

## Vale's performance in Q3 2022

Rio de Janeiro, October 27<sup>th</sup>, 2022. *"Our operational performance in the quarter was solid across our portfolio, with iron ore production reaching 90Mt and nickel and copper greatly increasing volumes. While the world is facing growing inflationary pressures, we remain focused on cost discipline and improving operational reliability. In Sudbury, our nickel production reached the highest quarterly level since 1Q21. We have also made progress in growing our supply of low-carbon nickel and other critical minerals for the energy transition. We have successfully delivered the first phase of the Copper Cliff Complex South Mine Project, which will nearly double ore production at Copper Cliff Mine. We achieved an important milestone in safety by delivering on the commitment to de-characterize 5 dams this year, totaling 12 structures so far, 40% of our program. We are delivering on our commitments to a safer and more reliable company."*, commented Eduardo Bartolomeo, Chief Executive Officer.

### Selected financial indicators

US\$ million	3Q22	2Q22	3Q21
Net operating revenues	9,929	11,157	12,330
Total costs and expenses (ex-Brumadinho and de-characterization of dams)	(6,730)	(6,504)	(5,917)
Expenses related to Brumadinho event and de-characterization of dams	(336)	(280)	(161)
Adjusted EBIT from continuing operations	2,891	4,444	6,257
Adjusted EBIT margin (%)	29%	40%	51%
Adjusted EBITDA from continuing operations	3,666	5,254	6,906
Adjusted EBITDA margin (%)	37%	47%	56%
Proforma adjusted EBITDA from continuing operations <sup>1</sup>	4,002	5,534	7,077
Net income from continuing operations attributable to Vale's stockholders	4,455	4,093	5,477
Net debt <sup>2</sup>	6,980	5,375	2,207
Capital expenditures	1,230	1,293	1,199

<sup>1</sup> Excluding expenses related to Brumadinho and donations associated with COVID-19.

<sup>2</sup> Including leases (IFRS 16).

## Highlights

### Business Results

- Proforma adjusted EBITDA from continued operations of US\$ 4.002 billion, US\$ 1.532 billion lower than 2Q22, mainly reflecting the decline in iron ore and nickel prices.
- Free Cash Flow from Operations of US\$ 2.164 billion, stable q/q, reaching a cash conversion of 54% of the proforma EBITDA, versus 41% in 2Q22. The better cash conversion is mainly explained by the positive impact of working capital in the quarter and the lower income tax paid.

### Disciplined capital allocation

- Capital expenditures of US\$ 1.230 billion, including growth and sustaining investments, down US\$ 63 million from 2Q22, mainly due to lower disbursement in Sol do Cerrado solar project due to equipment deliveries last quarter.
- Gross debt and leases of US\$ 12.204 billion as of September 30, 2022, US\$ 404 million lower q/q, largely due to bank loans amortization (US\$ 300 million).
- Expanded Net Debt of US\$ 13.3 billion, following a revision of its concept to be more aligned with market practices and better inform management on capital allocation decisions. The revision was to exclude operating and regulatory commitments yet keeping the target leverage range of US\$ 10-20 billion.

## Value creation and distribution

- Dividends and interest on capital of US\$ 3.1 billion paid in September, as part of our Shareholder Remuneration Policy.
- Share buyback 25% complete, with around 126 million shares<sup>1</sup> repurchased, for a total of US\$ 1.9 billion, as of the date of this report.

## Focusing and strengthening the core

- Approval of the Bahodopi nickel project, in July. The project is expected to start-up in 2025. The RKEF front of the project is a partnership between PTVI, Tisco & Xinhai with 73 ktpy capacity. PTVI ownership in the processing facility is 49%, and 100% of the mine. The mine will supply ore in accordance with PTVI equity stake in the JV. The project estimated CAPEX is around US\$2.2 billion<sup>2</sup> for the RKEF plant and around US\$ 400 million for the mine.
- Reorganization of base metals operations in Brazil to combine copper and nickel assets into two entities, enabling more efficient processes and management. Both copper and nickel assets will continue to be consolidated and wholly owned by Vale.
- Approval for the construction of Onça Puma's 2<sup>nd</sup> furnace, with an investment of US\$ 555 million for a capacity addition of 12-15 ktpy of nickel. The project is expected to come online in 1H25.
- Opening of the first phase of the C\$ 945 million Copper Cliff Complex South Mine Project in Sudbury, Canada. More than 12km of tunnels were developed to reunite the south and north shafts of Copper Cliff Mine. Phase 1 is expected to nearly double ore production at Copper Cliff Mine, adding roughly 10 ktpy of contained nickel and 13 ktpy of copper.

## New pact with society

- The upstream dam de-characterization program is 40% concluded. Since 2019, Vale has eliminated 12 structures, 5 in 2022.
- Emergency-level removal of 5 dams in Minas Gerais. The structures also received the declaration of stability (DCE), attesting the safety of the structures. Since the beginning of the year, 7 structures had their emergency level revoked.
- Continued progress on the decarbonization agenda:
  - Sol do Cerrado solar project is commissioning, and its electrification will ramp up until July 2023. The solar park is comprised of 17 sub-parks with an installed capacity of 766 MWp, one of the largest solar energy projects in Latin America. The project meets 16% of Vale's electricity needs in Brazil in 2025 and is part of the initiatives to reduce 33% of scopes 1 and 2 emissions by 2030.
  - Vale and the Germany steelmaker Stahl-Holding-Saar signed a Memorandum of Understanding to pursue solutions focused on carbon-neutral steelmaking process. Since 2021, Vale engaged with around 30 ironmaking clients representing approximately 50% of company's Scope 3 emissions.
  - Vale received in Brazil and Indonesia two battery-powered 72t off-road trucks. Emissions from off-road trucks running on diesel represent about 9% of Vale's total scope 1 and 2 emissions. The electric trucks do not emit CO<sub>2</sub> as they replace diesel with electricity from renewable sources. They also minimize the noise impact to the surrounding communities.

<sup>1</sup>Related to the April 2022 3rd buyback program for a total of 500 million shares. As reflected in our 3Q22 Financial Statement, until Sep 30, 2022, the Company had repurchased approximately 119.6 million ordinary shares in the total amount of US\$ 1.8 billion.

<sup>2</sup>100% basis. Excluding contingency.

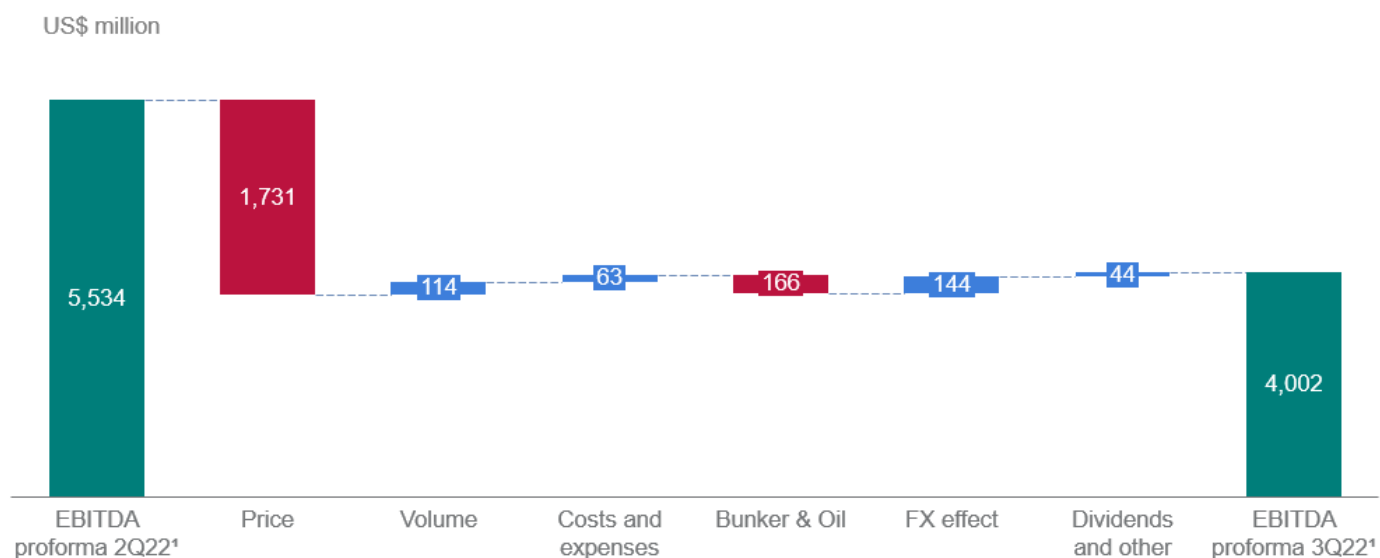
# Adjusted EBITDA

## Adjusted EBITDA

US\$ million	3Q22	2Q22	3Q21
Net operating revenues	9,929	11,157	12,330
COGS	(6,301)	(5,950)	(5,472)
SG&A	(119)	(127)	(114)
Research and development	(170)	(151)	(135)
Pre-operating and stoppage expenses	(89)	(111)	(165)
Expenses related to Brumadinho event & de-characterization of dams	(336)	(280)	(161)
Expenses related to COVID-19 donations	-	-	(10)
Other operational expenses	(51)	(165)	(21)
Dividends and interests on associates and JVs	28	71	5
<b>Adjusted EBIT from continuing operations</b>	<b>2,891</b>	<b>4,444</b>	<b>6,257</b>
Depreciation, amortization & depletion	775	810	649
<b>Adjusted EBITDA from continuing operations</b>	<b>3,666</b>	<b>5,254</b>	<b>6,906</b>
<b>Proforma Adjusted EBITDA from continuing operations<sup>1</sup></b>	<b>4,002</b>	<b>5,534</b>	<b>7,077</b>
Discontinued operations - Coal	-	-	32
<b>Adjusted EBITDA total</b>	<b>3,666</b>	<b>5,254</b>	<b>6,938</b>
<b>Proforma Adjusted EBITDA total<sup>1</sup></b>	<b>4,002</b>	<b>5,534</b>	<b>7,109</b>

<sup>1</sup> Excluding expenses related to Brumadinho and COVID-19 donations.

## Proforma EBITDA - 3Q22 vs. 2Q22



<sup>1</sup> Net of Brumadinho expenses

## Sales & price realization

### Volume sold - Minerals and metals

'000 metric tons	3Q22	2Q22	3Q21
Iron ore fines	65,381	62,769	66,185
ROM	3,668	1,550	540
Pellets	8,521	8,843	8,037
Nickel	44	39	42
Copper	71	52	65
Gold as by-product ('000 oz)	79	62	92
Silver as by-product ('000 oz)	346	391	210
PGMs ('000 oz)	65	46	11
Cobalt (metric ton)	569	450	538

### Average realized prices

US\$/metric ton	3Q22	2Q22	3Q21
Iron ore fines Vale CFR reference (dmt)	103.3	137.9	162.9
Iron ore fines Vale CFR/FOB realized price	92.6	113.3	127.2
Pellets CFR/FOB (wmt)	194.3	201.3	249.9
Nickel	21,672	26,221	18,211
Copper <sup>1</sup>	6,479	6,411	7,933
Gold (US\$/oz)	1,748	1,884	1,798
Silver (US\$/oz)	17	21	24
Cobalt (US\$/t)	49,228	81,915	56,859

<sup>1</sup> Considers operations in Salobo, Sossego and North Atlantic.

