



Interim Financial Statements

March 31, 2019

BRGAAP in R\$ (English)

Vale S.A. Interim Financial Statements
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Report on review of quarterly information

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

Introduction

We have reviewed the accompanying consolidated and parent company interim accounting information of Vale S.A. ("Company"), included in the Quarterly Information Form (ITR) for the quarter ended March 31, 2019, comprising the statement of financial position at that date and the income statement and the statements of comprehensive income, changes in equity and cash flows for the three-month period then ended, and a summary of significant accounting policies and other explanatory information.

Management is responsible for the preparation of the consolidated and parent company interim accounting information in accordance with the accounting standard CPC 21, Interim Financial Reporting, of the Brazilian Accounting Pronouncements Committee (CPC) and International Accounting Standard (IAS) 34, Interim Financial Reporting issued by the International Accounting Standards Board (IASB), as well as the presentation of this information in accordance with the standards issued by the Brazilian Securities Commission (CVM), applicable to the preparation of the Quarterly Information (ITR). Our responsibility is to express a conclusion on this interim accounting information based on our review.

Scope of review

We conducted our review in accordance with Brazilian and International Standards on Reviews of Interim Financial Information (NBC TR 2410 - Review of Interim Financial Information Performed by the Independent Auditor of the Entity and ISRE 2410 - Review of Interim Financial Information Performed by the Independent Auditor of the Entity, respectively). A review of interim information consists of making inquiries, primarily of persons responsible for financial and accounting matters, and applying analytical and other review procedures. A review is substantially less in scope than an audit conducted in accordance with Brazilian and International Standards on Auditing and consequently does not enable us to obtain assurance that we would become aware of all significant matters that might be identified in an audit. Accordingly, we do not express an audit opinion.

Conclusion on the interim information

Based on our review, nothing has come to our attention that causes us to believe that the accompanying consolidated and parent company interim accounting information included in the quarterly information referred to above has not been prepared, in all material respects, in accordance with CPC 21 and IAS 34 applicable to the preparation of the Quarterly Information, and presented in accordance with the standards issued by the CVM.



Emphasis of matter

Brumadinho's dam failure

We draw attention to Note 3 to the consolidated and parent company interim accounting information that describes the actions taken by the Company and the impacts on the interim accounting information as a consequence of the Brumadinho's Dam failure. As disclosed by Management, the Company has incurred costs and recorded provisions based on its best estimates and assumptions. Given the nature and uncertainties inherent in this type of event, the amounts recognized and/or disclosed will be reassessed by the Company and may be adjusted significantly in future periods, as new facts and circumstances become known. Our conclusion is not qualified in relation to this matter.

Other matters

Value added statements

We have also reviewed the consolidated and parent company value added statements for the three-month period ended March 31, 2019. These statements are the responsibility of the Company's management, and are required to be presented in accordance with standards issued by the CVM applicable to the preparation of Quarterly Information (ITR) and are considered supplementary information under IFRS, which do not require the presentation of the value added statement. These statements have been submitted to the same review procedures described above and, based on our review, nothing has come to our attention that causes us to believe that they have not been prepared, in all material respects, in a manner consistent with the consolidated and parent company interim accounting information taken as a whole.

Audit and review of prior-year information

The Quarterly Information Form (ITR) mentioned in the first paragraph includes accounting information, presented for comparison purposes, related to the income statement and statements of comprehensive income, changes in equity, cash flows and value added for the three-month period then ended, obtained from the Quarterly Information Form (ITR) for that quarter, and also to the statement of financial position as at December 31, 2018, obtained from the financial statements at December 31, 2018. The review of the Quarterly Information (ITR) for the quarter ended March 31, 2018 and the audit of the financial statements for the year ended December 31, 2018 were conducted by other independent auditors, who issued, respectively, an unqualified review report, dated April 25, 2018, and an unqualified audit report dated March 27, 2019, which included an emphasis of matter paragraph related to a subsequent event resulting from the Brumadinho's dam failure occurred on January 25, 2019.

Rio de Janeiro, May 9, 2019

/s/ PricewaterhouseCoopers
Auditores Independentes
CRC 2SP000160/O-5

Patricio Marques Roche
Contador CRC 1RJ081115/O-4

Income Statement

In millions of Brazilian reais, except earnings per share data

	Notes	Consolidated		Parent company	
		Three-month period ended March 31,			
		2019	2018	2019	2018
Continuing operations					
Net operating revenue	4(c)	30,952	27,932	16,785	15,705
Cost of goods sold and services rendered	5(a)	(17,750)	(16,970)	(9,201)	(8,376)
Gross profit		13,202	10,962	7,584	7,329
Operating (expenses) income					
Selling and administrative expenses	5(b)	(418)	(402)	(201)	(226)
Research and evaluation expenses		(269)	(223)	(159)	(147)
Pre operating and operational stoppage		(815)	(253)	(776)	(201)
Equity results from subsidiaries		-	-	4,075	2,227
Brumadinho event	3	(17,315)	-	(17,315)	-
Other operating expenses, net	5(c)	(318)	(406)	(313)	(263)
		(19,135)	(1,284)	(14,689)	1,390
Impairment and disposal of non-current assets	3 and 15	(781)	(52)	(631)	(80)
Operating income (loss)		(6,714)	9,626	(7,736)	8,639
Financial income					
Financial income	6	364	382	110	59
Financial expenses	6	(2,961)	(2,110)	(3,148)	(1,888)
Other financial items	6	7	(343)	155	(336)
Equity results and other results in associates and joint ventures	13 and 17	314	229	314	229
Income (loss) before income taxes		(8,990)	7,784	(10,305)	6,703
Income taxes					
Current tax	7	(961)	(295)	(492)	(1)
Deferred tax		3,405	(2,044)	4,375	(1,319)
		2,444	(2,339)	3,883	(1,320)
Net income (loss) from continuing operations		(6,546)	5,445	(6,422)	5,383
Net income (loss) attributable to noncontrolling interests		(124)	62	-	-
Net income (loss) from continuing operations attributable to Vale's stockholders		(6,422)	5,383	(6,422)	5,383
Discontinued operations					
Loss from discontinued operations		-	(271)	-	(271)
Loss from discontinued operations attributable to Vale's stockholders		-	(271)	-	(271)
Net income (loss)		(6,546)	5,174	(6,422)	5,112
Net income (loss) attributable to noncontrolling interests		(124)	62	-	-
Net income (loss) attributable to Vale's stockholders		(6,422)	5,112	(6,422)	5,112
Earnings (loss) per share attributable to Vale's stockholders:					
Basic and diluted earnings (loss) per share:					
Common share (R\$)	8	(1.24)	0.98	(1.24)	0.98

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

Statement of Comprehensive Income

In millions of Brazilian reais

	Consolidated		Parent company	
	Three-month period ended March 31,			
	2019	2018	2019	2018
Net income (loss)	(6,546)	5,174	(6,422)	5,112
Other comprehensive income (loss):				
Items that will not be reclassified subsequently to the income statement				
Retirement benefit obligations	35	176	(14)	(9)
Fair value adjustment to investment in equity securities	(147)	(114)	(114)	(86)
Equity results in associates and joint ventures	-	-	16	157
Transfer to reserve	-	(67)	-	(67)
Total items that will not be reclassified subsequently to the income statement, net of tax	(112)	(5)	(112)	(5)
Items that may be reclassified subsequently to the income statement				
Translation adjustments	1,179	61	1,183	(100)
Net investments hedge (note 20d)	(44)	(96)	(44)	(96)
Transfer of realized results to net income	-	(257)	-	(112)
Total of items that may be reclassified subsequently to the income statement, net of tax	1,135	(292)	1,139	(308)
Total comprehensive income (loss)	(5,523)	4,877	(5,395)	4,799
Comprehensive income (loss) attributable to noncontrolling interests	(128)	78		
Comprehensive income (loss) attributable to Vale's stockholders	(5,395)	4,799		
From continuing operations	(5,395)	4,783		
From discontinued operations	-	16		
	(5,395)	4,799		

Items above are stated net of tax and the related taxes are disclosed in note 7.

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

Statement of Cash Flows

In millions of Brazilian reais

	Consolidated		Parent company	
	Three-month period ended March 31,			
	2019	2018	2019	2018
Cash flow from operating activities:				
Income (loss) before income taxes from continuing operations	(8,990)	7,784	(10,305)	6,703
Adjusted for:				
Equity results from subsidiaries	-	-	(4,075)	(2,227)
Equity results and other results in associates and joint ventures	(314)	(229)	(314)	(229)
Impairment and disposal of non-current assets	781	52	631	80
Depreciation, amortization and depletion	3,029	2,834	1,744	1,403
Financial results, net	2,590	2,071	2,883	2,165
Changes in assets and liabilities:				
Accounts receivable	2,045	41	6,497	(1,844)
Inventories	(1,706)	153	(456)	(403)
Suppliers and contractors	(362)	(1,172)	314	(981)
Provision - Payroll, related charges and others remunerations	(1,758)	(1,653)	(1,157)	(1,122)
Liabilities related to Brumadinho (note 3)	9,317	-	9,317	-
De-characterization of the upstream dams (note 3)	7,137	-	7,137	-
Other assets and liabilities, net	(219)	(303)	246	183
	11,550	9,578	12,462	3,728
Interest on loans and borrowings paid (note 16)	(927)	(1,237)	(1,283)	(1,085)
Derivatives paid, net	(440)	(80)	(321)	(116)
Interest on leasing paid	(84)	-	-	-
Income taxes (including settlement program)	(1,838)	(1,177)	(1,010)	(431)
Net cash provided by operating activities from continuing operations	8,261	7,084	9,848	2,096
Cash flow from investing activities:				
Capital expenditures	(2,305)	(2,885)	(1,300)	(1,075)
Additions to investments	(1)	(58)	(208)	(707)
Acquisition of subsidiary, net of cash	(1,884)	-	(1,884)	-
Proceeds from disposal of assets and investments	347	3,536	13	6
Dividends and interest on capital received	-	33	342	454
Restricted cash and judicial deposits (note 3)	(13,042)	-	(13,042)	-
Others investments activities, net (1)	98	8,650	(500)	4,591
Net cash provided by (used in) investing activities from continuing operations	(16,787)	9,276	(16,579)	3,269
Cash flow from financing activities:				
Loans and borrowings from third-parties (note 16)	6,933	-	2,894	-
Payments of loans and borrowings from third-parties (note 16)	(789)	(7,448)	(660)	(960)
Payments of leasing	(288)	-	(19)	-
Dividends and interest on capital paid to stockholders	-	(4,721)	-	(4,721)
Dividends and interest on capital paid to noncontrolling interest	(237)	(290)	-	-
Transactions with noncontrolling stockholders	-	(56)	-	(56)
Net cash provided by (used in) financing activities from continuing operations	5,619	(12,515)	2,215	(5,737)
Net cash used in discontinued operations	-	(150)	-	-
Increase (decrease) in cash and cash equivalents	(2,907)	3,695	(4,516)	(372)
Cash and cash equivalents in the beginning of the period	22,413	14,318	4,835	1,876
Effect of exchange rate changes on cash and cash equivalents	7	159	-	-
Effects of disposals of subsidiaries and merger, net of cash and cash equivalents	-	(331)	-	-
Cash and cash equivalents at end of the period	19,513	17,841	319	1,504
Non-cash transactions:				
Additions to property, plant and equipment - capitalized loans and borrowing costs	141	194	140	194

(1) Includes loans and advances from/to related parties. For the period ended March 31, 2018, includes proceeds received from Nacala project finance (note 25b) in the amount of R\$8,434.

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

Statement of Financial Position

In millions of Brazilian reais

	Notes	Consolidated		Parent company	
		March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Assets					
Current assets					
Cash and cash equivalents		19,513	22,413	319	4,835
Accounts receivable	9	9,558	10,261	11,202	17,333
Other financial assets	11	1,816	1,683	785	360
Inventories	10	19,130	17,216	5,231	4,775
Prepaid income taxes		2,210	2,104	1,914	1,938
Recoverable taxes		4,629	3,422	2,903	2,024
Others		1,886	2,157	1,387	2,096
		58,742	59,256	23,741	33,361
Non-current assets					
Judicial deposits	22(c)	19,968	6,649	19,418	6,274
Other financial assets	11	12,109	12,180	5,142	5,276
Prepaid income taxes		2,183	2,107	-	-
Recoverable taxes		2,184	2,913	1,606	2,281
Deferred income taxes	7(a)	30,049	26,767	21,972	17,536
Others		1,156	1,015	1,220	1,163
		67,649	51,631	49,358	32,530
Investments	13	12,751	12,495	147,190	139,510
Intangibles	14	33,279	30,850	16,000	15,622
Property, plant and equipment	15	194,455	187,481	104,635	103,816
		308,134	282,457	317,183	291,478
Total assets		366,876	341,713	340,924	324,839
Liabilities					
Current liabilities					
Suppliers and contractors		12,981	13,610	7,711	7,342
Loans and borrowings	16	10,582	3,889	5,559	2,523
Leases	2(c)	854	-	354	-
Other financial liabilities	11	5,587	6,213	5,051	5,083
Taxes payable		2,605	1,659	1,872	806
Settlement program ("REFIS")	7(c)	1,689	1,673	1,655	1,638
Liabilities related to associates and joint ventures	17	1,091	1,120	1,091	1,120
Provisions	21	3,795	5,278	2,415	3,331
Liabilities related to Brumadinho	3	6,398	-	6,398	-
Others		2,991	1,843	2,887	2,743
		48,573	35,285	34,993	24,586
Non-current liabilities					
Loans and borrowings	16	55,861	56,039	22,295	23,082
Leases	2(c)	5,952	-	1,709	-
Other financial liabilities	11	11,732	10,511	72,644	71,740
Settlement program ("REFIS")	7(c)	14,903	15,179	14,606	14,876
Deferred income taxes	7(a)	5,938	5,936	-	-
Provisions	21	35,574	27,491	16,291	9,758
Liabilities related to Brumadinho	3	2,919	-	2,919	-
Liabilities related to associates and joint ventures	17	2,982	3,226	2,982	3,226
Deferred revenue - Gold stream		5,931	6,212	-	-
Others		8,251	8,151	7,393	7,168
		150,043	132,745	140,839	129,850
Total liabilities		198,616	168,030	175,832	154,436
Stockholders' equity					
	24				
Equity attributable to Vale's stockholders		165,092	170,403	165,092	170,403
Equity attributable to noncontrolling interests		3,168	3,280	-	-
Total stockholders' equity		168,260	173,683	165,092	170,403
Total liabilities and stockholders' equity		366,876	341,713	340,924	324,839

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

Value Added Statement

In millions of Brazilian Reals

	Consolidated		Parent company	
	Three-month period ended March 31,			
	2019	2018	2019	2018
Generation of value added from continuing operations				
Gross revenue				
Revenue from products and services	31,285	28,251	17,066	15,964
Impairment and disposal of non-current assets	(781)	(52)	(631)	(80)
Revenue from the construction of own assets	2,680	2,407	1,497	1,695
Other revenues	616	6,270	195	2,668
Less:				
Acquisition of products	(402)	(338)	(177)	(179)
Material, service and maintenance	(8,169)	(7,263)	(4,319)	(4,244)
Oil and gas	(1,325)	(1,164)	(823)	(776)
Energy	(799)	(795)	(377)	(386)
Freight	(2,874)	(2,931)	(27)	(29)
Brumadinho event	(17,315)	-	(17,315)	-
Other costs and expenses	(2,443)	(7,570)	(1,618)	(4,112)
Gross value added	473	16,815	(6,529)	10,521
Depreciation, amortization and depletion	(3,029)	(2,834)	(1,744)	(1,403)
Net value added	(2,556)	13,981	(8,273)	9,118
Received from third parties				
Equity results from entities	314	229	4,389	2,456
Financial income	364	382	112	59
Monetary and exchange variation of assets	184	169	190	226
Total value added from continuing operations to be distributed	(1,694)	14,761	(3,582)	11,859
Value added from discontinued operations to be distributed	-	63	-	-
Total value added to be distributed	(1,694)	14,824	(3,582)	11,859
Personnel	1,936	2,038	970	981
Taxes and contributions	1,542	1,859	1,326	854
Current income tax	961	295	492	1
Deferred income tax	(3,405)	2,044	(4,375)	1,319
Financial expense (excludes capitalized interest)	2,556	2,026	2,878	1,646
Monetary and exchange variation of liabilities	494	563	253	786
Other remunerations of third party funds	768	762	1,296	1,160
Reinvested net income (absorbed loss)	(6,422)	5,112	(6,422)	5,112
Net income (loss) attributable to noncontrolling interest	(124)	62	-	-
Distributed value added from continuing operations	(1,694)	14,761	(3,582)	11,859
Distributed value added from discontinued operations	-	63	-	-
Distributed value added	(1,694)	14,824	(3,582)	11,859

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

1. Corporate information

Vale S.A. and its direct and indirect subsidiaries (“Vale” or “Company”) are global producers of iron ore and iron ore pellets, key raw materials for steelmaking, and producers of nickel, which is used to produce stainless steel and metal alloys employed in the production of several products. The Company also produces copper, metallurgical and thermal coal, manganese ore, ferroalloys, platinum group metals, gold, silver and cobalt. The information by segment is presented in note 4.

