

Vale S.A.  
Form 6-K  
August 03, 2016  
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**United States  
Securities and Exchange Commission**

Washington, D.C. 20549

**FORM 6-K**

**Report of Foreign Private Issuer  
Pursuant to Rule 13a-16 or 15d-16  
of the  
Securities Exchange Act of 1934**

**For the month of**

**August 2016**

**Vale S.A.**

**Avenida das Américas, 700 Bloco 8, Sala 318**

**22640-100 Rio de Janeiro, RJ, Brazil**

(Address of principal executive office)

Indicate by check mark whether the registrant files or will file annual reports under cover of Form 20-F or Form 40-F.

(Check One) Form 20-F  Form 40-F

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Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulation S-T Rule 101(b)(1)

(Check One) Yes  No

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Indicate by check mark whether the registrant by furnishing the information contained in this Form is also thereby furnishing information to the Commission pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934.

(Check One) Yes  No

If  Yes is marked, indicate below the file number assigned to the registrant in connection with Rule 12g3-2(b). 82-

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**INCORPORATION BY REFERENCE**

This report is incorporated by reference in our registration statements on Form F-3 filed with the U.S. Securities and Exchange Commission on September 29, 2015 (File Nos. 333-207181 and 333-207181-01), and shall be deemed to be a part thereof from the date on which this report is furnished to the SEC, to the extent not superseded by documents or reports subsequently filed or furnished.

This report also incorporates by reference our current report on Form 6-K furnished to the SEC on July 28, 2016 (SEC Accession No: 0001104659-16-134706), containing our unaudited condensed consolidated interim financial statements as of and for the three-month and six-month periods ended June 30, 2016 and June 30, 2015 (the Interim Financial Statements ), prepared in accordance with International Financial Reporting Standards, as issued by the International Accounting Standards Board, which are accordingly incorporated by reference in the registration statements on Form F-3 referred to in the preceding paragraph.

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Table of Contents**RESULTS OF OPERATIONS FOR THE SIX-MONTH PERIODS ENDED JUNE 30, 2016 AND JUNE 30, 2015**

In the first half of 2016, we recorded net income attributable to our stockholders of US\$2,882 million, compared to a net loss of US\$1,443 million in the first half of 2015. The improvement was mainly driven by: (i) net foreign exchange gain of US\$3,464 million in the first half of 2016, compared to net foreign exchange loss of US\$2,537 million in the first half of 2015, reflecting the 17.8% appreciation of the Brazilian *real* against the U.S. dollar during the first half of 2016, compared to a 16.8% depreciation of the Brazilian *real* against the U.S. dollar in the first half of 2015 and (ii) a 4.3% reduction in our costs of goods sold and a 30.8% reduction in our expenses, each on a constant currency basis (as defined below), partially offset by (iii) US\$1,038 million provision recognized in the second quarter of 2016 for potential liabilities associated with the November 2015 failure of Samarco's tailings dam.

**Consolidated Revenues**

For the first half of 2016, our net operating revenues were US\$12,345 million, 6.5% lower than net operating revenues for the first half of 2015, mainly as a result of lower sales prices of ferrous minerals (impact of US\$380 million) and base metals (impact of US\$850 million), partially offset by higher sales volumes of ferrous minerals (impact of US\$305 million) and base metals (impact of US\$292 million).

*Net operating revenue by product*

The following table summarizes our net operating revenues by product for the periods indicated.

	2015	Six months ended June 30,		% change
		(US\$ million)		
		2016	2016	
<b>Ferrous minerals:</b>				
Iron ore	US\$	6,107	US\$ 6,425	5.2%
Iron ore pellets		1,937	1,621	(16.3)
Ferroalloys and manganese ore		123	108	(12.2)
Other ferrous products and services		253	191	(24.5)
Subtotal		8,420	8,345	(0.9)
Coal		291	299	2.7
<b>Base metals:</b>				
Nickel and other products(1)		2,575	2,050	(20.4)
Copper concentrate(2)		783	750	(4.2)
Subtotal		3,358	2,800	(16.6)
<b>Fertilizers:</b>				
Potash		61	45	(26.2)
Phosphates		802	653	(18.6)
Nitrogen		157	118	(24.8)
Other fertilizer products		26	32	23.1
Subtotal		1,046	848	(18.9)
Other products and services(3)		90	53	(41.1)
Net operating revenues	US\$	13,205	US\$ 12,345	(6.5)%

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- (1) Includes nickel co-products (copper) and by-products (precious metals, cobalt and others).
  - (2) Does not include copper produced as a nickel co-product.
  - (3) Includes energy.

Table of Contents*Sales volumes*

The following table sets forth, for our principal products, the total volumes we sold in each of the periods indicated.

	2015	Six months ended June 30, 2016	% change
	(thousand metric tons, except where indicated)		
<b>Ferrous minerals:</b>			
Iron ore fines	126,650	135,422	6.9%
Run of mine	7,096	925	(87.0)
Iron ore pellets	23,486	22,518	(4.1)
Manganese ore	748	869	16.2
Ferroalloys	53	61	15.1
Coal:	3,288	5,434	65.3
Thermal coal	422	3,066	626.5
Metallurgical coal	2,866	2,368	(17.4)
<b>Base metals:</b>			
Nickel	135	151	11.9
Copper	195	208	6.7
PGMs (oz)	293	304	3.8
Gold (oz)	206	237	15.0
Silver (oz)	1,105	1,242	12.4
Cobalt (lb)	1,939	2,178	12.3
<b>Fertilizers:</b>			
Potash	193	207	7.3
Phosphates:	3,592	3,338	(7.1)
MAP	466	469	0.6
TSP	314	293	(6.7)
SSP	790	774	(2.0)
DCP	222	237	6.8
Phosphate rock	1,613	1,424	(11.7)
Other phosphates	187	141	(24.6)
Nitrogen	302	291	(3.6)%

Table of Contents*Average realized prices*

The following table sets forth our average realized prices for our principal products for each of the periods indicated. We determine average realized prices based on our net operating revenues, which consist of the price charged to customers, excluding value added tax and certain other items that we deduct in arriving at net operating revenues.

