

Vale's 1Q23 production and sales report

Rio de Janeiro, April 18th, 2023

- Iron ore production increased 6% y/y due to a stronger performance at S11D and better weather conditions in Minas Gerais. Pellets production increased 20% y/y, driven by higher availability of pellet feed and lower maintenance activities.
- Iron ore fines and pellets sales decreased 7% y/y due to loading restrictions in the Northern System during the rainy season and supply chain rebalancing after strong sales in 4Q22. Vale expects to offset this impact in the second half of the year keeping its annual sales plan unchanged.
- Copper production increased 18% y/y, largely attributed to the improved operational performance of Sossego mine and the steady ramp-up of Salobo III. Copper sales were up 25% y/y, in line with higher production.
- Nickel production decreased 10% y/y mainly due to the continued transitioning of Voisey's Bay mine to underground operations and slightly longer scheduled maintenance at Matsusaka refinery compared to 1Q22. Sudbury mines had strong performance in the quarter, reaching ore production rates of 11.8 ktpd in March, the highest rate since 2017. Nickel sales were strong with up 3% y/y growth.

Production summary

000' metric tons	1Q23	4Q22	1Q22	% change		2023 Guidance
				1Q23/4Q22	1Q23/1Q22	
Iron ore ¹	66,774	80,852	63,128	-17.4%	5.8%	310-320 Mt
Pellets	8,318	8,261	6,924	0.7%	20.1%	36-40 Mt ²
Copper	67.0	66.3	56.6	1.1%	18.4%	335-370 kt
Nickel	41.0	47.4	45.8	-13.5%	-10.5%	160-175 kt

¹ Including third-party purchases, run-of-mine and feed for pelletizing plants.

² Iron ore agglomerates guidance, including iron ore pellets and briquettes.

Sales summary

000' metric tons	1Q23	4Q22	1Q22	% change	
				1Q23/4Q22	1Q23/1Q22
Iron ore fines ¹	45,861	81,202	51,311	-43.5%	-10.6%
Iron ore pellets	8,133	8,789	7,011	-7.5%	16.0%
Iron ore ROM	1,665	1,963	1,035	-15.2%	60.9%
Copper	62.7	71.6	50.3	-12.4%	24.7%
Nickel	40.1	58.2	39.0	-31.1%	2.8%

¹ Including third-party purchase sales.

Price realization summary

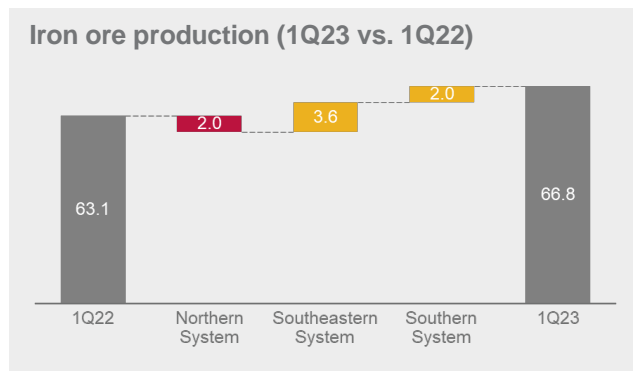
US\$/t	1Q23	4Q22	1Q22	% change	
				1Q23/4Q22	1Q23/1Q22
Iron ore fines (CFR/FOB, wmt)	108.6	95.6	141.4	13.6%	-23.2%
Iron ore pellets (CFR/FOB, wmt)	162.5	165.6	194.6	-1.9%	-16.5%
Copper ¹	9,465	8,774	10,848	7.9%	-12.7%
Nickel	25,260	24,454	22,195	3.3%	13.8%
Gold (US\$/ oz)	1,845	1,677	1,862	10.0%	-0.9%
Silver (US\$/oz)	22.1	21.9	23.5	0.9%	-6.0%
Cobalt	32,830	44,980	78,085	-27.0%	-58.0%

¹ Average realized price for copper operations only (Salobo and Sossego). Average realized copper price for all operations, including copper sales originated from nickel operations, was US\$ 9,298/t in 1Q23.