Vale S.A. (the “Parent Company”) is a public company headquartered in the city of Rio de Janeiro, Brazil with securities traded on the stock exchanges of São Paulo – B3 S.A. (VALE3), New York - NYSE (VALE), Paris - NYSE Euronext (VALE3) and Madrid – LATIBEX (XVALO).

2. Basis for preparation of the interim financial statements

a) Statement of compliance

The condensed consolidated and individual interim financial statements of the Company (“interim financial statements”) have been prepared and are being presented in accordance with IAS 34 Interim Financial Reporting (CPC 21) of the International Financial Reporting Standards (“IFRS”) as implemented in Brazil by the Brazilian Accountant Pronouncements Committee (“CPC”), approved by the Brazilian Securities Exchange Commission (“CVM”) and by the Brazilian Federal Accounting Council (“CFC”). All relevant information from its own interim financial statements, and only this information, are being presented and correspond to those used by the Company’s Management.

The selected notes of the Parent Company are presented in a summarized form in note 26.

b) Basis of presentation

The interim financial statements have been prepared to update users about relevant events and transactions occurred in the period and should be read in conjunction with the financial statements for the year ended December 31, 2018. The accounting policies, accounting estimates and judgements, risk management and measurement methods are the same as those applied when preparing the last annual financial statements, except for the critical judgements and estimates made in determining the financial impacts arising from the Brumadinho’s dam failure, as described in note 3, and the new accounting policy related to the application of IFRS 16 – Leases, which was adopted by the Company from January 1, 2019 and is described in note 2(c). The accounting policy for recognizing and measuring income taxes in the interim period is described in note 7.

The interim financial statements of the Company and its associates and joint ventures are measured using the currency of the primary economic environment in which the entity operates (“functional currency”), which in the case of the Parent Company is the Brazilian real (“R\$”). For presentation purposes, these interim financial statements are presented in Brazilian Reais.

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

	Closing rate		Average rate	
	March 31, 2019	December 31, 2018	March 31, 2019	March 31, 2018
US Dollar (“US\$”)	3.8967	3.8748	3.7684	3.2433
Canadian dollar (“CAD”)	2.9165	2.8451	2.8346	2.5649
Euro (“EUR” or “€”)	4.3760	4.4390	4.2802	3.9866

The issue of these interim financial statements was authorized by the Board of Directors on May 9, 2019.

c) Changes in significant accounting policies

– **IFRIC 23 Uncertainty over income tax treatments** – IFRIC 23 became effective for annual periods beginning on or after 1 January 2019 and clarifies the measurement and recognition requirements of IAS 12 Income taxes. The Company has assessed these requirements brought by the new interpretation and concluded there is no significant impact on its interim financial statements.

– **IFRS 16 Lease** – The Company applied IFRS 16 beginning from January 1, 2019, the date of initial application, using the modified retrospective approach. Accordingly, the comparative information has not been restated and continues to be reported under IAS 17 and IFRIC 4. As a result of the IFRS 16 adoption, the Company has changed its accounting policy for lease contracts and the details of these changes are disclosed below.

The ferrous minerals produced in Brazil are mainly shipped to Asia. The Company has leased the Ponta da Madeira and Itaguaí maritime terminals in Brazil, that are primarily for the delivery of iron ore and iron ore pellets to bulk carrier vessels. The remaining lease terms are, respectively, 4 and 7 years for the ports in Brazil. Vale also has a lease agreement for a maritime terminal in Oman, which is used to deliver iron ore pellets produced in that location. The remaining lease term is 24 years for the port in Oman.

Some of the delivery of iron ore from Brazil to the Asian clients are made through 5 time charter agreements, which have 11 years remaining on average. As part of the ferrous minerals segment, the Company also has long-term agreements for the exploration and processing of iron ore with its joint ventures, such as the agreements to lease the pelletizing plants in Brazil.

In addition, the Company leases an oxygen plant dedicated to the base metals operation, as part of its nickel operation run in Canada. The remaining period of this lease agreement is 11 years.

Moreover, the Company has a long term contract related to the right of use of certain locomotives dedicated to the transportation of the coal in Mozambique. This agreement has a remaining lease term of 7 years.

Vale has leased properties for its operational facilities and commercial and administrative offices in the various locations where the Company conducts its business.

Until December 31, 2018, these leases arrangements were classified as operating leases and were not recognized in the Company's statement of financial position. The contractual payments were recognized in the income statement on a straight-line basis over the term of the lease.

As at January 1, 2019, these lease agreements were recognized in the statement of financial position and were measured discounting the remaining contractual payments at the present value, using the Company's incremental borrowing rate ranging from 3% to 6%, depending on the remaining lease term. The Company used the following practical expedients when applying IFRS 16:

- Applied a single discount rate to a portfolio of leases with similar characteristics.
- Applied the exemption not to recognize right-of-use assets and liabilities for leases with less than 12 months of lease term and leases of low-value assets. The payments associated to these leases will be recognized as an expense on a straight-line basis over the lease term.
- Used hindsight when determining the lease term, to determine if the contract contains options to extend or terminate the lease.

Lease liabilities by type of assets under IFRS 16 and the reconciliation to the operating lease commitments under IAS 17 are as follows:

	Lease commitments disclosed on December 31, 2018	Contracts scoped out	Present value adjustment	Lease liability recognized on January 1, 2019
Ports	4,384	2	(1,415)	2,971
Vessels	2,980	(4)	(634)	2,343
Pellets plants	843	(57)	(201)	585
Properties	628	(2)	(94)	531
Energy plants	362	-	(114)	248
Locomotives	264	(28)	(62)	173
Mining equipment	179	(50)	(17)	111
Other	36	(20)	(1)	15
Total	9,676	(161)	(2,538)	6,978

The lease liability is presented on the statement of financial position as "Leases".

The recognized right-of-use assets by types of assets are as follows:

	January 1, 2019	March 31, 2019
Ports	2,971	2,946
Vessels	2,343	2,310
Pellets plants	585	549
Properties	531	475
Energy plants	248	252
Locomotives	173	187
Mining equipment	111	101
Other	15	11
Total	6,978	6,830

The accounting policy related to leases is disclosed in note 15.

3. Brumadinho's dam failure

On January 25, 2019, a rupture has been experienced in the Dam I of the Córrego do Feijão mine, which belongs to the Paraopebas Complex in the Southern System, located in Brumadinho, Minas Gerais, Brasil ("Brumadinho dam"). This dam built under the upstream method was inactive since 2016 (without additional tailings disposal) and there was no other operational activity in this structure.

Under the "upstream" method, the dam is raised by building successive layers ("lifts") above the tailings accumulated in the reservoir. There are two other raising methods, the "downstream" method and the "centerline" method. Each of these methods presents a different risk profile.

Due to the Brumadinho's dam failure ("event"), 270 people lost their lives or are missing. Around 11.7 million metric tons of iron ore waste were contained in the Brumadinho dam and it is not yet known the exact volume of iron ore waste that was released due to the dam failure. The tailings contained in the Dam I have caused an impact of around 270 km in extension, destroying some of Vale's facilities, affecting local communities and disturbing the environment. The Paraopeba river and its ecosystems have also been impacted by the event.

The Company has been taking the necessary actions to support the victims and to mitigate and recover the social and environmental damages resulting from the dam failure. Vale has provided support in multiple ways, aiming to ensure the humanitarian assistance to those affected by the dam failure.

The Company established three Extraordinary Independent Consulting Committees to support the Board of Directors. The members of these committees are independent and unrelated to the management or to the Company's operations, to ensure that the initiatives are unbiased. Following are the committees:

- a) The Extraordinary Independent Consulting Committee for Investigation ("CIAEA"), dedicated to investigating the causes and responsibilities for the Brumadinho dam failure;
- b) The Extraordinary Independent Consulting Committee for Support and Recovery ("CIAEAR"), dedicated to follow-up on the measures taken to support the victims and the recovery of the areas affected by the Brumadinho dam failure, assuring that all necessary resources will be applied; and
- c) The Extraordinary Independent Consulting Committee for Dam Safety ("CIAESB"), which will provide support to the Board of Directors in questions related to the diagnosis of safety conditions, management and risk mitigation related to Vale's tailings dams, also providing recommendations of actions to strengthen safety conditions of those dams.

In addition, Vale has determined the suspension (i) of the variable remuneration of its executives; (ii) the Shareholder's Remuneration Policy and (iii) any other resolution related to shares buyback.

a) Financial impacts arising from the dam failure

At the current stage of the investigations, assessments of the causes and possible third parties' lawsuits against the Company, it is not possible to determine all costs that may be incurred due to the event and, therefore, the amounts that are being disclosed in these interim financial statements took into consideration Management's best estimate and considers the facts and circumstances known at this point in time. The financial impacts recognized on the statement of financial position and income statement are presented as follows:

Statement of financial position

			March 31, 2019
	Current	Non-Current	Total
Assets			
Other financial assets - Restricted cash	432	-	432
Judicial deposits			
Civil litigation	-	6,748	6,748
Labor litigation	-	1,611	1,611
Environmental litigation	-	4,251	4,251
Total assets	432	12,610	13,042
Liabilities			
Provisions			
De-characterization of the upstream dams	614	6,523	7,137
Liabilities related to Brumadinho			
Framework Agreement with the Public Ministry of Labor	949	-	949
Framework Agreement with the Public Prosecutors and Public Defendants	4,931	2,919	7,850
Administrative sanctions - IBAMA	250	-	250
Donations	268	-	268
	6,398	2,919	9,317
Total liabilities	7,012	9,442	16,454

In addition to the restricted cash and judicial deposits, an amount equivalent to R\$3,75 billion has been restricted using 75,325,801 of the Company's common shares held in treasury (see further details below in "Lawsuits").

Income statement

	Three-month period ended March 31, 2019
Brumadinho event	
De-characterization of the upstream dams	7,137
Provisions related to the Brumadinho event	9,317
Incurred expenses (*)	392
Others	469
	17,315
Pre operating and operational stoppage	
Operational stoppage	605
Impairment and disposal of non-current assets	
Assets write-off	585
Total	18,505

(*) Cash outflows, which is broken down by nature is disclosed below in "Donations and incurred expenses".

b) De-characterization of the dams

i) Upstream dams

On January 29, 2019 the Company informed the market and Brazilian authorities its decision to speed up the plan to “de-characterize” all of its tailings dams built by the upstream method (same method as Brumadinho’s dam), located in Brazil. The “de-characterizing” means that the structure will be dismantled so the structure is effectively no longer a dam.

Before the event, the decommissioning plans of these dams were based on a method which aimed to ensure the physical and chemical stability of the structures, not necessarily, in all cases, removing in full and potentially reprocessing the tailings contained in the dams. Since the event, the Company has been working to develop the detailed de-characterization engineering plans to each of these dams.

Based on the current stage, the updated plans indicated that for certain of these upstream dams, the Company will have to first reinforce the downstream massive structures of these dams, and conclude the de-characterization subsequently, according to the geotechnical and geographic conditions of each of the upstream dams. Depending on the safety level of certain tailings dams, it was also considered whether an additional contention structures should be built. Therefore, there has been a revision of the total costs and expected timing for the cash outflows based on the updated studies. During March 2019, the conceptual projects for the de-characterization were filed and the conceptual developing are expected to be concluded in August 2019. These plans are subject to further review and eventual approval by the relevant authorities. Thus, based on the information available on the preparation of these interim financial statements, the estimated amount discounted at the present value using the rate of 4.38% and based on the expected cash outflows resulted in a provision of R\$7,137 recorded as at March 31, 2019.

The measurement of the costs and recognition of this provision takes into consideration several assumptions and estimates, which rely on factors, which some of that are not always under the Company’s control. The main critical assumptions and estimates applied 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; and (iii) acceptance by the authorities of the proposed engineering methods and solution. Therefore, changes in the critical assumptions and estimates may result in a material change to the provided amount as at March 31, 2019.

ii) Other structures

In addition to the structures aforementioned, 4 other structures did not have renewed their Stability Condition Declarations (“DCE”) due to the new safety index established primarily by the National Mining Agency (“*Agência Nacional de Mineração – ANM*”), leading to the stoppage of these structures.

External specialists have reviewed all information available in relation to these structures and have adopted new and more conservative interpretation to determine the safety index. To ensure the stability of these structures, the Company is working to conclude, based on the parameters adopted by these specialists and following guidelines issued primarily by the ANM, whether the Company will be required to either take any measure to increase the safety index or perform the de-characterization of these 4 structures. There has been also dikes identified that were built under the upstream method, which are part of certain downstream dams. The Company is assessing whether these dikes should be de-characterized as well.

At the current stage of studies and analysis, it is not yet possible to estimate the potential additional provision related to the de-characterization of the structures mentioned above, neither whether other additional dam’s structure or dikes may be identified based on the ongoing assessment and potential new standards related to the stability condition.

iii) Associates

Some of our investees also operate similar dam structures, which are exposed to the uncertainties explained in i) and ii) above. However, at this point in time, these investees could not prepare a detailed plan and, therefore, they did not develop a preliminary estimate with sufficient reliability of the costs and timing for the de-characterization of their tailings dams. These associates are still developing the specific studies to reintegrating the dam and its contents into the local environment when required and at the date it is not yet possible to determine whether the Company will reflect the expense related to the potential additional provision of these investees.

c) Operation stoppages

In order to carry out safely the de-characterization of the dams, the Company has temporarily stopped the production of the units, located in the southern system, where the upstream dams are located. Based on the volume produced in 2018, the stoppage may result in a reduction in production of approximately 40 million tons of iron ore. For reference, the Company sold 364 million tons of iron ore and pellets in 2018. In addition, the Company has other operations that are temporarily suspended due to judicial decisions or technical analysis performed by the Company on the dams, which may result in a reduction in sales up to 52.8 million tons of iron ore, based on the prior twelve-month period. The Company is working on legal and technical measures to resume these operations.

The Company recorded a loss of R\$605 related to the operational stoppage and idle capacity of the ferrous minerals segment as “Pre operating and operational stoppage” for the three-month period ended March 31, 2019.

d) Assets write-off

Following the event and the decision to speed up the de-characterization of the upstream dams, the Company recognized a loss of R\$585 as “Impairment and disposal of non-current assets” in the three-month period ended March 31, 2019 in relation to the assets write-off of the Córrego do Feijão mine and those related to the other upstream dams in Brazil.

The Company has assessed the risk of impairment considering the current circumstances and concluded that no further loss should be recognized in relation to the event.

e) Framework Agreements

The Company has been working together with the authorities and society to remediate the environmental and social impacts of the event. As a result, the Company has started negotiations and entered into agreements with the relevant authorities and affected people.

(i) Public Ministry of Labor

On February 15, 2019, Vale entered into a preliminary agreement with the Public Ministry of Labor to indemnify the direct and third-party employees of the Córrego do Feijão mine who were affected by the termination of this operation. Under the terms of the agreement, Vale will maintain the jobs of its direct employees until December 31, 2019 and will either assist terminated third party employees with a replacement or pay their salaries until December 31, 2019.

