
# Vale’s Performance in 3Q17

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Except where otherwise indicated the operational and financial information in this release is based on the consolidated figures in accordance with IFRS and, with the exception of information on investments and behavior of markets, quarterly financial statements are reviewed by the company's independent auditors. The main subsidiaries that are consolidated are the following: Mineração Corumbaense Reunida S.A., PT Vale Indonesia Tbk (formerly International Nickel Indonesia Tbk), Salobo Metais S.A, Vale Australia Pty Ltd., Vale International Holdings GMBH, Vale Canada Limited (formely Vale Inco Limited), Vale International S.A., Vale Manganês S.A., Vale Moçambique S.A., Vale Nouvelle-Calédonie SAS, Vale Oman Pelletizing Company LLC and Vale Shipping Holding PTE Ltd.

# Vale's performance in 3Q17

| | | |
|---|---|---|
| US$ 4.192 bi Total EBITDA ↑ 54% | US$ 863 mi Capital Expenditures ↓ 4% | US$ 561 mi Base Metals EBITDA ↑ 45% |
| US$ 67.2/t Iron ore price realization ↑ US$ 15.9/t | US$ 14.5/t Iron ore C1 cash cost ↓ US$ 0.7/t | US$ 30.0/t Iron ore EBITDA breakeven ↓ US$ 4.4/t |

Chief Executive Officer Fabio Schvartsman commented on the first results fully under his management: "*3Q17 performance shows improvements in price realization and the initial results of the cost management matrix approach. In addition, strict discipline in capital allocation will have a direct impact on future cash flows*". He concluded that: *"This is a new phase for Vale in terms of efficiency, sustainability and corporate governance. Now we are able to go to the Novo Mercado listing segment well in advance of our original plans with the support of all our shareholders. We are ready to transform Vale into a true corporation".*

- Adjusted EBITDA was US$ 4.192 billion in 3Q17, 53.6% higher than in 2Q17, mainly as a result of: (i) higher prices (US$ 851 million), (ii) better premiums[1] (US$ 447 million) on Vale's high quality iron ore products, (iii) higher volumes (US$ 219 million) on the back of the successful ramp-up of S11D and (iv) lower costs (US$ 70 million).

- Free Cash Flow was US$ 1.438 billion and net debt decreased by US$ 1.056 billion totaling US$ 21.066 billion. The reduction was not greater due to effects of the BRL appreciation over Vale's debt, which increased BRL-denominated debt when translated to USD by US$ 667 million, and due to the temporary effects of iron ore price volatility on accounts receivable. Working capital needs increased by US$ 981 million, but we expect reversal and a positive impact on cash flows in 4Q17 as sales collections increase throughout the quarter. *"4Q will accelerate debt reduction. It is traditionally a very strong quarter in sales and collections, and on top of that we will sign the Project Finance for the Nacala Corridor on November 22nd, 2017, with proceeds to Vale north of US$ 2 billion. The cash will be entirely available to reduce debt, enabling us to achieve the US$ 15 to 17 billion net debt target of 2017",* highlighted Chief Financial Officer Luciano Siani Pires.

- Capital Expenditures were US$ 863 million in 3Q17, once again breaking through the sub US$ 1 billion mark. Vale's capital expenditures should total US$ 4.0 billion in 2017.

- Iron ore price realization increased by US$ 15.9/t mainly due to the US$ 8.0/t increase in the Platts IODEX and the US$ 4.1/t increase in premiums[1]. The increase in premium was a result of: (i) higher market premiums for Carajás ore, (ii) higher share of Carajás sales linked to the MB65% index; (iii) our decision to reduce high silica products; and (iv) improved management of the global supply chain with the implementation of the Integrated Operations Center (COI), which will increasingly provide faster and more effective responses to market dynamics, enhancing asset productivity and margins. *"Vale is focused on maximizing its margins, and by advancing inventories offshore it is well positioned to manage production and sales of lower*

[1] Higher premiums, lower discounts and other commercial initiatives.

*and/or higher quality ore, according to market demand, with the sales/production volume ratio totaling 95% in 3Q17. Looking forward, the sales/production volume ratio in 2018 should average around the same levels seen in 3Q17, as offshore blending capacity is ramping up and will stabilize in 2018*", commented Mr. Peter Poppinga, Executive Officer for Ferrous Minerals and Coal.

- Iron ore C1 cash cost decreased by 7.1% to R$ 45.8/t (US$ 14.5/t). Costs are back to the BRL average levels of 2015 and 2016, as forecast in the 2Q17 earnings release.

- Competitiveness increased further with adjusted EBITDA per ton for Ferrous Minerals[2] reaching US$ 40.2/t in 3Q17, 49.4% higher than in 2Q17, and iron ore fines and pellets EBITDA break-even[3] decreasing by US$ 4.4/dmt[4] when compared to 2Q17, totaling US$ 30.0/dmt in 3Q17, the lowest level since 3Q16.

- Adjusted EBITDA for Base Metals was US$ 561 million, an increase of US$ 175 million when compared to 2Q17 as a result of higher prices (US$ 180 million) and lower costs (US$ 44 million). Jennifer Maki, Executive Officer for Base Metals, stressed that *"We are very happy with the sequential improvements in performance of our copper assets, and we are committed to improve cash flow generation in all of our nickel assets. In 3Q the successful transition to one furnace in Sudbury and the progress of the ramp-up of Long Harbour set the conditions for sequential improvements".*

- Adjusted EBITDA for Coal was US$ 46 million in 3Q17, recording a positive result for a fourth consecutive quarter, US$ 111 million lower than in 2Q17 as a result of lower prices (US$ 97 million) and the net impact of the higher tariff for the Nacala Corridor (US$ 13 million), which were partially offset by lower costs at the mine (US$ 16 million). Realized prices were mainly impacted by provisional prices set in 2Q17, which considered stability in the future price environment, and were later adjusted by lower realized prices upon cargo delivery in 3Q17.

- Nacala Project Finance is on track, with both NEXI and JBIC approvals being granted by their respective boards during 3Q17. Now with all lenders (including AFDB, ECIC and commercial banks) having concluded their approvals, the next step is the signing of the Project Finance, which will take place on November 22nd, 2017.

[2] Excluding Manganese and Ferroalloys.
[3] Measured by unit cash costs and expenses on a landed-in-China basis (and adjusted for quality, pellet margin differential and moisture, excluding ROM).
[4] dmt – dry metric ton.

## Selected financial indicators

| *US$ million* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Net operating revenues | 9,050 | 7,235 | 6,726 |
| Total costs and expenses | 5,866 | 5,492 | 4,615 |
| Adjusted EBIT | 3,184 | 1,743 | 2,111 |
| Adjusted EBIT margin (%) | 35.2 | 24.1 | 31.4 |
| Adjusted EBITDA | 4,192 | 2,729 | 2,964 |
| Adjusted EBITDA margin (%) | 46.3 | 37.7 | 44.1 |
| Iron ore - Platts' 62% IODEX | 70.9 | 62.9 | 58.6 |
| Net income (loss) | 2,230 | 16 | 575 |
| Underlying earnings | 2,090 | 949 | 954 |
| Underlying earnings per share on a fully diluted basis (US$ / share) | 0.40 | 0.18 | 0.19 |
| Net debt | 21,066 | 22,122 | 25,965 |
| Capital expenditures | 863 | 894 | 1,157 |

| *US$ million* | 9M17 | 9M16 | % |
|---|---|---|---|
| Net operating revenues | 24,800 | 18,223 | 36.1 |
| Total costs and expenses | 16,473 | 13,563 | 21.5 |
| Adjusted EBIT | 8,327 | 4,660 | 78.7 |
| Adjusted EBIT margin (%) | 33.6 | 25.6 | 31.3 |
| Adjusted EBITDA | 11,229 | 7,250 | 54.9 |
| Adjusted EBITDA margin (%) | 45.3 | 39.8 | 13.8 |
| Net income (loss) | 4,736 | 3,457 | 37.0 |
| Underlying earnings | 5,137 | 2,252 | 128.1 |
| Underlying earnings per share on a fully diluted basis (US$ / share) | 0.99 | 0.44 | 127.0 |
| Capital expenditures | 2,870 | 3,867 | (25.8) |

# Market overview

In 3Q17, Platts IODEX 62% Fe averaged US$ 70.90/dmt, a 12.7% increase over 2Q17. Premiums for higher grade iron ore continued at elevated levels while discounts for lower grade ores deteriorated further. The Metal Bulletin 65% Fe index averaged US$ 90.65/dmt, taking the gap with IODEX 62%Fe to a new all-time record of US$ 20.46/dmt, compared to US$ 13.61/dmt in the previous quarter, while the Metal Bulletin 58% Fe index averaged US$ 46.73/dmt, taking the gap with IODEX 62%Fe to US$ 24.17/dmt from US$ 21.12/dmt in the previous quarter.

Iron ore prices for the 62%Fe gained steam in 3Q17 on the back of higher steel production in China, supported by a resilient demand growth from both property and infrastructure investments and by a continued healthier profitability of steel mills. Quality premiums widened over the course of the quarter given the relatively lower availability of higher grade ores and mills desire to increase productivity amid still elevated coal prices and stricter environmental controls in China. It is expected a softening in Chinese steel production in 4Q17 as a result of the mandatory winter supply cut in some provinces to counteract the air pollution during the heating season. In addition, seasonal weakness also weighs in steel demand, as construction activities usually slow down during winter, however low property inventories should help to limit any downside to property construction and investment.

Global crude steel production as reported by the World Steel Association reached 430.9 Mt in 3Q17, up 0.9% and 6.7% from 2Q17 and 3Q16, respectively. Crude steel production in China reached 220 Mt in 3Q17, up 8.1% YoY, and outside China 210 Mt, up 5.3% YoY, with virtually all regions recording gains, given resilient domestic demand and lower exports from China.

In the coking coal market, the average index price remained almost in line with the previous quarter, being a US$ 188.8/t in 3Q17 vs. a US$ 190.3/t in 2Q17. The average index price, though, hides the enormous volatility and the distinct nature of price pressures in both periods. In 2Q17, prices boosted due to supply disruptions in Australia caused by the Cyclone Debbie. In 3Q17, prices were pressured upward by stronger Chinese demand to the seaborne market, as its steel production remained robust and restrictions were imposed by local regulators on coal mine producers. Later in 3Q17, though, demand for coking coal in the seaborne market slowed down as Chinese regulators also imposed restrictions on coke making in the main coke producing provinces in the country during the winter season.

Overall, from the data released on China's demand and Australia's exports, which comprises the first eight months of the year, there were positive pressures on prices, as China's coking coal imports increased by 24% YoY, and Australia's exports shrank by 11% YoY being only partially compensated by increases in US, Mongolia and Mozambique exports.

LME nickel prices rebounded during 3Q17 to an average of US$ 10,528/t, from US$ 9,225/t in 2Q17, representing the strongest pricing quarter of the year and with nickel prices reaching as high as US$ 12,150/t in September. Strong demand from stainless steel production as well as positive macroeconomic fundamentals particularly in China helped support the price increase. Total exchange inventories continued to decline closing at 435 kt by the end of 3Q17, down 30 kt since start of 2017. Global stainless steel production increased approximately 7.5% in 3Q17 relative to 3Q16, and 6.1% in 9M17 relative to 9M16. Demand for nickel in non-stainless steel applications remained robust, particularly in the automotive, battery and aerospace sectors. Demand for nickel is already benefiting from growth in electric vehicles with potential of further demand growth catalysts in the future as battery chemistry trends towards higher nickel content, due to lower cost and higher energy densities, and the market shifts towards the utilization of larger battery sizes.

During 9M17, the Indonesian government granted export licenses to six companies totaling 8.8 Mt of nickel ore on an annual basis and approximately 1.7 Mt of ore has been exported as of 8M17. The additional supply of Indonesian nickel ore in the market has caused downward pressure on ore and nickel prices, and continues to weigh negatively on the market which may have the unintended consequence of delaying investment in smelter development.

The average LME copper price gained approximately 12% in 3Q17, rising to US$ 6,349/t from US$ 5,662/t in 2Q17 and representing the strongest pricing quarter since 4Q14. Prices rose steadily throughout the quarter as global demand for refined copper showed signs of improvement in 3Q17, particularly in China and North East Asia. Copper consumption in China was up approximately 4% in 3Q17 vs. 3Q16 as a result of infrastructure investment and the housing market.

On the supply side, global refined copper production was up slightly during the third quarter as supply disruptions during the period stabilized relative to the beginning of the year. Despite the supply disruptions in the first half of 2017, copper concentrate imports into China increased approximately 2% in 8M17 vs. 8M16, reflecting demand associated with the ongoing expansion of smelter capacity in the country.

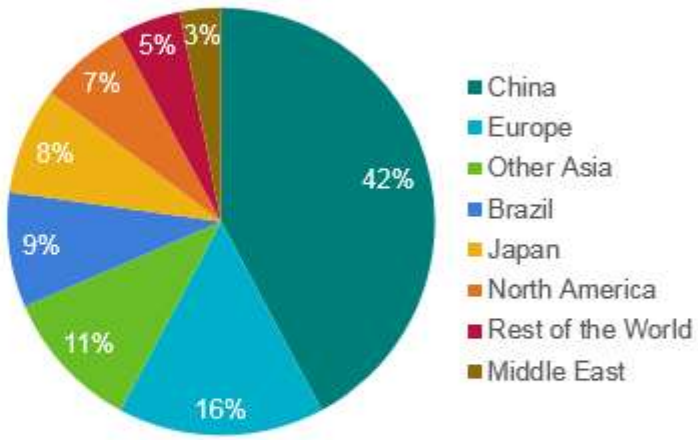
# Operating revenues

Net operating revenues in 3Q17 were US$ 9.050 billion, 25% higher than in 2Q17. The increase in sales revenues was mainly due to higher prices and volumes of Ferrous Minerals (US$ 1.706 billion) and Base Metals (US$ 250 million), which were partially offset by lower realized sales prices and higher share of thermal coal in sales volumes of Coal (US$ 121 million).

### Net operating revenue by destination

| *US$ million* | 3Q17 | % | 2Q17 | % | 3Q16 | % |
|---|---|---|---|---|---|---|
| **North America** | **617** | **6.8** | **528** | **7.3** | **541** | **8.0** |
| USA | 352 | 3.9 | 323 | 4.5 | 238 | 3.5 |
| Canada | 246 | 2.7 | 190 | 2.6 | 303 | 4.5 |
| Mexico | 19 | 0.2 | 15 | 0.2 | - | 0.0 |
| **South America** | **916** | **10.1** | **913** | **12.6** | **639** | **9.5** |
| Brazil | 783 | 8.7 | 735 | 10.2 | 557 | 8.3 |
| Others | 133 | 1.5 | 178 | 2.5 | 82 | 1.2 |
| **Asia** | **5,520** | **61.0** | **4,067** | **56.2** | **4,069** | **60.5** |
| China | 3,822 | 42.2 | 2,554 | 35.3 | 2,909 | 43.2 |
| Japan | 736 | 8.1 | 576 | 8.0 | 483 | 7.2 |
| South Korea | 384 | 4.2 | 342 | 4.7 | 269 | 4.0 |
| Others | 578 | 6.4 | 595 | 8.2 | 408 | 6.1 |
| **Europe** | **1,409** | **15.6** | **1,333** | **18.4** | **1,126** | **16.7** |
| Germany | 368 | 4.1 | 286 | 4.0 | 326 | 4.9 |
| Italy | 99 | 1.1 | 137 | 1.9 | 110 | 1.6 |
| Others | 942 | 10.4 | 910 | 12.6 | 690 | 10.3 |
| **Middle East** | **282** | **3.1** | **209** | **2.9** | **236** | **3.5** |
| **Rest of the World** | **306** | **3.4** | **185** | **2.6** | **115** | **1.7** |
| **Total** | **9,050** | **100.0** | **7,235** | **100.0** | **6,726** | **100.0** |

**Net operating revenues by destination in 3Q17**



## Net operating revenue by business area

| *US$ million* | 3Q17 | % | 2Q17 | % | 3Q16 | % |
|---|---|---|---|---|---|---|
| **Ferrous Minerals** | **6,820** | **75.4** | **5,114** | **70.7** | **4,959** | **73.7** |
| Iron ore fines | 5,131 | 56.7 | 3,544 | 49.0 | 3,782 | 56.2 |
| ROM | 7 | 0.1 | 8 | 0.1 | 4 | 0.1 |
| Pellets | 1,441 | 15.9 | 1,331 | 18.4 | 991 | 14.7 |
| Manganese ore | 87 | 1.0 | 71 | 1.0 | 51 | 0.8 |
| Ferroalloys | 44 | 0.5 | 46 | 0.6 | 25 | 0.4 |
| Others | 110 | 1.2 | 114 | 1.6 | 106 | 1.6 |
| **Coal** | **360** | **4.0** | **481** | **6.6** | **163** | **2.4** |
| Metallurgical coal | 266 | 2.9 | 414 | 5.7 | 105 | 1.6 |
| Thermal coal | 94 | 1.0 | 67 | 0.9 | 58 | 0.9 |
| **Base Metals** | **1,762** | **19.5** | **1,512** | **20.9** | **1,579** | **23.5** |
| Nickel | 752 | 8.3 | 686 | 9.5 | 797 | 11.8 |
| Copper | 683 | 7.5 | 535 | 7.4 | 452 | 6.7 |
| PGMs | 72 | 0.8 | 77 | 1.1 | 104 | 1.5 |
| Gold as by-product | 161 | 1.8 | 139 | 1.9 | 179 | 2.7 |
| Silver as by-product | 7 | 0.1 | 9 | 0.1 | 9 | 0.1 |
| Cobalt | 79 | 0.9 | 60 | 0.8 | 28 | 0.4 |
| **Others** | **8** | **0.1** | **6** | **0.1** | **10** | **0.1** |
| **Others** | **108** | **1.2** | **128** | **1.8** | **25** | **0.4** |
| **Total** | **9,050** | **100.0** | **7,235** | **100.0** | **6,726** | **100.0** |

# Costs and expenses

## COST OF GOODS SOLD (COGS)

COGS[5] totaled US$ 5.412 billion in 3Q17, increasing US$ 310 million from the US$ 5.102 billion recorded in 2Q17, as a result of higher sales volumes (US$ 353 million) and exchange rate variations (US$ 99 million), which were partially offset by lower costs (US$ 142 million), mainly due to lower maintenance costs (US$ 66 million), lower leasing costs (US$ 38 million) and lower personnel costs (US$ 34 million).

