



# Vale's Performance in 2017

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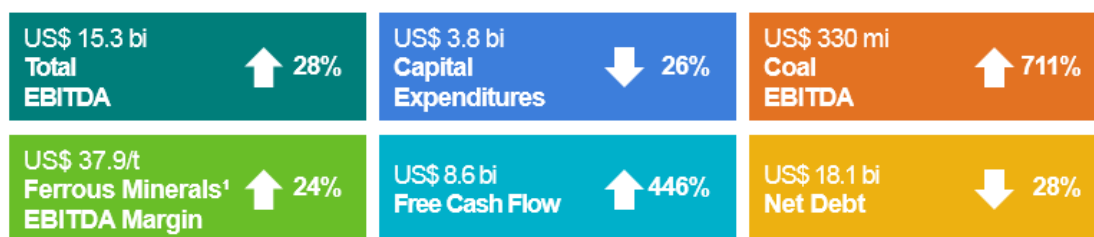
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Except where otherwise indicated the operational and financial information in this release is based on the consolidated figures in accordance with IFRS and, with the exception of information on investments and behavior of markets, quarterly financial 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 (formerly 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.

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## Vale's performance in 2017



Chief Executive Officer Mr. Fabio Schvartsman commented on 2017 results: “Our 2017 performance shows remarkable cash generation and substantial net debt reduction as a result of improvements in price realization, strict discipline in capital allocation and slightly improved results from nickel and coal assets”. He concluded that “2017 was a turning point for Vale. We started ambitious changes in efficiency, cost management and corporate governance. We laid the foundations for diversifying cash generation by improving the asset base we have today to reduce our dependency on iron ore. We aim to transform Vale into a predictable company”.

- Adjusted EBITDA was US\$ 15.338 billion in 2017, 28% higher than in 2016, despite the negative impact of the BRL appreciation (8.4%) and higher bunker oil prices (45%), mainly as a result of higher realized prices and premiums.
- Quarterly adjusted EBITDA was US\$ 4.109 billion, in line with 3Q17 despite the reduction of US\$ 5.3/t in Platts IODEX, as a result of higher prices in Base Metals and Coal, higher sales volumes in Ferrous Minerals and lower costs in Base Metals.
- Free Cash Flow was US\$ 8.604 billion in 2017, the highest level since 2011, and net debt decreased by US\$ 6.899 billion, totaling US\$ 18.143 billion as of December 31<sup>st</sup>, 2017.
- Quarterly Free Cash Flow increased considerably vs. 3Q17, totaling US\$ 2.744 billion in 4Q17. This enabled a significant net debt reduction of US\$ 2.923 billion quarter-on-quarter. “The solid operational performance and the conclusion of our divestment program accelerated Vale’s net debt reduction. The US\$ 18.1 billion net debt in 4Q17 is equivalent to a pro forma net debt of US\$ 14.4 billion, considering the cash inflows of US\$ 3.7 billion from the conclusion of the Fertilizers deal with Mosaic in January and from the Project Finance at Nacala Corridor to be received soon. We have obtained the financial close of the Nacala Project Finance, which means that all the conditions precedent were fulfilled, and we will receive the proceeds on March 21<sup>st</sup>, 2018. These inflows, together with the continuing cash generated from operations, will enable us to achieve our US\$ 10 billion net debt target in the short term”, highlighted Chief Financial Officer Mr. Luciano Siani Pires.
- Capital Expenditures reached their lowest level since 2005, totaling US\$ 3.848 billion in 2017, decreasing US\$ 1.342 billion vs. 2016 with the conclusion of the S11D mine and plant project. CAPEX is expected to remain at these levels in the coming years.
- Adjusted EBITDA for the Ferrous Minerals business segment was US\$ 13.192 billion in 2017, 26% higher than in 2016, mainly as a result of net effect of the 22% increase of the Platts IODEX in revenues and costs (US\$ 2.248 billion) and gains through higher premiums and

<sup>1</sup> Excluding Manganese and Ferroalloys.

commercial initiatives (US\$ 1.439 billion), which were partly offset by the negative impact of the exchange rate (US\$ 556 million) and the 45% increase in bunker oil prices (US\$ 409 million).

- Adjusted EBITDA per ton for Ferrous Minerals<sup>2</sup> was US\$ 37.9/t in 2017, 24% higher than in 2016 mainly as a result of higher price realization and a better product mix, despite the 45% increase in bunker oil prices. *“Vale is focused on maximizing its margins through product mix and volume adjustments as well as optimization of the balance between costs and price realization. Looking forward, costs will reduce and price realization will increase further on the back of continuous supply chain optimization”*, commented Mr. Peter Poppinga, Executive Officer for Ferrous Minerals and Coal.
- Adjusted EBITDA for pellets represented 18% of Vale’s total Adjusted EBITDA, totaling US\$ 2.767 billion in 2017, a 52% increase vs. 2016.
- Quarterly adjusted EBITDA for Ferrous Minerals was US\$ 3.319 billion in 4Q17, decreasing US\$ 355 million vs. 3Q17, mainly due to lower prices. After excluding the exogenous factors of lower market prices and premiums (US\$ 581 million), adjusted EBITDA was US\$ 226 million higher than in 3Q17.
- Quarterly iron ore fines and pellets EBITDA break-even<sup>3</sup> increased to US\$ 33.9/t in 4Q17, US\$ 3.9/t higher than in 3Q17, mainly as a result of exogenous factors such as higher spot freight rates, higher bunker oil prices and lower 65% Fe premiums.
- Quarterly CFR dmt<sup>4</sup> reference price for iron ore fines was US\$ 72.6/t in 4Q17, US\$ 7.0/t higher than the quarterly average Platts IODEX.
- Adjusted EBITDA for Base Metals was US\$ 2.139 billion in 2017, increasing 16% vs. 2016 mainly as a result of higher prices. *“We are on track to ensure that each and every asset in Base Metals is cash flow positive irrespective of prices, while also maintaining the optionality of capturing the possible upside in the market that comes with the advent of electric vehicles. In 2017, we carried out a detailed review on a mine-by-mine basis, putting in care and maintenance two mines in Canada and one nickel refinery in Taiwan. Other stoppages are planned for 2018 such as the precious metals refinery in Acton and the smelter and refinery in Thompson. Additionally, we have just launched our cost efficiency program targeting a reduction of US\$ 150 million by 2020”*, commented Mr. Eduardo Bartolomeo, Executive Officer for Base Metals.
- Quarterly adjusted EBITDA for Base Metals totaled US\$ 782 million in 4Q17, the highest quarterly level since 1Q11, with an increase of US\$ 221 million mainly as a result of higher prices and lower costs.
- Quarterly adjusted EBITDA of VNC was US\$ 11 million, mainly due to higher nickel and cobalt prices, the quarterly production record of cobalt and lower costs<sup>5</sup>, which decreased 14% to US\$ 8,420/t in 4Q17.

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<sup>2</sup> Excluding Manganese and Ferroalloys.

<sup>3</sup> Measured by unit cash costs and expenses on a landed-in-China basis and adjusted for quality, pellets margin differential and moisture, excluding ROM.

<sup>4</sup> dmt = dry metric ton

<sup>5</sup> VNC unit cash costs net of by-product credits.

- Adjusted EBITDA for the coal shipped through Nacala reached US\$ 410 million in 2017 driving the improvement of the Coal business adjusted EBITDA of US\$ 330 million in 2017, the first positive result since 2010.
- Net income of US\$ 5.5 billion in 2017 was US\$ 1.5 billion higher than in 2016.
- Vale will pay R\$ 4.7 billion (US\$ 1.5 billion) of shareholder remuneration in the form of interest on capital. Vale's Board of Directors approved the distribution of R\$ 2.2 billion in December 2017 and R\$ 2.5 billion in February 2018 to be paid in March 2018, which is equivalent to the minimum established by Vale's bylaws. The decision to pay the minimum required remuneration reflects a cautious and disciplined approach from Vale, until the Company receives the proceeds from asset sales and cash generation from operations. The new dividend policy is being discussed and will be announced until the end of March.

### Selected financial indicators

<i>US\$ million</i>	2017	2016	2015	2014	2013
Net operating revenues	33,967	27,488	23,384	35,124	43,953
Total costs and expenses	22,743	19,196	20,907	26,486	25,892
Adjusted EBIT	11,224	8,292	2,477	17,717	14,915
Adjusted EBIT margin (%)	33.0	30.2	10.6	50.4	33.9
Adjusted EBITDA	15,338	11,972	6,513	13,075	22,614
Adjusted EBITDA margin (%)	45.2	43.6	27.9	37.2	51.5
Iron ore - Platts' 62% IODEX	71.3	58.4	55.5	96.7	135.2
Net income (loss)	5,507	3,982	(12,129)	657	585
Underlying earnings	7,023	4,968	(1,698)	4,419	12,269
Underlying earnings per share on a fully diluted basis (US\$ / share)	1.35	0.96	(0.33)	0.85	2.36
Net debt	18,143	25,042	25,234	24,685	24,331
Capital expenditures	3,848	5,191	8,401	11,979	14,233

<i>US\$ million</i>	4Q17	3Q17	4Q16
Net operating revenues	9,167	9,050	9,265
Total costs and expenses	6,270	5,866	5,632
Adjusted EBIT	2,897	3,184	3,633
Adjusted EBIT margin (%)	31.6	35.2	39.2
Adjusted EBITDA	4,109	4,192	4,722
Adjusted EBITDA margin (%)	44.8	46.3	51.0
Iron ore - Platts' 62% IODEX	65.6	70.9	70.8
Net income (loss)	771	2,230	525
Underlying earnings	1,886	2,090	2,717
Underlying earnings per share on a fully diluted basis (US\$ / share)	0.36	0.40	0.52
Net debt	18,143	21,066	25,042
Capital expenditures	977	863	1,323

# Market overview

## IRON ORE

Iron ore Platts IODEX 62% averaged US\$ 71.3/dmt in 2017, an increase of 22% from 2016, supported by the steel sector outperformance that led to higher steel prices across the world.

China's steel sector outperformance in 2017 was driven by machinery, manufacturing and real estate. The infrastructure sector was quite robust with a relatively loose credit supply in the first three quarters. Manufactured goods enjoyed healthy external demand driven by strong orders from developed countries and from the ongoing 'Belt and Road Initiative' projects, all leading China to deliver a record high steel production of 831.7 Mt in 2017, an increase of 5.7% year-on-year<sup>6</sup>.

Steel production ex-China also posted strong growth in 2017 with 859.5 Mt, an increase of 4.9% year-on-year, as the world enjoyed its first synchronized growth period since the Global Financial Crisis of 2008/09 as consumption and job creation increased and investments resumed, reflected in steel demand and production.

Notably, in 2017 we witnessed increased price spreads between high and low quality ores. Improved steel profitability, high coking coal prices and the environmental restrictions imposed during 2017 led mills to source high quality ores like the Carajás iron ore (IOCJ), with around 65% Fe, which provide higher productivity and lower emission levels. While the Metal Bulletin 58% average of US\$ 46.7/dmt in 2017 was only 1% higher year-on-year, the Metal Bulletin 65% average of US\$ 88.0/dmt in 2017 represented an increase of 36% year-on-year.

We believe that the price differentials between high and low grade iron ores are a structural change that should continue to impact the market in the coming years. The move towards a more efficient steel industry, along with the enforcement of stricter environmental policies in China, should support the demand for high quality ores that enable productivity and lower emission levels like pellets and IOCJ.

While the increased demand for higher grade ores should support the quality premiums, the relatively strong supply of ores with lower Fe and high contaminant levels should also maintain pressure on the discounts for such products.

In 2018, we expect China's economic growth to become more moderate from 2017 with some downward risks from property. However, since the property stock level has been reduced, the investments and new starts should see only a small decrease. Global economic prospects continue positive for 2018 as the IMF has recently upgraded GDP growth from 3.6% to 3.9%. Steel demand and production are expected to grow also as new projects in Southeast Asia emerge, a region with steel production deficit and lower steel consumption per capita.

## COAL

Seaborne coking coal demand remained strong in 2017. China's demand for coking coal continues to be the main driver behind the global demand increase. Chinese imports were forecast to reach the third highest level on record in 2017 at 70 Mt, an increase of 18% vs. 2016. Japan imports remained relatively flat around 70Mt, while India saw a rise in its coking

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<sup>6</sup> World Steel Association figures.

coal imports from 49 Mt to 55 Mt, up 12% year on year. Overall global imports are expected to increase by around 5.5% in 2017.

We expect coking coal prices to lose steam throughout 1H18 as supply normalizes. Coking coal supply tightened in 4Q17 due to prolonged congestion at the main export terminals in Australia.

## NICKEL

In the nickel market, LME nickel prices averaged US\$ 10,411/t in 2017 up 8% from the average of US\$ 9,609/t in 2016, with significant price gains in the last quarter of the year (4Q17 average price of US\$ 11,584/t). Strong demand for stainless steel production as well as positive macroeconomic fundamentals, particularly in China, and increasing awareness of the role of nickel in batteries for electric vehicles, helped support the price increase.

Total exchange inventories at LME and SHFE continued to decline, closing at 412 kt by the end of 2017 – down 53 kt since the beginning of the year – indicating a nickel deficit for the year. Global stainless steel production increased approximately 5% in 2017 relative to 2016. Demand for nickel in non-stainless steel applications experienced a strong growth year (up 5% vs. 2016), particularly in the automotive, battery and aerospace sectors, with oil and gas showing signs of recovery.

On the supply side, the market saw a 2% increase in supply in 2017 relative to 2016. However, the growth was in Class II material (+12% year-on-year), not suitable for specialty applications such as batteries, while Class I material experienced a significant reduction (-7% year-on-year). In 2017, the market entered a second year of deficits estimated at between 90 kt and 110 kt of nickel.

On the demand side, stainless is expected to continue to grow while growth in non-stainless applications is expected to remain steady. Overall, we expect the market to remain in deficit in 2018. The long-term outlook for nickel continues to be positive. Capital investment for new projects and replacement volumes have been deferred within the context of challenging economic conditions, which will widen future deficits given the continued demand growth as global economies stabilize. Nickel in electric vehicle batteries will become an increasingly important source of demand growth, particularly as battery chemistry trends towards higher nickel content, which allows higher energy densities, and as the market shifts towards utilization of larger size batteries.

## COPPER

In the copper market, LME copper price averaged US\$ 6,166/t in 2017, an increase of 27% from 2016, with 4Q17 (US\$ 6,808/t) being the strongest pricing quarter since 4Q14. This rise was supported by increased global demand and tight supply. Total exchange inventories were practically stable.

Global demand increased by 2% in 2017 vs. 2016. Looking at China specifically – accounting for nearly 50% of global copper consumption – demand increased 3.2% year-on-year and was driven primarily by increased infrastructure investment and the housing market. On the supply side, global refined copper production remained relatively flat at 0.8% in 2017 vs. 2016 given mine supply constraints during the first half of the year. A total of 800 kt of disruptions to mine supply have been identified in 2017, mainly due to labor negotiations and government disputes, equivalent to 3.9% of 2017's expected annual production.



Demand for copper due to electric vehicles and associated infrastructure is expected to increase at a faster pace relative to previous years. Over the long-term, copper demand is also expected to grow, driven in part by the increasing investment in renewable energy, while constraint on future supply is expected, given declining ore grades and the need for greenfield investments.

## COBALT

Cobalt reference benchmark price averaged US\$ 57,025/t in 2017, more than double (127%) compared to 2016. The reason for this increase in price is expected future demand from the battery market given the growth in electric vehicles.

Cobalt is one of the key metals, besides nickel, needed to produce the highest energy density batteries for use in electric vehicles. The cobalt market needs to grow significantly to feed into battery demand; however, unlike other metals, cobalt is predominantly a by-product of nickel and copper mining. This means that it does not have the flexibility to respond to demand pressures as readily as other commodities.

# Operating revenues

## ANNUAL PERFORMANCE

Net operating revenues in 2017 were US\$ 33.967 billion, 23.6% higher than the US\$ 27.488 billion registered in 2016. The increase in sales revenues was mainly due to higher realized prices of Ferrous Minerals (US\$ 4.382 billion), Base Metals (US\$ 1.029 billion) and Coal (US\$ 386 million) and higher sales volumes of Ferrous Minerals (US\$ 397 million) and Coal (US\$ 342 million), being partially offset by lower Base Metals sales volumes (US\$ 297 million).

The following tables cover net operating revenues by destination and by business area, with the following highlights:

- Revenues by destination: higher geographical diversification, with lower share of revenues from China, 41% in 2017 vs. 46% in 2016, and higher contribution from Asia ex-China and South America, 18% and 12% in 2017 vs. 15% and 9% in 2016, respectively.
- Contribution by business segment: Ferrous Minerals business segment share of revenues was 74% in 2017, in line with 2016, while Coal segment share increased to 5% from 3% and Base Metals segment share decreased to 20% from 22% in the same period.

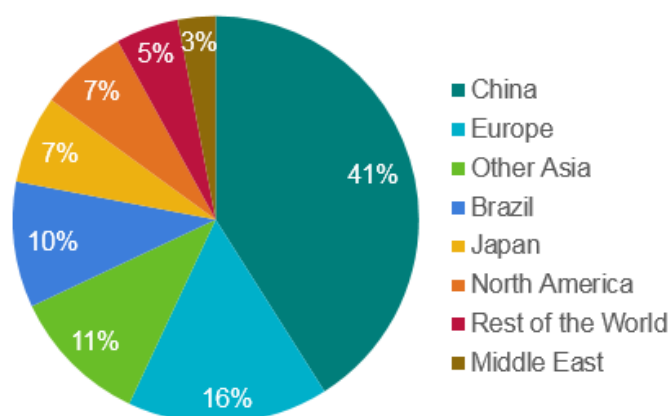
## QUARTERLY PERFORMANCE

Net operating revenues in 4Q17 were US\$ 9.167 billion, 1.3% higher than the US\$ 9.050 billion in 3Q17. The increase in sales revenues was mainly due to higher sales volumes for Ferrous Minerals (US\$ 310 million) and higher sales prices for Base Metals (US\$ 193 million), being partially offset by lower Ferrous Minerals sales prices (US\$ 432 million).

