

Vale S.A.  
Form 6-K  
February 06, 2017  
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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**

**February 2017**

**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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(Check One) Yes  No

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and shall be deemed to be a part thereof from the date on which this report is furnished to the SEC, to the extent not superseded by documents or reports subsequently filed or furnished.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 October 27, 2016 (SEC Accession No: 0001104659-16-152293), containing our unaudited condensed consolidated interim financial statements as of September 30, 2016 and for the nine-month periods ended September 30, 2016 and September 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 NINE-MONTH PERIODS ENDED SEPTEMBER 30, 2016 AND SEPTEMBER 30, 2015**

In the nine months ended September 30, 2016, we recorded net income attributable to our stockholders of US\$3,457 million, compared to a net loss of US\$3,560 million in the same period in 2015. The improvement was mainly driven by: (i) net foreign exchange gain of US\$3,136 million in the nine months ended September 30, 2016, compared to net foreign exchange loss of US\$7,653 million in the same period in 2015, reflecting the 16.9% appreciation of the Brazilian *real* against the U.S. dollar during the nine months ended September 30, 2016, compared to a 49.6% depreciation of the Brazilian *real* against the U.S. dollar in the same period in 2015 and (ii) a 6.2% reduction in our costs of goods sold and a 38.6% reduction in our expenses, each as adjusted to remove the effects of exchange rate variation (constant currency basis), partially offset by (iii) provisions in the aggregate amount of US\$1,038 million recognized in the nine months ended September 30, 2016 for the liabilities associated with the failure of Samarco's tailings dam in November 2015.

**Consolidated Revenues**

For the nine months ended September 30, 2016, our net operating revenues were US\$19,669 million, in line with the net operating revenues for the same period in 2015, mainly as a result of lower sales prices of base metals (impact of US\$790 million) and fertilizers (impact of US\$295 million), offset by higher sales volumes of ferrous minerals (impact of US\$563 million) and base metals (impact of US\$464 million).

*Net operating revenue by product*

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

|                                     | 2015 | Nine months ended September 30, |             | % change |
|-------------------------------------|------|---------------------------------|-------------|----------|
|                                     |      | (US\$ million)                  |             |          |
|                                     | US\$ | 2015                            | 2016        |          |
| <b>Ferrous minerals:</b>            |      |                                 |             |          |
| Iron ore                            | US\$ | 9,385                           | US\$ 10,208 | 8.8%     |
| Iron ore pellets                    |      | 2,820                           | 2,611       | (7.4)    |
| Ferrous alloys and manganese ore    |      | 149                             | 185         | 24.2     |
| Other ferrous products and services |      | 378                             | 300         | (20.6)   |
| Subtotal                            |      | 12,732                          | 13,304      | 4.5      |
| Coal                                |      | 418                             | 463         | 10.8     |
| <b>Base metals:</b>                 |      |                                 |             |          |
| Nickel and other products(1)        |      | 3,586                           | 3,209       | (10.5)   |
| Copper concentrate(2)               |      | 1,119                           | 1,170       | 4.6      |
| Subtotal                            |      | 4,705                           | 4,379       | (6.9)    |
| <b>Fertilizers:</b>                 |      |                                 |             |          |
| Potash                              |      | 102                             | 79          | (22.5)   |
| Phosphates                          |      | 1,362                           | 1,123       | (17.5)   |
| Nitrogen                            |      | 237                             | 187         | (21.1)   |
| Other fertilizer products           |      | 43                              | 57          | 32.6     |
| Subtotal                            |      | 1,744                           | 1,446       | (17.1)   |
| Other products and services(3)      |      | 111                             | 77          | (30.6)   |

|                        |      |        |      |        |        |
|------------------------|------|--------|------|--------|--------|
| Net operating revenues | US\$ | 19,710 | US\$ | 19,669 | (0.2)% |
|------------------------|------|--------|------|--------|--------|

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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  | Nine months ended September 30,<br>2016 | % change |
|--------------------------|---|---|----------|
|                          | (thousand metric tons, except where<br>indicated) |   |          |
| <b>Ferrous minerals:</b> |   |   |          |
| Iron ore fines           | 197,180   | 209,653                                 | 6.3%     |
| Run of mine              | 10,642  | 1,276                                   | (88.0)   |
| Iron ore pellets         | 35,447  | 34,519                                  | (2.6)    |
| Manganese ore            | 1,196   | 1,317                                   | 10.1     |
| Ferrous alloys           | 56  | 92                                      | 64.3     |
| <b>Coal:</b>             |   |   |          |
| Thermal coal             | 665   | 4,337                                   | 552.2    |
| Metallurgical coal       | 4,285   | 3,525                                   | (17.7)   |
| <b>Base metals:</b>      |   |   |          |
| Nickel                   | 207   | 228                                     | 10.1     |
| Copper                   | 289   | 315                                     | 9.0      |
| PGMs (oz)                | 376   | 434                                     | 15.4     |
| Gold (oz)                | 311   | 367                                     | 18.0     |
| Silver (oz)              | 1,542   | 1,852                                   | 20.1     |
| Cobalt (lb)              | 2,407   | 3,247                                   | 34.9     |
| <b>Fertilizers:</b>      |   |   |          |
| Potash                   | 348   | 372                                     | 6.9      |
| <b>Phosphates:</b>       |   |   |          |
| MAP                      | 814   | 802                                     | (1.5)    |
| TSP                      | 631   | 577                                     | (8.6)    |
| SSP                      | 1,530   | 1,361                                   | (11.0)   |
| DCP                      | 340   | 374                                     | 10.0     |
| Phosphate rock           | 2,382   | 2,276                                   | (4.5)    |
| Other phosphates         | 261   | 325                                     | 24.5     |
| Nitrogen                 | 487   | 491                                     | 0.8%     |

