Third parties – Brazil		16,757	14,042	14,825	13,184
Third parties – Abroad		8,001	8,342	285	85
Related parties	31	765	894	873	979
Total		25,523	23,278	15,983	14,248

The Company has transactions with certain suppliers, which allows them to anticipate their receivables and the Company to extend its payment term within the short term, that is, during its operational cycle. The outstanding balance related to those transactions was R\$6,966 (US\$1,438 million) as of December 31, 2023 (December 31, 2022: R\$3,877 (US\$743 million)), of which R\$1,073 (US\$221 million) (December 31, 2022: R\$1,058 (US\$202 million)) relates to the structure created by the Company with the exclusive purpose of enabling small and medium suppliers to anticipate their receivables with better interest rates, in line with Company's social pillar.

Accounting policy

The Company assesses whether the payment term extension arrangement substantially modifies the original liability based on qualitative and quantitative aspects. If the original liability has been substantially modified, the Company derecognizes the original liability (suppliers) and recognizes a new financial liability (other financial liabilities), any gain/loss is recognized in income statement. If the original liability does not modify substantially, the original liability (suppliers) remains.

14. Other financial assets and liabilities

	Notes	Consolidated		
		Current		Non-Current
		December 31, 2023	December 31, 2022	December 31, 2022
Other financial assets				
Restricted cash		-	-	404
Derivative financial instruments	20	1,311	1,788	1,022
Investments in equity securities (i)		-	-	36
		1,311	1,788	1,462
Other financial liabilities				
Derivative financial instruments	20	172	470	972
Other financial liabilities – Related parties	31(b)	1,404	2,086	-
Financial guarantees provided (ii)	32(b)	-	-	537
Liabilities related to the concession grant	14(a)	2,861	2,169	13,326
Contract liability and other financial liabilities (iii)		3,676	4,000	-
		8,113	8,725	14,835

	Notes	Parent Company		
		Current		Non-Current
		December 31, 2023	December 31, 2022	December 31, 2022
Other financial assets				
Restricted cash		-	-	22
Derivative financial instruments	20	1,107	1,160	1,022
Investments in equity securities (i)		-	-	31
Other financial assets		-	-	50
		1,107	1,160	1,125
Other financial liabilities				
Derivative financial instruments	20	33	128	848
Loans – Related parties	31(b)	15,136	25,691	48,465
Other financial liabilities – Related parties	31(b)	3,753	3,660	-
Financial guarantees provided (ii)	32(b)	-	-	537
Liabilities related to the concession grant	14(a)	2,861	2,169	13,326
Contract liability and other financial liabilities (iii)		19	33	-
		21,802	31,681	63,176

(i) It mainly relates to a 2.66% noncontrolling interest in Boston Electrometallurgical Company, which aims to promote the development of a technology focused on reducing carbon dioxide emissions in steel production, and a 2.01% noncontrolling interest in Allonia LLC, a transformative biology startup.

(ii) In March 2023, the Company completed the sale of its interest in CSP and derecognized the financial guarantee granted by the Company.

(iii) Includes advances received from customers that meets the definition of contract liability described in IFRS 15/CPC 47 – Revenue from Contracts with Customers and other financial liabilities that meets the definition of a financial liability described in IAS 32/CPC 39 – Financial Instruments: Presentation.

Notes to the Financial Statements

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a) Liabilities related to the concession grant

In December 2020, the Company entered into an agreement with the Federal Government to continue operating its concessions of the Estrada de Ferro Carajás ("EFC") and Estrada de Ferro Vitória a Minas ("EFVM") for thirty years more, extending the maturity date from 2027 to 2057.

	Reference					Consolidated	Discount rate		Remaining term of obligations
		December 31, 2022	Revision to estimates and new provisions	Monetary and present value adjustments	Disbursements	December 31, 2023	December 31, 2023	December 31, 2022	
Payment obligation	(a.i)	4,975	269	507	(279)	5,472	11.04%	11.04%	34 years
Infrastructure investment	(a.ii)	10,520	3,520	524	(1,307)	13,257	5.17% - 5.54%	6.08% - 6.23%	8 years
		15,495	3,789	1,031	(1,586)	18,729			
Current liabilities		2,169				2,861			
Non-current liabilities		13,326				15,868			
Liabilities		15,495				18,729			

(a.i) Payment obligation

The Company will make payments for the concession grants in quarterly installments through the concession period. This obligation is updated annually by the readjustment index for monetary exchange ("IRT"), which was 4.82% for the year 2023 (2022: 6.47%), resulting in an addition to the provision of R\$269 (US\$55 million) for the year ended December 31, 2023.

In addition, the ANTT may require, at their discretion, further investments on the concession network. Furthermore, there is a requirement for the Company to complete a minimum percentage of certain investments by 2028. In these circumstances, discussions on the economic and financial rebalancing of the contracts will be required and depending on the result of the physical inventory review and if new investments are demanded, the carrying amount of grant payable may have a material impact in the future.

In January 2024 (subsequent event), the Company was notified by the Ministry of Transport related to the asset base of the railway network which, in the understanding of the Ministry of Transport, should be amortized until the end of the concession and should not reduce the value of the grant. The Ministry of Transport required the Company to present measures to recover any compensation from the public authorities for assets covered by this notification. The Company has presented its arguments and understands that the provisions recorded are adequate to comply with obligations related to the concession.

(a.ii) Infrastructure investment

Midwestern Integration Railroad ("FICO") - Construction of 383 km of FICO, between the municipalities of Mara Rosa, in Goiás, and Água Boa, in Mato Grosso. As of December 31, 2023, the Company has a provision in the amount of R\$7,670 (US\$1,584 million) (2022: R\$7,385 (US\$1,415 million)). In 2023, the Company revised the estimates of cash disbursement for the execution of investments, mainly due to the anticipation of the moment of execution of part of these investments, resulting in the complement of the provision in the amount of R\$754 (US\$154 million) in the year ended December 31, 2023.

Infrastructure program - Comprises over 450 separate projects designed to improve safety and reduce trespass where the railways pass through urban areas. The program will benefit 25 and 33 municipalities intercepted by EFC and EFVM, respectively. In 2023, the Company made progress mainly in the maturity of projects associated with complementary infrastructure, as established in the concession renewal agreements, as well anticipated the timing of execution of part of the obligations, resulting in an addition to the provision in the amount of R\$2,766 (US\$565 million) in the year ended December 31, 2023.

West-East Integration Railway ("FIOL") - Acquisition and delivery of rails and sleepers, which the Federal Government will use for construction of section II of the FIOL, which will connect the municipalities of Caetité and Barreiras, in Bahia, and other miscellaneous obligations. In 2022, ANTT issued the definitive Discharge Term regarding the rails and sleepers acquired for FIOL, as established in an amendment to the EFVM concession contract. Therefore, this obligation was settled in 2022.

The construction of FICO and the execution of the Infrastructure Program are Vale's responsibility and changes in relation to the original budgets may materially change the balance of the provision in the future.

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(a.iii) Guarantee

As of December 31, 2021, as a condition for signing the contracts, the Company contracted a guarantee. These insurance contracts guarantee compensation, up to the amount established in the policy, for any losses arising from non-compliance of the contractual obligations assumed by Vale in the concession contracts. The amount of insurance coverage is R\$1,144 (US\$236 million) as of December 31, 2023 (2022: R\$1,092 (US\$209 million)) and the Company recorded financial expenses related to these contracts in the amount of R\$53 (US\$11 million) in 2023 (2022: R\$66 (US\$13 million)).

Accounting policy

Concessions – Railway concessions liabilities consist of the following future payments discounted at present value: (i) fixed payments for the concession; (ii) amounts expected to be disbursed for constructing railways and infrastructure; (iii) cost of acquiring equipment to be made available for the granting authority; and (iv) other miscellaneous obligations that complement the early extension of the railway concessions agreement.

Grant payments are discounted using the regulatory weighted average cost of capital (“WACC”), which is the interest rate explicit in the concession agreement as determined by the ANTT, and payments related to other investment obligations are discounted at an incremental rate to reflect the time value of money, that is, a risk-free interest rate applicable to the economic environment in which the Company operates and with terms and conditions equivalent to the obligations assumed.

The amounts payable in relation to the concession granted accounted for as intangible in accordance with the accounting policy, disclosed in note 17.

Notes to the Financial Statements

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15. Investments in subsidiaries, associates and joint ventures

	Business	% ownership	December 31, 2022	Additions and capitalizations	Equity results in income statement	Dividends declared	Translation adjustment	Transfer to assets held for sale	Reorganization of Energy Transition Metals	Other	December 31, 2023
Direct and indirect subsidiaries											
In Brazil											
Companhia Portuária da Baía de Sepetiba	Iron ore	100.00	310	51	78	(62)	-	-	-	-	377
Minerações Brasileiras Reunidas S.A.	Iron ore	100.00	2,086	-	183	(525)	-	-	-	199	1,943
Minerações Brasileiras Reunidas S.A. – Goodwill	-	-	4,060	-	-	-	-	-	-	-	4,060
Salobo Metais S.A.	Cooper	100.00	13,880	-	3,112	(2,836)	-	-	6,286	(528)	19,914
Tecnored Desenvolvimento Tecnológico S.A.	Iron ore	100.00	117	172	(176)	-	-	-	-	-	113
Valepar – Goodwill	-	-	3,073	-	-	-	-	-	-	-	3,073
Other	-	-	431	283	(194)	(2)	-	-	-	134	652
Abroad											
Vale Holdings B.V.	Holding	100.00	2,523	-	(318)	(7,563)	52	-	(528)	770	(5,064)
Vale Canada Limited (i)	Nickel	100.00	21,726	960	(548)	-	(1,473)	-	29,541	(396)	49,810
Vale International S.A.	Trading and holding	100.00	57,877	-	8,753	-	(3,691)	-	(33,694)	(551)	28,694
Vale Base Metals Limited	Holding	100.00	-	5	(85)	-	92	-	4,681	-	4,693
Vale Malaysia Minerals Sdn. Bhd.	Iron ore	100.00	6,755	-	213	-	(489)	-	-	-	6,479
Other	-	-	354	55	(608)	-	(21)	-	-	261	41
			113,192	1,526	10,410	(10,988)	(5,530)	-	6,286	(111)	114,785
Associates and joint ventures											
In Brazil											
Aliança Geração de Energia S.A.	Energy	55.00	1,772	-	240	(288)	-	-	-	1	1,725
Aliança Norte Energia Participações S.A.	Energy	51.00	553	-	(39)	-	-	-	-	-	514
Baovale Mineração S.A.	Minério de ferro	50.00	125	-	16	(10)	-	-	-	5	136
Companhia Coreano-Brasileira de Pelotização	Pellets	50.00	415	-	86	(147)	-	-	-	-	354
Companhia Hispano-Brasileira de Pelotização	Pellets	50.89	250	-	79	(90)	-	-	-	-	239
Companhia Ítalo-Brasileira de Pelotização	Pellets	50.90	323	-	77	(101)	-	-	-	-	299
Companhia Nipo-Brasileira de Pelotização	Pellets	51.00	759	-	195	(225)	-	-	-	-	729
Samarco Mineração S.A. (note 26)	Pellets	50.00	-	-	-	-	-	-	-	-	-
MRS Logística S.A.	Logistics	48.45	2,656	-	583	(139)	-	-	-	(4)	3,096
VLI S.A.	Logistics	29.60	2,234	-	(566)	-	-	-	-	4	1,672
Other	-	-	294	5	11	(1)	-	-	-	(12)	297
Abroad											
PT Kolaka Nickel Indonesia	Nickel	18.30	-	-	-	-	(3)	(62)	-	65	-
Consolidated total investment			9,381	5	682	(1,001)	(3)	(62)	-	59	9,061
Parent Company's total investment			122,573	1,531	11,092	(11,989)	(5,533)	(62)	6,286	(52)	123,846
Other results in associates and joint ventures (notes 16 and 26) (ii)			-	-	(6,116)	-	-	-	-	-	-
Equity results and other results			122,573	1,531	4,976	(11,989)	(5,533)	(62)	6,286	(52)	123,846

(i) Includes the investment in PTVI, which will be partially sold by the Company (note 16b).

(ii) It mainly refers to the addition to the provision related to the Samarco dam failure (note 26) and other results related to investments disposals (note 16).

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Reorganization of Energy Transition Metals – In July 2023, in the context of the corporate reorganization of the Energy Transition Metals segment in preparation for the agreement to sell the non-controlling interest in the assets of this segment (note 16a), Vale transferred through a capital contribution the assets and liabilities related to the Onça Puma ferro-nickel operations and the Sossego copper operations to its wholly-owned subsidiaries Mineração Onça Puma S.A. and Salobo Metais S.A., respectively. In addition, the Company transferred investments to Vale Base Metals Limited and capitalized a loan of R\$29,541 in Vale Canada. The corporate transactions occurred between Vale and its wholly-owned subsidiaries and, therefore, there is no impact at the Consolidated level.

Capital reduction in a foreign subsidiary – In August 2022, the Company approved a capital reduction in the amount of R\$7,885 (US\$1,500 million) of Vale Internacional SA (“VISA”), a wholly-owned foreign subsidiary, leading to a reduction in the absolute value of the investment held by the Parent Company, which resulted in a gain of R\$7,938 (US\$1,543 million) due to the reclassification of the cumulative translation adjustments following our accounting policy for such nature of transaction, presented as “Other financial items, net” (note 6). The remaining balance of cumulative translation adjustments of VISA represents R\$23,750 (US\$4,906 million) as of December 31, 2023.

Merger of New Steel – On April 29, 2022, the General Meeting approved the merger of New Steel Global N.V. (“New Steel”) into Vale. The merger did not result in the issuance of new shares nor changed Vale’s share capital, and the respective net assets were incorporated.

a) Summarized financial information

The summarized financial information about relevant associates and joint ventures for the Company are as follows. The stand-alone financial statements of those entities may differ from the financial information reported herein, which is prepared considering Vale’s accounting policies and using the most recent financial information available adjusted for the effects of significant transactions or events that occur between the date of the financial information and the date of the Company’s financial statements. The summarized financial information about Samarco is presented in note 26.

	December 31, 2023				
	Aliança Geração de Energia	Aliança Norte Energia Participações	Pelletizing plants (i)	MRS Logística	VLI S.A.
Current assets	583	–	1,813	4,617	4,524
Non-current assets	5,149	1,015	2,032	13,454	16,020
Total assets	5,732	1,015	3,845	18,071	20,544
Current liabilities	829	–	646	3,406	4,515
Non-current liabilities	1,766	8	5	8,274	10,380
Total liabilities	2,595	8	651	11,680	14,895
Equity	3,137	1,007	3,194	6,391	5,649
Net revenue	1,149	–	1,250	6,449	8,404
Net income (loss)	437	(77)	861	1,204	(1,911)

	December 31, 2022				
	Aliança Geração de Energia	Aliança Norte Energia Participações	Pelletizing plants (i)	MRS Logística	VLI S.A.
Current assets	728	–	4,316	2,594	3,966
Non-current assets	4,804	1,092	14,134	1,710	19,041
Total assets	5,532	1,092	18,450	4,304	23,007
Current liabilities	839	–	2,564	855	4,227
Non-current liabilities	1,471	8	12,783	4	11,234
Total liabilities	2,310	8	15,347	859	15,461
Equity	3,222	1,084	3,103	3,445	7,546
Net revenue	1,109	–	12,392	2,171	7,107
Net income (loss)	294	(66)	1,998	874	(149)

(i) Aggregated entities: Companhia Coreano-Brasileira de Pelotização, Companhia Hispano-Brasileira de Pelotização, Companhia Ítalo-Brasileira de Pelotização, and Companhia Nipo-Brasileira de Pelotização.

Notes to the Financial Statements

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b) Noncontrolling interest

Summarized financial information

The summarized financial information, prior to the eliminations of the intercompany balances and transactions, about subsidiaries with material noncontrolling interest is as follows. The stand-alone financial statements of those entities may differ from the financial information reported herein, which is prepared considering Vale's accounting policies.

	December 31, 2023		
	PTVI (note 16b)	Other	Total
Current assets	4,285	-	-
Non-current assets	14,409	-	-
Related parties – Shareholders	403	-	-
Total assets	19,097	-	-
Current liabilities	1,070	-	-
Non-current liabilities	1,159	-	-
Related parties – Shareholders	-	-	-
Total liabilities	2,229	-	-
Equity	16,868	-	-
Equity (negative reserves) attributable to noncontrolling interests	7,742	(382)	7,360
Net income	1,027	-	-
Net income (loss) attributable to noncontrolling interests	721	(107)	614
Dividends paid to noncontrolling interests	167	41	208

	December 31, 2022			
	PTVI	Vale Oman Pelletizing (note 16e)	Other	Total
Current assets	4,450	440	-	-
Non-current assets	11,199	3,032	-	-
Related parties – Shareholders	592	420	-	-
Total assets	16,241	3,892	-	-
Current liabilities	954	499	-	-
Non-current liabilities	1,300	776	-	-
Related parties – Shareholders	-	1,550	-	-
Total liabilities	2,254	2,825	-	-
Equity	13,987	1,067	-	-
Equity (negative reserves) attributable to noncontrolling interests	7,785	320	(323)	7,782
Net income	842	147	-	-
Net income (loss) attributable to noncontrolling interests	469	44	(100)	413
Dividends paid to noncontrolling interests	-	65	-	65

	December 31, 2021				
	PTVI	Vale Moçambique	Vale Oman Pelletizing	Other	Total
Current assets	4,300	2,348	512	-	-
Non-current assets	10,462	1,085	3,534	-	-
Related parties – Shareholders	459	32	139	-	-
Total assets	15,221	3,465	4,185	-	-
Current liabilities	972	1,251	548	-	-
Non-current liabilities	388	415	875	-	-
Related parties – Shareholders	-	67,364	1,651	-	-
Total liabilities	1,360	69,030	3,074	-	-
Equity (negative reserves)	13,861	(65,565)	1,111	-	-
Equity (negative reserves) attributable to noncontrolling interests	7,715	(3,278)	333	(115)	4,655
Net income	1,083	1,537	148	-	-
Net income (loss) attributable to noncontrolling interests	603	(475)	44	(57)	115
Dividends paid to noncontrolling interests	98	-	77	-	175

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

Accounting policy

Subsidiaries – The Company consolidates all entities over which it exercises control, defined as having both (i) exposure or rights to variable returns from its involvement and (ii) the ability to direct significant activities of the investee. Subsidiaries are fully consolidated from the acquisition date until the Company ceases to have control.

Transactions with noncontrolling interests – Investments held by other investors in Vale's subsidiaries are treated as noncontrolling interests ("NCI"). Transactions with NCI are treated as transactions with the Company's shareholders. For purchases or disposals of NCI, the difference between the consideration paid and the book value of the acquired portion of the subsidiary's net assets is directly recorded in equity under "Acquisitions and disposals of non-controlling interests."

Loss of control – When the Company ceases to have control, any interest retained in the entity is remeasured at its fair value, with the change in the carrying amount recognized in profit or loss. Amounts previously recognized in other comprehensive income are reclassified to the income statement.

Investments in associates and joint arrangements – Associates are entities over which the Company holds significant influence (typically 20% to 50% equity interest). If the equity interest in an associate decrease while retaining significant influence, a proportionate portion of the amounts previously recognized in other comprehensive income is reclassified to profit or loss as appropriate. Dilution gains and losses on associates are recognized in the income statement.

Joint arrangements are all entities over which the Company shares control with one or more parties. The classification of joint arrangement investments as joint operations or joint ventures depends on the contractual rights and obligations of each investor.

Joint operations are recorded in the financial statements to represent the Company's contractual rights and obligations. Accordingly, assets, liabilities, income and expenses related to the joint operation are individually recorded in the financial statements.

Interests in joint ventures are accounted for using the equity method, recognized initially at cost. The Company's investment in joint ventures includes identified goodwill from the acquisition, net of any impairment loss. The Company's interest in joint venture profits or losses is recognized in the income statement, and participation in changes in reserves is reflected in the Company's reserves. If the Company's interest in the losses of an associate or joint venture equals or exceeds the carrying amount of the investment, including any other receivables, additional losses are not recognized unless obligations or payments have been made on behalf of the joint venture.

In addition, the financial information used for associates and joint ventures to account for their impact in these financial statements may diverge from the stand-alone financial statements of those entities due to adjustments to Vale's accounting policy and variations in reporting periods.

Cumulative translation adjustments – According to IAS 21/CPC 02, exchange differences arising from transactions and balances of foreign operations are recognized in other comprehensive income and accumulated in equity until the full or partial disposal of the operation. A "partial disposal" of an investment can be construed as (i) a reduction in the percentage of equity interest or (ii) a decrease in the absolute value of the investment through the reduction of the investee's capital, even if the investor's ownership percentage remains unchanged. Consequently, there exists an accounting policy choice concerning the definition of a partial disposal.

In alignment with its accounting policy, the Company has chosen to treat a capital reduction in an investment in a foreign operation under the absolute value approach as described in (ii) above. Consequently, the exchange differences initially recorded in equity are reclassified to the income statement in the same proportion as the reduction in the net investment held in the foreign operation.

Notes to the Financial Statements

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Critical accounting estimates and judgments

In certain scenarios, judgment is necessary to determine whether, after considering all relevant factors, the Company exercises control, joint control, or significant influence over an entity. Significant influence includes situations involving collective control.

The Company holds the majority of the voting capital in five joint arrangements (Aliança Geração de Energia S.A., Aliança Norte Energia Participações S.A., Companhia Hispano-Brasileira de Pelotização, Companhia Ítalo-Brasileira de Pelotização, and Companhia Nipo-Brasileira de Pelotização). However, management has concluded that the Company lacks a sufficiently dominant voting interest to direct the activities of these entities. Consequently, these entities are accounted for using the equity method due to shareholder agreements where relevant decisions are shared with other parties.

Vale and Sumitomo Metal Mining Co. Ltd. ("SMM") jointly own a 44.3% and 15% equity interest in PT Vale Indonesia Tbk ("PTVI"), resulting in a total 59.3% interest in PTVI. Vale and SMM have a Shareholders' Agreement ("Block voting agreement"), stipulating that SMM will adhere to Vale's guidelines in decision-making on financial and operational matters crucial to PTVI's management. Consequently, the Company consolidates PTVI in its financial statements.

16. Acquisitions and divestitures

Effects on the income statement

	Reference	Cumulative translation adjustments			Year ended December 31, 2023	
		Other financial items, net	Equity results and other results in associates and joint ventures	Total recycling from OCI	Result of the transaction	
					Impairment reversal (impairment) of non-current assets	Equity results and other results in associates and joint ventures
Mineração Rio do Norte	16(d)	-	-	-	-	(420)
Companhia Siderúrgica do Pecém	16(f)	-	-	-	-	160
		-	-	-	-	(260)

	Reference	Cumulative translation adjustments			Year ended December 31, 2022	
		Other financial items, net	Equity results and other results in associates and joint ventures	Total recycling from OCI	Result of the transaction	
					Impairment reversal (impairment) of non-current assets	Equity results and other results in associates and joint ventures
Companhia Siderúrgica do Pecém (i)	16(f)	-	-	-	-	(685)
Midwestern System	16(g)	188	-	188	5,620	-
California Steel Industries	16(h)	-	779	779	-	741
Manganese	16(i)	-	-	-	(56)	-
Other		149	-	149	-	(40)
		337	779	1,116	5,564	16
Discontinued operations (Coal)	16(l)	14,636	-	14,636	(2,867)	-
		14,973	779	15,752	2,697	16

(i) Includes impairment of the investment in the amount of R\$553 (US\$111 million) and a provision for accounts receivable with CSP in the amount of R\$132 (US\$24 million).

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

	Reference	Cumulative translation adjustments			Year ended December 31, 2021	
		Other financial items, net	Equity results and other results in associates and joint ventures	Total recycling from OCI	Result of the transaction	
					Impairment reversal (impairment) of non-current assets	Equity results and other results in associates and joint ventures
Midwestern System	16(g)	-	-	-	(540)	-
Vale Nouvelle-Calédonie	16(m)	6,391	-	6,391	(549)	-
Vale Shipping Holding	16(k)	4,284	-	4,284	-	-
Manganese	16(i)	-	-	-	(192)	-
Other		58	-	58	-	(384)
		10,733	-	10,733	(1,281)	(384)
Discontinued operations (Coal)	16(l)	2,134	-	2,134	(17,178)	-
		12,867	-	12,867	(18,459)	(384)

a) Acquisition of equity interest in Anglo American Minério de Ferro Brasil S.A. (“Anglo American Brasil”) – In February 2024 (subsequent event), the Company entered into an agreement with Anglo American plc for the acquisition of 15% interest in Anglo American Brasi, company that currently owns the Minas-Rio complex (“Minas-Rio”), in Brazil. Under the terms agreed, Vale will contribute with Serra da Serpentina iron ore resources and a cash contribution of R\$762 (US\$157.5 million), subject to net debt and working capital variation adjustments at the closing date. Additionally, depending on the future iron ore prices, there may be an adjustment in the transaction price and the fair value adjustments of this mechanism will be recognized in the Company's income statements accordingly.

Following completion of the transaction, Vale will receive its pro-rata share of Minas-Rio production and the Company will also have an option to acquire an additional 15% shareholding in Minas-Rio. The option will be exercised at fair value, calculated at the time of exercise.

The closing of the transaction is subject to the usual conditions precedent and expected to occur in 2024. Upon completion of the transaction, Anglo American Brasil will be an associate of Vale and the investment will be accounted for under the equity method.

b) PT Vale Indonesia Tbk (“PTVI”) – PTVI has a Contract of Work with the government of Indonesia to operate its mining licenses, expiring in December 2025. To extend the period of the mining licenses beyond 2025, PTVI must meet certain requirements under the Contract of Work, including the commitment to meet a threshold of Indonesian participants in its shareholding structure.

In November 2023, the Company signed a Heads of Agreement with PT Mineral Industri Indonesia (“MIND ID”) and Sumitomo Metal Mining Co., Ltd. (“SMM”) regarding the divestment obligation of approximately 14% in PTVI. Therefore, MIND ID will become PTVI's largest shareholder, holding approximately 34% of the issued shares, with the Company and SMM holding approximately 33.9% and approximately 11.5%, respectively. The transaction's conclusion is expected in 2024 and is subject to customary closing conditions.

Thus, Vale will lose control over PTVI and will treat the investment held in PTVI through the equity method due to the significant influence it will retain on PTVI.