### Net operating revenue by destination

US\$ million	4Q17	3Q17	4Q16	2017	%	2016	%
<b>North America</b>	<b>638</b>	<b>617</b>	<b>647</b>	<b>2,379</b>	<b>7.0</b>	<b>2,186</b>	<b>8.0</b>
USA	351	352	328	1,310	3.9	1,005	3.7
Canada	269	246	310	1,008	3.0	1,172	4.3
Mexico	18	19	9	61	0.2	9	0.0
<b>South America</b>	<b>1,307</b>	<b>916</b>	<b>713</b>	<b>4,078</b>	<b>12.0</b>	<b>2,411</b>	<b>8.8</b>
Brazil	1,149	783	627	3,475	10.2	2,064	7.5
Others	158	133	86	603	1.8	345	1.3
<b>Asia</b>	<b>5,473</b>	<b>5,520</b>	<b>5,898</b>	<b>20,056</b>	<b>59.0</b>	<b>16,878</b>	<b>61.4</b>
China	3,824	3,822	4,685	14,018	41.3	12,747	46.4
Japan	633	736	513	2,456	7.2	1,741	6.3
South Korea	449	384	224	1,399	4.1	880	3.2
Others	567	578	476	2,183	6.4	1,510	5.5
<b>Europe</b>	<b>1,260</b>	<b>1,409</b>	<b>1,497</b>	<b>5,502</b>	<b>16.2</b>	<b>4,649</b>	<b>16.9</b>
Germany	374	368	415	1,389	4.1	1,379	5.0
Italy	162	99	85	521	1.5	435	1.6
Others	724	942	997	3,592	10.6	2,835	10.3
<b>Middle East</b>	<b>301</b>	<b>282</b>	<b>338</b>	<b>1,085</b>	<b>3.2</b>	<b>967</b>	<b>3.5</b>
<b>Rest of the World</b>	<b>188</b>	<b>306</b>	<b>173</b>	<b>867</b>	<b>2.6</b>	<b>400</b>	<b>1.5</b>
<b>Total</b>	<b>9,167</b>	<b>9,050</b>	<b>9,265</b>	<b>33,967</b>	<b>100.0</b>	<b>27,488</b>	<b>100.0</b>

## Net operating revenues by destination in 2017



## Net operating revenue by business area

US\$ million	4Q17	3Q17	4Q16	2017	%	2016	%
<b>Ferrous Minerals</b>	<b>6,698</b>	<b>6,820</b>	<b>7,047</b>	<b>25,129</b>	<b>74.0</b>	<b>20,351</b>	<b>74.0</b>
Iron ore fines	5,023	5,131	5,576	18,524	54.5	15,783	57.4
ROM	8	7	28	38	0.1	41	0.1
Pellets	1,422	1,441	1,217	5,653	16.6	3,829	13.9
Manganese ore	88	87	87	289	0.9	205	0.7
Ferroalloys	47	44	30	180	0.5	96	0.4
Others	110	110	109	445	1.3	397	1.4
<b>Coal</b>	<b>402</b>	<b>360</b>	<b>376</b>	<b>1,567</b>	<b>4.6</b>	<b>839</b>	<b>3.1</b>
Metallurgical coal	306	266	300	1,240	3.7	587	2.1
Thermal coal	96	94	76	327	1.0	252	0.9
<b>Base Metals</b>	<b>2,000</b>	<b>1,762</b>	<b>1,760</b>	<b>6,871</b>	<b>20.2</b>	<b>6,139</b>	<b>22.3</b>
Nickel	941	752	894	3,139	9.2	3,050	11.1
Copper	744	683	585	2,530	7.4	1,915	7.0
PGMs	62	72	52	296	0.9	351	1.3
Gold as by-product	157	161	164	587	1.7	627	2.3
Silver as by-product	9	7	13	33	0.1	42	0.2
Cobalt	79	79	42	258	0.8	115	0.4
Others	8	8	10	28	0.1	39	0.1
<b>Others</b>	<b>67</b>	<b>108</b>	<b>82</b>	<b>400</b>	<b>1.2</b>	<b>160</b>	<b>0.6</b>
<b>Total</b>	<b>9,167</b>	<b>9,050</b>	<b>9,265</b>	<b>33,967</b>	<b>100.0</b>	<b>27,488</b>	<b>100.0</b>

# Costs and expenses

## IMPACTS OF HIGHER COMMODITIES PRICES ON COSTS AND EXPENSES

The higher commodities prices seen in 2017 versus 2016 contributed to the increase in Vale's sales revenues, but also resulted in an increase in costs and expenses, a procyclical effect.

Some of Vale's costs and expenses vary directly with prices of its own products, such as: (i) pelletizing plants' leasing costs, which are contractually adjusted based on pellet prices; (ii) royalties; (iii) purchase of iron ore and nickel from third parties; and (iv) provision for profit sharing for Vale's employees. Unlike the typical "cost inflation" examined by industry analysts, these cost increases reverse immediately should iron ore and nickel prices decline.

Additionally, bunker oil prices, which are a component of the freight costs, tend to increase in a higher commodities price environment, however as a result of macroeconomic trends and therefore with less than perfect correlation.

## COST OF GOODS SOLD (COGS)

### ANNUAL PERFORMANCE

COGS<sup>7</sup>, net of depreciation, totaled US\$ 17.555 billion in 2017, with a net increase of US\$ 268 million, or 2%, compared to 2016, after excluding the following effects from:

- (i) stronger operational performance, resulting in higher sales volumes impact on COGS (US\$ 484 million);
- (ii) higher commodities prices, resulting in higher pelletizing plants' leasing costs, higher royalties, higher costs of feed purchased from third-parties and provision for profit sharing payments to employees (US\$ 695 million);
- (iii) other exogenous factors, such as the negative impact of exchange rate variations on COGS (US\$ 655 million), higher bunker oil prices (US\$ 409 million), higher freight costs<sup>8</sup> (US\$ 267 million) and higher energy costs (US\$ 215 million);
- (iv) the Nacala Logistics Corridor (NLC) tariff introduced in 2017 which pays for the remuneration of Vale's remaining debt instruments (US\$ 179 million) as part of

<sup>7</sup> COGS currency exposure in 2017 was as follows: 52% BRL, 33% USD, 12% CAD and 3% EUR.

<sup>8</sup> Excluding the effect of higher bunker oil prices.

the NLC capital structure, which is received back by Vale through Financial Income.

The net increase of US\$ 268 million in COGS was mainly driven by the increase of Base Metals costs due to higher nickel costs (US\$ 359 million) as a result of the transition to a simpler and more efficient nickel flowsheet in the North Atlantic operations and the increase of nickel unit costs due to lower production volumes, reflecting Vale's commitment to value over volume in the nickel business, which were partly offset by lower copper costs (US\$ 116 million).

## QUARTERLY PERFORMANCE

COGS<sup>9</sup>, net of depreciation, totaled US\$ 4.873 billion in 4Q17, remaining practically in line with 3Q17, after excluding the effects from:

- (i) stronger operational performance, resulting in higher sales volumes impact on COGS (US\$ 150 million);
- (ii) stronger commodities environment, resulting in higher bunker oil prices (US\$ 39 million);
- (iii) and other exogenous factors, such as the positive impact of exchange rate variation on COGS (US\$ 57 million), higher freight costs<sup>10</sup> (US\$ 71 million) and higher oil and energy costs (US\$ 21 million).

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

### COGS by business segment

US\$ million	4Q17	3Q17	4Q16	2017	%	2016	%
Ferrous Minerals	3,664	3,375	3,213	13,007	61.8	10,623	60.2
Base Metals	1,558	1,524	1,498	5,989	28.5	5,697	32.3
Coal	490	423	292	1,641	7.8	1,057	6.0
Other products	79	90	100	402	1.9	273	1.5
<b>Total COGS</b>	<b>5,791</b>	<b>5,412</b>	<b>5,103</b>	<b>21,039</b>	<b>100.0</b>	<b>17,650</b>	<b>100.0</b>
Depreciation	918	868	952	3,484	-	3,267	-
<b>COGS, ex-depreciation</b>	<b>4,873</b>	<b>4,544</b>	<b>4,151</b>	<b>17,555</b>	<b>-</b>	<b>14,383</b>	<b>-</b>

<sup>9</sup> COGS currency exposure in 4Q17 was as follows: 50% BRL, 35% USD, 12% CAD and 3% EUR.

<sup>10</sup> Excluding the effect of higher bunker oil prices.

## EXPENSES

### ANNUAL PERFORMANCE

Total expenses, excluding depreciation, amounted to US\$ 1.480 billion in 2017, US\$ 82 million lower than in 2016<sup>11</sup>.

SG&A, excluding depreciation, totaled US\$ 440 million in 2017, US\$ 34 million higher than in 2016<sup>12</sup>, mainly due to the stronger commodities environment in 2017 which resulted in (i) higher selling expenses, driven by higher sales performance, (ii) the impact of Brazilian employees' salary increase of 8.5% set in the November 2016 collective bargaining agreement of; and (iii) management severance expenses.

R&D expenses totaled US\$ 340 million in 2017, in line with 2016<sup>13</sup>.

Pre-operating and stoppage expenses, excluding depreciation, totaled US\$ 280 million in 2017, US\$ 75 million lower than in 2016<sup>14</sup>, mainly due to lower pre-operating expenses in Long Harbour (US\$ 64 million) and Mozambique (US\$ 37 million), as their ramp-ups mature. These reductions were partly offset by higher pre-operating expenses in S11D, due to the start of the ramp-up (US\$ 55 million).

Other operating expenses amounted to US\$ 420 million in 2017, US\$ 32 million lower than in 2016<sup>15</sup>, after adjusting for the one-off positive effect from the goldstream transaction (US\$ 150 million) in 2016.

### QUARTERLY PERFORMANCE

Total expenses, excluding depreciation, amounted to US\$ 421 million in 4Q17, increasing by US\$ 19 million from 3Q17. The main reasons for this increase were: (i) the stoppage of Stobie and Birchtree mines in Canada, after a detailed review on a mine-by-mine basis, in order to improve the nickel business margin going forward; and (ii) the ramp-up of S11D operations resulting in higher pre-operating expenses. Additionally, as a result of the detailed review in the nickel business, Vale is planning to stop operations of the precious metals refinery in Acton and the smelter and refinery in Thompson in 2018.

SG&A, excluding depreciation, totaled US\$ 125 million in 4Q17, US\$ 15 million higher than in 3Q17, mainly due to higher services expenses (US\$ 8 million) and seasonally higher personnel

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<sup>11</sup> After adjusting for the one-off positive effect from the goldstream transaction of US\$ 150 million in 2016 and after excluding exchange rate variation impacts of US\$ 86 million.

<sup>12</sup> After excluding exchange rate variation impacts of US\$ 19 million.

<sup>13</sup> After excluding exchange rate variation impacts of US\$ 18 million.

<sup>14</sup> After excluding exchange rate variation impacts of US\$ 14 million.

<sup>15</sup> After excluding exchange rate variation impacts of US\$ 35 million.

expenses (US\$ 6 million), mainly due to the impact of the employees' collective bargaining agreement signed in November 2017.

R&D expenses totaled US\$ 104 million in 4Q17, US\$ 13 million higher than in 3Q17, following the usual seasonality of higher disbursements in the last quarter of the year.

Pre-operating and stoppage expenses, excluding depreciation, totaled US\$ 88 million in 4Q17, US\$ 40 million higher than in 3Q17, mainly due to stoppage expenses with Stobie and Birchtree mines (US\$ 21 million) and higher pre-operating expenses with S11D, as the ramp-up progresses (US\$ 4 million).

Other operating expenses were US\$ 104 million in 4Q17, US\$ 47 million lower than in 3Q17, as there were one-off expenses of US\$ 42 million in 3Q17, related to the regularization of Tubarão port land taxes and the ICMS tax settlement in the state of Minas Gerais.

## Expenses

US\$ million	4Q17	3Q17	4Q16	2017	2016
<b>SG&amp;A ex-depreciation</b>	125	110	106	440	387
<b>SG&amp;A</b>	146	129	136	531	507
<b>Administrative</b>	127	112	128	463	472
Personnel	62	56	52	234	209
Services	29	19	25	77	72
Depreciation	21	19	30	91	120
Others	15	18	21	61	71
<b>Selling</b>	19	17	8	68	35
<b>R&amp;D</b>	104	91	112	340	319
<b>Pre-operating and stoppage expenses</b>	125	83	129	413	453
Long Harbour	-	-	30	50	114
S11D	43	39	34	150	95
Moatize	-	-	17	-	41
Others	45	9	18	80	103
Depreciation	37	35	30	133	100
<b>Other operating expenses</b>	104	151	152	420	267
<b>Total expenses</b>	479	454	529	1,704	1,546
Depreciation	58	52	59	224	221
<b>Expenses ex-depreciation</b>	421	402	470	1,480	1,325

## Costs and expenses

US\$ million	4Q17	3Q17	4Q16	2017	2016
<b>Costs</b>	5,791	5,412	5,103	21,039	17,650
<b>Expenses</b>	479	454	529	1,704	1,546
<b>Total costs and expenses</b>	6,270	5,866	5,632	22,743	19,196
Depreciation	976	920	1,011	3,708	3,487
<b>Costs and expenses ex-depreciation</b>	5,294	4,946	4,621	19,035	15,709

# Adjusted earnings before interest, taxes, depreciation and amortization (EBITDA)

## ANNUAL PERFORMANCE

Adjusted EBITDA in 2017 was US\$ 15.338 billion, 28.1% higher than in 2016, mainly as a result of higher realized prices across all Vale's business segments (US\$ 4.537 billion), higher premiums and gains in commercial initiatives in Ferrous Minerals (US\$ 1.439 billion). These positive impacts were partially offset by the expected pro-cyclical effects in costs and expenses driven by higher commodities prices, as well as exogenous factors, as detailed below:

- (i) higher commodities prices, resulting in higher pelletizing plants' leasing costs, higher royalties, higher costs of feed purchased from third-parties and provision for profit sharing payments to employees, all driven by higher iron ore prices (US\$ 695 million) and higher bunker oil prices (US\$ 409 million); and
- (ii) other exogenous factors, such as the negative impacts of exchange rate variations on costs and expenses (US\$ 725 million), higher freight costs<sup>16</sup> (US\$ 267 million) and higher energy costs (US\$ 215 million).

## QUARTERLY PERFORMANCE

Adjusted EBITDA in 4Q17 was US\$ 4.109 billion, in line with the US\$ 4.192 billion recorded in 3Q17, despite the reduction of US\$ 5.3/t in Platts IODEX, as a result of higher prices in Base Metals and Coal, higher sales volumes in Ferrous Minerals and lower costs in Base Metals.

Adjusted EBITDA of the Ferrous Minerals business segment was US\$ 3.319 billion in 4Q17, 9.7% lower than in 3Q17, impacted by the 7.5% reduction of the Platts IODEX and by lower market premiums. Slightly higher costs and expenses were partially offset by higher volumes.

Adjusted EBITDA of the Base Metals business segment was US\$ 782 million in 4Q17, the highest quarterly level since 1Q11, with an increase of US\$ 221 million vs. 3Q17, mainly as a result of higher prices, lower costs, and higher nickel and copper volumes, which were partially offset by lower by-product volumes and higher expenses.

Adjusted EBITDA for the Coal business segment was US\$ 66 million in 4Q17, US\$ 20 million higher than in 3Q17, mainly due to higher realized sales prices, which were partially offset by lower sales volumes and higher costs and expenses.

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<sup>16</sup> Excluding the effect of higher bunker oil prices.



Other business segments Adjusted EBITDA was negative US\$ 58 million, US\$ 31 million better than in 3Q17, mainly due to dividends received from MRN, CSI and Aliança Energia.

### Adjusted EBITDA

<i>US\$ million</i>	<b>4Q17</b>	<b>3Q17</b>	<b>4Q16</b>	<b>2017</b>	<b>2016</b>
Net operating revenues	9,167	9,050	9,265	33,967	27,488
COGS	(5,791)	(5,412)	(5,103)	(21,039)	(17,650)
SG&A	(146)	(129)	(136)	(531)	(507)
Research and development	(104)	(91)	(112)	(340)	(319)
Pre-operating and stoppage expenses	(125)	(83)	(129)	(413)	(453)
Other operational expenses	(104)	(151)	(152)	(420)	(267)
<b>Adjusted EBIT</b>	<b>2,897</b>	<b>3,184</b>	<b>3,633</b>	<b>11,224</b>	<b>8,292</b>
Depreciation, amortization & depletion	976	920	1,011	3,708	3,487
Dividends and interests on associates and JVs	236	88	78	406	193
<b>Adjusted EBITDA</b>	<b>4,109</b>	<b>4,192</b>	<b>4,722</b>	<b>15,338</b>	<b>11,972</b>
Iron ore - Platts' 62% IODEX	65.6	70.9	70.8	71.3	58.5

### Adjusted EBITDA by business area

<i>US\$ million</i>	<b>4Q17</b>	<b>3Q17</b>	<b>4Q16</b>	<b>2017</b>	<b>2016</b>
Ferrous Minerals	3,319	3,674	4,109	13,192	10,476
Coal	66	46	156	330	(54)
Base Metals	782	561	543	2,139	1,848
Others	(58)	(89)	(86)	(323)	(298)
<b>Total</b>	<b>4,109</b>	<b>4,192</b>	<b>4,722</b>	<b>15,338</b>	<b>11,972</b>
Iron ore - Platts' 62% IODEX	65.6	70.9	70.8	71.3	58.5

# Net income

## ANNUAL PERFORMANCE

Net income was US\$ 5.507 billion in 2017, increasing US\$ 1.525 billion when compared to 2016.

Underlying earnings were US\$ 7.023 billion in 2017, US\$ 2.055 billion higher than in 2016, mainly due to the US\$ 3.366 billion increase in Adjusted EBITDA.

Impairments and other results on non-current assets and in associates and JVs caused non-cash losses of US\$ 474 million in 2017 vs. US\$ 2.460 billion in 2016. In 2017, impairments were mainly driven by closure of the Stobie mine (US\$ 133 million) and Samarco (US\$ 180 million). Samarco impairments were write-downs of the debt instruments used to fund its working capital.

Net financial results showed a loss of US\$ 3.019 billion in 2017, compared to a gain of US\$ 1.843 billion in 2016. The decrease of US\$ 4.862 billion was mainly a result of non-cash losses on exchange rate variations in 2017 vs. non-cash gains in 2016 (US\$ 3.772 billion) and lower gains on derivatives of currency and interest rate swaps (US\$ 802 million).

In 2017, gross interest decreased 4% from US\$ 1.768 billion in 2016 to US\$ 1.697 billion, due to the reduction of the gross debt, partly offset by the increase in the average cost of debt, as the company prepaid short term debt, which is cheaper. Capitalization of interest decreased from US\$ 653 million in 2016 to US\$ 370 million in 2017, as a result of the conclusion of the Nacala Logistics Corridor project and the ramp-up of S11D.

Other financial expenses increased by US\$ 254 million in 2017 vs. 2016, of which US\$ 183 million were related to the repurchase of bonds and prepayment of loans in 2017.

Financial income includes US\$ 179 million of interest 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.

Income tax and social contribution expense totaled US\$ 1.495 billion in 2017, representing an effective tax rate of 19%. The effective tax rate was lower than the nominal 34% corporate tax rate mainly due to tax benefits and incentives (US\$ 1.100 billion), which were partially offset by unrecognized tax assets on current year losses (US\$ 432 million), mainly in Mozambique and New Caledonia.

<i>US\$ million</i>	<b>2017</b>	<b>%</b>
<b>Income before tax</b>	<b>7,829</b>	
Income tax	(2,662)	34%
<b>Adjustments to derive effective tax rate:</b>		
Tax benefits and incentives	1,100	(14%)
Results of Equity investments	35	(0%)
Unrecognized tax on current year losses	(432)	5%
Non-deductible impairment	(43)	0%
Other non-taxable gains (losses)	507	(6%)
<b>Income tax and social contribution expense</b>	<b>(1,495)</b>	<b>19%</b>

## QUARTERLY PERFORMANCE

Net income was US\$ 771 million in 4Q17 vs. US\$ 2.230 billion in 3Q17, decreasing by US\$ 1.459 billion, mainly as a result of the following impacts: (i) non-cash losses on monetary and exchange rate variation in 4Q17 vs. non-cash gains in 3Q17 (US\$ 1.374 billion) and (ii) higher impairments and other results on non-current assets and in associates and JVs (US\$ 281 million).

Underlying earnings were US\$ 1.886 billion in 4Q17, US\$ 204 million lower than in 3Q17, mainly due to losses in equity results in associates and joint ventures in 4Q17 vs. gains in 3Q17 (US\$ 181 million).

### Underlying earnings

<i>US\$ million</i>	<b>4Q17</b>	<b>3Q17</b>	<b>4Q16</b>	<b>2017</b>	<b>2016</b>
<b>Underlying earnings</b>	<b>1,886</b>	<b>2,090</b>	<b>2,717</b>	<b>7,023</b>	<b>4,968</b>
<b>Items excluded from basic earnings</b>					
Impairment and other results on non-current assets	(417)	(169)	(1,145)	(294)	(1,240)
Impairment and others results in associates and joint ventures	(59)	(26)	(74)	(180)	(1,220)
Shareholders Debentures	(54)	(72)	(167)	(625)	(417)
Foreign Exchange	(544)	452	66	(463)	3,307
Monetary variation	(297)	81	(53)	(211)	(158)
Currency and interest rate swaps	(133)	295	38	313	958
Other financial results	134	(29)	14	-	(85)
Income tax over excluded items	543	(172)	34	830	(1,226)
<b>Net Income (loss)</b>	<b>771</b>	<b>2,230</b>	<b>525</b>	<b>5,507</b>	<b>3,982</b>

Net financial results showed a loss of US\$ 1.287 billion in 4Q17 vs. a gain of US\$ 220 million in 3Q17. The decrease of US\$ 1.507 billion was mainly a result of non-cash losses on exchange rate variations in 4Q17 vs. non-cash gains in 3Q17 (US\$ 1.374 billion) and losses on currency derivatives and interest rate swaps in 4Q17 vs. gains in 3Q17 (US\$ 394 million). The losses on exchange rate variations and on currency derivatives were mainly due to the BRL depreciation of 4.2% against the USD from BRL 3.17/ USD as of September 30<sup>th</sup>, 2017 to BRL 3.31/ USD as of December 31<sup>st</sup>, 2017.