The Company will also keep paying wages regularly to the missing people until the authorities have considered them as fatal victims of the event and will pay to the families of the fatal victims an amount equivalent to their wages until December 31, 2019 or until Vale reaches the final agreement with the Public Ministry of Labor.

The Company has estimated the provision based on the terms of the preliminary agreement and taking into consideration the information available to date. However, as the Company did not have access to all information needed and has not reached a final agreement in relation the indemnification amounts, Management has applied judgements in determining the key assumptions used in the estimate. The main assumptions taken were: (i) average compensation, (ii) age and estimated number of relatives of those affected by the event, and (iii) discount rate. The estimated amount to meet the obligation under the agreement resulted in the provision of R\$885 as at March 31, 2019.

Moreover, the Company will provide a lifelong medical insurance benefit to the widows and widowers and a similar benefit to the dependents of the victims until they are 22 years old. Hence, as at March 31, 2019, Vale recognized a provision based on actuarial assumptions in the amount of R\$64.

(ii) Brazilian Federal Government, State of Minas Gerais, Public Prosecutors and Public Defendants

On a judicial hearing that took place on February 20, 2019, in the scope of the public civil action n° 5010709-36.2019.8.13.0024, in process of the 6th Public Treasury Lower Court of Belo Horizonte, Vale entered into a preliminary agreement with the State of Minas Gerais, Federal Government and representatives of Public Authorities in which the Company commits to make emergency indemnification payments to the residents of Brumadinho and the communities that are located up to one kilometer from the Paraopeba river bed, from Brumadinho to the city of Pompéu, subject to registration.

Due to this agreement, the Company will anticipate indemnification to each family member through monthly payments during a 12-month period, the total amount of this obligation may vary depending on the number of beneficiaries that will be registered and the number of relatives entitled to the indemnification payments. Therefore, Vale has estimated the total cost associated with this obligation based on the expected number of individuals and using demographic assumptions to determine the size of this provision, resulting in the recognition of R\$1,016 as at March 31, 2019.

The agreement also includes the following measures: (i) independent technical assistance to support on the individual indemnities of those affected, if requested; and (ii) reimbursement or direct funding of the extraordinary expenses of the State of Minas Gerais and its governmental bodies due to the dam failure, including transportation, accommodation and food expenses of the employees involved in the rescue and other emergency actions.

On April 5, 2019, Vale and the Public Defendants of the State of Minas Gerais entered into an agreement 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 for each damage. Vale has applied significant judgements in making assumptions to develop its best estimate for each item in the scope of the agreement.

The estimated amount of provision takes into consideration the expected volume of claims for each item thereto and timing to settle the indemnification agreements for each individual and their families. This provision also takes into consideration demographic assumptions, discount rate and the current market value of certain items that are scoped in the agreement. Therefore, based on the current best estimate and considering the uncertainties related to the possible outcomes, as it could change based on the actual settlements against the assumptions taken by Management, the Company has estimated a provision of R\$6,834, discounted at the present value using a rate of 4.38%, considering the expected cash outflows.

f) Donations and other incurred expenses

(i) Donations

The Company entered into an agreement with the Brumadinho city, in which the Company will donate to the city an amount of approximately R\$80 over the next 2 years. Vale has also signed an agreement to donate R\$100 to the Association of Mining Cities of Minas Gerais ("AMIG") and agreements to make donations to other institutions in the total amount of R\$114. In addition, the Company has offered donations to the families with missing members or affected by fatalities, to families that resided in the Self-Saving Zone ("ZAS") near to Brumadinho dam and to business owners of the region.

(ii) Environment and fauna

The Company is building a retention dike for the tailings on the affected areas. The Company has also installed anti-turbidity barriers for sediment retention alongside the Paraopeba River. In addition, Vale has mobilized cleaning, de-sanding and dredging the Paraopeba river channel.

Daily collection points of water and barriers for sediment retention were installed alongside the Paraopeba River, Três Marias reservoir and São Francisco river.

Vale also has set up an exclusive structure for treatment of the rescued animals, enabling emergency care and recovery before the animals are authorized, after veterinarian assessment, to be returned to their guardians.

Furthermore, the Company has paid the administrative fines imposed by the State Secretary for Environment and Sustainable Development – SEMAD MG, in the total amount of R\$100.

The potential environmental liabilities resulting from the dam failure could be significant, however the Company could not reasonably estimate the size of potential losses or settlements or the timing of the total amount related to environmental obligations due to the early stage of the negotiations with relevant authorities.

(iii) Incurred expenses

The Company has incurred the following expenses in the three-month period ended March 31, 2019:

	Three-month period ended March 31, 2019
Incurred expenses	
Administrative sanctions	100
Donations to the affected people and to the city	68
Drilling and infrastructure	7
Environmental recovery	62
Medical aid and other materials	18
Fuel and transportation	14
Others (*)	123
Total	392

(*) Includes expenses with communication, accommodation, humanitarian assistance, equipment, legal services, water, food aid, taxes, among others.

g) Contingencies and other legal matters

Vale is subject to significant contingencies due to the Brumadinho dam failure. Vale has already been named on several judicial and administrative proceedings brought by authorities and affected people and is currently under investigations. New contingencies are expected to come in the future. Vale is still evaluating these contingencies and will recognize a provision based on the stage of these claims. Due to the preliminary stage of the investigations and claims, it is not possible to determine a range of reliable results or estimates of potential exposure related to dam failure at this point in time.

Lawsuits

On January 27, 2019, following the injunctions granted upon the requests of the Public Prosecutors of the State of Minas Gerais and the State of Minas Gerais, the Company had restricted R\$11 billion on its bank accounts to take the necessary measures to reassure the stability of the other dams of the Córrego do Feijão Mine Complex, provide accommodation and assistance to the affected people, remediate environmental impacts, among other obligations in addition to the amounts provided to date.

On January 31, 2019, the Public Ministry of Labor filed a Public Civil Action and two preliminary injunctions were granted determining the freezing of R\$1.6 billion on the Company's bank accounts to secure the indemnification of direct and third-party employees that worked in the Córrego de Feijão mine at the time of the Brumadinho dam failure.

On March 18, 2019 the Public Prosecutor of the State of Minas Gerais filed a Public Civil Action and a preliminary injunction was granted to freeze R\$1 billion of the Company's assets, aiming to grant funds that could be required to indemnify for losses that may arise from the evacuation of the community of Sebastião de Águas Claras – Macacos community.

On March 25, 2019, the Public Prosecutor of the State of Minas Gerais filed a Public Civil Action and two preliminary injunctions were granted to freeze a total of R\$3 billion of the Company's assets, to grant funds that might be required to indemnify for losses that may arise from evacuation of the communities in Barão de Cocais.

On March 28, 2019, the Public Prosecutor of the State of Minas Gerais filed a Public Civil Action and a preliminary injunction was granted to suspend a total amount of R\$1 billion of the Company's assets, to grant funds that might be required to indemnify for losses that may arise from evacuation of the communities in Nova Lima.

In total, approximately R\$16.9 billion of the Company's assets were blocked, of which approximately R\$432 were frozen on the Company's bank accounts, R\$12.6 billion were converted into judicial deposits and R\$3.75 billion was guaranteed using 75,325,801 treasury shares out of the 156,192,313 common shares held in treasury as at March 31, 2019. In addition, the Company has guaranteed an amount of R\$5.3 billion through insurance agreements.

Other collective and individual claims related to the Brumadinho dam failure were filed. Some collective claims were extinguished by the competent courts.

Administrative sanctions

The Company was notified of the imposition of administrative fines by Brazilian Institute of the Environment and Renewable Natural Resources (“IBAMA”), in the amount of R\$250, which the Company expects to settle through environmental projects and so, this amount has been provided as at March 31, 2019.

In addition, the Company was fined by the daily amount of R\$100 thousand until IBAMA agrees that the Company has fully and satisfactorily concluded the fauna saving plan, drawn up on February 7, 2019. Moreover, the Brumadinho Municipal Department of the Environment has also imposed fines totaling approximately R\$108 million due to the pollution caused by the Company. Vale has presented its defenses against of these sanctions.

U.S. Securities class action suits

The Company became aware through public available information that Vale and certain of its current officers have been named as defendants in putative securities class action complaints in Federal Courts in New York brought by holders of Vale’s securities under U.S. federal securities laws. However, neither the Company nor its officers have been officially served of any of these Complaints.

The complaints allege that Vale made false and misleading statements or omitted to make disclosures concerning the risks and potential damage of the dam failure in the Córrego de Feijão mine. The plaintiffs have not specified an amount of alleged damages in these complaints. Vale intends to defend these actions and mount a full defense against these claims. Based on the assessment of the Company’s legal consultants, although still in a very preliminary stage, the expectation of loss of this proceeding is classified as possible.

Considering that no official service of process has been received to date, the very early stage of the aforementioned putative class action and the fact that no amounts have been claimed by the plaintiffs against the defendants, it is not possible, at the moment, to reliably estimate the potential amounts involved.

The Company is negotiating with insurers under its operational risk, general liability and engineering risk policies, but these negotiations are still at a preliminary stage. Any payment of insurance proceeds will depend on the coverage definitions under these policies and assessment of the amount of loss. In light of the uncertainties, no indemnification to the Company was recognized in Vale’s financial statements.

Accounting policy

The measurement of the provisions require the use of assumptions that may be mainly affected by: (i) changes in laws and regulations; (ii) changes in the current estimated market price of the direct and indirect cost related to products and services, (iii) changes in timing for cash outflows, (iv) changes in the technology considered in measuring the provision, (v) number of individuals entitled to the indemnification payments, (vi) resolution of existing and potential legal claims, and (vii) updates in the discount rate.

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.

4. Information by business segment and by geographic area

The Company operated the following reportable segments during this year: Ferrous Minerals, Coal and Base Metals. The segments are aligned with products and reflect the structure used by Management to evaluate Company's performance. The responsible bodies for making operational decisions, allocating resources and evaluating performance are the Executive Boards and the Board of Directors. The performance of the operating segments is assessed based on a measure of adjusted EBITDA.

In 2019, due to the Brumadinho's dam failure, the Company has created the Special Recovery and Development Board, which is in-charge of social, humanitarian, environmental and structural recovery measures that will be implemented in Brumadinho and other affected areas. This Board reports to the CEO and will assess the costs related to the Brumadinho event. These costs are not directly related to the Company's operating activities and, therefore, were not allocated to any operating segment.

The Company allocate in "Others" the sales and expenses of other products, services, research and development, investments in joint ventures and associates of other business and unallocated corporate expenses.

a) Adjusted LAJIDA (EBITDA)

Adjusted LAJIDA (EBITDA) is calculated for each segment using operating income or loss plus dividends received and interest from associates and joint ventures, and excluding the amounts charged as (i) depreciation, depletion and amortization and (ii) impairment and disposal of non-current assets.

	Consolidated						
	Three-month period ended March 31, 2019						
	Net operating revenue	Cost of goods sold and services rendered	Sales, administrative and other operating expenses	Research and evaluation	Pre operating and operational stoppage	Dividends received and interest from associates and joint ventures	Adjusted LAJIDA (EBITDA)
Ferrous minerals							
Iron ore	16,888	(6,204)	(49)	(71)	(601)	-	9,963
Iron ore Pellets	6,320	(2,845)	(14)	(17)	(37)	-	3,407
Ferroalloys and manganese	324	(218)	(3)	(1)	-	-	102
Other ferrous products and services	401	(287)	(3)	-	-	-	111
	23,933	(9,554)	(69)	(89)	(638)	-	13,583
Coal	1,258	(1,601)	(4)	(22)	-	106	(263)
Base metals							
Nickel and other products	3,701	(2,599)	(46)	(26)	(30)	-	1,000
Copper	1,776	(853)	(1)	(20)	-	-	902
	5,477	(3,452)	(47)	(46)	(30)	-	1,902
Brumadinho event	-	-	(17,315)	-	-	-	(17,315)
Others	284	(318)	(559)	(112)	-	-	(705)
Total	30,952	(14,925)	(17,994)	(269)	(668)	106	(2,798)

	Consolidated						
	Three-month period ended March 31, 2018						
	Net operating revenue	Cost of goods sold and services rendered	Sales, administrative and other operating expenses	Research and evaluation	Pre operating and operational stoppage	Dividends received and interest from associates and joint ventures	Adjusted LAJIDA (EBITDA)
Ferrous minerals							
Iron ore	15,278	(6,756)	(41)	(65)	(113)	-	8,303
Iron ore Pellets	5,142	(2,638)	(5)	(16)	(10)	-	2,473
Ferroalloys and manganese	406	(242)	(3)	(1)	-	-	160
Other ferrous products and services	372	(237)	(9)	-	-	-	126
	21,198	(9,873)	(58)	(82)	(123)	-	11,062
Coal	1,234	(1,086)	6	(11)	-	193	336
Base metals							
Nickel and other products	3,675	(2,291)	(48)	(29)	(27)	-	1,280
Copper	1,627	(804)	(3)	(12)	-	-	808
	5,302	(3,095)	(51)	(41)	(27)	-	2,088
Others	198	(225)	(647)	(89)	(18)	33	(748)
Total of continuing operations	27,932	(14,279)	(750)	(223)	(168)	226	12,738
Discontinued operations (Fertilizers)	288	(272)	(4)	-	-	-	12
Total	28,220	(14,551)	(754)	(223)	(168)	226	12,750

Adjusted LAJIDA (EBITDA) is reconciled to net income (loss) as follows:

From continuing operations

	Consolidated	
	2019	2018
Net income (loss) from continuing operations	(6,546)	5,445
Depreciation, depletion and amortization	3,029	2,834
Income taxes	(2,444)	2,339
Financial results, net	2,590	2,071
LAJIDA (EBITDA)	(3,371)	12,689
Items to reconciled adjusted LAJIDA (EBITDA)		
Equity results and other results in associates and joint ventures, net of dividends received	(208)	(3)
Impairment and disposal of non-current assets	781	52
Adjusted LAJIDA (EBITDA) from continuing operations	(2,798)	12,738

From discontinued operations

	Consolidated	
	Three-month period ended March 31, 2018	
Loss from discontinued operations	(271)	
Income taxes	(104)	
Financial results, net	12	
LAJIDA (EBITDA)	(363)	
Items to reconciled adjusted LAJIDA (EBITDA)		
Impairment of non-current assets	375	
Adjusted LAJIDA (EBITDA) from discontinued operations	12	

b) Assets by segment

	March 31, 2019			Consolidated December 31, 2018		
	Product inventory	Investments in associates and joint ventures	Property, plant and equipment and intangible (i)	Product inventory	Investments in associates and joint ventures	Property, plant and equipment and intangible (i)
Ferrous minerals	10,009	7,241	130,590	8,562	7,030	121,572
Coal	344	1,258	6,346	461	1,228	6,157
Base metals	4,824	53	84,440	4,443	54	82,515
Others	80	4,199	6,358	45	4,183	8,087
Total	15,257	12,751	227,734	13,511	12,495	218,331

	2019			Consolidated Three-month period ended March 31, 2018		
	Capital expenditures (ii)		Depreciation, depletion and amortization	Capital expenditures (ii)		Depreciation, depletion and amortization
	Sustaining capital	Project execution		Sustaining capital	Project execution	
Ferrous minerals	1,052	324	1,616	1,044	1,077	1,406
Coal	190	-	185	79	29	212
Base metals	688	41	1,158	588	49	1,137
Others	2	8	70	2	17	79
Total	1,932	373	3,029	1,713	1,172	2,834

(i) Goodwill is allocated mainly to ferrous minerals and base metals segments in the amount of R\$7,133 and R\$7,186 in March 31, 2019 and R\$7,133 and R\$7,022 in December 31, 2018, respectively.