In addition, due to the current stage of this transaction, this investment was classified as an asset held for sale as it meets the “highly probable” criterion as defined in IFRS 5/CPC 31 – Non-current Assets Held for Sale and Discontinued Operations. As the fair value of PTVI is higher than the carrying value, no impairment loss was recorded in the income statement for the year ended December 31, 2023.

Therefore, at the closing of the transaction, the Company will recognize impacts resulting from (i) derecognition of net assets due to the deconsolidation of PTVI; (ii) derecognition of the non-controlling interest due to the deconsolidation of PTVI; (iii) remeasurement of the retained interest in the investee at the fair value; (iv) reclassification of the accumulated translation adjustments, recorded in equity to the income statement.

Notes to the Financial Statements

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Effects on the balance sheet

		December 31, 2023
	Notes	PTVI (held for sale)
Assets		
Cash and cash equivalents		3,401
Accounts receivable		99
Inventories		390
Taxes		566
Investments		62
Property, plant and equipment	18	13,515
Intangibles	17	337
Other assets		671
		19,041
Liabilities		
Suppliers and contractors		833
Other liabilities		1,881
		2,714
Net assets held for sale		16,327

c) Strategic partnership on the Energy Transition Metals business – In July 2023, the Company signed a binding agreement with Manara Minerals, a joint venture between Ma'aden and Saudi Arabia's Public Investment Fund, under which Manara Minerals will make an equity investment in Vale Base Metals Limited ("VBM"), the holding entity for Vale's Energy Transition Metals Business. At the same time, Vale and Engine No. 1 entered into another binding agreement for an equity investment in VBM.

As a result of both agreements, Manara Minerals and Engine No. 1 will hold a combined 13% equity interest in VBM for the consideration of approximately R\$17 billion (US\$3.4 billion), which will be contributed to VBM thereby diluting Vale to an 87% equity interest. Therefore, the Company will retain control over VBM and as a result this agreement will be accounted for in the Company's equity. The closing of the transaction is expected to take place in 2024, subject to conditions precedent, including the approval of the usual authorities.

d) Mineração Rio do Norte S.A. ("MRN") – In November 2023, Vale concluded the sale of its 40% interest in MRN, which has been impaired in full since 2021, to Ananke Alumina S.A. ("Ananke"), an associate of Norsk Hydro ASA. At closing of the transaction, Vale paid R\$351 (US\$72 million) to the buyer, resulting in a loss of R\$420 (US\$87 million) recorded in the income statement for the year ended December 31, 2023, as "Equity results and other results in associates and joint ventures".

e) Vale Oman Pelletizing Company LLC ("VOPC") – In February 2023, OQ Group exercised its option to sell its 30% noncontrolling interest held in VOPC, a subsidiary consolidated by the Company. In April 2023, the Company concluded the transaction and acquired the minority interest for R\$653 (US\$130 million), resulting in a gain of R\$15 (US\$3 million), recorded in equity, as "Acquisitions and disposals of noncontrolling interests", since it resulted from a transaction between shareholders. Upon closing, Vale owns 100% of VOPC's share capital.

f) Companhia Siderúrgica do Pecém ("CSP") – In July 2022, the Company and the other shareholders of CSP signed a binding agreement with ArcelorMittal Brasil S.A. ("ArcelorMittal") for the sale of CSP. Following the terms of the agreement, the Company has impaired its investment in full, with an impact of R\$553 (US\$111 million) and recorded a provision for accounts receivable with CSP in the amount of R\$132 (US\$24 million), both recorded in the income statement for the year ended December 31, 2022.

In March 2023, the Company completed the sale of its interest in CSP to ArcelorMittal, for R\$5,637 (US\$1,082 million), which was fully used to prepay most of the outstanding net debt of R\$5,983 (US\$1,149 million). The remaining balance was settled by the shareholders and so Vale disbursed R\$346 (US\$67 million) upon completion of the transaction. The Company also derecognized its financial liability related to the guarantee granted to CSP, leading to a gain of R\$160 (US\$31 million) recorded as "Equity results and other results in associates and joint ventures" for the year ended December 31, 2023.

g) Midwestern System – In April 2022, the Company entered into an agreement with J&F Mineração ("J&F") for the sale of Vale's iron ore, manganese and logistics assets in the Centro-Oeste System, through equity interests in Mineração Corumbaense Reunida S.A., Mineração Mato Grosso S.A., International Iron Company, Inc. and Transbarga Navegación S.A.

The carrying amount of those assets were fully impaired in past years and the Company had a liability related to take-or-pay logistics contracts that were deemed onerous contracts under the Company's business model for the Midwestern System.

Notes to the Financial Statements

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However, these offers received during the sale process of the assets represented an objective evidence of impairment reversal and the remeasurement of the existing provision, which led to a gain of R\$5,620 (US\$1,121 million) recorded as "Impairment reversal (impairment and disposals) of non-current assets, net", of which R\$1,121 (US\$214 million) relates to the property, plant and equipment and R\$4,554 (US\$916 million) is due to the onerous contract liability, partially offset by losses in working capital adjustments at the closing of the transaction in the amount of R\$55 (US\$9 million).

In July 2022, the Company completed the transaction and received R\$745 (US\$140 million). Following the disposal, the Company recorded a gain of R\$188 (US\$37 million) related to the reclassification of the cumulative translation adjustments from the equity to the income statement, recorded in "Other financial items, net".

h) California Steel Industries ("CSI") - In December 2021, the Company entered into a binding agreement with Nucor Corporation ("Nucor") for the sale of its 50% interest in CSI for R\$2,269 (US\$437 million). In February 2022, the Company concluded the sale and recorded a gain of R\$1,520 (US\$292 million) for the year ended December 31, 2022, as "Equity results and other results in associates and joint ventures", of which R\$741 (US\$142 million) relates to a gain from the sale and R\$779 (US\$150 million) is due the reclassification of the cumulative translation adjustments from the shareholders' equity to the income statement.

i) Manganese

Operations in Minas Gerais - In January 2022, the Company completed the sale of its ferroalloy 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") for a total consideration of R\$210 (US\$40 million). As the Company had already adjusted the net assets to the fair value less cost of disposal, the closing did not result in an additional impact on the income statement for 2022 (2021: impairment of R\$143 (US\$25 million)).

Operations in Bahia - In 2020, the Company decided to shut down the Simões Filho operation, located in the State of Bahia, the plant was part of Vale Manganês business and produced manganese ferroalloy. In 2022, the Company signed a binding agreement with Minas Ligas for a partial sale of the assets of this plant for R\$60 (US\$11 million), which resulted in an impairment loss of R\$56 (US\$10 million) for the year ended December 31, 2022 (2021: R\$49 (US\$10 million)).

j) The Mosaic Company ("Mosaic") - The Company held 34.2 million common shares of Mosaic, the financial instrument was measured at fair value through other comprehensive income. Thus, changes in the fair value of this investment were accumulated in the Company's equity. In November 2021, the Company sold the entire investment of Mosaic shares for the total amount of R\$6,919 (US\$1,259 million) and the amount R\$2,911 (US\$522 million) was reclassified from other reserves to retained earnings reserve and, therefore, did not result in an impact on the income statement for the year ended December 31, 2021.

k) Vale Shipping Holding Pte. Ltd ("VSH") - In October 2021, the Company approved the liquidation of VSH, its wholly-owned subsidiary that owned and operated the Company's vessels. In November 2021, VSH made a repayment of capital to VISA and, as a result, the Company recognized a gain of R\$4,284 (US\$771 million) for the year ended December 31, 2021, presented as "Other financial items, net" arising from the reclassification of cumulative translation adjustments that was recorded in the Company's equity to the income statement.

l) Discontinued operations (Coal) - The Company had metallurgical and thermal coal mining and processing operations through Vale Moçambique S.A. ("Vale Moçambique") which was a company controlled by Vale, that had a non-controlling interest held by Mitsui & Co. Ltd. ("Mitsui"). Coal products were transported from the Moatize mine to the maritime terminal by the Nacala Logistics Corridor ("NLC"), which was a joint venture between Vale and Mitsui. The NLC's main assets were the railways and port concessions located in Mozambique and Malawi.

As part of the sustainable mining strategic agenda, the Company announced in 2021 its intention to divest from coal assets. To achieve this objective, it was necessary to carry out the corporate reorganization through the acquisition of the interests held by Mitsui in these assets, which, upon completion, allowed an agreement with Vulcan Minerals, for the sale of all coal assets. Following the signing of the agreement in December 2021, the Company started to treat coal as a discontinued operation.

Acquisition of non-controlling interest in Vale Moçambique

On June 22, 2021, the Company acquired 15% interest held by Mitsui in Vale Moçambique for an immaterial consideration, which resulted in a loss of R\$1,666 (US\$331 million) due to the negative reserves of Vale Moçambique at the conclusion of the transaction. This transaction with non-controlling interests was recognized in the equity as "Acquisition and disposal of non-controlling interest". After the acquisition of the interests previously held by Mitsui, the Company held 95% of the share capital of Vale Moçambique and the remaining interest was held by the government of Mozambique.

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Business combinations – NLC

The Company also concluded the acquisition of NLC's control in June 2021, through the disbursement of R\$12,665 (US\$2,517 million) to settle NLC's loans with third parties ("Project Finance"), satisfying all conditions for acquiring the additional 50% held by Mitsui. Therefore, the Company started consolidating the NLC's assets and liabilities on its statement of financial position.

Following the closing, the Company assessed the fair value of the acquired business, resulting in a loss of R\$3,880 (US\$771 million) on the fair value of the loans receivable from NLC, presented as "Impairment and disposals of non-current assets, net" in the loss of discontinued operations for the year ended December 31, 2021. The loss recognized was due to the decrease in the long-term price assumption for both metallurgical and thermal coal as well as the reduction in the expected production to reflect the operational challenges to reach the ramp-up of the coal business.

The fair values of identifiable assets acquired, and liabilities assumed as a result of the NLC's acquisition were as follows:

	June 22, 2021
Acquired assets	
Cash and cash equivalents	865
Inventory, recoverable tax and other assets	2,128
Intangibles	11,166
Property, plant, and equipment	6,858
Assumed liabilities	(795)
Net identifiable assets acquired	20,223
Fair value adjustments (i)	(8,001)
Total identifiable net assets at fair value	12,222
Pre-existing relation (Loans receivable from NLC)	4,322
Loss on pre-existing relation	(3,880)
	12,665
Cash consideration	12,665
(-) Balances acquired	
Cash and cash equivalents	865
Net cash outflow	11,800

(i) Of this amount, R\$2,218 (US\$441 million) was allocated to property, plant, and equipment and R\$3,978 (US\$791 million) was allocated to intangible and the remaining amount was allocated to other assets.

Fair value adjustments

Following the decision to divest from the coal segment, the Company initiated interactions with potential interested parties in acquiring these assets, and the negotiations that were underway at the time, resulted in the decision to provision in full the book value of these assets, mainly due to the difficulties to prove the expected productivity levels of metallurgical coal and thermal coal, due to the delays that occurred to implement the mining plan and the strategy for the plant to reach the ramp-up of the asset. The Company recorded the impact of R\$13,298 (US\$2,511 million) in the net income from discontinued operations for the year ended December 31, 2021, presented as "Impairment and disposal of non-current assets".

Binding agreement with Vulcan Resources ("Vulcan")

In December 2021, the Company entered into a binding agreement with Vulcan Resources (formerly Vulcan Minerals) for the sale of these assets. Under the sale agreement Vulcan has committed to pay the gross amount of R\$1,285 (US\$270 million), in addition of a 10-year royalty agreement subject to certain mine production and coal price conditions and so, due to the nature and uncertainties related to the measurement of these royalties, gains will be recognized as incurred.

In April 2022, the transaction was completed, and the Company recorded a net income from discontinued operations of R\$9,818 (US\$2,060 million) for the year ended December 31, 2022, which is mainly driven by the reclassification of the cumulative translation adjustments of R\$14,636 (US\$3,072 million), from the equity to the income statement, which was partially offset by the derecognition of noncontrolling interest of R\$2,783 (US\$585 million) due to the deconsolidation of the coal assets. Additionally, until the closing of the transaction, the Company recorded losses of R\$2,867 (US\$589 million) due to the impairment of assets acquired in the period and working capital adjustments.

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Net income and cash flows from discontinued operations

	Consolidated		
	Year ended December 31,		
	2023	2022	2021
Net income from discontinued operations			
Net operating revenue	-	2,308	5,877
Cost of goods sold and services rendered	-	(1,370)	(7,504)
Operating expenses	-	(64)	(180)
Impairment and results on disposals of non-current assets, net	-	(2,867)	(17,178)
Operating loss	-	(1,993)	(18,985)
Cumulative translation adjustments (i)	-	14,636	2,134
Derecognition of noncontrolling interest	-	(2,783)	-
Financial results, net	-	(33)	175
Equity results in associates and joint ventures	-	-	(144)
Income (loss) before income taxes	-	9,827	(16,820)
Income taxes	-	(9)	4,336
Net income (loss) from discontinued operations	-	9,818	(12,484)
Loss attributable to noncontrolling interests	-	-	(476)
Net income (loss) attributable to Vale's shareholders	-	9,818	(12,008)

(i) In 2021, the Company assessed that its Australian subsidiaries (part of the coal business), which were no longer operational, were considered "abandoned" under IAS 21/CPC 02 – The Effects of Changes in Foreign Exchange Rates and, therefore, the Company recognized a gain related to the cumulative translation adjustments in the amount of R\$2,134 (US\$424 million), which was reclassified to the net income as "Other financial items, net".

	Consolidated		
	Year ended December 31,		
	2023	2022	2021
Cash flow from discontinued operations			
Operating activities			
Income (loss) before income taxes	-	9,827	(16,820)
Adjustments:			
Equity results in associates and joint ventures	-	-	144
Depreciation, amortization and depletion	-	-	359
Impairment and results on disposals of non-current assets, net	-	2,867	17,178
Derecognition of noncontrolling interest	-	2,783	-
Financial results, net	-	(14,603)	(2,309)
Decrease in assets and liabilities	-	(661)	(284)
Net cash generated (used) by operating activities	-	213	(1,732)
Investing activities			
Additions to property, plant and equipment	-	(201)	(1,056)
Acquisition of NLC, net of cash	-	-	(11,800)
Disposal of coal, net of cash	-	(333)	-
Other	-	-	380
Net cash used in investing activities	-	(534)	(12,476)
Financing activities			
Payments	-	(54)	(72)
Net cash used by financing activities	-	(54)	(72)
Net cash used by discontinued operations	-	(375)	(14,280)

m) Vale Nouvelle-Calédonie S.A.S. ("VNC") – In December 2020, the Company signed a binding put option agreement to sell its interest in VNC for an immaterial consideration to Prony Resources consortium. With the final agreement signed in March 2021, the Company recorded a loss in the amount of R\$549 (US\$98 million), presented as "Impairment reversal (impairment and disposals) of non-current assets, net" in the income statement for the year ended December 31, 2021. The Company also recorded a gain of R\$6,391 (US\$1,132 million) due to the cumulative translation adjustments reclassification from the equity to the income statement as "Other financial items, net".

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Accounting policy

Business combinations - The acquisition method of accounting is used to account for all business combinations, irrespective of whether equity instruments or other assets are acquired. The consideration transferred for acquiring a subsidiary comprises (i) the fair values of the assets transferred; (ii) assumed liabilities of the acquired business; (iii) equity interests issued to the Company; (iv) the fair value of any asset or liability resulting from a contingent consideration arrangement; and (v) the fair value of any pre-existing equity interest in the subsidiary.

Identifiable assets acquired, and liabilities and contingent liabilities assumed in a business combination are, with limited exceptions, initially measured at their fair values on the acquisition date. The Company recognizes any noncontrolling interest in the acquired entity on an acquisition-by-acquisition basis, either at fair value or at the noncontrolling interest's proportionate share of the acquired entity's net identifiable assets.

Discontinued operations - The designation as a discontinued operation occurs either upon disposal or when the operation meets the criteria for classification as held for sale if this condition is met earlier. A discontinued operation refers to a component of a Company's business that encompasses cash flows and operations distinguishable from the remainder of the Company, representing a significant separate line of business or geographical area of operations.

The results of discontinued operations are presented in a single amount in the income statement, including the post-tax results of these operations, net of any impairment loss. Cash flows related to operating, investing, and financing activities of discontinued operations are disclosed in a separate note.

Upon classifying an operation as discontinued, the income statements for prior periods are restated as if the operation had been discontinued since the beginning of the comparative period.

Any noncontrolling interest associated with a group disposal held for sale is presented in equity and is not reclassified in the statement of financial position.

Notes to the Financial Statements

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17. Intangibles

	Consolidated				
	Goodwill	Concessions	Software	Research and development project	Total
Balance as of December 31, 2021	17,905	29,149	479	2,754	50,287
Additions	-	5,670	201	-	5,871
Disposals	-	(69)	-	-	(69)
Amortization	-	(1,180)	(221)	-	(1,401)
Translation adjustment	(1,262)	-	(5)	-	(1,267)
Balance as of December 31, 2022	16,643	33,570	454	2,754	53,421
Cost	16,643	40,739	2,945	2,754	63,081
Accumulated amortization	-	(7,169)	(2,491)	-	(9,660)
Balance as of December 31, 2022	16,643	33,570	454	2,754	53,421
Additions	3	4,978	262	28	5,271
Disposals	-	(70)	(1)	-	(71)
Amortization	-	(1,252)	(205)	-	(1,457)
Transfer to held for sale (PTVI)	(334)	-	(3)	-	(337)
Translation adjustment	(513)	-	(5)	-	(518)
Balance as of December 31, 2023	15,799	37,226	502	2,782	56,309
Cost	15,799	45,479	3,072	2,782	67,132
Accumulated amortization	-	(8,253)	(2,570)	-	(10,823)
Balance as of December 31, 2023	15,799	37,226	502	2,782	56,309

	Parent Company				
	Concessions	Software	Research and development project	Total	
Balance as of December 31, 2021	29,149	291	-	29,440	
Additions	5,670	149	-	5,819	
Disposals	(69)	-	-	(69)	
Amortization	(1,180)	(124)	-	(1,304)	
Merger of New Steel	-	-	2,754	2,754	
Balance as of December 31, 2022	33,570	316	2,754	36,640	
Cost	40,739	1,619	2,754	45,112	
Accumulated amortization	(7,169)	(1,303)	-	(8,472)	
Balance as of December 31, 2022	33,570	316	2,754	36,640	
Additions	4,978	222	-	5,200	
Disposals	(70)	(1)	-	(71)	
Amortization	(1,252)	(139)	-	(1,391)	
Restructuring of energy transition metals	-	(12)	-	(12)	
Balance as of December 31, 2023	37,226	386	2,754	40,366	
Cost	45,479	1,778	2,754	50,011	
Accumulated amortization	(8,253)	(1,392)	-	(9,645)	
Balance as of December 31, 2023	37,226	386	2,754	40,366	

a) Concessions – Includes the EFC and EFVM operating concession agreements (note 14a).

b) Goodwill – Includes the goodwill derived from acquisition of iron ore and nickel businesses and the goodwill from the incorporation of Valepar into Vale in 2017 which was recognized on the acquisition of Vale controlling interest by Valepar, based on the expected future returns of the ferrous segment. The Company has not recognized the deferred taxes over the goodwill, since there are no differences between the tax basis and accounting basis. Annually, the Company assesses the impairment of this asset, or more frequently when an indication of impairment is identified (note 19).

c) Research and development project – Refers to in-process research and development projects and patents identified in the business combination of New Steel Global N.V. acquired in 2019. The intangible assets of research and development are not subject to amortization until the operational phase is reached. Thus, the Company annually assesses the impairment of this asset, or more frequently when an indication of impairment is identified (note 19).

Accounting policy

Intangibles are carried at acquisition cost, net of accumulated amortization and impairment charges.

The estimated useful lives are as follows:

	Useful life
Railway concessions	5 to 37 years
Research and development project	19 years
Software	5 years

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

18. Property, plant, and equipment

Consolidated									
Notes	Building and land	Facilities	Equipment	Mineral properties	Railway equipment	Right of use assets	Other	Constructions in progress	Total
Balance as of December 31, 2021	45,408	40,357	26,463	43,206	13,024	8,579	13,864	43,094	233,995
Additions (i)	-	-	-	-	-	408	-	28,248	28,656
Disposals	(117)	(123)	(97)	(18)	(38)	-	(9)	(756)	(1,158)
Assets retirement obligation	27(b)	-	-	(2,694)	-	-	-	-	(2,694)
Depreciation, depletion and amortization	(2,107)	(2,466)	(3,616)	(2,239)	(822)	(951)	(1,553)	-	(13,754)
Impairment reversal	295	177	399	203	-	-	107	-	1,181
Transfer to asset held for sale - Midwestern System	(295)	(177)	(399)	(203)	-	-	(107)	-	(1,181)
Translation adjustment	(1,333)	(859)	(1,153)	(3,696)	(31)	(444)	(650)	(2,407)	(10,573)
Transfers	4,654	5,052	4,409	2,550	779	-	2,080	(19,524)	-
Balance as of December 31, 2022	46,505	41,961	26,006	37,109	12,912	7,592	13,732	48,655	234,472
Cost	83,623	66,885	60,772	85,599	21,385	11,060	30,778	48,655	408,757
Accumulated depreciation	(37,118)	(24,924)	(34,766)	(48,490)	(8,473)	(3,468)	(17,046)	-	(174,285)
Balance as of December 31, 2022	46,505	41,961	26,006	37,109	12,912	7,592	13,732	48,655	234,472
Additions (i)	-	-	-	-	-	368	-	31,659	32,027
Disposals	(177)	(55)	(74)	(34)	(67)	-	(39)	(658)	(1,104)
Assets retirement obligation	27(b)	-	-	1,562	-	-	-	-	1,562
Depreciation, depletion and amortization	(2,307)	(2,578)	(3,676)	(2,235)	(837)	(950)	(1,613)	-	(14,196)
Transfer to asset held for sale	(3,242)	-	(3,675)	(3,830)	(197)	(42)	(8)	(2,521)	(13,515)
Translation adjustment	(755)	(336)	(833)	(1,260)	(21)	(389)	(286)	(1,064)	(4,944)
Transfers	8,965	5,738	3,795	2,212	855	-	242	(21,807)	-
Balance as of December 31, 2023	48,989	44,730	21,543	33,524	12,645	6,579	12,028	54,264	234,302
Cost	84,147	71,931	49,992	75,828	21,471	10,690	26,101	54,264	394,424
Accumulated depreciation	(35,158)	(27,201)	(28,449)	(42,304)	(8,826)	(4,111)	(14,073)	-	(160,122)
Balance as of December 31, 2023	48,989	44,730	21,543	33,524	12,645	6,579	12,028	54,264	234,302

Parent Company									
	Building and land	Facilities	Equipment	Mineral properties	Railway equipment	Right of use assets	Other	Constructions in progress	Total
Balance as of December 31, 2021	29,235	31,458	11,188	9,236	12,653	1,659	7,543	20,987	123,959
Additions (i)	-	-	-	-	-	241	-	18,856	19,097
Disposals	(83)	(54)	(56)	(13)	(39)	(9)	(8)	(631)	(893)
Assets retirement obligation	-	-	-	1,718	-	-	-	-	1,718
Depreciation, depletion and amortization	(1,206)	(1,703)	(1,636)	(651)	(780)	(374)	(1,257)	-	(7,607)
Merger of subsidiaries	11	2	11	-	-	-	7	17	48
Transfers	2,052	3,714	2,357	(27)	749	(3)	1,890	(10,732)	-
Balance as of December 31, 2022	30,009	33,417	11,864	10,263	12,583	1,514	8,175	28,497	136,322
Cost	43,524	48,819	24,856	14,996	20,595	2,753	18,481	28,497	202,521
Accumulated depreciation	(13,515)	(15,402)	(12,992)	(4,733)	(8,012)	(1,239)	(10,306)	-	(66,199)
Balance as of December 31, 2022	30,009	33,417	11,864	10,263	12,583	1,514	8,175	28,497	136,322
Additions (i)	-	-	-	-	-	138	-	20,883	21,021
Disposals	(163)	(32)	(56)	(32)	(67)	-	(38)	(387)	(775)
Restructuring of Energy Transition Metals	(3,310)	(1,183)	(480)	(2,510)	(1)	(1)	(204)	(1,378)	(9,067)
Assets retirement obligation	-	-	-	1,753	-	-	-	-	1,753
Depreciation, depletion and amortization	(1,268)	(1,752)	(1,623)	(749)	(794)	(367)	(1,292)	-	(7,845)
Transfers	6,407	4,468	2,388	727	817	-	(6)	(14,801)	-
Balance as of December 31, 2023	31,675	34,918	12,093	9,452	12,538	1,284	6,635	32,814	141,409
Cost	45,846	50,401	25,362	14,058	21,242	2,775	15,918	32,814	208,416
Accumulated depreciation	(14,171)	(15,483)	(13,269)	(4,606)	(8,704)	(1,491)	(9,283)	-	(67,007)
Balance as of December 31, 2023	31,675	34,918	12,093	9,452	12,538	1,284	6,635	32,814	141,409

(i) The additions are mainly related to the expansion of the Voisey's Bay mine and the Salobo III project, Sol do Cerrado (solar energy plant) and the execution of the Capanema project. It also includes capitalized interest.

For more details regarding right of use and lease liability see note 24.

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Accounting policy

Property, plant, and equipment are recorded at the cost of acquisition or construction, net of accumulated depreciation and impairment charges.

Mineral properties developed internally are determined by (i) direct and indirect costs attributed to build the mining facilities, (ii) financial charges incurred during the construction period, (iii) depreciation of other fixed assets used during construction, (iv) estimated decommissioning and site restoration expenses, and (v) other capitalized expenditures during the development phase (phase when the project demonstrates its economic benefit to the Company, and the Company has ability and intention to complete the project).

The depletion of mineral properties is determined based on the ratio between production and total proven and probable mineral reserves.

Property, plant and equipment, other than mineral properties are depreciated using the straight-line method based on the estimated useful lives, from the date on which the assets become available for their intended use and are capitalized, except for land which is not depreciated.

The estimated useful lives are as follows:

	Useful life
Buildings	3 to 50 years
Facilities	3 to 50 years
Equipment	3 to 40 years
Wagons	30 to 45 years
Railway equipment	5 to 37 years
Vessels	20 to 25 years
Other	2 to 50 years

The residual values and useful lives of assets are reviewed each reporting period and adjusted if necessary.