## Financial results

<i>US\$ million</i>	<b>4Q17</b>	<b>3Q17</b>	<b>4Q16</b>	<b>2017</b>	<b>2016</b>
<b>Financial expenses</b>	<b>(562)</b>	<b>(826)</b>	<b>(762)</b>	<b>(3,276)</b>	<b>(2,677)</b>
Gross interest	(378)	(417)	(441)	(1,697)	(1,768)
Capitalization of interest	73	111	91	370	653
Tax and labor contingencies	(10)	(22)	15	(52)	(10)
Shareholder debentures	(54)	(72)	(167)	(625)	(417)
Others	(124)	(332)	(133)	(875)	(621)
Financial expenses (REFIS)	(69)	(94)	(127)	(397)	(514)
<b>Financial income</b>	<b>149</b>	<b>152</b>	<b>52</b>	<b>481</b>	<b>170</b>
<b>Derivatives<sup>1</sup></b>	<b>(29)</b>	<b>365</b>	<b>96</b>	<b>454</b>	<b>1,256</b>
Currency and interest rate swaps	(133)	295	39	313	959
Others <sup>2</sup> (bunker oil, commodities, etc)	104	70	57	141	297
<b>Foreign Exchange</b>	<b>(540)</b>	<b>443</b>	<b>64</b>	<b>(463)</b>	<b>3,252</b>
<b>Monetary variation</b>	<b>(305)</b>	<b>86</b>	<b>(53)</b>	<b>(215)</b>	<b>(158)</b>
<b>Financial result, net</b>	<b>(1,287)</b>	<b>220</b>	<b>(603)</b>	<b>(3,019)</b>	<b>1,843</b>

<sup>1</sup>The net derivatives loss of US\$ 29 million in 4Q17 is comprised of settlement losses of US\$ 17 million and mark-to-market losses of US\$ 12 million.

<sup>2</sup> Other derivatives include bunker oil derivatives gains of US\$ 16 million.

## Equity income from affiliated companies

### ANNUAL PERFORMANCE

Equity income from affiliated companies showed a gain of US\$ 98 million in 2017 vs. a gain of US\$ 309 million in 2016. The main contributors to equity income were the leased pelletizing companies in Tubarão (US\$ 224 million), MRS (US\$ 69 million), CSI (US\$ 42 million) and Aliança Geração de Energia (US\$ 27 million), which were partly offset by losses from Nacala (US\$ 62 million) and CSP (US\$ 264 million).

### QUARTERLY PERFORMANCE

Equity income from affiliated companies showed a loss of US\$ 66 million in 4Q17 vs. a gain of US\$ 115 million in 3Q17. The main contributors to equity income were the leased pelletizing companies in Tubarão (US\$ 60 million), MRS (US\$ 9 million), Aliança Geração de Energia (US\$ 9 million) and CSI (US\$ 7 million), which were offset by losses from Nacala (US\$ 40 million), due to expenses related to signing the Project Finance contracts, and CSP (US\$ 122 million), due to the non-cash impact of the BRL depreciation on its USD denominated debt.

## Shareholders' remuneration

Vale will pay R\$ 4.7 billion (US\$ 1.5 billion) of shareholder remuneration in the form of interest on capital. Vale's Board of Directors approved the distribution of R\$ 2.2 billion in December 2017 and R\$ 2.5 billion in February 2018, to be paid in March 2018, which is equivalent to the minimum established by Vale's bylaws. The decision to pay the minimum requirement is consistent with Vale's primary focus to reduce its net debt to US\$ 10 billion.

Considering the stronger commodities environment resulting in a free cash flow generation higher than in 2H17 (US\$ 4.2 billion) and the total net proceeds of US\$ 3.7 billion from the sale of Fertilizers assets and from the Nacala Corridor Project Finance, Vale may well achieve its net debt target by the end of 1H18.

Net debt reduction is an enabler to adopt an aggressive dividend policy, applicable to any commodity price scenario by linking shareholders' remuneration to cash generation.

The new dividend policy is going to be more robust, more sustainable and more predictable, aiming at generating outstanding returns for Vale's shareholders over the coming years. It is currently being discussed with the Board of Directors and will be announced by the end of March 2018.

# Investments

Capital expenditures have reached the lowest level since 2005, totaling US\$ 3.848 billion in 2017 with US\$ 1.617 billion in project execution and US\$ 2.231 billion in sustaining capital. This is also the first year since 2005 where investments in sustaining exceed growth projects.

Capital expenditures decreased US\$ 1.342 billion vs. the US\$ 5.190 billion spent in 2016, mainly due to the conclusion of the S11D mine and plant project. This shows our determination to focus on capital allocation discipline.

The guidance for investments remains as announced at the last Vale Day at US\$ 3.8 billion for 2018, with CLN S11D as the only capital project being developed.

Investments in 4Q17 totaled US\$ 977 million, US\$ 114 million higher than in 3Q17, following the usual seasonality, but 26.1% lower than in 4Q16.

## Project Execution and Sustaining by business area

US\$ million	4Q17	3Q17	4Q16	2017	%	2016	%
Ferrous Minerals	680	551	769	2,680	69.7	3,248	62.6
Coal	33	14	171	118	3.1	612	11.8
Base Metals	259	289	366	1,009	26.2	1,057	20.4
Power generation	6	7	17	34	0.9	73	1.4
Others	-	1	0	7	0.2	202	3.9
<b>Total</b>	<b>977</b>	<b>863</b>	<b>1,323</b>	<b>3,847</b>	<b>100.0</b>	<b>5,191</b>	<b>100.0</b>

## Project execution

Investment in project execution totaled US\$ 347 million in 4Q17, increasing 17.6% following the usual seasonality of disbursements.

Ferrous Minerals accounted for about 91% of the total investment in project execution in 4Q17.

## Project execution by business area

US\$ million	4Q17	3Q17	4Q16	2017	%	2016	%
Ferrous Minerals	315	273	468	1,485	91.9	2,356	75.9
Coal	5	2	98	45	2.8	463	14.9
Base Metals	23	13	6	50	3.1	12	0.4
Power generation	5	7	15	30	1.9	71	2.3
Others	-	1	0	7	0.4	201	6.5
<b>Total</b>	<b>347</b>	<b>295</b>	<b>588</b>	<b>1,617</b>	<b>100.0</b>	<b>3,102</b>	<b>100.0</b>

## FERROUS MINERALS

About 85% of the US\$ 315 million invested in Ferrous Minerals in 4Q17 relates to the S11D project and the expansion of its associated infrastructure (US\$ 301 million).

## S11D Mine – Buffer stockyard



S11D (including mine, plant and associated logistics – CLN S11D) achieved combined physical progress of 93% in 4Q17 with the mine site concluded and 88% progress at the logistic infrastructure sites.

The duplication of the railway reached 80% physical progress with 505 Km duplicated. The product stockyard moved more than 22 Mt of ore and over 200 thousand wagons loaded until December.

The Port expansion reached 97% physical progress, with the onshore stockyard expansion still under construction but all the remaining onshore infrastructure completed. (The offshore port expansion - pier IV, ship loading circuits and equipment - was concluded in 2016).

## S11D Logistics – Duplication of the railway



## Progress indicator<sup>17</sup>

Project	Capacity (Mtpy)	Estimated start-up	Executed capex (US\$ million)		Estimated capex (US\$ million)		Physical progress
			2017	Total	2018	Total	
<b>Ferrous Minerals projects</b>							
CLN S11D	230 (80) <sup>a</sup>	1H14 to 2H19	914	6,576	647	7,850 <sup>b</sup>	88%

<sup>a</sup> Net additional capacity.

<sup>b</sup> Original capex budget of US\$ 11.582 billion.

## Sustaining capex

Sustaining capital totaled US\$ 2.231 billion in 2017, increasing slightly when compared to the US\$ 2.088 billion in 2016, mainly due to the transition to one furnace in Base Metals and the restart of the pelletizing plants in Ferrous Minerals.

Sustaining capital totaled US\$ 631 million in 4Q17, increasing 11.1% when compared to 3Q17, mainly due to the usual seasonality and the start of disbursements in the São Luis and Tubarão I pellet plants projects. The Ferrous Minerals and Base Metals business segments accounted for 58% and 37%, respectively, of total sustaining capex in 4Q17.

Sustaining capex in the Base Metals business segment was mainly for: (i) operational improvements (US\$ 150 million); (ii) improvement in the current standards of health and safety and environmental protection (US\$ 56 million); and (iii) maintenance improvements and expansion of tailings dams (US\$ 17 million).

Sustaining capital for the Ferrous Minerals business segment included, among others: (i) enhancements and replacements in operations (US\$ 207 million); (ii) improvement in the current standards of health and safety, social and environmental protection (US\$ 73 million); and (iii) maintenance, improvement and expansion of tailings dams (US\$ 49 million). Maintenance of railways and ports in Brazil and Malaysia accounted for US\$ 86 million.

The projects for restarting pellet plants are on schedule, with the start-ups of the Tubarão I and São Luis pellet plants envisioned for 2Q18 and 3Q18, respectively. The Tubarão II pellet plant has already started up in January 2018. The three projects total US\$ 150 million, which are mainly revitalization works on the pellet plants, and will be charged to sustaining investments.

Sustaining investments in iron ore fines (excluding sustaining investments in pellet plants) amounted to US\$ 256 million, equivalent to US\$ 3.4/dmt of iron ore fines in 4Q17, 17.2% higher than in 3Q17 mainly due to the seasonality of disbursements. The last twelve months average of sustaining capex for iron ore fines amounts to US\$ 3.2/dmt.

<sup>17</sup> 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.



## Sustaining capex by type - 4Q17

US\$ million	Ferrous Minerals	Coal	Base Metals	TOTAL
Operations	209	15	150	373
Waste dumps and tailing dams	49	1	17	67
Health and Safety	48	7	17	72
CSR - Corporate Social Responsibility	26	1	39	67
Administrative & Others	35	4	13	52
<b>Total</b>	<b>367</b>	<b>28</b>	<b>236</b>	<b>631</b>

## Sustaining capex by business area

US\$ million	4Q17	3Q17	4Q16	2017	%	2016	%
Ferrous Minerals	365	278	301	1,195	53.6	892	42.7
Coal	28	12	73	73	3.3	149	7.1
Base Metals	236	276	360	959	43.0	1,045	50.0
Power generation	1	0	1	3	0.1	2	0.1
Others	0	0	-	-	-	1	0.0
<b>Total</b>	<b>631</b>	<b>568</b>	<b>735</b>	<b>2,231</b>	<b>100.0</b>	<b>2,088</b>	<b>100.0</b>

## Corporate social responsibility

Investments in corporate social responsibility totaled US\$ 612 million in 2017, of which US\$ 487 million dedicated to environmental protection and conservation and US\$ 125 million to social projects.

## Portfolio Management

Vale signed the Nacala Logistics Corridor (NLC) Project Finance in 4Q17, through which NLC will raise US\$ 2.730 billion. The funds received will be mostly paid to Vale to take out part of Vale's shareholders loans conceded for construction of the NLC, but they will also be used to support the ramp-up of the corridor.

In 4Q17, Vale also sold two very large ore carriers (VLOCs) of 400,000 dwt to nominees of Bank of Communications Finance Leasing Co., Ltd. (Bocomm), for a total of US\$ 178 million.

In 4Q17, Vale signed a quota purchase agreement with Yara International ASA, to sell its fully owned subsidiary Vale Cubatão Fertilizantes Ltda., which currently owns and operates the nitrogen and phosphate assets, for US\$ 255 million. The conclusion of the transaction and the proceeds should occur in 2H18, once conditions precedent are fulfilled.

Vale concluded the sale of its Fertilizer business, excluding the assets in Cubatão, to The Mosaic Company in January 2018.

# Free cash flow

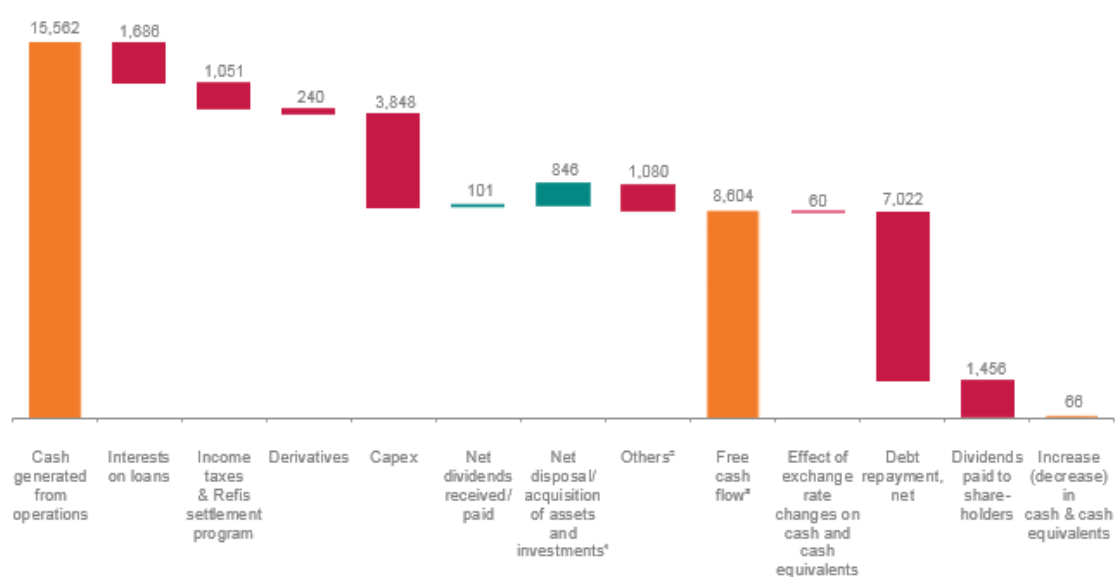
## Annual performance

Free cash flow was US\$ 8.604 billion in 2017.

Cash generated from operations was US\$ 15.562 billion in 2017, US\$ 224 million higher than Adjusted EBITDA, mainly due to the positive impact of the reduction in working capital.

## Free Cash Flow 2017

US\$ million



\* Includes the equity transaction of Nacala with Mitsui and the sale of vessels

<sup>2</sup> Includes US\$ 135 million related to shareholders debentures remuneration, US\$ 252 million of cash outflow from the Fertilizers segment, US\$ 353 million of payment to Sumic related to the purchase of its equity interest in VNC, US\$ 294 million of funds to the Renova Foundation and US\$ 141 million to Samarco to fund its working capital

<sup>3</sup> Cash flow before debt additions/repayments and distribution of dividends to shareholders

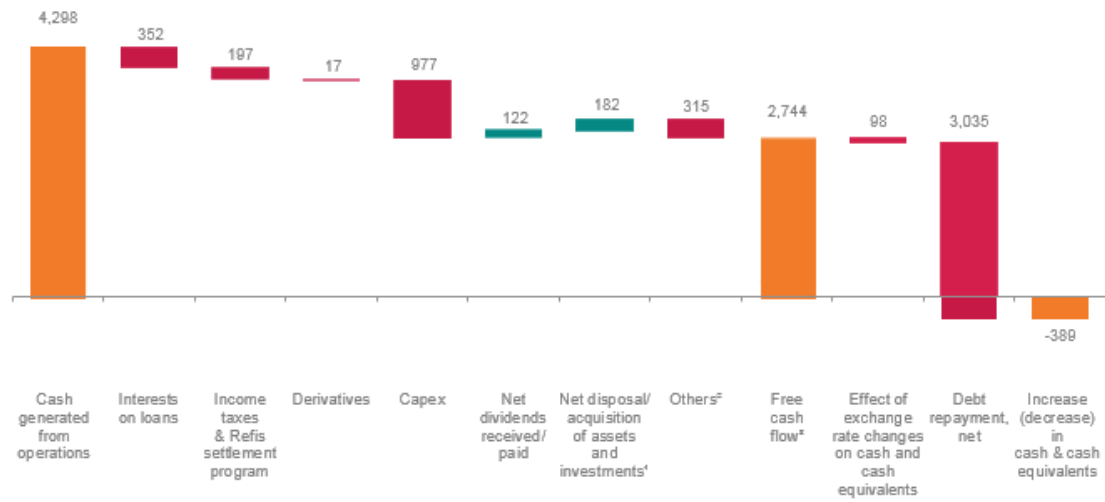
## Quarterly performance

Free cash flow was US\$ 2.744 billion in 4Q17.

Cash generated from operations was US\$ 4.298 billion in 4Q17, US\$ 189 million higher than the adjusted EBITDA, mainly due to the positive impact of the reduction in working capital. In 4Q17, there was a reversal of the accounts receivable variation, as forecast in the 3Q17 financial report, with a decrease in accounts receivable vs. 3Q17 as sales collections increased throughout the fourth quarter.

## Free Cash Flow 4Q17

US\$ million



<sup>1</sup> Includes the sale of vessels

<sup>2</sup> Includes US\$ 65 million related to shareholders debentures remuneration, US\$ 81 million of cash outflow from the Fertilizers segment, US\$ 78 million of funds to the Renova Foundation and US\$ 25 million to Samarco to fund its working capital

<sup>3</sup> Cash flow before debt additions/repayments and distribution of dividends to shareholders

## Debt indicators

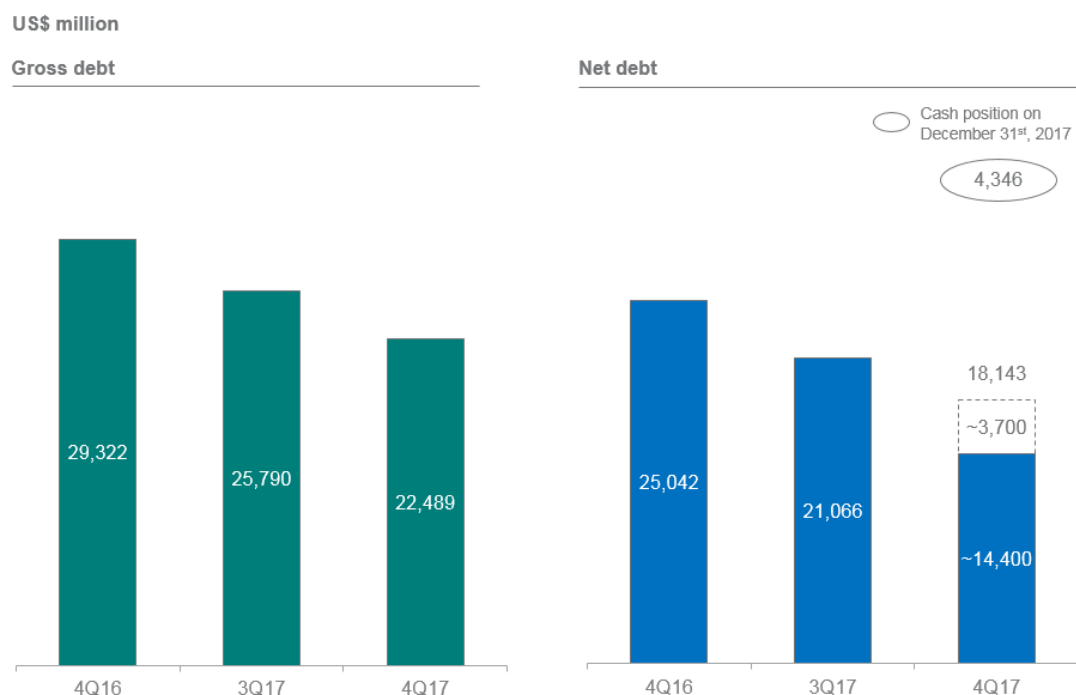
Vale delivered a substantial reduction in its debt levels quarter-on-quarter and year-on-year. Gross debt amounted to US\$ 22.489 billion as of December 31<sup>st</sup>, 2017, decreasing by US\$ 6.833 billion from December 31<sup>st</sup>, 2016 and by US\$ 3.301 billion from September 30<sup>th</sup>, 2017.