Further details regarding cost performance are provided in the "Performance of the Business Segments" section.

### COGS by business segment

| *US$ million* | 3Q17 | % | 2Q17 | % | 3Q16 | % |
|---|---|---|---|---|---|---|
| Ferrous Minerals | 3,375 | 62 | 3,142 | 62 | 2,663 | 61 |
| Base Metals | 1,524 | 28 | 1,452 | 28 | 1,429 | 33 |
| Coal | 423 | 8 | 377 | 7 | 190 | 4 |
| Other products | 90 | 2 | 131 | 3 | 63 | 2 |
| **Total COGS** | **5,412** | **100** | **5,102** | **100** | **4,345** | **100** |
| Depreciation | 868 | - | 852 | - | 790 | - |
| **COGS, ex-depreciation** | **4,544** | **-** | **4,250** | **-** | **3,555** | **-** |

## EXPENSES

Total expenses amounted to US$ 454 million in 3Q17, US$ 64 million higher than the US$ 390 million in 2Q17, mainly due to higher Other operating expenses (US$ 63 million) and higher R&D expenses (US$ 11 million), which were partially offset by lower pre-operating and stoppage expenses (US$ 7 million) and lower SG&A (US$ 3 million).

SG&A totaled US$ 129 million in 3Q17, US$ 3 million lower than in 2Q17.

R&D expenses totaled US$ 91 million in 3Q17, increasing 13.8% from the US$ 80 million in 2Q17, following the usual seasonality of higher disbursements in the second half of the year.

Pre-operating and stoppage expenses totaled US$ 83 million in 3Q17, decreasing by 7.8% from the US$ 90 million recorded in 2Q17, mainly due to the fact that there are no more pre-operating expenses charged to Long Harbour.

Other operating expenses were US$ 151 million in 3Q17, increasing US$ 63 million when compared to the US$ 88 million in 2Q17, mainly due to the one-offs expenses of: (i) provision for the annual federal tax of occupancy and use of the Tubarão port from 2003 to 2017 being

[5] COGS currency exposure in 3Q17 was as follows: 51% BRL, 32% USD, 13% CAD, 3% EUR and 1% other currencies.

disputed with government authorities (US$ 27 million) and (ii) regularization of ICMS tax in the Minas Gerais state (US$ 15 million); and higher contingencies (US$ 12 million).

## Expenses

| *US$ million* | 3Q17 | % | 2Q17 | % | 3Q16 | % |
|---|---|---|---|---|---|---|
| **SG&A ex-depreciation** | **110** | **-** | **110** | **-** | **101** | **-** |
| **SG&A** | **129** | **28** | **132** | **34** | **137** | **51** |
| **Administrative** | **112** | **25** | **113** | **29** | **125** | **46** |
| Personnel | 56 | 12 | 62 | 16 | 56 | 21 |
| Services | 19 | 4 | 17 | 4 | 17 | 6 |
| Depreciation | 19 | 4 | 22 | 6 | 36 | 13 |
| Others | 18 | 4 | 12 | 3 | 16 | 6 |
| **Selling** | **17** | **4** | **19** | **5** | **12** | **4** |
| **R&D** | **91** | **20** | **80** | **21** | **80** | **30** |
| **Pre-operating and stoppage expenses[1]** | **83** | **18** | **90** | **23** | **116** | **43** |
| Long Harbour | - | - | 15 | 4 | 39 | 14 |
| S11D | 58 | 13 | 59 | 15 | 28 | 10 |
| Moatize | - | - | - | - | 1 | 0 |
| Others | 25 | 6 | 16 | 4 | 49 | 18 |
| **Other operating expenses** | **151** | **33** | **88** | **23** | **(63)** | **(23)** |
| **Total Expenses** | **454** | **100** | **390** | **100** | **270** | **100** |
| Depreciation | 52 | - | 52 | - | 63 | - |
| **Expenses ex-depreciation** | **402** | **-** | **338** | **-** | **207** | **-** |

[1] Includes US$ 34 million of depreciation charges in 3Q17, US$ 30 million in 2Q17, and US$ 27 million in 3Q16

## Costs and expenses

| US$ million | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| **Costs** | **5,412** | **5,102** | **4,345** |
| **Expenses** | **454** | **390** | **270** |
| **Total costs and expenses** | **5,866** | **5,492** | **4,615** |
| Depreciation | 920 | 904 | 853 |
| **Costs and expenses ex-depreciation** | **4,946** | **4,588** | **3,762** |

# Adjusted earnings before interest, taxes, depreciation and amortization[6]

Adjusted EBITDA was US$ 4.192 billion in 3Q17, 53.6% higher than in 2Q17, mainly as a result of: (i) higher prices (US$ 851 million), (ii) better premiums[7] (US$ 447 million) on Vale's high quality iron ore products, (iii) higher volumes (US$ 219 million) on the back of the successful ramp-up of S11D and (iv) lower costs (US$ 70 million).

Adjusted EBITDA of the Ferrous Minerals business segment was US$ 3.674 billion in 3Q17, 64.6% higher than in 2Q17, mainly as a result of the increase of the Platts IODEX and gains in competitiveness, such as: (i) higher premiums, lower discounts and other commercial initiatives; (ii) higher volumes; and (iii) lower costs.

Base Metals business segment adjusted EBITDA was US$ 561 million in 3Q17, increasing US$ 175 million vs. 2Q17, mainly as a result of higher nickel and copper realized prices, lower costs and higher volumes, which were partially offset by unfavorable exchange rate variations and higher expenses.

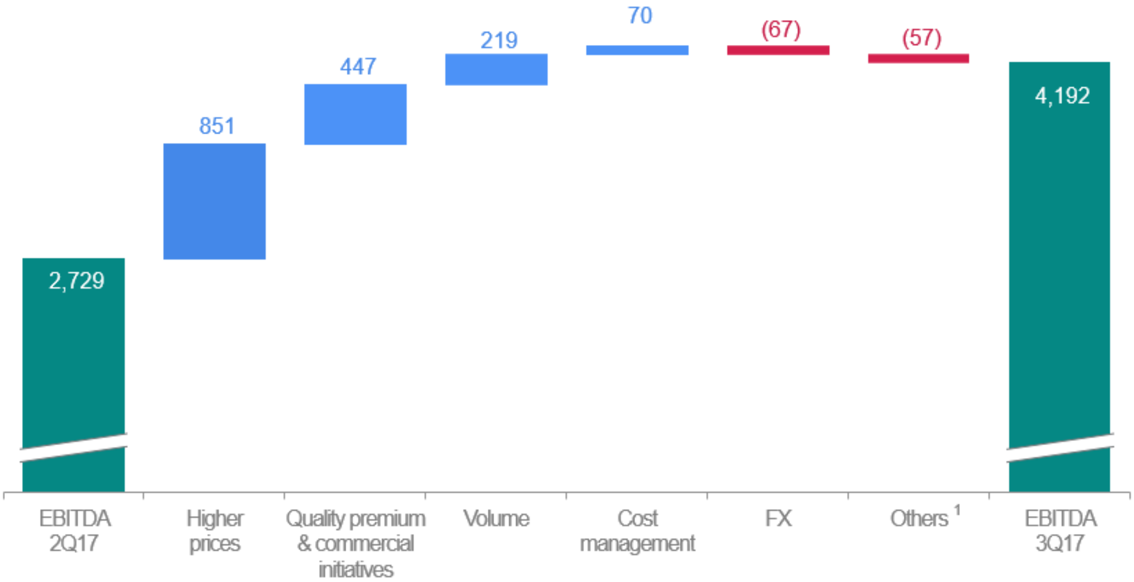
Adjusted EBITDA for the Coal business segment was US$ 46 million in 3Q17, US$ 111 million lower than in 2Q17, mainly due to lower sales prices and higher tariff costs in the Nacala Logistics Corridor, which were partially offset by the provision of Nacala Logistics Corridor's debt service to Vale and lower costs at the mine and plants.

Other business segments Adjusted EBITDA was negative US$ 89 million, US$ 43 million lower than in 2Q17, mainly due to higher dividends received on 2Q17 (US$ 37 million).

[6] Net revenues less costs and expenses net of depreciation plus dividends and interests on associates and JVs.
[7] Higher premiums, lower discounts and other commercial initiatives of Ferrous Minerals.

### EBITDA variation 3Q17 vs. 2Q17

US$ million




[1] Includes expenses, dividends and others

### Adjusted EBITDA

| *US$ million* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Net operating revenues | 9,050 | 7,235 | 6,726 |
| COGS | (5,412) | (5,102) | (4,345) |
| SG&A | (129) | (132) | (137) |
| Research and development | (91) | (80) | (80) |
| Pre-operating and stoppage expenses | (83) | (90) | (116) |
| Other operational expenses | (151) | (88) | 63 |
| **Adjusted EBIT** | **3,184** | **1,743** | **2,111** |
| Depreciation, amortization & depletion | 920 | 904 | 853 |
| Dividends and interests on associates and JVs | 88 | 82 | - |
| **Adjusted EBITDA** | **4,192** | **2,729** | **2,964** |
| Iron ore - Platts' 62% IODEX | 70.9 | 62.9 | 58.6 |

### Adjusted EBITDA by business area

| *US$ million* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Ferrous Minerals | 3,674 | 2,232 | 2,493 |
| Coal | 46 | 157 | (7) |
| Base Metals | 561 | 386 | 600 |
| Others | (89) | (46) | (122) |
| **Total** | **4,192** | **2,729** | **2,964** |
| Iron ore - Platts' 62% IODEX | 70.9 | 62.9 | 58.6 |

# Net income

Net income totaled US$ 2.230 billion in 3Q17 vs. US$ 16 million in 2Q17, increasing by US$ 2.214 billion, mainly as a result of the following impacts: (i) higher adjusted EBITDA (US$ 1.463 billion); and (ii) non-cash gains on monetary and exchange rate variation in 3Q17 vs. non-cash losses in 2Q17 (US$ 1.120 billion).

Underlying earnings were a positive US$ 2.090 billion in 3Q17 after excluding some positive effects on net income, most importantly: (i) the impact of foreign exchange (US$ 452 million), related to the appreciation of the BRL against the USD, and (ii) the impact of currency and interest rate swaps (US$ 295 million) mostly offset by: (i) the impact of impairments and other results on non-current assets (-US$ 389 million), which comprises mainly the adjustments related to the sale of fertilizer assets[8] (-US$ 218 million), and the disposal and impairment of assets, including discontinued projects (-US$ 55 million), mainly Apolo and Níquel do Vermelho projects, and (ii) the impact of the mark-to-market of the shareholders' debentures (-US$ 72 million).

**Underlying earnings**

| *US$ million* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| **Underlying earnings** | **2,090** | **949** | **954** |
| **Items excluded from basic earnings** | | | |
| Impairment and other results on non-current assets | (389) | (486) | (29) |
| Impairment and others results in associates and joint ventures | (26) | (34) | (33) |
| Shareholders Debentures | (72) | (87) | (48) |
| Foreign Exchange | 452 | (610) | (330) |
| Monetary variation | 81 | 11 | 2 |
| Currency and interest rate swaps | 295 | (96) | (49) |
| Other financial results | (29) | (57) | (55) |
| Income tax over excluded items | (172) | 426 | 163 |
| **Net Income (loss)** | **2,230** | **16** | **575** |

Net financial results showed a gain of US$ 220 million in 3Q17 vs. a loss of US$ 1.339 billion in 2Q17. The increase of US$ 1.559 billion was mainly a result of non-cash gains on exchange rate variations in 3Q17 vs. non-cash losses in 2Q17 (US$ 1.045 billion) and gains on derivatives of currency and interest rate swaps in 3Q17 vs. losses in 2Q17 (US$ 391 million).

Financial income includes US$ 67 million of interests on receivable loans from the Nacala Logistics Corridor (NLC), as in 3Q17 we started to recognize the interest on Vale's shareholder loans to NLC. The same amount impacted our adjusted EBITDA as Interest on associates and JV's.

[8] Being mainly the impact of the mark-to-market of Mosaic shares and exchange rate variations.

Other financial expenses increased by US$ 123 million, of which US$ 109 million represents the premium over par on the US$ 1.5 billion bonds repurchased in September 2017. For more details on the debt reduction, please refer to the *Debt Indicators* section.

The end-to-end appreciation of the BRL[9] contributed to non-cash gains of US$ 738 million with positive effects from foreign exchange (US$ 443 million) and currency and interest rate swap (US$ 295 million), where foreign exchange accounts for the net position of liabilities and assets denominated in currencies other than the BRL, and currency and interest rate swap accounts for changes in the fair value and the settlements of the currency swaps from the BRL and other currencies to the USD. Conceptually, these gains reflect the fact that, when the USD-denominated debt is translated to Vale´s functional currency – the Brazilian Real – total indebtness in BRL decreases with a stronger Real. The currency derivatives positions follow the same pattern, as they are intended to swap the BRL-debt exposure back into USD, therefore benefiting from the appreciation of the BRL.

## Financial results

| *US$ million* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| **Financial expenses** | **(826)** | **(773)** | **(704)** |
| Gross interest | (417) | (450) | (465) |
| Capitalization of interest | 111 | 83 | 172 |
| Tax and labor contingencies | (22) | (2) | (4) |
| Shareholder debentures | (72) | (87) | (48) |
| Others | (332) | (209) | (215) |
| Financial expenses (REFIS) | (94) | (108) | (144) |
| **Financial income** | **152** | **116** | **30** |
| **Derivatives[1]** | **365** | **(91)** | **(39)** |
| Currency and interest rate swaps | 295 | (96) | (49) |
| Others[2] (bunker oil, commodities, etc) | 70 | 5 | 10 |
| **Foreign Exchange** | **443** | **(602)** | **(330)** |
| **Monetary variation** | **86** | **11** | **2** |
| **Financial result, net** | **220** | **(1,339)** | **(1,041)** |

[1]The net derivatives gains of US$ 365 million in 3Q17 are comprised of settlement losses of US$ 113 million and mark-to-market gains of US$ 478 million.
[2] Other derivatives include bunker oil derivatives losses of US$ 6 million

The non-cash impact on financial results of the end-to-end appreciation of the BRL in 3Q17 was partially offset by the introduction of a net investment hedge in January 2017. With this instrument Vale assigned part of its USD and Euro designated debt as hedge against its net investments in its Vale International S.A. and Vale International Holding GmbH subsidiaries. The objective was to mitigate the foreign exchange risk on financial statements. On September 30th, 2017, the carrying value of the debt assigned as the net investment hedge was US$ 6.162 billion and € 750 million. The foreign exchange gains on the translation of this debt portion to

[9] In 3Q17, from end-to-end, the Brazilian Real (BRL) appreciated 4.23% against the US Dollar (USD) from BRL 3.31/ USD as of June 30th, 2017 to BRL 3.17/ USD as of September 30th, 2017. On a quarterly average, the exchange rate appreciated by 1.86%, from an average BRL 3.22/ USD in 2Q17 to an average BRL 3.16/ USD in 3Q17.

BRL were US$ 290 million, and they were recognized directly in “Other comprehensive income” in the stockholders’ equity, not impacting Vale’s financial results.