Expenditures and stripping costs

(i) Research and development expenditures – Expenditures on mining research are accounted for as operating expenses and recorded as “Research and development” in the income statement, until the effective proof of economic feasibility and commercial viability of a given field can be demonstrated. From then on, the expenditures incurred are capitalized as mineral properties.

(ii) Expenditures on feasibility studies, new technologies and others research – The Company also conducts feasibility studies for many businesses which it operates including researching new technologies to optimize the mining process. After these costs are proven to generate future benefits to the Company, the expenditures incurred are capitalized.

(iii) Maintenance costs – Significant industrial maintenance costs, including spare parts, assembly services, and others, are recorded in property, plant and equipment and depreciated through the next programmed maintenance overhaul.

(iv) Stripping Costs – The cost associated with the removal of overburden and other waste materials (“stripping costs”) incurred during the development of mines, before production takes place, are capitalized as part of the depreciable cost of the mineral properties. These costs are subsequently amortized over the useful life of the mine.

Post-production stripping costs are included in the cost of inventory, except when a new project is developed to permit access to a significant ore deposit. In such cases, the cost is capitalized as a non-current asset and is amortized during the extraction of the ore deposits, over the useful life of the ore deposits.

Critical accounting estimates and judgments

Mineral reserves – The estimates of proven and probable reserves are regularly evaluated and updated. These reserves are determined using generally accepted geological estimates. The calculation of reserves requires the Company to make assumptions about expected future conditions that are uncertain, including future ore prices, exchange rates, inflation rates, mining technology, availability of permits and production costs. Changes in assumptions could have a significant impact on the proven and probable reserves of the Company.

The estimated volume of mineral reserves is used as basis for the calculation of depletion of the mineral properties, and also for the estimated useful life which is a major factor to quantify the provision for asset retirement obligation, environmental recovery of mines and impairment of long-lived asset. Any changes to the estimates of the volume of mine reserves and the useful lives of assets may have a significant impact on the depreciation, depletion and amortization charges and assessments of impairment.

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19. Impairment reversal (impairment and disposals) of non-current assets

The impairment reversal (impairment loss) and result of disposal of non-current assets recognized are presented below:

	Notes	2023	2022	2021
Midwestern System	16(g)		1,066	(440)
Manganese	16(i)	-	(56)	(192)
Vale Nouvelle-Calédonie S.A.S. ("VNC")	16(m)	-	-	(549)
Impairment reversal (impairment) of non-current assets		-	1,010	(1,181)
Onerous contracts - Midwestern System	16(g)	-	4,554	(100)
Result of disposals of non-current assets and others		(1,317)	(1,731)	(1,071)
Result of disposals of non-current assets and others		(1,317)	2,823	(1,171)
Impairment reversal (impairment) and disposals of non-current assets		(1,317)	3,833	(2,352)

The Company tested for impairment the cash generating units ("CGU") for which a triggering event was identified and for goodwill. The recoverable amount of each CGU under the Company's impairment test was assessed using the fair value less costs of disposal model ("FVLCD"), through discounted cash flow techniques, which is classified as "level 3" in the fair value hierarchy, taking into consideration offers and purchase agreements, if applicable.

The cash flows were discounted by using a post-tax discount rate expressed in real terms, which represents an estimate of the rate that a market participant would apply having regard to the time value of money and the asset's specific risk. The Company used the weighted average cost of capital ("WACC") of the mining segment as a starting point for determining the discount rates, with appropriate adjustments for the risk profile of the countries in which the individual CGU operate.

Climate change

As outlined in note 2, the potential financial impacts on the Company of climate change and the transition to a low carbon economy have been considered in the assessment of the Company's critical accounting estimates, which includes indicators of impairment, such as: (i) demand for the Company's commodities decreasing, due to policy, regulatory (including carbon pricing mechanisms), legal, technological, market or societal responses to climate change; (ii) physical impacts related to risks resulting from increased frequency or severity of extreme weather events, and those related to chronic risks resulting from longer-term changes in climate patterns; and (iii) investments related to decarbonization.

a) Impairment test for the goodwill and other intangibles (note 17)

Goodwill allocated to iron ore and pellet operations

	2023	2022
Carrying amount	7,133	7,133
Impairment testing results	The recoverable amount of the operating segments is higher than the carrying amount and, therefore, there is no impairment to be recognized.	The recoverable amount of the operating segments is higher than the carrying amount and, therefore, there is no impairment to be recognized.
Measurement of recoverable value	FVLCD	FVLCD
Discount rate	7.0%	6.4%
Period of cash flow projections	2053	2052
Range of iron ore forecasted prices	US\$/t 75 - 98	US\$/t 75 - 95
Sensitivity of key assumptions	A 34% reduction in the long-term prices of all commodities or a 61% reduction in reserves would, alone, result in estimated recoverable amount equal to the carrying value of this CGU.	A 29% reduction in the long-term prices of all commodities or a 51% reduction in reserves would, alone, result in estimated recoverable amount equal to the carrying value of this CGU.

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Goodwill allocated to nickel operations

	2023	2022
Carrying amount	8,663	9,510
Impairment testing results	The recoverable amount of the operating segments is higher than the carrying amount and, therefore, there is no impairment to be recognized.	The recoverable amount of the operating segments is higher than the carrying amount and, therefore, there is no impairment to be recognized.
Measurement of recoverable value	FVLCD	FVLCD
Discount rate	5.6% – 5.9%	4.5% – 5.3%
Period of cash flow projections	2034–2048	2032–2048
Range of nickel forecasted prices	US\$/t 18,000 – 23,000	US\$/t 21,000 – 24,000
Sensitivity of key assumptions	A 12.5% reduction in the long-term prices of all commodities would, alone, result in estimated recoverable amount equal to the carrying value of this group of CGUs.	A 23.7% reduction in the long-term prices of all commodities would, alone, result in estimated recoverable amount equal to the carrying value of this group of CGUs.

Other intangibles – Research and development project

	2023	2022
Carrying amount	2.754	2.754
Impairment testing results	The recoverable amount of the cash generating unit is higher than the carrying amount and, therefore, there is no impairment to be recognised.	The recoverable amount of the cash generating unit is higher than the carrying amount and, therefore, there is no impairment to be recognised.
Measurement of recoverable value	FVLCD	FVLCD
Discount rate	7%	6,4%
Beginning of operation and useful life	16 years of useful life considering the beginning of operation in 2025	16 years of useful life considering the beginning of operation in 2025
Range of iron ore forecasted prices	US\$/t 80 – 98	US\$/t 85 – 95
Sensitivity of key assumptions	A 7.5% reduction in the prices of all commodities or an 67% reduction in in processing and beneficiating iron ore volumes would, alone, result in estimated recoverable amount equal to the carrying value of this asset.	A 12.5% reduction in the prices of all commodities or an A 77% reduction in in processing and beneficiating iron ore volumes would, alone, result in estimated recoverable amount equal to the carrying value of this asset.

b) Impairment recorded on the sale of investments

In the past few years, the Company has divested non-strategic assets, as detailed in note 16 to these financial statements. These transactions resulted in material impacts on Vale's results, which were recorded under "Impairment reversal (impairment and disposals) of non-current assets, net", as summarized below:

- **Midwestern system (note 16g)** – As a result of the agreement for the sale of these assets to J&F, the Company recorded a gain in the amount of R\$5,620 (US\$1,121 million) in the income statement for the year ended December 31, 2022 due to the reversal of the impairment of property, plant and equipment, of which R\$1,121 (US\$214 million) relates to the property, plant and equipment, and R\$4,559 (US\$916 million) is due to the onerous contract, partially offset by losses of R\$55 (US\$9 million) due to working capital adjustments at the closing of the transaction.
- **Manganese (note 16i)** – The Company has entered into agreements to sell its manganese assets, resulting in an impairment loss of R\$56 (US\$10 million) recorded in the income statement for the year ended December 31, 2022 (2021: R\$192 (US\$35 million)).
- **VNC (note 16m)** – As a result of the sale of this asset to Prony Resources, the Company recognized an impairment loss of R\$549 (US\$98 million) in the income statement for the year ended December 31, 2021.

Notes to the Financial Statements

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Accounting policy

Impairment of non-financial assets – Non-financial assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount might not be recoverable. An impairment loss is recognized for the amount by which the asset's carrying value exceeds its recoverable amount. The recoverable amount is the higher of an asset's fair value less costs of disposal ("FVLCD") and value in use ("VIU").

FVLCD is generally determined as the present value of the estimated future cash flows expected to arise from the continued use of the asset from a market participant's perspective, including any expansion prospects. VIU model is determined as the present value of the estimated future cash flows expected to arise from the continued use of the asset in its present form. Value in use is determined by applying assumptions specific to the Company's continued use and cannot take into account future development. These assumptions are different to those used in calculating fair value and consequently the VIU calculation is likely to give a different result to a FVLCD calculation.

Assets that have an indefinite useful life and are not subject to amortization, such as goodwill, are tested annually for impairment.

For the purposes of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash flows (CGU). Goodwill is allocated to Cash Generating Units or Cash Generating Units groups that are expected to benefit from the business combinations in which the goodwill arose and are identified in accordance with the operating segment.

Non-current assets (excluding goodwill) in which the Company recognized impairment in the past are reviewed whenever events or changes in circumstances indicate that the impairment may no longer be applicable. In such cases, an impairment reversal will be recognized.

Critical accounting estimates and judgments

Significant judgements, estimates and assumptions are required to determine whether an impairment trigger has occurred and to prepare the Company's cash flows. Management uses the budgets approved as a starting point and key assumptions are, but not limited to: (i) mineral reserves and mineral resources measured by internal experts; (ii) costs and investments based on the best estimate of projects as supported by past performance; (iii) sale prices consistent with projections available in reports published by industry considering the market price when appropriate; (iv) the useful life of each cash-generating unit (ratio between production and mineral reserves); and (v) discount rates that reflect specific risks relating to the relevant assets in each cash-generating unit.

These assumptions are susceptible to risks and uncertainties and may change the Company's projection and, therefore, may affect the recoverable value of assets.

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20. Financial and capital risk management

The Company is exposed to several financial and capital risk factors that may impact its performance and equity position. The evaluation of the exposure to financial and capital risks is performed periodically to support decision making process regarding the risk management strategy.

The Company's policy aims at establishing a capital structure that will ensure the continuity of our business in the long term. Within this perspective, the Company has been able to deliver value to shareholders through dividend payments and capital gain, and at the same time maintain a debt profile suitable for its activities, with an amortization well distributed over the years, thus avoiding a concentration in one specific period.

The Board of Directors establishes and supervises the management of financial risks with the support of the Capital Allocation and Project Advisory Committee that ensures that Company's financial activities are governed by appropriate policies and procedures and that financial risks are identified, measured and managed in accordance with the Company's policies and objectives.

The Company has developed its strategy through an integrated view of the risks to which it is exposed, considering not only the risk, generated by variables traded in the financial market (market risk) and the liquidity risk, but also the risk arising from obligations assumed by third parties to the Company (credit risk), among others.

The Company uses derivative financial instruments to protect its exposure to these market risks arising from operating, financing, and investment activities, so that Vale does not engage in derivative operations that result in leverage exceeding the nominal value of its contracts. The financial instruments portfolio is reassessed monthly, allowing the monitoring of financial results and their impact on cash flow. The Company applies hedge accounting to its net investment in foreign operation and nickel revenue program.

Risks	Origin of the exposure	Management
Market Risk - Exchange Rate	Financial instruments and other financial liabilities that are not denominated in US\$	Swap and forward operations
Market risk - Interest rate	Loans and financing indexed to different interest rates including, but not limited to, SOFR and CDI	Swap operations
Market risk - Product and input prices	Volatility of commodity and input prices	Forward operations and option contracts
Credit Risk	Receivables, derivative transactions, guarantees, advances to suppliers and financial investments	Portfolio diversification and policies for monitoring counterparty solvency and liquidity indicators
Liquidity risk	Contractual or assumed obligations	Availability of revolving credit lines

a) Method and techniques for valuation of derivatives

The risk of the derivatives instruments is measured using the delta-Normal parametric approach and considers that the future distribution of the risk factors and its correlations tends to present the same statistic properties verified in the historical data. The value at risk estimate considers a 95% confidence level for a one-business daytime horizon.

The derivative financial instruments were evaluated using the curves and market prices that impact each instrument on the calculation dates. For the pricing options, the Company generally uses the Black & Scholes model. In this model, the fair value of the derivative is obtained as a function of the volatility and price of the underlying asset, the exercise price of the option, the risk-free interest rate and the term to maturity of the option. In the case of options where the result is a function of the average price of the underlying asset in a certain period of the option's life, known as Asian options, the Company uses the Turnbull & Wakeman model. In this model, in addition to the factors that influence the option price in the Black & Scholes model, the average price formation period is considered.

In the case of swaps, both the present value of the paying and receiving amounts are estimated by discounting the cash flows by the interest rates in the corresponding currencies. The fair value is obtained by the difference between the present value of the paying and receiving amounts of the swap in the reference currency. In the case of swaps linked to Brazilian long-term interest rate ("TJLP"), the fair value calculation considers the current TJLP, i.e., projections of future cash flows in reais are made considering the last TJLP disclosed.

Forward and future contracts are priced using the futures curves of the respective underlying assets. These curves are usually obtained from the exchanges where these assets are traded, such as the London Metals Exchange ("LME"), the Commodities Exchange ("COMEX") or other market price providers. When there is no price for the desired maturity, the Company uses interpolations between the available maturities.

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Expressed in millions of Brazilian reais, unless otherwise stated

a.i) Effects of derivatives on the statement of financial position

	Reference	December 31, 2023		Consolidated December 31, 2022	
		Assets	Liabilities	Assets	Liabilities
Foreign exchange and interest rate risk					
CDI & TJLP vs. US\$ fixed and floating rate swap	20(b.i)	526	144	59	752
IPCA swap	20(b.i)	-	196	-	330
Dollar swap and forward transactions	20(b.i)	3,148	-	2,123	37
LIBOR & SOFR swap	20(b.ii)	19	138	37	-
		3,693	478	2,219	1,119
Commodities price risk					
Gasoil, Brent and freight	20(b.iv)	253	110	406	293
Energy Transition Metals	20(c)	-	38	185	7
		253	148	591	300
Other	20(d)	-	9	-	23
Total		3,946	635	2,810	1,442

	Reference	December 31, 2023		Parent Company December 31, 2022	
		Assets	Liabilities	Assets	Liabilities
Foreign exchange and interest rate risk					
CDI & TJLP vs. US\$ fixed and floating rate swap		526	87	59	609
IPCA swap		-	196	-	330
Dollar swap and forward transactions		3,148	-	2,123	37
Total		3,674	283	2,182	976

a.ii) Net exposure

	Reference	Consolidated		Parent Company	
		December 31, 2023	December 31, 2022	December 31, 2023	December 31, 2022
Foreign exchange and interest rate risk					
CDI & TJLP vs. US\$ fixed and floating rate swap	20(b.i)	382	(693)	439	(550)
IPCA swap	20(b.i)	(196)	(330)	(196)	(330)
Dollar swap and forward transactions	20(b.i)	3,148	2,086	3,148	2,086
LIBOR & SOFR swap (i)	20(b.ii)	(119)	37	-	-
		3,215	1,100	3,391	1,206
Commodities price risk					
Gasoil, Brent and freight	20(b.iv)	143	113	-	-
Energy Transition Metals	20(c)	(38)	178	-	-
		105	291	-	-
Other	20(d)	(9)	(23)	-	-
Total		3,311	1,368	3,391	1,206

(i) In March 2021, the UK Financial Conduct Authority ("FCA"), the financial regulator in the United Kingdom, announced the discontinuation of the LIBOR rate for all terms in pounds, euros, Swiss francs, yen and for terms of one week and two months in dollars at the end of December 2021 and the other terms at the end of June 2023. Vale has finalized the negotiations for the replacement of the reference interest rate of its financial contracts from LIBOR to Secured Overnight Financing Rate ("SOFR"), with spread adjustments to match the transaction costs.

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a.iii) Effects of derivatives on the income statement

	Reference	Consolidated			Parent Company	
		Gain (loss) recognized in the income statement				
		Year ended December 31,				
		2023	2022	2021	2023	2022
Foreign exchange and interest rate risk						
CDI & TJLP vs. US\$ fixed and floating rate swap	20(b.i)	1,060	2,054	(725)	1,003	1,844
IPCA swap	20(b.i)	137	382	146	137	382
Eurobonds swap		-	-	(154)	-	-
Dollar swap and forward operations	20(b.i)	3,301	3,286	(250)	3,301	3,286
LIBOR & SOFR swap	20(b.ii)	(111)	173	92	-	-
Treasury Hedge (Forward)	20(b.iii)	70	-	-	-	-
		4,457	5,895	(891)	4,441	5,512
Commodities price risk						
Gasoil, Brent and freight	20(b.iv)	60	128	666	-	-
Energy Transition Metals	20(c)	(76)	87	(8)	-	-
		(16)	215	658	-	-
Other	20(d)	14	(92)	80	-	(70)
Total		4,455	6,018	(153)	4,441	5,442

a.iv) Effects of derivatives on the cash flows

	Reference	Consolidated			Parent Company	
		Financial settlement inflows (outflows)				
		Year ended December 31,				
		2023	2022	2021	2023	2022
Foreign exchange and interest rate risk						
CDI & TJLP vs. US\$ fixed and floating rate swap	20(b.i)	(6)	(508)	(770)	14	(337)
IPCA swap	20(b.i)	3	284	(97)	3	284
Eurobonds swap		-	-	(162)	-	-
Dollar swap and forward operations	20(b.i)	2,239	824	(459)	2,239	824
LIBOR & SOFR swap	20(b.ii)	40	237	(8)	-	-
Treasury Hedge (Forward) (i)	20(b.iii)	70	(41)	-	-	-
		2,346	796	(1,496)	2,256	771
Commodities price risk						
Gasoil, Brent and freight	20(b.iv)	37	45	1,096	-	-
Energy Transition Metals	20(c)	(5)	53	10	-	-
		32	98	1,106	-	-
Derivatives designated as cash flow hedge accounting						
Nickel	20(e)	420	(1,398)	(371)	-	-
Palladium	20(e)	-	79	26	-	-
Coal		-	-	(383)	-	-
		420	(1,319)	(728)	-	-
Total		2,798	(425)	(1,118)	2,256	771

(i) In 2023, the Company carried out and settle the protection program for US interest rate volatility related to both the issuance and repurchase of bonds.

b) Market risk – Foreign exchange and interest rates

The Company's cash flow is exposed to the volatility of several currencies against the U.S. dollar. While most of our product prices are indexed to U.S. dollars, most of our costs, expenses and investments are indexed to currencies other than the U.S. dollar, principally the Brazilian real and the Canadian dollar.

The Company implements hedge transactions to protect its cash flow against the market risks that arises from its debt obligations and other liabilities – mainly currency volatility. The hedges cover most of the debt denominated in Brazilian real. The Company uses swap and forward transactions to convert debt and financial obligations linked to Brazilian real into U.S. dollar, with volumes, flows and settlement dates similar to those of the debt instruments and financial obligations – or sometimes lower, subject to market liquidity conditions.

Hedging instruments with shorter tenors are renegotiated through time, so that their final maturity matches – or becomes closer – to the debt and financial obligations final maturity. At each settlement date, the results of the swap and forward transactions partially offset the impact of the foreign exchange rate in the Company's obligations, contributing to stabilize the cash disbursements in U.S. dollar.

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

b.i) Protection programs for the R\$ denominated debt instruments and other liabilities

To reduce cash flow volatility, swap and forward transactions were implemented to convert into US\$ the cash flows from certain liabilities denominated in R\$ with interest rates linked mainly to Brazilian Interbank Interest rate ("CDI"), TJLP and consumer price index ("IPCA"). In those swaps, the Company pays fixed rates in US\$ and receives payments in R\$ linked to the interest rates of the protected liabilities. The swap and forward transactions were negotiated over-the-counter and the protected items are the cash flows from debt instruments and other liabilities linked to R\$.

Flow	December 31, 2023	Notional		Average rate	December 31, 2023	Fair value December 31, 2022	Financial Settlement Inflows (Outflows) December 31, 2023	Value at Risk December 31, 2023	Fair value by year	
		December 31, 2022	Index						2024	2025+
CDI vs. US\$ fixed rate swap					516	(431)	5	98	110	406
Receivable	R\$ 5,162	R\$ 6,356	CDI	100.00%						
Payable	US\$ 1,196	US\$ 1,475	Fix	2.00%						
TJLP vs. US\$ fixed rate swap					(134)	(262)	(11)	14	(15)	(119)
Receivable	R\$ 694	R\$ 814	TJLP +	1.06%						
Payable	US\$ 173	US\$ 204	Fix	3.46%						
					382	(693)	(6)	112	95	287
IPCA swap vs. US\$ fixed rate swap					(196)	(330)	3	22	(22)	(174)
Receivable	R\$ 1,078	R\$ 1,294	IPCA +	4.54%						
Payable	US\$ 267	US\$ 320	Fix	3.88%						
					(196)	(330)	3	22	(22)	(174)
R\$ fixed rate vs. US\$ fixed rate swap					2,905	1,658	1,672	194	1,614	1,291
Receivable	R\$ 12,660	R\$ 20,854	Fix	7.36%						
Payable	US\$ 2,431	US\$ 3,948	Fix	0.00%						
Forward	R\$ 1,209	R\$ 4,342	B	5.19	243	428	567	16	191	52
					3,148	2,086	2,239	210	1,805	1,343

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The sensitivity analysis of these derivative financial instruments is presented as follows:

Instrument	Instrument's main risk events	Fair value	Scenario I (Δ of 25%)	Scenario II (Δ of 50%)
CDI vs. US\$ fixed rate swap	R\$ depreciation	516	(15)	(2,346)
	US\$ interest rate inside Brazil decrease	516	357	186
	Brazilian interest rate increase	516	385	254
Protected item: R\$ denominated liabilities	R\$ depreciation	n.a.	-	-
TJLP vs. US\$ fixed rate swap	R\$ depreciation	(134)	(330)	(526)
	US\$ interest rate inside Brazil decrease	(134)	(156)	(179)
	Brazilian interest rate increase	(134)	(164)	(192)
	TJLP interest rate decrease	(134)	(156)	(179)
Protected item: R\$ denominated debt	R\$ depreciation	n.a.	-	-
IPCA swap vs. US\$ fixed rate swap	R\$ depreciation	(196)	(513)	(830)
	US\$ interest rate inside Brazil decrease	(196)	(230)	(266)
	Brazilian interest rate increase	(196)	(246)	(294)
	IPCA index decrease	(196)	(220)	(243)
Protected item: R\$ denominated debt	R\$ depreciation	n.a.	-	-
R\$ fixed rate vs. US\$ fixed rate swap	R\$ depreciation	2,905	149	(2,607)
	US\$ interest rate inside Brazil decrease	2,905	2,729	2,546
	Brazilian interest rate increase	2,905	2,541	2,195
	Protected item: R\$ denominated debt	R\$ depreciation	n.a.	-
Forward	R\$ depreciation	243	2	(238)
	US\$ interest rate inside Brazil decrease	243	234	225
	Brazilian interest rate increase	243	224	207
	Protected item: R\$ denominated liabilities	R\$ depreciation	n.a.	-

b.ii) Protection program for interest rate US\$ denominated debt

The Company has also exposure to interest rates risks over loans and financings. The US Dollar floating rate debt in the portfolio consists mainly of loans including export pre-payments, commercial banks and multilateral organizations loans.

To reduce the cash flow volatility, swap transactions were implemented to convert interest rate indexed to SOFR from certain debt instruments into fixed interest rate. In those swaps, the Company received floating rates and paid fixed rates in US\$.

Flow	Notional				Average rate	Fair value December 31, 2022	Financial Settlement Inflows (Outflows) December 31, 2023	Value at Risk December 31, 2023	Fair value by year	
	December 31, 2023	December 31, 2022	Index	December 31, 2023					2024	2025+
LIBOR vs. US\$ fixed rate swap										
Receivable	-	US\$ 150	LIBOR	0.00%		37	19	-	-	-
Payable	-	US\$ 150	Fix	0.00%						
SOFR vs. US\$ fixed rate swap										
Receivable	US\$ 2,300	-	SOFR	0.00%	(119)	-	21	50	19	(138)
Payable	US\$ 2,300	-	Fix	3.60%						

The sensitivity analysis of these derivative financial instruments is presented as follows:

Instrument	Instrument's main risk events	Fair value	Scenario I (Δ of 25%)	Scenario II (Δ of 50%)
SOFR vs. US\$ fixed rate swap	US\$ SOFR decrease	(119)	(323)	(537)
Protected item: SOFR US\$ indexed debt	US\$ SOFR decrease	n.a.	323	537

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Expressed in millions of Brazilian reais, unless otherwise stated

b.iii) Protection for American treasury volatility related to tender offer transaction

To reduce the volatility of the premium paid to investors on the tender offer transaction issued in 2023, treasury lock transactions were implemented and have already been settled as of December 31, 2023.

Flow	Notional				Fair value		Financial Settlement Inflows (Outflows)	Value at Risk	Fair value by year
	December 31, 2023	December 31, 2022	Index	Average rate	December 31, 2023	December 31, 2022	December 31, 2023	December 31, 2023	2024
Treasury Hedge (Forward)	-	-	B	-	-	-	70	-	-

b.iv) Protection program for product prices and input costs

The Company is also exposed to market risks associated with the price volatility of commodities and inputs, especially freight and fuel costs. In line with its risk management policy, risk mitigation strategies involving commodities are used to reduce cash flow volatility. These mitigation strategies incorporate derivative instruments, predominantly forward, futures and options.

Flow	Notional				Fair value		Financial settlement Inflows (Outflows)	Value at Risk	Fair value by year
	December 31, 2023	December 31, 2022	Bought / Sold	Average strike (US\$)	December 31, 2023	December 31, 2022	December 31, 2023	December 31, 2023	2024+
Brent crude oil (bbl)									
Call options	19,907,250	22,600,500	B	91	219	384	-	55	219
Put options	19,907,250	22,600,500	S	58	(109)	(267)	-	24	(109)
Forward Freight Agreement (days)									
Freight forwards	1,210	2,085	B	14,248	33	(4)	37	5	33
					143	113	37	84	143

The sensitivity analysis of these derivative financial instruments is presented as follows:

Instrument	Instrument's main risk events	Fair value	Scenario I (Δ of 25%)	Scenario II (Δ of 50%)
Brent crude oil (bbl)				
Options	Price input decrease	110	(539)	(1,933)
Protected item: Part of costs linked to fuel oil prices	Price input decrease	n.a.	539	1,933
Forward Freight Agreement (days)				
Forwards	Freight price decrease	33	4	(25)
Protected item: Part of costs linked to maritime freight prices	Freight price decrease	n.a.	(4)	25

Brent Crude Oil - To reduce the impact of fluctuations in fuel oil prices on the hiring and availability of maritime freight and, consequently, to reduce the Company's cash flow volatility, hedging operations were carried out through options contracts on Brent Crude Oil for different portions of the exposure. The derivative transactions were traded over-the-counter and the protected item is part of the costs linked to the price of fuel oil used on ships. The financial settlement inflows/outflows are offset by the protected items' losses/gains. In 2023, the Company renewed the program related to its brent crude oil hedge strategy for 2024.