(ii) Cash outflows.

c) Net operating revenue by destination

	Three-month period ended March 31, 2019				
	Ferrous minerals	Coal	Base metals	Others	Total
Americas, except United States and Brazil	608	-	834	-	1,442
United States of America	370	-	787	-	1,157
Germany	987	-	439	-	1,426
Europe, except Germany	1,554	400	1,497	-	3,451
Middle East/Africa/Oceania	2,373	102	22	-	2,497
Japan	1,802	246	333	-	2,381
China	12,243	-	539	-	12,782
Asia, except Japan and China	1,636	451	845	-	2,932
Brazil	2,360	59	181	284	2,884
Net operating revenue	23,933	1,258	5,477	284	30,952

	Consolidated Three-month period ended March 31, 2018				
	Ferrous minerals	Coal	Base metals	Others	Total
Americas, except United States and Brazil	711	-	509	-	1,220
United States of America	267	-	792	24	1,083
Germany	1,053	-	229	-	1,282
Europe, except Germany	1,528	331	1,620	-	3,479
Middle East/Africa/Oceania	1,924	140	14	-	2,078
Japan	1,483	107	373	-	1,963
China	11,006	-	677	-	11,683
Asia, except Japan and China	1,124	487	806	-	2,417
Brazil	2,102	169	282	174	2,727
Net operating revenue	21,198	1,234	5,302	198	27,932

Provisionally priced commodities sales – As at March 31, 2019, there were 8 million metric tons of iron ore and pellets (December 31, 2018: 27 million metric tons) and 94 thousand metric tons of copper (December 31, 2018: 78 thousand metric tons) provisionally priced based on forward prices. The final price of these sales will be determined during the second quarter of 2019. A 10% change in the realized prices compared to the provisionally priced sales, all other factors held constant, would increase or reduce iron ore net income by R\$277 and copper net income by R\$269.

5. Costs and expenses by nature

a) Cost of goods sold and services rendered

	Consolidated	
	Three-month period ended March 31,	
	2019	2018
Personnel	1,739	1,794
Materials and services	3,601	2,869
Fuel oil and gas	1,314	1,147
Maintenance	2,372	2,393
Energy	797	774
Acquisition of products	402	399
Depreciation and depletion	2,825	2,691
Freight	2,874	2,931
Others	1,826	1,972
Total	17,750	16,970
Cost of goods sold	17,142	16,491
Cost of services rendered	608	479
Total	17,750	16,970

b) Selling and administrative expenses

	Consolidated	
	Three-month period ended March 31,	
	2019	2018
Personnel	174	202
Services	53	63
Depreciation and amortization	56	57
Others	135	80
Total	418	402

c) Other operating (income) expenses, net

	Consolidated	
	Three-month period ended March 31,	
	2019	2018
Provision for litigation	299	146
Profit sharing program	132	154
Others	(113)	106
Total	318	406

6. Financial result

	Consolidated	
	Three-month period ended March 31,	
	2019	2018
Financial income		
Short-term investments	173	82
Others	191	300
	364	382
Financial expenses		
Loans and borrowings gross interest	(947)	(1,090)
Capitalized loans and borrowing costs	141	194
Participative stockholders' debentures	(1,337)	(590)
Interest on REFIS	(160)	(187)
Others	(658)	(437)
	(2,961)	(2,110)
Other financial items		
Net foreign exchange gains (losses) on loans and borrowings	(49)	(416)
Derivative financial instruments	340	285
Other net foreign exchange gains (losses)	26	182
Net indexation losses	(310)	(394)
	7	(343)
Financial results, net	(2,590)	(2,071)

Net investment of foreign operation

From January 1, 2019, the Company has considered certain long-term loans payable to Vale International S.A. as part of its net investment in that foreign operation. Until December 31, 2018, the impact of the exchange variation on these intercompany loans was recognized on the income statement and from the adoption of this accounting policy, the exchange variation is recognized directly in stockholders' equity. Further details are disclosed in note 20.

7. Income taxes

a) Deferred income tax assets and liabilities

Changes in deferred tax are as follows:

	Consolidated		
	Assets	Liabilities	Deferred taxes, net
Balance at December 31, 2018	26,767	5,936	20,831
Effect in income statement	3,283	(122)	3,405
Translation adjustment	30	108	(78)
Other comprehensive income	(31)	16	(47)
Balance at March 31, 2019	30,049	5,938	24,111

	Consolidated		
	Assets	Liabilities	Deferred taxes, net
Balance at December 31, 2017	21,959	5,687	16,272
Effect in income statement	(2,044)	-	(2,044)
Transfers between asset and liabilities	27	27	-
Translation adjustment	(17)	(77)	60
Other comprehensive income	288	28	260
Effect of discontinued operations			
Effect in income statement	104	-	104
Transfer to net assets held for sale	(19)	-	(19)
Balance at March 31, 2018	20,298	5,665	14,633

b) Income tax reconciliation – Income statement

The total amount presented as income taxes in the income statement is reconciled to the statutory rate, as follows:

	Consolidated	
	Three-month period ended March 31,	
	2019	2018
Income (loss) before income taxes	(8,990)	7,784
Income taxes at statutory rates - 34%	3,057	(2,647)
Adjustments that affect the basis of taxes:		
Income tax benefit from interest on stockholders' equity	-	216
Tax incentives	121	88
Equity results	135	93
Unrecognized tax losses of the period	(633)	(477)
Others	(236)	388
Income taxes	2,444	(2,339)

Income tax expense is recognized based on the estimate of the weighted average effective tax rate expected for the full year, adjusted for the tax effect of certain items recognized in full in the interim period. Therefore, the effective tax rate in the interim financial statement may differ from management's estimate of the effective tax rate for the annual financial statement.

c) Income taxes - Settlement program ("REFIS")

The balance mainly relates to REFIS to settle most of the claims related to the collection of income tax and social contribution on equity gains of foreign subsidiaries and affiliates from 2003 to 2012. As at March 31, 2019, the balance of R\$16,592 (R\$1,689 as current and R\$14,903 as non-current) is due in 115 remaining monthly installments, bearing interest at the SELIC rate (Special System for Settlement and Custody).

8. Basic and diluted earnings (loss) per share

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

	Three-month period ended March 31,	
	2019	2018
Net income (loss) attributable to Vale's stockholders:		
Net income (loss) from continuing operations	(6,422)	5,383
Loss from discontinued operations	-	(271)
Net income (loss)	(6,422)	5,112
Thousands of shares		
Weighted average number of shares outstanding - common shares	5,183,120	5,197,432
Basic and diluted earnings (loss) per share from continuing operations:		
Common share (R\$)	(1.24)	1.03
Basic and diluted loss per share from discontinued operations:		
Common share (R\$)	-	(0.05)
Basic and diluted earnings (loss) per share:		
Common share (R\$)	(1.24)	0.98

The Company does not have potential outstanding shares or other instruments with dilutive effect on the earnings per share.

9. Accounts receivable

	Consolidated	
	March 31, 2019	December 31, 2018
Accounts receivable	9,800	10,502
Expected credit loss	(242)	(241)
	9,558	10,261
Revenue related to the steel sector - %	83.18%	85.50%

There are no significant amounts recognized in the income statement related to impairment of accounts receivables for the three-month period ended March 31, 2019 and 2018.

There is no customer that individually represents over 10% of accounts receivable or revenues.

10. Inventories

	Consolidated	
	March 31, 2019	December 31, 2018
Finished products	12,601	10,847
Work in progress	2,656	2,664
Consumable inventory	3,873	3,705
Total	19,130	17,216

	Consolidated	
	Three-month period ended March 31,	
	2019	2018
Reversal (provision) for net realizable value	(69)	(3)

Finished and work in progress product inventory by segments is presented in note 4(b).

11. Other financial assets and liabilities

	Current		Consolidated Non-Current	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Other financial assets				
Financial investments	46	125	-	-
Bank accounts restricted	432	-	-	-
Loans	-	-	601	589
Derivative financial instruments (note 20)	166	149	1,648	1,520
Investments in equity securities (note 12)	-	-	3,637	3,823
Related parties - Loans (note 25)	1,172	1,409	6,223	6,248
	1,816	1,683	12,109	12,180
Other financial liabilities				
Derivative financial instruments (note 20)	1,296	1,821	1,213	1,335
Related parties - Loans (note 25)	4,291	4,392	3,731	3,722
Participative stockholders' debentures	-	-	6,788	5,454
	5,587	6,213	11,732	10,511

Participative stockholders' debentures

On April 2, 2019 (subsequent event), the Company paid the amount of R\$382, as remuneration to stockholders' debentures.

12. Acquisitions and divestitures

a) Fertilizers (discontinued operations)

In January 2018, the Company and The Mosaic Company ("Mosaic") concluded the transaction entered in December 2016, to sell (i) the phosphate assets located in Brazil, except for those located in Cubatão, Brazil; (ii) the control of Compañía Minera Miski Mayo S.A.C., in Peru; (iii) the potassium assets located in Brazil; and (iv) the potash projects in Canada. The Company received R\$3,495 (US\$1,080 million) in cash and 34.2 million common shares, corresponding to 8.9% of Mosaic's outstanding common shares after the issuance of these shares totaling R\$2,907 (US\$899 million), based on the Mosaic's quotation at closing date of the transaction and a loss of R\$184 was recognized in the income statement from discontinued operations.

Mosaic's shares received were accounted for as a financial investment measured at fair value through other comprehensive income.

b) Cubatão (part of the fertilizer segment)

In November 2017, the Company entered into an agreement with Yara International ASA ("Yara") to sell its assets located in Cubatão, Brazil. In May 2018, the transaction was concluded and the Company received R\$882 (US\$255 million) in cash and a loss of R\$231 was recognized in the income statement from discontinued operations.

c) New Steel

On January 24, 2019, the Company acquired 100% of the voting capital of New Steel Global NV ("New Steel") and gained its control for the total consideration of R\$1,884 (US\$496 million). New Steel is a company that develops processing and beneficiating technologies for iron ore through a completely dry process. The Company expects to continue developing this technology at the New Steel's technology center, allowing to use this technology on its operations over the future.

The total consideration paid is mainly attributable to the research project and development intangible asset. When completed, the Company expects to use the beneficiation technique on its pelletizing operations. The useful life of the intangible asset recognized will be defined at the beginning of the operation phase and until this asset is not subject to amortization, it will be tested annually for impairment, or more frequently if events or changes in circumstances indicate that it might be impaired.

The allocation of the purchase price to the acquired assets and liabilities assumed recognized at the acquisition date is as follows:

	January 24, 2019
Purchase price	1,884
Acquired assets	(67)
Intangibles (note 14)	(8)
Other assets	(59)
Assumed liabilities	63
Fair value adjustment of an intangible research and development asset (note 14)	(1,880)
Goodwill	-

d) Ferrous Resources Limited

In December 2018, the Company entered into an agreement to purchase the control of Ferrous Resources Limited, a company that currently owns and operates iron ore mines closely located to Company's operations in Minas Gerais, Brazil. The purchase price is R\$2,143 (US\$550 million) and the conclusion of transaction is expected to occur in 2019, subject to conditions precedent, including the approval of the Brazilian anti-trust authority (CADE).

13. Investments in associates and joint ventures

a) Changes during the period

Changes in investments in associates and joint ventures as follows:

			Consolidated
	Associates	Joint ventures	Total
Balance at December 31, 2018	5,403	7,092	12,495
Additions	-	1	1
Translation adjustment	57	9	66
Equity results in income statement	(25)	422	397
Equity results in statement of comprehensive income	(13)	-	(13)
Dividends declared	(37)	(170)	(207)
Others	2	10	12
Balance at March 31, 2019	5,387	7,364	12,751

			Consolidated
	Associates	Joint ventures	Total
Balance at December 31, 2017	4,774	7,028	11,802
Additions	-	58	58
Translation adjustment	55	5	60
Equity results in income statement	(10)	283	273
Dividends declared	-	(89)	(89)
Transfer from non-current assets held for sale (i)	280	(17)	263
Balance at March 31, 2018	5,099	7,268	12,367

(i) Refers to 18% interest held by Vale Fertilizantes at Ultrafertil which was transferred to Vale as part of the final settlement occurred in January 2018 (note 12).

The investments by segments are presented in note 4(b).

b) Guarantees provided

As of March 31, 2019, corporate guarantees provided by Vale (within the limit of its direct or indirect interest) for the companies Norte Energia S.A. and Companhia Siderúrgica do Pecém S.A. were R\$1,278 and R\$5,280 respectively.

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Expressed in millions of Brazilian reais, unless otherwise stated



Investments in associates and joint ventures (continued)

Associates and joint ventures	% ownership	% voting capital	Investments in associates and joint ventures		Equity results in the income statement		Consolidated Dividends received	
			March 31, 2019	December 31, 2018	Three-month period ended March 31,		Three-month period ended March 31,	
			2019	2018	2019	2018		
Ferrous minerals								
Baovale Mineração S.A.	50.00	50.00	94	88	6	5	-	-
Companhia Coreano-Brasileira de Pelotização	50.00	50.00	471	404	67	50	-	-
Companhia Hispano-Brasileira de Pelotização (i)	50.89	50.89	370	323	47	48	-	-
Companhia Ítalo-Brasileira de Pelotização (i)	50.90	51.00	342	312	31	52	-	-
Companhia Nipo-Brasileira de Pelotização (i)	51.00	51.11	690	575	114	98	-	-
MRS Logística S.A.	48.16	46.75	1,907	1,922	44	38	-	-
VLI S.A.	37.60	37.60	3,277	3,319	3	(43)	-	-
Zhuhai YPM Pellet Co.	25.00	25.00	90	87	-	-	-	-
			7,241	7,030	312	248	-	-
Coal								
Henan Longyu Energy Resources Co., Ltd.	25.00	25.00	1,258	1,228	(21)	13	-	-
			1,258	1,228	(21)	13	-	-
Base metals								
Korea Nickel Corp.	25.00	25.00	53	54	(2)	3	-	-
			53	54	(2)	3	-	-
Others								
Aliança Geração de Energia S.A. (i)	55.00	55.00	1,826	1,882	54	62	-	33
Aliança Norte Energia Participações S.A. (i)	51.00	51.00	635	628	7	22	-	-
California Steel Industries, Inc.	50.00	50.00	1,029	958	62	67	-	-
Companhia Siderúrgica do Pecém (ii)	50.00	50.00	-	-	-	(140)	-	-
Mineração Rio do Norte S.A.	40.00	40.00	356	360	(4)	10	-	-
Others			353	355	(11)	(12)	-	-
			4,199	4,183	108	9	-	33
Total			12,751	12,495	397	273	-	33

(i) Although the Company held a majority of the voting capital, the entities are accounted under equity method due to the stockholders' agreement where relevant decisions are shared with other parties.

(ii) Companhia Siderúrgica do Pecém ("CSP") is a joint venture and its results are accounted for under the equity method, in which the accumulated losses are capped to the Company's interest in the investee's capital based on the applicable law and requirements. That is, after the investment is reduced to zero, the Company does not recognize further losses nor liabilities associated with the investee. However, the Company has provided a financial guarantee to CSP, which has a fair value of R\$612 as at March 31, 2019 and is recorded in the balance sheet as "Others non-current liabilities".

14. Intangibles

Changes in intangibles are as follows:

	Consolidated					
	Goodwill	Concessions (i)	Right of use	Software	Research & development project and patents (ii)	Total
Balance at December 31, 2018	14,155	15,737	530	428	-	30,850
Additions	-	816	-	61	1,888	2,765
Disposals	-	(38)	-	-	-	(38)
Amortization	-	(419)	(2)	(75)	-	(496)
Translation adjustment	165	16	12	5	-	198
Balance at March 31, 2019	14,320	16,112	540	419	1,888	33,279
Cost	14,320	20,144	804	3,751	1,888	40,907
Accumulated amortization	-	(4,032)	(264)	(3,332)	-	(7,628)
Balance at March 31, 2019	14,320	16,112	540	419	1,888	33,279

	Consolidated					
	Goodwill	Concessions	Right of use	Software	Research & development project and patents	Total
Balance at December 31, 2017	13,593	13,236	506	759	-	28,094
Additions	-	829	-	1	-	830
Disposals	-	(22)	-	-	-	(22)
Amortization	-	(108)	(11)	(99)	-	(218)
Translation adjustment	(126)	3	-	(1)	-	(124)
Balance at March 31, 2018	13,467	13,938	495	660	-	28,560
Cost	13,467	17,534	767	5,147	-	36,915
Accumulated amortization	-	(3,596)	(272)	(4,487)	-	(8,355)
Balance at March 31, 2018	13,467	13,938	495	660	-	28,560

(i) Based on technical studies carried out by an independent company and after approval by the regulatory agency (ANTT), the Company reduced the useful life of its railroad tracks in 2019.