	2015		Six months ended June 30, 2016		% change
	(US\$ per metric ton, except where indicated)				
<b>Ferrous minerals:</b>					
Iron ore fines	US\$	48.22	US\$	47.44	(1.6)%
Run of mine		9.22		9.73	5.5
Iron ore pellets		82.49		71.99	(12.7)
Manganese ore		96.97		77.35	(20.2)
Ferroalloys		944.40		675.80	(28.4)
<b>Coal:</b>					
Thermal coal		59.24		38.48	(35.0)
Metallurgical coal		92.81		76.44	(17.6)
<b>Base metals:</b>					
Nickel		13,667		9,004	(34.1)
Copper		4,868		4,229	(13.1)
Platinum (US\$/oz)		1,132		904	(20.1)
Gold (US\$/oz)		1,168		1,201	2.8
Silver (US\$/oz)		15.16		15.49	2.2
Cobalt (US\$/lb)		9.82		9.44	(3.9)
<b>Fertilizers:</b>					
Potash		315.42		215.97	(31.5)
<b>Phosphates:</b>					
MAP		514.81		388.73	(24.5)
TSP		383.57		306.30	(20.7)
SSP		198.51		181.50	(8.6)
DCP		519.81		471.05	(9.4)
Phosphate rock		84.93		76.81	(9.6)
Nitrogen	US\$	521.20	US\$	406.60	(22.0)%

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The following table summarizes, for the periods indicated, the distribution of our net operating revenues based on the geographical location of our customers.

	Net operating revenues by destination					
	Six months ended June 30,					
	2015			2016		
	(US\$ million)		(% of total)	(US\$ million)		(% of total)
<b>North America</b>						
Canada	US\$	637	4.8%	US\$	558	4.5%
United States		498	3.8		439	3.6
Mexico		4	0.0		9	0.1
		1,139	8.6		1,006	8.2
<b>South America</b>						
Brazil		2,097	15.9		1,621	13.1
Other		229	1.7		187	1.5
		2,326	17.6		1,808	14.6
<b>Asia</b>						
China		4,360	33.0		5,154	41.7
Japan		999	7.6		745	6.0
South Korea		433	3.3		387	3.1
Other		839	6.4		664	5.4
		6,631	50.3		6,950	56.2
<b>Europe</b>						
Germany		750	5.7		638	5.2
Italy		245	1.9		240	1.9
Others		1,409	10.7		1,195	9.7
		2,404	18.3		2,073	16.8
<b>Middle East</b>		572	4.3		392	3.2
<b>Rest of the world</b>		133	0.9		116	1.0
<b>Total</b>	US\$	13,205	100.0%	US\$	12,345	100.0%

**Consolidated operating costs and expenses**

Our cost of goods sold and services rendered declined by US\$1,310 million, or 12.7%, to US\$9,044 million in the first half of 2016 from US\$10,354 million in the first half of 2015, mainly driven by: (i) the positive effect of exchange rate variation (US\$900 million impact) and (ii) cost reduction initiatives in all of our businesses. On a constant currency basis, our cost of goods sold declined 4.3% in the first half of 2016, compared to the first half of 2015.

Our selling, general and administrative expenses decreased by 26.8%, to US\$259 million in the first half of 2016 from US\$354 million in the first half of 2015, mostly due to the simplification of our corporate functions and structure, which contributed to a reduction of US\$47 million in personnel expenses, US\$20 million in services expenses and US\$7 million in selling expenses. On a constant currency basis and excluding depreciation, our selling, general and administrative expenses declined 25.7% in the first half of 2016, compared to the first half of 2015.

Our research and development expenses totaled US\$138 million in the first half of 2016, a decrease of US\$99 million, or 41.8%, from the US\$237 million expenses recorded in the first half of 2015, reflecting the interruption of the Kronau potash project in the last quarter of 2015 and reductions across all of our business segments.



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Our pre-operating and stoppage expenses totaled US\$216 million in the first half of 2016, a decrease of US\$307 million, or 58.7%, from the US\$523 million recorded in the first half of 2015, mainly due to the reduction of pre-operating expenses in Long Harbour, Moatize II and New Caledonia.

Our other operating expenses were US\$195 million in the first half of 2016, compared to US\$157 million in the first half of 2015, as a result of the positive effect of the gold streaming transaction of US\$230 million in the first half of 2015 and higher provisions for litigation (impact of US\$70 million) and results on sale or disposals of property, plant and equipment (US\$39 million) in the first half of 2016.

Table of Contents*Cost of goods sold by product*

The following table presents, for each indicated period, our cost of goods sold and services rendered by product for the periods indicated and the percentage change between periods. The percentage change is presented both as reported in our Interim Financial Statements and as adjusted to remove the effects of exchange rate variation ( constant currency basis ).

	2015		Six months ended June 30, Change		2016	
	Cost of goods sold (US\$ million)		As reported (%)	Constant currency basis (%)	Cost of goods sold (US\$ million)	
<b>Ferrous minerals:</b>						
Iron ore	US\$	3,843	(22.9)%	(14.3)%	US\$	2,961
Iron ore pellets		1,160	(22.8)	(12.5)		896
Ferrous alloys and manganese ore		99	(0.4)	18.8		99
Other ferrous products and services		195	(36.9)	(19.6)		123
Subtotal		5,297	(23.0)	(13.5)		4,078
Coal		372	42.5	45.2		530
<b>Base metals:</b>						
Nickel and other products(1)		1,681	(8.4)	(3.3)		1,540
Copper (2)		446	(3.8)	19.9		429
Subtotal		2,127	(7.4)	(1.0)		1,969
<b>Fertilizers:</b>						
Potash		41	(1.4)	22.5		40
Phosphates		559	0.8	10.2		563
Nitrogen		107	(19.8)	(0.2)		86
Subtotal		707	(2.5)	9.4		690
Other(3)		58	73.5	114.2		101
Total (excluding depreciation)		8,561	(13.9)	(4.4)		7,368
Depreciation		1,793	(6.5)	16.0		1,676
Total with depreciation	US\$	10,354	(12.7)%	(4.3)%	US\$	9,044

(1) Includes nickel co-products (copper) and by-products (precious metals, cobalt and others).