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  |        | Nine months ended September 30,<br>2016 |        | % change |
|--------------------|---|--------|---|--------|----------|
|                    | (US\$ per metric ton, except where indicated) |        |   |        |          |
| Ferrous minerals:  |   |        |   |        |          |
| Iron ore fines     | US\$  | 47.60  | US\$                                    | 48.69  | 2.3%     |
| Run of mine        |   | 8.40   |   | 10.19  | 21.3     |
| Iron ore pellets   |   | 79.57  |   | 75.67  | (4.9)    |
| Manganese ore      |   | 79.88  |   | 89.76  | 12.4     |
| Ferroalloys        |   | 947.38 |   | 719.83 | (24.0)   |
| Coal:              |   |        |   |        |          |
| Thermal coal       |   | 55.64  |   | 40.58  | (27.1)   |
| Metallurgical coal |   | 88.91  |   | 81.16  | (8.7)    |
| Base metals:       |   |        |   |        |          |
| Nickel             |   | 12,692 |   | 9,459  | (25.5)   |
| Copper             |   | 4,523  |   | 4,227  | (6.5)    |
| Platinum (US\$/oz) |   | 1,103  |   | 953    | (13.6)   |
| Gold (US\$/oz)     |   | 1,145  |   | 1,269  | 10.8     |
| Silver (US\$/oz)   |   | 14.51  |   | 15.32  | 5.6      |
| Cobalt (US\$/lb)   |   | 10.74  |   | 10.23  | (4.7)    |
| Fertilizers:       |   |        |   |        |          |
| Potash             |   | 293.08 |   | 213.28 | (27.2)   |
| Phosphates:        |   |        |   |        |          |
| MAP                |   | 505.94 |   | 392.10 | (22.5)   |
| TSP                |   | 377.30 |   | 302.39 | (19.9)   |
| SSP                |   | 193.44 |   | 185.62 | (4.0)    |
| DCP                |   | 503.92 |   | 473.69 | (6.0)    |
| Phosphate rock     |   | 82.82  |   | 75.57  | (8.8)    |
| Nitrogen           | US\$  | 487.12 | US\$                                    | 381.50 | (21.7)%  |

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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 |              |                |              |  |  |
|--------------------------|---------------------------------------|--------------|----------------|--------------|--|--|
|                          | 2015                                  |              |                | 2016         |  |  |
|                          | (US\$ million)                        | (% of total) | (US\$ million) | (% of total) |  |  |
| <b>North America</b>     |                                       |              |                |              |  |  |
| Canada                   | US\$ 844                              | 4.3%         | US\$ 862       | 4.4%         |  |  |
| United States            | 686                                   | 3.5          | 677            | 3.4          |  |  |
| Mexico                   | 28                                    | 0.1          | 19             | 0.1          |  |  |
|                          | 1,558                                 | 7.9          | 1,558          | 7.9          |  |  |
| <b>South America</b>     |                                       |              |                |              |  |  |
| Brazil                   | 3,183                                 | 16.1         | 2,734          | 13.9         |  |  |
| Other                    | 318                                   | 1.6          | 269            | 1.4          |  |  |
|                          | 3,501                                 | 17.8         | 3,003          | 15.3         |  |  |
| <b>Asia</b>              |                                       |              |                |              |  |  |
| China                    | 6,915                                 | 35.1         | 8,063          | 41.0         |  |  |
| Japan                    | 1,498                                 | 7.6          | 1,228          | 6.2          |  |  |
| South Korea              | 604                                   | 3.1          | 656            | 3.3          |  |  |
| Other                    | 1,162                                 | 5.9          | 1,082          | 5.5          |  |  |
|                          | 10,179                                | 51.6         | 11,029         | 56.1         |  |  |
| <b>Europe</b>            |                                       |              |                |              |  |  |
| Germany                  | 1,080                                 | 5.5          | 964            | 4.9          |  |  |
| Italy                    | 349                                   | 1.8          | 350            | 1.8          |  |  |
| Others                   | 2,084                                 | 10.6         | 1,906          | 9.7          |  |  |
|                          | 3,513                                 | 17.8         | 3,220          | 16.4         |  |  |
| <b>Middle East</b>       | 798                                   | 4.1          | 629            | 3.2          |  |  |
| <b>Rest of the world</b> | 161                                   | 0.8          | 230            | 1.2          |  |  |
| <b>Total</b>             | US\$ 19,710                           | 100.0%       | US\$ 19,669    | 100.0%       |  |  |

**Consolidated operating costs and expenses**

Our cost of goods sold and services rendered declined by US\$1,395 million, or 9.1%, to US\$13,999 million in the nine months ended September 30, 2016 from US\$15,394 million in the same period in 2015, mainly driven by: (i) the positive effect of exchange rate variation (US\$845 million impact) and (ii) cost reduction initiatives in all of our businesses. On a constant currency basis, our cost of goods sold declined 6.2% in the nine months ended September 30, 2016, compared to the same period in 2015.

Our selling and administrative expenses decreased by 15.1%, to US\$412 million in the nine months ended September 30, 2016 from US\$485 million in the same period in 2015, mostly due to the simplification of our corporate functions and structure, which contributed to a reduction of US\$42 million in personnel expenses and US\$27 million in services expenses, which were partially offset by an increase of US\$11 million in selling expenses. On a constant currency basis and excluding depreciation, our selling and administrative expenses declined 12.8% in the nine months ended September 30, 2016, compared to the same period in 2015.

Our research and development expenses totaled US\$223 million in the nine months ended September 30, 2016, a decrease of US\$135 million, or 37.7%, from the US\$358 million expenses recorded in the same period in 2015, reflecting the interruption of the Kronau potash project in the

last quarter of 2015 and reductions across all of our business segments.

Our pre-operating and stoppage expenses totaled US\$338 million in the nine months ended September 30, 2016, a decrease of US\$451 million, or 57.2%, from the US\$789 million recorded in the same period in 2015, mainly due to the reduction of pre-operating expenses in Long Harbour and Moatize II and the conclusion of the ramp-up of our operations in New Caledonia.

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Our other operating expenses were US\$144 million in the nine months ended September 30, 2016, compared to US\$270 million in the same period in 2015, as a result of (i) the positive effect of the gold streaming transactions of US\$150 million in the nine-month period ended September 30, 2016, compared to a positive effect of US\$ 230 million in the same period of 2015, and (ii) the reversal of provisions for disposal of materials and inventories in the amount of US\$73 million in the nine months ended September 30, 2016, compared to a US\$101 million provision charged in the same period of 2015.