## Costs

### COGS by business segment

US\$ million	3Q22	2Q22	3Q21
Ferrous Minerals	4,317	4,248	4,106
Base Metals	1,882	1,424	1,187
Others	102	278	179
<b>Total COGS of continuing operations<sup>1</sup></b>	<b>6,301</b>	<b>5,950</b>	<b>5,472</b>
Depreciation	752	777	603
<b>COGS of continuing operations, ex-depreciation</b>	<b>5,549</b>	<b>5,173</b>	<b>4,869</b>

<sup>1</sup> COGS currency exposure in 3Q22 was as follows: 50.9% USD, 42.0% BRL, 6.8% CAD and 0.3% Other currencies.

## Expenses

### Operating expenses

US\$ million	3Q22	2Q22	3Q21
SG&A	119	127	114
Administrative	103	103	90
Personnel	42	44	29
Services	28	30	29
Depreciation	9	12	11
Others	24	17	21
Selling	16	24	24
R&D	170	151	135
Pre-operating and stoppage expenses	89	111	165
Expenses related to Brumadinho event and de-characterization of dams	336	280	161
Expenses related to COVID-19 donations	-	-	10
Other operating expenses	51	165	21
<b>Total operating expenses</b>	<b>765</b>	<b>834</b>	<b>606</b>
Depreciation	23	33	46
<b>Operating expenses, ex-depreciation</b>	<b>742</b>	<b>801</b>	<b>560</b>

## Brumadinho

### Impact of Brumadinho and De-characterization in 3Q22

US\$ million	Provisions balance 30jun22	EBITDA impact	Payments	FX and other adjustments <sup>2</sup>	Provisions balance 30sep22
De-characterization	3,544	35	(95)	(30)	3,454
Agreements & donations <sup>1</sup>	3,680	141	(423)	(167)	3,231
<b>Total Provisions</b>	<b>7,224</b>	<b>176</b>	<b>(518)</b>	<b>(197)</b>	<b>6,685</b>
Incurring Expenses	-	160	(160)	-	-
<b>Total</b>	<b>7,224</b>	<b>336</b>	<b>(678)</b>	<b>(197)</b>	<b>6,685</b>

<sup>1</sup> Includes Integral Reparation Agreement, individual, labor and emergency indemnifications, tailing removal and containment works.

<sup>2</sup> Includes foreign exchange, present value and other adjustments.

### Impact of Brumadinho and De-characterization from 2019 until 3Q22

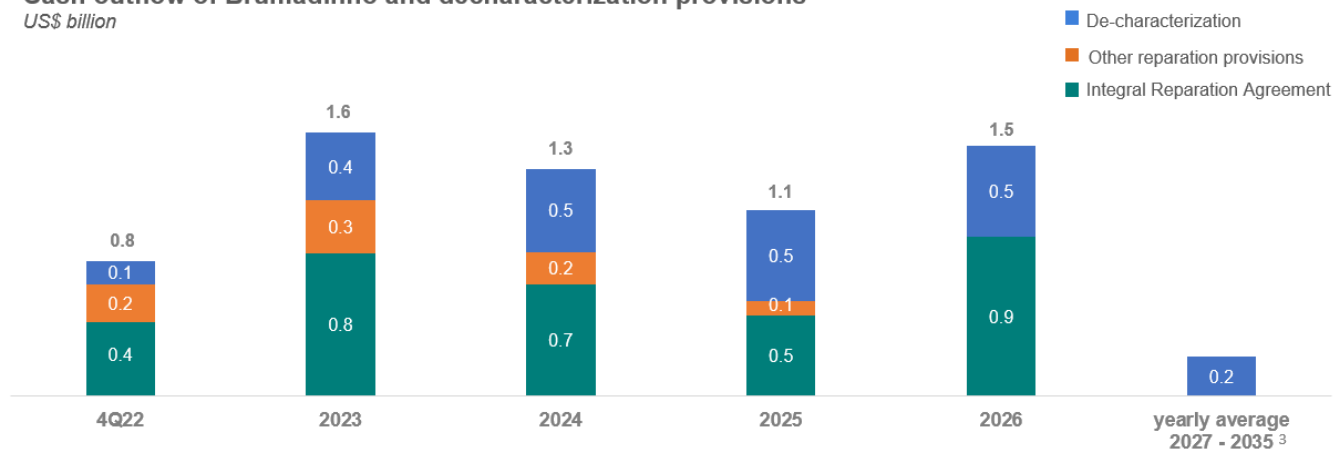
US\$ million	EBITDA impact	Payments	PV & FX adjust <sup>2</sup>	Provisions balance 30/sep/22
De-characterization	5,038	(1,036)	(548)	3,454
Agreements & donations <sup>1</sup>	8,524	(4,714)	(579)	3,231
<b>Total Provisions</b>	<b>13,562</b>	<b>(5,750)</b>	<b>(1,127)</b>	<b>6,685</b>
Incurring expenses	2,327	(2,327)	-	-
Others	122	-	-	-
<b>Total</b>	<b>16,011</b>	<b>(8,077)</b>	<b>(1,127)</b>	<b>6,685</b>

<sup>1</sup> Includes Integral Reparation Agreement, individual, labor and emergency indemnifications, tailing removal and containment works.

<sup>2</sup> Includes foreign exchange, present value and other adjustments

### Cash outflow of Brumadinho and decharacterization provisions<sup>1,2</sup>

US\$ billion



<sup>1</sup> Estimate cash outflow for 2022 - 2035 period, given BRL-USD exchange rates of 5.4066.

<sup>2</sup> Amounts stated without discount to present value, net of judicial deposits and comprises inflation adjustments.

<sup>3</sup> Estimate annual average cash flow for Decharacterization provisions in the 2027-2035 period is US\$ 235 million per year.

# Net income

## Reconciliation of proforma EBITDA to net income

US\$ million	3Q22	2Q22	3Q21
<b>EBITDA Proforma</b>	<b>4,002</b>	<b>5,534</b>	<b>7,109</b>
Brumadinho event and de-characterization of dams & COVID-19 donations	(336)	(280)	(171)
EBITDA Coal (Discontinued operation)	-	-	32
<b>Adjusted EBITDA from continuing operations</b>	<b>3,666</b>	<b>5,254</b>	<b>6,906</b>
Impairment & disposal of non-current assets	(40)	(82)	(63)
Dividends received	(28)	(71)	(5)
Equity results	89	(108)	99
Financial results	2,347	821	(350)
Income taxes	(804)	(911)	(461)
Depreciation, depletion & amortization	(775)	(810)	(649)
<b>Net income from continuing operations attributable to Vale's stockholders</b>	<b>4,455</b>	<b>4,093</b>	<b>5,477</b>

## Financial results

US\$ million	3Q22	2Q22	3Q21
<b>Financial expenses</b>	<b>(221)</b>	<b>(372)</b>	<b>(240)</b>
Gross interest	(140)	(162)	(156)
Capitalization of interest	9	17	14
Others	(48)	(188)	(81)
Financial expenses (REFIS)	(42)	(39)	(17)
<b>Financial income</b>	<b>141</b>	<b>137</b>	<b>90</b>
<b>Shareholder Debentures</b>	<b>470</b>	<b>537</b>	<b>152</b>
<b>Financial Guarantee</b>	<b>-</b>	<b>356</b>	<b>(34)</b>
<b>Derivatives<sup>1</sup></b>	<b>190</b>	<b>(270)</b>	<b>(458)</b>
Currency and interest rate swaps	232	(287)	(472)
Others (commodities, etc)	(42)	17	14
<b>Foreign Exchange</b>	<b>201</b>	<b>464</b>	<b>372</b>
Reclassification of cumulative translation adjustment on to income statement	1,608	-	10
<b>Monetary variation</b>	<b>(42)</b>	<b>(31)</b>	<b>(242)</b>
<b>Financial result, net</b>	<b>2,347</b>	<b>821</b>	<b>(350)</b>

<sup>1</sup> The cash effect of the derivatives was a gain of US\$ 100 million in 3Q22.

## Main factors that affected net income for 3Q22 vs. 2Q22

	US\$ million	
<b>2Q22 Net income from continuing operations attributable to Vale's stockholders</b>	<b>4,093</b>	
Δ EBITDA proforma	(1,532)	Lower iron ore and nickel prices.
Δ Brumadinho event and de-characterization of dams & COVID-19 donations	(56)	
Δ Impairment & disposal of non-current assets	42	
Δ Dividends received	43	
Δ Equity results	197	Better results in pelletizing joint-ventures, MRS and VLI.
Δ Financial results	1,526	Reclassification of the cumulative translation adjustment of US\$ 1.543 billion after the capital reduction of a wholly-owned subsidiary.
Δ Income taxes	107	
Δ Depreciation, depletion & amortization	35	
<b>3Q22 Net income from continuing operations attributable to Vale's stockholders</b>	<b>4,455</b>	

Δ: difference between 3Q22 and 2Q22 figures

# CAPEX

## Growth and sustaining projects execution

US\$ million	3Q22	%	2Q22	%	3Q21	%
<b>Growth projects</b>	<b>375</b>	<b>30.5</b>	<b>449</b>	<b>34.7</b>	<b>285</b>	<b>23.8</b>
Ferrous Minerals	200	16.3	199	15.4	136	11.3
Base Metals	81	6.6	90	7.0	113	9.4
Nickel	19	1.5	9	0.7	5	0.4
Copper	62	5.0	81	6.3	108	9.0
Energy and others	94	7.6	160	12.4	36	3.0
<b>Sustaining projects</b>	<b>855</b>	<b>69.5</b>	<b>844</b>	<b>65.3</b>	<b>914</b>	<b>76.2</b>
Ferrous Minerals	497	40.4	477	36.9	583	48.6
Base Metals	341	27.7	343	26.5	325	27.1
Nickel	288	23.4	293	22.7	290	24.2
Copper	53	4.3	50	3.9	35	2.9
Energy and others	17	1.4	24	1.9	6	0.5
<b>Total</b>	<b>1,230</b>	<b>100.0</b>	<b>1,293</b>	<b>100.0</b>	<b>1,199</b>	<b>100.0</b>

## Growth projects

Investments in growth projects under construction totaled US\$ 375 million in 3Q22, 16% lower q/q, mainly driven by lower disbursements at the Sol do Cerrado project due to equipment deliveries last quarter.

Sol do Cerrado, one of the largest solar energy projects in Latin America, started the commissioning in October and is anticipated to be fully operating in July 2023. The project has an installed capacity of 766 MWp.

Vale's Board of Directors approved the construction of the Onça Puma second furnace and its supporting infrastructure. The furnace is expected to start-up in 1H25, adding 12-15 ktpy to the current nickel capacity of 25 ktpy.

Bahodopi nickel project in Indonesia was approved and it is expected to start-up in 2025. The RKEF plant front is a partnership between PTVI, Tisco & Xinhai with 73 ktpy capacity. PTVI ownership in processing facility is 49% and 100% of the mine that will supply the ore in accordance with its equity stake in the JV. The project estimated capex is US\$ 2.2 billion<sup>3</sup> for the RKEF plant and around US\$ 400 million for the mine.

Vale and Ningbo Zhoushan Port Company Limited decided to terminate the West III Project due to the change of Chinese national policies. The West III project consisted of expanding the Shulanghu port facilities in China.