The decrease in gross debt against the end of last quarter was mainly due to net debt repayments<sup>18</sup> of US\$ 3.447 billion in 4Q17 and to the effects of the BRL depreciation over Vale's debt, which decreased BRL-denominated debt when translated to USD by US\$ 539 million (partially offset by the US\$ 320 million impact of the exchange rate variation on the USD and EUR-denominated debt when converted into BRL, Vale's functional currency). Interest accrued in the period was US\$ 378 million.

Net debt decreased by US\$ 2.923 billion compared to the end of the previous quarter and by US\$ 6.899 billion compared to the end of 2016, totaling US\$ 18.143 billion based on a cash position of US\$ 4.346 billion as of December 31<sup>st</sup>, 2017.

Considering the total net proceeds of US\$ 3.7 billion<sup>19</sup> from the sale of Fertilizers assets received by Vale in January 2018 and from the Nacala Corridor Project Finance to be received by Vale on March 21<sup>st</sup>, 2018, pro forma net debt is equivalent to US\$ 14.4 billion.

### Debt position

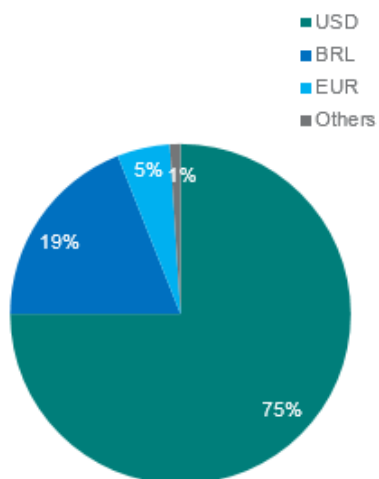


<sup>18</sup> Debt repayments less debt additions. Include interest payments.

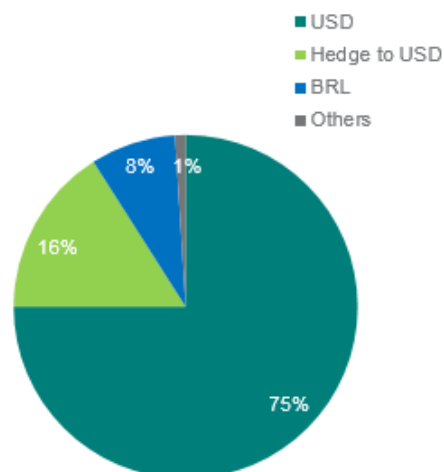
<sup>19</sup> Total proceeds from both transactions.

Gross debt after currency and interest rate swaps was 91% denominated in USD, with 27% based on floating and 73% based on fixed interest rates as of December 31<sup>st</sup>, 2017.

**Debt position breakdown by currency (before hedge)**



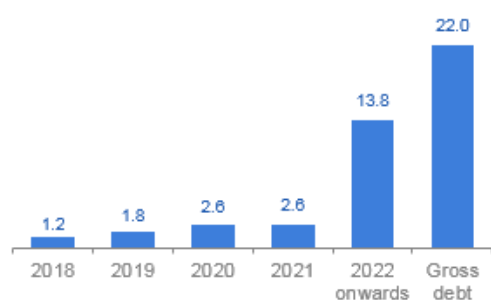
**Debt position breakdown by currency (after hedge)**



Average debt maturity increased to 8.9 years on December 31<sup>st</sup>, 2017, against 8.4 years on September 30<sup>th</sup>, 2017 and 7.9 years on December 31<sup>st</sup>, 2016. Average cost of debt, after the abovementioned currency and interest rate swaps, increased slightly, to 5.06% per annum on December 31<sup>st</sup>, 2017, against 4.96% per annum on September 30<sup>th</sup>, 2017. As the company prepaid debt with shorter maturities and with cheaper borrowing rates, both maturity and average cost of debt increased.

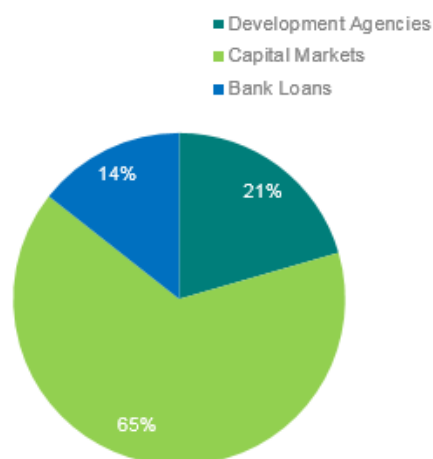
**Debt amortization schedule<sup>1</sup>**

US\$ billion



63% of debt maturity after 2022

**Debt breakdown by instrument**



<sup>1</sup> As of December 31<sup>st</sup>, 2017. Does not include accrued charges.

Interest coverage, measured by the ratio of LTM<sup>20</sup> adjusted EBITDA to LTM gross interest, was 9.0x in 4Q17, the same as in 3Q17, and higher than the 6.8x in 4Q16.

Leverage, measured by gross debt to LTM adjusted EBITDA, decreased to 1.5x as of December 31<sup>st</sup>, 2017 from 1.6x as of September 30<sup>th</sup>, 2017 and from 2.4x as of December 31<sup>st</sup>, 2016. Measuring by net debt to LTM adjusted EBITDA, leverage decreased to 1.2x as of December 31<sup>st</sup>, 2017 from 1.3x as of September 30<sup>th</sup>, 2017 and from 2.1x as of December 31<sup>st</sup>, 2016.

### Debt indicators

<i>US\$ million</i>	<b>4Q17</b>	<b>3Q17</b>	<b>4Q16</b>
Total debt	22,489	25,790	29,322
Net debt	18,143	21,066	25,042
Total debt / adjusted LTM EBITDA (x)	1.5	1.6	2.4
Net debt / adjusted LTM EBITDA (x)	1.2	1.3	2.1
Adjusted LTM EBITDA / LTM gross interest (x)	9.0	9.1	6.8

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<sup>20</sup> LTM = last twelve months

# Performance of the business segments

## Segment information – 2017, as per footnote of financial statements

US\$ million	Net Revenues	Cost <sup>1</sup>	Expenses			Dividends and interests on associates and JVs	Adjusted EBITDA
			SG&A and others <sup>1</sup>	R&D <sup>1</sup>	Pre operating & stoppage <sup>1</sup>		
Ferrous Minerals	25,129	(11,410)	(356)	(109)	(192)	130	13,192
Iron ore fines	18,524	(7,950)	(284)	(88)	(181)	30	10,051
ROM	38	-	-	-	-	-	38
Pellets	5,653	(2,876)	(65)	(19)	(7)	81	2,767
Others ferrous	445	(306)	5	(2)	-	19	161
Mn & Alloys	469	(278)	(12)	-	(4)	-	175
Coal	1,567	(1,354)	(44)	(14)	(4)	179	330
Base Metals	6,871	(4,416)	(179)	(62)	(75)	-	2,139
Nickel <sup>2</sup>	4,667	(3,437)	(153)	(48)	(75)	-	954
Copper <sup>3</sup>	2,204	(979)	(27)	(13)	-	-	1,185
Others	400	(375)	(281)	(155)	(9)	97	(323)
<b>Total</b>	<b>33,967</b>	<b>(17,555)</b>	<b>(860)</b>	<b>(340)</b>	<b>(280)</b>	<b>406</b>	<b>15,338</b>

<sup>1</sup> Excluding depreciation and amortization.

<sup>2</sup> Including copper and by-products from our nickel operations.

<sup>3</sup> Including by-products from our copper operations.

## Segment information – 4Q17, as per footnote of financial statements

US\$ million	Net Revenues	Cost <sup>1</sup>	Expenses			Dividends and interests on associates and JVs	Adjusted EBITDA
			SG&A and others <sup>1</sup>	R&D <sup>1</sup>	Pre operating & stoppage <sup>1</sup>		
Ferrous Minerals	6,698	(3,239)	(130)	(34)	(56)	80	3,319
Iron ore fines	5,023	(2,302)	(103)	(27)	(53)	29	2,567
ROM	8	-	-	-	-	-	8
Pellets	1,422	(779)	(22)	(6)	(2)	44	657
Others ferrous	110	(76)	(1)	(1)	-	7	39
Mn & Alloys	135	(82)	(4)	-	(1)	-	48
Coal	402	(433)	(12)	(3)	-	112	66
Base Metals	2,000	(1,130)	(45)	(18)	(25)	-	782
Nickel <sup>2</sup>	1,358	(874)	(33)	(15)	(25)	-	411
Copper <sup>3</sup>	642	(256)	(12)	(3)	-	-	371
Others	67	(71)	(42)	(49)	(7)	44	(58)
<b>Total</b>	<b>9,167</b>	<b>(4,873)</b>	<b>(229)</b>	<b>(104)</b>	<b>(88)</b>	<b>236</b>	<b>4,109</b>

<sup>1</sup> Excluding depreciation and amortization.

<sup>2</sup> Including copper and by-products from our nickel operations.

<sup>3</sup> Including by-products from our copper operations.

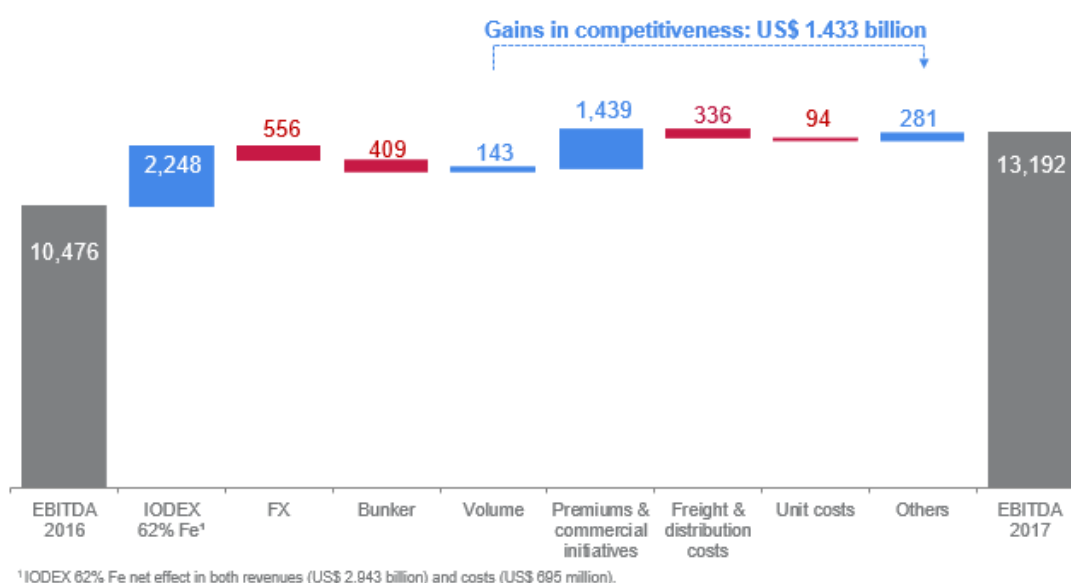
# Ferrous Minerals

Adjusted EBITDA of the Ferrous Minerals business segment was US\$ 13.192 billion in 2017, 25.9% higher than in 2016, mainly as a result of the net effect of the 22% increase of the Platts IODEX in revenues and costs (US\$ 2.248 billion) and gains in price realization (US\$ 1.439 billion), such as higher premiums and lower discounts (US\$ 1.003 billion) and renegotiations of freight reference for the FOB sales (US\$ 367 million). These were partly offset by the negative impact of the exchange rate (US\$ 556 million) and the 45% increase in bunker oil prices (US\$ 409 million).

Some of Vale's costs vary with iron ore prices and increased by US\$ 695 million<sup>21</sup> in line with a stronger price environment, such as: (i) pelletizing plant' leasing costs, which are adjusted based on pellet prices; (ii) iron ore royalties; (iii) third parties' product purchased; and (iv) provision for profit sharing to Vale employees. However, Vale was able to capture the benefits of the higher iron ore prices, with a much higher impact on revenues, which increased by US\$ 2.943 billion.

## EBITDA variation 2017 vs. 2016 – Ferrous Minerals business segment

US\$ million, 2017 vs. 2016



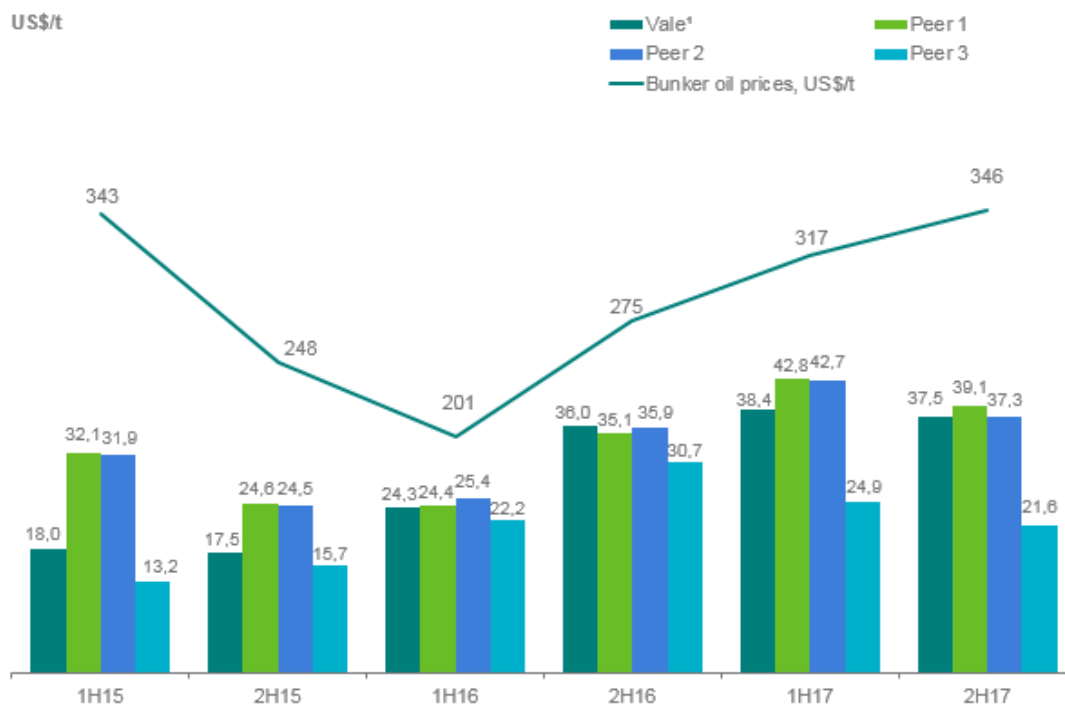
## Ferrous Minerals EBITDA margin<sup>22</sup>

Adjusted EBITDA per ton for Ferrous Minerals, excluding Manganese and Ferroalloys, was US\$ 37.9/t in 2017, 24.2% higher than the US\$ 30.5/t recorded in 2016, mainly as a result of the abovementioned higher price realization.

<sup>21</sup> Total impact of all iron ore price-linked cost factors.

<sup>22</sup> Excluding Manganese and Ferroalloys.





\* Adjusted EBITDA of iron ore, pellets, ROM and other ferrous for Vale's figures.  
Source: Financial reports of Vale and Peers

From 2016 onwards, Vale maintained the same level of EBITDA/t as its Australian peers, despite the structural freight disadvantage and the bunker oil price evolution in the period. This was achieved through Vale's ongoing initiatives in supply chain optimization, dynamic management of product mix, higher realized prices and not least its cost discipline.

## Iron ore fines (excluding Pellets and ROM)

### ANNUAL PERFORMANCE

Adjusted EBITDA of iron ore fines was US\$ 10.051 billion in 2017, 19.0% higher than in 2016, despite the negative impacts of exchange rate variations, bunker oil prices and spot freight rates. The increase was driven by higher market prices, higher premiums and the abovementioned initiatives of supply discipline, portfolio mix management, global supply chain management and focus on cost savings.

Costs for iron ore fines increased US\$ 928 million when compared to 2016<sup>23</sup>, mainly due to higher freight costs (US\$ 642 million) and the negative effect of the above mentioned procyclical iron ore price-linked cost factors (US\$ 283 million).

Unit maritime freight cost per iron ore metric ton was US\$ 15.4/t in 2017, US\$ 3.2/t higher than in 2016, mainly due to the impact of higher freight spot prices (US\$ 1.2/t), and higher bunker

<sup>23</sup> After adjusting for the effects of higher sales volumes (US\$ 70 million) and the negative impact of exchange rate variations (US\$ 330 million). Excluding depreciation.

oil prices (US\$ 1.9/t). The average bunker oil price in Vale's freight portfolio increased 45% from US\$ 219/t in 2016 to US\$ 318/t in 2017.

C1 cash cost FOB port per metric ton for iron ore fines ex-royalties totaled US\$ 14.8/t, increasing US\$ 1.5/t vs. 2016, mainly as a result of the negative impacts of: (i) the 8.4% BRL appreciation against the USD (US\$ 1.1/t); (ii) procyclical iron ore price-linked cost factors (US\$ 0.6/t); and (iii) inflation (US\$ 0.4/t). These were partially offset by the S11D ramp-up (US\$ 0.4/t) and the lower share of the Southern System and third party purchases in total sales (US\$ 0.4/t).

### Iron ore fines C1 cash cost variation 2017 vs. 2016



Sales volumes of iron ore fines reached 288.7 Mt in 2017, in line with 2016, mainly due to the S11D ramp-up, the curtailment of high silica products in the Southern and Southeastern Systems and build-up of offshore inventories.

Vale's CFR/FOB wmt price for iron ore fines (ex-ROM) of US\$ 64.2/t in 2017 increased by US\$ 9.8/t when compared to 2016, while the average Platts IODEX increased US\$ 12.9/t in the same period. The difference of US\$ 3.1/t was mainly due to the negative impacts of pricing systems mechanisms (US\$ 4.2/t) and moisture adjustment (US\$ 0.8/t) which was partially offset by the following positive impacts: (i) premium/discounts and commercial conditions (US\$ 1.3/t); (ii) quality (US\$ 0.4/t); and (iii) adjustment of FOB sales (US\$ 0.2/t).

## Reconciliation of Vale's Price Realization 2017 vs. 2016

US\$/t	2017 (A)	2016 (B)	(A) – (B)
<b>Average Platts (dmt)</b>	<b>71.3</b>	<b>58.4</b>	<b>12.9</b>
Quality	1.8	1.4	0.4
Premium/Discounts and commercial conditions	1.6	0.3	1.3
Pricing Systems	(1,1)	3.1	(4.2)
Adjustment for FOB sales	(3.6)	(3.8)	0.2
Moisture	(5.8)	(5.0)	(0.8)
<b>Vale CFR/FOB Price (wmt)</b>	<b>64.2</b>	<b>54.4</b>	<b>9.8</b>

The US\$ 4.2/t decrease linked to the Pricing Systems was mainly due to the provisional pricing mechanism. The sharp increase in prices in 4Q16 drove up provisional prices set in 4Q16, impacting significantly Vale's average realized price in 2016, whereas this trend was not observed in 2017, as the provisional prices set in 4Q17 were in line with the yearly Platts IODEX for 2017.

The US\$ 0.2/t increase in the adjustment of FOB sales was due to renegotiations of freight reference for the FOB sales (US\$ 0.9/t), which was partially offset by the increase in bunker oil prices (US\$ 0.7/t).

The US\$ 0.8/t decrease related to moisture was a result of the increase in Platts IODEX, as the moisture content remained at around 8%.

## QUARTERLY PERFORMANCE

### EBITDA

Adjusted EBITDA of iron ore fines was US\$ 2.567 billion in 4Q17, 11.1% lower than in 3Q17, mainly as a result of lower realized prices (US\$ 324 million), impacted by the 7.5% reduction of the Platts IODEX and by lower market premiums. Slightly higher costs and expenses<sup>24</sup> were partially offset by higher volumes.