Conversely, the average appreciation of the BRL against the USD had a negative impact on cash flows, as most of Vale’s revenues were denominated in USD, while COGS were 51% denominated in BRL, 32% in USD, 13% in Canadian dollars (CAD) and about 52% of capital expenditures in BRL. The appreciation of the BRL and of other currencies increased costs and expenses[10] in USD terms by US$ 67 million in 3Q17.

## Equity income from affiliated companies

Equity income from affiliated companies showed a gain of US$ 115 million in 3Q17 vs. a loss of US$ 24 million in 2Q17. The main contributors to equity income were: the leased pelletizing companies in Tubarão (US$ 51 million), MRS (US$ 22 million), VLI (US$ 17 million) and CSI (US$ 10 million).

[10] Excluding depreciation charges.

# Investments[11]

Capital expenditures totaled US$ 863 million in 3Q17 with US$ 295 million in project execution and US$ 568 million in sustaining investments. Capital expenditures decreased US$ 32 million vs. the US$ 894 million spent in 2Q17. For the 9M17, Vale's capital expenditures were US$ 2.9 billion, the lowest level since 9M06.

Investments in 4Q17 will be higher than 3Q17, following the usual seasonality, but significantly lower than 4Q16. In 2017, Vale's capital expenditures should total US$ 4.0 billion.

**Project Execution and Sustaining by business area**

| *US$ million* | 3Q17 | % | 2Q17 | % | 3Q16 | % |
|---|---|---|---|---|---|---|
| Ferrous Minerals | 551 | 63.9 | 619 | 69.2 | 795 | 68.7 |
| Coal | 14 | 1.6 | 15 | 1.6 | 149 | 12.9 |
| Base Metals | 289 | 33.5 | 254 | 28.4 | 189 | 16.3 |
| Power generation | 7 | 0.9 | 6 | 0.6 | 15 | 1.3 |
| Others | 1 | 0.2 | 2 | 0.2 | 9 | 0.8 |
| **Total** | **863** | **100.0** | **894** | **100.0** | **1,157** | **100.0** |

## Project execution

Investment in project execution totaled US$ 295 million in 3Q17, decreasing 24.0% due to the completion of stages in the S11D project on the mine, plant and railway, as planned.

Ferrous Minerals accounted for about 92% of the total investment in project execution in 3Q17.

**Project execution by business area**

| *US$ million* | 3Q17 | % | 2Q17 | % | 3Q16 | % |
|---|---|---|---|---|---|---|
| Ferrous Minerals | 273 | 92.3 | 370 | 95.4 | 579 | 81.5 |
| Coal | 2 | 0.5 | 7 | 1.7 | 106 | 14.9 |
| Base Metals | 13 | 4.2 | 5 | 1.3 | 2 | 0.3 |
| Power generation | 7 | 2.4 | 5 | 1.2 | 14 | 2.0 |
| Others | 1 | 0.5 | 2 | 0.4 | 9 | 1.3 |
| **Total** | **295** | **100.0** | **388** | **100.0** | **711** | **100.0** |

## FERROUS MINERALS

About 97% of the US$ 273 million invested in Ferrous Minerals in 3Q17 relates to the S11D project and the expansion of its associated infrastructure (US$ 264 million).

[11] Does not include Fertilizers investments.

**S11D Mine – Buffer stockyard**

S11D (including mine, plant and associated logistics – CLN S11D) achieved combined physical progress of 92% in 3Q17 with 99% progress at the mine site and 86% at the logistic infrastructure sites.

The duplication of the railway reached 76% physical progress with 470 Km duplicated. The long distance conveyor belt is already capable of operating at nominal capacity, the product stockyard moved more than 14.5 Mt of ore and over 367 trains with 330 wagons were loaded up to September. The port onshore expansion reached 92% physical progress.

### S11D Logistics – Duplication of the railway

### Progress indicators[12]

| Project | Capacity (Mtpy) | Estimated start-up | Executed capex (US$ million) | | Estimated capex (US$ million) | | Physical progress |
|---|---|---|---|---|---|---|---|
| | | | 2017 | Total | 2017 | Total | |
| **Ferrous Minerals projects** | | | | | | | |
| CLN S11D | 230 (80)[a] | 1H14 to 2H19 | 719 | 6,381 | 962 | 7,850[b] | 86% |

[a] Net additional capacity.
[b] Original capex budget of US$ 11.582 billion.

### Sustaining capex

Sustaining investments totaled US$ 568 million in 3Q17, increasing 12.0% when compared to 2Q17, mainly due to the start of disbursements in the São Luis pellet plant project and replacement investments for changes in mine plans in the Sudbury basin. The Ferrous Minerals and Base Metals business segments each accounted for 49% of the total sustaining capex in 3Q17.

Sustaining capex in the Base Metals business segment was mainly for: (i) operational improvements (US$ 175 million); (ii) improvement in the current standards of health and safety and environmental protection (US$ 80 million); and (iii) maintenance improvements and

[12] Pre-operating expenses were not included in the estimated capex for the year, although included in the total estimated capex column, in line with Vale's Board of Directors approvals. Estimated capex for the year is only reviewed once a year.

expansion of tailings dams (US$ 11 million). The transition to a single furnace in Sudbury was concluded in 3Q17 with no further disbursements.

Sustaining investments for the Ferrous Minerals business segment included, among others: (i) enhancement and replacement in operations (US$ 173 million); (ii) improvement in the current standards of health and safety, social and environmental protection (US$ 44 million); and (iii) maintenance, improvement and expansion of tailings dams (US$ 40 million). Maintenance of railways and ports in Brazil and Malaysia accounted for US$ 69 million.

Projects for restarting the São Luis and Tubarão Plant 2 pellet plants are on schedule, with their start-up planned for the first half of 2018 and a total cost of US$ 123 million which will be charged to sustaining investments.

Sustaining investments in iron ore fines (excluding sustaining investments in pellet plants) amounted to US$ 210 million, equivalent to US$ 2.9/dmt of iron ore fines in 3Q17, in line with the US$ 2.8/dmt in 2Q17. The last twelve months average of sustaining capex for iron ore fines amounted to US$ 3.2/dmt.

### Sustaining capex by type - 3Q17

| *US$ million* | Ferrous Minerals | Coal | Base Metals | Total |
|---|---|---|---|---|
| Operations | 173 | 5 | 175 | 353 |
| Waste dumps and tailing dams | 40 | 0 | 11 | 51 |
| Health and Safety | 31 | 3 | 11 | 45 |
| CSR - Corporate Social Responsibility | 14 | 0 | 69 | 83 |
| Administrative & Others | 20 | 4 | 10 | 35 |
| **Total** | **279** | **12** | **276** | **568** |

### Sustaining capex by business area

| *US$ million* | 3Q17 | % | 2Q17 | % | 3Q16 | % |
|---|---|---|---|---|---|---|
| Ferrous Minerals | 278 | 49.0 | 249 | 49.1 | 216 | 48.4 |
| Coal | 12 | 2.2 | 8 | 1.6 | 43 | 9.7 |
| Base Metals | 276 | 48.7 | 249 | 49.1 | 186 | 41.8 |
| Power generation | 0 | 0.1 | 1 | 0.2 | 0 | 0.1 |
| Others | 0 | 0.0 | 0 | 0.0 | - | - |
| **Total** | **568** | **100.0** | **507** | **100.0** | **446** | **100.0** |

## Corporate social responsibility

Investments in corporate social responsibility totaled US$ 163 million in 3Q17, of which US$ 141 million dedicated to environmental protection and conservation and US$ 22 million dedicated to social projects.

## Portfolio Management

Vale reached significant milestones on its way towards the completion of the Project Finance, obtaining the approvals from NEXI, JBIC and ECIC. Vale expects to sign the Project Finance on November 22nd, 2017 with the disbursement subject to conditions precedent.

As a condition precedent to the signing of the Project Finance, in 3Q17, Vale and Mitsui bought, equally, the Mozambique government stake in some concessionaires at the Nacala Logistics Corridor, with US$ 53 million cash outflow for Vale.

In 3Q17, Vale sold two very large ore carriers (VLOCs) of 400,000 tons to nominees of Bank of Communications Finance Leasing Co., Ltd. (Bocomm), for a total of US$ 178 million.

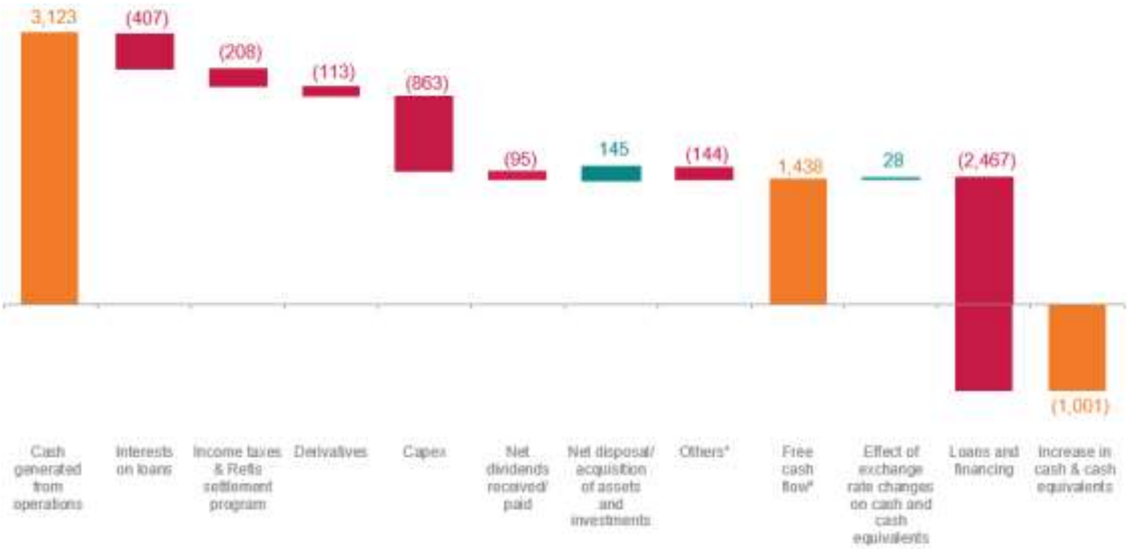
# Free cash flow

Free cash flow was US$ 1.438 billion in 3Q17.

Cash generated from operations was US$ 3.123 billion in 3Q17, US$ 1.069 billion lower than EBITDA, mainly due to the negative impact of the increase in accounts receivable in 3Q17 vs. 2Q17 driven by the cash impact of the provision booked in 2Q17 for provisionally priced sales to be settled in 3Q17 – meaning Vale had to give back cash to its customers who were invoiced at higher prices prior to the fall in iron ore prices at the end of 2Q17.

**Free Cash Flow 3Q17**

**US$ million**



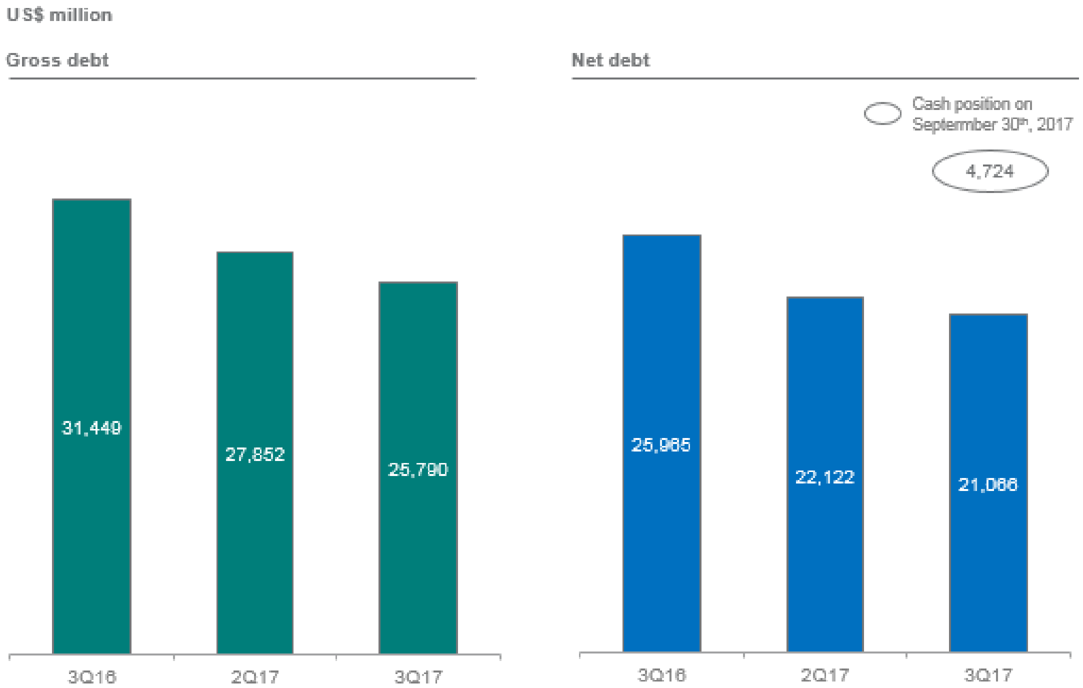

[1] Includes US$ 98 million related to loans made to Samarco and US$ 13 million of cash outflow from the Fertilizers segment
[2] Cash flow before debt additions/repayments and distribution of dividends to shareholders

# Debt indicators

Vale is focused on reducing its debt leverage. Gross debt decreased by US$ 2.062 billion from the US$ 27.852 billion as of June 30th, 2017 to US$ 25.790 billion as of September 30th, 2017. The decrease of gross debt was mainly due to net debt repayments[13] of US$ 2.874 billion in 3Q17, which were partially offset by effects of the BRL appreciation over Vale's debt, which increased BRL-denominated debt when translated to USD by US$ 667 million (partially compensated by the US$ 272 million impact of the exchange rate variation on the USD and EUR-denominated debt when converted into BRL, Vale's functional currency) and interests accrued in the period of US$ 417 million.

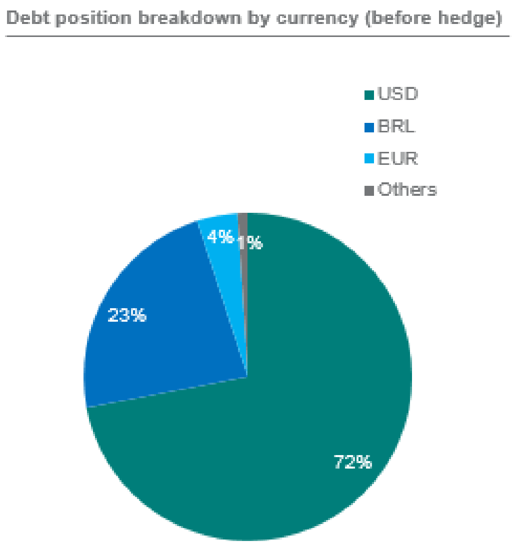
Net debt decreased by US$ 1.056 billion compared to the end of the previous quarter, totaling US$ 21.066 billion based on a cash position of US$ 4.724 billion as of September 30th, 2017, as free cash flow was positive in 3Q17.

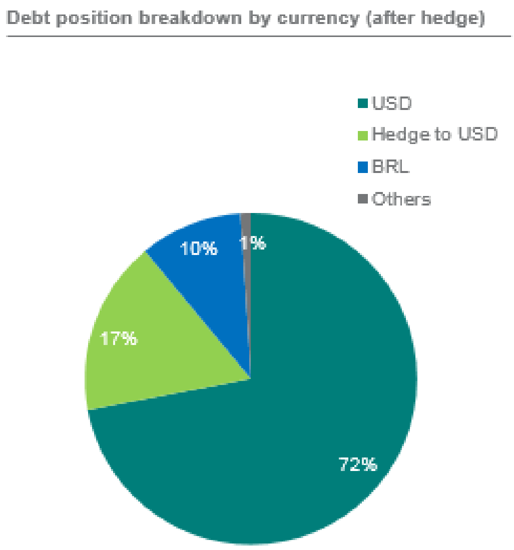
## Debt position




Gross debt after currency and interest rate swaps was 89% denominated in USD, with 32% based on floating and 68% based on fixed interest rates as of September 30th, 2017.

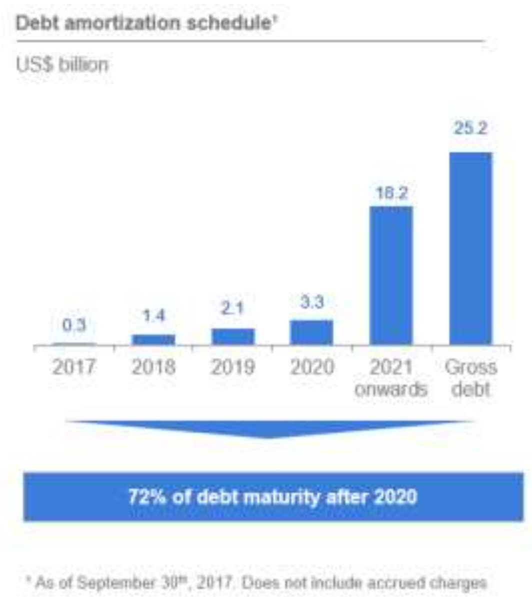
[13] Debt repayments less debt additions. Include interest payments.