## Growth projects progress indicator<sup>4</sup>

Projects	Capex 3Q22	Financial progress <sup>1</sup>	Physical progress	Comments
<b>Ferrous Minerals</b>				
<b>Northern System 240 Mtpy</b> Capacity: 10 Mtpy Start-up: 2H22 Capex: US\$ 772 MM	23	62%	85% <sup>2</sup>	Project has been almost fully commissioned. Silos at the train load out area are expected to be completed by Jan/23.  In the logistics front, the environmental license is required for implementation of remaining scope of EFC. The works at the Ponta da Madeira Maritime Terminal are on schedule.
<b>Capanema's Maximization</b> Capacity: 18 Mtpy Start-up: 1H24 Capex: US\$ 913 MM	29	11%	21%	Work continues on the crushing circuit with concrete work completed at secondary and tertiary crushing. Earthworks have been completed at the primary crusher site. Electromechanical assembly of the screening plant has begun.  Construction and assembly was initiated on the long-distance conveyors and the stackers and reclaimers at Capanema site.

<sup>3</sup> 100% basis. Excluding contingency

<sup>4</sup> Pre-operating expenses included in the total estimated capex information, in line with Vale's Board of Directors approvals.

Projects	Capex 3Q22	Financial progress <sup>1</sup>	Physical progress	Comments
<b>Serra Sul 120 Mtpy<sup>3</sup></b> Capacity: 20 Mtpy Start-up: 2H25 Capex: US\$ 1,502 MM	55	23%	31%	Earthworks have begun. The civil packages have been awarded and mobilization is in progress.
<b>Briquettes Tubarão</b> Capacity: 6 Mtpy Start-up: 1H23 (Plant 1) and 2H23 (Plant 2) Capex: US\$ 182 MM	27	41%	53%	Installation of the two dryers is completed. Welding is in progress for the modules that make up the iron ore silos.
<b>Base Metals</b>				
<b>Salobo III</b> Capacity: 30-40 ktpy Start-up: 2H22 Capex: US\$ 1,056 MM	60	82%	98%	The primary crushing circuit has been fully commissioned. Hot commissioning of the conveyor system, secondary crushing and grinding circuits is well advanced. Wet commissioning of the flotation circuit is also underway
<b>Onça Puma 2<sup>nd</sup> Furnace</b> Capacity: 12-15 ktpy Start-up: 1H25 Capex: US\$ 555 MM	1	3%	0%	Project was approved by Board of Directors in September 2022 and is currently advancing the major work packages.

<sup>1</sup> CAPEX disbursement until end of 3Q22 vs. CAPEX expected.

<sup>2</sup> Considering mine-plant-logistics project front physical progress.

<sup>3</sup> The project consists of increasing the S11D mine-plant capacity by 20 Mtpy.

## Sustaining projects

Investments in sustaining our operations totaled US\$ 855 million in 3Q22, in line with 2Q22.

### Sustaining projects progress indicator<sup>5</sup>

Projects	Capex 3Q22	Financial progress <sup>1</sup>	Physical progress	Comments
<b>Ferrous Minerals</b>				
<b>Gelado</b> Capacity: 10 Mtpy Start-up: 2H22 Capex: US\$ 428 MM	14	72%	97%	Commissioning at Gelado is near complete. The Gelado project is expected to start-up in 4Q22 with 5 Mtpy capacity in the initial years, as it requires Usina 1 conversion to dry processing to achieve full capacity (10 Mtpy).
<b>Base Metals</b>				
<b>Voisey's Bay Mine Extension</b> Capacity: 45 ktpy Start-up: 1H21 <sup>2</sup> Capex: US\$ 2,690 MM	137	67%	78%	Surface activities are well advanced with the port fuel tanks and Eastern Deeps mine fresh air infrastructure completed. Installation of the compressors systems for the paste plant is in progress. In the underground, the Reid Brook bulk Material Handling System is advancing on schedule. For Eastern Deeps, lateral development advancement remains the priority.

<sup>1</sup> CAPEX disbursement until end of 3Q22 vs. CAPEX expected.

<sup>2</sup> In 2Q21, Vale achieved the first ore production of Reid Brook deposit, the first of two underground mines to be developed in the project. Eastern Deeps, the second deposit, has started to extract development ore from the deposit and is scheduled to start the main production ramp-up in the second half of 2023.

### Sustaining capex by type - 3Q22

US\$ million	Ferrous Minerals	Base Metals	Energy and others	Total
Enhancement of operations	248	159	-	407
Replacement projects	20	138	-	158
Filtration and dry stacking projects	66	-	-	66
Dam management	15	4	-	19
Other investments in dams and waste dumps	36	8	-	44
Health and Safety	45	24	-	69
Social investments and environmental protection	34	3	-	37
Administrative & Others	33	5	17	55
<b>Total</b>	<b>497</b>	<b>341</b>	<b>17</b>	<b>855</b>

<sup>5</sup> Pre-operating expenses included in the total estimated capex column, in line with Vale's Board of Directors approvals



# Free cash flow

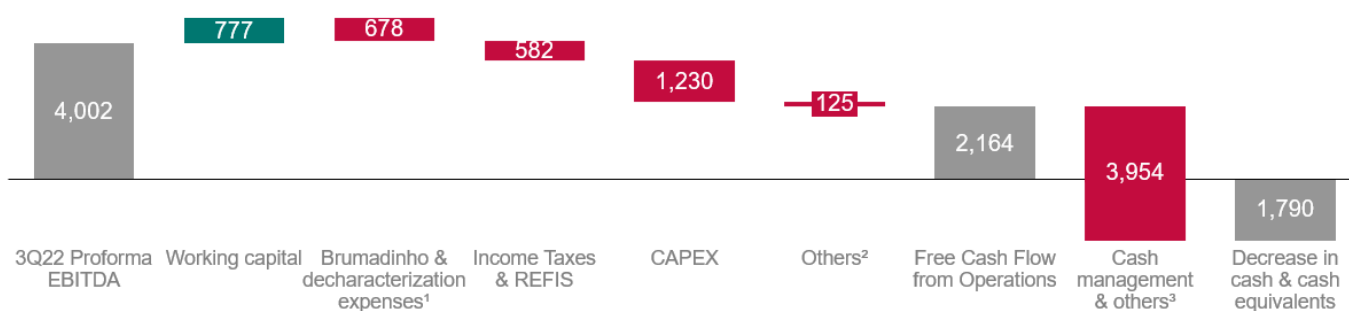
The Free Cash Flow from Operations reached US\$ 2.164 billion in 3Q22, only US\$ 131 million lower than in 2Q22 despite the US\$ 1.532 billion decrease of the Proforma EBITDA.

The main drivers that allowed for a greater cash conversion in 3Q22 were: (i) working capital initiatives with improvement in days payable outstanding; and (ii) lower income taxes paid (US\$ 631million lower vs. 2Q22) as a result of the tax shield from the payment of interest on capital, as part of the shareholders' remuneration.

The cash & cash equivalents position decreased by US\$ 1.790 billion in the quarter as Vale distributed US\$ 3.123 billion to shareholders and repurchased US\$ 686 million of its shares as part of the share buyback program.

## Free Cash Flow 3Q22

US\$ million



<sup>1</sup> Includes US\$ 518 million of disbursement of Brumadinho provisioned expenses and US\$ 160 million of Brumadinho incurred expenses.

<sup>2</sup> Includes interest on loans, derivatives, leasing, dividends paid to noncontrolling interest and others.

<sup>3</sup> Includes US\$ 686 million of share buyback, US\$ 3,123 million of dividends paid, US\$ 298 million from debt repurchased, and US\$ 153 million from the sale of Midwestern System.

# Debt

## Debt indicators

US\$ million	3Q22	2Q22	3Q21
<b>Gross debt <sup>1</sup></b>	<b>10,666</b>	<b>11,031</b>	<b>11,951</b>
Lease (IFRS 16)	1,538	1,577	1,634
<b>Gross debt and leases</b>	<b>12,204</b>	<b>12,608</b>	<b>13,585</b>
Cash, cash equivalents and short-term investments	5,224	7,233	11,378
<b>Net debt</b>	<b>6,980</b>	<b>5,375</b>	<b>2,207</b>
Currency swaps <sup>2</sup>	119	241	786
Brumadinho provisions	3,231	3,680	4,356
Samarco & Renova Foundation provisions <sup>3</sup>	2,954	3,191	2,061
<b>Expanded net debt</b>	<b>13,284</b>	<b>12,487</b>	<b>9,410</b>
Average debt maturity (years)	9.2	9.1	8.7
Cost of debt after hedge (% pa)	5.5	5.0	4.6
Total debt / adjusted LTM EBITDA (x)	0.6	0.5	0.4
Net debt / adjusted LTM EBITDA (x)	0.3	0.2	0.1
Adjusted LTM EBITDA / LTM gross interest (x)	33.7	38.1	43.1

<sup>1</sup> Does not include leases (IFRS 16).

<sup>2</sup> Includes interest rate swaps.

<sup>3</sup> Does not include provision for de-characterization of Germano dam in the amount of US\$ 191 million in 3Q22, US\$ 195 million in 2Q22 and US\$ 202 million in 3Q21.

Gross debt and leases totaled US\$ 12.204 billion as of September 30, 2022, US\$ 404 million lower q/q, mainly due to bank loans amortization (US\$ 300 million).

### Expanded Net Debt concept revision

Vale revised the Expanded Net Debt concept, seeking to be more aligned with market practices and have an indicator that better informs management on capital allocation decisions. The revised Expanded Net Debt now encompasses: (i) net debt, lease (IFRS 16) and currency swaps, and (ii) the provisions for the reparation of Brumadinho and Mariana, whose annual cash commitments are more concentrated in the early years. Operating and regulatory commitments previously included, such as the Refis tax renegotiation program and the upstream dam de-characterization provision are now excluded from the Expanded Net Debt concept. Those commitments are expected to have a more stable and longer annual cash outlays. The Expanded Net Debt target range of US\$ 10 billion to US\$ 20 billion remains unchanged.

Expanded net debt increased by US\$ 797 million q/q, to US\$ 13.284 billion, mainly due to the US\$ 3.1 billion paid to shareholders in dividends and interest on equity and the US\$ 686 million used to repurchase Vale's shares. This was partially offset by the non-cash positive effect of the BRL depreciation on Brumadinho, Dam De-characterization and Samarco & Renova provisions.