(2) Does not include copper produced as a nickel co-product.

(3) Includes energy.

Table of Contents*Expenses by product (excluding impairment charges)*

The following table summarizes, for each indicated period, our expenses (including selling, general and administrative, research and evaluation, pre-operating, stoppage and other expenses, net of other revenues) by product and the percentage change from year to year. The percentage change is presented both as reported in our Interim Financial Statements and as adjusted to remove the effects of exchange rate variation (constant currency basis).

	2015 Expenses (US\$ million)	Six months ended June 30, Change		2016 Expenses (US\$ million)
		As reported (%)	Constant currency basis (%)	
<b>Ferrous minerals:</b>				
Iron ore	US\$ 477	(16.3)	3.4	US\$ 399
Iron ore pellets	13	296.3	268	52
Ferroalloys and manganese ore	10	(65.5)	(56.9)	3
Other ferrous products and services	(4)	(37.0)	(184.0)	(3)
Subtotal	496	(8.9)	9.9	452
Coal	149	(118.2)	(118.7)	(27)
<b>Base metals:</b>				
Nickel and other products(1)	363	(67.7)	(67.7)	117
Copper (2)	14	(36.9)	(26.4)	9
Other base metal products	(230)			
Subtotal	147	(14.3)	(13.1)	126
<b>Fertilizers:</b>				
Potash	26	(71.9)	(71.9)	7
Phosphates	55	(18.4)	(6.5)	45
Nitrogen	6	12.9	(35.4)	7
Subtotal	87	(32.2)	(25.4)	59
Other(3)	162	(39.4)	(43.6)	98
Total (excluding depreciation)	1,041	(32.0)	(25.8)	708
Depreciation	230	(56.4)	(53.1)	100
Total with depreciation	US\$ 1,271	(36.4)	(30.8)	US\$ 808

(1) Includes nickel co-products (copper) and by-products (precious metals, cobalt and others).

(2) Does not include copper produced as a nickel co-product.

(3) Includes energy.

Table of Contents**Results of operations by segment**

Our management uses adjusted earnings before interest, taxes, depreciation and amortization, or Adjusted EBITDA, to assess each segment's contribution to our performance and to support decisions about resource allocation. Adjusted EBITDA is a non-GAAP measure, calculated for each segment using operating income or loss plus dividends received from joint ventures and associates, and adding back the amounts charged as (i) depreciation, depletion and amortization, (ii) impairment of non-current assets and onerous contracts and (iii) results on measurement or sale of non-current assets. For more information and a reconciliation of our operating income or loss to Adjusted EBITDA, see Note 3 to our Interim Financial Statements.

The following table summarizes operating income or loss and Adjusted EBITDA for each of our segments.

	2015		Six months ended June 30,		2016	
	Operating income (loss)	Adjustments	Adjusted EBITDA (US\$ million)	Operating income (loss)	Adjustments	Adjusted EBITDA
<b>Ferrous minerals:</b>						
Iron ore	US\$ 1,081	US\$ 707	US\$ 1,788	US\$ 2,484	US\$ 581	US\$ 3,065
Iron ore pellets	591	376	967	507	226	733
Ferroalloys and manganese ore	3	11	14	(6)	13	7
Other ferrous products and services	18	51	69	35	34	69
Subtotal	1,693	1,145	2,838	3,020	854	3,874
Coal	(301)	71	(230)	(241)	38	(203)
<b>Base metals:</b>						
Nickel and other products(1)	(289)	820	531	(350)	742	392
Copper(2)	223	100	323	210	103	313
Other	230		230			
Subtotal	164	920	1,084	140	845	705
<b>Fertilizers:</b>						
Potash	(19)	13	(6)	(16)	13	(3)
Phosphates	68	120	188	(87)	132	45
Nitrogen	34	11	45	15	10	25
Other fertilizer products	26		26	32	3	35
Subtotal	109	144	253	(56)	158	102
Other(3)	53	(183)	(130)	(156)	66	(90)
Total	US\$ 1,718	US\$ 2,097	US\$ 3,815	US\$ 2,427	US\$ 1,961	US\$ 4,388

(1) Includes copper and by-products from our nickel operations.

(2) Includes by-products from our copper operations.

(3) Includes energy.

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We discuss below, for each segment, the changes in our net operating revenues, cost of goods sold (excluding depreciation, depletion and amortization), expenses (excluding depreciation, depletion, amortization and impairment charges), Adjusted EBITDA and operating income.

*Ferrous minerals*

Our net operating revenues from sales of ferrous minerals decreased by 0.9% in the first half of 2016, compared to the first half of 2015, mainly reflecting lower pellet prices, partially offset by higher sales volumes of iron ore fines. Our average realized prices for iron ore fines in the first half of 2016 were 1.6% lower than our average realized prices in the first half of 2015. Our average realized prices for iron ore pellets were 12.7% lower than our average realized prices in the first half of 2015, reflecting the decline in the average value of the reference price index. Our iron ore sales volume increased by 6.9% in the first half of 2016 compared to the first half of 2015, due to the ramp-up of the N4WS mine, the extension of the N5S mine and the Carajás plant 2, in our Northern System, the extension of the Vargem Grande, Conceição I and II Itabirites projects, in our Southeastern and Southern systems, and an improvement of our distribution logistics. Our sales volume of iron ore pellets in the first half of 2016 decreased by 4.1% as a result of: (i) the halt of Fabrica pelletizing plant due to delays in obtaining environmental permits for the expansion of adjacent mines, and (ii) the scheduled maintenance stoppages at Tubarão plants in the second quarter of 2016.

Our cost of goods sold from ferrous minerals, excluding depreciation, decreased 13.5% in the first half of 2016, compared to the first half of 2015, on a constant currency basis. This decrease reflects lower freight costs (impact of US\$300 million), and the absence of bunker oil hedge accounting disbursements in the first half of 2016, compared to US\$170 million disbursements in the first half of 2015. This decrease was partially offset by increased costs associated with higher sales volumes, in the amount of US\$195 million.