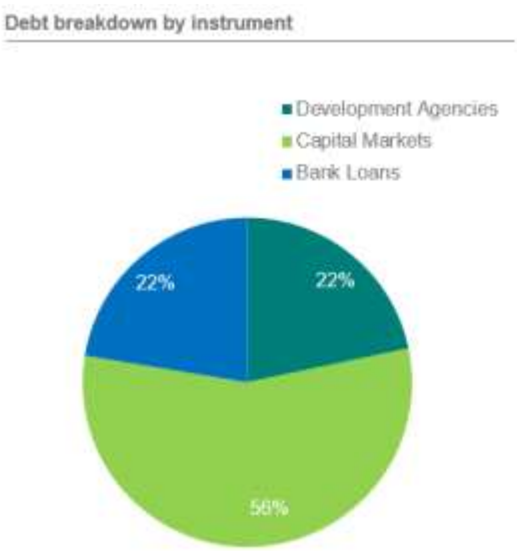



Average debt maturity increased to 8.4 years on September 30th, 2017, against 8.1 years on June 30th, 2017 and 7.7 years on September 30th, 2016. Average cost of debt, after the abovementioned currency and interest rate swaps, increased slightly, to 4.96% per annum on September 30th, 2017, against 4.88% per annum on June 30th, 2017. The increase of the average debt maturity and cost of debt was mainly a result of the liability management in 3Q17 through which Vale redeemed its 2019 Notes and purchased part of its 2020 Notes, thus reducing the gross debt and future financial expenses as well as decreasing the amortizations in 2019 and 2020.

In September, 2017, Vale Overseas Limited (Vale Overseas), a wholly-owned subsidiary of Vale, redeemed all of its US$ 1 billion outstanding 2019 Notes, pursuant to the exercise of the right to redeem such 2019 Notes, and has accepted for purchase the total principal amount of US$ 501 million of the 2020 Notes validly tendered in a cash tender offer.




Interest coverage, measured by the ratio of LTM adjusted EBITDA to LTM gross interest, improved to 8.8x in 3Q17 vs. 7.9x in 2Q17 and vs. 4.9x in 3Q16.

Leverage, measured by gross debt to LTM adjusted EBITDA, decreased to 1.6x as of September 30th, 2017 from 1.9x as of June 30th, 2017 and from 3.7x as of September 30th, 2016. Measuring by net debt to LTM adjusted EBITDA, leverage decreased to 1.3x as of September 30th, 2017 from 1.5x as of June 30th, 2017 and from 3.0x as of September 30th, 2016.

## Debt indicators

| *US$ million* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Total debt | 25,790 | 27,852 | 31,449 |
| Net debt | 21,066 | 22,122 | 25,965 |
| Total debt / adjusted LTM EBITDA (x) | 1.6 | 1.9 | 3.7 |
| Net debt / adjusted LTM EBITDA (x) | 1.3 | 1.5 | 3.0 |
| Adjusted LTM EBITDA / LTM gross interest (x) | 8.8 | 7.9 | 4.9 |

# Performance of the business segments

**Segment information — 3Q17, as per footnote of financial statements**

| *US$ million* | Net Revenues | Cost[1] | Expenses: SG&A and others[1] | Expenses: R&D[1] | Expenses: Pre operating & stoppage[1] | Dividends and interests on associates and JVs | Adjusted EBITDA |
|---|---|---|---|---|---|---|---|
| Ferrous Minerals | 6,820 | (2,967) | (116) | (27) | (49) | 13 | 3,674 |
| Iron ore fines | 5,131 | (2,086) | (89) | (22) | (47) | 1 | 2,888 |
| ROM | 7 | - | - | - | - | - | 7 |
| Pellets | 1,441 | (733) | (21) | (5) | (3) | - | 679 |
| Others ferrous | 110 | (77) | (2) | - | - | 12 | 43 |
| Mn & Alloys | 131 | (71) | (4) | - | 1 | - | 57 |
| Coal | 360 | (368) | (9) | (4) | - | 67 | 46 |
| Base Metals | 1,762 | (1,129) | (52) | (20) | - | - | 561 |
| Nickel[2] | 1,168 | (883) | (45) | (13) | - | - | 227 |
| Copper[3] | 594 | (246) | (8) | (6) | - | - | 334 |
| Others | 108 | (80) | (86) | (40) | 1 | 8 | (89) |
| Total | 9,050 | (4,544) | (263) | (91) | (48) | 88 | 4,192 |

[1] Excluding depreciation and amortization

[2] Including copper and by-products from our nickel operations

[3] Including by-products from our copper operations

# Ferrous Minerals

Adjusted EBITDA of the Ferrous Minerals business segment was US$ 3.674 billion in 3Q17, 64.6% higher than in 2Q17, mainly as a result of the 13% increase of the Platts IODEX (US$ 788 million) and gains in competitiveness (US$ 683 million), such as: (i) higher premiums, lower discounts and other commercial initiatives (US$ 447 million); (ii) higher volumes (US$ 189 million); and (iii) lower costs (US$ 109 million).

Adjusted EBITDA per ton for Ferrous Minerals, excluding Manganese and Ferroalloys, was US$ 40.2/t in 3Q17, 49.4% higher than the US$ 26.9/t recorded in 2Q17, mainly as a result of the abovementioned higher price realization.

### EBITDA variation 3Q17 vs. 2Q17 – Ferrous Minerals business segment


### Iron ore fines (excluding Pellets and ROM)

#### EBITDA

Adjusted EBITDA of iron ore fines was US$ 2.888 billion in 3Q17, 92.3% higher than in 2Q17, mainly as a result of higher realized prices (US$ 1.209 billion), which were impacted by higher premiums and lower discounts (US$ 3.9/t in 3Q17 vs. negative US$ 0.2/t in 2Q17), higher volumes (US$ 127 million) and lower costs[14] (US$ 67 million).

[11] After adjusting for the effects of higher volumes and exchange rate variations.

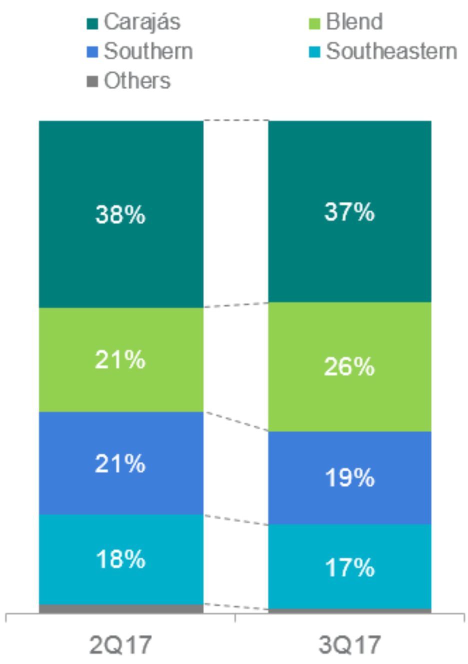
## SALES REVENUES AND VOLUME

Net sales revenues of iron ore fines, excluding pellets and Run of Mine (ROM), increased to US$ 5.131 billion in 3Q17 vs. US$ 3.544 billion in 2Q17, as a result of higher iron ore fines realized prices (US$ 1.209 billion) and higher sales volumes (US$ 378 million).

Sales volumes of iron ore fines reached 76.4 Mt in 3Q17 vs. 69.0 Mt in 2Q17, 10.7% higher than in 2Q17, mainly due to the S11D ramp-up. Inventories increased 4 Mt in 3Q17 vs. 2Q17 as a result of operational needs and market strategies. However, the sales/production volume ratio[15] totaled 95% vs. 89% in 2Q17. It is expected that the sales/production volume ratio will average around the same level as 3Q17 in the full years of 2017 and 2018, with some seasonality throughout the quarters due to dynamic management of the supply chain.

CFR sales of iron ore fines totaled 54.5 Mt in 3Q17, representing 71% of all iron ore fines sales volumes in 3Q17, 4 p.p. higher than the 67% share of CFR sales in 2Q17.

### Sales composition




The reduced production of high silica products by an annualized rate of 19 Mt from 2H17 onwards resulted in a decrease of Southern and Southeastern Systems lower quality products sales volumes, as well as an increase of the Brazilian Blend Fines (BRBF), reinforcing the use of the BRBF as a baseload charge for blast furnaces and supporting a substantial increase in price realization, as detailed below in Realized Prices section.

[15] Sales volumes of iron ore fines, pellets and ROM / Iron ore fines production including third party purchase.

## Net operating revenue by product

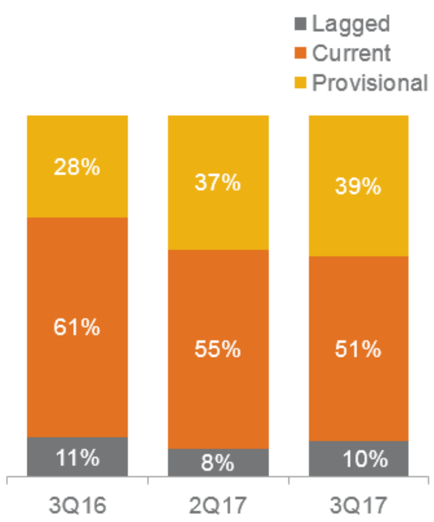
| *US$ million* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Iron ore fines | 5,131 | 3,544 | 3,782 |
| ROM | 7 | 8 | 4 |
| Pellets | 1,441 | 1,331 | 991 |
| Manganese & Ferroalloys | 131 | 117 | 76 |
| Others | 110 | 114 | 106 |
| **Total** | **6,820** | **5,114** | **4,959** |

## Volume sold

| *'000 metric tons* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Iron ore fines | 76,388 | 69,019 | 74,231 |
| ROM | 406 | 240 | 351 |
| Pellets | 13,135 | 12,479 | 12,001 |
| Manganese ore | 498 | 392 | 448 |
| Ferroalloys | 32 | 36 | 31 |

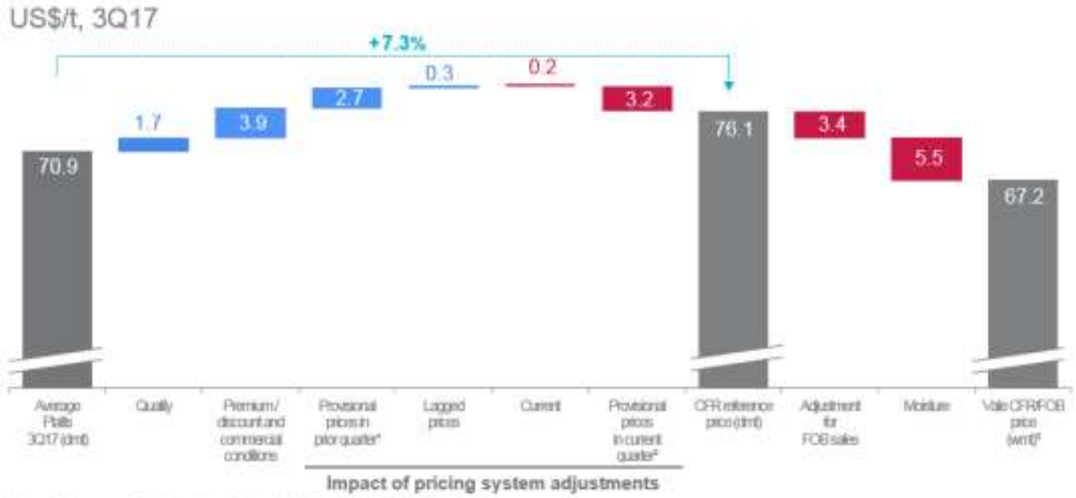
# REALIZED PRICES

## Pricing system breakdown




Vale is the player with the highest flexibility in the market for adjusting its product quality output, by managing production of lower and/or higher quality ore, according to market demand.

### Price realization – iron ore fines




[1] Adjustment as a result of provisional prices booked in 2Q17 at US$ 62.1/t.
[2] Difference between the weighted average of the prices provisionally set at the end of 3Q17 at US$ 62.7/t based on forward curves and US$ 70.9/t from the 3Q17 IODEX.
[3] Vale price is net of taxes.

Vale's CFR dmt reference price for iron ore fines (ex-ROM) increased by US$ 15.4/t from US$ 60.7/t in 2Q17 to US$ 76.1/t in 3Q17, mainly as a result of: (i) the increase in the IODEX (US$ 8.0/t) and (ii) higher premiums and lower discounts (US$ 4.1/t[16]). Pricing system adjustments had a small combined impact.

Vale's CFR/FOB wmt[17] price for iron ore fines (ex-ROM) increased 31% (US$ 15.9/t) from US$ 51.3/t in 2Q17 to US$ 67.2/t in 3Q17, after adjusting for moisture and the effect of FOB sales, which accounted for 29% of total sales volumes in 3Q17.

The positive US$ 3.9/t in 'Premiums/Discounts and commercial conditions' recorded in 3Q17 is a result of: (i) higher market premiums for Carajás ore; (ii) higher share of Carajás sales linked to MB65% Metal Bulletin index; (iii) the reduced production of high silica products by an annualized rate of 19 Mt from 2H17 onwards; and (iv) improved management of the global supply chain with the implementation of Integrated Operations Center (COI), which will increasingly provide faster and more effective responses to market dynamics, enhancing assets productivity and margins.

Price realization in 3Q17 was impacted by:

- Provisional prices set at the end of 2Q17 at US$ 62.1/t, which were later adjusted based on the price of delivery in 3Q17, and positively impacted prices in 3Q17 by US$ 2.7/t compared to a negative impact of US$ 4.2/t in 2Q17 as a result of higher realized prices in 3Q17.

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[16] Difference between the US$ 3.9/t recorded in 3Q17 and the negative US$ 0.2/t recorded in 2Q17.
[17] wmt - wet metric ton.

- Provisional prices set at the end of 3Q17 at US$ 62.7/t vs. the IODEX average of US$ 70.9/t in 3Q17, which negatively impacted prices in 3Q17 by US$ 3.2/t compared to a negative impact of US$ 0.3/t in 2Q17.

- Quarter-lagged contracts, priced at US$ 73.1/t based on the average prices for Mar-Apr-May, which positively impacted prices in 3Q17 by US$ 0.3/t compared to a positive impact of US$ 1.8/t in 2Q17.

Iron ore sales of 29.8 Mt, or 39% of Vale's sales mix, were recorded under the provisional pricing system, which was set at the end of 3Q17 at US$ 62.7/t. The final prices of these sales and the required adjustment to sales revenues will be determined and recorded in 4Q17.

### Average prices

| *US$/ metric ton* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Iron ore - Metal Bulletin 65% index | 91.20 | 76.50 | 65.60 |
| Iron ore - Platts' 62% IODEX | 70.90 | 62.90 | 58.60 |
| Iron ore fines CFR reference price (dmt) | 76.10 | 60.70 | 59.30 |
| Iron ore fines CFR/FOB realized price | 67.17 | 51.35 | 50.95 |
| ROM | 17.24 | 34.23 | 11.40 |
| Pellets CFR/FOB (wmt) | 109.71 | 106.68 | 82.58 |
| Manganese ore | 175.81 | 180.08 | 113.84 |
| Ferroalloys | 1,380.30 | 1,265.31 | 806.45 |

## COSTS

Costs for iron ore fines amounted to US$ 2.086 billion (or US$ 2.367 billion with depreciation charges) in 3Q17. Costs decreased US$ 67 million when compared to 2Q17, after adjusting for the effects of higher sales volumes (US$ 251 million) and exchange rate variations (US$ 17 million), mainly due to higher fixed-costs dilution on higher production volumes in 3Q17, lower maintenance costs, lower demurrage costs and lower third party railway costs in the Southern System (MRS).

### IRON ORE COGS - 2Q17 x 3Q17

| | | Variance drivers | | | | |
|---|---|---|---|---|---|---|
| *US$ million* | 2Q17 | Volume | Exchange Rate | Others | Total Variation 2Q17 x 3Q17 | 3Q17 |
| **Total costs before depreciation and amortization** | **1,885** | **251** | **17** | **(67)** | **201** | **2,086** |
| Depreciation | 266 | 29 | 4 | (18) | 15 | 281 |
| **Total** | **2,151** | **280** | **21** | **(85)** | **216** | **2,367** |

Maritime freight costs, which are fully accrued as cost of goods sold, totaled US$ 819 million in 3Q17, increasing US$ 129 million vs. 2Q17, mainly as a result of higher CFR volumes.