### SALES REVENUES AND VOLUME

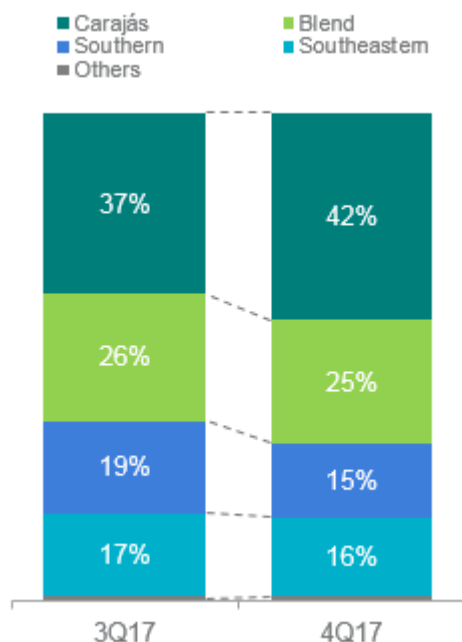
Net sales revenues of iron ore fines, excluding pellets and Run of Mine (ROM), decreased to US\$ 5.023 billion in 4Q17 vs. US\$ 5.131 billion in 3Q17, as a result of lower iron ore fines realized prices (US\$ 324 million) which were partially offset by higher sales volumes (US\$ 216 million).

Sales volumes of iron ore fines reached 79.6 Mt in 4Q17 vs. 76.4 Mt in 3Q17, 4.2% higher than in 3Q17, mainly due to the S11D ramp-up. In 4Q17, some sales were deliberately postponed to 1Q18 for margin optimization.

<sup>24</sup> After adjusting for the effects of exchange rate variations.

CFR sales of iron ore fines totaled 55.6 Mt in 4Q17, representing 70% of all iron ore fines sales volumes in 4Q17, remaining in line with the share of CFR sales in 3Q17.

## Sales composition



## Net operating revenue by product

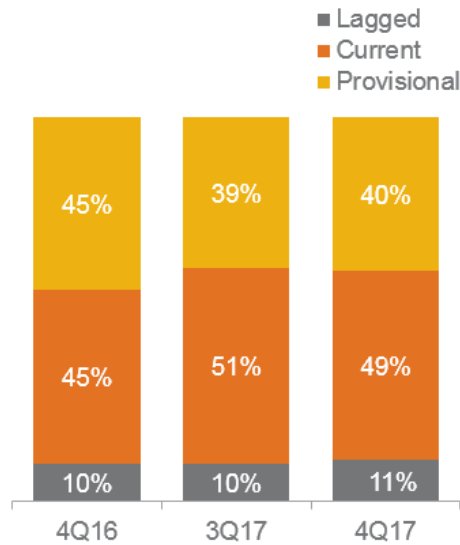
US\$ million	4Q17	3Q17	4Q16	2017	2016
Iron ore fines	5,023	5,131	5,576	18,524	15,783
ROM	8	7	28	38	41
Pellets	1,422	1,441	1,216	5,653	3,828
Manganese & Ferroalloys	135	131	117	469	301
Others	110	110	110	445	397
<b>Total</b>	<b>6,698</b>	<b>6,820</b>	<b>7,047</b>	<b>25,129</b>	<b>20,351</b>

## Volume sold

'000 metric tons	4Q17	3Q17	4Q16	2017	2016
Iron ore fines	79,603	76,388	80,287	288,692	289,940
ROM	355	406	2,220	2,637	3,496
Pellets	13,579	13,135	13,190	51,775	47,709
Manganese ore	740	498	534	1,826	1,851
Ferroalloys	34	32	35	132	127

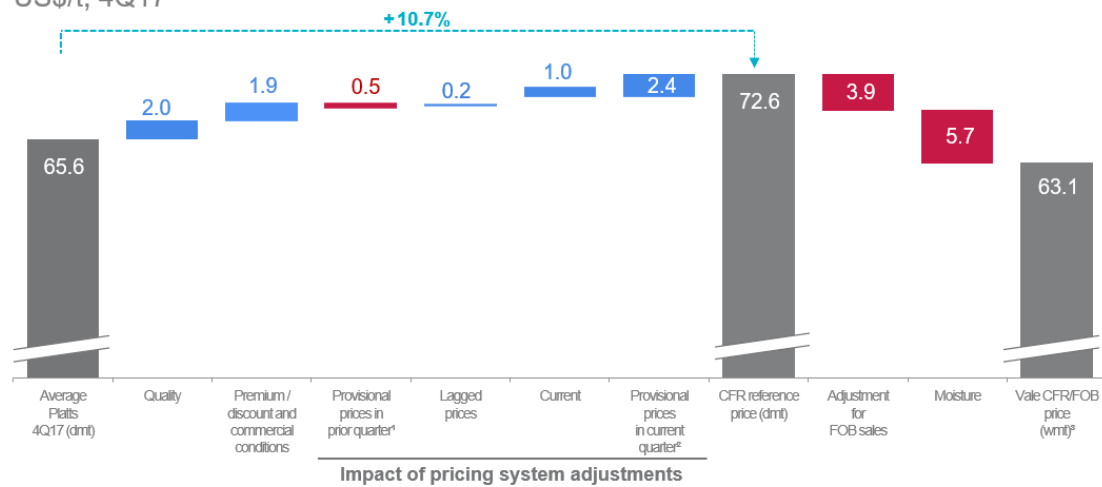
## REALIZED PRICES

### Pricing system breakdown



### Price realization – iron ore fines

US\$/t, 4Q17



<sup>1</sup> Adjustment as a result of provisional prices booked in 3Q17 at US\$ 62.7/t.

<sup>2</sup> Difference between the weighted average of the prices provisionally set at the end of 4Q17 at US\$ 72.8/t based on forward curves and US\$ 65.6/t from the 4Q17 IODEX.

<sup>3</sup> Vale price is net of taxes.

Vale's CFR dmt reference price for iron ore fines (ex-ROM) was US\$ 72.6/t, US\$ 7.0/t higher than the IODEX, but US\$ 3.5/t lower than the US\$ 76.1/t in 3Q17, mainly as a result of: (i) the decrease in the IODEX (US\$ 5.3/t) and (ii) lower premiums (US\$ 2.0/t<sup>25</sup>), which were partially offset by an increase in quality (US\$ 0.3/t) and the positive pricing system adjustments (US\$ 3.1/t).

<sup>25</sup> Difference between the US\$ 3.9/t recorded in 3Q17 and the US\$ 1.9/t recorded in 4Q17.

Vale's CFR/FOB wmt price for iron ore fines (ex-ROM) decreased only 6.1% (US\$ 4.1/t), after adjusting for moisture and the effect of FOB sales, which accounted for 30% of total sales volumes in 4Q17, while the IODEX reduced 7.5% (US\$ 5.3/t), from US\$ 67.2/t in 3Q17 to US\$ 63.1/t in 4Q17.

The 'Premiums/Discounts and commercial conditions' decreased by US\$ 2.0/t, from US\$ 3.9/t in 3Q17 to US\$ 1.9/t in 4Q17, mainly as a result of the decrease in the 65% Fe IOCJ premiums.

Price realization in 4Q17 was impacted by:

- Provisional prices set at the end of 3Q17 at US\$ 62.7/t, which were later adjusted based on the price of delivery in 4Q17, and negatively impacted prices in 4Q17 by US\$ 0.5/t compared to a positive impact of US\$ 2.7/t in 3Q17 as a result of lower realized prices of the indexes in 4Q17 compared to the indexes anticipated in the forward curve and provisioned in 3Q17.
- Provisional prices set at the end of 4Q17 at US\$ 72.8/t vs. the IODEX average of US\$ 65.6/t in 4Q17, which positively impacted prices in 4Q17 by US\$ 2.4/t compared to a negative impact of US\$ 3.2/t in 3Q17.
- Quarter-lagged contracts, priced at US\$ 66.6/t based on the average prices for Jun-Jul-Aug, which positively impacted prices in 4Q17 by US\$ 0.2/t compared to a positive impact of US\$ 0.3/t in 3Q17.

Iron ore sales of 32.3 Mt, or 40% of Vale's sales mix, were recorded under the provisional pricing system, which was set at the end of 4Q17 at US\$ 72.8/t. The final prices of these sales and the required adjustment to sales revenues will be determined and recorded in 1Q18.

### Average prices

US\$/ metric ton	4Q17	3Q17	4Q16	2017	2016
Iron ore - Metal Bulletin 65% index	84.70	91.20	82.60	88.00	64.95
Iron ore - Platts' 62% IODEX	65.57	70.90	70.76	71.30	58.45
Iron ore fines CFR reference price (dmt)	72.60	76.10	79.10	88.00	62.34
Iron ore fines CFR/FOB realized price	63.10	67.17	69.40	64.17	54.44
ROM	22.55	17.24	12.61	14.41	11.73
Pellets CFR/FOB (wmt)	104.71	109.71	92.27	109.18	80.26
Manganese ore	119.34	175.81	162.92	159.01	110.87
Ferroalloys	1,361.31	1,380.30	857.14	1,353.72	757.67

### COSTS

Costs for iron ore fines amounted to US\$ 2.302 billion (or US\$ 2.595 billion with depreciation charges) in 4Q17. Costs increased by US\$ 175 million when compared to 3Q17, after adjusting for the effects of higher sales volumes (US\$ 68 million) and the positive impact of exchange rate variations (US\$ 27 million). This increase was mainly due to higher than forecast iron ore prices impacting the provision for profit sharing payments to employees and higher third party

railway costs (MRS) in the Southern System, which were partially offset by lower maintenance costs.

### IRON ORE COGS - 3Q17 x 4Q17

US\$ million	Variance drivers					4Q17
	3Q17	Volume	Exchange Rate	Others	Total Variation 3Q17 x 4Q17	
C1 cash costs	1,109	46	(27)	39	57	1,166
Freight	819	16	-	111	128	947
Others	158	6	-	25	31	189
<b>Total costs before depreciation and amortization</b>	<b>2,086</b>	<b>68</b>	<b>(27)</b>	<b>175</b>	<b>216</b>	<b>2,302</b>
Depreciation	281	12	(7)	7	12	293
<b>Total</b>	<b>2,367</b>	<b>80</b>	<b>(34)</b>	<b>182</b>	<b>228</b>	<b>2,595</b>

Maritime freight costs, which are fully accrued as cost of goods sold, totaled US\$ 947 million in 4Q17, increasing US\$ 128 million vs. 3Q17.

Unit maritime freight cost per iron ore metric ton was US\$ 17.0/t in 4Q17, US\$ 2.0/t higher than in 3Q17, mainly due to the impact of higher freight spot prices (US\$ 0.8/t) and higher bunker oil prices (US\$ 0.7/t). The average bunker oil price in Vale's freight portfolio increased from US\$ 308/t in 3Q17 to US\$ 342/t in 4Q17.

### C1 CASH COST

C1 cash cost FOB port per metric ton for iron ore fines ex-royalties remained in line at US\$ 14.6/t in 4Q17. Excluding the positive impact of the BRL depreciation against the USD of 2.6% in 4Q17, costs increased US\$ 0.4/t mainly as a result of higher iron ore prices than previously forecast impacting the provision for profit sharing payments to employees (US\$ 0.3/t), higher third party railway costs (MRS) in the Southern System (US\$ 0.2/t) and the impact of the collective bargaining agreement renewal (US\$ 0.1/t). These were partially offset by lower maintenance costs (US\$ 0.2/t).

C1 cash cost FOB port per metric ton of iron ore fines ex-royalties in BRL increased by 4.1% to R\$ 47.7/t (US\$ 14.6/t) vs. the R\$ 45.8/t recorded in 3Q17, as a result of the abovementioned effects. When compared to 4Q15, Vale's C1 cash costs increased only 1.5%, despite the 10.8% inflation<sup>26</sup> during the period.

### Iron Ore Fines Costs and Expenses in BRL

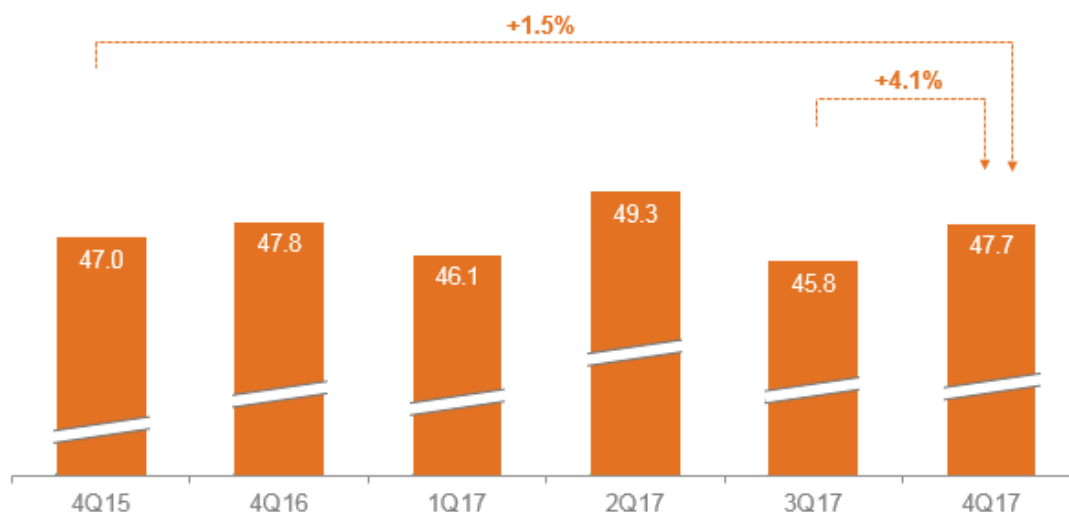
R\$/t	4Q17	3Q17	4Q16
C1 Cash Costs <sup>1</sup>	47.7	45.8	47.8
Expenses <sup>1</sup>	6.2	6.6	7.5
<b>Total</b>	<b>53.9</b>	<b>52.4</b>	<b>55.3</b>

<sup>1</sup> Net of depreciation.

<sup>26</sup> Using the IGP-M (FGV) metric from 4Q15 to 4Q17.

## Evolution of C1 Cash Cost<sup>1</sup> per ton in BRL

R\$/t



<sup>1</sup> 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

	4Q17	3Q17	4Q16	2017	2016
<b>Costs (US\$ million)</b>					
COGS, less depreciation and amortization	2,301	2,086	2,013	7,949	6,622
Distribution costs	54	51	25	163	95
Maritime freight costs	947	819	725	3,064	2,332
<b>FOB at port costs (ex-ROM)</b>	<b>1,300</b>	<b>1,216</b>	<b>1,263</b>	<b>4,722</b>	<b>4,195</b>
<b>FOB at port costs (ex-ROM and ex-royalties)</b>	<b>1,166</b>	<b>1,109</b>	<b>1,159</b>	<b>4,263</b>	<b>3,856</b>
<b>Sales volumes (Mt)</b>					
Total iron ore volume sold	80.0	76.8	82.5	291.3	293.4
Total ROM volume sold	0.4	0.4	2.2	2.6	3.5
Volume sold (ex-ROM)	79.6	76.4	80.3	288.7	289.9
<b>Vale's iron ore cash cost (ex-ROM, ex-royalties), FOB (US\$ /t)</b>	<b>14.6</b>	<b>14.5</b>	<b>14.4</b>	<b>14.8</b>	<b>13.3</b>
<b>Freight</b>					
Maritime freight costs	947	819	725	3,064	2,332
% of CFR sales	70%	71%	69%	69%	66%
Volume CFR (Mt)	55.6	54.5	55.1	199.3	191.9
Vale's iron ore unit freight cost (US\$/t)	17.0	15.0	13.2	15.4	12.2

## EXPENSES

Iron ore expenses, net of depreciation, amounted to US\$ 183 million in 4Q17, 15.8% higher than in 3Q17. SG&A and other expenses totaled US\$ 103 million in 4Q17, increasing US\$ 14 million vs. 3Q17, mainly due to higher iron ore prices than previously forecast impacting the provision for profit sharing payments to employees, the impact of the collective bargaining agreement renewal and higher service expenses. R&D amounted to US\$ 27 million, 22.7% higher than in 3Q17, mainly due to the usual seasonality of disbursements. Pre-operating and stoppage expenses, net of depreciation, amounted to US\$ 53 million, increasing US\$ 6 million vs. 3Q17, mainly as a result of higher S11D pre-operating expenses.



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



## Evolution of iron ore fines sustaining per ton



## Iron ore pellets

### ANNUAL PERFORMANCE

#### EBITDA

Adjusted EBITDA for pellets was US\$ 2.767 billion in 2017, representing 18% of Vale's total Adjusted EBITDA. The 52.0% increase vs. 2016 was mainly due to higher prices and premiums (US\$ 1.496 billion) and higher sales volumes (US\$ 149 million), which were partially offset by higher costs<sup>27</sup> (US\$ 583 million).

The average pellet premium increased from US\$ 34/t in 2016 to US\$ 46/t in 2017 and will further increase in 2018 as the premiums for all contracts were settled at a premium average of US\$ 60/t due to the strong market demand.

Costs for pellets totaled US\$ 2.876 billion (or US\$ 3.247 billion with depreciation charges) in 2017. Costs increased by US\$ 583 million excluding the effects of higher sales volumes (US\$ 181 million) and exchange rate variations (US\$ 110 million), mainly due to the procyclical effect of higher prices impacting leasing costs from the pelletizing plants (US\$ 374 million) and higher maintenance costs (US\$ 63 million).

### QUARTERLY PERFORMANCE

Adjusted EBITDA for pellets in 4Q17 was US\$ 657 million, 3.2% lower than the US\$ 679 million recorded in 3Q17. The decrease of US\$ 22 million was mainly a result of lower sales prices (US\$ 68 million) and higher costs<sup>27</sup> (US\$ 28 million), which were partially offset by higher dividends received<sup>28</sup> in 4Q17 (US\$ 44 million) and higher sales volumes (US\$ 20 million).

Net sales revenues for pellets amounted to US\$ 1.422 billion in 4Q17, decreasing US\$ 19 million from the US\$ 1.441 billion recorded in 3Q17 as a result of lower realized prices (US\$ 68 million), which decreased from an average CFR/FOB of US\$ 109.7/t in 3Q17 to US\$ 104.7/t in 4Q17. This decrease was mainly due to the US\$ 5.3/t decrease in the Platts IODEX, but was partially offset by higher sales volumes (US\$ 49 million). Sales volumes increased from 13.1 Mt in 3Q17 to 13.6 Mt in 4Q17.

CFR pellet sales of 3.2 Mt in 4Q17 represented 24% of total pellet sales, slightly higher than the 22% in 3Q17. FOB pellet sales amounted to 10.3 Mt in 4Q17, in line with the 10.2 Mt recorded in 3Q17.

Pellet costs totaled US\$ 779 million (or US\$ 876 million with depreciation charges) in 4Q17. After adjusting for the effects of higher volumes (US\$ 29 million) and exchange rate variations (US\$ 11 million), costs increased by US\$ 28 million vs. 3Q17, mainly due to higher leasing

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<sup>27</sup> After adjusting for the effects of higher volumes and exchange rate variations.

<sup>28</sup> Dividends from leased pelletizing plants, which are usually paid every 6 months (in 2Q and 4Q).

costs. The reason for increased leasing costs was higher profits impacting the pre-determined formula of the leasing contracts.

Pre-operating and stoppage expenses for pellets were US\$ 2 million in 4Q17, in line with 3Q17. SG&A and other expenses totaled US\$ 22 million in 4Q17, in line with 3Q17.

EBITDA unit margin for pellets was US\$ 48.4/t in 4Q17, 6.4% lower than in 3Q17.

### Pellets - EBITDA

	4Q17		3Q17	
	US\$ million	US\$/wmt	US\$ million	US\$/wmt
Net Revenues / Realized Price	1,422	104.7	1,441	109.7
Dividends Received (Leased pelletizing plants)	44	3.2	0	0.0
Cash Costs (Iron ore, leasing, freight, overhead, energy and other)	(779)	(57.4)	(733)	(55.8)
Expenses (SG&A, R&D and other)	(30)	(2.2)	(29)	(2.2)
EBITDA	657	48.4	679	51.7

### 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), increased US\$ 3.9/t when compared to 3Q17, totaling US\$ 33.9/dmt in 4Q17, mainly as a result of the abovementioned higher freight costs and lower premiums.

Quarterly iron ore and pellets cash break-even on a landed-in-China basis, including sustaining capex per ton of US\$ 3.4/dmt, increased from US\$ 32.9/dmt in 3Q17 to US\$ 37.3/dmt in 4Q17.