# Performance of the business segments

## Proforma Adjusted EBITDA from continuing operations, by business area

<i>US\$ million</i>	3Q22	2Q22	3Q21
<b>Ferrous Minerals</b>	<b>3,773</b>	<b>5,147</b>	<b>6,690</b>
Iron ore fines	2,806	3,975	5,280
Pellets	933	1,140	1,384
Other Ferrous Minerals	34	32	26
<b>Base Metals</b>	<b>364</b>	<b>603</b>	<b>505</b>
Nickel	209	580	99
Copper	155	23	406
<b>Others</b>	<b>(135)</b>	<b>(216)</b>	<b>(118)</b>
<b>Total</b>	<b>4,002</b>	<b>5,534</b>	<b>7,077</b>

## Segment information 3Q22, as per footnote of financial statements

<i>US\$ million</i>	Net operating revenues	Expenses					Dividends and interest received from associates and JVs	Adjusted EBITDA
		Cost <sup>1</sup>	SG&A and others <sup>1</sup>	R&D <sup>1</sup>	Pre operating & stoppage <sup>1</sup>			
<b>Ferrous Minerals</b>	<b>7,827</b>	<b>(3,891)</b>	<b>(47)</b>	<b>(49)</b>	<b>(72)</b>	<b>5</b>	<b>3,773</b>	
Iron ore fines	6,053	(3,095)	(44)	(46)	(63)	1	2,806	
Pellets	1,656	(714)	(7)	(1)	(5)	4	933	
Others ferrous	118	(82)	4	(2)	(4)	-	34	
<b>Base Metals</b>	<b>2,042</b>	<b>(1,600)</b>	<b>(6)</b>	<b>(69)</b>	<b>(3)</b>	<b>-</b>	<b>364</b>	
Nickel <sup>2</sup>	1,563	(1,325)	2	(31)	-	-	209	
Copper <sup>3</sup>	479	(275)	(8)	(38)	(3)	-	155	
<b>Brumadinho event and de-characterization of dams</b>	<b>-</b>	<b>-</b>	<b>(336)</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>(336)</b>	
<b>Others</b>	<b>60</b>	<b>(58)</b>	<b>(108)</b>	<b>(52)</b>	<b>-</b>	<b>23</b>	<b>(135)</b>	
<b>Total</b>	<b>9,929</b>	<b>(5,549)</b>	<b>(497)</b>	<b>(170)</b>	<b>(75)</b>	<b>28</b>	<b>3,666</b>	

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

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

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

# Ferrous Minerals

## Selected financial indicators - Ferrous Minerals

US\$ million	3Q22	2Q22	3Q21
Net Revenues	7,827	9,025	10,566
Costs <sup>1</sup>	(3,891)	(3,771)	(3,714)
SG&A and Other expenses <sup>1</sup>	(47)	(46)	(32)
Pre-operating and stoppage expenses <sup>1</sup>	(72)	(86)	(75)
R&D expenses	(49)	(46)	(55)
Dividends and interests on associates and JVs	5	71	-
<b>Adjusted EBITDA</b>	<b>3,773</b>	<b>5,147</b>	<b>6,690</b>
Depreciation and amortization	(442)	(497)	(408)
<b>Adjusted EBIT</b>	<b>3,331</b>	<b>4,650</b>	<b>6,282</b>
<b>Adjusted EBIT margin (%)</b>	<b>42.6</b>	<b>51.5</b>	<b>59.5</b>

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

## Ferrous Minerals EBITDA Variation 3Q22 vs 2Q22

US\$ million	2Q22	Drivers			Total variation	3Q22
		Volume	Prices	Others		
Iron ore fines	3,975	135	(1,391)	87	(1,169)	2,806
Pellets	1,140	(38)	(72)	(97)	(207)	933
Other	32	-	(13)	15	2	34
<b>Ferrous Minerals</b>	<b>5,147</b>	<b>97</b>	<b>(1,476)</b>	<b>5</b>	<b>(1,374)</b>	<b>3,773</b>

The 27% q/q EBITDA decline is largely explained by lower sales price (US\$ 1.476 billion), driven by a 25% decrease of average iron ore reference price.

## Revenues

	3Q22	2Q22	3Q21
<b>Volume sold ('000 metric tons)</b>			
Iron ore fines	65,381	62,769	66,185
ROM	3,668	1,550	540
Pellets	8,521	8,843	8,037
Share of premium products <sup>1</sup> (%)	78%	77%	81%
<b>Average prices (US\$/t)</b>			
Iron ore - 62% Fe reference price	103.3	137.9	162.9
Iron ore - Metal Bulletin 62% low alumina index	105.1	141.6	164.7
Iron ore - Metal Bulletin 65% index	115.8	160.8	190.4
Provisional price at the end of the quarter	95.2	119.9	117.1
Iron ore fines Vale CFR reference (dmt)	103.3	128.9	143.2
Iron ore fines Vale CFR/FOB realized price	92.6	113.3	127.2
Pellets CFR/FOB (wmt)	194.3	201.3	249.9
<b>Iron ore fines and pellets quality premium (US\$/t)</b>			
Iron ore fines quality premium	0.6	1.1	1.9
Pellets weighted average contribution	6.0	6.2	4.7
Total	6.6	7.3	6.6
<b>Net operating revenue by product (US\$ million)</b>			
Iron ore fines	6,053	7,113	8,418
ROM	29	29	17
Pellets	1,656	1,780	2,009
Others	89	103	122
<b>Total</b>	<b>7,827</b>	<b>9,025</b>	<b>10,566</b>

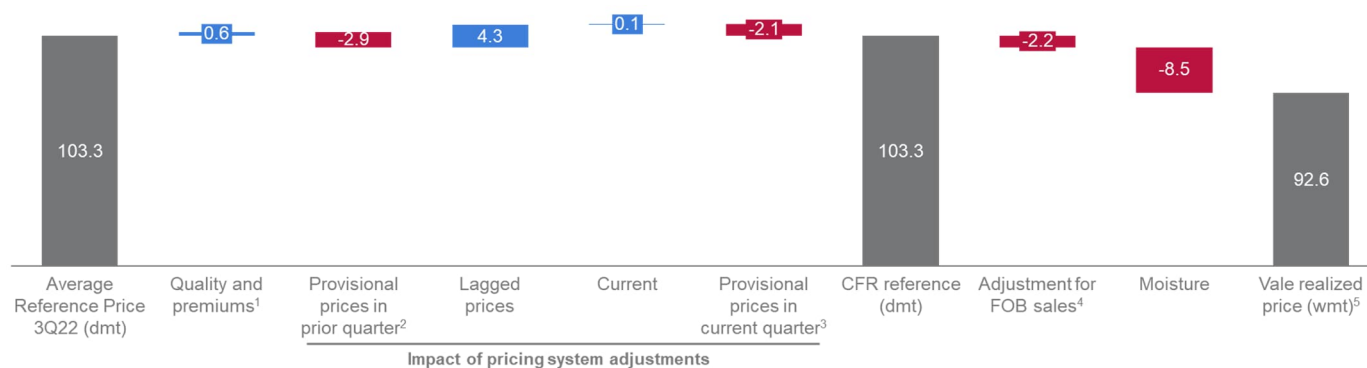
<sup>1</sup> Pellets, Carajás (IOCJ), Brazilian Blend Fines (BRBF) and pellet feed.

The share of premium products in total sales totaled 78% in 3Q22. Iron ore premium totaled US\$ 6.6/t (vs. US\$ 7.3/t in 2Q22) due to lower market premiums for low-alumina products and the absence of seasonal JV's dividends. The negative effect was partially offset by record contractual pellet premiums and a better mix of high-quality products, with a larger share of blended products.

## Iron ore fines, excluding Pellets and ROM

### Revenues & price realization

#### Price realization iron ore fines – US\$/t, 3Q22



<sup>1</sup> Includes quality (US\$ 0.0/t) and premiums/discounts and commercial conditions (US\$ 0.6/t).

<sup>2</sup> Adjustment as a result of provisional prices booked in 2Q22 at US\$ 119.9/t.

<sup>3</sup> Difference between the weighted average of the prices provisionally set at the end of 3Q22 at US\$ 95.2/t based on forward curves and US\$ 103.3/t from the 3Q22 62% Fe reference price.

<sup>4</sup> Includes freight pricing mechanisms of CFR sales freight recognition.

<sup>5</sup> Vale's price is net of taxes.

Vale's realized price totaled US\$ 92.6/t, US\$ 20.7/t lower than in 2Q22, mainly explained by a lower average reference price (US\$ 34.6/t). This was partially offset by a lower impact of pricing system adjustments vs. Q2 (US\$ 9.4/t), mainly due to a positive effect of lagged prices, with 13% of sales priced at an average price of US\$ 135.9/t vs. US\$ 103.3/t average reference price in Q3.

#### Iron Ore fines pricing system breakdown (%)

	3Q22	2Q22	3Q21
Lagged	13	16	14
Current	61	63	52
Provisional	26	21	34
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>

## Costs

### Iron ore fines cash cost and freight

	3Q22	2Q22	3Q21
<b>Costs (US\$ million)</b>			
Vale's iron ore fines C1 cash cost (A)	1,489	1,520	1,475
Third-party purchase costs <sup>1</sup> (B)	343	302	397
Vale's C1 cash cost ex-third-party volumes (C = A – B)	1,146	1,218	1,078
<b>Sales Volumes (Mt)</b>			
Volume sold (ex-ROM) (D)	65.4	62.8	66.2
Volume sold from third-party purchases (E)	6.2	4.5	4.8
Volume sold from own operations (F = D – E)	59.2	58.2	61.3
<b>Iron ore fines cash cost (ex-ROM, ex-royalties), FOB (US\$ /t)</b>			
Vale's C1 cash cost ex-third-party purchase cost (C/F)	19.4	20.9	17.6
Average third-party purchase C1 cash cost (B/E)	55.3	66.6	81.9
Vale's iron ore cash cost (A/D)	22.8	24.2	22.3

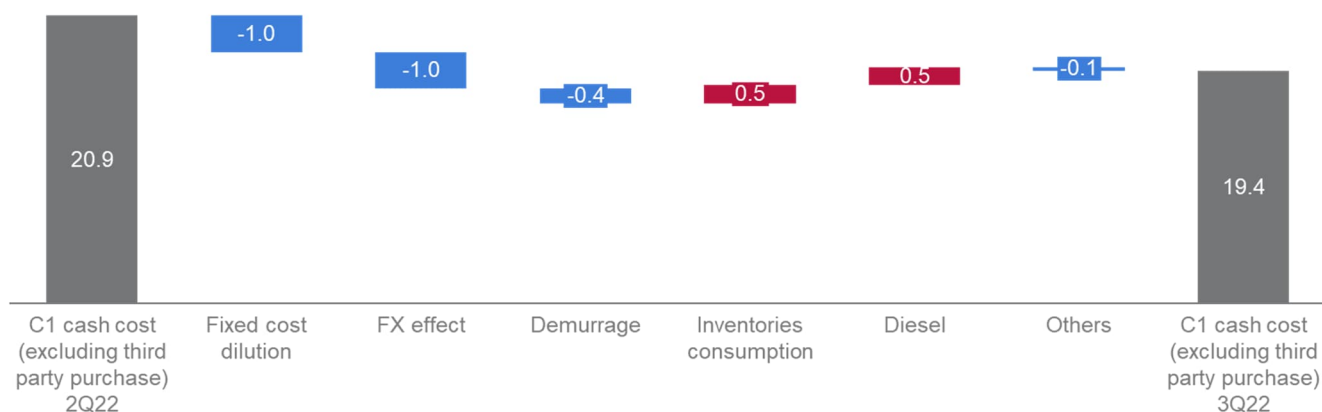
	3Q22	2Q22	3Q21
<b>Freight</b>			
Maritime freight costs (G)	1,230	1,053	1,062
% of CFR sales (H)	84%	79%	80%
Volume CFR (Mt) (I = D x H)	54.9	49.4	53.0
Vale's iron ore unit freight cost (US\$/t) (G/I)	22.4	21.3	20.1

<sup>1</sup> Includes logistics costs related to third-party purchases

## Iron ore COGS - 2Q22 x 3Q22

US\$ million	2Q22	Drivers			Total variation	3Q22
		Volume	Exchange rate	Others		
C1 cash costs	1,520	60	(60)	(31)	(31)	1,489
Freight	1,053	120	-	57	177	1,230
Distribution costs	137	6	-	2	8	145
Royalties & others	261	10	-	(40)	(30)	231
<b>Total costs before depreciation and amortization</b>	<b>2,971</b>	<b>196</b>	<b>(60)</b>	<b>(12)</b>	<b>124</b>	<b>3,095</b>
Depreciation	334	13	(11)	(47)	(45)	289
<b>Total</b>	<b>3,305</b>	<b>209</b>	<b>(71)</b>	<b>(59)</b>	<b>80</b>	<b>3,384</b>

## C1 cash cost variation (excluding 3<sup>rd</sup> party purchases) – US\$/t (3Q22 x 2Q22)



Vale's C1 cash cost, ex-third-party purchases, reduced by US\$ 1.5/t q/q, mainly driven by (i) stronger production volumes in Q3 allowing for higher dilution of fixed costs; (ii) positive effect of exchange rate; and (iii) seasonally lower demurrage costs. These effects were partially offset by (i) consumption of inventories from Q2 with higher costs; and (ii) higher diesel costs as a lagged effect in Brazil.