Freight derivative - To reduce the impact of maritime freight price volatility on the Company's cash flow, freight hedging transactions were implemented, through Forward Freight Agreements (FFAs). The protected item is part of the costs linked to maritime freight spot prices. The financial settlement inflows/outflows of the FFAs are offset by the protected items' losses/gains due to freight price changes. The FFAs are contracts traded over the counter and can be cleared through a Clearing House, in this case subject to margin requirements.

Notes to the Financial Statements

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c) Other derivatives, including embedded derivatives in contracts

Flow	Notional				Average strike (US\$/ton)	Fair value		Financial settlement Inflows (Outflows)	Value at Risk	Fair value by year
	December 31, 2023	December 31, 2022	Bought / Sold	December 31, 2023		December 31, 2022	December 31, 2023	December 31, 2023	December 31, 2023	2024
Fixed price nickel sales protection (ton)										
Nickel forwards	3,322	766	B	19,207	(38)	35	(15)	15	(38)	
Hedge program for products acquisition for resale (ton)										
Nickel forwards	-	384	S	-	-	(3)	10	-	-	
					(38)	32	(5)	15	(38)	
Embedded derivative (pellet price) in natural gas purchase (volume/month)										
Call options	746,667	746,667	S	233	(9)	(23)	-	8	(9)	
					(9)	(23)	-	8	(9)	

The sensitivity analysis of these derivative financial instruments is presented as follows:

Instrument	Instrument's main risk events	Fair value	Scenario I	Scenario II
			(Δ of 25%)	(Δ of 50%)
Fixed price sales protection (ton)				
Forwards	Nickel price decrease	(38)	(104)	(170)
Protected item: Part of nickel revenues with fixed prices	Nickel price decrease	n.a.	104	170
Hedge program for products acquisition for resale (ton)				
Forwards	Nickel price increase	n.a.	-	-
Protected item: Part of revenues from products for resale	Nickel price increase	n.a.	-	-
Embedded derivative (pellet price) in natural gas				
Embedded derivatives - Gas purchase	Pellet price increase	(9)	(28)	(61)

Fixed price sales protection - The Company started an operational program to protect nickel sales, converting fixed price commercial contracts with customers to floating price, therefore maintaining the Company's exposure to price fluctuations. The transactions usually carried out in this program are nickel purchases for future settlement.

Hedge program for products acquisition for resale - The Company started a hedge program with forward transactions with the objective of reducing the risk of price mismatch between the period of purchase and sale of products to third parties.

Embedded derivative (pellet price) in natural gas purchase agreement - The Company has a natural gas purchase agreement in which the amount charged to Vale changes based on the pricing level of the pellets sold by the Company to the market.

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d) Hedge accounting

	Consolidated			Parent Company	
	Gain (loss) recognized in the other comprehensive income				
	Year ended December 31,				
	2023	2022	2021	2023	2022
Net investments hedge	683	447	(646)	683	447
Cash flow hedge	(88)	50	47	21	(21)

Net investment hedge - The Company uses hedge accounting for foreign exchange risk arising from Vale S.A.'s net investments in Vale International S.A. and Vale Holding BV. With the hedge program, the Company's debt with third parties denominated in United States dollars and euros serves as a hedge instrument for investments in these subsidiaries. In March 2021, the Company redeemed all its euro bonds (note 10). As a result, the amount of debt designated as a hedge instrument for this investment is R\$13,125 (US\$2,711 million) as of December 2023. As a result of the hedge program, the impact of the exchange rate variation on the debt denominated in dollars and euros is now partially recorded in other comprehensive income, as "Translation adjustments".

e) Cash flow hedge

Flow	Bought / Sold	December 31, 2023	Fair value	Financial settlement Inflows (Outflows)	Value at Risk	Fair value by year
			December 31, 2022	December 31, 2023	December 31, 2023	2023
Nickel revenue hedge program						
Forward	S	-	146	420	-	-
		-	146	420	-	-

The sensitivity analysis of these derivative financial instruments is presented as follows:

Instrument	Instrument's main risk events	Fair value	Scenario I (Δ of 25%)	Scenario II (Δ of 50%)
Nickel Revenue Hedging Program				
Forward	Nickel price increase	-	-	-
Protected item: Part of nickel revenues with fixed sales prices	Nickel price increase	n.a.	-	-

Cash flow hedge (Nickel) - To reduce the cash flow volatility due to nickel price fluctuations, the Company implemented the Nickel Revenue Hedge Program in 2019. In this program, hedging operations were executed, through option contracts, to protect a portion of the projected volume of sales at floating, highly probable realization prices, guaranteeing prices above the average unit cost of nickel production for the protected volumes. The contracts are traded on the London Metal Exchange or over-the-counter market and the hedged item's P&L is offset by the hedged item's P&L due to Nickel price variation.

f) Credit risk management

The Company is exposed to credit risk that arises from trade receivables, derivative transactions, guarantees, down payment for suppliers and cash investments. The credit risk management process provides a framework for assessing and managing counterparties' credit risk and for maintaining our portfolio risk at an acceptable level.

For the commercial credit exposure, which arises from sales to final customers, the risk management area, in accordance with the current delegation level, approves or requests the approval of credit risk limits for each counterparty.

Vale attributes an internal credit risk rating for each counterparty using its own quantitative methodology for credit risk analysis, which is based on market prices, external credit ratings and financial information of the counterparty, as well as qualitative information regarding the counterparty's strategic position and history of commercial relations.

Based on the counterparty's credit risk, risk mitigation strategies may be used to manage the Company's credit risk. The main credit risk mitigation strategies include non-recourse sale of receivables, insurance instruments, letters of credit, corporate and bank guarantees, mortgages, among others.

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f.i) Accounts receivable portfolio

Vale has a diversified accounts receivable portfolio from a geographical standpoint, with Asia, Europe and Brazil as the regions with more significant exposures. According to each region, different guarantees can be used to enhance the credit quality of the receivables. Historically, the expected credit loss on the Company's accounts receivable portfolio is immaterial (note 11).

f.ii) Financial instruments, except for accounts receivable

To manage the credit exposure arising from cash investments and derivative instruments, credit limits are approved to each counterparty with whom the Company has credit exposure. Furthermore, the Company controls the portfolio diversification and monitors different indicators of solvency and liquidity of the different counterparties that were approved for trading. The carrying amount of the financial assets that represent the exposure to credit risk is presented below:

	Notes	December 31, 2023	Consolidated December 31, 2022
Cash and cash equivalents	23	17,474	24,711
Short-term investments	23	250	320
Restricted cash		22	404
Judicial deposits	28	-	6,338
Derivative financial instruments		3,946	2,810
Investments in equity securities	14	217	36
Total		21,909	34,619

	Notes	December 31, 2023	Parent Company December 31, 2022
Cash and cash equivalents	23	4,193	7,896
Short-term investments	23	14	15
Restricted cash		22	22
Judicial deposits	28	-	6,092
Derivative financial instruments		3,674	2,182
Investments in equity securities	14	108	31
Related parties - Other financial assets	31	-	50
Total		8,011	16,288

f.iii) Financial counterparties' ratings

The transactions of derivative instruments, cash and cash equivalents, as well as short-term investments are held with financial institutions whose exposure limits are periodically reviewed and approved by the delegated authority. The financial institutions credit risk is performed through a methodology that considers, among other information, ratings provided by international rating agencies.

The table below presents the ratings in foreign currency as published by Moody's regarding the main financial institutions used by the Company to contract derivative instruments, cash and cash equivalents transaction.

	December 31, 2023		Consolidated December 31, 2022	
	Cash and cash equivalents and investment	Derivatives	Cash and cash equivalents and investment	Derivatives
Aa1	-	-	168	-
Aa2	1,638	-	1,787	25
Aa3	205	-	1,248	-
A1	9,790	241	9,108	510
A2	1,497	1,419	4,894	753
A3	899	106	4,791	329
Baa1	9	-	2	-
Baa2	76	-	37	-
Ba1 (i)	413	-	-	-
Ba2 (i)	1,391	1,522	2,142	910
Ba3 (i)	1,806	658	854	283
	17,724	3,946	25,031	2,810

(i) A substantial part of the balances is held with financial institutions in Brazil which are deemed investment grade in local currency.

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g) Liquidity risk management

The liquidity risk arises from the possibility that Vale might not perform its obligations on due dates, as well as face difficulties to meet its cash requirements due to market liquidity constraints.

The available revolving credit facilities are intended to assist short term liquidity management and to enable more efficiency in cash management and were provided by a syndicate of several global commercial banks. The Company has two revolving credit facilities, in the amount of R\$27,903 (US\$5,000 million), for which R\$16,742 (US\$3,000 million) have maturity date in 2024 and R\$11,161 (US\$2,000 million) in 2026. As of December 31, 2023, these lines were not drawn.

Accounting policy

The Company uses financial instruments to hedge its exposure to certain market risks arising from operational, financing and investing activities. Derivatives are included within financial assets or liabilities at fair value through profit or loss unless they are designated as effective hedging instruments (hedge accounting).

At the beginning of the hedge operations, the Company documents the type of hedge, the relation between the hedging instrument and hedged items, its risk management objective and strategy for undertaking hedge operations. The Company also documents, both at hedge inception and on an ongoing basis that the hedge is expected to continue to be highly effective. The Company has elected to adopt the new general hedge accounting model in IFRS 9/CPC 48 and designates certain derivatives as either:

Cash flow hedge - The effective portion of changes in the fair value of derivatives that are designated and qualify as cash flow hedges is recognized in equity within "Unrealized fair value gain (losses)". The gain or loss relating to the ineffective portion is recognized immediately in the income statement. When a hedging instrument expires or is sold, or when a hedge no longer meets the criteria for hedge accounting, any cumulative gain or loss existing in equity at that time remains in equity and is recognized in profit or loss when the transaction is recognized in the income statement.

Net investment hedge - Hedges of net investments in foreign operations are accounted for similarly to cash flow hedges. Any gain or loss on the hedging instrument relating to the effective portion of the hedge is recognized in equity within "Cumulative translation adjustments". The gain or loss relating to the ineffective portion is recognized immediately in the income statement. Gains and losses accumulated in equity are included in the statement of income when the foreign operation is partially or fully disposed of or sold.

Derivatives at fair value through profit or loss - Certain derivative instruments do not qualify for hedge accounting. Changes in the fair value of any of these derivative instruments are recognized immediately in the income statement.

Critical accounting estimates and judgments

The fair values of financial instruments that are not traded in active markets are determined using valuation techniques. Vale uses its own judgment to choose between the various methods. Assumptions are based on the market conditions, at the end of the year. An analysis of the impact if actual results are different from management's estimates is present under "Sensitivity analysis of derivative financial instruments".

Notes to the Financial Statements

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21. Financial assets and liabilities

a) Classification

The Company classifies its financial instruments in accordance with the purpose for which they were acquired, and determines the classification and initial recognition according to the following categories:

	Notes	December 31, 2023				Consolidated December 31, 2022			
		Amortized cost	At fair value through OCI	At fair value through profit or loss	Total	Amortized cost	At fair value through OCI	At fair value through profit or loss	Total
Financial assets									
Current									
Cash and cash equivalents	23	17,474	-	-	17,474	24,711	-	-	24,711
Short-term investments	23	-	-	250	250	-	-	320	320
Derivative financial instruments	20	-	-	1,311	1,311	-	-	1,788	1,788
Accounts receivable	11	1,749	-	18,568	20,317	2,809	-	19,728	22,537
		19,223	-	20,129	39,352	27,520	-	21,836	49,356
Non-current									
Judicial deposits	28(d)	3,861	-	-	3,861	6,338	-	-	6,338
Restricted cash	14	22	-	-	22	404	-	-	404
Derivative financial instruments	20	-	-	2,635	2,635	-	-	1,022	1,022
Investments in equity securities	14	-	217	-	217	-	36	-	36
		3,883	217	2,635	6,735	6,742	36	1,022	7,800
Total of financial assets		23,106	217	22,764	46,087	34,262	36	22,858	57,156
Financial liabilities									
Current									
Suppliers and contractors	13	25,523	-	-	25,523	23,278	-	-	23,278
Derivative financial instruments	20	-	-	172	172	-	-	470	470
Loans and borrowings	23	3,986	-	-	3,986	1,604	-	-	1,604
Leases	24	954	-	-	954	948	-	-	948
Liabilities related to the concession grant	14(a)	2,861	-	-	2,861	2,169	-	-	2,169
Other financial liabilities – Related parties	31	1,404	-	-	1,404	2,086	-	-	2,086
Contract liability and financial liabilities	14	3,676	-	-	3,676	4,000	-	-	4,000
		38,404	-	172	38,576	34,085	-	470	34,555
Non-current									
Derivative financial instruments	20	-	-	463	463	-	-	972	972
Loans and borrowings	23	56,389	-	-	56,389	56,737	-	-	56,737
Leases	24	6,075	-	-	6,075	7,041	-	-	7,041
Participative shareholders' debentures	22	-	-	13,912	13,912	-	-	14,218	14,218
Liabilities related to the concession grant	14(a)	15,868	-	-	15,868	13,326	-	-	13,326
Financial guarantees	32	-	-	1	1	-	-	537	537
		78,332	-	14,376	92,708	77,104	-	15,727	92,831
Total of financial liabilities		116,736	-	14,548	131,284	111,189	-	16,197	127,386

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	Notes	December 31, 2023				Controladora December 31, 2022			
		Amortized cost	At fair value through OCI	At fair value through profit or loss	Total	Amortized cost	At fair value through OCI	At fair value through profit or loss	Total
Financial assets									
Current									
Cash and cash equivalents	23	4,193	-	-	4,193	7,896	-	-	7,896
Short-term investments	23	-	-	14	14	-	-	15	15
Derivative financial instruments	20	-	-	1,107	1,107	-	-	1,160	1,160
Accounts receivable	11	36,087	-	1,027	37,114	47,305	-	75	47,380
		40,280	-	2,148	42,428	55,201	-	1,250	56,451
Non-current									
Judicial deposits	28(d)	-	-	-	-	6,092	-	-	6,092
Restricted cash	14	22	-	-	22	22	-	-	22
Derivative financial instruments	20	-	-	2,567	2,567	-	-	1,022	1,022
Investments in equity securities	14	-	108	-	108	-	31	-	31
Other financial assets	14	-	-	-	-	50	-	-	50
		22	108	2,567	2,697	6,164	31	1,022	7,217
Total of financial assets		40,302	108	4,715	45,125	61,365	31	2,272	63,668
Financial liabilities									
Current									
Suppliers and contractors	13	15,983	-	-	15,983	14,248	-	-	14,248
Derivative financial instruments	20	-	-	33	33	-	-	128	128
Loans and borrowings	23	3,374	-	-	3,374	673	-	-	673
Leases	24	406	-	-	406	425	-	-	425
Liabilities related to the concession grant	14(a)	2,861	-	-	2,861	2,169	-	-	2,169
Loans - Related parties	31	15,136	-	-	15,136	25,691	-	-	25,691
Other financial liabilities - Related parties	31	3,753	-	-	3,753	3,660	-	-	3,660
Contract liability and other advances	14	19	-	-	19	33	-	-	33
		41,532	-	33	41,565	46,899	-	128	47,027
Non-current									
Derivative financial instruments	20	-	-	250	250	-	-	848	848
Loans and borrowings	23	13,016	-	-	13,016	14,809	-	-	14,809
Leases	24	1,024	-	-	1,024	1,253	-	-	1,253
Loans - Related parties	31	49,684	-	-	49,684	48,465	-	-	48,465
Participative shareholders' debentures	20	-	-	13,912	13,912	-	-	14,218	14,218
Liabilities related to the concession grant	14(a)	15,868	-	-	15,868	13,326	-	-	13,326
Financial guarantees	32	-	-	1	1	-	-	537	537
		79,592	-	14,163	93,755	77,853	-	15,603	93,456
Total of financial liabilities		121,124	-	14,196	135,320	124,752	-	15,731	140,483

b) Hierarchy of fair value

	Notes	December 31, 2023				Consolidated December 31, 2022			
		Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Financial assets									
Short-term investments	23	250	-	-	250	320	-	-	320
Derivative financial instruments	20	-	3,946	-	3,946	-	2,810	-	2,810
Accounts receivable	11	-	18,568	-	18,568	-	19,728	-	19,728
Investments in equity securities	14	-	217	-	217	-	36	-	36
		250	22,731	-	22,981	320	22,574	-	22,894
Financial liabilities									
Derivative financial instruments	20	-	635	-	635	-	1,442	-	1,442
Participative shareholders' debentures	22	-	13,912	-	13,912	-	14,218	-	14,218
Financial guarantees	32	-	1	-	1	-	537	-	537
		-	14,548	-	14,548	-	16,197	-	16,197

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	Notes	December 31, 2023				Parent Company December 31, 2022			
		Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Financial assets									
Short-term investments	23	14	-	-	14	15	-	-	15
Derivative financial instruments	20	-	3,674	-	3,674	-	2,182	-	2,182
Accounts receivable	14	-	1,027	-	1,027	-	75	-	75
Investments in equity securities	13	-	108	-	108	-	31	-	31
		14	4,809	-	4,823	15	2,288	-	2,303
Financial liabilities									
Derivative financial instruments	20	-	283	-	283	-	976	-	976
Participative shareholders' debentures	22	-	13,912	-	13,912	-	14,218	-	14,218
Financial guarantees	32	-	1	-	1	-	537	-	537
		-	14,196	-	14,196	-	15,731	-	15,731

There were no transfers between levels 1, 2 and 3 of the fair value hierarchy during the period presented.

c) Fair value of loans and borrowings

Loans and borrowings are recorded at their contractual values. To determine the market values of these financial instruments traded in public markets, the closing market quotations on the balance sheet dates were used. The Company considers that for the other financial liabilities measured at amortized cost, their book values are close to their fair values and therefore information on their fair values is not being presented.

	Consolidated				
	December 31, 2023		December 31, 2022		
	Carrying amount	Fair value	Carrying amount	Fair value	
Quoted in the secondary market:					
<i>Bonds</i>		35,112	35,845	32,642	32,626
<i>Debentures</i>		1,070	1,032	1,253	1,177
Debt contracts in Brazil in:					
R\$, indexed to TJLP, TR, IPCA, IGP-M and CDI		1,211	1,211	1,461	1,452
R\$, with fixed interest		-	-	11	8
Basket of currencies and bonds in US\$ indexed to SOFR		740	816	-	-
Debt contracts in the international market in:					
US\$, with variable and fixed interest		21,808	23,962	22,457	22,912
Other currencies, with variable interest		43	43	47	44
Other currencies, with fixed interest		391	410	470	474
Total		60,375	63,319	58,341	58,693

	Controladora				
	December 31, 2023		December 31, 2022		
	Carrying amount	Fair value	Carrying amount	Fair value	
Quoted in the secondary market:					
<i>Bonds</i>		2,426	2,311	2,606	2,442
<i>Debentures</i>		1,070	1,032	1,256	1,177
Debt contracts in Brazil in:					
R\$, indexed to TJLP, TR, IPCA, IGP-M and CDI		1,211	1,211	1,461	1,451
R\$, with fixed interest		-	-	8	8
Basket of currencies and bonds in US\$ indexed to SOFR		740	816	-	-
Debt contracts in the international market in:					
US\$, with variable and fixed interest		10,899	12,069	10,102	10,650
Other currencies, with variable interest		44	43	49	44
Total		16,390	17,482	15,482	15,772

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

Accounting policy

Classification and measurement – The Company classifies financial instruments based on its business model for managing the assets and the contractual cash flow characteristics of those assets. The business model test determines the classification based on the business purpose for holding the asset and whether the contractual cash flows represent only payments of principal and interest.

Financial instruments are measured at fair value through profit or loss (“FVTPL”) unless certain conditions are met that permit measurement at fair value through other comprehensive income (“FVOCI”) or amortized cost. Gains and losses recorded in other comprehensive income for debt instruments are recognized in profit or loss only on disposal.

Investments in equity instruments are measured at FVTPL unless they are eligible to be measured at FVOCI, whose gains and losses are never recycled to profit or loss.

All financial liabilities are initially measured at fair value, net of transaction costs incurred and are subsequently carried at amortized cost and updated using the effective interest rate method. Excepts for Participative shareholders’ debentures and Derivative financial instruments that are measured at FVTPL.

Fair value hierarchy – The Company classifies financial instruments within the fair value hierarchy as:

Level 1: The fair value of financial instruments traded in active markets (e.g. derivatives and publicly traded shares) is based on quoted market prices at the end of the financial statements period.

Level 2: The fair value of financial instruments that are not traded in an active market (e.g. over the counter derivatives) is determined using valuation techniques that maximize the use of observable market data. If all significant data required for the fair value of an instrument are observable, the instrument is included in level 2.

Level 3: If one or more of the significant data are not based on observable market data, the instrument is included in level 3. The fair value of derivatives classified as level 3 is estimated using discounted cash flows and option valuation models with unobservable inputs of discount rates, stock prices and commodity prices.

22. Participative shareholders’ debentures

At the time of its privatization in 1997, the Company issued a total of 388,559,056 debentures to then-existing shareholders, including the Brazilian Government. The debentures’ terms were set to ensure that pre-privatization shareholders would participate in potential future benefits that might be obtained from exploration of mineral resources. This obligation related to the debentures will cease when all the relevant mineral resources are exhausted, sold or otherwise disposed of by the Company.

Holders of participative shareholders’ debentures have the right to receive semi-annual payments equal to an agreed percentage of revenues less value-added tax, transport fee and insurance expenses related to the trading of the products, derived from these mineral resources.

The effects on the income statement and on the statement of financial position are shown below:

	Year ended December 31,								
	Average price (R\$)			Financial results			Liabilities		
	2023	2022	2021	2023	2022	2021	2023	2022	2021
Participative shareholders’ debentures	35,80	36.59	49.10	(871)	3,285	(3,691)	13,912	14,218	19,078

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The Company made available for withdrawal as remuneration the following amounts, as disclosed on the “Shareholders’ debentures report” available on the Company’s website, which were not incorporated by reference:

	Availability date	Remuneration amount
Remuneration for the first half of 2023	October 2, 2023	535
Remuneration for the second half of 2022	April 3, 2023	637
Year ended December 31, 2023		1,172
Remuneration for the first half of 2022	October 3, 2022	715
Remuneration for the second half of 2021	April 1, 2022	1,120
Year ended December 31, 2022		1,835
Remuneration for the first half of 2021	October 1, 2021	1,244
Remuneration for the second half of 2020	April 1, 2021	1,073
Year ended December 31, 2021		2,317

Accounting policy

The participative shareholders’ debentures are measured at fair value through profit or loss based on the market approach, representing the amount that would be paid for the acquisition of these securities on the measurement date and, therefore, also implicitly includes the remuneration to the debenture holder. To calculate the fair value of the liabilities, the Company uses the weighted average price of the secondary market trades in the last month of period.

23. Loans, borrowings, cash and cash equivalents and short-term investments

a) Net debt

The Company monitors the net debt with the objective of ensuring the continuity of its business in the long term.

	Consolidated	
	December 31, 2023	December 31, 2022
Loans and borrowings	60,375	58,341
Leases (note 24)	7,029	7,989
Gross debt	67,404	66,330
(-) Cash and cash equivalents	17,474	24,711
(-) Short-term investments (i)	250	320
(-) Net Cash PTVI (note 16b)	3,401	-
Net debt	46,279	41,299

(i) Substantially comprises investments in an exclusive investment fund, which portfolio is made by committed transactions and Selic Treasury Notes (“LFTs”), which are floating-rate securities issued by the Brazilian government.

b) Cash and cash equivalents

	Consolidated	
	December 31, 2023	December 31, 2022
R\$	4,612	9,233
US\$	12,182	14,602
Other currencies	680	876
Total	17,474	24,711

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

c) Loans and borrowings

i) Outstanding balance of loans and borrowings by type and currency

	Average interest rate (i)	Consolidated			
		Current liabilities		Non-current liabilities	
		December 31, 2023	December 31, 2022	December 31, 2023	December 31, 2022
Quoted in the secondary market:					
US\$ Bonds	6.02%	-	-	34,649	32,125
R\$, Debentures (ii)	10.17%	463	244	573	973
Debt contracts in Brazil in (iii):					
R\$, indexed to TJLP, TR, IPCA, IGP-M and CDI	10.12%	239	239	968	1,206
R\$, with fixed interest		-	8	-	-
Basket of currencies and bonds in US\$ indexed to SOFR	6.80%	-	-	726	-
Debt contracts in the international market in:					
US\$, with variable and fixed interest	5.59%	2,416	282	19,104	21,978
Other currencies, with variable interest	4.12%	-	-	44	49
Other currencies, with fixed interest	3.87%	59	60	325	406
Accrued charges		809	771	-	-
Total		3,986	1,604	56,389	56,737

	Average interest rate (i)	Parent Company			
		Current liabilities		Non-current liabilities	
		December 31, 2023	December 31, 2022	December 31, 2023	December 31, 2022
Quoted in the secondary market:					
US\$, Bonds	5.66%	-	-	2,378	2,563
R\$, Debentures (ii)	10.17%	463	244	573	973
Debt contracts in Brazil in (iii):					
R\$, indexed to TJLP, TR, IPCA, IGP-M and CDI	10.12%	239	239	968	1,206
R\$, with fixed interest		-	8	-	-
Basket of currencies and bonds in US\$ indexed to SOFR	6.80%	-	-	726	-
Debt contracts in the international market in:					
US\$, with variable interest	5.59%	2,421	-	8,327	10,018
Other currencies, with variable interest	4.12%	-	-	44	49
Accrued charges		251	182	-	-
Total		3,374	673	13,016	14,809

(i) In order to determine the average interest rate for debt contracts with floating rates, the Company used the rate applicable as of December 31, 2023.

(ii) The Company has debentures in Brazil obtained for the Company's infrastructure investment projects.