(ii) Refers to the acquisition of New Steel Global N.V. (note 12c).

15. Property, plant and equipment

Changes in property, plant and equipment are as follows:

	Consolidated								
	Land	Building	Facilities	Equipment	Mineral properties	Leasing agreements (ii)	Others	Constructions in progress	Total
Balance at December 31, 2018	2,459	42,434	43,536	24,826	32,931	-	28,175	13,120	187,481
Additions (i)	-	-	-	-	-	6,978	-	3,032	10,010
Disposals	(79)	(235)	(1)	(8)	(486)	-	(4)	(278)	(1,091)
Assets retirement obligation	-	-	-	-	472	-	-	-	472
Depreciation, amortization and depletion	-	(501)	(610)	(798)	(603)	(180)	(847)	-	(3,539)
Translation adjustment	6	157	162	114	473	32	67	111	1,122
Transfers	1	161	12	1,359	947	-	237	(2,717)	-
Balance at March 31, 2019	2,387	42,016	43,099	25,493	33,734	6,830	27,628	13,268	194,455
Cost	2,387	71,456	68,213	48,838	66,824	7,018	46,183	13,268	324,187
Accumulated depreciation	-	(29,440)	(25,114)	(23,345)	(33,090)	(188)	(18,555)	-	(129,732)
Balance at March 31, 2019	2,387	42,016	43,099	25,493	33,734	6,830	27,628	13,268	194,455

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	Consolidated								
	Land	Building	Facilities	Equipment	Mineral properties	Leasing agreements	Others	Constructions in progress	Total
Balance at December 31, 2017	2,375	40,028	38,986	22,803	29,999	-	27,104	20,240	181,535
Additions (i)	-	-	-	-	-	-	-	1,685	1,685
Disposals	-	(118)	(50)	(8)	(14)	-	(5)	(9)	(204)
Assets retirement obligation	-	-	-	-	124	-	-	-	124
Depreciation, amortization and depletion	-	(505)	(598)	(763)	(455)	-	(613)	-	(2,934)
Translation adjustment	-	(54)	(65)	13	(351)	-	(72)	302	(227)
Transfers	12	(4)	1,179	587	653	-	690	(3,117)	-
Balance at March 31, 2018	2,387	39,347	39,452	22,632	29,956	-	27,104	19,101	179,979
Cost	2,387	62,976	61,276	42,949	57,752	-	41,558	19,101	287,999
Accumulated depreciation	-	(23,629)	(21,824)	(20,317)	(27,796)	-	(14,454)	-	(108,020)
Balance at March 31, 2018	2,387	39,347	39,452	22,632	29,956	-	27,104	19,101	179,979

(i) Includes capitalized borrowing costs.

(ii) Refers to the recognition of the leases in accordance with IFRS 16 (note 2c).

There are no material changes to the net book value of consolidated property, plant and equipment pledged to secure judicial claims and loans and borrowings (note 16) compared to those disclosed in the financial statements as at December 31, 2018.

Disposals of assets

The Company recognized a loss of R\$196 and R\$52 in the income statement as "Impairment and disposal of non-current assets" for the period ended March 31, 2019 and 2018, respectively, due to non-viable projects and operating assets written off through sale or obsolescence. In addition, the Company recognized a loss of R\$585 related to the write-off assets of the Córrego do Feijão mine and those related to the upstream dams in Brazil (note 3) for the period ended March 31, 2019.

Accounting policy

Leases - At inception of a contract, the Company assesses whether a contract is, or contains, a lease. A contract is, or contains a lease, if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration.

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 useful life of the right-of-use asset or the end of the lease term.

The lease liability is initially measured at the present value of the lease payments that are not paid at the commencement date, 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, initially measured using the index or 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.

16. Loans, borrowings and cash and cash equivalents

a) Cash and cash equivalents

Cash and cash equivalents includes cash, immediately redeemable deposits and short-term investments with an insignificant risk of change in value. They are readily convertible to cash, part in R\$, indexed to the Brazilian Interbank Interest rate ("DI Rate" or "CDI") and part denominated in US\$, mainly time deposits.

b) Loans and borrowings

i) Total debt

	Current liabilities		Non-current liabilities	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Principal in:				
US\$ (i)	6,076	993	40,743	39,909
EUR	-	-	4,162	4,217
R\$ (i)	3,637	1,907	10,442	11,392
Other currencies	94	96	514	492
Accrued charges	775	893	-	29
Total	10,582	3,889	55,861	56,039

(i) In the three-month period ended March 31, 2019, the Company entered into export financing lines.

The future flows of debt payments principal and interest are as follows:

	Consolidated	
	Principal	Estimated future interest payments (i)
2019	5,121	2,626
2020	7,586	3,445
2021	4,836	3,055
2022	8,075	2,704
Between 2023 and 2027	20,345	9,983
2028 onwards	19,705	13,374
Total	65,668	35,187

(i) Based on interest rate curves and foreign exchange rates applicable as at March 31, 2019 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 interim financial statements.

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

	Consolidated
	Loans and borrowings
December 31, 2018	59,928
Additions	6,933
Repayments	(789)
Interest paid	(927)
Cash flow from financing activities	5,217
Effect of exchange rate	424
Interest accretion	874
Non-cash changes	1,298
March 31, 2019	66,443

iii) Credit lines

To mitigate liquidity risk, Vale has two revolving credit facilities, which will mature in 2020 and 2022, in the available amount of R\$19,484 (US\$5,000 million) to assist the short term liquidity management and to enable more efficiency in cash management, being consistent with the strategic focus on cost of capital reduction. As of March 31, 2019 these lines are undrawn.

iv) Guarantees

As at March 31, 2019 and December 31, 2018, loans and borrowings are secured by property, plant and equipment and receivables in the amount of R\$920 and R\$857, respectively.

The securities issued through Vale's wholly-owned finance subsidiary Vale Overseas Limited are fully and unconditionally guaranteed by Vale.

v) Covenants

Some of the Company's debt agreements with lenders contain financial covenants. The primary financial covenants in those agreements require maintaining certain ratios, such as debt to EBITDA (Earnings before Interest Taxes, Depreciation and Amortization) and interest coverage. The Company has not identified any instances of noncompliance as at March 31, 2019.

17. Liabilities related to associates and joint ventures

The movements of the provision to comply with the obligations under the agreement related to the dam failure of Samarco Mineração S.A. ("Samarco"), which is a Brazilian joint venture between Vale S.A. and BHP Billiton Brasil Ltda. ("BHPB"), in the three-month period ended March 31, 2019 and 2018 are as follows:

	2019	2018
Balance at January 01,	4,346	3,296
Payments	(200)	(191)
Present value valuation	(73)	226
Balance at March 31,	4,073	3,331
Current liabilities	1,091	1,227
Non-current liabilities	2,982	2,104
Liabilities	4,073	3,331

In addition to the provision, Vale S.A. made available in the three-month period ended March 31, 2019 and 2018, the amount of R\$115 and R\$44, respectively, which was fully used to fund Samarco's working capital and was recognized in Vale's income statement as an expense in "Equity results and other results in associates and joint ventures". Vale S.A. intends to make available until June 30, 2019 short-term facilities up to R\$226 to support Samarco's cash necessity, without any binding obligation to Samarco in this regard. Such support will be released simultaneously with BHPB, and pursuant to the same amounts, terms and conditions, subject to the fulfillment of certain milestones.

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

The contingencies related to the Samarco dam failure are disclosed in note 22.

18. Financial instruments classification

	March 31, 2019				December 31, 2018			
	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	19,513	-	-	19,513	22,413	-	-	22,413
Bank accounts restricted	432	-	-	432	-	-	-	-
Financial investments	-	-	46	46	-	-	125	125
Derivative financial instruments	-	-	166	166	-	-	149	149
Accounts receivable	9,348	-	210	9,558	10,679	-	(418)	10,261
Related parties	1,172	-	-	1,172	1,409	-	-	1,409
	30,465	-	422	30,887	34,501	-	(144)	34,357
Non-current								
Derivative financial instruments	-	-	1,648	1,648	-	-	1,520	1,520
Investments in equity securities	-	3,637	-	3,637	-	3,823	-	3,823
Loans	601	-	-	601	589	-	-	589
Related parties	6,223	-	-	6,223	6,248	-	-	6,248
	6,824	3,637	1,648	12,109	6,837	3,823	1,520	12,180
Total of financial assets	37,289	3,637	2,070	42,996	41,338	3,823	1,376	46,537
Financial liabilities								
Current								
Suppliers and contractors	12,981	-	-	12,981	13,610	-	-	13,610
Leases	854	-	-	854	-	-	-	-
Derivative financial instruments	-	-	1,296	1,296	-	-	1,821	1,821
Loans and borrowings	10,582	-	-	10,582	3,889	-	-	3,889
Related parties	4,291	-	-	4,291	4,392	-	-	4,392
	28,708	-	1,296	30,004	21,891	-	1,821	23,712
Non-current								
Leases	5,952	-	-	5,952	-	-	-	-
Derivative financial instruments	-	-	1,213	1,213	-	-	1,335	1,335
Loans and borrowings	55,861	-	-	55,861	56,039	-	-	56,039
Related parties	3,731	-	-	3,731	3,722	-	-	3,722
Participative stockholders' debentures	-	-	6,788	6,788	-	-	5,454	5,454
	65,544	-	8,001	73,545	59,761	-	6,789	66,550
Total of financial liabilities	94,252	-	9,297	103,549	81,652	-	8,610	90,262

19. Fair value estimate

a) Assets and liabilities measured and recognized at fair value:

	March 31, 2019				December 31, 2018			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Financial assets								
Financial investments	46	-	-	46	125	-	-	125
Derivative financial instruments	-	586	1,228	1,814	-	525	1,144	1,669
Accounts receivable	-	210	-	210	-	(418)	-	(418)
Investments in equity securities	3,637	-	-	3,637	3,823	-	-	3,823
Total	3,683	796	1,228	5,707	3,948	107	1,144	5,199
Financial liabilities								
Derivative financial instruments	-	1,926	583	2,509	-	2,466	690	3,156
Participative stockholders' debentures	-	6,788	-	6,788	-	5,454	-	5,454
Total	-	8,714	583	9,297	-	7,920	690	8,610

There were no transfers between Level 1 and Level 2, or between Level 2 and Level 3 for the three-month period ended in March 31, 2019.

The following table presents the changes in Level 3 assets and liabilities for the three-month period ended in March 31, 2019:

	Consolidated	
	Financial assets	Derivative financial instruments Financial liabilities
Balance at December 31, 2018	1,144	690
Gain and losses recognized in income statement	84	(107)
Balance at March 31, 2019	1,228	583

Methods and techniques of evaluation

Derivative financial instruments

Derivative financial instruments are evaluated through the use of market curves and prices impacting each instrument at the closing dates, detailed in the item "market curves" (note 27).

For the pricing of options, the Company often uses the Black & Scholes model. In this model, the fair value of the derivative is determined basically as a function of the volatility and the price of the underlying asset, the strike price of the option, the risk free interest rate and the option maturity. In the case of options where payoff is a function of the average price of the underlying asset over a certain period during the life of the option, the Company uses Turnbull & Wakeman model. In this model, in addition to the factors that influence the option price in the Black-Scholes model, the formation period of the average price is also considered.

In the case of swaps, both the present value of the long and short positions are estimated by discounting their cash flows by the interest rate in the related currency. The fair value is determined by the difference between the present value of the long and short positions of the swap in the reference currency.

For the swaps indexed to TJLP, the calculation of the fair value assumes that TJLP is constant, that is, the projections of future cash flows in Brazilian Reais are made considering the last TJLP disclosed.

Forward and future contracts are priced using the future curves of their corresponding underlying assets. Typically, these curves are obtained on the stock exchanges where these assets are traded, such as the London Metals Exchange ("LME"), the Commodity Exchange ("COMEX") or other providers of market prices. When there is no price for the desired maturity, Vale uses an interpolation between the available maturities.

The fair value of derivatives within level 3 is estimated using discounted cash flows and option model valuation techniques with unobservable inputs of discount rates, stock prices and commodities prices.

b) Fair value of financial instruments not measured at fair value

The fair values and carrying amounts of loans and borrowings are as follows:

Financial liabilities	Balance	Fair value	Consolidated	
			Level 1	Level 2
March 31, 2019				
Debt principal	65,668	69,653	41,488	28,165
December 31, 2018				
Debt principal	59,006	63,013	41,408	21,605

Due to the short-term cycle, the fair value of cash and cash equivalents balances, financial investments, accounts receivable and accounts payable approximate their book values.

20. Derivative financial instruments

a) Derivatives effects on statement of financial position

	Consolidated			
	Assets			
	March 31, 2019		December 31, 2018	
	Current	Non-current	Current	Non-current
Foreign exchange and interest rate risk				
CDI & TJLP vs. US\$ fixed and floating rate swap	41	2	35	-
IPCA swap	23	347	27	324
Eurobonds swap	-	-	-	17
Pré-dólar swap	73	6	73	3
	137	355	135	344
Commodities price risk				
Nickel	23	15	8	-
Bunker oil	6	-	3	-
	29	15	11	-
Others (note 27)	-	1,278	3	1,176
	-	1,278	3	1,176
Total	166	1,648	149	1,520

	Consolidated			
	Liabilities			
	March 31, 2019		December 31, 2018	
	Current	Non-current	Current	Non-current
Foreign exchange and interest rate risk				
CDI & TJLP vs. US\$ fixed and floating rate swap	1,189	384	1,481	380
IPCA swap	43	141	136	181
Eurobonds swap	18	39	19	-
Pré-dólar swap	39	60	40	72
	1,289	624	1,676	633
Commodities price risk				
Nickel	4	-	31	8
Bunker oil	-	-	114	-
	4	-	145	8
Others (note 27)	3	589	-	694
	3	589	-	694
Total	1,296	1,213	1,821	1,335

b) Effects of derivatives on the income statement and cash flow

	Consolidated			
	Gain (loss) recognized in the income statement		Three-month period ended March 31, Financial settlement inflows (outflows)	
	2019	2018	2019	2018
Foreign exchange and interest rate risk				
CDI & TJLP vs. US\$ fixed and floating rate swap	(28)	107	(324)	(144)
IPCA swap	46	57	(101)	-
Eurobonds swap	(72)	101	(19)	-
Pré-dólar swap	8	61	(8)	(3)
	(46)	326	(452)	(147)
Commodities price risk				
Nickel	74	13	13	38
Bunker oil	108	-	-	29
	182	13	13	67
Others	204	(54)	(1)	-
Total	340	285	(440)	(80)

The maturity dates of the derivative financial instruments are as follows:

	Last maturity dates
Currencies and interest rates	September 2029
Bunker oil	June 2019
Nickel	March 2021
Others	December 2027

c) Net investment of foreign operation

From January 1, 2019, the Company has considered certain long-term loans payable to Vale International S.A., for which settlement is neither planned nor likely to occur in the foreseeable future, as part of its net investment in that foreign operation. The foreign exchange differences arising on the monetary item are recognized in other comprehensive income and reclassified from stockholders' equity to income statement at the moment of the disposal or partial disposal of the net investment. The Company recognized a loss of R\$292 (R\$193 net of taxes) for the three-month period ended March 31, 2019 in the "Cumulative translation adjustments" in stockholders' equity.

d) Hedge in foreign operations

In January 2017, the Company implemented hedge accounting for the foreign currency risk arising from Vale S.A.'s net investments in Vale International S.A. and Vale International Holding GmbH. Under the hedge accounting program, the Company's debt denominated in U.S. dollars and Euros serves as a hedge instrument for these investments. With the program, the impact of exchange rate variations on debt denominated in U.S. dollars and Euros has been partially recorded in other comprehensive income. As at March 31, 2019, the carrying value of the debts designated as instrument hedge of these investments are R\$12,292 (US\$3,154 million) and R\$3,193 (EUR750 million), and the foreign exchange loss of R\$67 (R\$44, net of taxes) for the three-month period ended March 31, 2019 was recognized in the "Cumulative translation adjustments" in stockholders' equity.