The effects from higher third-party purchases in Q3 were immaterial, as they were offset by lower iron ore prices.

Vale's maritime freight cost was US\$ 22.4/t in 3Q22, US\$ 1.1/t higher q/q. The increase was mainly driven by (i) a seasonally larger spot affreightment (+US\$ 1.4/t), increasing the average inventories costs consumed in the quarter; and (ii) a lagged effect of higher bunker fuel costs (+US\$ 0.4/t) in the end of Q2, partially offset by lower spot freight rates (-US\$ 0.7/t). In line with the lag effect, the market bunker cost decrease noticed in the end of Q3 will be recognized in the Q4 Vale's average freight cost.

CFR sales totaled 54.9 Mt in 3Q22, increasing to 84% of total sales volumes, as a result of higher sales to China. Sales to China are predominantly CFR-based, due to Vale's blending strategy and customers' usual choice.

## Expenses

US\$ millions	3Q22	2Q22	3Q21
SG&A	14	16	18
R&D	46	45	53
Pre-operating and stoppage expenses	63	74	61
Other expenses	30	32	13
<b>Total expenses</b>	<b>153</b>	<b>167</b>	<b>145</b>

## Iron ore pellets

### Pellets – EBITDA

US\$ million	3Q22	2Q22	3Q21	Comments
				Lower sales volumes (-4% q/q).
Net revenues / Realized prices	1,656	1,780	2,009	Realized prices averaged US\$ 194.3/t in 3Q22 (-US\$ 6.9/t q/q), driven by a decline in the 65%Fe price index, which was partially offset by higher contractual pellet premium and positive effect of lagged prices.
Dividends from leased pelletizing plants	4	71	0	
Cash costs (Iron ore, leasing, freight, overhead, energy and other)	(714)	(707)	(612)	Mainly due to higher fuel costs and lower pellet feed availability (+US\$ 59 million), partially offset by a positive exchange rate effect (-US\$ 25 million). FOB sales totalled 57% of total sales (vs. 63% in 2Q22).
Pre-operational & stoppage expenses	(5)	(6)	(10)	
Expenses (Selling, R&D and other)	(8)	2	(3)	
<b>EBITDA</b>	<b>933</b>	<b>1,140</b>	<b>1,384</b>	
<b>EBITDA/t</b>	<b>109</b>	<b>129</b>	<b>172</b>	

## Iron ore fines and pellets cash break-even landed in China<sup>6</sup>

US\$/t	3Q22	2Q22	3Q21
Vale's C1 cash cost ex-third-party purchase cost	19.4	20.9	17.6
Third party purchases cost adjustments	3.4	3.3	4.7
Vale's iron ore cash cost (ex-ROM, ex-royalties), FOB (US\$ /t)	22.8	24.2	22.3
Iron ore fines freight cost (ex-bunker oil hedge)	22.4	21.3	20.1
Iron ore fines distribution cost	2.2	2.2	1.2
Iron ore fines expenses <sup>1</sup> & royalties	5.8	6.9	7.8
Iron ore fines moisture adjustment	4.7	4.9	4.5
Iron ore fines quality adjustment	(0.6)	(1.1)	(1.9)
<b>Iron ore fines EBITDA break-even (US\$/dmt)</b>	<b>57.3</b>	<b>58.4</b>	<b>54.0</b>
Iron ore fines pellet adjustment	(6.0)	(6.2)	(4.7)
<b>Iron ore fines and pellets EBITDA break-even (US\$/dmt)</b>	<b>51.3</b>	<b>52.2</b>	<b>49.3</b>
Iron ore fines sustaining investments	6.9	6.8	8.2
<b>Iron ore fines and pellets cash break-even landed in China (US\$/dmt)</b>	<b>58.2</b>	<b>59.0</b>	<b>57.5</b>

<sup>2</sup> Net of depreciation and includes dividends received. Including stoppage expenses.

<sup>6</sup> Measured by unit cost + expenses + sustaining investment adjusted for quality. Does not include the impact from the iron ore fines and pellets pricing system mechanism.

# Base Metals

## Base Metals EBITDA overview – 3Q22

US\$ million	Sudbury	Voisey's Bay & Long Harbour	PTVI (site)	Onça Puma	Sossego	Salobo	Others	Subtotal Base Metals	Marketing activities	Total Base Metals
Net Revenues	902	205	309	75	163	316	(236)	1,734	308	2,042
Costs	(826)	(183)	(202)	(46)	(94)	(181)	229	(1,303)	(297)	(1,600)
Selling and other expenses	(5)	(1)	(1)	(1)	(2)	(3)	7	(6)	-	(6)
Pre-operating and stoppage expenses	-	-	-	-	-	(3)	-	(3)	-	(3)
R&D	(20)	(4)	(3)	-	(11)	(1)	(30)	(69)	-	(69)
<b>EBITDA</b>	<b>51</b>	<b>17</b>	<b>103</b>	<b>28</b>	<b>56</b>	<b>128</b>	<b>(30)</b>	<b>353</b>	<b>11</b>	<b>364</b>

## Nickel operations

### Selected financial indicators, ex- marketing activities

US\$ million	3Q22	2Q22	3Q21
Net Revenues	1,255	1,262	780
Costs <sup>1</sup>	(1,028)	(652)	(670)
SG&A and other expenses <sup>1</sup>	2	(12)	57
Pre-operating and stoppage expenses <sup>1</sup>	-	-	(52)
R&D expenses	(31)	(26)	(20)
Adjusted EBITDA	198	572	95
Depreciation and amortization	(254)	(192)	(145)
Adjusted EBIT	(56)	380	(50)
Adjusted EBIT margin (%)	(4.4)	30.1	(6.4)

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

### EBITDA variation - US\$ million (3Q22 x 2Q22)

US\$ million	Drivers					Total variation	3Q22
	2Q22	Volume	Prices	By-products	Others		
Nickel excl. marketing	572	61	(288)	64	(211)	(374)	198

### EBITDA by operations, ex-marketing activities

US\$ million	3Q22	2Q22	3Q21	3Q22 Comments
Sudbury <sup>1</sup>	51	209	(150)	Decline q/q due to (i) lower nickel realized prices, (ii) higher consumption of third-party feed and (iii) temporary carry over effect of inventories from Q2 (maintenance period), which was partially offset by higher nickel sales volumes and by-product revenues.
Voisey's Bay & Long Harbour	17	125	112	Decline q/q due to lower nickel realized prices partially offset by higher by-products credits
PTVI	103	163	125	Decline q/q due to lower nickel prices and higher fuel costs, partially offset by higher nickel sales volumes
Onça Puma	28	87	30	Decline q/q due to lower nickel realized prices and sales volumes.
Others <sup>2</sup>	(1)	(12)	(22)	
<b>Total</b>	<b>198</b>	<b>572</b>	<b>95</b>	

<sup>1</sup> Includes the Thompson operations and Clydach refinery.

<sup>2</sup> Includes Japanese operations, intercompany eliminations, purchase of finished nickel. Hedge results have been relocated to each nickel business operation..



## Revenues & price realization

	3Q22	2Q22	3Q21
<b>Volume sold ('000 metric tons)</b>			
Nickel <sup>1</sup>	44	39	42
Copper	18	17	3
Gold as by-product ('000 oz)	10	10	1
Silver as by-product ('000 oz)	152	198	34
PGMs ('000 oz)	65	46	11
Cobalt (metric ton)	569	450	538
<b>Average realized prices (US\$/t)</b>			
Nickel	21,672	26,221	18,211
Copper	5,925	6,240	8,187
Gold (US\$/oz)	1,578	1,780	1,798
Silver (US\$/oz)	15	19	24
Cobalt	49,228	81,915	56,859
<b>Net revenue by product - ex marketing activities (US\$ million)</b>			
Nickel	960	1,032	761
Copper	104	105	9
Gold as by-product (US\$/oz)	16	18	2
Silver as by-product (US\$/oz)	2	4	1
PGMs	129	65	(20)
Cobalt	28	37	31
Others	16	1	(4)
<b>Total</b>	<b>1,255</b>	<b>1,262</b>	<b>780</b>

<sup>1</sup> Nickel sales volumes were adjusted in the financial report to reflect VNC divestment

## Breakdown of nickel volumes sold, realized price and premium

	3Q22	2Q22	3Q21
<b>Volumes (kt)</b>			
Upper Class I nickel	25.1	19.8	22.6
- of which: EV Battery	1.6	1.0	1.0
Lower Class I nickel	5.2	6.8	6.0
Class II nickel	8.7	11.1	9.3
Intermediates	5.3	1.7	3.9
<b>Nickel realized price (US\$/t)</b>			
LME average nickel price	22,063	28,940	19,125
Average nickel realized price	21,672	26,221	18,211
Contribution to the nickel realized price by category:			
Nickel average aggregate premium	190	100	(120)
Other timing and pricing adjustments contributions <sup>1</sup>	(581)	(2,819)	(794)
<b>Premium/discount by product (US\$/t)</b>			
Upper Class I nickel	1,770	1,540	790
Lower Class I nickel	750	770	200
Class II nickel	(1,920)	(1,880)	(770)
Intermediates	(4,310)	(6,100)	(4,410)

<sup>1</sup> Comprises (i) the Quotational Period effects (based on sales distribution in the prior three months, as well as the differences between the LME price at the moment of sale and the LME average price), with a negative impact of US\$ 80/t, (ii) fixed-price sales, with a positive impact of US\$ 44/t (iii) the effect of the hedging on Vale's nickel price realization, with a negative impact of US\$ 549/t in the quarter and (iv) other effects with a positive impact of US\$ 4/t.

Nickel realized price in 3Q22 decreased 17% q/q mainly due to 24% lower LME nickel average price. This was partially offset by 90% higher nickel average aggregate premium, largely attributed to (i) the higher proportion of Upper Class 1 products in the sales mix, following the resumption of the refineries in North Atlantic and (ii) higher upper Class 1 premium on the back of a rise in market demand for non-Russian material.

Timing and pricing adjustments improved q/q mainly due to a shorter spread between market prices and nickel hedge<sup>7</sup> strike price in the quarter (circa US\$ 20,210/t).

<sup>7</sup> In 2022 we started the implementation of the Nickel Revenue Hedging Program for 2023. The nickel realized price for 3Q22 was impacted by strike price in the quarter of circa US\$ 20,210/t. The average price for the complete hedge position has increased from US\$ 23,117/t to US\$ 25,113/t.