Our net expenses from ferrous minerals, excluding depreciation, depletion and amortization, increased by 9.9% in the first half of 2016, compared to the first half of 2015, on a constant currency basis, mainly as a result of higher provision for litigation (US\$ 70 million) and other contingencies in the first half of 2016. These effects were partially offset by a US\$42 million decrease in research and development expenses.

Our Adjusted EBITDA from ferrous minerals was US\$3,874 million in the first half of 2016, US\$1,036 million, or 36.5%, higher than our Adjusted EBITDA in the first half of 2015. This increase primarily reflects the US\$667 million positive impact of exchange rate variations in our costs and expenses, as well as reductions in costs, which were partially offset by the negative impact of lower sales prices, as described above, and a US\$151 million decrease in dividends received from associates and joint ventures.

Our operating income from ferrous minerals was US\$3,020 million in the first half of 2016, 78.4% higher than in the first half of 2015, reflecting the increase in our Adjusted EBITDA, as described above.

*Coal*

Our net operating revenues from sales of coal increased to US\$299 million in the first half of 2016, from US\$291 million in the first half of 2015. This 2.8% increase was mainly due to higher sales volumes. Our sales volumes of thermal coal increased to 3,066 thousand metric tons in the first half of 2016 from 422 thousand metric tons in the first half of 2015, due to the sale of stockpiles accumulated during the ramp-up of the Nacala Logistics Corridor. The sales volume of our metallurgical coal in first half of 2016 decreased by 17.4% from first half of 2015, due to lower production in Australia.

Our cost of goods sold and expenses from coal, excluding depreciation, decreased to US\$503 million in the first half of 2016 compared to US\$521 million to the first half of 2015, or 3.5% on a constant currency basis. This decrease reflects the impact of higher volumes in Mozambique offset by lower services costs.

Our Adjusted EBITDA from coal was a loss of US\$203 million in the first half of 2016, while in the first half of 2015 we reported a loss of US\$230 million. This reduced loss was due to lower costs in Mozambique.

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Our operating loss from coal was US\$241 million in the first half of 2016, compared to US\$301 million in the first half of 2015, for the reasons described above and the lower depreciation registered in 2016 compared to 2015.

*Base metals*

Our net operating revenues from sales of base metals decreased to US\$2,800 million in the first half of 2016 from US\$3,358 million in the first half of 2015. This 16.6% decrease was mainly due to 34.1% and 13.1% lower average realized prices of nickel and copper, respectively, in the first half of 2016, compared to the first half of 2015, reflecting in each case the decline in the average reference price index LME. This decrease was partially offset by: (i) 11.9% higher nickel sales volumes in the first half of 2016, compared to the first half of 2015, mainly due to increased production in our operations in New Caledonia and increased production in the North Atlantic operations, and (ii) 6.7% higher copper sales volumes, due to successful ramp-up of Salobo and increased production in the North Atlantic operations.

Our cost of goods sold from base metals, excluding depreciation, decreased 1.0%, on a constant currency basis, compared to the first half in 2015.

Our net expenses from base metals, excluding depreciation, depletion and amortization, decreased to US\$126 million in the first half of 2016 from US\$147 million in the first half of 2015. This decrease reflects the non-recurring positive effect of the gold stream transaction recorded in the March 2015, in the amount of US\$230 million, which was partially offset by a US\$169 million reduction in pre-operating and stoppage expenses as a result of lower expenses in Long Harbour and New Caledonia.

Our Adjusted EBITDA from base metals was US\$705 million in the first half of 2016, 35.0% lower than the US\$1,084 million registered in the first half of 2015, mainly as a result of lower prices of nickel (impact of US\$676 million) and copper (impact of US\$131 million) and the non-recurring positive effect of the gold stream transaction of US\$230 million recorded in March 2015, partially offset by the increase in the sales volume.

Our operating results from base metals was an operating loss of US\$140 million in the first half of 2016, compared to operating income of US\$164 million in the first half of 2015 for the reasons described above.

*Fertilizers*



Our net operating revenues from sales of fertilizers decreased to US\$848 million in the first half of 2016 from US\$1,046 million in the first half of 2015. This US\$198 million decrease, or 18.9%, was mainly driven by US\$152 million impact of the decrease in fertilizer prices in the international market and US\$40 million negative impact of exchange rate variation. Our sales volumes in the first half of 2016 remained in line with the first half of 2015.

Our cost of goods sold from fertilizers, excluding depreciation, increased 9.4% in the first half of 2016, on a constant currency basis, compared to the first half of 2015. This increase was mainly due to corrective maintenance in some plants and higher rental costs of mining equipment, which are more economically attractive than investing to replace the fleet.

Our net expenses from fertilizers, excluding depreciation, depletion and amortization, decreased 25.4% in the first half of 2016 on a constant currency basis compared with the first half of 2015. This decrease was mainly due to a US\$26 million reduction of research and development expenses, as a result of the interruption of the Kronau potash project in the last quarter of 2015.

Our Adjusted EBITDA from fertilizers was US\$102 million in the first half of 2016, a 59.7% decrease compared to the first half of 2015, mainly driven by lower prices and higher cost of goods sold, mentioned above.

Our operating result from fertilizers was an operating loss of US\$56 million in the first half of 2016 compared to a US\$109 million income in the first half of 2015, for the reasons described above.

Table of Contents**Financial results**

The following table details our net non-operating income (expenses) for the periods indicated.

	Six months ended June 30,			
	2015	(US\$ millions)		2016
Financial income	US\$	96	US\$	94
Financial expenses		(432)		(1,241)
Gains (losses) on derivatives, net		(1,105)		1,199
Foreign exchange gains (losses), net		(2,395)		3,571
Indexation gains (losses), net		(142)		(107)
Non-operating income (expenses)	US\$	(3,978)	US\$	3,516

Our non-operating income (expenses) was an income of US\$3,516 million in the first half of 2016 compared to an expense of US\$3,978 million in the first half of 2015. This mainly resulted from:

(i) Net foreign exchange gain of US\$3,571 million in the first half of 2016 compared to net foreign exchange loss of US\$2,395 million in the first half of 2015, mainly due to the 17.8% appreciation of the Brazilian *real* against the U.S. dollar in the first half of 2016, compared to a 16.8% depreciation of the Brazilian *real* in the first half of 2015.