*Cost of goods sold by product*

The following table presents, for each indicated period, our cost of goods sold and services rendered (excluding depreciation and amortization) 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                                 |  | Nine months ended September 30,<br>Change |                                | 2016                                    |  |
|---|--------------------------------------|--|---|--------------------------------|---|--|
|   | Cost of goods sold<br>(US\$ million) |  | As reported<br>(%)                        | Constant currency<br>basis (%) | Cost of goods<br>sold<br>(US\$ million) |  |
| <b>Ferrous minerals:</b>                        |                                      |  |   |                                |   |  |
| Iron ore  | US\$ 5,680                           |  | (18.9)%                                   | (14.4)%                        | US\$ 4,609                              |  |
| Iron ore pellets                                | 1,668                                |  | (15.6)                                    | (10.0)                         | 1,408                                   |  |
| Ferroalloys and manganese ore                   | 130                                  |  | 24.6                                      | 35.6                           | 162                                     |  |
| Other ferrous products and services             | 266                                  |  | (27.9)                                    | (19.4)                         | 192                                     |  |
| Subtotal  | 7,744                                |  | (17.7)                                    | (12.8)                         | 6,371                                   |  |
| Coal  | 579                                  |  | 18.6                                      | 18.8                           | 687                                     |  |
| <b>Base metals:</b>                             |                                      |  |   |                                |   |  |
| Nickel and other products(1)                    | 2,501                                |  | (6.8)                                     | (3.4)                          | 2,332                                   |  |
| Copper (2)                                      | 644                                  |  | 2.9                                       | 15.0                           | 684                                     |  |
| Subtotal  | 3,165                                |  | (4.7)                                     | (0.2)                          | 3,016                                   |  |
| <b>Fertilizers:</b>                             |                                      |  |   |                                |   |  |
| Potash  | 70                                   |  | 7.1                                       | 18.7                           | 75                                      |  |
| Phosphates                                      | 923                                  |  | 5.8                                       | 9.5                            | 976                                     |  |
| Nitrogen  | 157                                  |  | (11.5)                                    | (0.1)                          | 139                                     |  |
| Subtotal  | 1,150                                |  | 3.5                                       | 8.7                            | 1,190                                   |  |
| Other(3)  | 102                                  |  | 54.8                                      | 73.5                           | 158                                     |  |
| Total (excluding depreciation and amortization) | 12,740                               |  | (10.3)                                    | (5.5)                          | 11,422                                  |  |
| Depreciation and amortization                   | 2,654                                |  | (2.9)                                     | (9.3)                          | 2,577                                   |  |
| Total with depreciation and amortization        | US\$ 15,394                          |  | (9.1)%                                    | (6.2)%                         | US\$ 13,999                             |  |

(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.

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*Expenses by product (excluding impairment charges)*

The following table summarizes, for each indicated period, our expenses (including selling and administrative, research and evaluation, pre-operating, stoppage and other expenses, net of other revenues, excluding depreciation and amortization) 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).

|   | Nine months ended September 30,    |                    |  |                                    |
|---|------------------------------------|--------------------|--|------------------------------------|
|   | 2015<br>Expenses<br>(US\$ million) | As reported<br>(%) | Change<br>Constant currency<br>basis (%) | 2016<br>Expenses<br>(US\$ million) |
| <b>Ferrous minerals:</b>                        |                                    |                    |  |                                    |
| Iron ore  | US\$ 695                           | (21.6)             | (13.1)                                   | US\$ 545                           |
| Iron ore pellets                                | 6                                  | 1,033              | 1,033                                    | 68                                 |
| Ferroalloys and manganese ore                   | 16                                 | (25.0)             | (14.3)                                   | 12                                 |
| Other ferrous products and services             | (8)                                | (112.5)            | (133.3)                                  | 1                                  |
| Subtotal  | 709                                | (11.7)             | (2.8)                                    | 626                                |
| Coal  | 198                                | (107.1)            | (107.1)                                  | (14)                               |
| <b>Base metals:</b>                             |                                    |                    |  |                                    |
| Nickel and other products(1)                    | 475                                | (58.7)             | (60.0)                                   | 196                                |
| Copper (2)                                      | 18                                 | (33.3)             | (29.4)                                   | 12                                 |
| Other base metal products                       | (230)                              | (34.8)             | (34.8)                                   | (150)                              |
| Subtotal  | 263                                | (77.9)             | (79.1)                                   | 58                                 |
| <b>Fertilizers:</b>                             |                                    |                    |  |                                    |
| Potash  | 50                                 | (72.0)             | (72.0)                                   | 14                                 |
| Phosphates                                      | 85                                 | (12.9)             | (5.1)                                    | 74                                 |
| Nitrogen  | 9                                  | 11.1               | (25.0)                                   | 10                                 |
| Subtotal  | 144                                | (31.9)             | (27.9)                                   | 98                                 |
| Other(3)  | 197                                | (5.6)              | (1.6)                                    | 186                                |
| Total (excluding depreciation and amortization) | 1,511                              | (36.9)             | (33.8)                                   | 954                                |
| Depreciation and amortization                   | 391                                | (58.3)             | (56.9)                                   | 163                                |
| Total with depreciation and amortization        | US\$ 1,902                         | (41.3)             | (38.6)                                   | US\$ 1,117                         |

(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.



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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 Adjusted EBITDA to net income (loss), see Note 3 to our Interim Financial Statements.

The following table summarizes the Adjusted EBITDA for each of our segments.

**Nine months ended September 30,**  
**2015**                      **2016**  
**Adjusted EBITDA**      **Adjusted EBITDA**  
**(US\$ million)**

|                                     |      |       |      |       |
|-------------------------------------|------|-------|------|-------|
| <b>Ferrous minerals:</b>            |      |       |      |       |
| Iron ore                            | US\$ | 3,010 | US\$ | 5,054 |
| Iron ore pellets                    |      | 1,349 |      | 1,195 |
| Ferroalloys and manganese ore       |      | 3     |      | 11    |
| Other ferrous products and services |      | 128   |      | 107   |
| Subtotal                            |      | 4,490 |      | 6,367 |
| Coal                                |      | (359) |      | (210) |
| <b>Base metals:</b>                 |      |       |      |       |
| Nickel and other products(1)        |      | 610   |      | 681   |
| Copper(2)                           |      | 437   |      | 474   |
| Other                               |      | 230   |      | 150   |
| Subtotal                            |      | 1,277 |      | 1,305 |
| <b>Fertilizers:</b>                 |      |       |      |       |
| Potash                              |      | (18)  |      | (10)  |
| Phosphates                          |      | 354   |      | 73    |
| Nitrogen                            |      | 71    |      | 38    |
| Other fertilizer products           |      | 43    |      | 60    |
| Subtotal                            |      | 450   |      | 161   |
| Other(3)                            |      | (168) |      | (212) |
| Total                               | US\$ | 5,690 | US\$ | 7,411 |

(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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**Results of Operations by Segment**

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, amortization and impairment charges) and Adjusted EBITDA.