(iii) The Company entered into derivatives to mitigate the exposure to cash flow variations of all floating rate debt contracted in Brazil, resulting in an average cost of 3.39% per year in US\$.

The reconciliation of loans and financing with cash flows resulting from financing activities is presented in note 10(C).

ii) Future flows of principal and interest of loans and borrowings payments

	Consolidated		Parent Company	
	Principal	Estimated future interest payments (i)	Principal	Estimated future interest payments (i)
2024	3,181	3,772	3,123	1,003
2025	2,186	3,639	667	871
2026	2,769	3,507	425	838
2027	8,229	3,027	3,683	692
Between 2028 and 2030	15,849	7,453	3,640	1,160
2031 onwards	27,352	10,564	4,601	2,258
Total	59,566	31,962	16,139	6,822

(i) Based on interest rate curves and foreign exchange rates applicable as of December 31, 2023 and considering that the payments of principal will be made on their contracted payments dates. The amount includes the estimated interest not yet accrued and the interest already recognized in the annual financial statements.

For the year ended in 2023, 2% of total interest incurred in Loans and borrowings was capitalized (2022: 7%) (note 6). Loan and Borrowing costs that are not capitalized were recognized in the income statement of the year in which they are incurred.

Notes to the Financial Statements

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Covenants

Some of the Company's loans and borrowings agreements with lenders contain financial covenants. The primary financial covenants in those agreements require maintaining certain ratios, such as debt to EBITDA (as defined in note 4a) and interest coverage. The Company did not identify any instances of noncompliance as of December 31, 2023.

Accounting policy

Loans and borrowings are initially measured at fair value, net of transaction costs incurred and are subsequently carried at amortized cost and updated using the effective interest rate method. Any difference between the proceeds (net of transaction costs) and the redemption value is recognized in the Income statement over the period of the loan, using the effective interest rate method. The fees paid in obtaining the loan are recognized as transaction costs. The Company contracts derivatives to protect its exposure to changes in debt cash flows, changing the average cost of debts that have hedge derivatives contracted.

Loans and borrowing costs are capitalized as part of property, plants and equipment if those costs are directly related to a qualified asset. The capitalization occurs until the qualified asset is ready for its intended use. Interest on loans and borrowing not capitalized is recognized in profit or loss for the year when incurred.

24. Leases

a) Right of use

	Consolidated					
	December 31, 2022	Additions and contract modifications	Depreciation	Transfer to asset held for sale	Translation adjustment	December 31, 2023
Ports	3,424	116	(291)	-	(209)	3,040
Vessels	2,364	21	(215)	-	(162)	2,008
Pelletizing plants	1,064	120	(251)	-	-	933
Properties	456	57	(123)	-	(2)	388
Energy plants	206	-	(30)	-	(11)	165
Equipment and installment of mining	78	54	(40)	(42)	(5)	45
Total	7,592	368	(950)	(42)	(389)	6,579

	Parent Company					
	December 31, 2022	Additions and contract modifications	Depreciation	Restructuring of Metals for Energy Transition operations	Translation adjustment	December 31, 2023
Ports	1	-	(1)	-	-	-
Pelletizing plants	1,064	120	(251)	-	-	933
Properties	446	18	(113)	-	-	351
Energy plants	3	-	(2)	(1)	-	-
Total	1,514	138	(367)	(1)	-	1,284

b) Leases liabilities

	Consolidated						
	December 31, 2022	Additions and contract modifications	Payments (i)	Interest	Transfer to liabilities held for sale	Translation adjustment	December 31, 2023
Ports	3,599	116	(336)	152	-	(228)	3,303
Vessels	2,303	21	(308)	80	-	(174)	1,922
Pelletizing plants	1,157	120	(318)	43	-	-	1,002
Properties	549	57	(133)	19	-	(1)	491
Energy plants	274	-	(30)	14	-	(19)	239
Mining equipment	107	54	(34)	2	(42)	(15)	72
Total	7,989	368	(1,159)	310	(42)	(437)	7,029
Current liabilities	948						954
Non-current liabilities	7,041						6,075
Total	7,989						7,029

Notes to the Financial Statements

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	Parent Company						
	December 31, 2022	Additions and contract modifications	Payments (i)	Interest	Restructuring of Metals for Energy Transition operations	Translation adjustment	December 31, 2023
Ports	1	-	(1)	-	-	-	-
Pelletizing plants	1,157	120	(318)	43	-	-	1,002
Properties	513	18	(121)	18	-	-	428
Energy plants	7	-	(3)	-	(4)	-	-
Total	1,678	138	(443)	61	(4)	-	1,430
Current liabilities	425						406
Non-current liabilities	1,253						1,024
Total	1,678						1,430

(i) The total amount of the variable lease payments not included in the measurement of lease liabilities was R\$557 (US\$112 million) recorded in the income statement for the year ended December 31, 2023, (2022: R\$1,897 (US\$367 million)).

Annual minimum payments and remaining lease term

The following table presents the undiscounted lease obligation by maturity date. The lease liability recognized in the statement of financial position is measured at the present value of such obligations.

	Consolidated							
	2024	2025	2026	2027	2028 onwards	Total	Remaining term (years)	Discount rate
Ports	340	336	270	210	3,568	4,724	3 to 20	4% to 5%
Vessels	292	284	260	255	1,413	2,504	2 to 10	3% to 4%
Pelletizing plants	290	242	83	83	555	1,254	1 to 10	2% to 6%
Properties	137	87	76	65	182	547	1 to 10	2% to 6%
Energy plants	47	47	31	26	224	375	1 to 7	5% to 6%
Mining equipment	38	19	12	1	1	71	1 to 5	3% to 6%
Total	1,143	1,015	733	641	5,943	9,475		

Accounting policy

The Company recognizes a right-of-use asset and a lease liability at the lease commencement date. The right-of-use asset is initially measured at cost, which comprises the initial amount of the lease liability adjusted for any lease payments made at or before the commencement date. The right-of-use asset is subsequently depreciated using the straight-line method from the commencement date to the earlier of the end of the lease term or the end of the useful life of the right-of-use asset.

The Company does not recognize right-of-use assets and liabilities for leases with less than 12 months of lease term and/or leases of low-value assets. The payments associated to these leases are recognized as an expense on a straight-line basis over the lease term.

The lease liability is initially measured at the present value of the lease payments, discounted using the interest rate implicit in the lease or, if that rate cannot be readily determined, the Company's incremental borrowing rate. Lease payments included in the measurement of the lease liability comprise: (i) fixed payments, including in-substance fixed payments; (ii) variable lease payments that depend on an index or a rate; and (iii) the exercise price under a purchase option or renewal option that are under the Company's control and is reasonably certain to be exercised.

The lease liability is measured at amortized cost using the effective interest method. It is remeasured when there is a change in future lease payments arising from a change in an index or rate. When the lease liability is remeasured, a corresponding adjustment is made to the carrying amount of the right-of-use asset or is recorded in profit or loss if the carrying amount of the right-of-use asset has been reduced to zero.

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25. Brumadinho dam failure

In January 2019, a tailings dam ("Dam I") experienced a failure at the Córrego do Feijão mine, in the city of Brumadinho, state of Minas Gerais, Brazil. The failure released a flow of tailings debris, destroying some of Vale's facilities, affecting local communities and disturbing the environment. The tailings released have caused an impact of around 315 km in extension, reaching the nearby Paraopeba River. The dam failure in Brumadinho ("event") resulted in 270 fatalities or presumed fatalities and caused extensive property and environmental damage in the region.

As a result of the dam failure, the Company recognized provisions to meet its assumed obligations, including indemnification to those affected by the event, remediation of the impacted areas and compensation to the society. Changes in the provisions are shown below:

					Consolidated
	December 31, 2022	Revision to estimates and new provisions	Monetary and present value adjustments	Disbursements	December 31, 2023
Judicial Settlement for Integral Reparation					
Payment obligations	4,602	164	408	(2,454)	2,720
Provision for socio-economic reparation and others	4,523	(20)	474	(2,110)	2,867
Provision for social and environmental reparation	4,057	47	402	(426)	4,080
	13,182	191	1,284	(4,990)	9,667
Other obligations					
Tailings containment, geotechnical safety and environmental reparation	2,916	980	280	(865)	3,311
Individual indemnification	237	501	46	(381)	403
Other	947	654	193	(361)	1,433
	4,100	2,135	519	(1,607)	5,147
Liability	17,282	2,326	1,803	(6,597)	14,814

The cash flow for obligations are estimated for an average period ranging from 5 to 7 years and were discounted at present value at a rate in nominal terms, which decreased from 9.08% on December 31, 2022 to 8.36% on December 31, 2023.

In addition, the Company has incurred expenses, which have been recognized straight to the income statement as "other operating expenses, net" (note 5c), in relation to tailings management, communication, humanitarian assistance, payroll, legal services, water supply, among others. The Company incurred expenses in the amount of R\$2,492 (US\$499 million), R\$3,222 (US\$626 million) and R\$3,492 (US\$650 million) for the years ended December 31, 2023, 2022 and 2021, respectively.

Judicial Settlement for Integral Reparation

The Settlement for Integral Reparation includes: (i) payment obligations, of which the funds will be used directly by the State of Minas Gerais and Institutions of Justice for socio-economic and socio-environmental compensation projects; (ii) socioeconomic projects in Brumadinho and other municipalities; and (iii) compensation of the environmental damage caused by the dam failure. These obligations are projected for an average period of 5 years.

For the measures (i) and (ii), the agreement specifies an amount for each project and changes in the original budget and deadlines may have an impact in the provision. In addition, the execution of the environmental recovery actions has no cap limit despite having been estimated in the Judicial Settlement for Integral Reparation due to the Company's legal obligation to fully repair the environmental damage caused by the dam failure. The expenses related to these obligations are deducted from the income tax calculation, in accordance with the Brazilian tax regulation, which is subject to periodic inspection by the competent authorities. Therefore, although Vale is monitoring this provision, the amount recorded could materially change depending on several factors that are not under the Company's control.

Other obligations

The Company is also working to ensure geotechnical safety of the remaining structures at the Córrego do Feijão mine, in Brumadinho, and the removal and proper disposal of the tailings of Dam I, including dredging part of the released material and de-sanding from the channel of the river Paraopeba. In 2023, the review of estimates to carry out these actions resulted in an addition to the provision in the amount of R\$980 (US\$200 million) (2022: R\$1,568 (US\$303 million)).

For the individual indemnification, Vale and the Public Defendants of the State of Minas Gerais formalized an agreement on April 5, 2019, under which those affected by the Brumadinho's dam failure may join an individual or family group out-of-Court settlement agreements for the indemnification of material, economic and moral damages. This agreement establishes the basis for a wide range of indemnification payments, which were defined according to the best practices and case law of Brazilian Courts, following rules and principles of the United Nations.

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a) Legal proceedings

Public civil actions brought by the State of Minas Gerais and state public prosecutors for damages resulting from the failure of Dam I

The Company is party to public civil actions brought by the State of Minas Gerais and justice institutions, claiming compensation for socioeconomic and socio-environmental damages resulting from the dam failure and seeking a broad range of decisions ordering Vale to execute specific remediation and reparation actions. As a result of the Judicial Settlement for Integral Reparation, settled in February 2021, the requests for the reparation of socio-environmental and socioeconomic damages caused by the dam failure were substantially resolved. Indemnifications for individual damages were excluded from the Judicial Settlement for Integral Reparation, and the Term of Commitment signed with the Public Defendants of the State of Minas Gerais was ratified, whose parameters are utilized as a basis for the settlement of individual agreements. The likelihood of a financial loss to the Company is classified as possible and it is not yet possible to reliably estimate the amount of a potential loss to Vale.

Public civil action and investigation under the Brazilian Anticorruption Law

In October 2020, the Brazilian Office of the Comptroller General ("CGU") notified the Company about an administrative proceeding prosecution based on the same allegations mentioned above under the Brazilian Law 12,846/2013 in connection with inspection and monitoring activities related to the Brumadinho dam. In August 2022, the CGU concluded that Vale has failed to present reliable information to the Brazilian National Mining Agency ("ANM"), as once a positive stability condition statement ("DCE") was issued for the Dam I, where it should be negative in the view of the CGU. Thus, even recognizing the non-existence of corruption acts or practices, the CGU fined Vale R\$86 (US\$18 million), which is the minimum amount established by law (for example, the CGU recognizes the non-involvement or tolerance of the Company's top management).

In September 2023, CGU denied the request for reconsideration filed by the Company and, therefore, Vale paid the fine of R\$86 (US\$18 million) during the year ended December 31, 2023. Vale disagrees with the decision and is adopting the appropriate legal measures.

Class action in the United States

Vale is defending itself against a class action brought before a Federal Court in New York and filed by holders of securities - American Depositary Receipts ("ADRs") - issued by Vale. Following the decision of the Court, in May 2020, that partially denied the Motion to Dismiss presented by the Company, the Discovery phase has started and was concluded in November 2023.

Upon the filing of a pre-motion letter for the Motion for Summary Judgment by Vale, the Court should decide whether the Parties may file their motion for summary judgment. In addition, a Court hearing will be held in 2024, with oral arguments before the Court on the Motion for Class Decertification filed by Vale.

On November 24, 2021, a new complaint was filed before the same Court by eight Plaintiffs, all investment funds, as an "opt-out" litigation from the class action already pending in the Eastern District of New York court, asserting virtually the same allegations in the main class action. The Parties are still exchanging briefs on the merits of the claims.

The likelihood of loss of these proceedings is considered possible. However, considering the current phase of this class action, it is not yet possible to reliably estimate the amount of a potential loss. The amount of damages sought in these claims is unspecified.

Criminal proceedings and investigations

In January 2020, the State Prosecutors of Minas Gerais ("MPMG") filed criminal charges against 16 individuals (including former executive officers of Vale and former employees) for a number of potential crimes, including homicide, and against Vale S.A. for alleged environmental crimes.

In November 2021, the Brazilian Federal Police concluded the investigation on potential criminal responsibility related with the Brumadinho dam failure and the final report sent to the Federal Public Prosecutors ("MPF").

In January 2023, after the Federal Supreme Court recognized the competence of the Federal Court, the MPF ratified the complaint presented by MPMG, which was received by the competent authority. The MPF and the Brazilian Federal Police conducted a separate investigation into the causes of the dam failure in Brumadinho, which may result in new criminal proceedings. Vale is defending itself against the criminal claims and is not possible to estimate when a decision will be issued.

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The likelihood of a financial loss to the Company is classified as possible and it is not yet possible to reliably estimate the amount of a potential loss to Vale.

Public civil actions brought by labor unions

In 2021, public civil actions were filed with Labor Court of Betim in the State of Minas Gerais, by a workers' unions claiming the compensation for death damages to own and outsourced employees, who died as a result of the failure of Dam I. Initial decisions sentenced Vale to pay R\$1 (US\$200 thousand) per fatality. In June 2023, the Superior Labor Court ruled the lawsuit filed by workers' union, sustaining the initial decision that condemned Vale. The Company is defending itself in the lawsuits and considers that the likelihood of loss is possible.

Securities and Exchange Commission ("SEC") and investigations conducted by the CVM

On April 28, 2022, the SEC filed a lawsuit against Vale in the U.S. District Court for the Eastern District of New York, alleging that certain Vale's disclosures related to dam safety management prior to the dam failure in Brumadinho violated U.S. securities laws.

On March 28, 2023, Vale reached a settlement with the SEC to fully resolve this litigation. Under the agreement, without admitting or denying the settled claims, Vale paid R\$285 (US\$56 million) during the year ended December 31, 2023. The settlement resolves the litigation without judgment on the claims based upon intentional or reckless fraud. In April 2023, the settlement was approved and granted by the Court.

CVM is also conducting investigations relating to Vale's disclosure of relevant information to shareholders, investors and the market in general, especially regarding the conditions and management of Vale's dams. The likelihood of loss of this proceeding is classified as possible and it is not yet possible to reliably estimate the amount of a potential loss to the Company.

Arbitration proceedings in Brazil filed by shareholders, a class association and foreign investment funds

In Brazil, Vale is named as a defendant in (i) one arbitration filed by 385 minority shareholders, (ii) two arbitrations filed by a class association allegedly representing all Vale's noncontrolling shareholders, and (iii) three arbitrations filed by foreign investment funds.

In the six proceedings, the claimants argue that Vale was aware of the risks associated with the dam and failed to disclose it to its shareholders. Based on such argument, they claim compensation for losses caused by the decrease in share price.

The expectation of loss is classified as possible for the six procedures and, considering the initial phase, it is not possible at this time to reliably estimate the amount of a possible loss.

In one of the proceedings filed by foreign funds, the Claimants initially estimated the amount of the alleged losses would be approximately R\$1,800 (US\$359 million). In another proceeding filed by foreign funds, the Claimants initially estimated the amount of the alleged losses would be approximately R\$3,900 (US\$779 million). The Company disagrees with the ongoing proceedings and understands that, in this case and at the current stage of the proceedings, the probability of loss in the amount claimed by the foreign funds is remote.

Other proceedings

Vale is defendant in a number of investigations and proceedings brought by individuals, business entities, investors, associations, unions, legislative bodies, non-governmental organizations and other entities seeking remediation and compensation for environmental, property and personal damages resulting from the Brumadinho dam failure, including alleged violations of securities laws. The potential loss was R\$457 (US\$94 million) as of December 31, 2023 (2022: R\$639 (US\$132 million)) and the likelihood of a potential loss to the Company is classified as possible.

b) Insurance

The Company is negotiating with insurers the payment of indemnification under its civil liability and Directors and Officers Liability Insurance. In 2023, the Company received R\$149 (US\$30 million) from insurers (2022: R\$23 (US\$6 million)) which was recorded in income statement as "other operating expenses, net" (note 5c).

Notes to the Financial Statements

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Critical accounting estimates and judgments

The provision for social, economic and environmental reparation may be affected by factors including, but not limited to: (i) changes in the current estimated market price of the direct and indirect cost related to products and services, (ii) changes in timing for cash outflows, (iii) changes in the technology considered in measuring the provision, (iv) number of individuals entitled to the indemnification payments, (v) resolution of existing and potential legal claims, (vi) demographic assumptions, (vii) actuarial assumptions, and (viii) updates in the discount rate.

Thus, the amounts actually incurred by the Company may differ from the amounts currently provisioned, due to the confirmation of the assumptions used and which depend on several factors, some of which are not under the Company's control. These changes could result in a material impact on the amount of the provision in future periods. At each presentation date of its financial statements, the Company will reassess the main assumptions used in the preparation of projected cash flows and will adjust the provision, when applicable.

26. Liabilities related to associates and joint ventures

In November 2015, the Fundão tailings dam owned by Samarco Mineração S.A. ("Samarco") experienced a failure, flooding certain communities and impacting communities and the environment along the Doce River. The dam failure resulted in 19 fatalities and caused property and environmental damage to the affected areas. Samarco is a joint venture equally owned by Vale S.A. and BHP Billiton Brasil Ltda. ("BHPB").

In 2016, Vale, Samarco and BHPB, entered into a Framework Agreement with the Federal Government of Brazil, the states of Espírito Santo and Minas Gerais and certain other public authorities to establish the Renova Foundation that is developing and executing environmental and socio-economic programs to remediate and provide compensation for damage caused by the Samarco dam failure.

In June 2018, Samarco, Vale and BHPB entered into a comprehensive agreement with the offices of the federal and state (Minas Gerais and Espírito Santo) prosecutors, public defenders and attorney general, among other parties ("TacGov Agreement"), improving the governance mechanism of Renova Foundation and establishing, among other things, a process for potential revisions to the remediation programs under the Framework Agreement.

These agreements aim to remediate and provide compensation for damage caused, of which Samarco has primary responsibility for funding the obligations, and Vale and BHPB have secondary funding obligations under the Framework Agreement in proportion to their 50 per cent shareholding in Samarco.

a) Judicial reorganization of Samarco

In April 2021, Samarco filed for Judicial Reorganization ("JR") with the Courts of Minas Gerais to renegotiate its debt, which was held by bondholders abroad. The purpose of JR is to restructure Samarco's debts and establish an independent and sustainable financial position, allowing Samarco to keep working to resume its operations safely and to fulfill its obligations related to the Renova Foundation.

In May 2023, Vale S.A. entered into a binding agreement jointly with BHPB, Samarco and certain creditors which hold together more than 50% of Samarco's debt, setting the parameters of Samarco's debt restructuring to be implemented through a consensual restructuring plan, which was approved by the creditors, submitted to the JR Court in July 2023, and confirmed by the judge in September 2023.

In December 2023, Samarco's existing R\$24 billion (US\$4.8 billion) of financial debt held by creditors was exchanged for approximately R\$19 billion (US\$3.9 billion) of long-term unsecured debt, bearing interest from 2023 to 2031.

After the execution of the plan, Samarco has a lean capital structure, in line with its operational ramp-up and cash flow generation. The plan considers the fund of the reparation and compensation programs capped at R\$5 billion (US\$ 1 billion) from 2024 to 2030 and additional contributions after that period due to the Samarco's projected cash flows generation.

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b) Main contingent liabilities

Public Civil Action filed by the Federal Government and others and public civil action filed by the Federal Public Ministry ("MPF")

Vale is a defendant in several legal proceedings brought by governmental authorities and civil associations claiming recover socioenvironmental and socioeconomic damages and a number of specific remediation measures as a result of the Samarco's Fundão dam failure, including a claim brought by the Federal Public Prosecution Office in 2016 seeking several measures that amount to R\$155 billion (US\$31 billion), subject to interest and monetary adjustments, which the effect for Vale would be 50% of this amount.

This Public Civil Action was suspended as a result of the ratification of TacGov agreement. However, as pre-requisites established in the TacGov Agreement, for renegotiation of the Framework Agreement were not implemented during the established period, in 2020, the Brazilian Federal and State prosecutors and public defenders filed a request for the immediate resumption of this claim.

Therefore, Vale, Samarco, BHPB and Federal and State prosecutors have been engaging in negotiations to seek a definitive settlement of the obligations under the Framework Agreement and the R\$155 billion (US\$31 billion) Federal Public Prosecution Office claim.

The goal in signing a potential settlement agreement is to provide a stable framework for the execution of reparation and compensation measures related to the Samarco dam rupture, it also aims to settle all lawsuits brought by the public authorities involved.

Judicial decision requesting cash deposits and increase on the territories affected by the collapse

In March 2023, as part of a proceeding related to a potential increase on the number of territories recognized as affected by the collapse of Samarco's Fundão dam and covered by the TTAC, a Federal Court issued a decision ordering Vale and BHP Brasil to make judicial deposits in the total amount of R\$10.3 billion (US\$2.1 billion), in ten installments, which the effect for Vale would be 50% of this amount. On April 28, 2023, the Federal Court granted the companies' request for a suspensive effect on the decision that determined this deposit.

In August 2023, the judge issued a judicial decision recognizing the existence of new territories impacted by the collapse of the Fundão dam. The Company is adopting the appropriate legal measures and believes its provisions are sufficient to comply with the TTAC obligations.

Judicial decision on collective moral damages

In January 2024 (subsequent event), the 4th Federal Lower Civil Court of Belo Horizonte issued a judicial decision requiring the payment of collective moral damages in the amount of R\$47.6 billion (US\$9.5 billion) (the effect for Vale would be 50% of this amount), subject to monetary adjustments from the date of the decision and interests from November 2015. The Company is defending itself and believes the likelihood of loss in relation of the merits of these proceedings is possible, however, the likelihood of loss in the alleged amount is assessed as remote.

c) Provision related to the Samarco dam failure

In preparing these financial statements, Vale has considered all information available from the status of the potential settlement agreement, the claims related to the Samarco dam failure and the extent to which Samarco may be able to fund any future outflows.

As a result, the Company recognized an addition to the provision in the amount of R\$5,841 (US\$1,200 million), reflecting the change in Vale's assessment of potential outflows to resolve all aspects of the reparation and compensation of the Samarco dam failure. The changes on the provision are presented below:

	Total
Balance on December 31, 2022	17,328
Addition to the provision due to change in estimates	5,841
Monetary and present value adjustments	990
Disbursements	(2,728)
Translation adjustments	-
Balance on December 31, 2023	21,431

The cash outflows to meet the obligations are discounted at present value at a rate in nominal terms, which decreased from 9.51% on December 31, 2022, to 8.90% on December 31, 2023.

Notes to the Financial Statements

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d) Other contingent liabilities

As of December 31, 2023, Vale has certain contingent liabilities arising as a consequence of the Samarco dam failure. The main updates regarding the lawsuits in the year were as follows:

London Contribution claim

As a result of the rupture of Samarco's Fundão dam failure, BHP Group Ltd ("BHP") was named as defendant in group action claims for damages filed in the courts of England and Wales for various plaintiffs, between individuals, companies and municipalities from Brazil that were supposedly affected by the Samarco dam failure (the "UK Claim").

On December 2022, BHP filed a "Contribution Claim" against Vale, requesting the Company to share the indemnification established in the UK Claim. Both the Contribution Claim and the UK Claim are still ongoing, and there has not been any decision on their merits. It is not yet possible to reliably estimate the amount of a potential loss to Vale.

Criminal proceedings

In September 2019, the federal court dismissed all criminal charges against Vale representatives relating to the first group of charges, which concerns the results of the Fundão dam failure, remaining only the legal entity in the passive pole. The second group of charges against Vale S.A. and one of the Company's employees, which concerns the accusation of alleged crimes committed against the Environmental Public Administration, remained unchanged. The Company cannot estimate when a final decision on the case will be issued. The likelihood of loss is classified as possible and it is not yet possible to reliably estimate the amount of a potential loss to Vale.

Tax proceeding

In September 2018, the federal tax authorities filed a request before a federal court in Belo Horizonte for an order to Vale's assets to secure the payment of Samarco's federal tax and social security debts, in the amount of approximately R\$11 billion (US\$2.3 billion) (as of June 2018). In May 2019, a favorable decision was issued dismissing the claim without prejudice, due to lack of procedural interest. The General Attorney for the National Treasury (Procuradoria Geral da Fazenda Nacional - "PGFN") filed an appeal to the local court, and a decision is pending.

Other proceedings

Vale is defendant in several private actions, before different state and federal courts in the states of Minas Gerais and Espírito Santo, brought by individuals and other entities seeking remediation and compensation for environmental, property and personal damages resulting from the Samarco dam failure.

e) Tax consequences for Vale arising from the consensual restructuring plan of Samarco

The plan provides that additional cash demands from Renova Foundation will be made through capital contributions to Samarco. The contributions have been carried out directly by Vale and BHPB to the Renova Foundation on behalf of Samarco and, therefore, they were deemed tax deductible as incurred, according to the Brazilian tax regulation.