Businesses' highlights in 1Q23

Iron Ore and Pellets operations

- **Iron ore production increased by 3.7 Mt y/y**, driven by a stronger operational performance at S11D and lower rainfall in Minas Gerais. The production-to-sales gap was a result of (i) port loading restrictions at Ponta da Madeira Terminal due to the rainy season impact on stockpile formation and unscheduled maintenance in port equipment, and (ii) supply chain rebalancing after strong sales in 4Q22. **Vale expects to offset this impact in the second half of the year keeping its annual sales plan unchanged.**



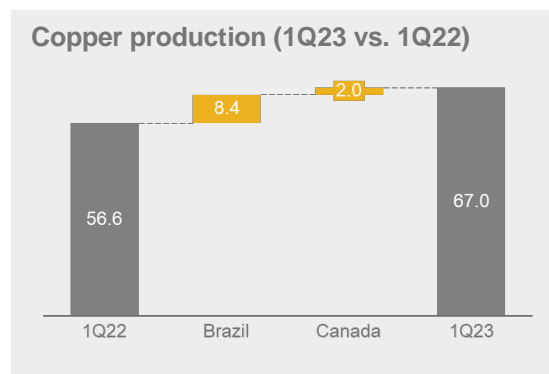
- **S11D's production improved by 1.2 Mt y/y** due to a better performance of our truckless system and the installation of new crushers in 2022. **Northern System production decreased by 2.0 Mt y/y**, in line with our plan, driven by lower ROM availability.
- **Southeastern System production was 3.6 Mt higher y/y**, driven by run-of-mine production increase at Mariana Complex and the increase of high-silica production at Brucutu. **Southern System production increased by 2.0 Mt y/y** mainly due to the improved performance at Vargem Grande and more third-party purchases, despite a landslide that partially impacted MRS railway, which is expected to normalize in May. Both Systems' performances were also positively impacted by better weather conditions.
- **Pellet production increased by 1.4 Mt y/y**, driven by (i) higher production at Tubarão 3 plant after scheduled maintenance in 1Q22, and (ii) higher Vargem Grande plant output due to higher pellet feed availability. In March, Torto dam's emergency plan¹ was approved, and Vale expects to receive its operating license by the end of Q2.
- **All-in premium totaled US\$ 2.1/t²**, US\$ 7.0/t lower y/y, driven by (i) higher sales mix of high-silica products, which, despite the positive margins, reduce average premiums, (ii) lower share of IOCJ and BRBF in the sales mix, due to port restrictions at Ponta da Madeira Terminal, and (iii) lower market premiums for pellets.
- **Iron ore fines realized price was US\$ 108.6/t**, US\$ 32.8/t lower y/y, mainly due to (i) lower benchmark prices (US\$ 16.1/t lower y/y), (ii) a negative effect of pricing adjustment mechanisms (US\$ 12.6/t lower y/y), and (iii) lower fines premiums (US\$ 5.8/t lower y/y). **Iron ore pellets realized price was US\$ 162.5/t**, US\$ 32.1/t lower y/y, mainly due to (i) lower benchmark prices, and (ii) the net effect of lower market premiums.

¹ Emergency Preparedness and Response Plan (PAEBM - Plano de Ação de Emergência para Barragens de Mineração in Portuguese).

² Iron ore premium of US\$ -1.4/t and weighted average contribution of pellets of US\$ 3.5/t.

Copper operations

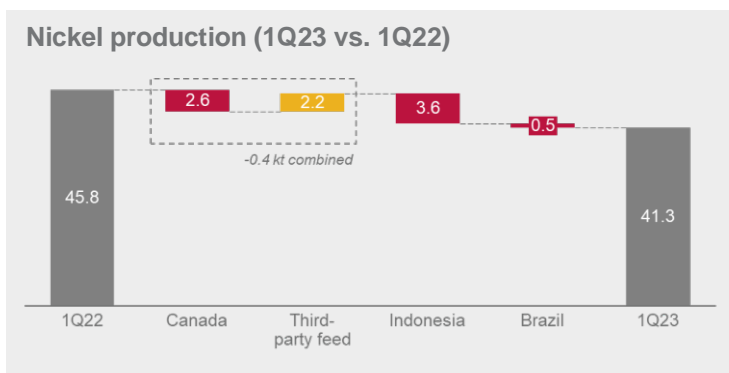
- **Sossego copper production was 9.5 kt higher y/y** as a result of improved plant availability, benefitting from the extended SAG mill maintenance conducted in 1H22.
- **Salobo copper production was 1.1 kt lower y/y** due to planned and corrective maintenance in 1Q23, partially offset by the ramp-up of Salobo III. Salobo III contributed with 3 kt of copper to the overall Salobo complex.