*Ferrous minerals*

Our net operating revenues from sales of ferrous minerals increased by 4.5% in the nine months ended September 30, 2016, compared to the same period in 2015, mainly reflecting higher sales volumes and average realized prices of iron ore fines, partially offset by lower sales volumes and average realized prices of iron ore pellets. Our average realized prices for iron ore fines in the nine months ended September 30, 2016 were 2.3% higher than our average realized prices in the same period in 2015. Our average realized prices for iron ore pellets were 4.9% lower than our average realized prices in the same period in 2015, reflecting the decline in the iron ore pellets premium. Our iron ore sales volume increased by 6.3% in the nine months ended September 30, 2016 compared to the same period in 2015, due to the ramp-up of the N4WS mine and the expansion of the N5S mine and the Carajás plant 2, in our Northern System, and the expansion of the Vargem Grande, Conceição I and II Itabirites projects, in our Southeastern and Southern systems. Our sales volume of iron ore pellets in the nine months ended September 30, 2016 decreased by 2.6% 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 and amortization, decreased 12.8% in the nine months ended September 30, 2016, compared to the same period in 2015, on a constant currency basis. This decrease primarily reflects lower freight costs (impact of US\$723 million) and the absence of bunker oil hedge accounting program which was discontinued in December 31, 2015 (impact of US\$325 million). This decrease was partially offset by increased costs associated with higher sales volumes, in the amount of US\$217 million.

Our net expenses from ferrous minerals, excluding depreciation and amortization, decreased by 2.8% in the nine months ended September 30, 2016, compared to the same period in 2015, on a constant currency basis, mainly as a result of lower research and development expenses (impact of US\$30 million), and lower provisions of the value-added tax on services and circulation of goods ( ICMS ) and other provisions (impact of US\$75 million and US\$37 million, respectively), partially offset by higher litigation expenses (impact of US\$110 million) in the nine months ended September 30, 2016.

Our Adjusted EBITDA from ferrous minerals was US\$6,367 million in the nine months ended September 30, 2016, an increase of US\$1,877 million, or 41.8%, compared to our Adjusted EBITDA for the same period in 2015. This increase primarily reflects the US\$496 million positive impact of exchange rate variations in our costs and expenses,

in addition to the increase in revenues and reductions in costs and expenses discussed above, which were partially offset by a US\$151 million decrease in dividends received from associates and joint ventures.

*Coal*

Our net operating revenues from sales of coal increased to US\$463 million in the nine months ended September 30, 2016, from US\$418 million in the same period in 2015. This 10.8% increase was mainly due to higher sales volumes. Our sales volumes of thermal coal increased to 4,337 thousand metric tons in the nine months ended September 30, 2016 from 665 thousand metric tons in the same period in 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 the nine months ended September 30, 2016 decreased by 17.7% from same period in 2015, due to lower production in Australia.

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Our cost of goods sold and expenses from coal, excluding depreciation, depletion and amortization, decreased 13,1% on a constant currency basis in the nine months ended September 30, 2016 compared to the same period in 2015. This decrease reflects the impact of lower services costs following the ramp-up of the Nacala Logistics Corridor offset by higher volumes in Mozambique.

Our Adjusted EBITDA from coal was a loss of US\$210 million in the nine months ended September 30, 2016, while in the same period in 2015 we reported a loss of US\$359 million. This reduced loss was due to increased revenues and lower costs and expenses in Mozambique following the ramp-up of the Nacala Logistics Corridor, as described above.

*Base metals*

Our net operating revenues from sales of base metals decreased to US\$4,379 million in the nine months ended September 30, 2016 from US\$4,705 million in the same period in 2015. This 6.9% decrease was mainly due to a 25.5% and 6.5% decrease in the average realized prices of nickel and copper, respectively, in the nine months ended September 30, 2016, compared to the same period in 2015, reflecting in each case the decline in the average reference price index LME. This decrease was partially offset by: (i) 10.1% higher nickel sales volumes in the nine months ended September 30, 2016, compared to the same period in 2015, mainly due to increased production in our operations in our North Atlantic and New Caledonia operations, and (ii) 9.0% 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, depletion and amortization, decreased 0.2% in the nine months ended September 30, 2016, on a constant currency basis, compared to the nine-months in 2015.

Our net expenses from base metals, excluding depreciation and amortization, decreased 79.1% the nine months ended September 30, 2016, on a constant currency basis, compared to the same period in 2015. This decrease reflects the reduction in pre-operating and stoppage expenses as a result of lower expenses in Long Harbour and New Caledonia of US\$239 million, partially offset by the positive effect of the gold stream transaction recorded in March 2015 and August 2016, in the amounts of US\$230 million and US\$150 million, respectively.

Our Adjusted EBITDA from base metals was US\$1,305 million in the nine-months of 2016, 2.2% higher than the US\$1,277 million registered in the nine-months of 2015, for the reasons described above.

*Fertilizers*

We agreed in December 2016 to sell assets constituting most of our fertilizer business. See *Recent Developments* *Sale of Fertilizer Business*. As a result, in our financial statements for the year ended December 31, 2016, the fertilizer segment will be presented as a discontinued operation and the related assets and liabilities will be classified as non-current assets and liabilities available for sale.

*Our net operating revenues from sales of fertilizers* decreased to US\$1,446 million in the nine months ended September 30, 2016 from US\$1,744 million in the same period in 2015. This US\$298 million decrease, or 17.1%, was mainly driven by US\$295 million impact of the decrease in fertilizer prices in the international market.