Therefore, due to the change in the mechanism to fund Renova, Vale will no longer be allowed to deduct future payments from its income tax computation as they are not tax deductible in Brazil. Thus, the deferred income tax asset over the provision in the amount of R\$5,468 (US\$1,078 million) was reversed in full, with the corresponding impact in the income statement for the year ended December 31, 2023, recorded as "Income taxes" (note 8a).

In addition, the Plan does not require the capitalization of the expenses of R\$3,404 (US\$703 million) that were incurred in the past and so, there is no change in relation to the tax treatment adopted.

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f) Summarized financial information

The summarized financial information of Samarco are as follows. The stand-alone financial statements of Samarco may differ from the financial information reported herein, which is prepared considering Vale's accounting policies.

	December 31, 2023	December 31, 2022
Current assets	2,576	2,369
Non-current assets	17,382	14,337
Total assets	19,958	16,706
Current liabilities	16,179	56,393
Non-current liabilities	58,963	38,616
Total liabilities	75,142	95,009
Negative reserves	(55,184)	(78,303)
Net income for the year ended	12,922	55

g) Insurance

Since the Fundão dam failure, the Company has been negotiating with insurers the indemnification payments based on its general liability policies. In 2021, the Company received payments in the amount of R\$181 (US\$33 million), which was recorded as a gain in the income statement as "Equity results and other results in associates and joint ventures". The Company did not receive any further insurance in 2023 and 2022 and does not expect to receive any material amounts in the future.

Critical accounting estimates and judgments

Under Brazilian legislation and the terms of the joint venture agreement, the Company does not have an obligation to provide funding to Samarco. Accordingly, the Company's investment in Samarco was fully impaired and no provision was recognized in relation to the Samarco's negative equity.

The provision related to the Samarco dam failure requires the use of assumptions and estimates, which may be materially impacted by: (i) the scope and cost of completing the programs under the Framework Agreement, including the ongoing legal actions in relation to the number of people eligible for compensation and the amount of damages to which they are entitled, (ii) the terms of any potential future settlement agreement in respect of the Federal Public Prosecution Office Claim, including potential amounts payable, obligations of the parties to perform ongoing programs of the Framework Agreement, and the period of time over which any settlement amounts may be payable, (iii) the extent to which Samarco is able to directly fund any future obligations relating to reparation and compensation measures as Samarco's long-term cash flow generation depends on factors including its ability to return to full production capacity and commodity prices, (iv) resolution of existing and potential legal claims, and (v) updates of the discount rate.

As a result, future expenditures may differ from the amounts currently provided and changes to key assumptions could result in a material impact to the amount of the provision in future reporting periods.

27. Provision for de-characterization of dam structures and asset retirement obligations

The Company is subject to local laws and regulations, that requires the decommissioning of the assets that Vale operates at the end of their useful lives, therefore, expenses for demobilization occur predominantly after the end of operational activities. These obligations are regulated by the ANM at the federal level and by environmental agencies at the state level. Among the requirements, the decommissioning plans must consider the physical, chemical and biological stability of the areas and post-closure actions for the period necessary to verify the effectiveness of the decommissioning. These obligations are accrued and are subject to critical estimates and assumptions applied to the measurement of costs by the Company. Depending on the geotechnical characteristics of the structures, the Company is required to de-characterize the structures, as shown in item a) below.

Laws and regulations related to dam safety

In September 2020, the Federal Government enacted Law no. 14.066, which modified the National Dam Safety Policy (Law no. 12,334/2020), reinforcing the prohibition of constructing and raising upstream dams in Brazil. The law also required the de-characterization of the structures built using the upstream method by 2022, or by a later date if proven that the de-characterization was not technically feasible by 2022. As made available to competent bodies, a substantial part of the

Notes to the Financial Statements

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Company's de-characterization projects will be completed in a period exceeding the date established in the legislation due to the characteristics and safety levels of the Company's geotechnical structures.

Thus, in February 2022, the Company filed with the relevant bodies a request for an extension to perform the projects and, as a result, signed a Term of Commitment establishing legal and technical certainty for the process of de-characterization of the upstream dams, considering that the deadline defined was technically infeasible, especially due to the necessary actions to increase safety during the works. With the signing of the agreement, the Company recorded an additional provision of R\$192 (US\$37 million) to make investments in social and environmental projects over a period of 8 years.

In December 2022, the Federal Government published decree no. 11,310, which regulates dispositions of the National Dam Safety Policy, regulates dam supervision activities, establishes the competence to regulate the extension of the self-rescue zone for authorities acting in dam emergency situations, and presents guidelines on technical reports regarding the causes of a breach and other aspects of management of geotechnical structures. This decree also determined that companies must present guarantees for dams in an alert situation.

In February 2023, ANM issued a resolution that modifies the current dam safety regulation. The main changes are new rules in connection with the active and passive monitoring during the de-characterization of dams, the simplified dam collapse study and simplified emergency action plan for specific cases, and the dam safety plan ("PSB"). The Company believes its provisions are sufficient to comply with the effective legal obligations.

In December 2023, the government of Minas Gerais published decree No. 48,747, which regulates the measurement and execution of environmental guarantees individually for each dam, based on the reservoir area, classification and purpose of the dam, and estimated de-characterization costs and should be kept throughout the useful life of the dam, from its start-up phase until the de-characterization and socio-environmental recovery. The guarantee may be a cash deposit, bank deposit certificate, bank guarantee or insurance. The guarantees shall be presented up to 3 years, with half of the amount in 2024 and the remaining amount split between 2025 and 2026.

The value of the guarantees is estimated at R\$1.8 billion (US\$370 million), for which the Company intends to meet by providing financial guarantees and insurance. Vale expects that the financial costs to be incurred will be immaterial.

Decommissioning plan and future use

The implementation and execution of future use projects, after the decommissioning, is not required by law. However, the Company has been studying a governance to assess the future use, considering its aptitudes, post-operational usage intention, socio-economic development of the community and the characteristics of the physical and biotic environments in which Vale operates. Any future obligations, if assumed by Vale, may result in material impact on the amount of the provision.

a) De-characterization of upstream and centerline geotechnical structures

As a result of the Brumadinho dam failure (note 25) and, in compliance with Law 14,066, the Company has decided to speed up the plan to "de-characterize" of all its tailings dams built under the upstream method, certain "centerline structures" and dikes, located in Brazil. The Company also operates tailings dams in Canada, including upstream compacted dams. However, the Company decided that these dams will be decommissioned using other methods, thus, the provision to carry out the decommissioning of dams in Canada is recognized as "Obligations for decommissioning assets and environmental obligations", as presented in item (b) below.

These structures are in different stages of maturity, some of them still in the conceptual engineering phase, for which the estimate of expenditures includes in its methodology a high degree of uncertainty in the definition of the total cost of the project in accordance with best market practices.

The cash flow for de-characterization projects are estimated for a period up to 15 years and were discounted at present value at a rate, which reduced from 6.14% to 5.41%. Changes in the provisions are as follows:

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	Total
Balance as of December 31, 2021	19,337
Revision to estimates and new provisions	375
Disbursements	(1,796)
Monetary and present value adjustments	(679)
Balance as of December 31, 2022	17,237
Revision to estimates and new provisions	750
Disbursements	(2,275)
Monetary and present value adjustments	992
Balance as of December 31, 2023	16,704

Public civil actions relating to evacuation of communities

In August 2023, Vale entered into an agreement to extinguish the Public Civil Action of the Sul Superior dam, located in Barão de Cocais, in the amount of R\$527 (US\$108 million), which is recorded as other liabilities on the statement of financial position as of December 31, 2023.

In December 2022, Vale entered into an agreement to extinguish the Public Civil Action of the B3/B4 dam located in Nova Lima, in the amount of R\$500 (US\$96 million), part of which had already been registered by the Company in previous periods. Thus, the Company recorded an additional provision in the amount of R\$292 (US\$57 million) for the year ended December 31, 2022.

In addition, the Company is defending itself in a public civil action filed by the Public Prosecutor's Office of the State of Minas Gerais claiming injunctions and socio-economic damages arising from the evacuations of communities located within the self-rescue zones of the Doutor dam, located in Ouro Preto. The Company assessed that the risk of loss is possible and, at this moment, it is not possible to reliably estimate the amount of a possible loss for the Company.

Operational stoppage and idle capacity

In addition, due to the de-characterization projects, the Company has suspended some operations due to judicial decisions or technical analysis performed by Vale on its upstream dam structures located in Brazil. The Company has been recording losses in relation to the operational stoppage and idle capacity of the Iron Ore Solutions segment in the amounts of R\$1,094 (US\$218 million) for the year ended December 31, 2023 (2022: R\$1,392 (US\$269 million) and 2021: R\$2,041 (US\$376 million)). The Company is working on legal and technical measures to resume all operations at full capacity.

b) Asset retirement obligations and environmental obligations

	Notes	Consolidated		Parent Company		Discount rate		Cash flow maturity	
		December 31, 2023	December 31, 2022	December 31, 2023	December 31, 2022	December 31, 2023	December 31, 2022	December 31, 2023	December 31, 2022
Liability by geographical area									
Brazil		11,683	9,722	10,187	9,138	5.47%	6.20%	2132	2096
Canada		7,710	8,781	-	-	1.30%	1.11%	2150	2151
Oman		766	596	-	-	3.19%	3.90%	2035	2035
Indonesia	16(b)	-	382	-	-	-	4.33%	-	2061
Other regions		557	751	-	-	2.04%	1.92%	-	-
		20,716	20,232	10,187	9,138				
Operating plants		16,046	15,478	7,508	6,048				
Closed plants		4,670	4,754	2,679	3,090				
		20,716	20,232	10,187	9,138				

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Provision changes during the year

	Consolidated			Parent Company		
	Asset retirement obligations	Environmental obligations	Total	Asset retirement obligations	Environmental obligations	Total
Balance on December 31, 2021	24,239	1,649	25,888	6,139	1,309	7,448
Disbursements	(531)	(136)	(667)	(394)	(228)	(622)
Revision to estimates and new provisions (i)	(3,250)	240	(3,010)	1,613	321	1,934
Transfer to assets held for sale	(231)	(9)	(240)	-	-	-
Monetary and present value adjustments	303	33	336	338	40	378
Translation adjustment	(2,054)	(21)	(2,075)	-	-	-
Balance on December 31, 2022	18,476	1,756	20,232	7,696	1,442	9,138
Disbursements	(858)	(551)	(1,409)	(681)	(301)	(982)
Reestruturação das operações de Metais para Transição Energética	-	-	-	(810)	(113)	(923)
Revision to estimates and new provisions	979	1,121	2,100	1,806	619	2,425
Transfer to assets held for sale	(406)	-	(406)	-	-	-
Monetary and present value adjustments	647	115	762	448	81	529
Translation adjustment	(540)	(23)	(563)	-	-	-
Balance on December 31, 2023	18,298	2,418	20,716	8,459	1,728	10,187

(i) Among other factors, includes the reduction in liability of R\$4,408 (US\$870 million), due to the update in the discount rate of the asset retirement obligation in Canada, which increased from 0.00% to 1.11% for the year ended December 31, 2022.

Critical accounting estimates and judgments

De-characterization of dam structures - The main critical assumptions and estimates applied in the de-characterization provision considers, among others: (i) volume of the waste to be removed based on historical data available and interpretation of the enacted laws and regulations; (ii) location availability for the tailings disposal; (iii) engineering methods and solutions; (iv) security levels; (v) productivity of the equipment used; (vi) advances in geological studies and new hydrological information; and (vii) discount rate update.

Therefore, future expenditures may differ from the amounts currently provided because the realized assumptions and various other factors are not always under the Company's control. These changes to key assumptions could result in a material impact to the amount of the provision in future reporting periods. At each reporting period, the Company will reassess the key assumptions used in the preparation of the projected cash flows and will adjust the provision, if required.

Asset retirement obligations - When the provision is recognized, the corresponding cost is capitalized as part of property, plant and equipment and it is depreciated over the useful life of the related mining asset.

The long-term liability is discounted at presented value using a pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the liability and the unwinds are recorded in the income statement and is reduced by payments for mine closure and decommissioning of mining assets. The accrued amounts of these obligations are not deducted from the potential costs covered by insurance or indemnities.

Judgment is required to determine key assumptions used on the asset retirement obligation measurement such as, interest rate, cost of closure, useful life of the mining asset considering the current conditions of closure and the projected date of depletion of each mine. Any changes in these assumptions may significantly impact the recorded provision. Therefore, the estimated costs for closure of the mining assets are deemed to be a critical accounting estimate and annually reviewed.

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28. Legal proceedings

The Company is a defendant in numerous legal actions in the ordinary course of business, including civil, tax, environmental and labor proceedings.

The Company makes use of estimates to recognize the amounts and the probability of outflow of resources, based on reports and technical assessments and on management's assessment. Provisions are recognized for probable losses of which a reliable estimate can be made.

Arbitral, legal and administrative decisions against the Company, new jurisprudence and changes of existing evidence can result in changes regarding the probability of outflow of resources and on the estimated amounts, according to the assessment of the legal basis.

a) Provision for legal proceedings

					Consolidated Total of litigation provision
	Tax litigation	Civil litigation	Labor litigation	Environmental litigation	
Balance as of December 31, 2021	2,542	1,579	2,000	42	6,163
Additions and reversals, net	212	195	355	31	793
Payments	(208)	(354)	(295)	(2)	(859)
Indexation and interest	466	128	93	5	692
Transfer to held for sale	(4)	(39)	(8)	-	(51)
Balance as of December 31, 2022	3,008	1,509	2,145	76	6,738
Additions and reversals, net	(38)	341	834	1	1,138
Payments	(20)	(212)	(465)	(34)	(731)
Transfer to payable taxes	(2,956)				(2,956)
Indexation and interest	447	196	(24)	29	648
Balance as of December 31, 2023	441	1,834	2,490	72	4,837

					Parent Company Total of litigation provision
	Tax litigation	Civil litigation	Labor litigation	Environmental litigation	
Balance as of December 31, 2021	2,513	1,259	1,960	39	5,771
Additions and reversals, net	209	173	342	29	753
Payments	(207)	(329)	(280)	(2)	(818)
Indexation and interest	463	91	95	6	655
Balance as of December 31, 2022	2,978	1,194	2,117	72	6,361
Additions and reversals, net	(37)	321	808	-	1,092
Payments	(20)	(186)	(434)	(15)	(655)
Transfer to payable taxes	(2,956)	-	-	-	(2,956)
Indexation and interest	445	178	(24)	28	627
Transfer to held for sale	-	(3)	(16)	(25)	(44)
Balance as of December 31, 2023	410	1,504	2,451	60	4,425

The Company has considered all information available to assess the likelihood of an outflow of resources and in the preparation on the estimate of the costs that may be required to settle the obligations.

Tax litigations – The transfer to payable taxes refers to the lawsuit filed in 2011 by Valepar (merged by Vale) seeking the right to exclude the amount of dividends received in the form of interest on capital ("JCP") from the PIS and COFINS tax base. This proceeding is fully guaranteed by a judicial deposit. In December 2023, a judicial decision was issued determining the conversion of part of the judicial deposit to the Government, resulting in the reclassification of the amount to payable taxes.

Civil litigations – Refers to lawsuits for: (i) indemnities for losses, payments and contractual fines due to contractual imbalance or non-compliance that are alleged by suppliers, and (ii) land claims referring to real estate related to Vale's operational activities.

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Labor litigations – Refers to lawsuits for individual claims by in-house employees and service providers, primarily involving demands for additional compensation for overtime work, moral damages or health and safety conditions.

Environmental litigations – Refers mainly to proceedings for environmental damages and issues related to environmental licensing.

The lawsuits related to the Brumadinho event (note 25) and the Samarco dam failure (note 26) are presented in its specific notes to these financial statements and, therefore, are not disclosed below.

b) Contingent liabilities

	Consolidated			Parent Company
	December 31, 2023	December 31, 2022	December 31, 2023	December 31, 2022
Tax litigations	35,023	34,383	34,287	33,694
Civil litigations	6,613	6,625	5,500	5,513
Labor litigations	1,829	2,970	1,731	2,877
Environmental litigations	6,394	5,750	4,750	4,765
Total	49,859	49,728	46,268	46,849

The main contingent liabilities, updated by applicable interest rates, for which the likelihood of loss is considered possible are presented by nature as follows. The proceedings related to the Brumadinho event (note 25) and the Samarco dam failure (note 26) are presented in its specific notes to these financial statements.

Tax proceedings – Financial compensation for the exploration of mineral resources (“CFEM”)

The Company is engaged in numerous administrative and judicial proceedings related to the mining royalty known as CFEM. These proceedings arise from assessments by the Brazilian National Mining Agency (“*Agência Nacional de Mineração – ANM*”, former “DNPM”), which main discussions involve the deduction of taxes, insurance and transportation costs indicated in the corresponding invoice of CFEM payments, in addition to CFEM charges on pellet sales and the revenues from sales made by our foreign subsidiaries. The Company estimates the possible losses resulting from these proceedings to be R\$10,320 (US\$2,132 million) as of December 31, 2023 (December 31, 2022: R\$9,555 (US\$1,831 million)).

Tax proceedings – PIS/COFINS

The Company is a party to several claims related to the alleged misuse of PIS and COFINS credits (federal taxes levied on the companies’ gross revenue). Brazilian tax legislation authorizes taxpayers to deduct PIS and COFINS tax credits, such as those referring to the acquisition of inputs for the production process and other items. The tax authorities mainly claim that (i) some credits were not related to the production process, and (ii) the right to use the tax credits was not adequately proven. The Company is discussing the afore mentioned charges related to credits determined as of 2002. The chances of loss related to these lawsuits classified as possible total R\$10,640 (US\$2,198 million) as of December 31, 2023 (December 31, 2022: R\$8,975 (US\$1,720 million)).

Tax proceedings – Tax on Services (“ISS”)

The Company is party to several administrative and judicial proceedings related to the collection of ISS in several Brazilian municipalities. The tax authorities’ main allegations for those proceedings are: (i) the tax basis used for computing the tax payable was incorrect; (ii) failure to pay ISS related to third-party property and business management services; and (iii) the incidence of ISS over own goods port handling services (“self-service”). As of December 31, 2023, the total amount of the possible loss is R\$3,573 (US\$738 million) (December 31, 2022: R\$3,268 (US\$626 million)).

Tax proceedings – Value added tax on services and circulation of goods (“ICMS”)

The Company is engaged in several administrative and judicial proceedings relating to additional charges of ICMS by the tax authorities of different Brazilian states. In each of these proceedings, the tax authorities claim that (i) misuse of tax credit; (ii) the Company is required to pay the ICMS on acquisition of electricity (iii) operations related to the collection of tax rate differential (“DIFAL”) and (iv) incidence of ICMS on its own transportation. The total amount classified as a possible loss is R\$2,835 (US\$586 million) as of December 31, 2023 (December 31, 2022: R\$2,910 (US\$558 million)).

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Tax proceedings – Fines arising from offsets not approved for settlement of federal debts

Vale is a party to several assessments by the Brazilian Federal Revenue Service (“RFB”) referring to the imposition of fines of 50% on the value of compensation not approved for the settlement of federal debts. The RFB understands that these offsets were made with undue credits. We are challenging these assessments and the tax offset rejection in other proceedings. The constitutional foundations for charging these fines were discussed in leading cases and, in 2023 September, the STF discussion has become final with victory for the taxpayers to declare the charge unconstitutional. The possible loss of these assessments was changed to remote, and we expect that these fines will be cancelled. As of December 31, 2023, the total amount of fines imposed was R\$3,032 (US\$626 million) (December 31, 2022: R\$2,735 (US\$524 million)).

Civil proceedings – Environmental licensing of the Company's operations in the State of Pará, Brazil

The Company is a party to several civil proceedings, which are not individually material. Among these processes, the Company is engaged on public civil actions brought by associations representing the Kayapó and Xikrin indigenous communities, in the state of Pará, which seek to suspend the Company's environmental licenses for Onça Puma (nickel), Salobo (copper) and S11D (iron ore). Those associations claim, among other things, that during the environmental licensing process, the Company did not perform appropriate studies on the impacts from those operations over the surrounding indigenous communities, which were ordinarily processed and approved by the competent licensing bodies.

In 2022, the Company entered into an indemnity agreement with the indigenous communities Xikrin do Cateté and Kayapó, for social and economic compensation. However, the Company is still defending itself against the environmental claims, which likelihood of loss is deemed as possible, however, it is not yet possible to estimate the amount of a potential loss due to the interruption of these operations or any potential agreement to mitigate and compensate.

Environmental proceedings – Environmental licensing of the Company's operations in the States of Minas Gerais and Espírito Santo, Brazil

The Company is a party to a public civil action filed by associations representing the owners of areas near to the Mar Azul, Tamanduá and Capão Xavier mines. The associations are requesting the cancellation of Vale's mining and environmental licenses to operate those mines, mainly claiming that the mining activities are contaminating the water springs in the region. The Company is defending itself against the lawsuit, which it believes that the likelihood of loss is possible, however, it is not yet possible to estimate the amount of a potential loss due to the interruption of these operations or any potential agreement to mitigate and compensate.

In addition, the Company is also a party to public civil actions filed by the Public Ministry of the State of Minas Gerais and by the municipality of Jeceaba requesting the Company to stop disposing tailings at Maravilhas II and III dams (Vargem Grande complex), Forquilhas V (Fábrica complex) and Dam 7 (Viga mine). The Company signed a partial agreement with the municipality from Dam 7. The Company believes that the likelihood of loss is possible, however, it is not yet possible to estimate the amount of a potential loss due to an interruption of these operations or any potential agreement to mitigate and compensate.

Labor litigations – Safety requirements at dams in the State of Pará, Brazil

In March 2022, the Labor Prosecutor's Office of the State of Pará filed two public civil actions requesting an indemnification payment of R\$590 (US\$122 million) and the adoption of several work safety measures related to the Mirim and Pera Jusante dams to restrict access only to the employees that are strictly necessary at the site. The Company signed an agreement with the Public Ministry and labor unions to close the public civil actions and disbursed R\$10 (US\$2 million) during the year ending December 31, 2023.

Environmental litigations – Iron ore operations in Itabira

The Company is a party to several environmental proceedings, which are not individually material. Among these processes, the Company is a defendant in two separate actions brought by the municipality of Itabira, in the Brazilian state of Minas Gerais. In the first action, filed in August 1996, the municipality alleges that Vale iron ore operations have caused environmental and social harm, and claims damages with respect to the alleged environmental degradation, as well as the immediate restoration of the affected ecological complex and the performance of compensatory environmental programs in the region. In the second action, filed in September 1996, the municipality of Itabira claims the right to be reimbursed for expenses it has incurred in connection with public services rendered due to mining activities. The damages sought, as adjusted from the date of the claim, amount to approximately R\$2.538 (US\$524 million) (2022: R\$2,249 (US\$431 million)).

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c) Contingent assets

In 2015, the Company filed a legal proceeding to receive the amounts related to compulsory loans with Eletrobrás. In August 2020, the Company received R\$301 (US\$55 million) resulting from a favorable decision on part of the claim presented by the Company, and the remaining amount remained under legal discussion. In November 2023, the Company signed an extrajudicial agreement with Eletrobrás to conclude the legal proceedings. Thus, the Company recorded a gain of R\$235 (US\$48 million) as "other assets" in financial position as of December 31, 2023.

d) Judicial deposits

	Consolidated		Parent Company	
	December 31, 2023	December 31, 2022	December 31, 2023	December 31, 2022
Tax litigations	2,495	4,928	2,383	4,835
Civil litigations	591	640	404	506
Labor litigations	718	701	689	683
Environmental litigations	57	69	56	68
Total	3,861	6,338	3,532	6,092

e) Guarantees contracted for legal proceedings

In addition to the above-mentioned tax, civil, labor and environmental judicial deposits, the Company contracted R\$13.2 billion (US\$2.7 billion) (December 31, 2022: R\$12 billion (US\$2.3 billion)) in guarantees for its lawsuits, as an alternative to judicial deposits.

Accounting policy

A provision is recognized when it is considered probable that an outflow of resources will be required to settle the obligation and can be reliably estimated. The liability is accounted against an expense in the income statement. This obligation is updated based on the developments of the judicial process or interest accretion and can be reversed if the expectation of loss is not considered probable due to changes in circumstances or when the obligation is settled.

Contingent assets are disclosed when the related economic benefits are probable and are only recognized in the financial statements in the period in which their realization is virtually certain.

Critical accounting estimates and judgments

Legal proceedings are contingent by nature, that is, it will be resolved when one or more future event occurs or fails to occur. Typically, the occurrence or not of such events is outside of the Company's control. Legal uncertainties involve the application of significant estimates and judgments by management regarding the potential outcomes of future events.

Notes to the Financial Statements

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29. Employee benefits

	Notes	Consolidated			
		Current liabilities		Non-current liabilities	
		December 31, 2023	December 31, 2022	December 31, 2023	December 31, 2022
Payroll, related charges and other remunerations	29(a)	4,195	4,336	-	-
Share-based payment	29(b)	130	171	-	-
Employee post retirement obligation	29(c)	340	344	6,688	6,572
		4,665	4,851	6,688	6,572

	Notes	Parent Company			
		Current liabilities		Non-current liabilities	
		December 31, 2023	December 31, 2022	December 31, 2023	December 31, 2022
Payroll, related charges and other remunerations	29(a)	3,173	3,217	-	-
Share-based payment	29(b)	71	65	-	-
Employee post retirement obligation	29(c)	123	99	2,620	2,331
		3,367	3,381	2,620	2,331

a) Profit sharing program ("PLR")

The Company recorded as cost of goods sold and services rendered and other operating expenses related to the profit sharing program R\$2,797 (US\$557 million), R\$2,578 (US\$499 million) e R\$2,555 (US\$474 million) for the years ended on December 31, 2023, 2022 and 2021, respectively.

b) Share-based payments

For the long-term incentive programs, the Company compensation plans includes Matching Program and Performance Share Unit program ("PSU"), with three-year-vesting cycles, respectively, with the aim of encouraging employee's retention and encouraging their performance. The fair value of the programs is recognized on a straight-line basis over the three-year required service period, net of estimated losses.

Matching Program

For the Matching program, the participants can acquire Vale's common shares in the market without any benefits being provided by Vale. If the shares acquired are held for a period of three years and the participants keep an employment relationship with Vale, the participant is entitled to receive from Vale an award in shares, equivalent to the number of shares originally acquired by the executive.