- We advanced with maintenance activities at both Salobo and Sossego operations in 1Q23, and additional maintenance is planned for 2Q23.
- **Copper production in Canada increased by 2.0 kt y/y**, mostly due to higher production from Sudbury, which was driven by greater mine performance and stability this quarter. This increase was partially offset by lower production in Voisey's Bay due to the ongoing mine transition.
- **Copper sales were 12.4 kt higher y/y**, driven by higher production.
- **Average realized price for copper was US\$ 9,465/t in the quarter**, down 13% y/y, mainly due to lower LME prices. The realized price was 6% higher than average LME price for the quarter (US\$ 8,927/t) as a result of the positive effect of the provisional pricing arrangements (PPAs), as open invoices were marked-up at lower prices in the beginning of the quarter.

Nickel operations

- Finished nickel production from Sudbury sourced ore increased by 0.9 kt y/y** mostly due to improved mining performance. In March, the Sudbury mines achieved the highest ore production in March since October 2017.
- Finished nickel production from Thompson sourced ore decreased by 0.4 kt y/y**, as 1Q22 was positively impacted by the transition of Thompson nickel concentrate processing from Sudbury to Long Harbour, when both plants were processing Thompson concentrate.
- Finished nickel production from Voisey's Bay sourced ore was 3.2 kt lower y/y** as we proceed with the ongoing transitional period between the depletion of Ovoid mine and ramp-up to full production of the Voisey's Bay underground project. Planned maintenance at Voisey's Bay and Long Harbour operations are scheduled for 2Q23, with expected impact on Voisey's Bay and Thompson ore source production in the quarter.
- Finished nickel production from third parties increased by 2.2 kt y/y**. For 2023, consumption of feed from third parties is expected to remain at higher levels than in recent years, in order to maximize the utilization and performance of our downstream operations.
- Finished nickel production from Indonesia sourced material was 3.6 kt lower y/y** due to slightly longer scheduled maintenance shutdown at the Matsusaka Refinery in 1Q23, as well as the one-off effect of direct matte sales relocation from 2Q22 to 1Q22 last year. Nickel in matte production increased 22%, reaching 16.8 kt in 1Q23, resulting from the conclusion of the planned furnace rebuild, which started in December 2021 and concluded in June 2022.
- Onça Puma production was 0.5 kt lower y/y** impacted by the maintenance of the furnace in 1Q23, in preparation for the furnace rebuild later in the year.
- Nickel sales were 1.1 kt higher y/y**, as 1Q22 sales were impacted by inventories held to cover sales commitments in 2Q22.
- Average realized price for nickel was US\$ 25,260/t in the quarter**, representing a 14% increase y/y, mainly as a result of higher premiums for Class I products and the positive impact of hedge, with average strike price reaching US\$ 34,929/t in the quarter. This was partially offset by the negative impact of (i) quotational period due to the 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, (ii) fixed-price sales, and (iii) higher discounts for Class II products.



ANNEX 1 - Production and sales summary

Iron ore

000' metric tons	1Q23	4Q22	1Q22	% change	
				1Q23/4Q22	1Q23/1Q22
Northern System	35,771	45,097	37,732	-20.7%	-5.2%
Serra Norte and Serra Leste	19,450	26,486	22,586	-26.6%	-13.9%
S11D	16,321	18,611	15,147	-12.3%	7.8%
Southeastern System	18,604	18,405	14,955	1.1%	24.4%
Itabira (Cauê, Conceição and others)	7,439	7,007	6,198	6.2%	20.0%
Minas Centrais (Brucutu and others)	5,411	5,395	3,569	0.3%	51.6%
Mariana (Alegria, Timbopeba and others)	5,753	6,003	5,188	-4.2%	10.9%
Southern System	12,399	17,350	10,441	-28.5%	18.8%
Paraopeba (Mutuca, Fábrica and others)	4,326	8,403	4,010	-48.5%	7.9%
Vargem Grande (Vargem Grande, Pico and others)	8,074	8,947	6,432	-9.8%	25.5%
IRON ORE PRODUCTION¹	66,774	80,852	63,128	-17.4%	5.8%
OWN PRODUCTION	63,490	75,872	60,718	-16.3%	4.6%
THIRD-PARTY PURCHASES	3,284	4,980	2,411	-34.1%	36.2%
FINES AND PELLETS SALES	53,994	89,991	58,323	-40.0%	-7.4%
FINES SALES²	45,861	81,202	51,311	-43.5%	-10.6%
PELLETS SALES	8,133	8,789	7,011	-7.5%	16.0%
ROM SALES	1,665	1,963	1,035	-15.2%	60.9%
SALES FROM 3RD PARTY PURCHASE	3,545	5,051	2,699	-29.8%	31.3%

¹ Including third-party purchases, run-of-mine and feed for pelletizing plants. Excluding Midwestern System volumes. Vale's product portfolio Fe content reached 61.6%, alumina 1.2% and silica 7.2% in 1Q23.