## Product type by operation

% of source sales	North Atlantic	PTVI	Onça Puma	Total 3Q22	Total 2Q22
Upper Class I	76.3	-	-	56.7	50.3
Lower Class I	15.7	-	-	11.6	17.2
Class II	2.4	43.5	100	19.6	28.1
Intermediates	5.5	50.1	-	12.0	4.4

## Costs

### Nickel COGS, excluding marketing activities - 3Q22 x 2Q22

US\$ million	Drivers				Total variation	3Q22
	2Q22	Volume	Exchange rate	Others		
Nickel operations	652	155	(16)	236	376	1,028
Depreciation	192	46	(4)	20	62	254
<b>Total</b>	<b>844</b>	<b>201</b>	<b>(20)</b>	<b>256</b>	<b>438</b>	<b>1,282</b>

### Unit cash cost of sales by operation, net of by-product credits

US\$/t	3Q22	2Q22	3Q21	3Q22 Comments
Sudbury <sup>1,2</sup>	19,078	17,879	24,931	Negatively impacted q/q by higher feed from third-party purchased in Q2 and processed in Q3, and temporary carry over effect of inventories from Q2 (maintenance period) partially offset by higher by products credits
Voisey's Bay & Long Harbour <sup>2</sup>	16,704	16,639	5,618	Flat q/q, as the consumption of a higher proportion of feed from Thompson at Long Harbour and the VBME ramp-up were offset by higher by-products credits
PTVI	11,637	11,876	7,813	Relatively flat q/q as higher dilution of fixed costs and lower material costs offset the increase in fuel costs
Onça Puma	9,882	10,678	10,928	Decreased q/q mainly due to higher dilution of fixed costs

<sup>1</sup> Sudbury figures include Thompson and Clydach costs.

<sup>2</sup> A large portion of Sudbury, including Clydach, and Long Harbour finished nickel production is derived from intercompany transfers, as well as from the purchase of ore or nickel intermediates from third parties. These transactions are valued at fair market value.

## EBITDA break-even<sup>8</sup>

US\$/t	3Q22	2Q22	3Q21
COGS <sup>1</sup>	23,214	16,591	16,040
By-product revenues <sup>1</sup>	(6,663)	(5,863)	(456)
COGS after by-product revenues	16,551	10,728	15,584
Other expenses	705	592	334
<b>Total Costs</b>	<b>17,256</b>	<b>11,320</b>	<b>15,918</b>
<b>Nickel average aggregate premium (discount)</b>	<b>190</b>	<b>100</b>	<b>(120)</b>
<b>EBITDA breakeven</b>	<b>17,066</b>	<b>11,220</b>	<b>16,038</b>

<sup>1</sup> Excluding marketing activities

<sup>2</sup> Includes R&D, sales expenses and pre-operating & stoppage

<sup>8</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 break-even would increase to US\$ 17,224/t.

## Copper operations – Salobo and Sossego

### Selected financial indicators - Copper operations, ex-marketing activities

US\$ million	3Q22	2Q22	3Q21
Net Revenues	479	328	679
Costs <sup>1</sup>	(275)	(268)	(242)
SG&A and other expenses <sup>1</sup>	(8)	(3)	(6)
Pre-operating and stoppage expenses <sup>1</sup>	(3)	(3)	(1)
R&D expenses	(38)	(31)	(23)
Adjusted EBITDA	155	23	406
Depreciation and amortization	(30)	(35)	(36)
Adjusted EBIT	125	(12)	370
Adjusted EBIT margin (%)	26.1	(3.7)	54.4

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

### EBITDA variation - US\$ million (3Q22 x 2Q22)

US\$ million	Drivers					Total variation	3Q22
	2Q22	Volume	Prices	By-products	Others		
Copper	23	6	1	23	102	132	155

### EBITDA by operation

US\$ million	3Q22	2Q22	3Q21	Comments
Salobo	128	110	270	Increased q/q mainly due to lower unit cash costs, as Salobo plant performance improved in the quarter.
Sossego	56	(65)	154	Increased q/q following the conclusion of extended SAG mill maintenance in 2Q22, resulting in lower costs, higher sales volumes and by-product revenues
Others copper <sup>1</sup>	(29)	(22)	(18)	
<b>Total</b>	<b>155</b>	<b>23</b>	<b>406</b>	

<sup>1</sup> Includes US\$ 29 million in research expenses related to the Hu'u project in 3Q22.

## Revenues & price realization

US\$ million	3Q22	2Q22	3Q21
<b>Volume sold (000 metric tons)</b>			
Copper	53	35	62
Gold as by-product	69	52	91
Silver as by-product	194	193	176
<b>Average prices (US\$/t)</b>			
Average LME copper price	7,745	9,513	9,372
<b>Average copper realized price</b>	<b>6,663</b>	<b>6,493</b>	<b>8,187</b>
Gold (US\$/oz)	1,773	1,904	1,770
Silver (US\$/oz)	19	22	26
<b>Revenue (US\$ million)</b>			
Copper	353	225	510
Gold as by-product	123	99	164
Silver as by-product	4	4	4
<b>Total</b>	<b>479</b>	<b>328</b>	<b>678</b>

## Price realization – copper operations

US\$/t	3Q22	2Q22	3Q21
Average LME copper price	7,745	9,513	9,372
Current period price adjustments <sup>1</sup>	(390)	(1,119)	(389)
Copper gross realized price	7,355	8,394	8,983
Prior period price adjustments <sup>2</sup>	(246)	(1,436)	(358)
<b>Copper realized price before discounts</b>	<b>7,110</b>	<b>6,958</b>	<b>8,625</b>
TC/RCs, penalties, premiums and discounts <sup>3</sup>	(452)	(465)	(438)
<b>Average copper realized price</b>	<b>6,663</b>	<b>6,493</b>	<b>8,187</b>

<sup>1</sup> Current-period price adjustments: at the end of the quarter, mark-to-market of open invoices based on the copper price forward curve. Includes a small number of final invoices that were provisionally priced and settled within the quarter.

<sup>2</sup> Prior-period price adjustment: based on the difference 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 prior quarters

<sup>3</sup> TC/RCs, penalties, premiums, and discounts for intermediate products

Vale's copper products are sold on a provisional pricing basis<sup>9</sup> during the quarter, with final prices determined in a future period, generally one to four months forward.

The negative effects of the prior-period price adjustments of US\$ 246/t and the current-period price adjustments US\$ 390/t were mainly due to the forward price decrease during the third quarter.

## Costs

### COGS - 3Q22 x 2Q22

US\$ million	Drivers				Total variation	3Q22
	2Q22	Volume	Exchange rate	Others		
Copper operations	268	122	(11)	(104)	7	275
Depreciation	35	11	(1)	(15)	(5)	30
<b>Total</b>	<b>303</b>	<b>133</b>	<b>(12)</b>	<b>(119)</b>	<b>2</b>	<b>305</b>

### Copper operations – unit cash cost of sales, net of by-product credits

US\$/t	3Q22	2Q22	3Q21	Comments
Salobo	2,343	3,329	700	Increased q/q mainly due to higher dilution of fixed costs.
Sossego	3,491	40,407	1,911	Lower q/q mainly due to higher dilution of fixed costs, following the completion of the extended maintenance in 1H22, and higher by-product revenues.

## EBITDA break-even – copper operations<sup>10</sup>

US\$/t	3Q22	2Q22	3Q21
COGS	5,170	7,734	3,884
By-product revenues	(2,390)	(2,977)	(2,704)
<b>COGS after by-product revenues</b>	<b>2,780</b>	<b>4,757</b>	<b>1,180</b>
Other expenses <sup>1</sup>	952	1,051	497
<b>Total costs</b>	<b>3,732</b>	<b>5,808</b>	<b>1,676</b>
TC/RCs penalties, premiums and discounts	452	465	438
<b>EBITDA breakeven</b>	<b>4,184</b>	<b>6,273</b>	<b>2,114</b>

The realized price to be compared to the EBITDA break-even should be the copper realized price before discounts (US\$ 7,110/t), given that TC/RCs, penalties and other discounts are already part of the EBITDA break-even build-up.

<sup>9</sup> On September 30th, 2022, Vale had provisionally priced copper sales from Sossego and Salobo totaling 59,638 tons valued at an LME forward price of US\$ 7,637/t, subject to final pricing over the following months.

<sup>10</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 break-even would increase to US\$ 4,974/t.

## WEBCAST INFORMATION

Vale will host a webcast on Friday, October 28, 2022, at 11:00 a.m. Brasilia time (10:00 a.m. New York time; 3:00 p.m. London time). Internet access to the webcast and presentation materials will be available on Vale website at [www.vale.com/investors](http://www.vale.com/investors). A webcast replay will be accessible at [www.vale.com](http://www.vale.com) beginning shortly after the completion of the call. Interested parties may listen to the teleconference by dialing in:

Brazil: +55 (11) 4090 1621 / 3181-8565

U.K: +44 20 3795 9972

U.S (toll-free): +1 844 204 8942

U.S: +1 412 717 9627 / 1-844-200-6205.

The Access Code for this call is VALE.

**Further information on Vale can be found at: [vale.com](http://vale.com)**

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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. Our quarterly financial statements are reviewed by the company's independent auditors. The main subsidiaries that are consolidated are the following: Companhia Portuária da Baía de Sepetiba, Mineração Corumbaense Reunida S.A., Minerações Brasileiras Reunidas S.A. PT Vale Indonesia Tbk, Salobo Metais S.A, Vale Holdings B.V., Vale Canada Limited, Vale International S.A., Vale Manganês S.A., Vale Malaysia Minerals Sdn. Bhd., Vale Moçambique S.A., Vale Oman Pelletizing Company LLC and Vale Oman Distribution Center LLC.

This press release may include statements about Vale's current expectations about future events or results (forward-looking statements). Many of those forward-looking statements can be identified by the use of forward-looking words such as "anticipate," "believe," "could," "expect," "should," "plan," "intend," "estimate" "will" and "potential," among others. All forward-looking statements involve various risks and uncertainties. Vale cannot guarantee that these statements will prove correct. These risks and uncertainties include, among others, factors related to: (a) the countries where Vale operates, 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. Vale cautions you that actual results may differ materially from the plans, objectives, expectations, estimates and intentions expressed in this presentation. Vale undertakes no obligation to publicly update or revise any forward-looking statement, whether as a result of new information or future events or for any other reason. To obtain further information on factors that may lead to results different from those forecast by Vale, please consult the reports that Vale files with the U.S. Securities and Exchange Commission (SEC), the Brazilian Comissão de Valores Mobiliários (CVM) and, in particular, the factors discussed under "Forward-Looking Statements" and "Risk Factors" in Vale's annual report on Form 20-F.

The information contained in this press release includes financial measures that are not prepared in accordance with IFRS. These non-IFRS measures differ from the most directly comparable measures determined under IFRS, but we have not presented a reconciliation to the most directly comparable IFRS measures, because the non-IFRS measures are forward-looking and a reconciliation cannot be prepared without unreasonable effort.