The fair value of the Matching program was estimated using the Company's share price and ADR and the number of shares granted on the grant date.

	2023	2022
Granted shares	1,330,503	1,437,588
Share price	81.82	95.87

Performance Shares Units ("PSU")

Under the PSU, eligible executives can earn, during a three-year vesting cycle, an award equivalent to the market value of a certain number of common shares and conditioned to Vale's performance factor measured based on Total Shareholder Return ("TSR") and Environmental, Social and Governance ("ESG") metrics. It is comprised of 75% of TSR metrics and 25% of ESG indicators and health and safety.

The fair value of the PSU program was measured by estimating the performance factor using Monte Carlo simulations for the Return to Shareholders Indicator and health and safety and sustainability indicators. The assumptions used for the Monte Carlo simulations are shown in the table below, as well as the result used to calculate the expected value of the total performance factor.

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

	2023	2022
Granted shares	1,177,755	1,709,955
Date shares were granted	January 2, 2023	January 3, 2022
Share price	88.88	78.00
Expected volatility	48.33%	39.00%
Expected term (in years)	3	3
Expected shareholder return indicator	72.42%	51.20%
Expected performance factor	79.32%	53.08%

c) Employee post retirement obligation

In Brazil, the management of the pension plans is the responsibility of Fundação Vale do Rio Doce de Seguridade Social ("Valia") a nonprofit entity with administrative and financial autonomy. The Brazilian plans are as follows:

Benefit plan Vale Mais ("Vale Mais") and benefit plan Valiaprev ("Valiaprev") - The Company's employees participating in Valia are associated, for the most part, with the Vale Mais plan, which has a defined benefit component (settled benefit from the former Defined Benefits Plan and specific benefit to cover death, disability retirement and sickness benefit) and defined contribution component (for programmable benefits). The Valiaprev plan is similar to the Vale Mais plan, with the exception of not having the benefit settled and the sickness benefit. Both Vale Mais and Valiaprev plans were overfunded as of December 31, 2023 and 2022.

Defined benefit plan ("Plano BD") - The Plano BD is closed to new entrants since 2000, when the Vale Mais plan was implemented. It is a plan that has defined benefit characteristics, covering almost exclusively retirees and their beneficiaries. It was overfunded as of December 31, 2023 and 2022 and the contributions made by the Company are not material.

"Abono complementação" benefit plan - The Company sponsors a specific group of former employees entitled to receive additional benefits from Valia regular payments. The contributions made by the Company finished in 2014. The "Abono complementação" benefit was overfunded as of December 31, 2023 and 2022.

Other benefits - The Company sponsors medical plans for employees that meet specific criteria and for employees who use the "abono complementação" benefit. Although those benefits are not specific retirement plans, actuarial calculations are used to calculate future obligations. As those benefits are related to health care plans they have nature of underfunded benefits, and are presented as underfunded plans as of December 31, 2023 and 2022.

The foreign plans are managed in accordance with their region. They are divided between plans in Canada, US A, UK and Indonesia. Pension plans in Canada are composed of a defined benefit and defined contribution component. Currently the defined benefit plans do not allow new entrants. The majority of foreign defined benefit plans are underfunded as of December 31, 2023 and 2022 and just two overfunded plans as of December 31, 2023 and three in December 31, 2022.

In December 2023, the Company entered into annuity contracts to transfer R\$4,178 (US\$836 million) of pension plan obligations and its associated assets. This transaction triggered a settlement and remeasurement of the pension plan, and as a result, the Company recognized a non-cash loss of R\$25 (US\$5 million) in the income statement as "Other expenses", measured by the difference between the premium and the obligations transferred.

Employers' disclosure about pensions and other post-retirement benefits on the status of the defined benefit elements of all plans is provided as follows.

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Expressed in millions of Brazilian reais, unless otherwise stated

i. Evolution of present value obligation

	Consolidated			Parent Company		
	Overfunded pension plans	Underfunded pension plans	Other benefits	Overfunded pension plans	Underfunded pension plans	Other benefits
Benefit obligation as of December 31, 2021	15,808	22,228	7,967	14,350	1,320	1,682
Service costs	230	207	68	27	-	-
Interest costs	1,680	202	310	1,197	129	145
Benefits paid	(2,756)	(301)	(296)	(1,736)	(166)	(100)
Participant contributions	-	(157)	-	-	2	-
Effect of changes in the actuarial assumptions	(4,010)	(557)	(1,757)	(98)	1	(53)
Translation adjustment	(922)	(1,656)	(671)	-	-	-
Others	-	-	(99)	-	-	-
Transfer	16,798	(16,798)	-	-	-	-
Benefit obligation as of December 31, 2022	26,828	3,168	5,522	13,740	1,286	1,674
Service costs	82	75	40	28	-	-
Interest costs	1,608	516	341	1,287	131	160
Benefits paid	(2,389)	(629)	(282)	(1,876)	(67)	(106)
Participant contributions	-	1	-	-	1	-
Effect of changes in the actuarial assumptions	2,336	654	219	2,082	(34)	154
Settlement	-	(4,178)	-	-	-	-
Transfer to assets held for sale	-	(138)	(61)	-	-	-
Translation adjustment	(611)	(64)	(213)	-	-	-
Other	14	11	-	-	-	-
Transfer	(5,998)	5,997	-	-	-	-
Benefit obligation as of December 31, 2023	21,870	5,413	5,566	15,261	1,317	1,882

ii. Evolution of assets fair value

	Consolidated			Parent Company		
	Overfunded pension plans	Underfunded pension plans	Other benefits	Overfunded pension plans	Underfunded pension plans	Other benefits
Fair value of plan assets as of December 31, 2021	20,943	21,086	-	19,242	516	-
Interest income	2,133	92	-	1,626	47	-
Employer contributions	231	75	296	77	18	100
Participant contributions	-	2	-	-	2	-
Benefits paid	(2,756)	(301)	(296)	(1,736)	(166)	(100)
Return on plan assets (excluding interest income)	(3,855)	(157)	-	(647)	113	-
Translation adjustment	(1,042)	(1,598)	-	-	-	-
Transfer	17,425	(17,425)	-	-	-	-
Fair value of plan assets as of December 31, 2022	33,079	1,774	-	18,562	530	-
Interest income	2,140	422	-	1,763	51	-
Employer contributions	108	126	282	57	16	106
Participant contributions	-	1	-	-	1	-
Benefits paid	(2,389)	(629)	(282)	(1,876)	(67)	(106)
Return on plan assets (excluding interest income)	1,427	219	-	1,078	(75)	-
Settlement	-	(4,203)	-	-	-	-
Translation adjustment	(678)	(60)	-	-	-	-
Transfer	(6,300)	6,300	-	-	-	-
Fair value of plan assets as of December 31, 2023	27,387	3,950	-	19,584	456	-

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iii. Reconciliation of assets and liabilities recognized in the statement of financial position

	Consolidated Plans in Brazil					
	December 31, 2023			December 31, 2022		
	Overfunded pension plans	Underfunded pension plans	Other benefits	Overfunded pension plans	Underfunded pension plans	Other benefits
Movements of assets ceiling						
Balance at beginning of the year	4,822	-	-	4,892	-	-
Interest income	473	-	-	426	-	-
Changes on asset ceiling	(972)	-	-	(496)	-	-
Balance at end of the year	4,323	-	-	4,822	-	-
Amount recognized in the statement of financial position						
Present value of actuarial liabilities	(15,261)	(1,316)	(1,882)	(13,740)	(1,286)	(1,674)
Fair value of assets	19,584	455	-	18,562	530	-
Effect of the asset ceiling	(4,323)	-	-	(4,822)	-	-
Liabilities	-	(861)	(1,882)	-	(756)	(1,674)
Current liabilities	-	(17)	(106)	-	(17)	(82)
Non-current liabilities	-	(844)	(1,776)	-	(739)	(1,592)
Liabilities	-	(861)	(1,882)	-	(756)	(1,674)

	Consolidated Foreign plan					
	December 31, 2023			December 31, 2022		
	Overfunded pension plans (i)	Underfunded pension plans	Other benefits	Overfunded pension plans	Underfunded pension plans	Other benefits
Movements of assets ceiling						
Balance at beginning of the year	994	-	-	243	-	-
Interest income	42	7	-	4	-	-
Changes on asset ceiling and onerous liability	10	(138)	-	830	-	-
Translation adjustment	(46)	2	-	(83)	-	-
Transfer	(129)	129	-	-	-	-
Balance at end of the year	871	-	-	994	-	-
Amount recognized in the statement of financial position						
Present value of actuarial liabilities	(6,609)	(4,097)	(3,683)	(13,088)	(1,882)	(3,848)
Fair value of assets	7,803	3,495	-	14,517	1,244	-
Effect of the asset ceiling	(871)	-	-	(994)	-	-
Assets (liabilities)	323	(602)	(3,683)	435	(638)	(3,848)
Current liabilities	-	(26)	(191)	-	(35)	(210)
Non-current assets (liabilities)	323	(576)	(3,492)	-	(603)	(3,638)
Assets (liabilities)	323	(602)	(3,683)	-	(638)	(3,848)

	Consolidated Total					
	December 31, 2023			December 31, 2022		
	Overfunded pension plans (i)	Underfunded pension plans	Other benefits	Overfunded pension plans	Underfunded pension plans	Other benefits
Movements of assets ceiling						
Balance at beginning of the year	5,816	-	-	5,135	-	-
Interest income	515	7	-	430	-	-
Changes on asset ceiling	(962)	(138)	-	334	-	-
Translation adjustment	(46)	2	-	(83)	-	-
Transfer	(129)	129	-	-	-	-
Balance at end of the year	5,194	-	-	5,816	-	-
Amount recognized in the statement of financial position						
Present value of actuarial liabilities	(21,870)	(5,413)	(5,565)	(26,828)	(3,168)	(5,522)
Fair value of assets	27,387	3,950	-	33,079	1,774	-
Effect of the asset ceiling	(5,194)	-	-	(5,816)	-	-
Assets (liabilities)	323	(1,463)	(5,565)	435	(1,394)	(5,522)
Current liabilities	-	(43)	(297)	-	(52)	(292)
Non-current assets (liabilities)	323	(1,420)	(5,268)	435	(1,342)	(5,230)
Assets (liabilities)	323	(1,463)	(5,565)	435	(1,394)	(5,522)

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	Parent Company Plans in Brazil					
	December 31, 2023			December 31, 2022		
	Overfunded pension plans	Underfunded pension plans	Other benefits	Overfunded pension plans	Underfunded pension plans	Other benefits
Movements of assets ceiling						
Balance at beginning of the year	4,822	-	-	4,892	-	-
Interest income	473	-	-	426	-	-
Changes on asset ceiling	(972)	-	-	(496)	-	-
Balance at end of the year	4,323	-	-	4,822	-	-
Amount recognized in the statement of financial position						
Present value of actuarial liabilities	(15,261)	(1,316)	(1,882)	(13,740)	(1,286)	(1,674)
Fair value of assets	19,584	455	-	18,562	530	-
Effect of the asset ceiling	(4,323)	-	-	(4,822)	-	-
Liabilities	-	(861)	(1,882)	-	(756)	(1,674)
Current liabilities	-	(17)	(106)	-	(17)	(82)
Non-current liabilities	-	(844)	(1,776)	-	(739)	(1,592)
Liabilities	-	(861)	(1,882)	-	(756)	(1,674)

(i) The pension plan asset is recorded as "Other non-current assets" in the financial position.

iv. Costs recognized in the income statement

	Consolidated								
	Year ended December 31,								
	2023			2022			2021		
	Overfunded pension plans	Underfunded pension plans	Other benefits	Overfunded pension plans	Underfunded pension plans	Other benefits	Overfunded pension plans	Underfunded pension plans	Other benefits
Service cost	82	75	40	230	207	68	52	364	6
Interest expense	1,608	516	341	1,680	202	310	1,056	658	179
Interest income	(2,140)	(422)	-	(2,133)	(92)	-	(1,368)	(548)	-
Others	14	55	-	-	-	-	-	-	-
Interest expense on effect of (asset ceiling)/ onerous liability	515	7	-	430	-	-	313	-	-
Total of cost, net	79	231	381	207	317	378	53	474	185

	Parent Company					
	Year ended December 31,					
	2023			2022		
	Overfunded pension plans	Underfunded pension plans	Other benefits	Overfunded pension plans	Underfunded pension plans	Other benefits
Service cost	28	-	-	27	-	-
Interest expense	1,287	131	160	1,197	129	145
Interest income	(1,763)	(51)	-	(1,626)	(47)	-
Interest expense on effect of (asset ceiling)/ onerous liability	473	-	-	426	-	-
Total of cost, net	25	80	160	24	82	145

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v. Costs recognized in the statement of comprehensive income

	Consolidated								
	Year ended December 31,								
	2023			2022			2021		
	Overfunded pension plans	Underfunded pension plans	Other benefits	Overfunded pension plans	Underfunded pension plans	Other benefits	Overfunded pension plans	Underfunded pension plans	Other benefits
Balance at beginning of the year	(653)	(233)	326	(525)	(514)	(962)	(525)	(2,078)	(1,870)
Effect of changes actuarial assumptions	(2,336)	(654)	(219)	4,010	557	1,757	1,778	1,349	1,420
Return on plan assets (excluding interest income)	1,427	219	-	(3,855)	(157)	-	(1,450)	999	-
Change of asset ceiling	962	138	-	(334)	-	-	(330)	-	-
Others	-	-	(40)	(12)	-	8	(27)	17	24
	53	(297)	(259)	(191)	400	1,765	(29)	2,365	1,444
Deferred income tax	(15)	89	98	59	(133)	(520)	27	(713)	(463)
Others comprehensive income	38	(208)	(161)	(132)	267	1,245	(2)	1,652	981
Translation adjustments	3	3	(59)	4	14	43	2	(88)	(73)
Accumulated other comprehensive income	(612)	(438)	106	(653)	(233)	326	(525)	(514)	(962)

	Parent Company					
	Year ended December 31,					
	2023		2022		2021	
	Overfunded pension plans	Underfunded pension plans	Other benefits	Overfunded pension plans	Underfunded pension plans	Other benefits
Balance at beginning of the year	(593)	(285)	(496)	(558)	(359)	(562)
Effect of changes actuarial assumptions	(2,082)	34	(154)	98	(1)	53
Return on plan assets (excluding interest income)	1,078	(75)	-	(647)	113	-
Change of asset ceiling	972	-	-	496	-	-
Others	-	-	(67)	-	(1)	46
	(32)	(41)	(221)	(53)	111	99
Deferred income tax	11	14	74	18	(37)	(33)
Others comprehensive income	(21)	(27)	(147)	(35)	74	66
Accumulated other comprehensive income	(614)	(312)	(643)	(593)	(285)	(496)

vi. Risks related to plans

The Administrators of the plans have committed to strategic planning to strengthen internal controls and risk management. This obligation is achieved by conducting audits and assessments of internal controls, which aim to mitigate operational market and credit risks. Risks are presented as follow:

Legal - Lawsuits: issuance of periodic reports to the audit and Board of Directors, including the lawyers' analysis of the chances of success (remote, probable or possible), focusing on the administrative decision on provisions. Promote and monitor adaptations to new legal obligations and monitor compliance with established legal obligations. Due diligence of third parties from the perspective of the Integrity Program.

Actuarial - The annual actuarial evaluation of the benefit plans comprises the assessment of taxes, income and adequacy of the costing plans. Technical study of compliance with the assumptions adopted in the actuarial evaluation of benefit plans prepared by an external actuary, in accordance with current legislation. Monitoring of biometric, demographic and economic-financial assumptions.

Market - Technical allocation studies are carried out with the objective of evaluating investment portfolios of the different obligations of the plans and projecting the future result of these portfolios. Asset Liability Management studies are carried out for defined benefit type obligations (Asset Liability Management study), while for defined contribution type obligations there are efficient frontier studies (investment profiles) and glidepath (life cycles). Periodic monitoring of the plans' short-term market risk based on risk indicators (VaR - Value at Risk, Benchmark VaR, Maximum Drawdown, Stress Tests, among others).

Credit - Risk classification of securities from corporate and bank issuers based on quantitative and qualitative assessments of the credit risk of the issuer, the asset and its guarantees, from acquisition to maturity. This internal rating sensitizes provisions for credit risk losses, as well as verified defaults, in accordance with current legislation. Provisions for loan losses with participants are realized based on default verified in payments.

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Liquidity - Technical study of the liquidity of plans with defined benefit obligations, focusing on the long term, whose objective is to verify the sufficiency of the assets in fulfilling the plan's obligations. Monitoring of short-term liquidity with a focus on cash available to meet plan obligations for the coming years. The defined contribution bond portfolios (investment profiles and life cycles) have assets available for sale at any time in normal market situations.

vii. Actuarial and economic assumptions and sensitivity analysis

All calculations involve future actuarial projections about some parameters, such as: salaries, interest, inflation, mortality and disability.

The economic and actuarial assumptions adopted have been formulated considering the long-term period for maturity and should therefore be analyzed accordingly. In the short term they may not be realized.

The following assumptions were adopted in the assessment:

	Brazil					
	December 31, 2023			December 31, 2022		
	Overfunded pension plans	Underfunded pension plans	Other benefits	Overfunded pension plans	Underfunded pension plans	Other benefits
Discount rate to determine benefit obligation	8,57% - 8,63%	10.15%	8,59% - 8,74%	9,77% - 9,88%	10.66%	9,81% - 9,90%
Nominal average rate to determine expense/ income	8,57% - 8,63%	10.15%	N/A	9,77% - 9,88%	10.66%	N/A
Nominal average rate of salary increase	3,08% - 4,94%	4.50%	N/A	3,50% - 5,36%	6.86%	N/A
Nominal average rate of benefit increase	3,08% - 3,60%	4.50%	N/A	3,50% - 4,02%	6.86%	N/A
Immediate health care cost trend rate	N/A	N/A	6.17%	N/A	N/A	6.35%
Ultimate health care cost trend rate	N/A	N/A	6.17%	N/A	N/A	6.35%
Nominal average rate of price inflation	3.08%	4.50%	3.08%	3.50%	4.25%	3.50%

	Foreign					
	December 31, 2023			December 31, 2022		
	Overfunded pension plans	Underfunded pension plans	Other benefits	Overfunded pension plans	Underfunded pension plans	Other benefits
Discount rate to determine benefit obligation	4.63%	4.63%	4.64%	5.10%	5.10%	5.14%
Nominal average rate to determine expense/ income	5.10%	5.10%	5.14%	2.84%	2.84%	3.03%
Nominal average rate of salary increase	3.31%	3.31%	N/A	3.23%	3.23%	N/A
Nominal average rate of benefit increase	3.00%	3.00%	N/A	3.00%	3.00%	N/A
Immediate health care cost trend rate	N/A	N/A	4.85%	N/A	N/A	5.11%
Ultimate health care cost trend rate	N/A	N/A	4.49%	N/A	N/A	4.57%
Nominal average rate of price inflation	2.08%	2.08%	N/A	2.06%	2.06%	N/A

For the sensitivity analysis, the Company applies the effect of 1.0% in nominal discount rate to the present value of the Company's actuarial liability. The effects of this analysis on the Company's actuarial liability and assumptions adopted are as follows:

	Brazil		
	December 31, 2023		
	Overfunded pension plans	Underfunded pension plans	Other benefits
Nominal discount rate - 1% increase			
Actuarial liability adjusted for sensitivity test	14,232	1,267	2,425
Assumptions made	9.60%	11.15%	9.67%
Nominal discount rate - 1% reduction			
Actuarial liability adjusted for sensitivity test	16,455	1,371	1,876
Assumptions made	7.60%	9.15%	7.67%

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	Foreign December 31, 2023		
	Overfunded pension plans	Underfunded pension plans	Other benefits
Nominal discount rate - 1% increase			
Actuarial liability adjusted for sensitivity test	5,989	3,605	3,278
Assumptions made	5.63%	5.63%	5.65%
Nominal discount rate - 1% reduction			
Actuarial liability adjusted for sensitivity test	7,293	4,635	4,260
Assumptions made	3.63%	3.63%	3.64%

viii. Assets of pension plans

Brazilian plan assets as of December 31, 2023 and 2022 includes respectively (i) investments in a portfolio of Vale's share and other instruments in the amount of R\$157 (US\$32 million) and R\$245 (US\$47 million), which are presented as "Investments funds – Equity" and (ii) Brazilian Federal Government securities in the amount of R\$23,205 (US\$4,793 million) and R\$21,986 (US\$4,214 million), which are presented as "Debt securities governments" and "Investments funds – Fixed".

Foreign plan assets as of December 31, 2023 and 2022 includes Canadian Government securities in the amount of R\$2,867 (US\$592 million) and R\$2,368 (US\$454 million), respectively.

ix. Overfunded pension plans

Assets by category are as follows:

	Consolidated							
	December 31, 2023				December 31, 2022			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Cash and cash equivalents	-	67	-	67	-	288	-	288
Equity securities	1,266	-	-	1,266	5,820	-	-	5,820
Debt securities - Corporate	1	1,917	-	1,918	3	1,913	-	1,916
Debt securities - Government	18,464	1,746	-	20,210	17,501	2,270	-	19,771
Investments funds - Fixed Income	6,734	787	-	7,521	5,426	694	-	6,120
Investments funds - Equity	2,338	5	-	2,343	2,372	7	-	2,379
International investments	286	900	-	1,186	120	1,203	-	1,323
Structured investments - Private Equity funds	-	245	347	592	-	983	1,255	2,238
Structured investments - Real estate funds	-	-	-	-	-	-	14	14
Real estate	-	-	1,140	1,140	-	-	1,527	1,527
Loans to participants	-	-	784	784	-	-	665	665
Other	-	-	907	907	-	-	-	-
Total	29,089	5,667	3,178	37,934	31,242	7,358	3,461	42,061
Funds not related to risk plans (i)				(10,547)				(8,982)
Fair value of plan assets at end of year				27,387				33,079

	Parent Company							
	December 31, 2023				December 31, 2022			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Debt securities - Corporate	1	317	-	318	3	310	-	313
Debt securities - Government	18,184	-	-	18,184	17,099	-	-	17,099
Investments funds - Fixed Income	6,734	-	-	6,734	5,427	-	-	5,427
Investments funds - Equity	2,338	-	-	2,338	2,372	-	-	2,372
International investments	286	-	-	286	120	-	-	120
Structured investments - Private Equity funds	-	-	347	347	-	-	378	378
Structured investments - Real estate funds	-	-	-	-	-	-	14	14
Real estate	-	-	1,140	1,140	-	-	1,156	1,156
Loans to participants	-	-	784	784	-	-	665	665
Total	27,543	317	2,271	30,131	25,021	310	2,213	27,544
Funds not related to risk plans (i)				(10,547)				(8,982)
Fair value of plan assets at end of year				19,584				18,562

(i) Financial investments not related to coverage of overfunded pension plans. Funds are related to the Company's unconsolidated entities and former employees.

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Measurement of overfunded plan assets at fair value with no observable market variables (level 3) are as follows:

	Private equity funds	Real estate funds	Real estate	Loans to participants	Total
Balance as of December 31, 2021	573	24	1,187	597	2,381
Return on plan assets	(24)	(10)	76	132	174
Assets purchases	54	-	127	1,442	1,623
Assets sold during the year	(188)	-	(115)	(1,506)	(1,809)
Translation adjustment	(7)	-	(1)	-	(8)
Transfer between Overfunded pension and Underfunded pension plans	847	-	253	-	1,100
Balance as of December 31, 2022	1,255	14	1,527	665	3,461
Return on plan assets	26	(1)	44	112	181
Assets purchases	53	-	39	1,055	1,147
Assets sold during the year	(30)	(13)	(78)	(1,048)	(1,169)
Translation adjustment	(42)	-	(20)	-	(62)
Transfer between Overfunded pension and Underfunded pension plans	(290)	-	(90)	-	(380)
Balance as of December 31, 2023	972	-	1,422	784	3,178

Parent Company

	Private equity funds	Real estate funds	Real estate	Loans to participants	Total
Balance as of December 31, 2021	573	24	1,187	597	2,381
Return on plan assets	(138)	(10)	55	132	39
Assets purchases	2	-	29	1,442	1,473
Assets sold during the year	(59)	-	(115)	(1,506)	(1,680)
Balance as of December 31, 2022	378	14	1,156	665	2,213
Return on plan assets	(24)	(1)	44	112	131
Assets purchases	13	-	19	1,055	1,087
Assets sold during the year	(20)	(13)	(79)	(1,048)	(1,160)
Balance as of December 31, 2023	347	-	1,140	784	2,271

x. Underfunded pension plans

Assets by category are as follows:

	December 31, 2023				December 31, 2022			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
	Cash and cash equivalents	-	27	-	27	-	12	-
Equity securities	545	2	-	547	287	-	-	287
Debt securities - Corporate	-	1,040	-	1,040	-	127	-	127
Debt securities - Government	289	725	-	1,014	237	100	-	337
Investments funds - Fixed Income	198	-	-	198	213	-	-	213
Investments funds - Equity	39	56	-	95	34	29	2	65
Structured investments - Private Equity funds	-	-	266	266	-	-	42	42
Real estate	-	-	129	129	-	-	32	32
Loans to participants	-	-	6	6	-	-	8	8
Others	-	-	634	634	-	-	651	651
Total	1,071	1,850	1,035	3,956	771	268	735	1,774

	December 31, 2023				December 31, 2022			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
	Cash and cash equivalents	-	-	-	-	-	-	-
Equity securities	19	-	-	19	30	-	-	30
Debt securities - Corporate	-	2	-	2	-	3	-	3
Debt securities - Government	173	-	-	173	220	-	-	220
Investments funds - Fixed Income	198	-	-	198	213	-	-	213
Investments funds - Equity	39	-	-	39	34	-	-	34
Structured investments - Private Equity funds	-	-	5	5	-	-	5	5
Real estate	-	-	13	13	-	-	16	16
Loans to participants	-	-	6	6	-	-	8	8
Others	-	-	-	-	-	-	-	-
Total	429	2	24	455	497	3	29	529

Notes to the Financial Statements

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Measurement of underfunded plan assets at fair value with no observable market variables (level 3) are as follows:

	Consolidated					
	Private equity funds	Equity pool	Real estate	Loans to participants	Others	Total
Balance as of December 31, 2021	1,010	298	19	7	931	2,265
Return on plan assets	5	-	-	1	(171)	(165)
Assets purchases	-	-	5	-	-	5
Assets sold during the year	(11)	-	(3)	-	-	(14)
Translation adjustment	(115)	(22)	(10)	-	(109)	(256)
Transfer between surplus and deficit plans	(847)	(274)	21	-	-	(1,100)
Balance as of December 31, 2022	42	2	32	8	651	735
Return on plan assets	20	(2)	-	(2)	15	31
Assets purchases	15	-	-	-	-	15
Assets sold during the year	(95)	-	6	-	-	(89)
Translation adjustment	(6)	-	1	-	(32)	(37)
Transfer between surplus and deficit plans	290	-	90	-	-	380
Balance as of December 31, 2023	266	-	129	6	634	1,035

	Parent Company					
	Private equity funds	Equity pool	Real estate	Loans to participants	Others	Total
Balance as of December 31, 2021	11	-	19	7	-	37
Return on plan assets	-	-	-	1	-	1
Assets purchases	-	-	-	-	-	-
Assets sold during the year	(6)	-	(3)	-	-	(9)
Translation adjustment	-	-	-	-	-	-
Balance as of December 31, 2022	5	-	16	8	-	29
Return on plan assets	-	-	-	(2)	-	(2)
Assets purchases	-	-	(3)	-	-	(3)
Assets sold during the year	-	-	-	-	-	-
Translation adjustment	-	-	-	-	-	-
Balance as of December 31, 2023	5	-	13	6	-	24

xi. Disbursement of future cash flow

Vale expects to disburse R\$285 (US\$59 million) in 2024 in relation to pension plans and other benefits.

xii. Expected benefit payments

The expected benefit payments, which reflect future services, are as follows:

	Consolidated		
	Overfunded pension plans	Underfunded pension plans	Other benefits
2024	1,329	147	124
2025	1,341	146	130
2026	1,349	148	137
2027	1,355	151	143
2028	1,358	152	144
2029 and thereafter	6,716	781	809

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	Overfunded pension plans	Underfunded pension plans	Parent Company Other benefits
2024	1,329	121	124
2025	1,341	125	130
2026	1,349	128	137
2027	1,355	131	143
2028	1,358	133	144
2029 and thereafter	6,716	698	808

Accounting policy

Employee benefits

i. Current benefits – wages, vacations and related taxes

Payments of benefits such as wages or accrued vacation, as well the related social security taxes over those benefits are recognized monthly in income, on an accrual basis.

ii. Current benefits – profit sharing program

The Company has the Annual Incentive Program (AIP) based on Team and business unit's contribution and Company-wide performance through operational cash generation. The Company makes an accrual based on evaluation periodic of goals achieved and Company result, using the accrual basis and recognition of present obligation arising from past events in the estimated outflow of resources in the future. The accrual is recorded as cost of goods sold and services rendered or operating expenses in accordance with the activity of each employee.

iii. Non-current benefits – share-based payments

The Company has established a procedure for awarding certain eligible executives (Matching and Performance Share Unit ("PSU") Programs) with the goal of encouraging employee retention and optimum performance. Share-based long-term compensation programs are equity-settled, under which the Company receives employee services as consideration for equity instruments. The fair value of employee services received in exchange for the grant of options is recognized as an expense. The total amount of expenses is recognized during the period in which the right is acquired; period during which the specific vesting conditions are met.

iv. Non-current benefits – pension costs and other post retirement benefits

The Company has several retirement plans for its employees.