*Our cost of goods sold from fertilizers*, excluding depreciation, depletion and amortization, increased 8.7% in the nine months ended September 30, 2016, on a constant currency basis, compared to the same period in 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 and amortization, decreased 27.9% in the nine months ended September 30, 2016 on a constant currency basis compared with the same period in 2015. This decrease was mainly due to a US\$44 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\$161 million in the nine months ended September 30, 2016, a 64.2% decrease compared to the same period in 2015, mainly driven by lower prices and higher cost of goods sold, mentioned above.

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

|                                      | Nine months ended September 30, |                 |      |         |
|--------------------------------------|---------------------------------|-----------------|------|---------|
|                                      | 2015                            | (US\$ millions) |      | 2016    |
| Financial income                     | US\$                            | 188             | US\$ | 129     |
| Financial expenses                   |                                 | (787)           |      | (1,956) |
| Gains (losses) on derivatives, net   |                                 | (2,902)         |      | 1,160   |
| Foreign exchange gains (losses), net |                                 | (7,420)         |      | 3,241   |
| Indexation gains (losses), net       |                                 | (233)           |      | (105)   |
| Financial results                    | US\$                            | (11,154)        | US\$ | 2,469   |

Our financial results were an income of US\$2,469 million in the nine months ended September 30, 2016 compared to an expense of US\$11,154 million in the same period in 2015. This mainly resulted from:

- (i) Net foreign exchange gain of US\$3,241 million in the nine months ended September 30, 2016 compared to net foreign exchange loss of US\$7,420 million in the same period in 2015, mainly due to the 16.9% appreciation of the Brazilian *real* against the U.S. dollar in the nine months ended September 30, 2016, compared to a 49.6% depreciation of the Brazilian *real* in the same period in 2015.
- (ii) The net effect of fair value changes in derivatives, which represented a gain of US\$1,160 million in the nine months ended September 30, 2016 compared to a loss of US\$2,902 million in the same period in 2015. This reflected the following main categories of derivatives transactions:
- *Currency and interest rate swaps.* We recognized a net gain of US\$920 million in the nine months ended September 30, 2016 from currency and interest rate swaps, compared to a net loss of US\$2,215 million in the same period in 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\$127 million in the nine months ended September 30, 2016 compared to a net loss of US\$500 million in the same period in 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\$40 million in the nine months ended September 30, 2016 compared to a loss of US\$38 million in the same period in 2015. These derivatives are part of our nickel price protection program.
  
- (iii) A loss on inflation-indexed instruments of US\$105 million in the nine months ended September 30, 2016 compared to a loss of US\$233 million in the same period in 2015.
  
- (iv) An increase in financial expenses of US\$1,169 million, from US\$787 million in the nine months ended September 30, 2015 to US\$1,956 million in the nine months ended September 30, 2016, attributable primarily to the US\$961 million increase in the fair value of our participative debentures due to the increase in their market value.

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**Equity results in associates and joint ventures**

Our equity results in associates and joint ventures in the nine months ended September 30, 2016 increased to income of US\$392 million from a loss of US\$402 million in the same period in 2015, mostly due to the positive results from (i) Companhia Siderúrgica do Pecém ( CSP ), in the amount of US\$177 million (due to the impact of appreciation of Brazilian *reais* on CSP debt denominated in U.S. dollars), (ii) the pelletizing companies in Tubarão, in the amount of US\$49 million, and (iii) MRS, in the amount of US\$49 million, in the nine months ended September 30, 2016. In the same period in 2015, our equity results in associates and joint ventures was impacted by a negative contribution of US\$167 million from Samarco and US\$311 million from CSP, mainly due to the impact of the depreciation of the Brazilian *reais* on their U.S. dollar-denominated debt.

**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 nine months ended September 30, 2016, we recognized a negative result of US\$1,146 million, reflecting mainly:

(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 nine months ended September 30, 2016, we recorded income tax expense of US\$2,690 million, compared to a US\$5,178 million tax gain in the same period in 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 nine months ended September 30, 2016 would have been 37.1%. 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 nine months ended September 30, 2016, we generated cash from operations in the amount of US\$7,038 million, compared to US\$5,942 million in the same period in 2015, reflecting the improvement in our operating income.

In the nine months ended September 30, 2016, we incurred US\$6,206 million in additional debt under our new and existing financing agreements and issuance of notes (US\$1,253 million net of repayments of debt in the same period). Our major new borrowing transactions in the nine months ended September 30, 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, and the outstanding balance of US\$2.0 billion was paid November 16, 2016.

- In June 2016, our wholly-owned subsidiary Vale Overseas Limited issued US\$1,250 million notes due 2021, guaranteed by Vale S.A.
- In August 2016, our wholly-owned subsidiary Vale Overseas Limited issued US\$1,000 million notes due 2026, guaranteed by Vale S.A.

In August 2016, we announced a new gold streaming transaction with a subsidiary of Silver Wheaton Corp., 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 received an initial cash payment of US\$800 million in August 2016.

As described in our annual report on Form 20-F, we are always seeking to optimize the structure of our portfolio of businesses, and we have engaged in several dispositions that have contributed to our sources of funding. In June 2016, we sold three very large ore carriers to ICBC International for US\$269 million, and in December 2016, we sold four capesize vessels to Polaris Shipping Co. for US\$140 million. In December 2016, we also concluded the sale of our remaining 13.63% stake in Mineração Paragominas S.A. to Norsk Hydro ASA for US\$113 million, in connection with the sale of our aluminum assets announced in February 2011. We have also agreed to sell our fertilizer business. See Recent Developments Sale of Fertilizer Business below.

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**Uses of funds**

*Capital expenditures*

In the nine months ended September 30, 2016, our capital expenditures amounted to US\$4,074 million, including US\$2,566 million for project execution and US\$1,508 million dedicated to sustaining existing operations.

*Distributions and repurchases*

We did not pay dividends in the nine months ended September 30, 2016. In December 2016, we paid total dividends of US\$250 million, classified as interest on shareholders' equity. We did not repurchase any of our shares in 2016.