Unit maritime freight cost per iron ore metric ton was US$ 15.0/t in 3Q17, remaining practically in line with the US$ 14.9/t recorded in 2Q17. Vale's average bunker oil price recorded in 3Q17 was US$ 308/t vs. US$ 306/t in 2Q17.

## C1 CASH COST

C1 cash cost FOB port per metric ton for iron ore fines ex-royalties decreased by US$0.7/t, from the US$ 15.2/t recorded in 2Q17 to US$ 14.5/t in 3Q17, as a result of: (i) higher fixed-costs dilution on higher production volumes in 3Q17 (US$ 0.3/t); (ii) lower maintenance costs (US$ 0.3/t); (iii) lower demurrage costs (US$ 0.2/t); and (iv) lower third party railway costs (MRS) in the Southern System (US$ 0.1/t); which were partially offset by the negative impact of the BRL appreciation against the USD of 1.7% in 3Q17 (US$ 0.3/t).

C1 cash cost FOB port per metric ton of iron ore fines in BRL decreased by 7.1% to R$ 45.8/t (US$ 14.5/t) vs. the R$ 49.3/t recorded in 2Q17, as a result of the abovementioned effects. Costs are back to the BRL average levels of 2015 and 2016, as forecast in the 2Q17 earnings release, due to the combination of higher production, seasonally lower maintenance costs and productivity gains.

### Iron Ore Fines Costs and Expenses in BRL

| *R$/t* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| C1 Cash Costs[1] | 45.8 | 49.3 | 42.2 |
| Expenses[1] | 6.6 | 7.3 | 7.4 |
| **Total** | **52.4** | **56.5** | **49.5** |

[1] Net of depreciation.

## Evolution of C1 Cash Cost[1] per ton in BRL


[1] 2015 figures were adjusted to the new allocation criteria, as reported in the 4Q15, and include acquisition costs of third party purchased ore

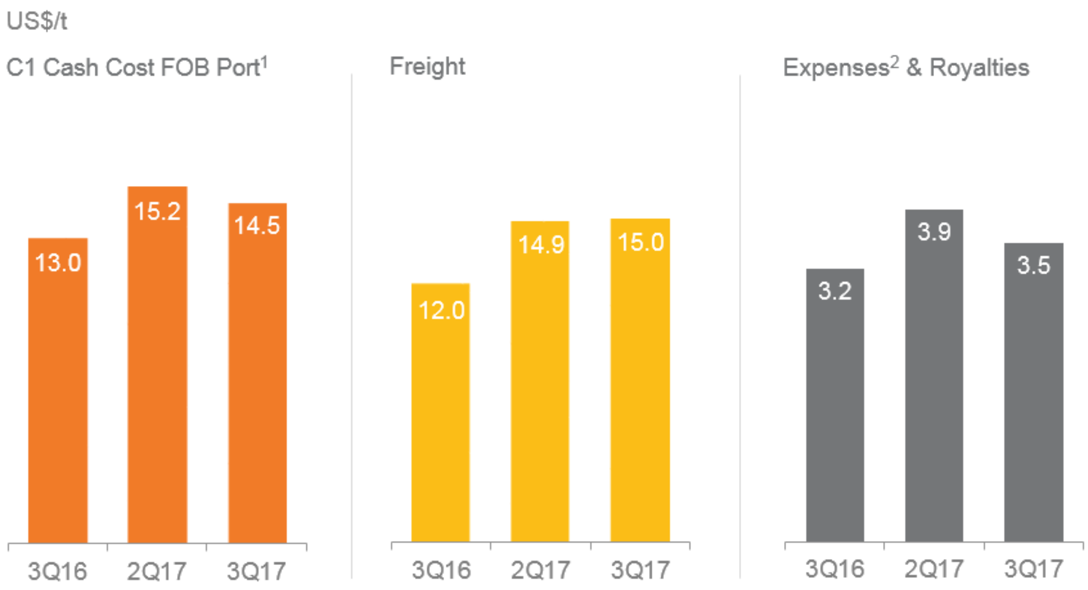
### Iron ore fines cash cost and freight

| | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| **Costs (US$ million)** | | | |
| COGS, less depreciation and amortization | 2,086 | 1,885 | 1,648 |
| Distribution costs | 51 | 33 | 18 |
| Maritime freight costs | 819 | 690 | 575 |
| **FOB at port costs (ex-ROM)** | **1,216** | **1,162** | **1,055** |
| **FOB at port costs (ex-ROM and ex-royalties)** | **1,109** | **1,051** | **965** |
| **Sales volumes (Mt)** | | | |
| Total iron ore volume sold | 76.8 | 69.3 | 74.6 |
| Total ROM volume sold | 0.4 | 0.2 | 0.4 |
| Volume sold (ex-ROM) | 76.4 | 69.0 | 74.2 |
| % of CFR sales | 71% | 67% | 64% |
| % of FOB sales | 29% | 33% | 36% |
| **Vale's iron ore cash cost (ex-ROM, ex-royalties), FOB (US$ /t)** | **14.5** | **15.2** | **13.0** |
| **Freight** | | | |
| Volume CFR (Mt) | 54.5 | 46.4 | 47.8 |
| Vale's iron ore unit freight cost (US$/t) | 15.0 | 14.9 | 12.0 |

## EXPENSES

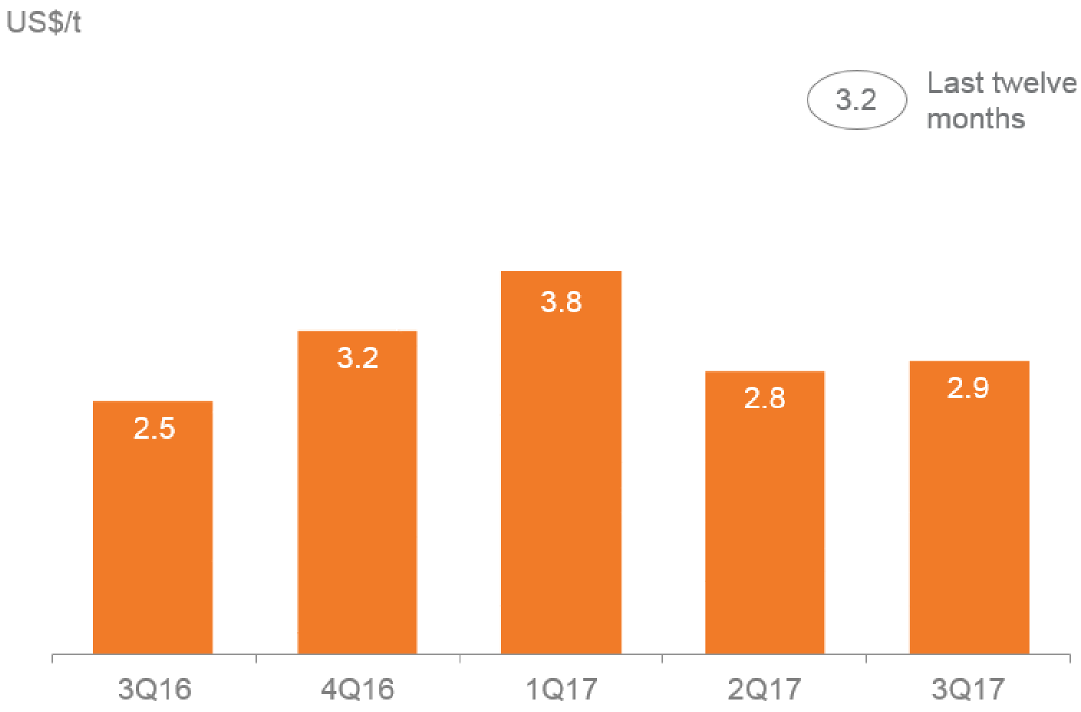
Iron ore expenses, net of depreciation, amounted to US$ 158 million in 3Q17, remaining in line with 2Q17. SG&A and other expenses totaled US$ 89 million in 3Q17, decreasing US$ 5 million vs. 2Q17. R&D amounted to US$ 22 million, remaining in line with 2Q17. Pre-operating and stoppage expenses, net of depreciation, amounted to US$ 47 million, increasing US$ 7 million vs. 2Q17, mainly as a result of higher S11D pre-operating expenses.

## Evolution of iron ore fines cash cost, freight and expenses




[1] Ex-ROM and ex-royalties.
[2] Net of depreciation.

## Evolution of iron ore fines sustaining per ton




## Iron ore pellets

Adjusted EBITDA for pellets in 3Q17 was US$ 679 million, 6.1% higher than the US$ 640 million recorded in 2Q17. The increase of US$ 39 million was mainly a result of higher sales prices (US$ 40 million), higher volumes (US$ 31 million) and lower costs[18] (US$ 24 million), which

[18] After adjusting for the effects of higher volumes and exchange rate variations.

were partially offset by lower dividends received[19] in 3Q17 (US$ 37 million) and higher expenses (US$ 13 million).

Net sales revenues for pellets amounted to US$ 1.441 billion in 3Q17, increasing US$ 110 million from the US$ 1.331 billion recorded in 2Q17 as a result of higher realized sales prices (US$ 40 million), which increased from an average of US$ 106.7 per ton in 2Q17 to US$ 109.7 per ton in 3Q17, and higher sales volumes (US$ 70 million). Sales volumes increased from 12.5 Mt in 2Q17 to 13.1 Mt in 3Q17.

CFR pellet sales of 2.9 Mt in 3Q17 represented 22% of total pellet sales, in line with 2Q17. FOB pellet sales amounted to 10.2 Mt, 4% higher than the 9.8 Mt recorded in 2Q17.

Pellet CFR/FOB prices increased by US$ 3.0/t to US$ 109.7/t in 3Q17, whereas the Platts IODEX iron ore reference price (CFR China) increased by US$ 8.0/t in the quarter, mainly as a result of the negative impact of contracts with lagged prices.

Pellet costs totaled US$ 733 million (or US$ 827 million with depreciation charges) in 3Q17. After adjusting for the effects of higher volumes (US$ 39 million) and exchange rate variations (US$ 6 million), costs decreased by US$ 24 million vs. 2Q17, mainly due to lower leasing costs, which are based on a pre-determined formula linked to Platts IODEX with a one-month lag and pellet premiums. Average Platts used as a reference for the leasing contracts decreased from US$ 73.6/t in 2Q17 to US$ 66.7/t in 3Q17.

Pre-operating and stoppage expenses for pellets were US$ 3 million in 3Q17, in line with 2Q17. SG&A and other expenses totaled US$ 21 million, increasing US$ 11 million when compared to 2Q17 mainly due to the write-off of materials and inventories.

EBITDA unit margin for pellets was US$ 51.7/t in 3Q17, remaining in line with 2Q17.

**Pellets - EBITDA**

| | 3Q17 | | 2Q17 | |
|---|---|---|---|---|
| | US$ million | US$/wmt | US$ million | US$/wmt |
| Net Revenues / Realized Price | 1,441 | 109.7 | 1,331 | 106.7 |
| Dividends Received (Leased pelletizing plants) | 0 | 0.0 | 37 | 3.0 |
| Cash Costs (Iron ore, leasing, freight, overhead, energy and other) | (733) | (55.8) | (712) | (57.1) |
| Expenses (SG&A, R&D and other) | (29) | (2.2) | (16) | (1.3) |
| EBITDA | 679 | 51.7 | 640 | 51.3 |

## Iron ore fines and pellets cash break-even

Quarterly iron ore fines and pellets EBITDA break-even, measured by unit cash costs and expenses on a landed-in-China basis (and adjusted for quality, pellets margins differential and moisture, excluding ROM), decreased US$ 4.4/t when compared to 2Q17, totaling US$

[19] Dividends from leased pelletizing plants, which are usually paid every 6 months (in 2Q and 4Q).

30.0/dmt in 3Q17[20], mainly as a result of the abovementioned higher premiums, lower discounts and lower C1 cash costs.

Quarterly iron ore and pellets cash break-even on a landed-in-China basis, including sustaining capex per ton of US$ 2.9/dmt, decreased from US$ 37.2/dmt in 2Q17 to US$ 32.9/dmt in 3Q17.

**Iron ore and pellets cash break-even landed in China[1]**

| *US$/t* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Vale's iron ore cash cost (ex-ROM, ex-royalties), FOB (US$ /t) | 14.5 | 15.2 | 13.0 |
| Iron ore fines freight cost (ex-bunker oil hedge) | 15.0 | 14.9 | 12.0 |
| Iron ore fines distribution cost[2] | 0.7 | 0.5 | 0.2 |
| Iron ore fines expenses[3] & royalties | 3.5 | 3.9 | 3.2 |
| Iron ore fines moisture adjustment | 2.9 | 3.1 | 2.5 |
| Iron ore fines quality adjustment | (5.6) | (1.2) | (1.5) |
| **Iron ore fines EBITDA break-even (US$/dmt)** | **31.0** | **36.4** | **29.4** |
| Iron ore fines pellet adjustment | (1.0) | (1.9) | (1.3) |
| **Iron ore fines and pellets EBITDA break-even (US$/dmt)** | **30.0** | **34.4** | **28.1** |
| Iron ore fines sustaining investments | 2.9 | 2.8 | 2.5 |
| **Iron ore fines and pellets cash break-even landed in China (US$/dmt)** | **32.9** | **37.2** | **30.6** |

[1] Measured by unit cost + expenses + sustaining investment adjusted for quality

[2] Distribution cost per ton calculation method has been revised and adjusted retroactively, now dividing by total sales volume instead of CFR sales volume

[3] Net of depreciation

## Manganese and ferroalloys

Adjusted EBITDA of manganese ore and ferroalloys was US$ 57 million in 3Q17, US$ 24 million higher than the US$ 33 million in 2Q17, mainly due to higher volumes (US$ 25 million).

Net sales revenues for manganese ore increased to US$ 87 million in 3Q17 from US$ 71 million in 2Q17 mainly due to higher sales volumes (US$ 23 million), which were partially offset by lower sales prices (US$ 7 million) in 3Q17. Volumes sold of manganese ore reached 498,000 t in 3Q17 vs. 392,000 t in 2Q17.

Net sales revenues for ferroalloys decreased to US$ 44 million in 3Q17 from the US$ 46 million in 2Q17, mainly due to lower sales volumes (US$ 6 million), which were partially offset by higher sales prices (US$ 4 million). Volumes sold of ferroalloys decreased to 32,000 t in 3Q17 from the 36,000 t recorded in 2Q17.

Manganese ore and ferroalloys costs totaled US$ 71 million (or US$ 77 million with depreciation charges) in 3Q17. Costs decreased US$ 3 million when compared to 2Q17 after adjusting for the effect of volumes (-US$ 8 million) and exchange rate variations (US$ 1 million).

[20] The calculation method of the Distribution costs per ton has been revised and numbers adjusted retroactively to reflect the changes. Distribution costs are divided by total sales volumes in the new criteria instead of CFR sales volumes.

## Volume sold by destination – Iron ore and pellets

| *'000 metric tons* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| **Americas** | **9,306** | **9,229** | **9,275** |
| Brazil | 6,710 | 6,493 | 7,384 |
| Others | 2,596 | 2,736 | 1,891 |
| **Asia** | **65,854** | **56,747** | **61,353** |
| China | 52,355 | 46,511 | 49,061 |
| Japan | 8,127 | 5,516 | 7,512 |
| Others | 5,372 | 4,720 | 4,780 |
| **Europe** | **10,226** | **12,802** | **12,421** |
| Germany | 4,309 | 5,270 | 4,753 |
| France | 1,678 | 2,117 | 1,549 |
| Others | 4,239 | 5,415 | 6,119 |
| **Middle East** | **2,153** | **1,686** | **2,274** |
| **Rest of the World** | **2,390** | **1,274** | **1,260** |
| **Total** | **89,929** | **81,738** | **86,583** |

## Selected financial indicators - Ferrous Minerals

| *US$ million* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Net Revenues | 6,820 | 5,114 | 4,959 |
| Costs[1] | (2,967) | (2,755) | (2,293) |
| Expenses[1] | (116) | (94) | (95) |
| Pre-operating and stoppage expenses[1] | (49) | (42) | (49) |
| R&D expenses | (27) | (28) | (29) |
| Dividends and interests on associates and JVs | 13 | 37 | - |
| Adjusted EBITDA | 3,674 | 2,232 | 2,493 |
| Depreciation and amortization | (456) | (427) | (399) |
| Adjusted EBIT | 3,205 | 1,768 | 2,094 |
| Adjusted EBIT margin (%) | 47.0 | 34.6 | 42.2 |

[1] Net of depreciation and amortization

## Selected financial indicators - Iron ore fines

| - | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Adjusted EBITDA (US$ million) | 2,888 | 1,502 | 1,989 |
| Volume Sold (Mt) | 76.4 | 69.0 | 74.2 |
| Adjusted EBITDA (US$/t) | 37.8 | 21.8 | 26.8 |

## Selected financial indicators - Pellets

| - | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Adjusted EBITDA (US$ million) | 679 | 640 | 462 |
| Volume Sold (Mt) | 13.1 | 12.5 | 12.0 |
| Adjusted EBITDA (US$/t) | 51.7 | 51.3 | 38.5 |

## Selected financial indicators - Ferrous ex Manganese and Ferroalloys

| - | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Adjusted EBITDA (US$ million) | 3,617 | 2,199 | 2,489 |
| Volume Sold (Mt)[1] | 89.9 | 81.7 | 86.6 |
| Adjusted EBITDA (US$/t) | 40.2 | 26.9 | 28.7 |

[1] Volume including iron ore fines, pellets and ROM

# Base Metals

Adjusted EBITDA was US$ 561 million in 3Q17, increasing US$ 175 million vs. 2Q17, mainly as a result of higher nickel and copper realized prices (US$ 178 million), lower costs (US$ 44 million), mainly related to lower costs associated with scheduled maintenance shutdown work, and higher volumes (US$ 4 million), which were partially offset by unfavourable exchange rate variations[21] (US$ 45 million) and higher expenses[22] (US$ 8 million).