### Iron ore and pellets cash break-even landed in China<sup>1</sup>

US\$/t	4Q17	3Q17	4Q16	2017	2016
Vale's iron ore cash cost (ex-ROM, ex-royalties), FOB (US\$/t)	14.6	14.5	14.4	14.8	13.3
Iron ore fines freight cost (ex-bunker oil hedge)	17.0	15.0	13.2	15.4	12.2
Iron ore fines distribution cost <sup>2</sup>	0.7	0.7	0.3	0.6	0.3
Iron ore fines expenses <sup>3</sup> & royalties	3.6	3.5	3.5	3.4	3.6
Iron ore fines moisture adjustment	3.1	2.9	2.7	3.0	2.6
Iron ore fines quality adjustment	(3.9)	(5.6)	(2.1)	(3.4)	(1.7)
<b>Iron ore fines EBITDA break-even (US\$/dmt)</b>	<b>35.2</b>	<b>31.0</b>	<b>31.9</b>	<b>33.8</b>	<b>30.4</b>
Iron ore fines pellet adjustment	(1.3)	(1.0)	(1.5)	(1.5)	(1.5)
<b>Iron ore fines and pellets EBITDA break-even (US\$/dmt)</b>	<b>33.9</b>	<b>30.0</b>	<b>30.4</b>	<b>32.2</b>	<b>28.8</b>
Iron ore fines sustaining investments	3.4	2.9	3.2	3.2	2.6
<b>Iron ore fines and pellets cash break-even landed in China (US\$/dmt)</b>	<b>37.3</b>	<b>32.9</b>	<b>33.6</b>	<b>35.5</b>	<b>31.4</b>

<sup>1</sup> Measured by unit cost + expenses + sustaining investment adjusted for quality.

<sup>2</sup> Distribution cost per ton calculation method has been revised and adjusted retroactively, now dividing by total sales volume instead of CFR sales volume.

<sup>3</sup> Net of depreciation and includes dividends received.

## Manganese and ferroalloys

### ANNUAL PERFORMANCE

Adjusted EBITDA of manganese ore and ferroalloys was US\$ 175 million in 2017, US\$ 119 million higher than the US\$ 56 million in 2016, mainly due to higher realized prices (US\$ 166 million) which were partially offset by higher costs<sup>29</sup> (US\$ 28 million).

### QUARTERLY PERFORMANCE

Adjusted EBITDA of manganese ore and ferroalloys was US\$ 48 million in 4Q17, US\$ 9 million lower than the US\$ 57 million in 3Q17, mainly due to lower realized prices (US\$ 42 million), partially offset by higher volumes (US\$ 25 million) and lower costs<sup>30</sup> (US\$ 9 million).

### Volume sold by destination – Iron ore and pellets

'000 metric tons	4Q17	3Q17	4Q16	2017	2016
<b>Americas</b>	<b>9,995</b>	<b>9,306</b>	<b>10,699</b>	<b>40,504</b>	<b>36,485</b>
Brazil	7,232	6,710	8,679	30,535	29,008
Others	2,763	2,596	2,020	9,969	7,477
<b>Asia</b>	<b>68,105</b>	<b>65,854</b>	<b>68,013</b>	<b>244,864</b>	<b>242,244</b>
China	54,182	52,355	56,181	197,247	196,348
Japan	7,518	8,127	7,042	27,444	28,188
Others	6,405	5,372	4,790	20,173	17,708
<b>Europe</b>	<b>11,460</b>	<b>10,226</b>	<b>12,619</b>	<b>43,459</b>	<b>49,421</b>
Germany	4,747	4,309	5,839	18,314	20,543
France	1,795	1,678	1,851	6,526	6,609
Others	4,918	4,239	4,929	18,619	22,269
<b>Middle East</b>	<b>2,351</b>	<b>2,153</b>	<b>2,795</b>	<b>8,091</b>	<b>8,999</b>
<b>Rest of the World</b>	<b>1,626</b>	<b>2,390</b>	<b>1,571</b>	<b>6,186</b>	<b>3,996</b>
<b>Total</b>	<b>93,537</b>	<b>89,929</b>	<b>95,697</b>	<b>343,104</b>	<b>341,145</b>

### Selected financial indicators - Ferrous Minerals

US\$ million	4Q17	3Q17	4Q16	2017	2016
Net Revenues	6,698	6,820	7,047	25,129	20,351
Costs <sup>1</sup>	(3,239)	(2,967)	(2,753)	(11,410)	(9,125)
Expenses <sup>1</sup>	(130)	(116)	(141)	(356)	(572)
Pre-operating and stoppage expenses <sup>1</sup>	(56)	(49)	(52)	(192)	(186)
R&D expenses	(34)	(27)	(45)	(109)	(105)
Dividends and interests on associates and JVs	80	13	53	130	113
Adjusted EBITDA	3,319	3,674	4,109	13,192	10,476
Depreciation and amortization	(466)	(456)	(489)	(1,766)	(1,616)
Adjusted EBIT	2,773	3,205	3,567	11,296	8,747
Adjusted EBIT margin (%)	41.4	47.0	50.6	45.0	43.0

<sup>1</sup> Net of depreciation and amortization.

<sup>29</sup> After adjusting for the effects of higher volumes and exchange rates.

<sup>30</sup> After adjusting for the effects of higher volumes and exchange rates.

### Selected financial indicators - Iron ore fines

	4Q17	3Q17	4Q16	2017	2016
Adjusted EBITDA (US\$ million)	2,567	2,888	3,391	10,051	8,445
Volume Sold (Mt)	79.6	76.4	80.3	288.7	289.9
Adjusted EBITDA (US\$/t)	32.2	37.8	42.2	34.8	29.1

### Selected financial indicators - Pellets

	4Q17	3Q17	4Q16	2017	2016
Adjusted EBITDA (US\$ million)	657	679	625	2,767	1,820
Volume Sold (Mt)	13.6	13.1	13.2	51.8	47.7
Adjusted EBITDA (US\$/t)	48.4	51.7	47.4	53.4	38.1

### Selected financial indicators - Ferrous ex Manganese and Ferroalloys

	4Q17	3Q17	4Q16	2017	2016
Adjusted EBITDA (US\$ million)	3,271	3,617	4,064	13,017	10,420
Volume Sold (Mt) <sup>1</sup>	93.5	89.9	95.7	343.1	341.1
Adjusted EBITDA (US\$/t)	35.0	40.2	42.5	37.9	30.5

<sup>1</sup> Volume including iron ore fines, pellets and ROM

# Base Metals

## Annual performance

Base Metals adjusted EBITDA totaled US\$ 2.139 billion in 2017, representing an increase of US\$ 291 million from the US\$ 1.848 billion recorded in 2016. The increase was mainly due to higher copper prices (US\$ 642 million), higher nickel prices (US\$ 257 million) and higher cobalt prices (US\$ 138 million). These price effects were partially offset by higher costs (US\$ 237 million), lower volumes (US\$ 203 million), higher expenses (US\$ 148 million), and the unfavorable effect of exchange rate variations (US\$ 150 million). 2017 is marked as a year of transition to a simpler and more efficient nickel flowsheet in the North Atlantic operations. This transition aims to deliver stronger results from 2018 onwards, as well as lower volumes, reflecting Vale's commitment to value over volume in the nickel business.

## Quarterly performance

Adjusted EBITDA was US\$ 782 million in 4Q17, the highest quarterly level since 1Q11, with an increase of US\$ 221 million vs. 3Q17, mainly as a result of higher nickel and copper realized prices (US\$ 152 million), lower costs<sup>31</sup> (US\$ 55 million), higher by-product prices (US\$ 40 million), higher nickel and copper volumes (US\$ 25 million) and favourable exchange rate variations<sup>32</sup> (US\$ 16 million), which were partially offset by lower by-product volumes (US\$ 50 million) and higher expenses<sup>33</sup> (US\$ 16 million).

## SALES REVENUES AND VOLUMES

Nickel sales revenues were US\$ 941 million in 4Q17, increasing US\$ 189 million vs. 3Q17 as a result of higher nickel realized prices in 4Q17 (US\$ 94 million) and higher sales volumes (US\$ 94 million). Sales volumes totaled 80 kt, 9 kt higher than in 3Q17.

Copper sales revenues were US\$ 744 million in 4Q17, increasing US\$ 61 million vs. 3Q17 mainly as a result of higher copper realized prices in 4Q17 (US\$ 58 million). Sales volumes were 111 kt in 4Q17, in line with 3Q17.

Sales revenues from gold contained as a by-product in nickel and copper concentrates amounted to US\$ 157 million in 4Q17, decreasing by US\$ 4 million vs. 3Q17 mainly as a result of lower volumes which were partially offset by higher gold by-product realized prices in 4Q17. Sales volumes of gold as a by-product amounted to 108,000 oz in 4Q17, 30,000 oz lower than in 3Q17.

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<sup>31</sup> Net of volume effect and exchange rate variations.

<sup>32</sup> Exchange rate variations in COGS and expenses.

<sup>33</sup> Net of exchange rate variations.

PGMs (platinum group metals) sales revenues totalled US\$ 62 million in 4Q17, decreasing US\$ 10 million vs. 3Q17. Sales volumes were 68,000 oz in 4Q17 vs. 85,000 oz in 3Q17. The PGMs sales volume decreased mainly due to the lower sales volumes of palladium.

Cobalt sales revenues totalled US\$ 79 million in 4Q17, in line with 3Q17, as higher cobalt prices (US\$ 7 million) offset lower sales volumes (US\$ 7 million) in the quarter. Sales volumes of cobalt by-product amounted to 1,368 t in 4Q17, 114 t lower than in 3Q17.

### Net operating revenue by product

US\$ million	4Q17	3Q17	4Q16	2017	2016
Nickel	941	752	894	3,139	3,050
Copper	744	683	585	2,530	1,915
Gold as by-product	157	161	164	587	627
Silver as by-product	9	7	13	33	42
PGMs	62	72	52	296	351
Cobalt	79	79	42	258	115
Others	8	8	10	28	39
<b>Total</b>	<b>2,000</b>	<b>1,762</b>	<b>1,760</b>	<b>6,871</b>	<b>6,139</b>

### REALIZED NICKEL PRICES

The realized nickel price was US\$ 11,781/t, US\$ 197/t higher than the average LME nickel price of US\$ 11,584/t in 4Q17.

Refined nickel sales accounted for 85% of total nickel sales in 4Q17. Sales of intermediate products accounted for the balance.

The realized nickel price differed from the average LME price in 4Q17 due to the following factors:

- Premium for refined finished nickel products averaged US\$ 511/t, with an impact on the aggregate realized nickel price of US\$ 434/t;
- Discount for intermediate nickel products averaged US\$ 1,580/t, with an impact on the aggregate realized nickel price of -US\$ 237/t.

## Price realization – nickel

US\$/t, 4Q17



## REALIZED COPPER PRICES

The realized copper price was US\$ 6,735/t, US\$ 73/t lower than the average LME copper price of US\$ 6,808/t in 4Q17. Vale's copper 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<sup>34</sup>.

The realized copper price differed from the average LME price in 4Q17 due to the following factors:

- Current period price adjustments: mark-to-market of invoices still open in the quarter based on the copper price forward curve<sup>35</sup> at the end of the quarter (US\$ 236/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\$ 242/t);
- TC/RCs, penalties, premiums and discounts for intermediate products (-US\$ 551/t).

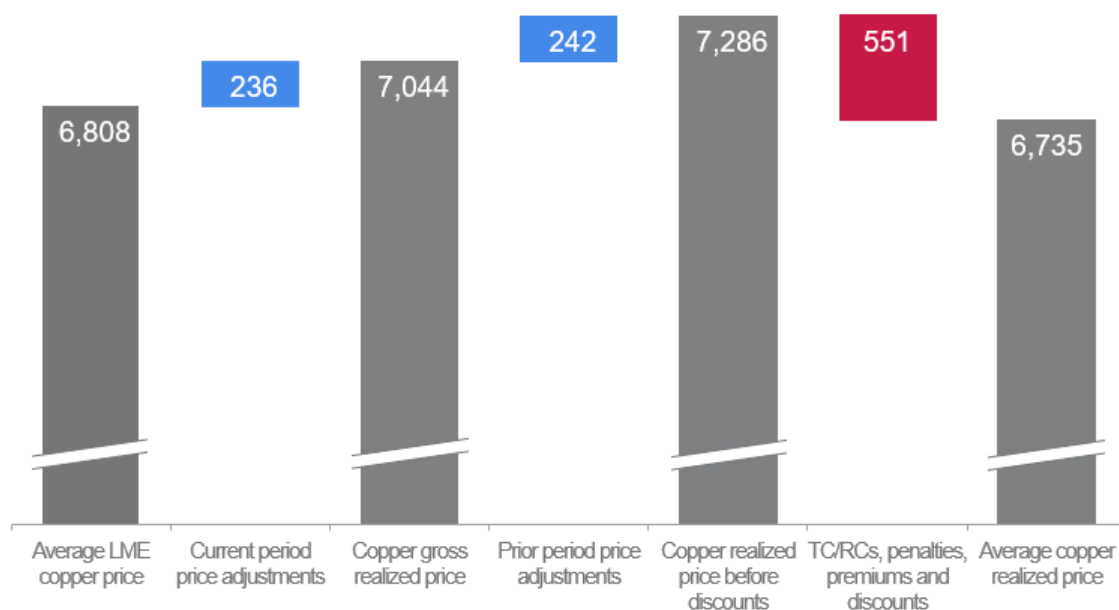
<sup>34</sup> On Dec 31<sup>st</sup>, 2017, Vale had provisionally priced copper sales totaling 106,178 tons valued at a LME forward price of US\$ 7,232/t, subject to final pricing over the following months.

<sup>35</sup> Includes a small number of final invoices that were provisionally priced and settled within the quarter.



## Price realization – copper

US\$/t, 4Q17



## Average prices

US\$/ metric ton	4Q17	3Q17	4Q16	2017	2016
Nickel - LME	11,584	10,528	10,810	10,411	9,609
Copper - LME	6,808	6,349	5,277	6,166	4,863
Nickel	11,781	10,554	10,803	10,654	9,800
Copper	6,735	6,203	5,093	5,970	4,458
Platinum (US\$/oz)	880	917	887	891	919
Gold (US\$/oz)	1,450	1,175	1,246	1,247	1,260
Silver (US\$/oz)	15.48	15.87	18.52	15.30	16.22
Cobalt (US\$/t)	57,680	53,428	28,021	51,513	24,273

## SALES VOLUME PERFORMANCE

Sales volumes of nickel were 80 kt in 4Q17, 9 kt higher than in 3Q17 and 3 kt lower than in 4Q16. Sales volumes were higher than in 3Q17 mainly due to higher nickel production in 4Q17 as well as a drawdown of finished nickel inventories in 4Q17.

Sales volumes of copper totaled 111 kt in 4Q17, in line with 3Q17 and 4 kt lower than in 4Q16.

Sales volumes of gold as a by-product totaled 108,000 oz in 4Q17, 30,000 oz lower than in 3Q17, mainly due to corrections for North Atlantic precious metals volumes in 4Q17.

## Volume sold

'000 metric tons	4Q17	3Q17	4Q16	2017	2016
Nickel operations & by products					
Nickel	80	71	83	295	311
Copper	37	37	44	143	172
Gold as by-product ('000 oz)	-	34	25	74	94
Silver as by-product ('000 oz)	383	242	524	1,338	1,851
PGMs ('000 oz)	68	85	73	350	507
Cobalt (metric ton)	1,368	1,482	1,487	5,013	4,734
Copper operations & by products					
Copper	74	73	71	281	258
Gold as by-product ('000 oz)	108	104	107	397	403
Silver as by-product ('000 oz)	219	223	203	841	727

## COSTS OF GOODS SOLD (COGS)

Costs totaled US\$ 1.130 billion in 4Q17 (or US\$ 1.558 billion including depreciation). Costs decreased by US\$ 56 million vs. 3Q17 after adjusting for the effects of higher sales volumes (US\$ 70 million) and exchange rate variations (US\$ 13 million).

## BASE METALS COGS - 3Q17 x 4Q17

US\$ million	3Q17	Variance drivers			Total variation 3Q17 x 4Q17	4Q17
		Volume	Exchange rate	Others		
Nickel operations	882	68	(6)	(69)	(7)	875
Copper operations	247	2	(7)	13	8	255
<b>Total costs before depreciation and amortization</b>	<b>1,129</b>	<b>70</b>	<b>(13)</b>	<b>(56)</b>	<b>1</b>	<b>1,130</b>
Depreciation	395	24	(9)	18	33	428
<b>Total</b>	<b>1,524</b>	<b>94</b>	<b>(22)</b>	<b>(38)</b>	<b>34</b>	<b>1,558</b>

## EXPENSES

SG&A and other expenses, excluding depreciation, totaled US\$ 45 million, a decrease of US\$ 7 million when compared to the US\$ 52 million in 3Q17, mainly due to one-off expenses related to IT allocated in 3Q17.

Pre-operating and stoppage expenses were US\$ 25 million, mainly due to care and maintenance costs associated with Stobie mine, in Sudbury (US\$ 7 million), Birchtree mine, in Thompson (US\$ 6 million), Acton refinery (US\$ 2 million) and costs associated with the revision of the mining plan in Voisey's Bay (US\$ 2 million).

## UNIT CASH COST

North Atlantic operations unit cash cost net of by-product credits increased from the US\$ 4,484/t recorded in 3Q17 to US\$ 4,624/t in 4Q17, mainly due to lower by-product credits partially offset by lower costs associated with third party purchased feed and lower spending on services and supplies in 4Q17.

PTVI unit cash cost increased from the US\$ 5,866/t recorded in 3Q17 to US\$ 6,609/t in 4Q17, mainly due to lower favorable inventory adjustments and higher energy costs.

VNC unit cost net of by-product credits decreased from the US\$ 9,841/t recorded in 3Q17 to US\$ 8,420/t in 4Q17, mainly due to the favorable impact of 13% higher production on fixed cost dilution and lower spending on services and supplies in 4Q17.

Onça Puma unit cash cost decreased from the US\$ 7,944/t recorded in 3Q17 to US\$ 7,536/t in 4Q17, mainly due to lower costs with maintenance services and supplies as well as the favourable impact of exchange rate variations.

Sossego unit cost increased from the US\$ 2,951/t recorded in 3Q17 to US\$ 3,270/t in 4Q17, mainly due to lower ore grades being processed at the mill and one-off maintenance costs.

Salobo unit costs decreased from the US\$ 792/t recorded in 3Q17 to US\$ 679/t in 4Q17, mainly due to higher gold by-product volumes and prices.

#### Base Metals – unit cash cost of sales per operation, net of by-product credits<sup>1</sup>

US\$ / t	4Q17	3Q17	4Q16 <sup>4</sup>	2017	2016
<b>NICKEL</b>					
North Atlantic operations <sup>2</sup>	4,624	4,484	5,125	5,287	4,489
PTVI <sup>2</sup>	6,609	5,866	5,770	6,515	5,518
VNC <sup>3</sup>	8,420	9,841	11,375	10,053	12,458
Onça Puma	7,536	7,944	9,204	8,642	8,319
<b>COPPER</b>					
Sossego	3,270	2,951	3,207	2,935	2,866
Salobo	679	792	589	1,009	838

<sup>1</sup> North Atlantic figures include Clydach and Acton refining costs.