(ii) The net effect of fair value changes in derivatives, which represented a gain of US\$1,199 million in the first half of 2016 compared to a loss of US\$1,105 million in the first half of 2015. This reflected the following main categories of derivatives transactions:

- *Currency and interest rate swaps.* We recognized a net gain of US\$969 million in the first half of 2016 from currency and interest rate swaps, compared to a net loss of US\$1,020 million in the first half of 2015. These swaps are primarily used to convert debt denominated in other currencies into U.S. dollars in order to protect our cash flow from exchange rate volatility.

- *Bunker oil derivatives.* We recognized a net gain of US\$134 million in the first half of 2016 compared to a net gain of US\$30 million in the first half of 2015. These derivatives are structured to minimize the volatility of the cost of maritime freight, and the variation is due to the volatility in the spot bunker oil price.

- *Nickel derivatives.* We recognized a loss of US\$37 million in the first half of 2016 compared to a loss of US\$19 million in the first half of 2015. These derivatives are part of our nickel price protection program.

(iii) An indexation loss from monetary variation of US\$107 million in the first half of 2016 compared to a loss of US\$142 million in the first half of 2015.

(iv) An increase in financial expenses of US\$809 million, from US\$432 million in the first half of 2015 to US\$1,241 million in the first half of 2016, attributable primarily to the US\$838 million variation in the fair value of our participative debentures due to the increase in their market value.

#### **Equity results in associates and joint ventures**

Our equity results in associates and joint ventures in the first half of 2016 increased to income of US\$346 million from a loss of US\$53 million in the first half of 2015, mostly due to the positive results from Companhia Siderúrgica do Pecém ( CSP ), in the amount of US\$229 million (due to the impact of appreciation of Brazilian *reais* on CSP debt), the leased pelletizing companies in Tubarão, in the amount of US\$29 million, and MRS, in the amount of US\$32 million, in the first half of 2016. In the first half of 2015, our equity results in associates and joint ventures was impacted by a negative contribution of US\$47 million from Samarco and US\$66 million from CSP, mainly due to the impact of the depreciation of the Brazilian *reais* on their U.S. dollar-denominated debt.

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**Other results in associates and joint ventures**

Other results in associates and joint ventures comprise provisions for liabilities and results on the disposal of investments in associates and joint ventures. In the first half of 2016, we recognized a negative result of US\$1,113 million, reflecting:

(i) A US\$1,038 million provision corresponding to our estimated share of the amounts necessary to comply with the obligations undertaken by Samarco and its shareholders under the settlement agreement with certain Brazilian authorities in connection with the failure of Samarco's dam (see below *Recent Developments* and Note 4 to our Interim Financial Statements); and

(ii) A US\$75 million loss in the sale of our 26.9% participation in Thyssenkrupp Companhia Siderúrgica do Atlântico Ltd.

**Income taxes**

In the first half of 2016, we recorded income tax expense of US\$2,275 million, compared to a US\$675 million tax gain in the first half of 2015, when we recognized a net loss before taxes. Excluding the effects of other results in associates and joint ventures, discussed above, our effective rate in the first half of 2016 would have been 36.6%. Tax legislation that became effective in Brazil in 2015 provides that income of our foreign subsidiaries will be taxed in Brazil, on an accrual basis, applying the differential between the local rate and the Brazilian tax rates. Accordingly, the effective tax rate was different from the statutory rate mainly due to unrecognized tax losses of the period.

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**LIQUIDITY AND CAPITAL RESOURCES**

**Overview**

In the ordinary course of business, our principal funding requirements are for capital expenditures, dividend payments and debt service. We have historically met these requirements by using cash generated from operating activities and through borrowings, supplemented by dispositions of assets.

We have taken measures to reduce our capital expenditures, costs and expenses to face the reduction in the commodity prices and the consequent impact on our operating cash flows. We continue to evaluate opportunities for additional cash generation, such as the sale of certain assets, which may include core assets, and investments, joint ventures for certain businesses, streaming transactions, and issuance of redeemable non-voting shares in some of our subsidiaries.

We are cognizant of market volatility, despite the recent improvement in commodity prices, and remain fully committed to reduce our costs and expenses and to strengthen our balance sheet through the reduction of our net debt. We remain focused on our operating and capital allocation discipline and on progressing our divestment and asset optimization program.

**Sources of funds**

Our principal sources of funds are operating cash flow and borrowings. In the first half of 2016, we generated cash from operations in the amount of US\$3,811 million, compared to US\$3,628 million in the first half of 2015, despite the impact of lower commodity prices on our financial results, reflecting primarily the maintenance of our cash management.

In the first half of 2016, we incurred additional US\$4,633 million debt under our new and existing financing agreements and issuance of notes. Our major new borrowing transactions in the first half of 2016 are summarized below.

- In January 2016, we drew US\$3.0 billion under our existing revolving credit facilities with syndicates of international banks, which will mature in 2018 and 2020. Of this amount, US\$1.0 billion was repaid in June 2016 with part of the proceeds of the offering of our US\$1,250 million notes due 2021.
- In January 2016, we entered into trade finance transactions in the total amount of US\$195 million. US\$95 million of these facilities will mature in 2016 and the remaining US\$100 million, in 2017.

- In June 2016, our wholly-owned subsidiary Vale Overseas Ltd. issued US\$1,250 million notes due 2021, guaranteed by Vale S.A.

In August 2016, we announced a new gold streaming transaction with a subsidiary of Silver Wheaton Corp. ( SLW ), pursuant to which we sold an additional 25% premium of the payable gold stream in copper concentrate from the Salobo copper mine for the life of the mine. As part of the sale price, we will receive an initial cash payment of US\$800 million in August 2016.