## SALES REVENUES AND VOLUMES

Nickel sales revenues were US$ 752 million in 3Q17, increasing US$ 66 million vs. 2Q17 as a result of higher nickel realized prices in 3Q17 (US$ 62 million) and a favourable mix of products (US$ 4 million). Sales volumes totaled 71 kt, in line with 2Q17.

Copper sales revenues were US$ 683 million in 3Q17, increasing US$ 148 million vs. 2Q17 as a result of higher copper realized prices in 3Q17 (US$ 116 million) and higher sales volumes (US$ 33 million). Sales volumes were 110 kt in 3Q17, 7 kt higher than in 2Q17.

Sales revenues from gold contained as a by-product in nickel and copper concentrates amounted to US$ 161 million in 3Q17, increasing by US$ 22 million vs. 2Q17 mainly as a result of increased delivery of gold by-products from our North Atlantic nickel operations in 3Q17. Sales volumes of gold as a by-product amounted to 138,000 oz in 3Q17, 21,000 oz higher than in 2Q17.

PGMs (platinum group metals) sales revenues totalled US$ 72 million in 3Q17, decreasing US$ 5 million vs. 2Q17. Sales volumes were 85,000 oz in 3Q17 vs. 93,000 oz in 2Q17. The PGMs sales volume decrease was mainly due to the lower sales volume of palladium.

Cobalt sales revenue totalled US$ 79 million in 3Q17, increasing US$ 19 million vs. 2Q17, mainly due to higher sales volumes (US$ 10 million) and higher cobalt prices (US$ 9 million). Sales volumes of cobalt by-product amounted to 1,482 t in 3Q17, 210 t higher than in 2Q17.

**Net operating revenue by product**

| *US$ million* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Nickel | 752 | 686 | 797 |
| Copper | 683 | 535 | 452 |
| Gold as by-product | 161 | 139 | 179 |
| Silver as by-product | 7 | 9 | 9 |
| PGMs | 72 | 77 | 104 |
| Cobalt | 79 | 60 | 28 |
| Others | 8 | 6 | 10 |
| **Total** | **1,762** | **1,512** | **1,579** |

[21] Exchange rate variations in COGS and expenses.
[22] Net of exchange rate variations.

## REALIZED NICKEL PRICES

The realized nickel price was US$ 10,554/t, US$ 26/t higher than the average LME nickel price of US$ 10,528/t in 3Q17.

Vale’s nickel products are divided into two categories, refined nickel (pellets, powder, cathode, FeNi, Utility Nickel™ and Tonimet™) and intermediates (concentrates, matte, NiO and NHC).

Refined nickel products have higher nickel content, typically commanding a premium over the average LME nickel price, whereas nickel intermediates are less pure as they are only partially processed. Due to this difference, intermediate products are sold at a discount. The amount of the discount will vary depending on the amount of processing still required, product forms and level of impurities. The sales product mix is an important driver of nickel price realization.

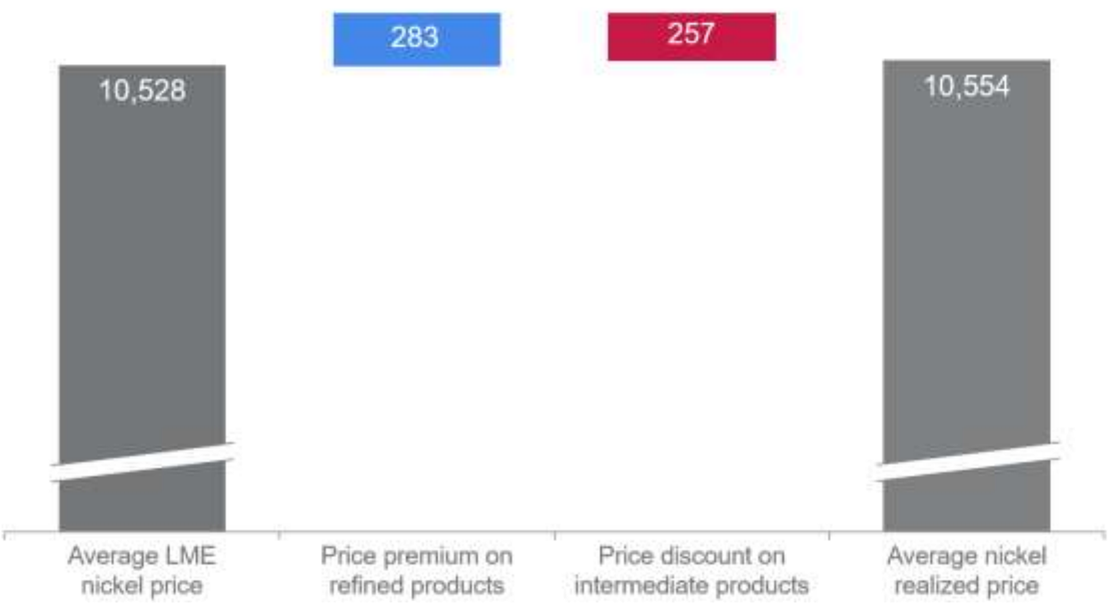
Refined nickel sales accounted for 85% of total nickel sales in 3Q17. Sales of intermediate products accounted for the balance.

The realized nickel price differed from the average LME price in 3Q17 due to the following impacts:

- Premium for refined finished nickel products averaged US$ 333/t, with an impact on the aggregate realized nickel price of US$ 283/t;
- Discount for intermediate nickel products averaged US$ 1,713/t, with an impact on the aggregate realized nickel price of -US$ 257/t.

**Price realization – nickel**

US$/t, 3Q17



## REALIZED COPPER PRICES

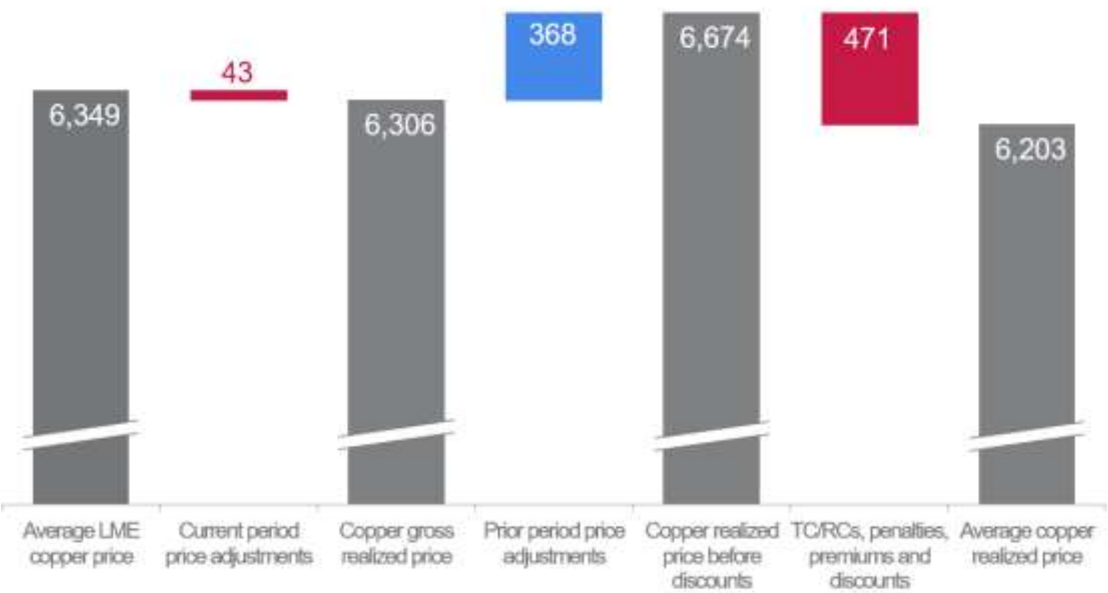
The realized copper price was US$ 6,203/t, US$ 146/t lower than the average LME copper price of US$ 6,349/t in 3Q17. Vale's copper products are mostly intermediate forms of copper, predominantly in the form of concentrate, which is sold at a discount to the LME price. These products are sold on a provisional pricing basis during the quarter with final prices determined in a future period, generally one to four months forward[23].

The realized copper price differed from the average LME price in 3Q17 due to the following impacts:

- Current period price adjustments: mark-to-market of invoices still open in the quarter based on the copper price forward curve[24] at the end of the quarter (-US$ 43/t);
- Prior period price adjustment: variance between the price used in final invoices (and in the mark-to-market of invoices from previous quarters still open at the end of the quarter) and the provisional prices used for sales in previous quarters (US$ 368/t);
- TC/RCs, penalties, premiums and discounts for intermediate products (-US$ 471/t).

**Price realization – copper**

US$/t, 3Q17




[23] On September 30th, 2017, Vale had provisionally priced copper sales totaling 96,373 tons valued at a LME forward price of US$ 6,469/t, subject to final pricing over the next several months.

[24] Includes a small number of final invoices that were provisionally priced and settled within the quarter.

### Average prices

| *US$/ metric ton* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Nickel - LME | 10,528 | 9,225 | 10,265 |
| Copper - LME | 6,349 | 5,662 | 4,772 |
| Nickel | 10,554 | 9,603 | 10,317 |
| Copper | 6,203 | 5,200 | 4,218 |
| Platinum (US$/oz) | 917 | 967 | 1,060 |
| Gold (US$/oz) | 1,175 | 1,188 | 1,383 |
| Silver (US$/oz) | 15.87 | 16.38 | 15.15 |
| Cobalt (US$/t) | 53,428 | 46,918 | 26,084 |

## SALES VOLUME PERFORMANCE

Sales volumes of nickel were 71 kt in 3Q17, in line with 2Q17 and 6 kt lower than in 3Q16. Sales volumes were in line with 2Q17 despite higher nickel production, mainly in response to the larger drawdown of finished nickel inventories in 2Q17.

Sales volumes of copper totaled 110 kt in 3Q17, 7 kt higher than in 2Q17 and 3 kt higher than in 3Q16. The increase over 2Q17 was mainly due to the higher sales of copper by-product from our North Atlantic nickel operations.

Sales volumes of gold as a by-product totaled 138,000 oz in 3Q17, 21,000 oz higher than in 2Q17, mainly due to increased delivery of gold by-products from our North Atlantic nickel operations in 3Q17.

### Volume sold

| *'000 metric tons* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Nickel operations & by products | | | |
| Nickel | 71 | 71 | 77 |
| Copper | 37 | 31 | 42 |
| Gold as by-product ('000 oz) | 34 | 17 | 24 |
| Silver as by-product ('000 oz) | 242 | 363 | 388 |
| PGMs ('000 oz) | 85 | 93 | 130 |
| Cobalt (metric ton) | 1,482 | 1,272 | 1,069 |
| Copper operations & by products | | | |
| Copper | 73 | 72 | 65 |
| Gold as by-product ('000 oz) | 104 | 100 | 104 |
| Silver as by-product ('000 oz) | 223 | 204 | 221 |

## Costs and expenses

Costs and expenses increased US$ 75 million in 3Q17, mainly due to higher volumes (US$ 66 million), the unfavorable impact of the exchange rate variation[25] (US$ 45 million) and higher expenses[26] (US$ 8 million), which were partially offset by lower costs (US$ 44 million), mainly related to lower costs associated with scheduled maintenance shutdown work.

[25] Exchange rate variations in COGS and expenses.
[26] Net of exchange rate variations.

## COSTS OF GOODS SOLD (COGS)

Costs totaled US$ 1.129 billion in 3Q17 (or US$ 1.524 billion including depreciation). Costs decreased by US$ 44 million vs. 2Q17 after adjusting for the effects of higher sales volumes (US$ 66 million) and exchange rate variations[27] (US$ 42 million).

### BASE METALS COGS - 2Q17 x 3Q17

| | | Variance drivers | | | | |
|---|---|---|---|---|---|---|
| *US$ million* | 2Q17 | Volume | Exchange rate | Others | Total variation 2Q17 x 3Q17 | 3Q17 |
| **Total costs before depreciation and amortization** | **1,065** | **66** | **42** | **(44)** | **64** | **1,129** |
| Depreciation | 387 | 21 | 23 | (36) | 8 | 395 |
| **Total** | **1,452** | **87** | **65** | **(80)** | **72** | **1,524** |

## UNIT CASH COST

North Atlantic operations unit cash cost decreased from the US$ 5,388/t recorded in 2Q17 to US$ 4,484/t in 3Q17, mainly due to lower costs related to the scheduled maintenance shutdown at the Sudbury operations, and the favourable impact of higher by-product prices.

PTVI unit cash cost decreased from the US$ 6,827/t recorded in 2Q17 to US$ 5,866/t in 3Q17, mainly due to lower inventory adjustments, lower energy costs and higher delivery volumes.

VNC unit cost net of by-product credits decreased from the US$ 11,222/t recorded in 2Q17 to US$ 9,841/t in 3Q17, mainly due to the favorable impact of 9% higher production on unit costs and higher by-product volumes and prices.

Onça Puma unit cash cost decreased from the US$ 10,164/t recorded in 2Q17 to US$ 7,944/t in 3Q17, mainly due to the favourable impact of higher production volumes on unit costs, since 2Q17 was impacted by the scheduled maintenance shutdown.

Sossego unit cost increased from the US$ 2,611/t recorded in 2Q17 to US$ 2,951/t in 3Q17, mainly due to the unfavorable impact of lower production volume on unit costs, higher costs associated with materials and lower by-product volumes.

Salobo unit costs decreased from the US$ 1,274/t recorded in 2Q17 to US$ 792/t in 3Q17, mainly due to the dilution of fixed costs on higher volumes as well as the favourable impact of higher by-product prices and volumes.

[27] Exchange rate variations in COGS only.

### Base Metals – unit cash cost of sales per operation, net of by-product credits[1]

| US$ / t | 3Q17 | 2Q17 | 3Q16[4] |
|---|---|---|---|
| **NICKEL** | | | |
| North Atlantic operations[2] | 4,484 | 5,388 | 4,136 |
| PTVI[2] | 5,866 | 6,827 | 5,184 |
| VNC[3] | 9,841 | 11,222 | 13,141 |
| Onça Puma | 7,944 | 10,164 | 8,166 |
| **COPPER** | | | |
| Sossego | 2,951 | 2,611 | 2,741 |
| Salobo | 792 | 1,274 | 935 |

[1] North Atlantic figures includes Clydach and Acton refining costs.

[2] Prior periods restated to include royalties, freight and other period costs.

[3] Unit cash cost restated for periods prior to 1Q17 to exclude pre-operating and other operating expenses.

[4] We realigned our unit cash cost of sales methodology in 1Q17 to include all freight, royalty and other costs reported as cost of goods sold and to exclude other operating expenses and pre-operating expenses for certain operations. Considering the previous criteria, the unit cash cost figures would be as follows: North Atlantic, US$ 3,403/t in 3Q16; PTVI, US$ 5,192/t in 3Q16, and; VNC, US$ 12,425/t in 3Q16.

## EXPENSES

SG&A and other expenses, excluding depreciation, totaled US$ 52 million, an increase of US$ 16 million when compared to the US$ 36 million in 2Q17 due to one-off expenses associated with net losses on the sale of materials (US$ 4 million), the one-off provision for severance package in Canadian operations (US$ 3 million), one-off other corporate expenses for IT (US$ 3 million), the quarterly increase in Stobie's expenses associated with care and maintenance (US$ 1 million) and a one-off provision for doubtful accounts receivable in VNC (US$ 1 million). We expect further expenses related to Birchtree mine being placed under care and maintenance in the 4Q17 (estimated at US$ 4 million).

There were no pre-operating and stoppage expenses as, due to its successful ramp-up, Long Harbour's production costs have been fully allocated to COGS instead of pre-operating expenses.

## Performance by operation

The breakdown of the Base Metals EBITDA components per operation is detailed below.