For defined contribution plans, the Company's obligations are limited to a monthly contribution linked to a pre-defined percentage of the remuneration of employees enrolled into these plans.

For defined benefit plans, actuarial calculations are periodically obtained for liabilities determined in accordance with the Projected Unit Credit Method in order to estimate the Company's obligation. The liability recognized in the statement of financial position represents the present value of the defined benefit obligation as of that date, less the fair value of plan assets. The Company recognized in the income statement the costs of services, the interest expense of the obligations and the interest income of the plan assets. The remeasurement of gains and losses, return on plan assets (excluding the amount of interest on return of assets, which is recognized in income for the year) and changes in the effect of the ceiling of the active and onerous liabilities are recognized in comprehensive income for the year.

For overfunded plans, the Company recognizes the net defined benefit assets limited to the present value of the economic benefits available as refunds or reductions in future contributions, considering minimum funding requirements applicable. For underfunded plans, the Company recognizes net defined benefit liabilities. The gain or loss on recognition/remeasurement of these net assets/liabilities are recognized in income statement or in comprehensive income, when arising from the actuarial valuation.

Notes to the Financial Statements

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Critical accounting estimates and judgments

Post retirement benefits for employees – The amounts recognized depend on several factors that are determined based on actuarial calculations using various assumptions in order to determine costs and liabilities. One of these assumptions is selection and use of the discount rate. Any changes to these assumptions will affect the amount recognized.

At the end of each year the Company and external actuaries review the assumptions that will be used for the following year. These assumptions are used in determining the fair values of assets and liabilities, costs and expenses and the future values of estimated cash outflows, which are recorded in the plan obligations.

30. Equity

a) Share capital

As of December 31, 2023, the share capital was R\$77.300 (US\$61,614 million) corresponding to 4,539,007,580 shares issued and fully paid without par value. The Board of Directors may, regardless of changes to by-laws, approve the issue and cancelation of common shares, including the capitalization of profits and reserves to the extent authorized.

Shareholders	December 31, 2023		
	Common shares	Golden shares	Total
Previ	395,314,056	-	395,314,056
Mitsui&co	286,347,055	-	286,347,055
Blackrock, Inc	264,763,034	-	264,763,034
Total shareholders with more than 5% of capital (i)	946,424,145	-	946,424,145
Free floating	3,353,430,143	-	3,353,430,143
Golden shares	-	12	12
Total outstanding (without shares in treasury)	4,299,854,288	12	4,299,854,300
Shares in treasury	239,153,280	-	239,153,280
Total capital	4,539,007,568	12	4,539,007,580

(i) The number of shares is based on communications sent by shareholders pursuant to Resolution 44 issued by the Brazilian Securities Exchange Commission ("CVM").

b) Cancelation of treasury shares

During 2023 and 2022, the Board of Directors approved cancellations of common shares issued by the Company, acquired and held in treasury, without reducing the amount of its share capital, as shown below. The effects were transferred in shareholders' equity as "Treasury shares cancelled", between the "Revenue reserve" and "Treasury shares".

	Number of canceled shares	Carrying amount
Cancelation approved on March 2, 2023 (i)	239,881,683	21,397
Year ended December 31, 2023	239,881,683	21,397
Cancelation approved on February 24, 2022 (i)	133,418,347	14,589
Cancelation approved on July 28, 2022	220,150,800	19,466
Year ended December 31, 2022	353,569,147	34,055

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c) Share buyback program

In 2023 and 2022, the Board of Directors approved shares buyback programs for Vale's shares, as described below.

	Total of shares repurchased		Effect on cash flows	
	2023	2022	Year ended December 31,	
			2023	2022
Shares buyback program up to 150,000,000 shares (i)				
Acquired by Parent	1,500,000	-	109	-
Acquired by wholly owned subsidiaries	1,500,000	-	110	-
Total	3,000,000	-	219	-
Shares buyback program up to 500,000,000 shares (ii)				
Acquired by Parent	93,638,352	87,779,900	6,906	7,114
Acquired by wholly owned subsidiaries	88,058,750	90,847,177	6,468	7,301
Total	181,697,102	178,627,077	13,374	14,415
Shares buyback program up to 470,000,000 shares (iii)				
Acquired by Parent	-	81,855,600	-	7,467
Acquired by wholly owned subsidiaries	-	96,959,900	-	8,758
Total	-	178,815,500	-	16,225
Shares buyback program	184,697,102	357,442,577	13,593	30,640

(i) On October 26, 2023 a new share buyback program limited to a maximum of 150,000,000 common shares and their respective ADRs, over the next 18 months started from the end of the program previously on going.

(ii) On April 27, 2022, the Board of Directors approved the common shares buyback program, limited to a maximum of 500,000,000 common shares or their respective ADRs, with a term of 18 months.

(iii) On April 1, 2021, the Board of Directors approved the common share buyback program, limited to a maximum of 270,000,000 common shares or their respective ADRs. In continuation of the previous program, the Board of Directors approved a new share repurchase program on October 28, 2021, with a limit of up to 200,000,000 common shares or their respective ADRs. Both programs ended in 2022.

d) Profit distribution

	2023	2022
Net income of the year	39,940	95,924
Appropriation to legal reserve (i)	-	(1,387)
Appropriation to tax incentive reserve	(4,505)	(5,818)
Net income after appropriations to legal reserve and tax incentive reserve	35,435	88,719
Minimum remuneration to shareholders (ii)	10,422	23,428
Additional shareholders' remuneration from the net income for the year	19,610	2,265
Total remuneration to shareholders	30,032	25,693
Appropriation to statutory reserve	5,403	44,359
Appropriation to retained earnings reserve	-	18,667

(i) In 2022, the limit of 20% of the share capital for the constitution of the legal reserve was reached, in accordance with article 193 of Law 6,404 and article 39 of the Company's By-laws.

(ii) Mandatory minimum remuneration was fully approved.

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Remuneration approved

The Company's By-laws determines as its minimum mandatory remuneration to Vale shareholders an amount equal to 25% of the net income, after appropriations to legal and tax incentive reserves. The remuneration approved as interest on capital ("JCP") is gross up with the income tax applicable to Vale's shareholders. The remuneration to Vale's shareholders was based on the following resolutions:

- On February 22, 2024 (subsequent event), the Board of Directors has approved remuneration to shareholders in the total amount of R\$11,722 (US\$2,364 million). The total amount was approved as dividends and recorded in equity as "Additional remuneration reserve". The payment is expected by March 2024.
- On October 26, 2023, the Board of Directors approved an additional remuneration to its shareholders in the amount of R\$10,033 (US\$2,000 million) as an anticipation of the shareholders remuneration for the year ending December 31, 2023, of which R\$3,295 (US\$657 million) was approved as interest on capital and R\$6,738 (US\$1,343 million) as dividends. The payment of this remuneration was fully paid in December 2023.
- On July 27, 2023, the Board of Directors approved interest on capital to its shareholders in the amount of R\$8,277 (US\$1,744 million) as an anticipation of remuneration for the year ended December 31, 2023. The payment of this remuneration was fully paid in September 2023.
- On February 16, 2023, the Board of Directors approved the shareholder's remuneration of R\$8,130 (US\$1,569 million), of which R\$5,865 (US\$1,132 million) is part of the minimum mandatory remuneration, recorded as a liability for the year ended December 31, 2022, and R\$2,265 (US\$437 million) as an additional remuneration, recorded in equity as "Additional remuneration reserve". The payment of this remuneration was fully paid in March 2023.
- On December 1, 2022, the Board of Directors approved interest on capital to shareholders in the amount of R\$1.319 (US\$254 million), as an anticipation of the income for the year ended December 31, 2022, which is part of the minimum mandatory remuneration, recorded as a liability for the year ended December 31, 2022. The payment of this remuneration was fully paid in March 2023.
- On July 28, 2022, the Board of Directors approved the remuneration to shareholders in the amount of R\$16,243 (US\$3,000 million), which is part of the minimum mandatory remuneration, recorded as a liability for the year ended December 31, 2022. The payment of this remuneration was fully paid in September 2022.
- On February 24, 2022, the Board of Directors approved the remuneration to shareholders in the amount of R\$17,849 (US\$3,500 million) as an additional remuneration for the year ended December 31, 2021, recorded in equity as "Additional remuneration reserve". The payment of this remuneration was fully paid in March 2022.

e) Profit reserves

	Legal reserve	Tax incentive reserve	Statutory reserve	Retained earnings reserve	Additional remuneration reserve	Total of profit reserves
Balance as of December 31, 2021	14,072	17,206	38,494	-	17,849	87,621
Allocation of income	1,387	5,818	44,359	18,667	2,265	72,496
Deliberated dividends and interest on capital of Vale's shareholders	-	-	-	-	(17,849)	(17,849)
Treasury shares cancellation	-	-	(34,055)	-	-	-
Transfer of reserves	-	16	(16)	-	-	-
Balance as of December 31, 2022	15,459	23,040	48,782	18,667	2,265	108,213
Allocation of income	-	4,505	5,403	-	11,722	21,630
Deliberated dividends and interest on capital of Vale's shareholders	-	-	-	-	(2,265)	(2,265)
Treasury shares cancellation	-	-	(21,397)	-	-	(21,397)
Balance as of December 31, 2023	15,459	27,545	32,788	18,667	11,722	106,181

Legal reserve - Is a legal requirement for Brazilian public companies to retain 5% of the annual net income up to 20% of the capital. The reserve can only be used to compensate losses or to increase capital. The reserve can only be used to absorb losses or to increase capital. In 2022, the limit of 20% of the share capital for the constitution of the legal reserve was reached, in accordance with article 193 of Law No. 6,404 and article 39 of the Company's By-laws.

Tax incentive reserve - Results from the option to designate a portion of the income tax for investments in projects approved by the Brazilian Government as well as tax incentives.

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Statutory reserve – Aims to ensure the maintenance and development of the main activities that comprise the Company's operations and to retain budgeted capital for investments. Based on the Company's by-laws, this reserve is capped to 50% of the annual distributable net income, up to the amount of the share capital.

Retained earnings reserve – It is intended to be used in investments for capital expenditures as allowed by the Brazilian Corporate Law.

Additional remuneration reserve – Results from the remuneration proposed by Management that exceeds the mandatory minimum remuneration of 25% of the adjusted net income.

Accounting policy

Share capital and treasury shares – The Company holds shares in treasury for a future sale, cancellation or for the payment of the executives' long-term compensation programs. These shares are recognized in a specific account as a reduction of equity to the acquisition value and maintained at the cost of the transaction. Incremental costs directly attributable to the issue of new shares or options are recognized in equity as a deduction from the amount raised, net of taxes.

Shareholder's remuneration – The shareholder's remuneration is paid on dividends and interest on capital. This remuneration is recognized as a liability in the financial statements of the Company based on by-laws. Any amount above the minimum mandatory remuneration approved by the by-laws shall only be recognized in current liabilities on the date that is approved by shareholders.

The Company is permitted to distribute interest attributable to equity. The calculation is based on the equity amounts as stated in the statutory accounting records and the interest rate applied may not exceed the Brazilian Government Long-term Interest Rate ("TJLP") determined by the Central Bank of Brazil. Also, such interest may not exceed 50% of the net income for the year or 50% of retained earnings plus profit reserves as determined by Brazilian corporate law.

The benefit to the Company, as opposed to making a dividend payment, is a reduction in the income tax burden because this interest charge is tax deductible in Brazil. Income tax of 15% is withheld on behalf of the shareholders relative to the interest distribution. Under Brazilian law, interest attributed to equity is considered as part of the annual minimum mandatory dividend. This notional interest distribution is treated for accounting purposes as a deduction from equity in a manner similar to a dividend and the tax deductibility recorded in the income statement.

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

31. Related parties

The Company's related parties are subsidiaries, joint ventures, associates, shareholders and its related entities and key management personnel of the Company.

Related party transactions were made by the Company on terms equivalent to those that prevail in arm's-length transactions, with respect to price and market conditions that are no less favorable to the Company than those arranged with third parties.

Net operating revenue relates to sale of iron ore to the steelmakers and right to use capacity on railroads. Cost and operating expenses mostly relates to the variable lease payments of the pelletizing plants.

Purchases, accounts receivable and other assets, and accounts payable and other liabilities relate largely to amounts charged by joint ventures and associates related to the pelletizing plants operational lease and railway transportation services.

a) Transactions with related parties

	Consolidated Year ended December 31,								
	2023			2022			2021		
	Net operating revenue	Cost and operating expenses	Financial result	Net operating revenue	Cost and operating expenses	Financial result	Net operating revenue	Cost and operating expenses	Financial result
Joint Ventures									
Companhia Siderúrgica do Pecém	484	-	-	2,231	-	(14)	3,438	-	14
Aliança Geração de Energia S.A.	-	(627)	-	-	(625)	-	26	(564)	-
Pelletizing companies (i)	-	(1,132)	(194)	-	(1,733)	(173)	-	(1,872)	(79)
MRS Logística S.A.	-	(2,246)	-	6	(2,039)	-	-	(1,498)	-
Norte Energia S.A.	-	(532)	-	-	(695)	-	-	(612)	-
Other	157	(50)	4	210	(42)	(2)	-	(53)	(3)
	641	(4,587)	(190)	2,447	(5,134)	(189)	3,464	(4,599)	(68)
Associates									
VLI	1,598	(146)	(13)	1,487	(133)	(12)	1,374	(115)	(9)
Other	-	(5)	1	6	(3)	(6)	5	-	-
	1,598	(151)	(12)	1,493	(136)	(18)	1,379	(115)	(9)
Shareholders									
Cosan	52	(56)	-	-	-	-	-	-	-
Bradesco	-	-	1,018	-	-	2,029	-	-	(2,978)
Mitsui	1,393	-	-	2,151	-	-	1,416	-	-
Banco do Brasil	-	-	2	-	-	14	-	-	72
	1,445	(56)	1,020	2,151	-	2,043	1,416	-	(2,906)
Total of continuing operations	3,684	(4,794)	818	6,091	(5,270)	1,836	6,259	(4,714)	(2,983)
Discontinued operation - Coal	-	-	-	-	-	-	-	(518)	81
Total	3,684	(4,794)	818	6,091	(5,270)	1,836	6,259	(5,232)	(2,902)

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

	Parent Company					
	Year ended December 31,					
	2023			2022		
	Net operating revenue	Cost and operating expenses	Financial result	Net operating revenue	Cost and operating expenses	Financial result
Subsidiaries						
Vale International	115,960	-	(7,204)	120,708	-	(5,759)
Other	219	(937)	(398)	218	(752)	(137)
	116,179	(937)	(7,602)	120,926	(752)	(5,896)
Joint Ventures						
Companhia Siderúrgica do Pecém	484	-	-	2,218	-	(14)
Aliança Geração de Energia S.A.	-	(627)	-	-	(625)	-
Pelletizing companies (i)	-	(1,132)	(43)	-	(1,733)	(45)
MRS Logística S.A.	-	(2,246)	-	6	(2,039)	-
Norte Energia S.A.	-	(532)	-	-	(695)	-
Other	157	(50)	3	210	(42)	(2)
	641	(4,587)	(40)	2,434	(5,134)	(61)
Associates						
VLI	1,598	(137)	(13)	1,487	(133)	(12)
Other	-	-	1	3	-	(6)
	1,598	(137)	(12)	1,490	(133)	(18)
Shareholders						
Cosan	52	(51)	-	-	-	-
Bradesco	-	-	1,007	-	-	1,972
Banco do Brasil	-	-	1	-	-	5
	52	(51)	1,008	-	-	1,977
Total	118,470	(5,712)	(6,646)	124,850	(6,019)	(3,998)

(i) Aggregated entities: Companhia Coreano-Brasileira de Pelotização, Companhia Hispano-Brasileira de Pelotização, Companhia Ítalo-Brasileira de Pelotização and Companhia Nipo-Brasileira de Pelotização.

b) Outstanding balances with related parties

	Consolidated Assets					
	December 31, 2023			December 31, 2022		
	Cash and cash equivalents	Accounts receivable	Dividends receivable and other assets	Cash and cash equivalents	Accounts receivable	Dividends receivable and other assets
Joint Ventures						
Companhia Siderúrgica do Pecém	-	-	-	-	475	89
Pelletizing companies (i)	-	-	130	-	-	128
MRS Logística S.A.	-	79	166	-	-	128
Other	-	18	210	-	19	260
	-	97	506	-	494	605
Associates						
VLI	-	222	-	-	71	-
Other	-	-	7	-	-	12
	-	222	7	-	71	12
Shareholders						
Cosan	-	4	-	-	-	-
Bradesco	852	-	1,516	1,749	-	802
Banco do Brasil	282	-	-	156	-	-
Mitsui	-	26	-	-	467	-
	1,134	30	1,516	1,905	467	802
Pension plan	-	79	-	-	70	-
Total	1,134	428	2,029	1,905	1,102	1,419

(i) Aggregated entities: Companhia Coreano-Brasileira de Pelotização, Companhia Hispano-Brasileira de Pelotização, Companhia Ítalo-Brasileira de Pelotização and Companhia Nipo-Brasileira de Pelotização.

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

	Consolidated Liabilities			
	December 31, 2023		December 31, 2022	
	Supplier and contractors	Financial instruments and other liabilities	Supplier and contractors	Financial instruments and other liabilities
Joint Ventures				
Pelletizing companies (i)	247	1,404	326	2,086
MRS Logística S.A.	232	-	299	-
Other	188	-	157	-
	667	1,404	782	2,086
Associates				
VLI	6	286	27	274
Other	21	-	16	-
	27	286	43	274
Shareholders				
Cosan	5	-	-	-
Bradesco	-	109	-	391
Mitsui	-	-	7	-
	5	109	7	391
Pension plan	66	-	62	-
Total	765	1,799	894	2,751

(i) Aggregated entities: Companhia Coreano-Brasileira de Pelotização, Companhia Hispano-Brasileira de Pelotização, Companhia Ítalo-Brasileira de Pelotização and Companhia Nipo-Brasileira de Pelotização.

	Parent Company Assets					
	December 31, 2023			December 31, 2022		
	Cash and cash equivalents	Accounts receivable	Dividends receivable and other assets	Cash and cash equivalents	Accounts receivable	Dividends receivable and other assets
Subsidiaries						
Vale International S.A.	-	34,073	-	-	46,021	-
Minerações Brasileiras Reunidas S.A.	-	-	652	-	-	229
Salobo Metais	-	1,211	2,266	-	36	400
Other	-	81	122	-	8	111
	-	35,365	3,040	-	46,065	740
Joint Ventures						
Companhia Siderúrgica do Pecém	-	-	-	-	475	89
Pelletizing companies (i)	-	-	130	-	-	128
MRS Logística S.A.	-	79	31	-	-	23
Other	-	18	210	-	19	260
	-	97	371	-	494	500
Associates						
VLI	-	222	-	-	71	-
Other	-	3	7	-	-	3
	-	225	7	-	71	3
Shareholders						
Cosan	-	4	-	-	-	-
Bradesco	477	-	1,516	744	-	802
Banco do Brasil	115	-	-	15	-	-
	592	4	1,516	759	-	802
Pension Plan	-	79	-	-	70	-
Total	592	35,770	4,934	759	46,700	2,045

(i) Aggregated entities: Companhia Coreano-Brasileira de Pelotização, Companhia Hispano-Brasileira de Pelotização, Companhia Ítalo-Brasileira de Pelotização and Companhia Nipo-Brasileira de Pelotização.

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

	Parent Company Liabilities					
	December 31, 2023			December 31, 2022		
	Supplier and contractors	Loans	Financial instruments and other liabilities	Supplier and contractors	Loans	Financial instruments and other liabilities
Subsidiaries						
Vale International S.A.	-	64,820	4,695	-	74,156	5,037
Minerações Brasileiras Reunidas S.A.	-	-	-	-	-	-
Salobo	9	-	136	-	-	-
Other	152	-	3,851	101	-	3,762
	161	64,820	8,682	101	74,156	8,799
Joint Ventures						
Pelletizing companies (i)	247	-	-	326	-	-
MRS Logística S.A.	232	-	-	299	-	-
Other	146	-	-	157	-	-
	625	-	-	782	-	-
Associates						
VLI	5	-	286	27	-	274
Other	17	-	-	1	-	-
	22	-	286	28	-	274
Shareholders						
Cosan	4	-	-	-	-	-
Bradesco	-	-	109	-	-	391
Mitsui	-	-	-	7	-	-
	4	-	109	7	-	391
Pension plan	61	-	-	61	-	-
Total	873	64,820	9,077	979	74,156	9,464

(i) Aggregated entities: Companhia Coreano-Brasileira de Pelotização, Companhia Hispano-Brasileira de Pelotização, Companhia Ítalo-Brasileira de Pelotização and Companhia Nipo-Brasileira de Pelotização.

c) Key management personnel compensation

	Year ended December 31,		
	2023	2022	2021
Short-term benefits			
Wages	54	54	49
Direct and indirect benefits	7	8	7
Profit sharing program ("PLR")	53	60	56
	114	122	112
Long-term benefits			
Shares based	68	95	67
Severance	10	10	8
	192	227	187

Notes to the Financial Statements

Expressed in millions of Brazilian reais, unless otherwise stated

32. Commitments and guarantees granted

a) Commitments

	December 31, 2023	December 31, 2022
Purchase of raw materials and services	25,953	34,095
Purchase of energy	11,211	13,592
	37,164	47,687

Commitments arise mainly from contracts for the acquisition of fuel and power and the purchase of raw materials and services. They represent the minimum required and non-cancelable payments related to contractual obligations.

b) Guarantee

	December 31, 2023			December 31, 2022		
	Guarantee	Restricted cash	Liability (i)	Guarantee	Restricted cash	Liability (i)
Associates and joint ventures	1,325	-	1	7,941	-	537
Assets retirement obligations	4,408	-	-	3,361	381	-
	5,733	-	1	11,302	381	537

(i) The fair value of these financial guarantees is recorded as "Other financial liabilities" (note 14).

Guarantees for associates and joint ventures - The Company has issued financial guarantees to certain associates and joint ventures to the extent of its direct and indirect ownership interest. In March 2023, the Company completed the sale of its interest in CSP and derecognized the financial guarantee granted by the Company (note 16f). In 2022, there was an improvement in the credit risk rating of the associates and as a result of the decrease in the probability of default on the guaranteed debts, resulting in a gain in the amount of R\$2.488 (US\$481 million) (2021: R\$1.536 (US\$312 million)) (note 6).

Guarantees related to asset retirement obligations - The Company has financial guarantees provided for the asset retirement obligations of its energy transition metals operations in Canada. In addition, for Indonesia, as collateral in relation to the bank guarantees issued by the bank in relation to the reclamation and mine closure guarantees Vale has bank deposits as collateral in relation to the bank guarantees issued by the bank in relation to the reclamation and mine closure guarantees.

Fixed assets given as guarantee for loans and financing - The securities issued through Vale's wholly owned finance subsidiary Vale Overseas Limited are fully and unconditionally guaranteed by Vale and no other subsidiary of the Parent Company guarantees those securities.

Accounting policy

Power Purchase Agreements ("PPAs") - The Company holds PPAs that were entered into and continue to be held for own use. As such, these contracts fall outside the scope of IFRS 9/CPC 48 - Financial Instruments. These PPAs are accounted for as executory contracts and are recorded as energy is received.