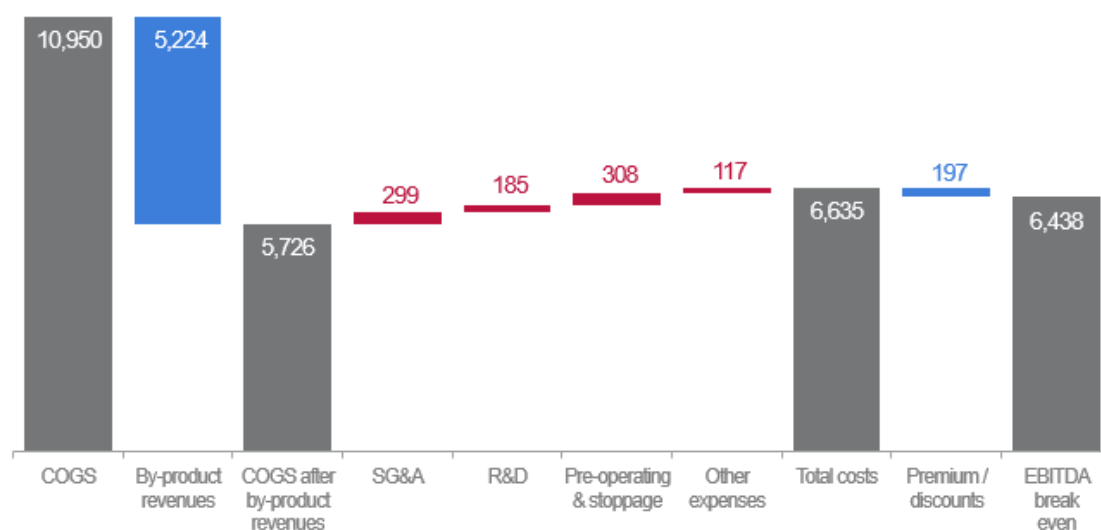
<sup>2</sup> Prior periods restated to include royalties, freight and other period costs.

<sup>3</sup> Unit cash cost restated for periods prior to 1Q17 to exclude pre-operating and other operating expenses.

<sup>4</sup> 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\$ 3,412/t in 4Q16; PTVI, US\$ 5,695/t in 4Q16, and; VNC, US\$ 11,017/t in 4Q16.

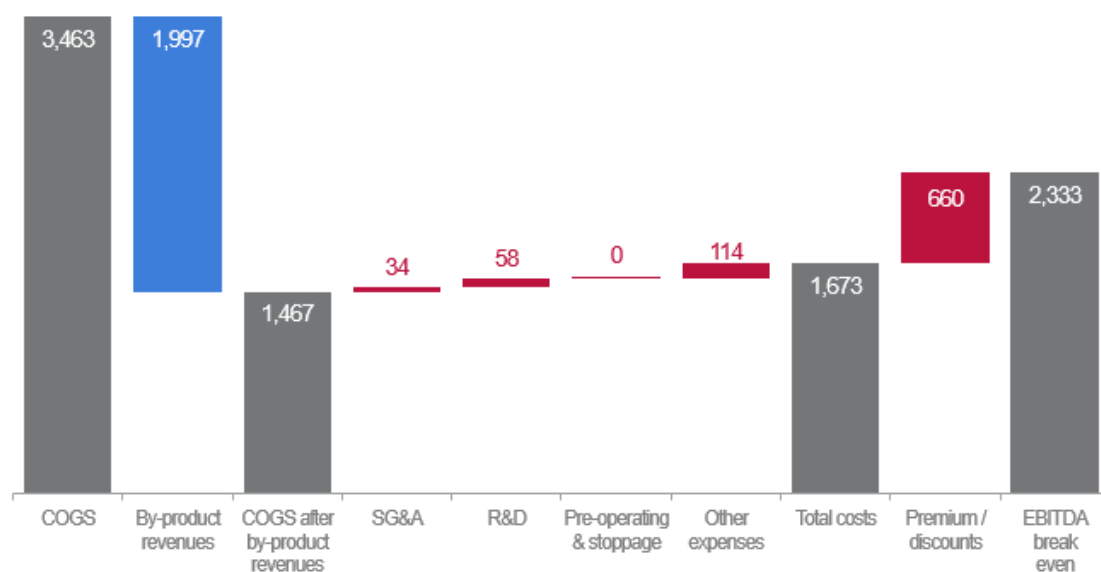
## EBITDA breakeven – nickel operations<sup>36</sup>

US\$/t, 4Q17



## EBITDA breakeven – copper operations (Salobo and Sossego)<sup>37</sup>

US\$/t, 4Q17



EBITDA breakeven considers the abovementioned unit cash cost after by-products as well as expenses and premiums/discounts per ton of nickel and copper sales volume. For nickel operations, by-product revenues were mainly due to cobalt and copper sales whereas by-product revenues from copper operations (Sossego and Salobo) were mainly due to gold and silver sales. In the case of copper operations, the realized price to be used against the EBITDA

<sup>36</sup> Considering only the cash effect of US\$ 400/oz that Wheaton Precious Metals pays for 70% of Sudbury's gold by-product, nickel operations EBITDA breakeven would increase to US\$ 7,321/t).

<sup>37</sup> Considering only the cash effect of US\$ 400/oz that Wheaton Precious Metals pays for 75% of Salobo's gold by-product, copper operations EBITDA breakeven would increase to US\$ 3,204/t).

breakeven should be the copper realized price before discounts (US\$ 7,286/t), given that TC/RCs and other discounts are already part of the EBITDA breakeven build-up.

## Performance by operation

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

### Base Metals EBITDA overview – 4Q17

US\$ million	North Atlantic	PTVI Site	VNC Site	Onça Puma	Sossego	Salobo	Others	Total Base Metals
<b>Net Revenues</b>	<b>973</b>	<b>181</b>	<b>133</b>	<b>91</b>	<b>170</b>	<b>472</b>	<b>(20)</b>	<b>2,000</b>
Costs	(597)	(130)	(121)	(58)	(91)	(165)	32	(1,130)
SG&A and others	13	(5)	2	(3)	(11)	(1)	(40)	(45)
Pre-operating and stoppage	(20)	-	-	(1)	-	-	(4)	(25)
R&D	(7)	(3)	(3)	(1)	(3)	-	(1)	(18)
<b>EBITDA</b>	<b>362</b>	<b>43</b>	<b>11</b>	<b>28</b>	<b>65</b>	<b>306</b>	<b>(33)</b>	<b>782</b>
Ni deliveries <sup>1</sup> (kt)	42	20	10	8	-	-	-	80
Cu deliveries (kt)	37	-	-	-	22	51	-	111

<sup>1</sup> North Atlantic sales consider sales from these operations as well as inventory eliminations between PTVI/VNC and our refineries, either in Asia Pacific or North Atlantic operations. Hence, a managerial perspective that separates these effects would lead nickel sales of 47 kt in North Atlantic Operations and -5 kt in Others.

## EBITDA

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

- (i) The North Atlantic operations EBITDA was US\$ 362 million, increasing by US\$ 125 million vs. 3Q17 mainly due to higher nickel and copper realized prices (US\$ 116 million).
- (ii) PTVI's EBITDA was US\$ 43 million, increasing by US\$ 9 million vs. 3Q17 mainly due higher realized nickel prices (US\$ 29 million) which were partially offset by higher costs<sup>38</sup> (US\$ 15 million) and higher expenses (US\$ 4 million).
- (iii) VNC's EBITDA was US\$ 11 million, increasing by US\$ 18 million when compared to 3Q17, mainly as a result of lower costs<sup>39</sup> (US\$ 15 million), driven by dilution of fixed costs, lower spending on services and supplies and reversals of an inventory and expense provision (US\$ 6 million) and also as a result of higher realized cobalt prices (US\$ 4 million), which were partially offset by lower sales volumes (US\$ 6 million).
- (iv) Onça Puma's EBITDA was US\$ 28 million, increasing US\$ 17 million vs. 3Q17, mainly as a result of higher realized nickel prices (US\$ 11 million) and higher sales volumes (US\$ 3 million).

<sup>38</sup> Costs including volume effect.

<sup>39</sup> Costs including volume effect.

(v) Sossego's EBITDA was US\$ 65 million, decreasing US\$ 9 million vs. 3Q17, mainly as a result of higher costs (US\$ 11 million).

(vi) Salobo's EBITDA was US\$ 306 million, increasing US\$ 46 million vs. 3Q17, mainly as a result of higher realized copper and by-product prices (US\$ 30 million) and higher volumes (US\$ 12 million).

### Base Metals – EBITDA by operation

US\$ million	4Q17	3Q17	4Q16	2017	2016
North Atlantic operation <sup>1,3</sup>	362	237	245	898	954
PTVI	43	34	49	112	133
VNC	11	(7)	(32)	(66)	(169)
Onça Puma	28	11	7	35	(8)
Sossego	65	74	36	262	127
Salobo	306	260	203	923	736
Others <sup>2,3</sup>	(33)	(48)	35	(25)	75
<b>Total</b>	<b>782</b>	<b>561</b>	<b>543</b>	<b>2,139</b>	<b>1,848</b>

<sup>1</sup> Includes the operations in Canada and in the United Kingdom.

<sup>2</sup> Includes the PTVI and VNC off-takes, intercompany sales, purchase of finished nickel and corporate center allocation for Base Metals.

<sup>3</sup> 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\$ 298 million in 4Q16; Others would be US\$ -18 million in 4Q16.

### Selected financial indicators - Base Metals

US\$ million	4Q17	3Q17	4Q16	2017	2016
Net Revenues	2,000	1,762	1,760	6,871	6,139
Costs <sup>1</sup>	(1,130)	(1,129)	(1,112)	(4,416)	(4,128)
Expenses <sup>1</sup>	(45)	(52)	(57)	(179)	30
Pre-operating and stoppage expenses <sup>1</sup>	(25)	-	(30)	(75)	(114)
R&D expenses	(18)	(20)	(22)	(62)	(83)
Dividends and interests on associates and JVs	-	-	4	-	-
Adjusted EBITDA	782	561	543	2,139	1,848
Depreciation and amortization	(438)	(398)	(410)	(1,615)	(1,658)
Adjusted EBIT	344	163	129	524	186
Adjusted EBIT margin (%)	17.2	9.3	7.4	7.6	3.0

<sup>1</sup> Net of depreciation and amortization

# Coal

## Annual performance

Adjusted EBITDA for the coal shipped through Nacala port reached US\$ 410 million, driving the improvement of the Coal business adjusted EBITDA to US\$ 330 million in 2017, the first annual positive result since 2010. The increase of US\$ 384 million in comparison to the negative US\$ 54 million recorded in 2016 was mainly due to higher realized prices (US\$ 386 million) and higher sales volumes from Mozambique (US\$ 129 million). These higher prices and sales volumes were partially offset by the higher costs and expenses<sup>40</sup> (US\$ 73 million), due to the impact of the logistics tariff applied after the deconsolidation of the Nacala Logistic Corridor, and by lower EBITDA from Australia (US\$ 57 million), where operations were discontinued with the sale of Carborough Downs in November 2016.

## Quarterly performance

### EBITDA

Adjusted Coal business EBITDA in 4Q17 was US\$ 66 million, with coal shipped through Nacala port representing US\$ 84 million. The business result was US\$ 20 million higher than the US\$ 46 million recorded in 3Q17, mainly due to higher realized prices (US\$ 68 million) which were partially offset by higher costs and expenses<sup>40</sup> (US\$ 46 million).

### SALES REVENUES AND VOLUMES

Coal business net sales revenues increased to US\$ 402 million in 4Q17 from US\$ 360 million in 3Q17, as a result of higher prices (US\$ 68 million) that were partially offset by lower sales volumes (US\$ 26 million).

Sales volumes of metallurgical coal in 4Q17 totaled 1.715 Mt while sales volumes of thermal coal totaled 1.228 Mt, 8% and 4% lower than in 3Q17 respectively. An already addressed failure of one of the hydraulic excavators affected production volumes and consequently sales volumes.

### METALLURGICAL COAL

In 4Q17, 77% of the metallurgical coal sales were priced based on a market index, including index lagged prices, 19 % were sold based on fixed prices (spot shipments and trial cargos) and 4 % were linked to the quarterly index benchmark.

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<sup>40</sup> Net of provision for Nacala Logistics Corridor's debt service to Vale.

## Metallurgical coal prices

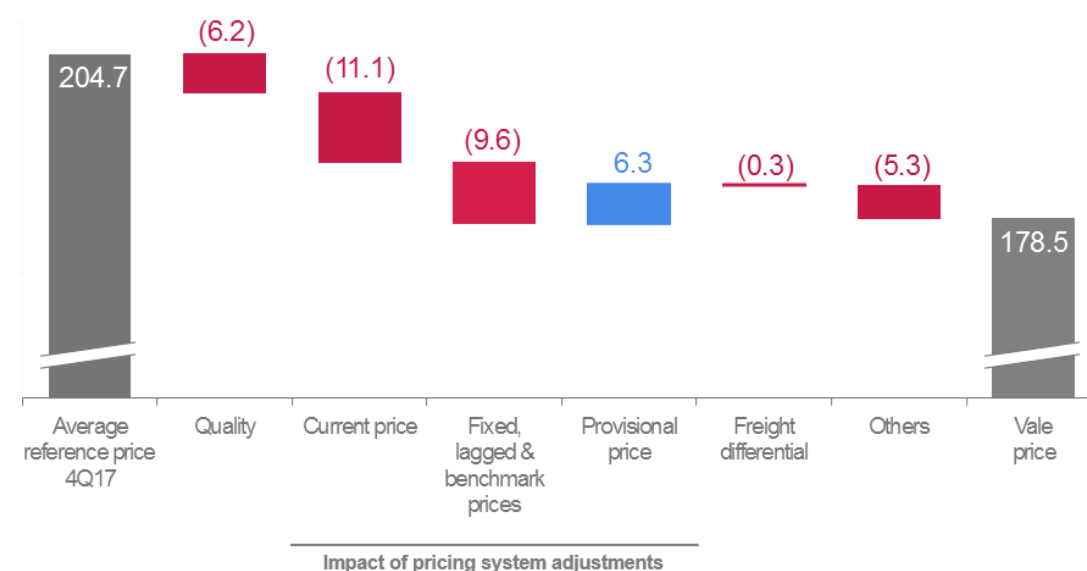
US\$/ metric ton	4Q17	3Q17	4Q16
Premium Low Vol HCC index price 1	204.7	188.8	168.2
HCC benchmark price	192.2	170.3	200
Vale's metallurgical coal realized price	178.5	141.8	165.2

<sup>1</sup>Platts Premium Low Vol Hard Coking Coal FOB Australia.

The metallurgical coal realized price increased US\$ 36.6/t in the quarter while the seaborne index price increased US\$ 15.9/t in the same period. The better price realization was mainly due to a higher exposure to current and lagged index linked contracts and to lower penalties and commercial discounts compared to 3Q17. Lower production and sales volumes, concentrated at the end of the quarter, coincided with the higher index price period, partially offsetting the gains obtained.

## Price realization – metallurgical coal from Mozambique

US\$/t 4Q17



## THERMAL COAL

In 4Q17, 86% of thermal coal sales were priced based on index prices with the remaining 14% based on fixed prices.

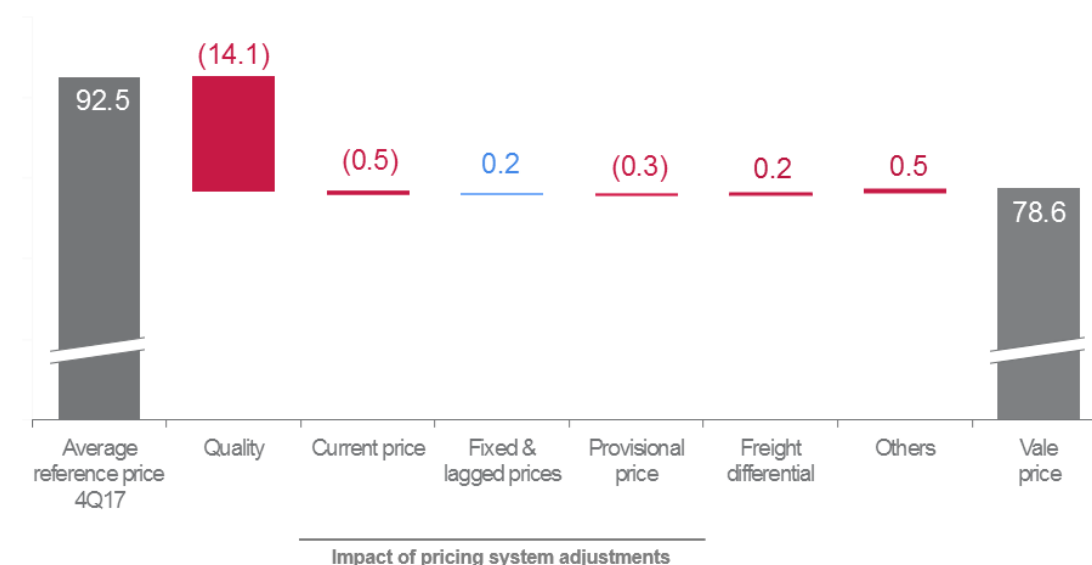
The realized price of thermal coal was US\$ 78.6/t in 4Q17, 6.4% higher than in 3Q17, and in line with the increase of the index in the period.

Price realization for thermal coal compared to the index was mainly impacted by the quality adjustment against the reference index, given our lower calorific values and higher ash levels, which negatively affected prices by US\$ 14.1/t.



## Price realization – thermal coal from Mozambique

US\$/t, 4Q17



## COSTS AND EXPENSES

Pro forma Coal business costs and expenses<sup>41</sup> totaled US\$ 336 million in 4Q17 (or US\$ 398 million with depreciation charges), increasing US\$ 22 million against the US\$ 314 million recorded in 3Q17, mainly as a result of lower dilution of mine and logistics fixed costs (US\$ 29 million) and a higher logistics tariffs<sup>42</sup> (US\$ 10 million), which were partly offset by the impact of lower volumes (US\$ 24 million).

Pro forma unitary cash cost through Nacala was US\$ 104.4/t in 4Q17, US\$ 10.6/t higher than in 3Q17 due to the impact of higher operational costs (US\$ 21.3/t) and higher tariffs charged by NLC in 4Q17 (US\$ 4.6/t). These were partially offset by the higher provision for NLC's debt service to Vale (US\$ 15.4/t). Operational costs<sup>43</sup> increased mainly due to: (i) lower dilution of fixed costs, as a result of the hydraulic excavator failure, which impacted production in 4Q17, (ii) and higher services costs to prepare the Nacala railway for the wet season, while NLC debt service to Vale was higher as result of the retroactive charge in 4Q17 to adjust the tariff in accordance with the Project Finance.

### Cash cost through Nacala

US\$ / metric ton	4Q17	3Q17	4Q16
Operational cost (A)	92.6	71.3	97.8
NLC tariff (B)	52.0	47.4	-
NLC's debt service to Vale (C)	40.2	24.8	-
<b>Pro forma production cost (A + B – C)</b>	<b>104.4</b>	<b>93.8</b>	<b>97.8</b>

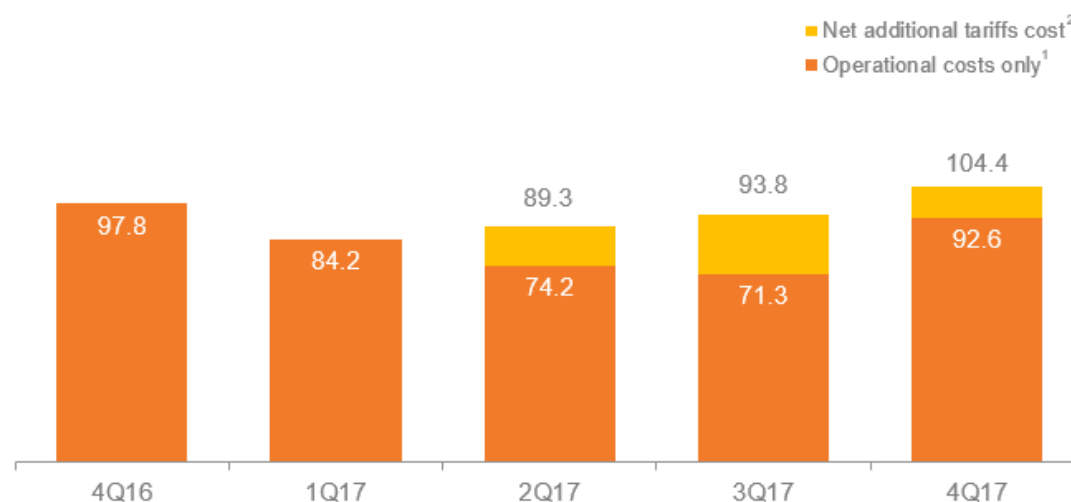
<sup>41</sup> Includes mine, plant, railway, port and royalties costs, excluding inventory movement, and expenses, net of provision for Nacala Logistics Corridor's debt service to Vale.