21. Provisions

	Consolidated			
	Current liabilities		Non-current liabilities	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Payroll, related charges and other remunerations (i)	2,059	4,054	-	-
Onerous contracts	180	235	2,538	2,486
Environmental obligations	388	382	869	784
Asset retirement obligations	293	331	12,874	11,738
De-characterization of the upstream dams (note 3)	614	-	6,523	-
Provisions for litigation (note 22)	-	-	5,409	5,258
Employee postretirement obligations (note 23)	261	276	7,361	7,225
Provisions	3,795	5,278	35,574	27,491

(i) Change mainly due to payment of profit sharing program.

22. Litigation

a) Provision for litigation

Vale is party to labor, civil, tax and other ongoing lawsuits, at administrative and court levels. Provisions for losses resulting from lawsuits are estimated and updated by the Company, based on analysis from the Company's legal consultants.

Changes in provision for litigation are as follows:

	Consolidated				
	Tax litigation	Civil litigation	Labor litigation	Environmental litigation	Total of litigation provision
Balance at December 31, 2018	2,680	644	1,921	13	5,258
Additions and reversals, net	21	174	85	19	299
Payments	(58)	(46)	(108)	-	(211)
Indexation and interest	(30)	63	30	5	68
Translation adjustment	-	(5)	-	-	(5)
Balance at March 31, 2019	2,613	830	1,929	37	5,409

	Consolidated				
	Tax litigation	Civil litigation	Labor litigation	Environmental litigation	Total of litigation provision
Balance at December 31, 2017	2,483	432	1,924	34	4,873
Additions and reversals, net	1	5	139	1	146
Payments	(7)	(1)	(58)	-	(66)
Additions - discontinued operations	97	2	43	-	142
Indexation and interest	23	9	(67)	1	(34)
Translation adjustment	-	(2)	-	-	(2)
Balance at March 31, 2018	2,597	445	1,981	36	5,059

b) Contingent liabilities

Contingent liabilities of administrative and judicial claims, with expectation of loss classified as possible, and for which the recognition of a provision is not considered necessary by the Company, based on legal advice are as follows:

	Consolidated	
	March 31, 2019	December 31, 2018
Tax litigation	36,763	33,481
Civil litigation	6,853	7,583
Labor litigation	5,224	5,717
Environmental litigation	4,128	4,070
Total	52,968	50,851

i - Tax litigation - The most relevant contingent tax liabilities are associated with proceedings related to (i) deductibility of tax credits from our payments of contributions on the net income (CSLL) on our taxable income, (ii) challenges to our PIS and COFINS tax credits, (iii) assessments related to mining royalties (CFEM), and (iv) assessments of value-added tax on services and circulation of goods (ICMS), in particular related to credits we claimed in connection with the sale and purchase of electricity, collection of ICMS in connection with goods that enter into the State of Pará and collection of ICMS/penalties in connection with the transportation by Vale of its own products. The variation in the period is mainly due to new tax proceedings related to ISS, PIS, COFINS, CSLL and IRPJ, accrued interest and adjustment for inflation of the amounts in dispute.

ii - Civil litigation - Most of those claims have been filed by suppliers for indemnification under construction contracts, primarily relating to certain alleged damages, payments and contractual penalties. A number of other claims related to contractual disputes regarding inflation index.

iii - Labor litigation - Represents individual claims by employees and service providers, primarily involving demands for additional compensation for overtime work, time spent commuting or health and safety conditions; and the Brazilian federal social security administration ("INSS") regarding contributions on compensation programs based on profits.

iv - Environmental litigation - The most significant claims concern alleged procedural deficiencies in licensing processes, non-compliance with existing environmental licenses or damage to the environment.

c) Judicial deposits

In addition to the provisions and contingent liabilities, the Company is required by law to make judicial deposits to secure a potential adverse outcome of certain lawsuits. These court-ordered deposits are monetarily adjusted and reported as non-current assets until a judicial decision to draw the deposit occurs.

	Consolidated	
	March 31, 2019	December 31, 2018
Tax litigation	4,119	4,143
Civil litigation	7,677	231
Labor litigation	3,786	2,150
Environmental litigation	4,386	125
Total	19,968	6,649

The judicial deposits related to Brumadinho's event are detailed in note 3(a) and are included in the amounts above.

Beside the deposits already made, the Company has insurance and bank guarantees for judicial deposits in the amount of R\$15,4 billions, of which R\$5,3 billion are related to the Brumadinho event. The cost of this guarantees recognized in financial expenses is R\$8 in three-month period ended March 31, 2019.

d) Contingencies related to Samarco accident

(i) Public civil claim filed by the Federal Government and others and Public civil claim filed by Federal Prosecution Office ("MPF")

In 2016, the federal government, the Brazilian states of Espírito Santo and Minas Gerais and other governmental authorities have initiated a public civil lawsuit against Samarco and its shareholders, with an estimated value indicated by the plaintiffs of R\$20.2 billion. In the same year, MPF filed a public civil action against Samarco and its shareholders and presented several claims, including: (i) the adoption of measures for mitigating the social, economic and environmental impacts resulting from the dam failure and other emergency measures; (ii) the payment of compensation to the community; and (iii) payments for the collective moral damage. The action value indicated by MPF is R\$155 billion.

In 2018, the parties entered into an agreement ("Term of Adjustment of Conduct"), which extinguishes (i) the public civil claim of R\$20.2 billion filed by the Federal Government and others; and (ii) part of the claims included in the public civil claim of R\$155 billion filed by MPF.

(ii) United States class action lawsuits

In March 2017, holders of bonds issued by Samarco Mineração S.A., filed a class action suit in the Federal Court in New York against Samarco Mineração S.A., Vale S.A. and BHP Brasil Ltda. under U.S. federal securities laws. The plaintiffs allege that Vale S.A. made false and misleading statements or not made disclosures concerning the risks and dangers of the operations of Samarco's Fundão dam and the adequacy of related programs and procedures.

Based on the assessment of the Company's legal consultants, the expectation of loss of this proceeding is classified as possible. The plaintiffs have not specified an amount of alleged damages in these actions. Therefore, it is not possible, at the moment, to reliably estimate the potential amounts involved.

(iii) Criminal lawsuit

In 2016, the MPF brought a criminal lawsuit against Samarco and its shareholders, VogBr Recursos Hídricos e Geotecnia Ltda. and 22 individuals for the consequences related to Fundão dam failure. Currently, the progress of the criminal action is paralyzed due to the judgment of Habeas Corpus, with no decision.

On April 23, 2019, the Federal Court from the 1st Region issued an Habeas Corpus writ and granted it to dismiss the criminal charges of homicide and physical injuries committed by oblique intent held against one of the defendants on the criminal action. At the same opportunity, the Court extended the writ's issuance to all other defendants on the case as the criminal information does not describe the crimes of homicide and physical injury, but the crime of flooding qualified by the result of death and physical injury as a consequence of the Fundão dam's failure. Therefore, the Court dismissed the homicide and physical injuries charges held against all defendants.

Currently, the criminal action awaits for the judge to schedule new hearings for the defense witnesses to testify and also to determine a rogatory letter to be sent to Canada to collect the testimony of the three accusation witnesses that live there.

(iv) Tax proceedings

In 2018, the Office of the of the Attorney General for the National Treasury (PGFN) requested a court order to seize our assets to secure the payment of federal tax debts, in the amount of approximately R\$10 billion, related to a joint venture in which Vale participates. The court initially granted an injunction, but the injunction was later reversed in all material respects. Such tax debits are currently suspended under Brazilian law and Vale's defense was timely presented.

e) Contingent Assets

In 2015, the Company filed a request to enforce a judicial decision in the amount of R\$524 million, based on a partially favorable unappealable decision that granted the Company the right to adjust for inflation and interest, the amount of compulsory loans it made to the electricity sector from 1987 to 1993. A judicial decision determining the amount of the asset to be recognized in Vale's financial statements is still pending. Currently it is not possible to estimate the economic benefit inflow as there is a pending judicial decision. Consequently, the asset was not recognized in the financial statements.

In March 2017, the Federal Supreme Court (STF) decided that the ICMS shall not be included in PIS and COFINS tax base. The decision is not final as an appeal by the Office of the of the Attorney General for the National Treasury (PGFN) is still pending. Vale has been litigating this issue in two judicial proceedings, related to taxable events after December 2001. On March 18, 2019, a favorable judicial decision in one of these proceedings became final and unappealable (with respect to assessments after March 2012). In the other case, Vale is waiting for Federal Regional Court of the 2nd Region to apply the same authority from the STF. The asset has not yet been recognized in the financial statements as the determination of its amount is subject to a final decision on a request for clarification (*embargos de declaração*) before the STF, which is pending.

In 2010, Vale acquired a 51% stake in VBG - Vale BSGR Limited ("VBG") (formerly BSG Resources (Guiné) Limited), which had iron ore concession rights in Simandou South ("Zogota") and iron ore exploration permits in Simandou North (Blocks 1 & 2) in Guinea. In 2014, the Republic of Guinea revoked that concession after a finding that BSGR had obtained it through bribery of Guinean government officials, while finding that Vale did not participate in any way in that bribery. In April, 2019, the Company was summoned of an award from an arbitral tribunal in London granting the amount of R\$4,676 (US\$1.2 billion) plus costs and interest (with interest and costs, exceeding R\$7,793 (US\$2.0 billion), against BSG Resources Limited ("BSGR"), for fraud and breaches of warranty by BSGR in inducing Vale to enter into a joint venture to develop a concession for mining iron ore in the Simandou region of the Republic of Guinea. Vale S.A. commenced a proceeding against BSG Resources Limited ("BSGR") in the United States District Court for the Southern District of New York to enforce Vale's arbitral award against BSGR, which was issued on April 4, 2019 by an arbitral tribunal under the auspices of the London Court of International Arbitration. Vale intends to pursue collection of this award by all legally available means, including other possible jurisdictions, but since there can be no assurance as to the timing and amount of any collections, the asset was not recognized in its financial statements.

23. Employee postretirement obligations

Reconciliation of net liabilities recognized in the statement of financial position

	March 31, 2019			Consolidated December 31, 2018		
	Overfunded pension plans	Underfunded pension plans	Other benefits	Overfunded pension plans	Underfunded pension plans	Other benefits
Amount recognized in the statement of financial position						
Present value of actuarial liabilities	(11,868)	(15,904)	(5,215)	(13,861)	(15,226)	(4,956)
Fair value of assets	18,713	13,497	-	18,355	12,681	-
Effect of the asset ceiling	(6,845)	-	-	(4,494)	-	-
Liabilities	-	(2,407)	(5,215)	-	(2,545)	(4,956)
Current liabilities	-	(88)	(173)	-	(74)	(202)
Non-current liabilities	-	(2,319)	(5,042)	-	(2,471)	(4,754)
Liabilities	-	(2,407)	(5,215)	-	(2,545)	(4,956)

24. Stockholders' equity

a) Share capital

As at March 31, 2019, the share capital was R\$77,300 corresponding to 5,284,474,782 shares issued and fully paid without par value.

Stockholders	March 31, 2019		
	ON	PNE	Total
Litel Participações S.A. and Litela Participações S.A.	1,075,773,534	-	1,075,773,534
BNDES Participações S.A.	323,496,276	-	323,496,276
Bradespar S.A.	293,907,266	-	293,907,266
Mitsui & Co., Ltd	286,347,055	-	286,347,055
Foreign investors - ADRs	1,199,344,981	-	1,199,344,981
Foreign institutional investors in local market	1,194,732,165	-	1,194,732,165
FMP - FGTS	53,070,716	-	53,070,716
PIBB - Fund	2,455,573	-	2,455,573
Institutional investors	378,691,740	-	378,691,740
Retail investors in Brazil	320,463,151	-	320,463,151
Brazilian Government (Golden Share)	-	12	12
Shares outstanding	5,128,282,457	12	5,128,282,469
Shares in treasury	156,192,313	-	156,192,313
Total issued shares	5,284,474,770	12	5,284,474,782
Share capital per class of shares (in millions)	77,300	-	77,300
Total authorized shares	7,000,000,000	-	7,000,000,000

b) Shares in treasury

As of March 31, 2019, the Company had 156,192,313 treasury shares of which 75,325,801 are judicially blocked, as described in note 3, due to the Brumadinho event.

In addition, the Company used 2,024,059 treasury shares to pay the Matching program of its eligible executives. These shares are part of the total treasury share acquired by the Company in the share buyback program, approved by the Board of Directors on July 25, 2018, in the amount of R\$84 recognized as "assignment and transfer of shares".

25. Related parties

The Company's related parties are subsidiaries, joint ventures, associates, stockholders and its related entities and key management personnel of the Company. Transactions between the parent company and its subsidiaries are eliminated on consolidation and are not disclosed in this note.

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.

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.

Information about related party transactions and effects on the financial statements is set out below:

a) Transactions with related parties

	Consolidated							
	Three-month period ended March 31,							
	2019				2018			
	Joint Ventures	Associates	Major stockholders	Total	Joint Ventures	Associates	Major stockholders	Total
Net operating revenue	243	255	165	663	338	252	157	747
Cost and operating expenses	(1,882)	(30)	-	(1,912)	(1,635)	(67)	-	(1,702)
Financial result	12	(1)	(116)	(105)	129	1	(171)	(41)

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 leases of the pelletizing plants.

b) Outstanding balances with related parties

	Consolidated							
	March 31, 2019				December 31, 2018			
	Joint Ventures	Associates	Major stockholders	Total	Joint Ventures	Associates	Major stockholders	Total
Assets								
Cash and cash equivalents	-	-	2,541	2,541	-	-	4,867	4,867
Accounts receivable	214	643	14	871	426	163	12	601
Dividends receivable	682	37	-	719	511	-	-	511
Loans	7,395	-	-	7,395	7,657	-	-	7,657
Derivatives financial instruments	-	-	1,168	1,168	-	-	1,151	1,151
Other assets	280	-	-	280	96	-	-	96
Liabilities								
Supplier and contractors	1,052	420	80	1,552	854	80	94	1,028
Loans	-	5,222	11,896	17,118	-	5,136	10,268	15,404
Derivatives financial instruments	-	-	425	425	-	-	433	433
Other liabilities	2,800	366	-	3,166	2,978	-	-	2,978

Major stockholders

Refers to regular financial instruments with large financial institutions of which the stockholders are part of the controlling "shareholders' agreement".

Coal segment transactions

In March 2018, Nacala BV, a joint venture between Vale and Mitsui on the Nacala's logistic corridor, closed the project financing and repaid a portion of the shareholders loans from Vale, in the amount of R\$8,434 (US\$2,572 million). The outstanding receivable of R\$7,395 carries interest at 7.44% p.a.

The loan from associates mainly relates to the loan from Pangea Emirates Ltd, part of the group of shareholders which owns 15% interest on Vale Moçambique, which carries interest at 6.54% p.a.

26. Select notes to Parent Company information (individual interim information)

a) Investments

	Parent company	
	2019	2018
Balance at January 1st,	139,510	117,387
Additions/Capitalizations (i)	2,092	707
Disposals	(84)	-
Translation adjustment	1,366	(100)
Equity results in income statement	4,472	2,500
Equity results in statement of comprehensive income	16	90
Dividends declared	(164)	(99)
Others (ii)	(18)	3,485
Balance at March 31,	147,190	123,970

(i) Refers to the acquisition of New Steel Global N.V. (note 12c).