# Annexes

## Simplified financial statements

### Income Statement

<i>US\$ million</i>	<b>3Q22</b>	<b>2Q22</b>	<b>3Q21</b>
<b>Net operating revenue</b>	<b>9,929</b>	<b>11,157</b>	<b>12,330</b>
Cost of goods sold and services rendered	(6,301)	(5,950)	(5,472)
<b>Gross profit</b>	<b>3,628</b>	<b>5,207</b>	<b>6,858</b>
Gross margin (%)	36.5	46.7	55.6
Selling and administrative expenses	(119)	(127)	(114)
Research and development expenses	(170)	(151)	(135)
Pre-operating and operational stoppage	(89)	(111)	(165)
Brumadinho event and de-characterization of dams	(336)	(280)	(161)
Other operational expenses, net	(51)	(165)	(31)
Impairment reversal (impairment and disposals) of non-current assets, net	(40)	(82)	(63)
<b>Operating income</b>	<b>2,823</b>	<b>4,291</b>	<b>6,189</b>
Financial income	141	137	90
Financial expenses	(221)	(372)	(240)
Other financial items, net	2,427	1,056	(200)
Equity results and other results in associates and joint ventures	78	(56)	128
<b>Income before income taxes</b>	<b>5,248</b>	<b>5,056</b>	<b>5,967</b>
Current tax	(514)	(1,181)	(2,464)
Deferred tax	(290)	270	2,003
<b>Net income from continuing operations</b>	<b>4,444</b>	<b>4,145</b>	<b>5,506</b>
Net income (loss) attributable to noncontrolling interests	(11)	52	29
<b>Net income from continuing operations attributable to Vale's stockholders</b>	<b>4,455</b>	<b>4,093</b>	<b>5,477</b>
<b>Discontinued operations</b>			
Net income (Loss) from discontinued operations	-	2,058	(1,548)
Net income from discontinued operations attributable to noncontrolling interests	-	-	43
<b>Net income (Loss) from discontinued operations attributable to Vale's stockholders</b>	<b>-</b>	<b>2,058</b>	<b>(1,591)</b>
<b>Net income</b>	<b>4,444</b>	<b>6,203</b>	<b>3,958</b>
Net income (Loss) attributable to Vale's to noncontrolling interests	(11)	52	72
<b>Net income attributable to Vale's stockholders</b>	<b>4,455</b>	<b>6,151</b>	<b>3,886</b>
Earnings per share (attributable to the Company's stockholders - US\$):			
Basic and diluted earnings per share (attributable to the Company's stockholders - US\$)	0.98	1.32	0.76

### Equity income (loss) by business segment

<i>US\$ million</i>	<b>3Q22</b>	<b>%</b>	<b>2Q22</b>	<b>%</b>	<b>3Q21</b>	<b>%</b>
Ferrous Minerals	80	92	52	85	58	29
Base Metals	-	-	1	2	-	-
Others	7	8	8	13	140	71
<b>Total</b>	<b>87</b>	<b>100</b>	<b>61</b>	<b>100</b>	<b>198</b>	<b>100</b>

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

<b>%</b>	<b>3Q22</b>	<b>2Q22</b>	<b>3Q21</b>
Ferrous Minerals	42.6	51.5	59.5
Base Metals	3.9	20.1	20.5
<b>Total</b>	<b>29.1</b>	<b>39.8</b>	<b>50.7</b>

## Balance sheet

US\$ million	9/30/2122	6/30/2122	9/30/2121
<b>Assets</b>			
<b>Current assets</b>	<b>13,922</b>	<b>16,022</b>	<b>19,991</b>
Cash and cash equivalents	5,182	7,185	10,857
Short term investments	42	48	521
Accounts receivable	2,150	2,148	873
Other financial assets	152	229	1,366
Inventories	5,268	5,154	5,085
Recoverable taxes	858	744	824
Others	270	240	405
Non-current assets held for sale	-	274	60
<b>Non-current assets</b>	<b>13,354</b>	<b>13,931</b>	<b>14,790</b>
Judicial deposits	1,289	1,328	1,221
Other financial assets	236	210	162
Recoverable taxes	1,114	1,147	1,322
Deferred income taxes	9,825	10,360	11,402
Others	890	886	683
<b>Fixed assets</b>	<b>53,335</b>	<b>54,405</b>	<b>52,099</b>
<b>Total assets</b>	<b>80,611</b>	<b>84,358</b>	<b>86,880</b>
<b>Liabilities</b>			
<b>Current liabilities</b>	<b>12,994</b>	<b>12,117</b>	<b>16,074</b>
Suppliers and contractors	4,735	3,664	4,096
Loans, borrowings and leases	447	935	1,345
Other financial liabilities	1,466	1,584	1,557
Taxes payable	303	331	2,594
Settlement program (REFIS)	351	356	330
Provisions	929	835	1,021
Liabilities related to associates and joint ventures	2,027	1,783	1,551
Liabilities related to Brumadinho	1,318	1,060	2,336
De-characterization of dams and asset retirement obligations	700	692	590
Others	718	750	641
Liabilities associated with non-current assets held for sale	-	127	13
<b>Non-current liabilities</b>	<b>32,945</b>	<b>35,259</b>	<b>36,717</b>
Loans, borrowings and leases	11,757	11,673	12,240
Participative stockholders' debentures	2,659	3,219	4,128
Other financial liabilities	1,948	1,820	2,825
Settlement program (REFIS)	1,861	1,976	2,080
Deferred income taxes	1,608	1,759	1,928
Provisions	2,349	2,477	3,505
Liabilities related to associates and joint ventures	1,117	1,603	714
Liabilities related to Brumadinho	1,913	2,620	2,020
De-characterization of dams and asset retirement obligations	5,926	6,238	5,191
Streaming transactions	1,629	1,637	1,936
Others	178	237	150
<b>Total liabilities</b>	<b>45,939</b>	<b>47,376</b>	<b>52,791</b>
<b>Stockholders' equity</b>	<b>34,672</b>	<b>36,982</b>	<b>34,089</b>
<b>Total liabilities and stockholders' equity</b>	<b>80,611</b>	<b>84,358</b>	<b>86,880</b>

## Cash flow

US\$ million	3Q22	2Q22	3Q21
<b>Cash flow from operations</b>	<b>4,591</b>	<b>5,738</b>	<b>10,324</b>
Interest on loans and borrowings paid	(194)	(277)	(173)
Cash received (paid) on settlement of Derivatives, net	100	(42)	22
Payments related to Brumadinho event	(423)	(319)	(93)
Payments related to de-characterization of dams	(95)	(83)	(93)
Interest on participative stockholders debentures paid	-	(235)	-
Income taxes (including settlement program)	(582)	(1,213)	(991)
<b>Net cash generated from operating activities from continuing operations</b>	<b>3,397</b>	<b>3,569</b>	<b>8,996</b>
<b>Net cash generated (used) in operating activities from discontinued operations</b>	<b>-</b>	<b>-</b>	<b>55</b>
<b>Net cash generated from by operating activities</b>	<b>3,397</b>	<b>3,569</b>	<b>9,051</b>
<b>Cash flow from investing activities</b>			
Short term investment	118	101	424
Capital expenditures	(1,230)	(1,293)	(1,199)
Dividends received from joint ventures and associates	28	71	5
Proceeds from sale of Midwestern System, net of cash	140	-	-
Other investment activities, net	(70)	48	18
<b>Net cash used in investing activities from continuing operations</b>	<b>(1,014)</b>	<b>(1,073)</b>	<b>(752)</b>
<b>Net cash used in investing activities from discontinued operations</b>	<b>-</b>	<b>(65)</b>	<b>(49)</b>
<b>Net cash used in investing activities</b>	<b>(1,014)</b>	<b>(1,138)</b>	<b>(801)</b>
<b>Cash flow from financing activities</b>			
Loans and financing:			
Loans and borrowings from third-parties	150	200	-
Payments of loans and borrowings from third-parties	(448)	(1,433)	(111)
Payments of leasing	(48)	(57)	(55)
Payments to stockholders:			
Dividends and interest on capital paid to stockholders	(3,123)	-	(7,391)
Dividends and interest on capital paid to noncontrolling interest	(3)	(4)	(3)
Share buyback program	(686)	(2,596)	(2,841)
<b>Net cash used in financing activities from continuing operations</b>	<b>(4,158)</b>	<b>(3,890)</b>	<b>(10,401)</b>
<b>Net cash used in financing activities from discontinued operations</b>	<b>-</b>	<b>-</b>	<b>(3)</b>
<b>Net cash used in financing activities</b>	<b>(4,158)</b>	<b>(3,890)</b>	<b>(10,404)</b>
<b>Increase (decrease) in cash and cash equivalents</b>	<b>(1,775)</b>	<b>(1,459)</b>	<b>(2,154)</b>
Cash and cash equivalents in the beginning of the period	7,185	9,061	13,649
Effect of exchange rate changes on cash and cash equivalents	(228)	(417)	(638)
Cash and cash equivalents from subsidiaries sold, net	-	-	-
<b>Cash and cash equivalents at the end of period</b>	<b>5,182</b>	<b>7,185</b>	<b>10,857</b>
<b>Non-cash transactions:</b>			
Additions to property, plant and equipment - capitalized loans and borrowing costs	9	17	14
<b>Cash flow from operating activities</b>			
<b>Income before income taxes</b>	<b>5,248</b>	<b>5,056</b>	<b>5,967</b>
<b>Adjusted for:</b>			
Provisions for Brumadinho	141	126	-
Provision for de-characterization of dams	35	-	-
Equity results and other results in associates and joint ventures	(78)	56	(128)
Impairment and disposals of non-current assets, net	40	82	63
Depreciation, depletion and amortization	775	810	649
Financial results, net	(2,347)	(821)	350
<b>Change in assets and liabilities</b>			
Accounts receivable	3	902	3,870
Inventories	(287)	(305)	(588)
Suppliers and contractors	1,169	432	322
Payroll and other compensation	158	73	61
Other assets and liabilities, net	(266)	(673)	(242)
<b>Cash flow from operations</b>	<b>4,591</b>	<b>5,738</b>	<b>10,324</b>



## Reconciliation of IFRS and “non-GAAP” information

### (a) Adjusted EBIT

US\$ million	3Q22	2Q22	3Q21
Net operating revenues	9,929	11,157	12,330
COGS	(6,301)	(5,950)	(5,472)
Sales and administrative expenses	(119)	(127)	(114)
Research and development expenses	(170)	(151)	(135)
Pre-operating and stoppage expenses	(89)	(111)	(165)
Brumadinho event and dam de-characterization of dams	(336)	(280)	(161)
Other operational expenses, net	(51)	(165)	(31)
Dividends received and interests from associates and JVs	28	71	5
<b>Adjusted EBIT from continuing operations</b>	<b>2,891</b>	<b>4,444</b>	<b>6,257</b>

### (b) Adjusted EBITDA

EBITDA defines profit or loss before interest, tax, depreciation, depletion and amortization. The definition of Adjusted EBITDA for the Company is the operating income or loss plus dividends received and interest from associates and joint ventures, and excluding the amounts charged as (i) depreciation, depletion and amortization and (ii) impairment reversal (impairment and disposals) of non-current assets. 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 tables show the reconciliation between adjusted EBITDA and operational cash flow and adjusted EBITDA and net income, in accordance with its statement of changes in financial position.

The definition of Adjusted EBIT is Adjusted EBITDA plus depreciation, depletion and amortization.