#### **Uses of funds**

##### *Capital expenditures*

In the first half of 2016, our capital expenditures amounted to US\$2,817 million, including US\$1,825 million for project execution and US\$992 million dedicated to sustaining existing operations.

##### *Distributions and repurchases*

We did not pay dividends and we did not repurchase any of our shares in the first half of 2016.

##### *Tax payments*

We paid US\$259 million in income tax in the first half of 2016, compared to US\$318 million in the first half of 2015, excluding the payments in connection with REFIS. In connection with our participation in the REFIS, our outstanding commitment as of June 30, 2016 was US\$5,455 million, which will be paid in 148 monthly installments. In the first half of 2016, we paid a total of US\$188 million, compared to US\$209 million in the first half of 2015 in connection with the REFIS.

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*Non-operational*

Our non-operational uses of cash in the first half of 2016 mainly consisted of: (i) interest on loans amounting to US\$822 million in the first half of 2016, compared to US\$776 million in the first half of 2015; and (ii) settlement of derivatives amounting to US\$863 million, of which US\$527 million were related to bunker oil in the first half of 2016, compared to the settlement of derivatives amounting to US\$759 million in the first half of 2015, of which US\$363 million were related to bunker oil.

*Repayment debt*

In the first half of 2016, we paid US\$2,966 million under our financing agreements (including repayment of US\$951 million in bonds, US\$1.0 billion in revolving credit facilities, and US\$1.0 billion in other trades finance transactions).

**Debt**

As of June 30, 2016, our outstanding debt was US\$31.814 billion (including US\$31.087 billion of principal and US\$727 million of accrued interest). As of June 30, 2016, US\$477 million of our debt was secured by liens on some of our assets. As of June 30, 2016, the average remaining term of our debt was 7.6 years.

As of June 30, 2016, the short-term debt and the current portion of long-term debt was US\$3.153 billion, including charges.

Our major categories of long-term indebtedness are as follows. The principal amounts given below include the current portion of long-term debt and exclude accrued charges.

- *U.S. dollar-denominated floating rate notes* (US\$8.790 billion as of June 30, 2016). This category includes export financing lines, loans from export credit agencies, and loans from commercial banks and multilateral organizations.
- *U.S. dollar-denominated fixed rate notes* (US\$14.108 billion as of June 30, 2016). We have issued in public offerings several series of fixed-rate debt securities, directly by Vale and through our finance subsidiary Vale Overseas Limited, guaranteed by Vale, totaling US\$12.760 billion. Our subsidiary Vale Canada has outstanding fixed rate debt in the amount of US\$400 million.

- *Euro-denominated fixed rate notes* (US\$1.655 billion as of June 30, 2016). We have issued in public offerings two series of fixed-rate debt securities denominated in Euro totaling 1.500 billion.
- *Other debt* (US\$6.534 billion as of June 30, 2016). We have outstanding debt, principally owed to BNDES, Brazilian commercial banks and infrastructure debentures, denominated in Brazilian *reais* and other currencies.

We have a variety of credit lines available, including the following, as of June 30, 2016:

- Credit lines for R\$7.300 billion, or US\$2.274 billion, to finance our investment program. As of June 30, 2016, the total amount available under these facilities was R\$1.112 billion, or US\$346 million.
- A R\$3.883 billion or US\$1.210 billion, financing agreement with BNDES to finance part of the implementation of the CLN 150 Mtpy project, which will expand the logistics infrastructure in Vale's Northern System. As of June 30, 2016, this facility was almost fully drawn.



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- A R\$6.163 billion, or US\$1.920 billion, financing agreement with BNDES to finance part of the implementation of the S11D project and its infrastructure (CLN S11D). As of June 30, 2016, the total amount available under this facility was R\$2.447 billion, or US\$762 million.
- We have two revolving credit facilities with syndicates of international banks, which will mature in 2018 and 2020. As of June 30, 2016, the total amount available under these facilities was US\$3.0 billion, which can be drawn by Vale, Vale Canada and Vale International.

Some of our long-term debt instruments contain financial covenants. In particular, instruments representing approximately 19% of the aggregate principal amount of our total debt require that we maintain, as of the end of each quarter (a) a consolidated ratio of total debt to Adjusted EBITDA for the past twelve months not exceeding 4.5 to one and (b) a consolidated interest coverage ratio of at least 2.0 to one. These covenants appear in our financing agreements with BNDES, with other export and development agencies, and with some other lenders. In the last quarter of 2015, we agreed with lenders under these agreements to amend the consolidated ratio of total debt to Adjusted EBITDA to require a ratio of 5.5 to one through the end of 2016, which will give us flexibility to finalize our investment cycle. On June 30, 2016, (i) our consolidated ratio of total debt to adjusted EBITDA for the past twelve months was 4.2 to one and (ii) our consolidated interest coverage ratio was 5.1 to one.

As of June 30, 2016, the corporate guarantees we provided (corresponding to our direct or indirect interest) for the companies Norte Energia S.A. and Companhia Siderúrgica do Pecém S.A. totaled US\$350 million and US\$1,317 million, respectively.

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**RECENT DEVELOPMENTS**

**Developments Relating to the Samarco Dam Failure**

*The March 2016 agreement*

As discussed in our annual report on Form 20-F, filed with the U.S. Securities and Exchange Commission on March 31, 2016 (See *Significant changes in our business – Failure of Samarco’s tailings dam in Minas Gerais in our annual report on Form 20-F*), in November 2015 our joint venture Samarco experienced the failure of a tailings dam (Fundão) in the Brazilian state of Minas Gerais – Brazil, which caused impacts on communities and the environment, alongside the Rio Doce river.

Following the dam failure, the Brazilian mining authority (DNPM) and the Minas Gerais State Environmental Secretary (SEMAD) ordered the suspension of Samarco’s operations.

In March 2016, Samarco and its shareholders, Vale S.A. and BHP Billiton Brasil Ltda. ( BHPB ), entered into a settlement agreement (the March 2016 Agreement ) with the Brazilian federal government, the two Brazilian states affected by the failure (Espírito Santo and Minas Gerais) and certain other government authorities, pursuant to which Samarco and its shareholders agreed to create a foundation (the Foundation ) to develop and implement programs for the remediation and compensation of the impacts of the dam failure.