<sup>42</sup> Net of provision for Nacala Logistics Corridor's debt service to Vale.

<sup>43</sup> Includes mine, plant, railway, port operational costs, excluding royalties and inventory movement per ton of coal sold.

## Pro forma production costs through the Nacala Logistics Corridor

US\$/t



<sup>1</sup> Includes mine and logistics operational costs

<sup>2</sup> Includes total tariff charged by the Nacala Logistics Corridor (NLC) excluding its operational costs minus the provision of the interest related to Vale's shareholder loans made to the NLC

### Net operating revenue by product

US\$ million	4Q17	3Q17	4Q16	2017	2016
Metallurgical coal	306	266	300	1,240	587
Thermal coal	96	94	76	327	252
<b>Total</b>	<b>402</b>	<b>360</b>	<b>376</b>	<b>1,567</b>	<b>839</b>

### Average prices

US\$/ metric ton	4Q17	3Q17	4Q16	2017	2016
Metallurgical coal	178.4	141.8	217.0	172.7	119.5
Thermal coal	78.6	73.8	67.7	71.0	46.2

### Volume sold

'000 metric tons	4Q17	3Q17	4Q16	2017	2016
Metallurgical coal	1,715	1,869	1,382	7,178	4,907
Thermal coal	1,228	1,279	1,121	4,602	5,457
<b>Total</b>	<b>2,943</b>	<b>3,148</b>	<b>2,503</b>	<b>11,780</b>	<b>10,365</b>

### Selected financial indicators - Coal

US\$ million	4Q17	3Q17	4Q16	2017	2016
Net Revenues	402	360	376	1,567	839
Costs <sup>1</sup>	(433)	(368)	(185)	(1,354)	(872)
Expenses <sup>1</sup>	(12)	(9)	(10)	(44)	35
Pre-operating and stoppage expenses <sup>1</sup>	-	-	(18)	(4)	(41)
R&D expenses	(3)	(4)	(7)	(14)	(15)
Dividends and interests on associates and JVs	112	67	-	179	-
Adjusted EBITDA	66	46	156	330	(54)
Depreciation and amortization	(62)	(56)	(111)	(300)	(190)
Adjusted EBIT	(108)	(77)	45	(149)	(244)
Adjusted EBIT margin (%)	(27)	(21)	12	(10)	(29)

<sup>1</sup> 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](http://www.vale.com/investors/information-to-the-market/financial-statements).

## Conference call and webcast

Vale will host two conference calls and webcasts on Wednesday, February 28<sup>th</sup>, to discuss its 4Q17 performance. The first, in Portuguese (non-translated), will begin at 10:00 a.m. Rio de Janeiro time. The second, in English, at 12:00 p.m. Rio de Janeiro time (10:00 a.m. US Eastern Standard Time, 3:00 p.m. British Standard Time).

Dial in to conference calls/webcasts:

In Portuguese:

Participants from Brazil: (55 11) 3193-1001 or (55 11) 2820-4001

Participants from the US: (1 800) 492-3904

Participants from other countries: (1 646) 828-8246

Access code: VALE

In English:

Participants from Brazil: (55 11) 3193-1001 or (55 11) 2820-4001

Participants from the U.S.: (1 800) 492-3904

Participants from other countries: (1 646) 828-8246

Access code: VALE

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

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This press release may include statements that present Vale's expectations about future events or results. All statements, when based upon expectations about the future, involve various risks and uncertainties. Vale cannot guarantee that such statements will prove correct. These risks and uncertainties include factors related to the following: (a) the countries where we operate, especially Brazil and Canada; (b) the global economy; (c) the capital markets; (d) the mining and metals prices and their dependence on global industrial production, which is cyclical by nature; and (e) global competition in the markets in which Vale operates. To obtain further information on factors that may lead to results different from those forecast by Vale, please consult the reports Vale files with the U.S. Securities and Exchange Commission (SEC), the Brazilian Comissão de Valores Mobiliários (CVM) and the French Autorité des Marchés Financiers (AMF), and in particular the factors discussed under "Forward-Looking Statements" and "Risk Factors" in Vale's annual report on Form 20-F.

# ANNEX 1 – SIMPLIFIED FINANCIAL STATEMENTS

## Income statement

<i>US\$ million</i>	<b>4Q17</b>	<b>3Q17</b>	<b>4Q16</b>	<b>2017</b>	<b>2016</b>
<b>Net operating revenue</b>	<b>9,167</b>	<b>9,050</b>	<b>9,265</b>	<b>33,967</b>	<b>27,488</b>
Cost of goods sold	(5,791)	(5,412)	(5,103)	(21,039)	(17,648)
<b>Gross profit</b>	<b>3,376</b>	<b>3,638</b>	<b>4,162</b>	<b>12,928</b>	<b>9,840</b>
Gross margin (%)	36.8	40.2	44.9	38.1	35.8
Selling, general and administrative expenses	(146)	(129)	(136)	(531)	(507)
Research and development expenses	(104)	(91)	(112)	(340)	(319)
Pre-operating and stoppage expenses	(125)	(83)	(129)	(413)	(453)
Other operational expenses	(104)	(151)	(152)	(420)	(267)
Impairment and others results in non-current assets	(417)	(169)	(1,145)	(294)	(1,240)
<b>Operating profit</b>	<b>2,480</b>	<b>3,015</b>	<b>2,488</b>	<b>10,930</b>	<b>7,054</b>
Financial revenues	149	152	52	481	170
Financial expenses	(562)	(826)	(762)	(3,276)	(2,677)
Gains (losses) on derivatives, net	(29)	365	96	454	1,256
Monetary and exchange variation	(845)	529	11	(678)	3,094
Equity results in associates and joint ventures	(66)	115	(83)	98	309
Impairment and others results in associates and joint ventures	(59)	(26)	(74)	(180)	(1,220)
<b>Income (loss) before taxes</b>	<b>1,068</b>	<b>3,324</b>	<b>1,728</b>	<b>7,829</b>	<b>7,986</b>
Current tax	243	(522)	(125)	(849)	(943)
Deferred tax	(85)	(457)	67	(646)	(1,838)
<b>Net Earnings (loss) from continuing operations</b>	<b>1,226</b>	<b>2,345</b>	<b>1,670</b>	<b>6,334</b>	<b>5,205</b>
Loss attributable to noncontrolling interest	32	(7)	33	(21)	8
Gain (loss) from discontinued operations	(487)	(108)	(1,178)	(806)	(1,231)
<b>Net earnings (attributable to the Company's stockholders)</b>	<b>771</b>	<b>2,230</b>	<b>525</b>	<b>5,507</b>	<b>3,982</b>
Earnings (loss) per share (attributable to the Company's stockholders - US\$)	0.15	0.43	0.10	1.06	0.77
Diluted earnings (loss) per share (attributable to the Company's stockholders - US\$)	0.15	0.43	0.10	1.06	0.77

## Equity income (loss) by business segment

<i>US\$ million</i>	<b>4Q17</b>	<b>3Q17</b>	<b>4Q16</b>	<b>2017</b>	<b>%</b>	<b>2016</b>	<b>%</b>
Ferrous Minerals	77	91	41	329	333.7	179	(49.4)
Coal	-	4	4	20	20.4	(4)	(4.8)
Base Metals	-	1	-	1	1.0	(4)	-
Logistics	-	-	-	-	-	-	-
Steel	(115)	9	(140)	(222)	(226.5)	57	168.7
Others	(28)	10	14	(30)	(28.6)	81	(14.5)
<b>Total</b>	<b>(66)</b>	<b>115</b>	<b>(81)</b>	<b>98</b>	<b>100.0</b>	<b>309</b>	<b>100.0</b>

## Balance sheet

US\$ million	12/31/2017	9/30/2017	12/31/2016
<b>Assets</b>			
<b>Current assets</b>	<b>18,954</b>	<b>19,889</b>	<b>22,567</b>
Cash and cash equivalents	4,328	4,719	4,262
Accounts receivable	2,600	2,712	3,663
Other financial assets	2,022	2,149	292
Inventories	3,926	4,083	3,349
Prepaid income taxes	781	333	159
Recoverable taxes	1,172	1,125	1,625
Others	538	443	628
Non-current assets held for sale and discontinued operation	3,587	4,325	8,589
<b>Non-current assets</b>	<b>13,291</b>	<b>13,417</b>	<b>10,461</b>
Judicial deposits	1,986	2,005	962
Other financial assets	3,232	3,262	626
Recoverable income taxes	530	539	527
Recoverable taxes	638	651	727
Deferred income taxes	6,638	6,651	7,343
Others	267	309	276
Fixed assets	66,939	68,786	65,986
<b>Total assets</b>	<b>99,184</b>	<b>102,092</b>	<b>99,014</b>
<b>Liabilities</b>			
<b>Current liabilities</b>	<b>13,114</b>	<b>10,717</b>	<b>11,232</b>
Suppliers and contractors	4,041	4,013	3,630
Loans and borrowing	1,703	1,838	1,660
Other financial liabilities	374	381	767
Taxes payable	697	730	657
Provision for income taxes	355	309	171
Provisions	1,394	1,197	952
Dividends and interest on capital	1,441	-	816
Liabilities related to associates and joint ventures	326	301	292
Others	1,604	816	1,197
Liabilities directly associated with non-current assets held for sale and discontinued operations	1,179	1,132	1,090
<b>Non-current liabilities</b>	<b>41,298</b>	<b>44,893</b>	<b>46,758</b>
Loans and borrowing	20,786	23,952	27,662
Other financial liabilities	2,894	2,963	2,087
Taxes payable	4,890	5,168	4,961
Deferred income taxes	1,719	1,604	1,700
Provisions	7,027	6,877	5,748
Liabilities related to associates and joint ventures	670	725	785
Gold stream transaction	1,849	1,922	2,090
Others	1,463	1,682	1,725
<b>Total liabilities</b>	<b>54,412</b>	<b>55,610</b>	<b>57,990</b>
<b>Stockholders' equity</b>	<b>44,772</b>	<b>46,482</b>	<b>41,024</b>
<b>Total liabilities and stockholders' equity</b>	<b>99,184</b>	<b>102,092</b>	<b>99,014</b>

## Cash flow

US\$ million	4Q17	3Q17	4Q16	2017	2016
<b>Cash flows from operating activities:</b>					
Net income (loss) before taxes on income	1,068	3,324	1,726	7,829	7,984
<b>Adjustments to reconcile</b>					
Depreciation, depletion and amortization	976	920	1,006	3,708	3,487
Equity Income	66	(115)	83	(98)	(309)
Other items from non-current assets	417	169	45	294	1,240
Impairment on assets and investments	59	26	1,174	180	1,220
Items of the financial result	1,287	(220)	603	3,019	(1,843)
<b>Variation of assets and liabilities</b>					
Accounts receivable	173	(936)	(1,557)	1,277	(2,744)
Inventories	157	(52)	396	(339)	288
Suppliers and contractors	(131)	37	(163)	232	243
Payroll and related charges	210	205	106	372	133
Tax assets and liabilities, net	(246)	(114)	(7)	(297)	(109)
Goldstream transaction	0	0	0	0	524
Others	262	(121)	273	(615)	441
<b>Net cash provided by operations</b>	<b>4,298</b>	<b>3,123</b>	<b>3,685</b>	<b>15,562</b>	<b>10,555</b>
Interest on loans and financing	(352)	(407)	(420)	(1,686)	(1,663)
Derivatives received (paid), net	(17)	(113)	(548)	(240)	(1,602)
Remuneration paid to debentures	(65)	0	(47)	(135)	(84)
Income taxes	(74)	(84)	(50)	(563)	(388)
Income taxes - settlement program	(123)	(124)	(113)	(488)	(417)
<b>Net cash provided by operating activities from continuing operations</b>	<b>3,667</b>	<b>2,395</b>	<b>2,507</b>	<b>12,450</b>	<b>6,401</b>
Net cash provided by operating activities from discontinued operations	9	87	24	87	180
<b>Net cash provided by operating activities</b>	<b>3,676</b>	<b>2,482</b>	<b>2,531</b>	<b>12,537</b>	<b>6,581</b>
<b>Cash flows from investing activities:</b>					
Additions to investments	(19)	(57)	(9)	(93)	(239)
Acquisition of subsidiary	0	0	0	0	0
Additions to property, plant and equipment	(978)	(856)	(1,310)	(3,831)	(4,951)
Proceeds from disposal of assets and investments	201	198	203	922	543
Dividends and interest on capital received from joint ventures and associates	124	21	79	227	193
Proceeds from goldstream transaction	0	0	0	0	276
Others	(168)	(131)	(163)	(583)	(239)
<b>Net cash used in investing activities from continued operations</b>	<b>(840)</b>	<b>(825)</b>	<b>(1,200)</b>	<b>(3,358)</b>	<b>(4,417)</b>
Net cash used in investing activities from discontinued operations	(90)	(71)	(86)	(305)	(281)
<b>Net cash used in investing activities</b>	<b>(930)</b>	<b>(896)</b>	<b>(1,286)</b>	<b>(3,663)</b>	<b>(4,698)</b>
<b>Cash flows from financing activities:</b>					
<b>Loans and financing</b>					
Additions	175	351	788	1,976	6,994
Repayments	(3,210)	(2,818)	(2,775)	(8,998)	(7,717)
<b>Payments to shareholders:</b>					
Dividends and interest on capital	(2)	0	(250)	(1,456)	(250)
Dividends and interest on capital attributed to noncontrolling interest	(2)	(116)	(87)	(126)	(291)
Other transactions with noncontrolling interest	0	0	0	(98)	(17)
Net cash provided by (used in) financing activities from continuing operations	(3,039)	(2,583)	(2,324)	(8,702)	(1,281)
Net cash provided by (used in) financing activities from discontinued operations	0	(34)	(6)	(34)	(17)
<b>Net cash provided by (used in) financing activities</b>	<b>(3,039)</b>	<b>(2,617)</b>	<b>(2,330)</b>	<b>(8,736)</b>	<b>(1,298)</b>
Increase (decrease) in cash and cash equivalents	(293)	(1,031)	(1,085)	138	585
Cash and cash equivalents in the beginning of the period	4,719	5,720	5,369	4,262	3,591
Effect of exchange rate changes on cash and cash equivalents	(98)	28	(22)	(60)	86
Cash of subsidiaries disposed	0	2	0	0	0
<b>Cash and cash equivalents, end of period</b>	<b>4,328</b>	<b>4,719</b>	<b>4,262</b>	<b>4,328</b>	<b>4,262</b>
<b>Non-cash transactions:</b>					
Additions to property, plant and equipment - interest capitalization	73	111	90	370	653

# ANNEX 2 – VOLUMES SOLD, PRICES AND MARGINS

## Volume sold - Minerals and metals

'000 metric tons	4Q17	3Q17	4Q16	2017	2016
Iron ore fines	79,603	76,388	80,287	288,692	289,940
ROM	355	406	2,220	2,637	3,496
Pellets	13,579	13,135	13,190	51,775	47,709
Manganese ore	740	498	534	1,826	1,851
Ferroalloys	34	32	35	132	127
Thermal coal	1,228	1,279	1,121	4,602	5,457
Metallurgical coal	1,715	1,869	1,382	7,178	4,907
Nickel	80	71	83	295	311
Copper	111	110	115	424	430
Gold as by-product ('000 oz)	108	138	132	471	497
Silver as by-product ('000 oz)	602	465	727	2,179	2,578
PGMs ('000 oz)	68	85	73	350	507
Cobalt (metric ton)	1,368	1,482	1,487	5,013	4,734

## Average prices

US\$/ton	4Q17	3Q17	4Q16	2017	2016
Iron ore fines CFR reference price (dmt)	72.60	76.10	79.10	88.00	62.34
Iron ore fines CFR/FOB realized price	63.10	67.17	69.40	64.17	54.44
ROM	22.55	17.24	12.61	14.41	11.73
Pellets CFR/FOB (wmt)	104.71	109.71	92.27	109.18	80.26
Manganese ore	119.34	175.81	162.92	159.01	110.87
Ferroalloys	1,361.31	1,380.30	857.14	1,353.72	757.67
Thermal coal	78.57	73.82	67.67	71.05	46.17
Metallurgical coal	178.38	141.84	217.01	172.69	119.54
Nickel	11,781	10,554	10,803	10,654	9,800
Copper	6,735	6,203	5,093	5,970	4,458
Platinum (US\$/oz)	880	917	887	891	919
Gold (US\$/oz)	1,450	1,175	1,246	1,247	1,260
Silver (US\$/oz)	15.48	15.87	18.52	15.30	16.22
Cobalt (US\$/t)	57,680	53,428	28,021	51,513	24,273

## Operating margin by segment (EBIT adjusted margin)

%	4Q17	3Q17	4Q16	2017	2016
Ferrous Minerals	41.4	47.0	50.6	45.0	43.0
Coal	(26.9)	(21.4)	12.0	(9.5)	(29.1)
Base Metals	17.2	9.3	7.3	7.6	3.0
<b>Total<sup>1</sup></b>	<b>31.6</b>	<b>35.2</b>	<b>39.2</b>	<b>33.0</b>	<b>30.2</b>

<sup>1</sup> Excluding non-recurring effects.

# ANNEX 3 – RECONCILIATION OF IFRS AND “NON-GAAP” INFORMATION

## (a) Adjusted EBIT<sup>1</sup>

<i>US\$ million</i>	<b>4Q17</b>	<b>3Q17</b>	<b>4Q16</b>
Net operating revenues	9,167	9,050	9,265
COGS	(5,791)	(5,412)	(5,103)
SG&A	(146)	(129)	(136)
Research and development	(104)	(91)	(112)
Pre-operating and stoppage expenses	(125)	(83)	(129)
Other operational expenses	(104)	(151)	(152)
<b>Adjusted EBIT</b>	<b>2,897</b>	<b>3,184</b>	<b>3,633</b>

<sup>1</sup> 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

<i>US\$ million</i>	<b>4Q17</b>	<b>3Q17</b>	<b>4Q16</b>
<b>Adjusted EBITDA</b>	<b>4,109</b>	<b>4,192</b>	<b>4,722</b>
<b>Working capital:</b>			
Accounts receivable	173	(936)	(1,557)
Inventories	157	(52)	396
Suppliers	(131)	37	(163)
Payroll and related charges	210	205	106
Others	16	(235)	266
<b>Adjustment for non-recurring items and other effects</b>	<b>(236)</b>	<b>(88)</b>	<b>(105)</b>
<b>Cash provided from operations</b>	<b>4,298</b>	<b>3,123</b>	<b>3,665</b>
Income taxes paid - current	(74)	(84)	(50)
Income taxes paid - settlement program	(123)	(124)	(113)
Interest paid for third parties	(352)	(407)	(420)
Participative stockholders' debentures paid	(65)	-	(47)
Derivatives received (paid), net	(17)	(113)	(548)
<b>Net cash provided by (used in) operating activities</b>	<b>3,667</b>	<b>2,395</b>	<b>2,708</b>

## (c) Net debt

<i>US\$ million</i>	<b>4Q17</b>	<b>3Q17</b>	<b>4Q16</b>
Total debt	22,489	25,790	29,322
Cash and cash equivalents <sup>1</sup>	4,346	4,724	4,280
Net debt	18,143	21,066	25,042

<sup>1</sup> Including financial investments

## (d) Total debt / LTM Adjusted EBITDA

<i>US\$ million</i>	<b>4Q17</b>	<b>3Q17</b>	<b>4Q16</b>
Total debt / LTM Adjusted EBITDA (x)	1.5	1.6	2.4
Total debt / LTM operational cash flow (x)	1.8	2.3	4.6

## (e) LTM Adjusted EBITDA / LTM interest

<i>US\$ million</i>	<b>4Q17</b>	<b>3Q17</b>	<b>4Q16</b>
Adjusted LTM EBITDA / LTM gross interest (x)	9.0	9.1	6.8
LTM adjusted EBITDA / LTM interest payments (x)	9.1	9.1	7.2
LTM operational profit / LTM interest payments (x)	6.5	6.1	4.2