² Including third-party purchases.

Pellets

000' metric tons	1Q23	4Q22	1Q22	% change	
				1Q23/4Q22	1Q23/1Q22
Northern System	784	739	738	6.1%	6.2%
São Luis	784	739	738	6.1%	6.2%
Southeastern System	4,668	3,616	3,689	29.1%	26.5%
Itabrasco (Tubarão 3)	951	960	310	-0.9%	206.8%
Hispanobras (Tubarão 4)	-	-	-	-	-
Nibrasco (Tubarão 5 and 6)	1,208	1,131	1,064	6.8%	13.5%
Kobrasco (Tubarão 7)	948	178	969	432.6%	-2.2%
Tubarão 8	1,562	1,347	1,346	16.0%	16.0%
Southern System	1,147	1,222	679	-6.1%	68.9%
Fábrica	-	-	-	-	-
Vargem Grande	1,147	1,222	679	-6.1%	68.9%
Oman	1,719	2,684	1,818	-36.0%	-5.4%
PELLETS PRODUCTION	8,318	8,261	6,924	0.7%	20.1%
PELLETS SALES	8,133	8,789	7,011	-7.5%	16.0%

Copper - Finished production by source

000' metric tons	1Q23	4Q22	1Q22	% change	
				1Q23/4Q22	1Q23/1Q22
Brazil	46.1	44.9	37.7	2.7%	22.3%
Salobo	32.8	29.6	33.9	10.8%	-3.2%
Sossego	13.3	15.3	3.8	-13.1%	250.0%
Canada	20.9	21.4	18.9	-2.3%	10.6%
Sudbury	16.3	16.1	13.9	1.2%	17.3%
Thompson	0.1	1.2	0.3	-91.7%	-66.7%
Voisey's Bay	2.0	1.9	3.1	5.3%	-35.5%
Feed from third parties	2.5	2.2	1.6	13.6%	56.3%
COPPER PRODUCTION	67.0	66.3	56.6	1.1%	18.4%
COPPER SALES	62.7	71.6	50.3	-12.4%	24.7%
Copper Sales Brazil	43.2	44.7	34.1	-3.4%	26.7%
Copper Sales Canada	19.5	26.9	16.2	-27.5%	20.4%

Nickel - Finished production by source

000' metric tons	1Q23	4Q22	1Q22	% change	
				1Q23/4Q22	1Q23/1Q22
Canada	16.3	18.2	18.9	-10.4%	-13.8%
Sudbury ¹	9.5	11.1	8.6	-14.4%	10.5%
Thompson	2.5	2.4	2.9	4.2%	-13.8%
Voisey's Bay	4.3	4.6	7.5	-6.5%	-42.7%
Indonesia	14.0	18.0	17.6	-22.2%	-20.5%
Brazil	4.9	5.1	5.4	-3.9%	-9.3%
Feed from third-parties¹	5.9	6.1	3.7	-3.3%	59.5%
NICKEL PRODUCTION	41.0	47.4	45.8	-13.5%	-10.5%
NICKEL SALES	40.1	58.2	39.0	-31.1%	2.8%

¹ External feed purchased from third parties and processed into finished nickel in our Canadian operations.

Energy Transition Metals by-products - Finished production

	1Q23	4Q22	1Q22	% change	
				1Q23/4Q22	1Q23/1Q22
COBALT (000' metric tons)	597	529	755	12.9%	-20.9%
PLATINUM (000' oz troy)	34	25	23	36.0%	47.8%
PALLADIUM (000' oz troy)	40	33	29	21.2%	37.9%
GOLD (000' oz troy) ¹	79	74	71	6.8%	11.3%
TOTAL BY-PRODUCTS (000' metric tons Cu eq.) ^{2,3}	34	34	32	-	6.3%

¹ Includes gold from Copper and Nickel operations.

² Includes iridium, rhodium, ruthenium and silver.

³ Copper equivalent tonnes calculated using average market metal prices for each quarter. Market reference prices: for copper and cobalt: LME spot; for gold and silver: LME spot for 1Q22 and NYMEX for 4Q22 and 1Q23; for Platinum and Palladium: NYMEX spot; for other PGMs: Johnson Matthey.

Further information on Vale can be found at: vale.com

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