### Base Metals EBITDA overview – 3Q17

| *US$ million* | North Atlantic | PTVI Site | VNC Site | Onça Puma | Sossego | Salobo | Other | Total Base Metals |
|---|---|---|---|---|---|---|---|---|
| **Net Revenues** | **834** | **157** | **141** | **68** | **170** | **424** | **(32)** | **1,762** |
| Costs | (554) | (119) | (144) | (52) | (87) | (159) | (14) | (1,129) |
| SG&A and others | (35) | (2) | (2) | (5) | (5) | (3) | - | (52) |
| R&D | (8) | (2) | (2) | - | (4) | (2) | (2) | (20) |
| **EBITDA** | **237** | **34** | **(7)** | **11** | **74** | **260** | **(48)** | **561** |
| Ni deliveries (kt) | 33 | 20 | 11 | 7 | - | - | - | 71 |
| Cu deliveries (kt) | 37 | - | - | -6 | 24 | 49 | - | 110 |

EBITDA

Details of Base Metals' adjusted EBITDA by operation are as follows:

(i) The North Atlantic operations EBITDA was US$ 237 million, increasing by US$ 114 million vs. 2Q17 mainly due to higher nickel and copper realized prices (US$ 83 million) and lower costs related to the scheduled maintenance shutdown (US$ 44 million).

(ii) PTVI's EBITDA was US$ 34 million, increasing by US$ 24 million vs. 2Q17 mainly due to a reversal of an inventory provision (US$ 17 million) and higher realized nickel prices (US$ 2 million).

(iii) VNC's EBITDA was negative US$ 7 million, increasing by US$ 33 million when compared to 2Q17, mainly as a result of higher realized nickel prices (US$ 27 million), higher cobalt volumes (US$ 11 million) and higher cobalt prices (US$ 3 million), partially offset by the unfavorable impact of exchange rate variation (US$ 7 million).

(iv) Onça Puma's EBITDA was US$ 11 million, increasing US$ 17 million vs. 2Q17, mainly as a result of lower costs (US$ 16 million).

(v) Sossego's EBITDA was US$ 74 million, increasing US$ 13 million vs. 2Q17, mainly as a result of higher realized copper prices (US$ 27 million), partially offset by lower copper and by-product volumes (US$ 6 million) and higher costs (US$ 5 million).

(vi) Salobo's EBITDA was US$ 260 million, increasing US$ 71 million vs. 2Q17, mainly as a result of higher realized copper and by-product prices (US$ 54 million), higher by-product volumes (US$ 9 million) and lower costs (US$ 12 million).

## Base Metals – EBITDA by operation

| US$ million | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| North Atlantic operation[1, 3] | 237 | 123 | 339 |
| PTVI | 34 | 10 | 48 |
| VNC | (7) | (40) | (39) |
| Onça Puma | 11 | (6) | (49) |
| Sossego | 74 | 61 | 32 |
| Salobo | 260 | 189 | 281 |
| Others[2, 3] | (48) | 49 | (12) |
| **Total** | **561** | **386** | **600** |

[1] Includes the operations in Canada and in the United Kingdom.

[2] Includes the PTVI and VNC off-takes, intercompany sales, purchase of finished nickel and corporate center allocation for Base Metals.

[3] Reflecting a realignment of our reporting for the North Atlantic operations and unit cash cost methodology, the EBITDA in previous periods would change: North Atlantic would be US$ 285 million in 3Q16; Others would be US$ 42 million in 3Q16.

## Selected financial indicators - Base Metals

| *US$ million* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Net Revenues | 1,762 | 1,512 | 1,579 |
| Costs[1] | (1,129) | (1,065) | (1,047) |
| Expenses[1] | (52) | (36) | 117 |
| Pre-operating and stoppage expenses[1] | - | (12) | (26) |
| R&D expenses | (20) | (13) | (23) |
| Dividends and interests on associates and JVs | - | - | - |
| Adjusted EBITDA | 561 | 386 | 600 |
| Depreciation and amortization | (398) | (397) | (403) |
| Adjusted EBIT | 163 | (11) | 197 |
| Adjusted EBIT margin (%) | 9.3 | (0.7) | 12.5 |

[1] Net of depreciation and amortization

# Coal

## EBITDA

Adjusted EBITDA for the Coal business segment was US$ 46 million in 3Q17, US$ 111 million lower than the US$ 157 million recorded in 2Q17, mainly due to: (i) lower realized prices (US$ 97 million), impacted by provisional prices set in 2Q17, which considered stability in future price environment, and were later adjusted by lower realized prices upon cargo delivery in 3Q17 and (ii) higher tariff costs in the Nacala Logistics Corridor (US$ 80 million), which were partially offset by (i) the provision of Nacala Logistics Corridor's debt service to Vale (US$ 67 million) and (ii) lower costs at the mine and plants (US$ 16 million).

## SALES REVENUES AND VOLUMES

Net sales revenues of metallurgical coal decreased to US$ 266 million in 3Q17 from US$ 414 million in 2Q17, as a result of lower sales prices (US$ 111 million) and lower sales volumes (US$ 38 million). Net sales revenues of thermal coal increased to US$ 94 million in 3Q17 from US$ 67 million in 2Q17 as a result of higher volumes (US$ 14 million) and sales prices (US$ 13 million).

Sales volumes of metallurgical coal totaled 1.869 Mt in 3Q17, decreasing 9% vs. 2Q17, as a result of lower production of metallurgical coal, which was impacted by a combination of the geological characteristics of the coal feed plus the continued optimization of the Coal Handling and Preparation Plants (CHPP1 and CHPP2). Sales volumes of thermal coal totaled 1.279 Mt in 3Q17, 20% higher than in 2Q17. The sales mix in 3Q17 was composed of 59% metallurgical coal and 41% thermal coal. We expect the share of metallurgical coal to return to between 60%-65% of overall production.

## REALIZED PRICES

### Metallurgical coal

In 3Q17, metallurgical coal sales were priced as follows: (i) 31% based on index lagged prices; (ii) 14% based on a quarterly index benchmark; and (iii) 55% based on fixed prices (spot shipments and trial cargos).

The metallurgical coal realized price decreased US$ 59.3/t, from US$ 201.1/t in 2Q17 to US$ 141.8/t in 3Q17, mainly due to: (i) negative adjustments on provisional prices set at higher levels in 2Q17 but realized at lower levels in 3Q17 vs. the opposite effect in 2Q17 (US$ 20.9/t); (ii) higher exposure to spot with lower prices in 3Q17 in markets outside China vs. the opposite effect in 2Q17 (US$ 12.1/t); and (iii) lower lagged prices in 3Q17 vs. the opposite effect in 2Q17 (US$ 12.0/t).

### Metallurgical coal prices

| *US$/ metric ton* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Premium Low Vol HCC index price[1] | 188.8 | 190.3 | 135.6 |
| HCC benchmark price | 170.3 | N/A | 92.5 |
| Vale's metallurgical coal realized price | 141.8 | 201.2 | 91.0 |

[1] Platts Premium Low Vol Hard Coking Coal FOB Australia.

Price realization in 3Q17 for metallurgical coal was impacted by:

- Quality adjustment over the index reference price due to different product characteristics as well as value in use adjustments associated with ash content, which negatively affected prices in 3Q17 by US$ 2.2/t;
- Sales not evenly spread across the quarter, which negatively impacted prices by US$ 4.3/t;
- Sales using fixed prices (spot shipments and trial cargos), quarterly benchmark and lagged index prices which negatively impacted prices in 3Q17 by US$ 18.8/t, partially due to the strong trialing campaign and prompt sales outside China where the market was not as tight as the Chinese market in 3Q17;
- Sales from the previous quarter with provisional prices adjusted in 3Q17 to lower levels, which negatively impacted prices by US$ 11.6/t, as sales made at the beginning of 2Q17 were higher priced;
- Freight differentials, which negatively impacted prices in 3Q17 by US$ 0.2/t, mainly due to differentials between Vale's freight rates contracted from Mozambique to the delivery ports and the freight rates set in the sales contracts, which are determined considering delivery from the index reference port;
- Other adjustments, including penalties (related to moisture and ash content), which negatively impacted prices in 3Q17 by US$ 9.9/t.

Price indexes have been extremely volatile since the end of 2016. This behavior associated with our pricing system caused significant variations in all realized quarterly prices of 2017. However, the ratio of our 9M17 realized price and the year-to-date average of Platts index PLV HCC was 94%, smoothing the effect of volatility and reflecting the fair value of our product portfolio.

**Price realization – Metallurgical coal from Mozambique**


## Thermal coal

In 3Q17, thermal coal sales were priced as follow: (i) 82% based on index prices and (ii) 18% based on fixed prices.

The realized price of thermal coal was US$ 73.8/t in 3Q17, 16.4% higher than in 2Q17, and in line with the 14.3% increase of the reference index in the period.

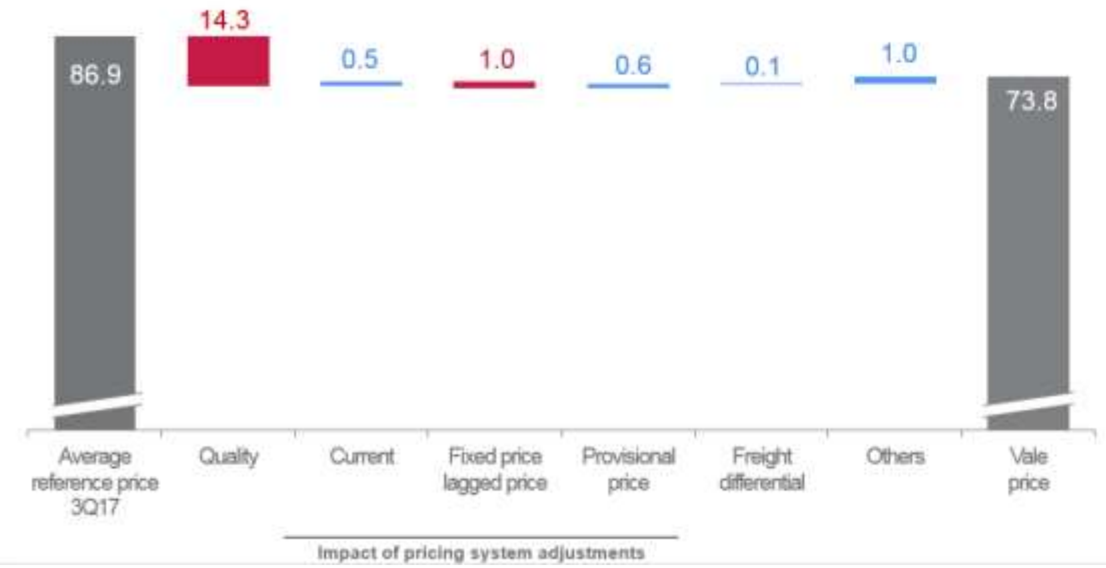
Price realization for thermal coal was impacted by:

- Quality adjustment against the reference index given our lower calorific values and higher ash levels, which negatively impacted prices by US$ 14.3/t;
- Sales not evenly spread across the quarter, which positively impacted prices by US$ 0.5/t;
- Fixed price and lagged index pricing shipments, which negatively impacted prices by US$ 1.0/t;
- Sales made in the previous quarter with provisional prices adjusted in 3Q17, which positively impacted prices by US$ 0.6/t as prices increased in 3Q17 compared to 2Q17;
- Freight differentials which positively impacted prices in 3Q17 by US$ 0.1/t, mainly due to differentials between Vale's freight rates contracted from Mozambique to the delivery ports and the freight rates set in the sales contracts, which are determined considering delivery from the index reference port;

- Other adjustments, mainly commercial premiums/discounts that positively impacted prices by US$ 1.0/t.

### Price realization – Thermal coal from Mozambique

US$/t, 3Q17




## COSTS AND EXPENSES

Coal costs were impacted in 2Q17 and 3Q17 as a result of the gradual introduction of the Nacala Logistics Corridor (NLC)'s tariff. The NLC was deconsolidated in March 2017 upon completion of the equity transaction with Mitsui. In 2Q17, after the deconsolidation, a tariff was established to cover operation costs, investments, working capital and taxes. In 3Q17, NLC's tariff started to include a parcel of debt service and amortization, in anticipation for the signing and closing of the Project Finance. Part of that tariff increase will service the Project Finance debt, whereas part of it will remunerate Vale's remaining debt instruments to the NLC (the Project Finance will repay part, but not all, of those debt instruments). The portion of the tariff increase allocated to Vale's own instruments partially offsets the increase in tariff costs and is recognized back into Coal Adjusted EBITDA.

Proforma Coal costs and expenses[28] totaled US$ 314 million in 3Q17 (or US$ 370 million with depreciation charges), decreasing US$ 10 million against the US$ 324 million recorded in 2Q17, mainly as a result of lower mine and plant costs (US$ 16 million) and lower expenses (US$ 6 million), which were partly offset by higher sales volumes (US$ 3 million) and the net effect of the higher tariff at the NLC (US$ 13 million, being US$ 80 million tariff increase less US$ 67 million provisioned for debt service payments to Vale).

[28] Cost and expenses plus the positive impact of the provision for NLC's debt service to Vale.

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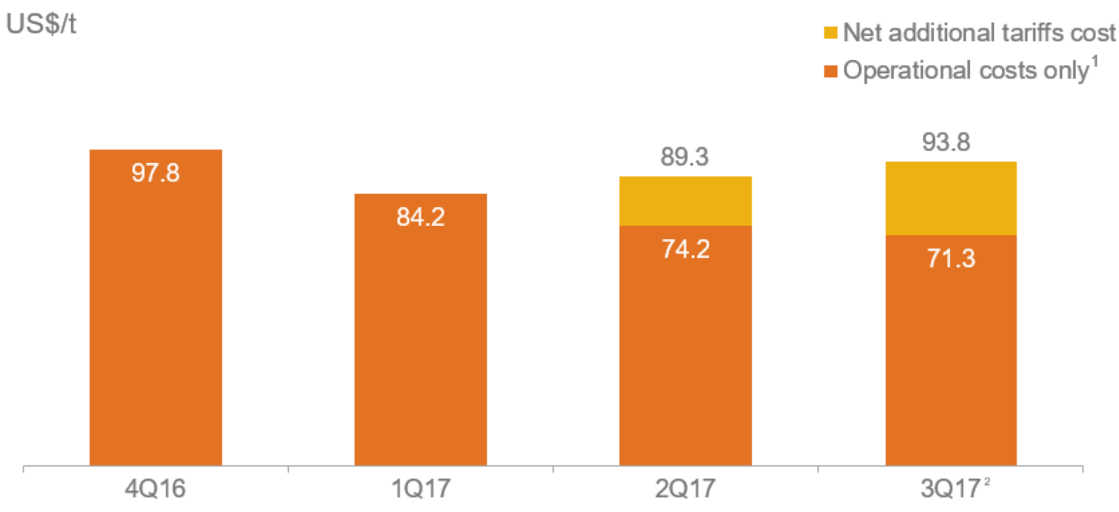
Proforma production cost per ton of coal shipped through the Nacala port[29] increased by US$ 4.5/t, from US$ 89.3/t in 2Q17 to US$ 93.8/t in 3Q17, due to the impact of higher tariffs charged by the NLC in 3Q17 (US$ 32.8/t), which were partially offset by the provision for NLC's debt service to Vale (US$ 24.8/t).

After excluding the effects of the tariff related to non-operational costs, production cost per ton[30] would have been US$ 71.3/t in 3Q17, 3.8% lower than the US$ 74.2/t recorded in 2Q17.

### Proforma production costs through the Nacala Logistics Corridor




[1] Includes mine and logistics operational costs.
[2] Includes total tariff charged by the Nacala Logistics Corridor (NLC) excluding its operational costs minus the provision of the debt service related to Vale's shareholder loans made to the NLC.

### Production Cost

| *US$/ metric ton* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Cash cost through Nacala (operational costs only) | 71.3 | 74.2 | 87.3 |
| Cash cost through Nacala (full tariff) | 93.8 | 89.3 | N/A |
| Tariff proceeds back to Vale | 24.8 | 0.0 | 0.0 |
| Cash Cost through Beira | 108.3 | 124.5 | 153.9 |

[1] Includes total tariff charged by the Nacala Logistic Corridor (NLC) minus the provision of the debt service related to Vale's shareholder loan made to NLC

### Net operating revenue by product

| *US$ million* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Metallurgical coal | 266 | 414 | 105 |
| Thermal coal | 94 | 67 | 58 |
| **Total** | **360** | **481** | **163** |

[29] FOB cash cost at the port (mine, plant, railroad and port) ex-royalties and demurrage costs less the positive impact of the provision for NLC's debt service to Vale.
[30] Operational cost of mine and logistics only.

