

Vale's production and sales in 1Q24

Rio de Janeiro, April 16th, 2024

- **Vale's Q1 performance was marked by robust iron ore sales, which increased by 15% y/y, and by consistent improvement in iron ore operations. On copper, Salobo 3 reached ~90% average throughput rate in the quarter. On nickel, Canadian and Indonesian operations delivered stronger performance y/y.**
- Iron ore production totaled 70.8 Mt, increasing 6% y/y, driven by S11D's improved operating performance, continued asset reliability initiatives and higher 3rd party purchases. Pellets production totaled 8.5 Mt, up 2% y/y, driven by higher pellet feed availability. Iron ore sales reached 63.8 Mt in 1Q24, 15% higher y/y.
- Copper production totaled 81.9 kt, 22% higher y/y, driven by a continued solid ramp-up at Salobo 3, as well as by better operational performance at the Salobo 1 & 2 plants.
- Nickel production totaled 39.5 kt, decreasing by 4% y/y, mainly reflecting the Onça Puma furnace rebuild, partially offset by stronger performance at the Canadian and Indonesian operations.

Production summary

000' metric tons	1Q24	4Q23	Δ q/q	1Q23	Δ y/y	2024 guidance
Iron ore ¹	70,837	89,397	-20.8%	66,774	6.1%	310-320 Mt
Pellets	8,467	9,851	-14.0%	8,318	1.8%	38-42 Mt ²
Copper	81.9	99.1	-17.4%	67.0	22.2%	320-355 kt
Nickel	39.5	44.9	-12.0%	41.0	-3.7%	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	1Q24	4Q23	Δ q/q	1Q23	Δ y/y
Iron ore	63,826	90,328	-29.3%	55,659	14.7%
Fines ¹	52,546	77,885	-32.5%	45,861	14.6%
Pellets	9,225	10,285	-10.3%	8,133	13.4%
ROM	2,056	2,158	-4.7%	1,665	23.5%
Copper	76.8	97.5	-21.2%	62.7	22.5%
Nickel	33.1	47.9	-30.9%	40.1	-17.5%

¹ Including third-party purchases.

Price realization summary

US\$/t	1Q24	4Q23	Δ q/q	1Q23	Δ y/y
Iron ore fines (CFR/FOB, wmt)	100.7	118.3	-14.9%	108.6	-7.3%
Iron ore pellets (CFR/FOB, wmt)	171.9	163.4	5.2%	162.5	5.8%
Copper ¹	7,687	7,941	-3.2%	9,465	-18.8%
Nickel	16,848	18,420	-8.5%	25,260	-33.3%

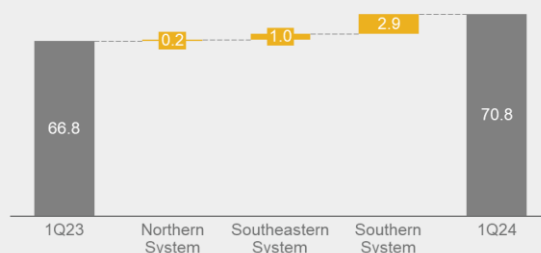
¹ Average realized price for copper operations only (Salobo and Sossego). Average realized copper price for all operations, including copper sales originated from nickel operations, was US\$ 7,632/t in 1Q24.

Business highlights in 1Q24

Iron Ore and Pellets operations

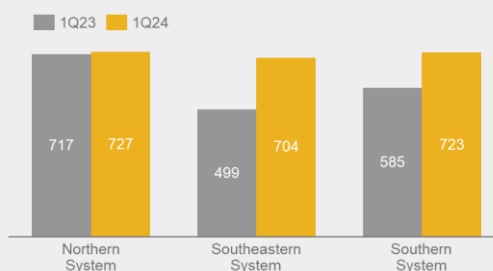
- Northern System: S11D's production is the main positive highlight, up 1.4 Mt y/y.** S11D achieved the highest Q1 output since 2020, with continued asset reliability initiatives securing greater operational stability during the rainy season. At Serra Norte, production decreased y/y due to reduced ROM availability, as expected in the mine development plan. Shipments at Ponta da Madeira port improved by 17% y/y as a result of several initiatives to minimize the impact of rainfall, like cargo moisture management and others.

Iron ore production, Mt (1Q24 vs. 1Q23)



- Southeastern System: output was 1.0 Mt higher y/y,** driven by: (i) Brucutu and Timbopeba plants' solid operational performance and (ii) higher third-party purchases. These effects were partially offset by lower production at Alegria, caused by plant adjustments aiming to increase higher quality ore processing.

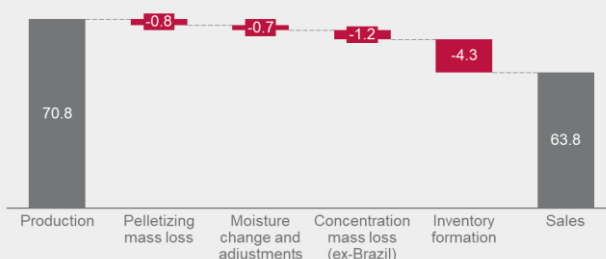
Average rainfall¹, mm (1Q24 vs. 1Q23)



¹ Average from the mining complexes and ports in each System.