Under the March 2016 Agreement, Samarco must fund the Foundation as follows: (i) R\$2.0 billion (US\$623 million) in 2016, R\$1.2 billion (US\$374 million) in 2017 and R\$1.2 billion (US\$374 million) in 2018 (the amounts already spent by Samarco on remediation and compensation, as well as 50% of the amounts deposited or frozen due to judicial orders in proceedings related to the dam failure, will be considered part of these funding obligations); (ii) from 2019 to 2021, Samarco agreed to provide funding based on the amounts needed to implement the projects approved for the relevant year, subject to an annual minimum of R\$800 million (US\$249 million) and an annual maximum of R\$1.6 billion (US\$498 million); and (iii) starting on 2022, Samarco will provide the necessary funding to complete remaining remediation and compensation programs approved for each relevant year. The Foundation will allocate an annual amount of R\$240 million (US\$75 million) over 15 years to the implementation of compensation programs, and these annual amounts are included in the annual contributions described above for the first six years. Through the end of 2018, the Foundation will also provide R\$500 million (US\$156 million) for basic sanitation programs in the affected areas, as follows: R\$ 50 million (US\$ 16 million) in 2016, R\$ 200 million (US\$ 62 million) in 2017 and R\$ 250 million (US\$ 78 million) in 2018.

To the extent that Samarco does not meet its funding obligations to the Foundation, each of Vale S.A. and BHPB will provide, under the terms of the March 2016 Agreement, funds to the Foundation in proportion to its 50% equity interest in Samarco.

In June 2016, the Foundation was established by Samarco and its shareholders, with a commencement date estimated to occur in early August 2016. We intend to make short-term facilities of up to US\$100 million available to Samarco to support its operations, without undertaking an obligation to Samarco. Funds will be released as needed, subject to achieving certain milestones. BHPB will provide a similar

short-term facility.

In July 2016, the Superior Court of Justice (STJ) issued an interim order suspending the decision of the Federal Regional Court, 1st Region that ratified the March 2016 Agreement. Only the judicial decision that ratified the March 2016 Agreement was suspended and, therefore, the March 2016 Agreement remains valid and enforceable, and the parties continue to perform their obligations under the March 2016 Agreement. With this interim order, the public civil claim brought by several authorities and associations against Samarco, its shareholders and other defendants, in the amount of R\$20.2 billion (US\$6.3 billion), was reinstated.

*Provision for potential liabilities under the March 2016 Agreement*

Samarco is currently unable to resume its mining and processing operations. Samarco's original expectation was to resume its operations in 2016. However, in view of the current stage of the necessary procedures to resume operations and the uncertainties related to the licensing approval by the relevant governmental authorities, Samarco cannot make a reliable estimate of how and when its operations will resume.

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Therefore, we recognized a provision of R\$3,733 million (US\$1,163 million) in our balance sheet as of June 30, 2016, which was also reflected as Other results in associates and joint ventures in our income statement for the six months ended June 30, 2016.

This provision represents our best estimate of our secondary obligations under the March 2016 Agreement, in case Samarco is unable to resume operations, and is based on reports prepared by independent experts engaged by Samarco. The total amount required to comply with the obligations under the March 2016 Agreement to remediate and compensate the impacts of the dam failure was estimated in R\$11,121million (US\$3,465million), of which R\$656million (US\$204million) was already disbursed by Samarco before June 30, 2016. Our proportional estimated share of the remaining balance, discounted at a risk-free rate, amounts to R\$3,733million (US\$1,163million) as of June 30, 2016.

The assessment of this provision involves uncertainties and significant judgments and estimates on the part of our management. We will continuously reassess the key assumptions used by Samarco in the preparation of its estimated future cash flows and the other assumptions for determining the amount of the provision, in order to timely reflect in our financial statements any new facts and circumstances.

*Other contingencies related to Samarco accident*

In addition, we are a defendant in a number of lawsuits brought by individuals, corporations and governmental authorities seeking damages for personal injury, wrongful death, commercial or economic injury, breach of contract and violations of statutes as a result of the failure of Samarco's dam (See *Additional information Legal proceedings Legal proceedings related to failure of Samarco's tailings dam in Minas Gerais* in our annual report on Form 20-F). Some of these actions are described below, and other proceedings and investigations in connection with the Samarco dam failure are expected.

Notably, the Brazilian federal prosecutor's office (the *Ministério Público Federal* or MPF) filed a public civil action in early May 2016 before the 12th Federal Court at Belo Horizonte, Minas Gerais, against Samarco, its shareholders, Vale and BHPB, and numerous governmental authorities and other organizations. The MPF requests the court to order a broad range of specific actions to be taken by the various parties. It also states in its complaint that the required remedial measures would have a total value of R\$155 billion, based on a comparison with the costs of the Deepwater Horizon oil spill in the Gulf of Mexico in 2010. In this public civil action, the MPF claims monetary damages from the defendants on a joint and several basis as well as other forms of relief, including injunctions (i) ordering the defendants to implement several measures to mitigate or remediate social, economic and environmental impacts arising from the collapse of the Fundão dam, as well as other emergency measures; (ii) preventing the defendants from encumbering or disposing of their assets; (iii) preventing the defendants from paying dividends; (iv) ordering the defendants to deposit R\$7.7 billion into a fund, managed by the defendants, for implementation of social, environmental and emergency programs; (v) ordering the defendants to provide collateral in the amount of R\$155 billion to secure their compliance with the final court decision; (vi) ordering the defendants to maintain working capital in the amount of R\$2 billion initially, and thereafter in an amount equal to 100% of the expenses of the remediation and compensation measures projected for the subsequent twelve months; and (vii) ordering BNDES to take actions under its credit agreements with the defendants, including cessation of further drawings and acceleration of outstanding principal. In July 2016, the court ordered Samarco to present proposals for certain interim measures and scheduled mediation proceedings.