## Average prices

| *US$/ metric ton* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Metallurgical coal | 141.8 | 201.1 | 91.0 |
| Thermal coal | 73.8 | 63.4 | 45.8 |

## Volume sold

| *'000 metric tons* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Metallurgical coal | 1,869 | 2,057 | 1,156 |
| Thermal coal | 1,279 | 1,064 | 1,271 |
| **Total** | **3,148** | **3,121** | **2,427** |

## Selected financial indicators - Coal

| *US$ million* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Net Revenues | 360 | 481 | 163 |
| Costs[1] | (368) | (305) | (157) |
| Expenses[1] | (9) | (11) | 3 |
| Pre-operating and stoppage expenses[1] | - | (4) | (13) |
| R&D expenses | (4) | (4) | (3) |
| Dividends and interests on associates and JVs | 67 | - | - |
| Adjusted EBITDA | 46 | 157 | (7) |
| Depreciation and amortization | (56) | (74) | (41) |
| Adjusted EBIT | (77) | 83 | (48) |
| Adjusted EBIT margin (%) | (21) | 17 | (29) |

[1] Net of depreciation and amortization

# Financial indicators of non-consolidated companies

For selected financial indicators of the main non-consolidated companies, see our quarterly financial statements on www.vale.com / investors / information to the market / financial statements.

# Conference call and webcast

Vale will host a conference call/webcast in Portuguese, with simultaneous translation into English, on October 26th, 2017, at 11:00 a.m. Rio de Janeiro time. (9:00 a.m. US Eastern Daylight Time, 2:00 p.m. British Standard Time). Vale clarifies that the questions will be answered in the same language of the questions. Therefore, it will be possible to ask questions in both languages, English and Portuguese.

Information on dial-in to conference calls/webcast:

Conference in Portuguese, with simultaneous translation into English:
Participants from Brazil: (55 11) 3193-1001 or (55 11) 2820-4001
Participants from the US: (1 888) 700-0802 or (1 800) 492-3904
Participants from other countries: (1 786) 924-6977 or (1 646) 828-8246
Access code: VALE

Instructions for participation will be available on the website: www.vale.com/investors. A podcast will be available on Vale's Investor Relations website.

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# ANNEX 1 – SIMPLIFIED FINANCIAL STATEMENTS

## Income statement

| *US$ million* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| **Net operating revenue** | **9,050** | **7,235** | **6,726** |
| Cost of goods sold | (5,412) | (5,102) | (4,345) |
| **Gross profit** | **3,638** | **2,133** | **2,381** |
| Gross margin (%) | 40.2 | 29.5 | 35.4 |
| Selling, general and administrative expenses | (129) | (132) | (137) |
| Research and development expenses | (91) | (80) | (80) |
| Pre-operating and stoppage expenses | (83) | (90) | (116) |
| Other operational expenses | (151) | (88) | 63 |
| Impairment and others results in non-current assets | (169) | (220) | (29) |
| **Operating profit** | **3,015** | **1,523** | **2,082** |
| Financial revenues | 152 | 116 | 30 |
| Financial expenses | (826) | (773) | (704) |
| Gains (losses) on derivatives, net | 365 | (91) | (39) |
| Monetary and exchange variation | 529 | (591) | (326) |
| Equity results in associates and joint ventures | 115 | (24) | 45 |
| Impairment and others results in associates and joint | (26) | (34) | (33) |
| **Income (loss) before taxes** | **3,324** | **126** | **1,055** |
| Current tax | (522) | (69) | (64) |
| Deferred tax | (457) | 118 | (370) |
| **Net Earnings (loss) from continuing operations** | **2,345** | **175** | **621** |
| Loss attributable to noncontrolling interest | (7) | (31) | (11) |
| Gain (loss) from discontinued operations | (108) | (128) | (35) |
| **Net earnings (attributable to the Company's stockholders)** | **2,230** | **16** | **575** |
| Earnings (loss) per share (attributable to the Company's stockholders - US$) | 0.43 | 0.00 | 0.11 |
| Diluted earnings (loss) per share (attributable to the Company's stockholders - US$) | 0.43 | 0.00 | 0.11 |

## Equity income (loss) by business segment

| *US$ million* | 3Q17 | % | 2Q17 | % | 3Q16 | % |
|---|---|---|---|---|---|---|
| Ferrous Minerals | 91 | 79.1 | 104 | (433.3) | 62 | 137.8 |
| Coal | 4 | 3.5 | 6 | (25.0) | 2 | 4.4 |
| Base Metals | 1 | 0.9 | - | - | 1 | 2.2 |
| Logistics | - | 0.0 | - | - | - | - |
| Steel | 9 | 7.8 | (114) | 475.0 | (35) | (77.8) |
| Others | 10 | 8.7 | (20) | 83.3 | 15 | 33.3 |
| **Total** | **115** | **100.0** | **(24)** | **100.0** | **45** | **100.0** |

## Balance sheet

| *US$ million* | 9/30/2017 | 6/30/2017 | 9/30/2016 |
|---|---|---|---|
| **Assets** | | | |
| **Current assets** | **19,889** | **19,862** | **19,507** |
| Cash and cash equivalents | 4,719 | 5,720 | 5,369 |
| Accounts receivable | 2,712 | 1,709 | 2,556 |
| Other financial assets | 2,255 | 2,193 | 322 |
| Inventories | 4,083 | 3,864 | 3,900 |
| Prepaid income taxes | 333 | 217 | 317 |
| Recoverable taxes | 1,125 | 1,302 | 1,603 |
| Others | 337 | 427 | 651 |
| Non-current assets held for sale and discontinued operation | 4,325 | 4,430 | 4,789 |
| **Non-current assets** | **13,417** | **12,968** | **10,518** |
| Judicial deposits | 2,005 | 939 | 1,073 |
| Other financial assets | 3,262 | 3,334 | 705 |
| Recoverable income taxes | 539 | 548 | 542 |
| Recoverable taxes | 651 | 733 | 688 |
| Deferred income taxes | 6,651 | 7,095 | 6,849 |
| Others | 309 | 319 | 661 |
| Fixed assets | 68,786 | 65,475 | 72,062 |
| **Total assets** | **102,092** | **98,305** | **102,087** |
| **Liabilities** | | | |
| **Current liabilities** | **10,717** | **10,582** | **10,847** |
| Suppliers and contractors | 4,013 | 3,746 | 3,751 |
| Loans and borrowing | 1,838 | 2,063 | 2,181 |
| Other financial liabilities | 634 | 876 | 1,426 |
| Taxes payable | 730 | 641 | 634 |
| Provision for income taxes | 309 | 257 | 154 |
| Provisions | 1,197 | 834 | 752 |
| Dividends and interest on capital | - | - | - |
| Liabilities related to associates and joint ventures | 301 | 295 | 329 |
| Others | 563 | 781 | 1,471 |
| Liabilities directly associated with non-current assets held for sale and discontinued operations | 1,132 | 1,089 | 149 |
| **Non-current liabilities** | **44,893** | **45,822** | **49,409** |
| Loans and borrowing | 23,952 | 25,789 | 29,268 |
| Other financial liabilities | 2,963 | 3,144 | 1,962 |
| Taxes payable | 5,168 | 4,862 | 4,977 |
| Deferred income taxes | 1,604 | 1,565 | 1,676 |
| Provisions | 6,877 | 6,053 | 6,608 |
| Liabilities related to associates and joint ventures | 725 | 724 | 795 |
| Gold stream transaction | 1,922 | 1,984 | 2,158 |
| Others | 1,682 | 1,701 | 1,965 |
| **Total liabilities** | **55,610** | **56,404** | **60,256** |
| **Stockholders' equity** | **46,482** | **41,901** | **41,831** |
| **Total liabilities and stockholders' equity** | **102,092** | **98,305** | **102,087** |

## Cash flow

| *US$ million* | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| **Cash flows from operating activities:** | | | |
| Net income (loss) before taxes on income | 3,324 | 126 | 1,056 |
| **Adjustments to reconcile** | | | |
| Depreciation, depletion and amortization | 920 | 904 | 853 |
| Equity Income | (115) | 24 | (46) |
| Other items from non-current assets | 169 | 220 | 29 |
| Impairment on assets and investments | 26 | 34 | 0 |
| Items of the financial result | (220) | 1,339 | 1,041 |
| **Variation of assets and liabilities** | | | |
| Accounts receivable | (936) | 1,380 | 127 |
| Inventories | (52) | (223) | (72) |
| Suppliers and contractors | 37 | 244 | 436 |
| Payroll and related charges | 205 | 199 | (15) |
| Tax assets and liabilities, net | (114) | 56 | (51) |
| Goldstream transaction | 0 | 0 | 524 |
| Others | (121) | (218) | (691) |
| **Net cash provided by operations** | **3,123** | **4,085** | **3,191** |
| Interest on loans and financing | (407) | (412) | (422) |
| Derivatives received (paid), net | (113) | (3) | (191) |
| Remuneration paid to debentures | 0 | (70) | 0 |
| Income taxes | (84) | (37) | (88) |
| Income taxes - settlement program | (124) | (120) | (116) |
| **Net cash provided by operating activities from continuing operations** | **2,395** | **3,443** | **2,374** |
| Net cash provided by operating activities from discontinued operations | 87 | (101) | 34 |
| **Net cash provided by operating activities** | **2,482** | **3,342** | **2,408** |
| **Cash flows from investing activities:** | | | |
| Additions to investments | (57) | (361) | (4) |
| Acquisition of subsidiary | 0 | 0 | 0 |
| Additions to property, plant and equipment | (856) | (890) | (1,149) |
| Proceeds from disposal of assets and investments | 198 | 8 | 326 |
| Dividends and interest on capital received from joint ventures and associates | 21 | 82 | 0 |
| Proceeds from goldstream transaction | 0 | 0 | 276 |
| Others | (131) | (85) | (4) |
| **Net cash used in investing activities from continued operations** | **(825)** | **(1,246)** | **(555)** |
| Net cash used in investing activities from discontinued operations | (71) | (81) | (103) |
| **Net cash used in investing activities** | **(896)** | **(1,327)** | **(658)** |
| Cash flows from financing activities: | | | |
| Loans and financing | | | |
| Additions | 351 | 300 | 1,573 |
| Repayments | (2,818) | (1,852) | (1,978) |
| Payments to shareholders: | | | |
| Dividends and interest on capital | 0 | (1,454) | 0 |
| Dividends and interest on capital attributed to noncontrolling interest | (116) | (5) | (129) |
| Other transactions with noncontrolling interest | 0 | 0 | 0 |
| **Net cash provided by (used in) financing activities from continuing operations** | **(2,583)** | **(3,011)** | **(534)** |
| Net cash provided by (used in) financing activities from discontinued operations | (34) | 34 | (8) |
| **Net cash provided by (used in) financing activities** | **(2,617)** | **(2,977)** | **(542)** |
| Increase (decrease) in cash and cash equivalents | (1,031) | (859) | 1,208 |
| Cash and cash equivalents in the beginning of the period | 5,720 | 6,716 | 4,168 |
| Effect of exchange rate changes on cash and cash equivalents | 28 | (137) | (7) |
| Cash of subsidiaries disposed | 2 | 0 | 0 |
| **Cash and cash equivalents, end of period** | **4,719** | **5,720** | **5,369** |

| **Non-cash transactions:** | | | |
|---|---|---|---|
| Additions to property, plant and equipment - interest capitalization | 111 | 83 | 172 |

# ANNEX 2 – VOLUMES SOLD, PRICES AND MARGINS

### Volume sold - Minerals and metals

| '000 metric tons | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Iron ore fines | 76,388 | 69,019 | 74,231 |
| ROM | 406 | 240 | 351 |
| Pellets | 13,135 | 12,479 | 12,001 |
| Manganese ore | 498 | 392 | 448 |
| Ferroalloys | 32 | 36 | 31 |
| Thermal coal | 1,279 | 1,064 | 1,271 |
| Metallurgical coal | 1,869 | 2,057 | 1,156 |
| Nickel | 71 | 71 | 77 |
| Copper | 110 | 103 | 107 |
| Gold as by-product ('000 oz) | 138 | 117 | 129 |
| Silver as by-product ('000 oz) | 465 | 567 | 609 |
| PGMs ('000 oz) | 85 | 93 | 130 |
| Cobalt (metric ton) | 1,482 | 1,272 | 1,069 |

### Average prices

| US$/ton | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Iron ore fines CFR reference price (dmt) | 76.10 | 60.70 | 59.30 |
| Iron ore fines CFR/FOB realized price | 67.17 | 51.35 | 50.95 |
| ROM | 17.24 | 34.23 | 11.40 |
| Pellets CFR/FOB (wmt) | 109.71 | 106.68 | 82.58 |
| Manganese ore | 175.81 | 180.08 | 113.84 |
| Ferroalloys | 1,380.30 | 1,265.31 | 806.45 |
| Thermal coal | 73.82 | 63.41 | 45.80 |
| Metallurgical coal | 141.84 | 201.13 | 91.04 |
| Nickel | 10,554 | 9,603 | 10,317 |
| Copper | 6,203 | 5,200 | 4,218 |
| Platinum (US$/oz) | 917 | 967 | 1,060 |
| Gold (US$/oz) | 1,175 | 1,188 | 1,383 |
| Silver (US$/oz) | 15.87 | 16.38 | 15.15 |
| Cobalt (US$/t) | 53,428 | 46,918 | 26,084 |

### Operating margin by segment (EBIT adjusted margin)

| % | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Ferrous Minerals | 47.0 | 34.6 | 42.2 |
| Coal | (21.4) | 17.3 | (29.4) |
| Base Metals | 9.3 | (0.7) | 12.5 |
| **Total[1]** | **35.2** | **24.1** | **31.4** |

[1] excluding non-recurring effects

# ANNEX 3 – reconciliation of IFRS and “NON-GAAP” information

## (a) Adjusted EBIT[1]

| US$ million | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Net operating revenues | 9,050 | 7,235 | 6,726 |
| COGS | (5,412) | (5,102) | (4,345) |
| SG&A | (129) | (132) | (137) |
| Research and development | (91) | (80) | (80) |
| Pre-operating and stoppage expenses | (83) | (90) | (116) |
| Other operational expenses | (151) | (88) | 63 |
| **Adjusted EBIT** | **3,184** | **1,743** | **2,111** |

[1] Excluding non-recurring effects.

## (b) Adjusted EBITDA

EBITDA defines profit or loss before interest, tax, depreciation and amortization. Vale uses the term adjusted EBITDA to reflect exclusion of gains and/or losses on sale of assets, non-recurring expenses and the inclusion of dividends received from non-consolidated affiliates. However, our adjusted EBITDA is not the measure defined as EBITDA under IFRS, and may possibly not be comparable with indicators with the same name reported by other companies. Adjusted EBITDA should not be considered as a substitute for operational profit or as a better measure of liquidity than operational cash flow, which are calculated in accordance with IFRS. Vale provides its adjusted EBITDA to give additional information about its capacity to pay debt, carry out investments and cover working capital needs. The following table shows the reconciliation between adjusted EBITDA and operational cash flow, in accordance with its statement of changes in financial position:

### Reconciliation between adjusted EBITDA and operational cash flow

| US$ million | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| **Adjusted EBITDA** | **4,192** | **2,729** | **2,964** |
| **Working capital:** | | | |
| Accounts receivable | (936) | 1,380 | 57 |
| Inventories | (52) | (223) | 12 |
| Suppliers | 37 | 244 | 255 |
| Payroll and related charges | 205 | 199 | (16) |
| Others | (235) | (162) | 79 |
| **Adjustment for non-recurring items and other effects** | **(88)** | **(82)** | **(183)** |
| **Cash provided from operations** | **3,123** | **4,085** | **3,168** |
| Income taxes paid - current | (84) | (37) | (88) |
| Income taxes paid - settlement program | (124) | (120) | (116) |
| Interest paid for third parties | (407) | (412) | (423) |
| Participative stockholders' debentures paid | - | (70) | - |
| Derivatives received (paid), net | (113) | (3) | (191) |
| **Net cash provided by (used in) operating activities** | **2,395** | **3,443** | **2,350** |

## (c) Net debt

| US$ million | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Total debt | 25,790 | 27,852 | 31,449 |
| Cash and cash equivalents[1] | 4,724 | 5,730 | 5,484 |
| Net debt | 21,066 | 22,122 | 25,965 |

[1] Including financial investments

## (d) Total debt / LTM Adjusted EBITDA

| US$ million | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Total debt / LTM Adjusted EBITDA (x) | 1.6 | 1.9 | 3.7 |
| Total debt / LTM operational cash flow (x) | 2.3 | 2.5 | 5.9 |

## (e) LTM Adjusted EBITDA / LTM interest

| US$ million | 3Q17 | 2Q17 | 3Q16 |
|---|---|---|---|
| Adjusted LTM EBITDA / LTM gross interest (x) | 8.8 | 7.9 | 4.9 |
| LTM adjusted EBITDA / LTM interest payments (x) | 9.1 | 8.3 | 5.5 |
| LTM operational profit / LTM interest payments (x) | 6.1 | 5.5 | (2.8) |