*Tax payments*

We paid US\$347 million in income tax in the nine months ended September 30, 2016, compared to US\$365 million in the nine months of 2015, excluding the payments in connection with REFIS. In connection with our participation in the REFIS, our outstanding commitment as of September 30, 2016 was US\$5,426 million, which will be paid in 145 monthly installments. In the nine months ended September 30, 2016, we paid a total of US\$304 million, compared to US\$298 million in the same period in 2015, in connection with the REFIS.

*Non-operational*

Our non-operational uses of cash in the nine months ended September 30, 2016 mainly consisted of: (i) interest on loans amounting to US\$1,245 million in the nine months ended September 30, 2016, compared to US\$1,157 million in the same period in 2015; and (ii) settlement of derivatives amounting to US\$1,054 million, of which US\$693 million were related to bunker oil in the nine months ended September 30, 2016, compared to the settlement of derivatives amounting to US\$927 million in the same period in 2015, of which US\$497 million were related to bunker oil.

*Repayment debt*

In the nine months ended September 30, 2016, we paid US\$4.953 billion under our financing agreements, including repayment of US\$2.250 billion in bonds, US\$1.0 billion in revolving credit facilities, and US\$1.7 billion in other trades finance transactions. On November 16, 2016, we paid the outstanding balance of US\$2.0 billion on our revolving credit facilities.

**Debt**

As of September 30, 2016, our outstanding debt was US\$31.449 billion (including US\$30.827 billion of principal and US\$622 million of accrued interest). As of September 30, 2016, US\$469 million of our debt was secured by liens on some of our assets. As of September 30, 2016, the weighted average remaining term of our debt was 7.7 years.

As of September 30, 2016, the short-term debt and the current portion of long-term debt was US\$2.181 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\$9.041 billion as of September 30, 2016). This category includes export financing lines, loans from export credit agencies, and loans from commercial banks and multilateral organizations.

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- *U.S. dollar-denominated fixed rate notes* (US\$13.500 billion as of September 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\$12.549 billion. Our subsidiary Vale Canada has outstanding fixed rate debt in the amount of US\$400 million.
- *Euro-denominated fixed rate notes* (US\$1.686 billion as of September 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\$6.600 billion as of September 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 September 30, 2016:

- Credit lines for R\$7.300 billion, or US\$2.249 billion, to finance our investment program. As of September 30, 2016, the total amount available under these facilities was R\$897 billion, or US\$276 million.
- A R\$3.883 billion or US\$1.196 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 September 30, 2016, this facility was almost fully drawn.
- A R\$6.163 billion, or US\$1.899 billion, financing agreement with BNDES to finance part of the implementation of the S11D project and its infrastructure (CLN S11D). As of September 30, 2016, the total amount available under this facility was R\$2.247 billion, or US\$754 million.
- We have two revolving credit facilities with syndicates of international banks, which will mature in 2018 and 2020. As of September 30, 2016, we had drawn US\$2.0 billion under these facilities, but we repaid that amount in November 2016 and the total amount now available under these facilities is US\$5.0 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

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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 September 30, 2016, (i) our consolidated ratio of total debt to adjusted EBITDA for the past twelve months was 3.6 to one and (ii) our consolidated interest coverage ratio was 5.0 to one.

As of September 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\$354 million and US\$1,351 million, respectively.

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**RECENT DEVELOPMENTS**

**Performance through December 31, 2016**

On February 23, 2017, we plan to announce our results for the fourth quarter of 2016 and the full year 2016, and to publish our audited financial statements for the year ended December 31, 2016. That information will supersede the financial information as of September 30, 2016 and for the nine months ended September 30, 2016 that is incorporated by reference in this Form 6-K. Our results will be affected by a variety of factors, including improved prices for iron ore, trends in prices for our other products and the impact of changing exchange rates. In addition, we expect to recognize impairments (with no cash effect) in our fertilizers segment, with an impact in our results of approximately US\$1.2 billion after tax, resulting from the agreement to sell certain assets for US\$2.5 billion announced in December 2016. Also, as a result of a lower price outlook for certain products, we expect to recognize additional impairments (with no cash effect) in our base metals operations in Vale Newfoundland and Labrador (VNL) and Vale New Caledonia (VNC). We have not yet finally determined the amount of these impairments in VNL and VNC, but based on our current estimates we expect it to be significantly less than the impairment recognized on these assets in 2015. As of the date of this Form 6-K we have not completed our closing and review procedures, the preparation of our financial statements, or our assessment of internal control over financial reporting, and our auditors have not completed their audit of our financial statements.

**Sale of Fertilizer Business**

In December 2016, we entered into an agreement with The Mosaic Company ( Mosaic ) for the sale of our fertilizer business, which includes (i) our phosphate assets in Brazil, except for the nitrogen business located in Cubatão; (ii) our stake in the joint venture that operates the phosphate rock mine in Bayóvar, Peru; (iii) our potash assets located in Brazil; and (iv) our potash project based in Canada (Kronau). We expect to receive consideration from Mosaic consisting of US\$1.25 billion in cash and approximately 42.3 million shares of Mosaic's common stock, which corresponds to approximately 11% (on a post-issuance basis) of Mosaic's outstanding common stock. Subject to limited exceptions, the Mosaic shares to be issued to us cannot be transferred for two years following closing, after which time we will have customary registration rights. Following closing of the transaction, we will also have the right to appoint two members of Mosaic's board of directors. Mosaic has also agreed to pay additional amounts of up to US\$260 million if the market price of certain products, and the exchange rate between the Brazilian real and the U.S. dollar exceed certain thresholds during each of the two 12-month periods following completion of the transaction. Closing of the sale is subject to certain conditions precedent, including approvals by the Brazilian and other antitrust authorities, certain other operational and regulatory milestones and the completion of a carve-out of our assets located in Cubatão from Vale Fertilizantes. We expect to complete the sale to Mosaic in late 2017. The Rio Colorado potash project in Argentina may also be sold to Mosaic, subject to Mosaic's agreement following appropriate diligence. We intend to seek buyers for the Cubatão assets in 2017.

In our financial statements for the year ended December 31, 2016, the fertilizer segment will be presented as a discontinued operation, and the related assets and liabilities will be classified as non-current assets and liabilities available for sale. Financial statements for prior periods will be retrospectively adjusted to conform to this presentation.