Also, in June 2016 the federal police concluded an investigation and recommended to federal prosecutors that they bring criminal charges against Samarco, Vale and certain individuals, which may result in additional proceedings against us. The federal police recommended charges against Vale on the grounds that certain of our operations deposited tailings at the Samarco dam. Other investigations related to the Samarco dam failure are continuing and could result in additional proceedings or charges.

We will take all necessary steps to defend our rights in this public civil action and the other lawsuits arising from the Samarco dam failure. Because these pending lawsuits are in very early stages, it is not possible to determine a range of outcomes or reliable estimates of our potential exposure at this time. Therefore, we have not recognized a provision or provided an estimate of any contingent liability specifically related to these lawsuits.

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**Other Legal Proceedings**

*Tax assessments.*

Brazilian state and federal tax authorities have continued to assert new tax assessments similar to those discussed in our annual report on Form 20-F under *Additional Information Legal proceedings CFEM-related proceedings, Additional Information Legal proceedings ICMS tax assessments* and *Additional Information Legal proceedings PIS/COFINS assessments*. The new assessments cover tax periods that were not covered by previous assessments and include an aggregate amount of approximately R\$2 billion. As time passes without resolution of the underlying issues, the authorities bring such assessments for additional periods to avoid application of the statute of limitations.

*Public civil action seeking suspension of S11D project*

Associations representing the indigenous Xikrin and Porekrô people have recently brought a public civil action against Vale, the Federal Environmental Agency (IBAMA), the Federal Indigenous Agency (FUNAI) and the National Bank of Economic and Social Development (BNDES), seeking the suspension of the environmental permitting procedure of our S11D project. The associations contend that FUNAI and IBAMA have failed to conduct the appropriate studies regarding the indigenous people during the environmental permitting procedure, and that the indigenous groups consequently did not provide a required consent. They also requested a monthly payment of R\$2 million for each association until the defendants conclude the studies. See our current report on Form 6-K furnished to the SEC on May 16, 2016 (SEC Accession No: 0001104659-16-121018), describing the public civil actions filed by two indigenous protection associations requesting the suspension of the environmental license of our S11D project.

We will take all necessary steps to defend our rights in this public civil action. Applicable legislation provides for mandatory consultation of indigenous communities located within ten kilometers of the project, and these indigenous communities are located more than 12 kilometers away from the project. We have submitted our preliminary defense, and a decision of court with respect to plaintiffs' request for an injunction suspending our S11D project is pending.

*Environmental proceedings involving Jangada and Feijão mines*

In June 2016, the environmental authority of the Brazilian state of Minas Gerais ordered the suspension of part of our Jangada and Feijão mines in the Southern System, in order to protect caves located near these mines under Brazilian legislation for the protection of natural resources, which include underground geological phenomena. We have obtained an injunction from the state courts of Minas Gerais suspending the order of the environmental authority. In the event that the injunction is overturned or revoked, we may be required to suspend approximately 50% of our operations at the affected mines, with potential consequences for production volumes, costs or reserves in our iron ore business.

*Ministry of Labor Proceedings*

In February 2015, the Brazilian Ministry of Labor conducted an inspection in the facilities of a company that provided transportation services to us between our mines Mina do Pico and Mina de Fábrica, in Minas Gerais, and it found that this company failed to comply with certain obligations relating to hygiene, safety, overtime and other labor matters, concluding that its employees to be in conditions similar to slavery. Under Brazilian law, the Labor Ministry has authority to adopt a broad interpretation of the law and conclude that such failures to comply with labor obligations may be classified as similar to slavery. Upon learning of the findings, we remediated the problems identified by the Ministry of Labor. Because this transportation company rendered services that the Ministry of Labor considered to be part of our core business, the Ministry of Labor made findings against us. We submitted our defense at the administrative level, arguing that there was no labor relationship between the transportation company's employees and us and that the classification of the irregularities as being similar to slavery was not correct. We also terminated the agreement with the transportation company and entered into an agreement with the Labor Public Prosecutor Office, pursuant to which we agreed to take some corrective and preventive measures, which we are complying with. The Ministry of Labor rejected our challenge to its findings and, in June 2016, we commenced judicial proceedings challenging the administrative findings and seeking a ruling that the Ministry of Labor may not classify us as engaging in practices similar to slavery.

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	2011	Year ended December 31, (US\$ million)				2015	Six months ended June30, 2015 2016	
		2012	2013	2014		2015	2016	
Income before income taxes and equity results	US\$ 26,775	US\$ 5,387	US\$ 6,731	US\$ 1,109	US\$ (16,932)	US\$ (2,260)	US\$ 5,943	
Fixed charges:								
Interest costs - capitalized	234	335	235	588	761	373	390	
Interest costs - expensed	1,388	1,251	1,335	1,148	891	423	474	
	1,622	1,586	1,570	1,736	1,652	796	864	
Amortization of capitalized interest	54	67	77	90	105	94	110	
Distributed income of equity investees	1,038	460	834	568	318	212	118	
	29,489	7,500	9,212	3,503	(14,857)	(1,158)	7,035	
Less: interest capitalized	(234)	(335)	(235)	(588)	(761)	(373)	(390)	
	US\$ 29,255	US\$ 7,165	US\$ 8,977	US\$ 2,915	US\$ (15,618)	US\$ (1,531)	US\$ 6,645	
Ratio of earnings to combined fixed charges(1)	18.04	4.52	5.72	1.68	(9.45)	(1.92)	7.69	

(1) For the year ended December 31, 2015 and the six-month period ended June 30, 2015, earnings available for fixed charges were inadequate to cover total fixed charges. The amount of the deficiency was US\$17,270 and US\$2,327 respectively.



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**EXHIBIT INDEX**

**Exhibit A:** Awareness Letter of KPMG Auditores Independentes

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**SIGNATURES**

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

VALE S.A.

By: /s/ Marcio Felipe M. Aigner  
Name: Marcio Felipe M. Aigner  
Title: Attorney-in-Fact

By: /s/ Luciana Ribeiro da Costa Werner  
Name: Luciana Ribeiro da Costa Werner  
Title: Attorney-in-Fact

Date: August 3, 2016