(ii) In 2018 Includes assets held for sale (Vale Fertilizantes) that were indirectly sold by the Parent Company.

b) Intangibles

	Parent company			
	Concessions (i)	Right of use	Software	Total
Balance at December 31, 2018	15,240	105	277	15,622
Additions	815	-	24	839
Disposals	(38)	-	-	(38)
Amortization	(360)	(1)	(62)	(423)
Balance at March 31, 2019	15,657	104	239	16,000
Cost	19,662	223	2,567	22,452
Accumulated amortization	(4,005)	(119)	(2,328)	(6,452)
Balance at March 31, 2019	15,657	104	239	16,000

	Parent company			
	Concessions	Right of use	Software	Total
Balance at December 31, 2017	12,773	111	587	13,471
Additions	829	-	1	830
Disposals	(19)	-	-	(19)
Amortization	(106)	(1)	(87)	(194)
Balance at March 31, 2018	13,477	110	501	14,088
Cost	17,008	223	4,111	21,342
Accumulated amortization	(3,531)	(113)	(3,610)	(7,254)
Balance at March 31, 2018	13,477	110	501	14,088

(i) Based on technical studies carried out by an independent company and after approval by the regulatory agency (ANTT), the Company reduced the useful life of its railroad tracks in 2019.

c) Property, plant and equipment

	Parent company								
	Land	Building	Facilities	Equipment	Mineral properties	Leasing agreements (ii)	Others	Constructions in progress	Total
Balance at December 31, 2018	1,735	26,559	30,593	10,004	7,689	-	19,240	7,996	103,816
Additions (i)	-	-	-	-	-	2,058	-	997	3,055
Disposals	(2)	(229)	-	(3)	(92)	-	(4)	(276)	(606)
Assets retirement obligation	-	-	-	-	208	-	-	-	208
Depreciation, amortization and depletion	-	(248)	(346)	(327)	(136)	(76)	(705)	-	(1,838)
Transfers	1	437	63	374	(11)	-	519	(1,383)	-
Balance at March 31, 2019	1,734	26,519	30,310	10,048	7,658	1,982	19,050	7,334	104,635
Cost	1,734	33,442	38,422	17,598	9,850	2,058	31,161	7,334	141,599
Accumulated depreciation	-	(6,923)	(8,112)	(7,550)	(2,192)	(76)	(12,111)	-	(36,964)
Balance at March 31, 2019	1,734	26,519	30,310	10,048	7,658	1,982	19,050	7,334	104,635

	Parent company								
	Land	Building	Facilities	Equipment	Mineral properties	Leasing agreements	Others	Constructions in progress	Total
Balance at December 31, 2017	1,739	25,315	27,204	9,716	5,367	-	18,205	15,432	102,978
Additions (i)	-	-	-	-	-	-	-	842	842
Disposals	-	-	(49)	(8)	-	-	(5)	(6)	(68)
Assets retirement obligation	-	-	-	-	96	-	-	-	96
Depreciation, amortization and depletion	-	(201)	(291)	(305)	(71)	-	(452)	-	(1,320)
Transfers	13	2	967	287	366	-	651	(2,286)	-
Balance at March 31, 2018	1,752	25,116	27,831	9,690	5,758	-	18,399	13,982	102,528
Cost	1,752	30,433	34,824	16,727	7,580	-	28,290	13,982	133,588
Accumulated depreciation	-	(5,317)	(6,993)	(7,037)	(1,822)	-	(9,891)	-	(31,060)
Balance at March 31, 2018	1,752	25,116	27,831	9,690	5,758	-	18,399	13,982	102,528

(i) Includes capitalized borrowing costs.

(ii) Refers to the recognition of the leases in accordance with IFRS 16 (note 2c).

Disposals of assets

The Company recognized a loss of R\$585 in the income statement as "Impairment and disposal of non-current assets" related to the write-off assets of the Córrego do Feijão mine and those related to the upstream dams in Brazil (note 3) for the period ended March 31, 2019.

d) Loans and borrowings

	Parent company			
	Current liabilities		Non-current liabilities	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Principal in:				
US\$ (i)		3,350	8,943	9,004
EUR		-	3,282	3,329
R\$	1,955	1,581	10,070	10,749
Accrued charges	254	385	-	-
Total	5,559	2,523	22,295	23,082

(i) In the three-month period ended March 31, 2019, the Company entered into export financing lines.

The future flows of debt payments (principal) are as follows:

	Parent company
	Debt principal
2019	2,773
2020	5,108
2021	3,059
2022	2,734
Between 2023 and 2027	11,488
2028 onwards	2,438
	27,600

e) Provisions

	Current liabilities		Parent company Non-current liabilities	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
	Payroll, related charges and other remunerations (i)	1,335	2,808	-
Environmental obligations	265	277	501	514
Asset retirement obligations	133	158	3,083	3,217
De-characterization of the upstream dams (note 3)	614	-	6,523	-
Provisions for litigation	-	-	4,604	4,483
Employee postretirement obligations	68	88	1,580	1,544
Provisions	2,415	3,331	16,291	9,758

(i) Change mainly due to payment of profit sharing program.

f) Provisions for litigation

	Parent company				Total of litigation provision
	Tax litigation	Civil litigation	Labor litigation	Environmental litigation	
Balance at December 31, 2018	2,240	467	1,767	9	4,483
Additions and reversals, net	20	76	66	19	181
Payments	(1)	(1)	(96)	5	(93)
Indexation and interest	(32)	38	26	-	32
Balance at March 31, 2019	2,227	581	1,763	33	4,604

	Parent company				Total of litigation provision
	Tax litigation	Civil litigation	Labor litigation	Environmental litigation	
Balance at December 31, 2017	2,117	308	1,770	24	4,219
Additions and reversals, net	2	4	120	1	127
Payments	(5)	(1)	(49)	-	(55)
Indexation and interest	22	1	(48)	-	(25)
Additions - discontinued operations	97	2	43	-	142
Balance at March 31, 2018	2,233	314	1,836	25	4,408

g) Contingent liabilities

	Parent company	
	March 31, 2019	December 31, 2018
Tax litigation	33,988	30,808
Civil litigation	5,165	5,371
Labor litigation	4,931	5,398
Environmental litigation	3,950	3,897
Total	48,034	45,474

h) Income taxes

The total amount presented as income taxes in the income statement is reconciled to the rate established by law, as follows:

	Parent company	
	Three-month period ended March 31, 2019	2018
Income (loss) before income taxes	(10,305)	6,703
Income taxes at statutory rates - 34%	3,504	(2,279)
Adjustments that affect the basis of taxes:		
Income tax benefit from interest on stockholders' equity	-	216
Tax incentives	8	-
Equity results	1,521	850
Others	(1,150)	(107)
Income taxes	3,883	(1,320)

27. Additional information about derivatives financial instruments

The risk of the derivatives portfolio 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 day time horizon.

The following tables detail the derivatives positions for Vale and its controlled companies as of March 31, 2019, with the following information: notional amount, fair value including credit risk, gains or losses in the period, value at risk and the fair value breakdown by year of maturity.

a) Foreign exchange and interest rates derivative positions

(i) Protection programs for the R\$ denominated debt instruments

In order to reduce cash flow volatility, swap transactions were implemented to convert into US\$ the cash flows from certain debt instruments denominated in R\$ with interest rates linked mainly to CDI, TJLP and IPCA. In those swaps, Vale pays fixed or floating rates in US\$ and receives payments in R\$ linked to the interest rates of the protected debt instruments.

The swap transactions were negotiated over-the-counter and the protected items are the cash flows from debt instruments linked to R\$. These programs transform into US\$ the obligations linked to R\$ to achieve a currency offset in the Company's cash flows, by matching its receivables - mainly linked to US\$ - with its payables.

Flow	Notional		Index	Average rate	Fair value		Financial Settlement Inflows (Outflows) March 31, 2019	Value at Risk March 31, 2019	Fair value by year		
	March 31, 2019	December 31, 2018			March 31, 2019	December 31, 2018			2019	2020	2021+
CDI vs. US\$ fixed rate swap											
Receivable	R\$ 1,575	R\$ 1,581	CDI	98.77%	(167)	(178)	(16)	26	(52)	(66)	(49)
Payable	US\$ 450	US\$ 456	Fix	3.17%							
TJLP vs. US\$ fixed rate swap											
Receivable	R\$ 2,183	R\$ 2,303	TJLP +	1.18%	(1,146)	(1,433)	(306)	88	(860)	(80)	(206)
Payable	US\$ 875	US\$ 994	Fix	1.72%							
TJLP vs. US\$ floating rate swap											
Receivable	R\$ 178	R\$ 181	TJLP +	0.83%	(217)	(215)	(2)	7	(217)	-	-
Payable	US\$ 105	US\$ 107	Libor +	-1.24%							
R\$ fixed rate vs. US\$ fixed rate swap											
Receivable	R\$ 1,058	R\$ 1,078	Fix	6.92%	(20)	(36)	(8)	72	44	38	(102)
Payable	US\$ 343	US\$ 351	Fix	-0.58%							
IPCA vs. US\$ fixed rate swap											
Receivable	R\$ 865	R\$ 1,315	IPCA +	6.57%	(182)	(310)	(101)	19	-	(40)	(142)
Payable	US\$ 278	US\$ 434	Fix	4.26%							
IPCA vs. CDI swap											
Receivable	R\$ 1,350	R\$ 1,350	IPCA +	6.62%	368	344	-	1	21	198	149
Payable	R\$ 1,350	R\$ 1,350	CDI	98.59%							

(ii) Protection program for EUR denominated debt instruments

In order to reduce the cash flow volatility, swap transactions were implemented to convert into US\$ the cash flows from certain debt instruments issued in Euros by Vale. In those swaps, Vale receives fixed rates in EUR and pays fixed rates in US\$.

The swap transactions were negotiated over-the-counter and the protected items are the cash flows from debt instruments linked to EUR. The financial settlement inflows/outflows are offset by the protected items' losses/gains due to EUR/US\$ exchange rate.

Flow	Notional			Average rate	Fair value		Financial Settlement Inflows (Outflows) March 31, 2019	Value at Risk March 31, 2019	Fair value by year		
	March 31, 2019	December 31, 2018	Index		March 31, 2019	December 31, 2018			2019	2020	2021+
EUR fixed rate vs. US\$ fixed rate swap					(57)	(1)	(19)	22	-	(19)	(38)
Receivable	€ 500	€ 500	Fix	3.75%							
Payable	US\$ 613	US\$ 613	Fix	4.29%							

b) Commodities derivative positions

(i) Bunker Oil purchase cash flows protection program

In order to reduce the impact of bunker oil price fluctuation on maritime freight hiring/supply and, consequently, reducing the Company's cash flow volatility, bunker oil hedging transactions were implemented, through options contracts.

The derivative transactions were negotiated over-the-counter and the protected item is part of the Vale's costs linked to bunker oil prices. The financial settlement inflows/outflows are offset by the protected items' losses/gains due to bunker oil prices changes.

Flow	Notional (ton)			Average strike (US\$/ton)	Fair value		Value at Risk March 31, 2019	Fair value by year 2019
	March 31, 2019	December 31, 2018	Bought / Sold		March 31, 2019	December 31, 2018		
Call options	1,095,000	2,100,000	B	518	7	4	3	7
Put options	1,095,000	2,100,000	S	292	(1)	(115)	-	(1)
Total					6	(111)	3	6

(ii) Protection programs for base metals raw materials and products

In the operational protection program for nickel sales at fixed prices, derivatives transactions were implemented to convert into floating prices the contracts with clients that required a fixed price, in order to keep nickel revenues exposed to nickel price fluctuations. Those operations are usually implemented through the purchase of nickel forwards.

In the operational protection program for the purchase of raw materials and products, derivatives transactions were implemented, usually through the sale of nickel and copper forward or futures, in order to reduce the mismatch between the pricing period of purchases (concentrate, cathode, sinter, scrap and others) and the pricing period of the final product sales to the clients.

The derivative transactions are negotiated at London Metal Exchange or over-the-counter and the protected item is part of Vale's revenues and costs linked to nickel and copper prices. The financial settlement inflows/outflows are offset by the protected items' losses/gains due to nickel and copper prices changes.

Flow	Notional (ton)			Average strike (US\$/ton)	Fair value		Financial settlement Inflows (Outflows) March 31, 2019	Value at Risk March 31, 2019	Fair value by year		
	March 31, 2019	December 31, 2018	Bought / Sold		March 31, 2019	December 31, 2018			2019	2020+	
Fixed price sales protection											
Nickel forwards	11,789	7,244	B	12,201	38	(39)	13	17	36	2	
Raw material purchase protection											
Nickel forwards	141	120	S	12,293	-	1	-	-	-	-	
Copper forwards	48	81	S	6,184	-	-	-	-	-	-	
Total					38	(38)	13	17	36	2	

c) Freight derivative positions

In order 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 Vale's 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 prices changes.

The FFAs are contracts traded over the counter and can be cleared through a Clearing House, in this case subject to margin requirements.

Flow	Notional (days)		Bought / Sold	Average strike (US\$/day)	Fair value		Financial Settlement Inflows (Outflows)	Value at Risk	Fair value by year
	March 31, 2019	December 31, 2018			March 31, 2019	December 31, 2018	March 31, 2019	March 31, 2019	2019
	Freight forwards	780			480	B	13,146	(3)	3

d) Wheaton Precious Metals Corp. warrants

The company owns warrants of Wheaton Precious Metals Corp. (WPM), a Canadian company with stocks negotiated in Toronto Stock Exchange and New York Stock Exchange. Such warrants have payoff similar to that of an american call option and were received as part of the payment regarding the sale of part of gold payable flows produced as a sub product from Salobo copper mine and some nickel mines in Sudbury.

Flow	Notional (quantity)		Bought / Sold	Average strike (US\$/share)	Fair value		Financial settlement Inflows (Outflows)	Value at Risk	Fair value by year
	March 31, 2019	December 31, 2018			March 31, 2019	December 31, 2018	March 31, 2019	March 31, 2019	2023
	Call options	10,000,000			10,000,000	B	44	50	32

e) Debentures convertible into shares of Valor da Logística Integrada ("VLI")

The Company has debentures in which lenders have the option to convert the outstanding debt into a specified quantity of shares of VLI owned by the Company.

Flow	Notional (quantity)		Bought / Sold	Average strike (R\$/share)	Fair value		Financial settlement Inflows (Outflows)	Value at Risk	Fair value by year
	March 31, 2019	December 31, 2018			March 31, 2019	December 31, 2018	March 31, 2019	March 31, 2019	2027
	Conversion options	140,239			140,239	S	8,134	(205)	(228)

f) Options related to Minerações Brasileiras Reunidas S.A. ("MBR") shares

The Company entered into a stock sale and purchase agreement that has options related to MBR shares. Mainly, the Company has the right to buy back this non-controlling interest in the subsidiary. Moreover, under certain restrict and contingent conditions, which are beyond the buyer's control, such as illegality due to changes in the law, the contract has a clause that gives the buyer the right to sell back its stake to the Company. In this case, the Company could settle through cash or shares.

Flow	Notional (quantity, in millions)		Bought / Sold	Average strike (R\$/share)	Fair value		Financial settlement Inflows (Outflows)	Value at Risk	Fair value by year
	March 31, 2019	December 31, 2018			March 31, 2019	December 31, 2018	March 31, 2019	March 31, 2019	2019+
	Options	2,139			2,139	B/S	1.7	1,089	1,082

g) Option related to SPCs Casa dos Ventos

The Company acquired in January 2019 a call option related to shares of the special purpose companies Ventos de São Bento Energias Renováveis, Ventos São Galvão Energias Renováveis and Ventos de Santo Eloy Energias Renováveis (SPCs Casa dos Ventos), which are part of the wind farm of Folha Larga Sul project, in Campo Formoso, Bahia, with commercial operation scheduled for the first half of 2020. This option was acquired in the context of the Company's signing of electric power purchase and sale agreements with Casa dos Ventos, supplied by this wind farm.

Flow	Notional (quantity)		Bought / Sold	Average strike (R\$/share)	Fair value		Financial settlement Inflows (Outflows) March 31, 2019	Value at Risk March 31, 2019	Fair value by year 2022
	March 31, 2019	December 31, 2018			March 31, 2019	December 31, 2018			
Call option	137,751,623	-	B	2.81	70	-	-	6	70

h) Embedded derivatives in contracts

The Company has some nickel concentrate and raw materials purchase agreements in which there are provisions based on nickel and copper future prices behavior. These provisions are considered as embedded derivatives.