### Reconciliation between adjusted EBITDA and operational cash flow

US\$ million	3Q22	2Q22	3Q21
<b>Adjusted EBITDA from continuing operations</b>	<b>3,666</b>	<b>5,254</b>	<b>6,906</b>
<b>Working capital:</b>			
Accounts receivable	3	902	3,870
Inventories	(287)	(305)	(588)
Suppliers and contractors	1,169	432	322
Payroll and other compensation	158	73	61
Provisions for Brumadinho	141	126	-
Provision for de-characterization of dams	35	-	-
Others	(294)	(744)	(247)
<b>Cash flow from continuing operations</b>	<b>4,591</b>	<b>5,738</b>	<b>10,324</b>
Income taxes paid - including settlement program	(582)	(1,213)	(991)
Interest on loans and borrowings paid	(194)	(277)	(173)
Payments related to Brumadinho event	(423)	(319)	(93)
Payments related to de-characterization of dams	(95)	(83)	(93)
Interest on participative shareholders' debentures paid		(235)	
Cash received (paid) on settlement of Derivatives, net	100	(42)	22
<b>Net cash generated from operating activities from continuing operations</b>	<b>3,397</b>	<b>3,569</b>	<b>8,996</b>
<b>Net cash generated (used) in operating activities from discontinued</b>	<b>-</b>	<b>-</b>	<b>55</b>
<b>Net cash generated from operating activities</b>	<b>3,397</b>	<b>3,569</b>	<b>9,051</b>

### Reconciliation between adjusted EBITDA and net income (loss)

US\$ million	3Q22	2Q22	3Q21
<b>Adjusted EBITDA from continuing operations</b>	<b>3,666</b>	<b>5,254</b>	<b>6,906</b>
Depreciation, depletion and amortization	(775)	(810)	(649)
Dividends received and interest from associates and joint ventures	(28)	(71)	(5)
Impairment and disposals (impairment reversal) of non-current assets, net	(40)	(82)	(63)
<b>Operating income</b>	<b>2,823</b>	<b>4,291</b>	<b>6,189</b>
Financial results	2,347	821	(350)
Equity results and other results in associates and joint ventures	78	(56)	128
Income taxes	(804)	(911)	(461)
<b>Net income from continuing operations</b>	<b>4,444</b>	<b>4,145</b>	<b>5,506</b>
Net income (loss) attributable to noncontrolling interests	(11)	52	29
<b>Net income attributable to Vale's stockholders</b>	<b>4,455</b>	<b>4,093</b>	<b>5,477</b>

**(c) Net debt**

<i>US\$ million</i>	<b>3Q22</b>	<b>2Q22</b>	<b>3Q21</b>
Gross debt	10,666	11,031	11,951
Leases	1,538	1,577	1,634
Cash and cash equivalents <sup>1</sup>	5,224	7,233	11,378
<b>Net debt</b>	<b>6,980</b>	<b>5,375</b>	<b>2,207</b>

<sup>1</sup> Including financial investments

**(d) Gross debt / LTM Adjusted EBITDA**

<i>US\$ million</i>	<b>3Q22</b>	<b>2Q22</b>	<b>3Q21</b>
Gross debt and leases / LTM Adjusted EBITDA (x)	0.6	0.5	0.4
Gross debt and leases / LTM operational cash flow (x)	0.9	0.6	0.4

**(e) LTM Adjusted EBITDA / LTM interest payments**

<i>US\$ million</i>	<b>3Q22</b>	<b>2Q22</b>	<b>3Q21</b>
Adjusted LTM EBITDA / LTM gross interest (x)	33.7	38.1	43.1
LTM adjusted EBITDA / LTM interest payments (x)	19.4	23.0	41.3

**(f) US dollar exchange rates**

<i>R\$/US\$</i>	<b>3Q22</b>	<b>2Q22</b>	<b>3Q21</b>
Average	5.2462	4.9210	5.2286
End of period	5.4066	5.2380	5.4394

## Revenues and volumes

### Net operating revenue by destination

US\$ million	3Q22	%	2Q22	%	3Q21	%
<b>North America</b>	<b>562</b>	<b>5.7</b>	<b>585</b>	<b>5.2</b>	<b>387</b>	<b>3.1</b>
USA	423	4.3	474	4.2	345	2.8
Canada	139	1.4	111	1.0	42	0.3
<b>South America</b>	<b>1,086</b>	<b>10.9</b>	<b>1,434</b>	<b>12.9</b>	<b>1,848</b>	<b>15.0</b>
Brazil	958	9.6	1,222	11.0	1,582	12.8
Others	128	1.3	212	1.9	266	2.2
<b>Asia</b>	<b>6,282</b>	<b>63.3</b>	<b>7,024</b>	<b>63.0</b>	<b>8,211</b>	<b>66.6</b>
China	4,640	46.7	5,102	45.7	5,602	45.4
Japan	857	8.6	1,014	9.1	1,436	11.6
South Korea	387	3.9	359	3.2	471	3.8
Others	398	4.0	549	4.9	702	5.7
<b>Europe</b>	<b>1,360</b>	<b>13.7</b>	<b>1,426</b>	<b>12.8</b>	<b>1,326</b>	<b>10.8</b>
Germany	377	3.8	315	2.8	350	2.8
Italy	166	1.7	207	1.9	159	1.3
Others	817	8.2	904	8.1	817	6.6
<b>Middle East</b>	<b>334</b>	<b>3.4</b>	<b>348</b>	<b>3.1</b>	<b>136</b>	<b>1.1</b>
<b>Rest of the World</b>	<b>305</b>	<b>3.1</b>	<b>340</b>	<b>3.0</b>	<b>422</b>	<b>3.4</b>
<b>Total</b>	<b>9,929</b>	<b>100.0</b>	<b>11,157</b>	<b>100.0</b>	<b>12,330</b>	<b>100.0</b>

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

'000 metric tons	3Q22	2Q22	3Q21
<b>Americas</b>	<b>11,495</b>	<b>9,422</b>	<b>8,016</b>
Brazil	10,334	8,551	6,968
Others	1,161	871	1,048
<b>Asia</b>	<b>59,353</b>	<b>55,498</b>	<b>60,020</b>
China	48,707	43,668	47,350
Japan	5,226	6,666	7,337
Others	5,420	5,164	5,333
<b>Europe</b>	<b>3,676</b>	<b>5,265</b>	<b>4,722</b>
Germany	789	753	1,096
France	669	972	625
Others	2,218	3,540	3,001
<b>Middle East</b>	<b>1,554</b>	<b>1,510</b>	<b>486</b>
<b>Rest of the World</b>	<b>1,491</b>	<b>1,466</b>	<b>1,518</b>
<b>Total</b>	<b>77,569</b>	<b>73,161</b>	<b>74,762</b>

### Net operating revenue by business area

US\$ million	3Q22	%	2Q22	%	3Q21	%
<b>Ferrous Minerals</b>	<b>7,829</b>	<b>79%</b>	<b>9,031</b>	<b>81%</b>	<b>10,611</b>	<b>86%</b>
Iron ore fines	6,053	61%	7,113	64%	8,418	68%
ROM	29	0%	29	0%	17	0%
Pellets	1,656	17%	1,780	16%	2,009	16%
Others	89	1%	103	1%	122	1%
<b>Base Metals</b>	<b>2,042</b>	<b>21%</b>	<b>1,875</b>	<b>17%</b>	<b>1,574</b>	<b>13%</b>
Nickel	960	10%	1,032	9%	761	6%
Copper	457	5%	330	3%	519	4%
PGMs	129	1%	65	1%	-20	0%
Gold as by-product	139	1%	117	1%	166	1%
Silver as by-product	5	0%	8	0%	5	0%
Cobalt	28	0%	37	0%	31	0%
Others <sup>1</sup>	324	3%	286	3%	112	1%
<b>Others</b>	<b>60</b>	<b>1%</b>	<b>257</b>	<b>2%</b>	<b>190</b>	<b>2%</b>
<b>Total of continuing operations</b>	<b>9,929</b>	<b>100%</b>	<b>11,163</b>	<b>100%</b>	<b>12,375</b>	<b>100%</b>

<sup>1</sup> Includes marketing activities

## Projects under evaluation and growth options

Copper		
<b>Alemão</b>	<b>Capacity: 60 ktpy</b>	<b>Stage: FEL3</b>
Carajás, Brazil	Growth project	Investment decision: 2023
Vale's ownership: 100%	Underground mine	115 kozpy Au as byproduct
<b>South Hub extension</b>	<b>Capacity: 60-80 ktpy</b>	<b>Stage: FEL3<sup>1</sup></b>
Carajás, Brazil	Replacement project	Investment decision: 2023
Vale's ownership: 100%	Open pit	Development of mines to feed Sossego mill
<b>Victor</b>	<b>Capacity: 20 ktpy</b>	<b>Stage: FEL3</b>
Ontario, Canada	Replacement project	Investment decision: 2023-2024
Vale's ownership: N/A	Underground mine	5 ktpy Ni as co-product; JV partnership under discussion
<b>Hu'u</b>	<b>Capacity: 300-350 ktpy</b>	<b>Stage: FEL2</b>
Dompu, Indonesia	Growth project	200 kozpy Au as byproduct
Vale's ownership: 80%	Underground block cave	
<b>North Hub</b>	<b>Capacity: 70-100 ktpy</b>	<b>Stage: FEL1</b>
Carajás, Brazil	Growth project	
Vale's ownership: 100%	Mines and processing plant	
<b>Salobo IV</b>	<b>Capacity: 30 ktpy</b>	<b>Stage: FEL1</b>
Carajás, Brazil	Growth project	
Vale's ownership: 100%	Processing plant	
Nickel		
<b>Pomalaa</b>	<b>Capacity: 120 ktpy</b>	<b>Stage: Definitive feasibility study</b>
Kolaka, Indonesia	Growth project	Investment decision: 2023 (mine)
Vale's ownership: N/A <sup>2</sup>	Mine and HPAL plant	15 ktpy Co as by-product
<b>Creighton Ph. 5</b>	<b>Capacity: 20-24 ktpy</b>	<b>Stage: FEL2</b>
Ontario, Canada	Replacement project	Investment decision: 2023-2024
Vale's ownership: 100%	Underground mine	17-20 ktpy Cu as by-product
<b>CCM Pit</b>	<b>Capacity: 12-15 ktpy</b>	<b>Stage: FEL2</b>
Ontario, Canada	Replacement project	Investment decision: 2023
Vale's ownership: 100%	Underground mine	7-9 ktpy Cu as by-product
<b>CCM Ph. 3</b>	<b>Capacity: 7 ktpy</b>	<b>Stage: FEL2</b>
Ontario, Canada	Replacement project	9 ktpy Cu as by-product
Vale's ownership: 100%	Underground mine	
<b>CCM Ph. 4</b>	<b>Capacity: 9 ktpy</b>	<b>Stage: FEL2</b>
Ontario, Canada	Replacement project	9 ktpy Cu as by-product
Vale's ownership: 100%	Underground mine	

Iron ore		
<b>Serra Norte N1/N2</b>	<b>Capacity: ~50 Mtpy ROM</b>	<b>Stage: FEL3</b>
Northern System (Brazil)	Replacement project	Investment decision: 2024
Vale's ownership: 100%	Open pit mine	
<b>Dry concentration plant</b>	<b>Capacity: 8 Mtpy DR pellet feed</b>	<b>Stage: FEL3</b>
Oman	Replacement project	Investment decision: 2023
Vale's ownership: N/A	Cleaner to produce DR pellet feed	
<b>Serra Leste expansion</b>	<b>Capacity: Under evaluation</b>	<b>Stage: FEL2</b>
Northern System (Brazil)	Growth project	
Vale's ownership: 100%	Open pit mine	
<b>S11C</b>	<b>Capacity: Under evaluation</b>	<b>Stage: FEL2</b>
Northern System (Brazil)	Growth project	
Vale's ownership: 100%	Open pit mine	
<b>Green briquette plants</b>	<b>Capacity: Under evaluation</b>	<b>Stage: FEL3 (two plants)</b>
Brazil and other regions	Growth project	Investment decision: 2022-2029
Vale's ownership: N/A	Cold agglomeration plant	8 plants under engineering stage, including co-located plants in clients' facilities

<sup>1</sup> Indirect ownership through Vale's 44.34% equity in PTVI. PTVI will own 100% of the mine and has the option to acquire up to 30% of the plant as part of the JV agreement.

<sup>2</sup> Refers to the most advanced projects (Bacaba and Cristalino).