**Developments Relating to the Samarco Dam Failure**

*March 2016 Framework Agreement*

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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, governmental authorities 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 an agreement (the Framework Agreement ) with the Brazilian federal government, the two Brazilian states affected by the failure (Espírito Santo and Minas Gerais) and other governmental authorities in order to implement the programs for remediation and compensation of the areas and communities affected by Samarco’s dam failure. The Framework Agreement has a 15-year term, renewable for successive one-year periods until all the obligations under the Framework Agreement have been performed. The Framework Agreement does not provide for admission of civil, criminal or administrative liability for the Fundão dam failure.

Under the Framework Agreement, Samarco, Vale S.A. and BHPB agreed to establish a foundation to develop and implement social and economic remediation and compensation, to be funded by Samarco as follows: 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. 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). Starting in 2022, Samarco will provide the necessary funding in order to complete remaining 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, R\$500 million (US\$156 million) will be provided for sewage collection and treatment and solid waste disposal under the terms of the Framework Agreement.

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 Framework Agreement, funds to the foundation in proportion to its 50% equity interest in Samarco.

On June 24, 2016, the Renova Foundation ( Foundation ) was constituted, under the Framework Agreement, to develop and implement socioeconomic and environmental restoration and compensation programs. The Foundation began its operations in August of 2016.

### *Provisions relating to Framework Agreement*

Samarco initially expected to resume its operations in the last quarter of 2016. Based on this assumption, Samarco’s cash flow projections indicated that Samarco would be able to generate all or a substantial part of the funding required under the Framework Agreement. This assumption was supported by studies of technical solutions available, combined with the progress of the repair works on the remaining dam structures after the dam failure and the definition of the contractual scope of the remediation measures and compensation to the communities impacted by the dam failure. Therefore, the company did not recognize any provision in our balance sheet as of March 31, 2016.

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In the second quarter of 2016, in view of the status of the necessary procedures to resume operations and the uncertainties related to the licensing approval by the governmental authorities, Samarco reviewed its assumption and concluded that was unable to make a reliable estimate of how and when its operations will resume. Therefore, the company recognized a provision on our balance sheet as of June 30, 2016 in the amount of R\$3,733 million (US\$1,163 million at the June 30, 2016 exchange rate), which represents the present value, discounted at a risk-free rate, of our best estimate of the amounts we may incur to comply with our obligations under the Framework Agreement, considering our 50% stake in Samarco.

In August 2016, Samarco issued non-convertible private debentures which were subscribed equally by Vale S.A. and BHPB. As of December 31, 2016, the total amount contributed by Vale was R\$457 million (US\$140 million), including amounts used by Samarco in the reparation programs in accordance with the Framework Agreement and to fund its working capital needs. In our income statement for the nine months ended September 30, 2016, we recognized a provision in the amount of US\$33 million (R\$106 million), which corresponds to the amount of the debentures we subscribed that was applied to fund Samarco's working capital. This provision was reflected in Others results in associates and joint ventures. Vale intends to make available short term facilities of up to US\$115 million to support Samarco's operations during the first half of 2017. These funds will be released on an as-needed basis and will be subject to achieving certain milestones, without undertaking an obligation to Samarco. BHPB has stated that it will make available to Samarco short-term facilities with similar terms and conditions as mentioned above.

At each reporting period, we will reassess the key assumptions used by Samarco in the preparation of its projected future cash flows and will adjust the provision, if required.

*Recent developments on certain proceedings related to Samarco accident*

(i) *Public civil action filed by the Federal Government and others*

The federal government, the two Brazilian states affected by the failure (Espírito Santo and Minas Gerais) and other entities and governmental authorities have initiated a public civil action against Samarco and its shareholders, Vale and BHPB. The estimated value indicated by the plaintiffs was R\$20.2 billion (US\$6.3 billion).

The federal court in Minas Gerais granted an injunction ordering Samarco to make a deposit of R\$2.0 billion for use toward remediation and compensation activities and preventing each defendant from selling or otherwise transferring its mining rights in Brazil.

In May 5, 2016, the Framework Agreement was ratified by the Federal Regional Court (TRF) of the First Region. However, in July 2016, the Superior Court of Justice (STJ) in Brazil issued an interim order, suspending the decision of the TRF that ratified the Framework Agreement until the final judgments of the claim. On August 17, 2016, the TRF reversed its decision ratifying the Framework Agreement and, among other measures, confirmed the prior injunction that prohibited each defendant from transferring or conveying any of its interests in Brazilian iron ore concessions, without, however, limiting its production and commercial activities.

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Despite the reversal of the judicial decision that ratified the Framework Agreement, the Framework Agreement remains valid between the parties, and the parties will continue performing their obligations under the Framework Agreement.

In November 2016, the federal court determined that the defendants: (i) in 90 days, present evidence that the leakage of waste from Fundão tailing dam has been definitely contained; (ii) in six months, present conclusive studies, with the endorsement from the appropriate environmental agencies, regarding an action plan and the feasibility of the withdrawal of mud placed on the banks of Rio Doce river, its affluents and the areas near its estuary; (iii) in 30 days, make a deposit in the total amount of R\$1.2 billion to secure future reparatory measures. This R\$1.2 billion cash deposit was replaced by the guarantees provided for under the agreements described in item (iii) below.

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(ii) *Public civil action filed by Federal Prosecution Office*

On May 3, 2016, the Federal Prosecution Office (MPF) filed a public civil action against Samarco, its shareholders, BNDES and the governmental authorities that are parties to the Framework Agreement. In this action, the MPF requested 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. A preliminary hearing for conciliation was held in September 2016, and the proceeding has been suspended pending further discussions among the parties.