Flow	Notional (ton)		Bought / Sold	Average strike (US\$/ton)	Fair value		Value at Risk March 31, 2019	Fair value by year 2019
	March 31, 2019	December 31, 2018			March 31, 2019	December 31, 2018		
Nickel forwards	1,134	3,763	S	12,303	(3)	6	2	(3)
Copper forwards	1,743	2,035	S	6,260	(1)	1	1	(1)
Total					(4)	7	3	(4)

The Company has also a natural gas purchase agreement in which there's a clause that defines that a premium can be charged if the Company's pellet sales prices trade above a pre-defined level. This clause is considered an embedded derivative.

Flow	Notional (volume/month)		Bought / Sold	Average strike (US\$/ton)	Fair value		Financial settlement Inflows (Outflows) March 31, 2019	Value at Risk March 31, 2019	Fair value by year	
	March 31, 2019	December 31, 2018			March 31, 2019	December 31, 2018			2019	2020+
Call options	746,667	746,667	S	233	(6)	(4)	-	4	(1)	(5)

In August 2014 the Company sold part of its stake in Valor da Logística Integrada ("VLI") to an investment fund managed by Brookfield Asset Management ("Brookfield"). The sales contract includes a clause that establishes, under certain conditions, a minimum return guarantee on Brookfield's investment. This clause is considered an embedded derivative, with payoff equivalent to that of a put option.

Flow	Notional (quantity)		Bought / Sold	Average strike (R\$/share)	Fair value		Financial settlement Inflows (Outflows) March 31, 2019	Value at Risk March 31, 2019	Fair value by year 2019+
	March 31, 2019	December 31, 2018			March 31, 2019	December 31, 2018			
Put option	1,105,070,863	1,105,070,863	S	3.88	(309)	(400)	-	36	(309)

i) Sensitivity analysis of derivative financial instruments

The following tables present the potential value of the instruments given hypothetical stress scenarios for the main market risk factors that impact the derivatives positions. The scenarios were defined as follows:

- *Probable*: the probable scenario was defined as the fair value of the derivative instruments as at March 31, 2019
- *Scenario I*: fair value estimated considering a 25% deterioration in the associated risk variables
- *Scenario II*: fair value estimated considering a 50% deterioration in the associated risk variables

Instrument	Instrument's main risk events	Probable	Scenario I	Scenario II
CDI vs. US\$ fixed rate swap	R\$ depreciation	(167)	(617)	(1,066)
	US\$ interest rate inside Brazil decrease	(167)	(179)	(191)
	Brazilian interest rate increase	(167)	(167)	(166)
Protected item: R\$ denominated debt	R\$ depreciation	n.a.	-	-
TJLP vs. US\$ fixed rate swap	R\$ depreciation	(1,146)	(1,991)	(2,837)
	US\$ interest rate inside Brazil decrease	(1,146)	(1,178)	(1,212)
	Brazilian interest rate increase	(1,146)	(1,199)	(1,248)
	TJLP interest rate decrease	(1,146)	(1,197)	(1,249)
Protected item: R\$ denominated debt	R\$ depreciation	n.a.	-	-
TJLP vs. US\$ floating rate swap	R\$ depreciation	(217)	(319)	(421)
	US\$ interest rate inside Brazil decrease	(217)	(219)	(222)
	Brazilian interest rate increase	(217)	(219)	(221)
	TJLP interest rate decrease	(217)	(219)	(221)
Protected item: R\$ denominated debt	R\$ depreciation	n.a.	-	-
R\$ fixed rate vs. US\$ fixed rate swap	R\$ depreciation	(20)	(312)	(604)
	US\$ interest rate inside Brazil decrease	(20)	(52)	(85)
	Brazilian interest rate increase	(20)	(79)	(132)
Protected item: R\$ denominated debt	R\$ depreciation	n.a.	-	-
IPCA vs. US\$ fixed rate swap	R\$ depreciation	(182)	(459)	(737)
	US\$ interest rate inside Brazil decrease	(182)	(193)	(204)
	Brazilian interest rate increase	(182)	(203)	(224)
	IPCA index decrease	(182)	(195)	(208)
Protected item: R\$ denominated debt	R\$ depreciation	n.a.	-	-
IPCA vs. CDI swap	Brazilian interest rate increase	368	306	248
	IPCA index decrease	368	332	297
Protected item: R\$ denominated debt linked to IPCA	IPCA index decrease	n.a.	(332)	(297)
EUR fixed rate vs. US\$ fixed rate swap	EUR depreciation	(57)	(688)	(1,319)
	Euribor increase	(57)	(68)	(79)
	US\$ Libor decrease	(57)	(109)	(163)
Protected item: EUR denominated debt	EUR depreciation	n.a.	688	1,319

Instrument	Instrument's main risk events	Probable	Scenario I	Scenario II
Bunker Oil protection				
Options	Bunker Oil price decrease	6	(38)	(354)
Protected item: Part of costs linked to bunker oil prices	Bunker Oil price decrease	n.a.	38	354
Maritime Freight protection				
Forwards	Freight price decrease	(3)	(12)	(22)
Protected item: Part of costs linked to maritime freight prices	Freight price decrease	n.a.	12	22
Nickel sales fixed price protection				
Forwards	Nickel price decrease	38	(108)	(254)
Protected item: Part of nickel revenues with fixed prices	Nickel price fluctuation	n.a.	108	254
Purchase protection program				
Nickel forwards	Nickel price increase	-	(2)	(4)
Protected item: Part of costs linked to nickel prices	Nickel price increase	n.a.	2	4
Copper forwards	Copper price increase	-	-	(1)
Protected item: Part of costs linked to copper prices	Copper price increase	n.a.	-	1
Wheaton Precious Metals Corp. warrants	WPM stock price decrease	50	14	1
Conversion options - VLI	VLI stock value increase	(205)	(333)	(502)
Options - MBR	Iron ore price decrease	1,089	700	394
Option - SPCs Casa dos Ventos	SPCs Casa dos Ventos stock value decrease	70	32	8

Instrument	Main risks	Probable	Scenario I	Scenario II
Embedded derivatives - Raw material purchase (nickel)	Nickel price increase	(3)	(18)	(32)
Embedded derivatives - Raw material purchase (copper)	Copper price increase	(1)	(12)	(23)
Embedded derivatives - Gas purchase	Pellet price increase	(6)	(14)	(27)
Embedded derivatives - Guaranteed minimum return (VLI)	VLI stock value decrease	(309)	(825)	(1,720)

j) Financial counterparties' ratings

The transactions of derivative instruments, cash and cash equivalents as well as 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 published by agencies Moody's and S&P regarding the main financial institutions that we hire derivative instruments, cash and cash equivalents transactions

Long term ratings by counterparty	Moody's	S&P
ANZ Australia and New Zealand Banking	Aa3	AA-
Banco ABC	Ba3	BB-
Banco Amazônia SA	-	-
Banco Bradesco	Ba3	BB-
Banco de Credito del Peru	Baa1	BBB+
Banco do Brasil	Ba3	BB-
Banco do Nordeste	Ba3	BB-
Banco Safra	Ba3	BB-
Banco Santander	A2	A
Banco Votorantim	Ba3	BB-
Bank of America	A3	A-
Bank of China	A1	A
Bank of Mandiri	Baa2	BB+
Bank of Montreal	Aa2	A+
Bank of Nova Scotia	Aa2	A+
Bank of Shanghai	Baa2	-
Bank of Tokyo Mitsubishi UFJ	A1	A-
Bank Rakyat	Baa2	BB+
Banpará	-	BB-
Barclays	Baa3	BBB
BBVA	A3	A-
BNP Paribas	Aa3	A
BTG Pactual	Ba3	BB-
Caixa Economica Federal	Ba3	BB-
Canadian Imperial Bank	Aa2	A+
China Construction Bank	A1	A
CIMB Bank	A3	A-

Long term ratings by counterparty	Moody's	S&P
Citigroup	Baa1	BBB+
Credit Agricole	A1	A+
Credit Suisse	Baa2	BBB+
Deutsche Bank	A3	BBB+
Goldman Sachs	A3	BBB+
HSBC	A2	A
Intesa Sanpaolo Spa	Baa1	BBB
Itaú Unibanco	Ba3	BB-
JP Morgan Chase & Co	A2	A-
Macquarie Group Ltd	A3	BBB
Mega Int. Commercial Bank	A1	A
Mitsui & Co	A1	A-
Mizuho Financial	A1	A-
Morgan Stanley	A3	BBB+
Muscat Bank	Ba2	BB
National Australia Bank NAB	Aa3	AA-
National Bank of Canada	Aa3	A
National Bank of Oman	Ba2	-
Natixis	A1	A+
Rabobank	Aa3	A+
Royal Bank of Canada	Aa2	AA-
Societe Generale	A1	A
Standard Bank Group	Ba1	-
Standard Chartered	A2	BBB+
Sumitomo Mitsui Financial	A1	A-
UBS	Aa3	A-
Unicredit	Baa1	BBB

k) Market curves

The curves used on the pricing of derivatives instruments were developed based on data from B3, Central Bank of Brazil, London Metals Exchange and Bloomberg.

(i) Products

Nickel

Maturity	Price (US\$/ton)	Maturity	Price (US\$/ton)	Maturity	Price (US\$/ton)
SPOT	13,015	SEP19	13,074	MAR20	13,230
APR19	12,936	OCT19	13,101	MAR21	13,496
MAY19	12,968	NOV19	13,127	MAR22	13,768
JUN19	12,994	DEC19	13,155	MAR23	14,045
JUL19	13,021	JAN20	13,180		
AUG19	13,047	FEB20	13,202		

Copper

Maturity	Price (US\$/lb)	Maturity	Price (US\$/lb)	Maturity	Price (US\$/lb)
SPOT	2.94	SEP19	2.94	MAR20	2.94
APR19	2.94	OCT19	2.94	MAR21	2.94
MAY19	2.94	NOV19	2.94	MAR22	2.93
JUN19	2.94	DEC19	2.94	MAR23	2.93
JUL19	2.94	JAN20	2.94		
AUG19	2.94	FEB20	2.94		

Bunker Oil

Maturity	Price (US\$/ton)	Maturity	Price (US\$/ton)	Maturity	Price (US\$/ton)
SPOT	419	SEP19	392	MAR20	331
APR19	420	OCT19	379	MAR21	323
MAY19	419	NOV19	365	MAR22	283
JUN19	416	DEC19	352	MAR23	248
JUL19	410	JAN20	343		
AUG19	403	FEB20	336		

Maritime Freight (Capesize 5TC)

Maturity	Price (US\$/day)	Maturity	Price (US\$/day)	Maturity	Price (US\$/day)
SPOT	3,796	SEP19	15,591	MAR20	12,121
APR19	5,188	OCT19	16,288	Cal 2020	13,234
MAY19	7,167	NOV19	16,288	Cal 2021	12,558
JUN19	9,279	DEC19	16,288	Cal 2022	12,542
JUL19	10,592	JAN20	12,121		
AUG19	12,142	FEB20	12,121		

(ii) Foreign exchange and interest rates

US\$-Brazil Interest Rate

Maturity	Rate (% p.a.)	Maturity	Rate (% p.a.)	Maturity	Rate (% p.a.)
05/02/19	3.59	03/02/20	3.52	04/01/22	3.52
06/03/19	3.48	04/01/20	3.52	07/01/22	3.51
07/01/19	3.43	05/04/20	3.53	10/03/22	3.53
08/01/19	3.40	07/01/20	3.53	01/02/23	3.54
09/02/19	3.33	10/01/20	3.53	04/03/23	3.54
10/01/19	3.35	01/04/21	3.52	07/03/23	3.54
11/01/19	3.38	04/01/21	3.52	10/02/23	3.54
12/02/19	3.38	07/01/21	3.52	01/02/24	3.56
01/02/20	3.45	10/01/21	3.53	07/01/24	3.56
02/03/20	3.49	01/03/22	3.50	01/02/25	3.61

US\$ Interest Rate

Maturity	Rate (% p.a.)	Maturity	Rate (% p.a.)	Maturity	Rate (% p.a.)
1M	2.50	6M	2.57	11M	2.55
2M	2.57	7M	2.56	12M	2.55
3M	2.60	8M	2.56	2Y	2.42
4M	2.58	9M	2.56	3Y	2.37
5M	2.57	10M	2.55	4Y	2.37

TJLP

Maturity	Rate (% p.a.)	Maturity	Rate (% p.a.)	Maturity	Rate (% p.a.)
05/02/19	7.03	03/02/20	7.03	04/01/22	7.03
06/03/19	7.03	04/01/20	7.03	07/01/22	7.03
07/01/19	7.03	05/04/20	7.03	10/03/22	7.03
08/01/19	7.03	07/01/20	7.03	01/02/23	7.03
09/02/19	7.03	10/01/20	7.03	04/03/23	7.03
10/01/19	7.03	01/04/21	7.03	07/03/23	7.03
11/01/19	7.03	04/01/21	7.03	10/02/23	7.03
12/02/19	7.03	07/01/21	7.03	01/02/24	7.03
01/02/20	7.03	10/01/21	7.03	07/01/24	7.03
02/03/20	7.03	01/03/22	7.03	01/02/25	7.03

BRL Interest Rate

Maturity	Rate (% p.a.)	Maturity	Rate (% p.a.)	Maturity	Rate (% p.a.)
05/02/19	6.42	03/02/20	6.58	04/01/22	7.92
06/03/19	6.42	04/01/20	6.58	07/01/22	8.02
07/01/19	6.44	05/04/20	6.65	10/03/22	8.13
08/01/19	6.45	07/01/20	6.75	01/02/23	8.24
09/02/19	6.46	10/01/20	6.96	04/03/23	8.34
10/01/19	6.48	01/04/21	7.14	07/03/23	8.42
11/01/19	6.48	04/01/21	7.33	10/02/23	8.42
12/02/19	6.51	07/01/21	7.49	01/02/24	8.54
01/02/20	6.52	10/01/21	7.64	07/01/24	8.65
02/03/20	6.55	01/03/22	7.78	01/02/25	8.75

Implicit Inflation (IPCA)

Maturity	Rate (% p.a.)	Maturity	Rate (% p.a.)	Maturity	Rate (% p.a.)
05/02/19	4.11	03/02/20	4.26	04/01/22	4.13
06/03/19	4.11	04/01/20	4.25	07/01/22	4.15
07/01/19	4.13	05/04/20	4.19	10/03/22	4.19
08/01/19	4.14	07/01/20	4.09	01/02/23	4.24
09/02/19	4.15	10/01/20	4.06	04/03/23	4.28
10/01/19	4.18	01/04/21	4.01	07/03/23	4.32
11/01/19	4.17	04/01/21	4.03	10/02/23	4.28
12/02/19	4.20	07/01/21	4.04	01/02/24	4.36
01/02/20	4.21	10/01/21	4.06	07/01/24	4.40
02/03/20	4.24	01/03/22	4.09	01/02/25	4.45

EUR Interest Rate

Maturity	Rate (% p.a.)	Maturity	Rate (% p.a.)	Maturity	Rate (% p.a.)
1M	(0.42)	6M	(0.27)	11M	(0.23)
2M	(0.37)	7M	(0.26)	12M	(0.23)
3M	(0.35)	8M	(0.25)	2Y	(0.20)
4M	(0.31)	9M	(0.24)	3Y	(0.14)
5M	(0.29)	10M	(0.24)	4Y	(0.07)

CAD Interest Rate

Maturity	Rate (% p.a.)	Maturity	Rate (% p.a.)	Maturity	Rate (% p.a.)
1M	1.98	6M	2.09	11M	1.09
2M	2.00	7M	1.77	12M	0.99
3M	2.01	8M	1.54	2Y	1.94
4M	2.05	9M	1.35	3Y	1.92
5M	2.07	10M	1.20	4Y	1.95

Currencies - Ending rates

CAD/US\$	0.7482	US\$/BRL	3.8967	EUR/US\$	1.1235
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