(iii) *January 2017 preliminary agreements with Federal Prosecution Office*

On January 18, 2017, Samarco, Vale and BHPB entered into two preliminary agreements with the Federal Prosecution Office relating to both of the pending public civil actions described above. One of the agreements sets forth a process and timetable for resolution of the actions, and the other sets forth a timetable for making funds available for the remediation measures. These agreements provide for the appointment of experts to assist the MPF in the analysis and monitoring of the programs established under the Framework Agreement, and for the holding of public hearings. They also provide for Samarco, Vale and BHPB to give the federal court in Minas Gerais security for the performance of their remediation obligations in the aggregate amount of R\$2.2 billion, consisting of R\$100 million in financial instruments, R\$1.3 billion in insurance bonds, and a pledge of Samarco assets for R\$800 million. The preliminary agreements further require Samarco, Vale and BHPB to make available R\$200 million to remediate damages in four specified municipalities of Minas Gerais. As a result of these agreements, the federal court has suspended the public civil action brought by MPF, without prejudice to urgent requests, and suspended the injunction ordering the deposit of R\$2.0 billion that was issued in the public civil action filed by the Federal Government and others.

(iv) *Criminal proceeding*

On October 20, 2016, the MPF filed criminal charges before the federal court of Ponte Nova, state of Minas Gerais, against Samarco, Vale, BHPB and a number of individuals who were employees of Samarco or members of Samarco's board of directors, executive board and advisory committees established by its board of directors. The charges include murder, physical injury, and various environmental crimes due to the failure of Samarco's dam.

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Together with the indictment, the MPF is seeking a pre-judgment attachment order to seize assets from the three companies to secure the payment of the R\$20 billion claimed in connection with the failure of Fundão dam and is also seeking the imposition of external monitoring of the companies' ethical and social-environmental matters practices for 10 years.

A decision is pending on the requests for injunctions against the defendants. Vale was served on November 8, 2016, and will submit its defense in due course.

(v) *U.S. Securities class actions*

Vale S.A. and certain of its officers have been named as defendants in securities class action suits in Federal Court in New York brought by holders of Vale's American Depositary Receipts under U.S. federal securities laws. The lawsuits allege that Vale S.A. made false and misleading statements or omitted to make disclosures concerning the risks and dangers of the operations of Samarco's Fundão dam and the adequacy of related programs and procedures. The plaintiffs have not specified an amount of alleged damages in these actions. Vale S.A. intends to vigorously mount a full defense against the allegations. The litigation is at a very early stage. On March 7, 2016, the judge overseeing the securities class actions issued an order consolidating these actions and designating lead plaintiffs and counsel. On April 29, 2016, lead plaintiffs filed a consolidated amended complaint that will serve as the operative complaint in the litigation. In July 2016, Vale S.A. and the individual defendants filed a motion to dismiss the amended complaint. In August 2016, the plaintiffs submitted their opposition to the motion to dismiss, to which the defendants replied in September 2016. The decision on the motion to dismiss remains pending.

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(vi) *Other lawsuits*

In addition, Samarco and its shareholders have been named as a defendant in several other lawsuits brought by individuals, corporations and governmental entities seeking damages for environmental, property or personal damages. These lawsuits and petitions are at very early stages, thus it is not possible to determine a range of outcomes and/or reliable estimates of the potential exposure at this time. No contingent liability has been quantified and no provision was recognized for these other lawsuits. Other proceedings and investigations in connection with the dam failure are expected.

**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.

In connection with a certain legal proceeding relating to ICMS, prosecutors in the state of Rio de Janeiro are seeking criminal charges against members of management of our subsidiary MBR, alleging tax fraud. The amount involved in the underlying tax proceeding is small (approximately R\$7 million), but if these charges are accepted by the court, a criminal proceeding against these individuals will be started. We believe that these allegations are without merit.

*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 in January 2017 the court denied plaintiffs' request for an injunction

suspending our S11D project.

*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.

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*Ministry of Labor proceeding*

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 were 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 employment 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.

**Controlling Shareholder Matters**

Our annual report on Form 20-F describes our controlling shareholder Valepar S.A., its power to determine our senior management and our strategic direction, the shareholders of Valepar S.A. and the shareholders agreement among them. That shareholders agreement will expire by its terms in May 2017. We understand that the shareholders are discussing the terms for a possible renewal, but we cannot predict whether that will occur or on what terms, and we cannot predict the impact of discussions among these shareholders concerning our management and strategic direction.

Table of Contents**RATIO OF EARNINGS TO FIXED CHARGES**

|  | 2011 |        | 2012 |       | Year ended December 31,<br>2013 |       | 2014<br>(US\$ million) |       | 2015 |          | Nine months ended September 30,<br>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\$                                    | (8,650) | US\$ | 6,927 |
| Fixed charges:                                 |      |        |      |       |                                 |       |                        |       |      |          |   |         |      |       |
| Interest costs - capitalized                   |      | 234    |      | 335   |                                 | 235   |                        | 588   |      | 761      |   | 568     |      | 562   |
| Interest costs - expensed                      |      | 1,388  |      | 1,251 |                                 | 1,335 |                        | 1,148 |      | 891      |   | 662     |      | 768   |
|  |      | 1,622  |      | 1,586 |                                 | 1,570 |                        | 1,736 |      | 1,652    |   | 1,230   |      | 1,330 |
| Amortization of capitalized interest           |      | 54     |      | 67    |                                 | 77    |                        | 90    |      | 105      |   | 99      |      | 115   |
| Distributed income of equity investees         |      | 1,038  |      | 460   |                                 | 834   |                        | 568   |      | 318      |   | 231     |      | 118   |
|  |      | 29,489 |      | 7,500 |                                 | 9,212 |                        | 3,503 |      | (14,857) |   | (7,090) |      | 8,490 |
| Less: interest capitalized                     |      | (234)  |      | (335) |                                 | (235) |                        | (588) |      | (761)    |   | (568)   |      | (562) |
|  | US\$ | 29,255 | US\$ | 7,165 | US\$                            | 8,977 | US\$                   | 2,915 | US\$ | (15,618) | US\$                                    | (7,658) | US\$ | 7,928 |
| Ratio of earnings to combined fixed charges(1) |      | 18.04  |      | 4.52  |                                 | 5.72  |                        | 1.68  |      | (9.45)   |   | (6.23)  |      | 5.96  |

(1) For the year ended December 31, 2015 and the nine-month period ended September 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\$8,888 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/ Adriana Barbosa Areias  
Name: Adriana Barbosa Areias  
Title: Attorney-in-Fact

By: /s/ Theo Casotti Penedo  
Name: Theo Casotti Penedo  
Title: Attorney-in-Fact

Date: February 6, 2017