- Southern System: production increased by 2.9 Mt y/y,** mainly driven by greater stability at Vargem Grande and Mutuca, with initiatives to minimize rainfall impact bearing fruit and (ii) higher third-party purchases.

Iron ore production-to-sales, Mt (1Q24)



- Pellets: production was 0.1 Mt higher y/y,** due to increased pellet feed availability from the Southeastern and Southern System mines, driving higher pellet output in the Tubarão and Vargem Grande plants.

- Iron ore sales increased by 8.2 Mt y/y, totaling 63.8 Mt.**

The strong performance was driven by the absence of port loading restrictions that negatively impacted the Ponta da Madeira port in 1Q23. The difference between production and sales is explained by Vale's supply chain effects and inventories formation driven by cargos transiting to distribution centers.

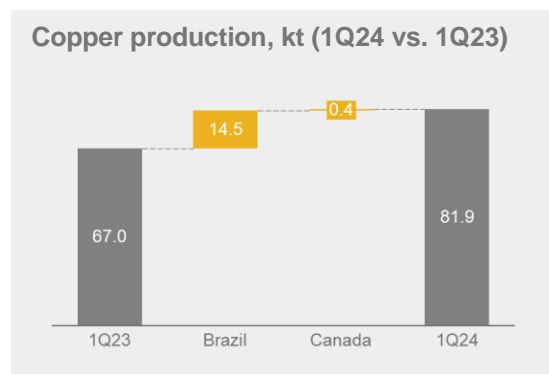
- Average realized iron ore fines price was US\$ 100.7/t,** US\$ 17.6/t lower q/q, largely impacted by provisional pricing adjustments due to lower-than-average forward prices on the last day of the quarter. **The average realized iron ore pellet price was US\$ 171.9/t,** US\$ 8.5/t higher q/q, as quarterly contract pellet premiums increased, while pellet sales are generally not impacted by provisional pricing adjustments.

- The all-in premium totaled US\$ 2.2/t¹,** slightly higher q/q. Given current market conditions with a lower price spread for low-grade materials, Vale continued to prioritize the sale of blended and high-silica products in Q1, in order to maximize its product portfolio value.

¹ Iron ore fines premium of US\$ -1.6/t and the weighted average contribution of the pellet business of US\$ 3.8/t.

Copper operations

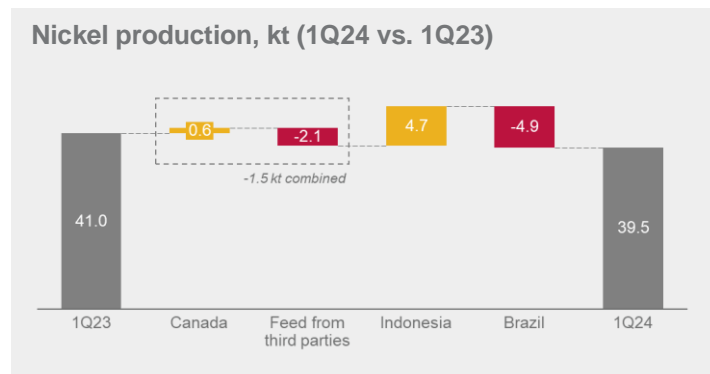
- **Salobo: copper production increased by 15.6 kt y/y** mainly due to the continued ramp-up at Salobo 3, which reached ~90% average throughput in Q1. Salobo 1 & 2 plants also posted strong performance in the quarter, with 14% higher throughput rate, 10% higher productivity and 3% higher asset availability y/y. On a sequential basis, production decreased by 6.8 kt, mainly due to lower feed grades, which was expected as per the mine development plan.
- **Sossego: copper production decreased by 1.0 kt y/y and 9.1 kt q/q** due scheduled maintenance shutdown and lower ore grades, as expected. Maintenance works are anticipated to be completed by late April. In January, the SAG mill achieved record results, namely: (i) highest monthly throughput since August 2018, (ii) highest productivity since October 2018 and (iii) highest operational efficiency since December 2020.
- **Canada: copper production was 0.4 kt higher y/y and decreased by 1.1 kt q/q.** Copper production was positively impacted by a 1.6 kt increase in production from Canadian mines, especially as result of an 8% y/y increase in own sourced ore production at the Clarabelle mill in Sudbury. The weaker q/q performance was impacted by the winter season at the Thompson site.
- **Payable copper sales² totaled 76.8 kt in the quarter, up 14.1 kt y/y and down 20.7 kt q/q,** in line with production levels.
- **Average copper realized price was US\$ 7,687/t, 3% lower q/q,** mainly a result of the impact of purchase price adjustments in Q4.



² Sales volumes are lower than production volumes due to payable copper vs. contained copper: part of the copper contained in the concentrates is lost in the smelting and refining process, hence payable quantities of copper are approximately 3.5% lower than contained volumes.

Nickel operations

- Sudbury-sourced ore: finished nickel production increased by 0.7 kt y/y and 0.2 kt q/q**, as a result of better performance of the Sudbury mines, supported by the ramp-up of the Copper Cliff South mine, which was partially offset by corrective maintenance at the Copper Cliff Refinery.
- Thompson-sourced ore: finished nickel production was flat y/y and 0.8 kt lower q/q**. The q/q decrease was mainly a result of internal inventory rebuild after a strong quarter in 4Q23.
- Voisey's Bay-sourced ore: finished nickel production was flat y/y and increased by 0.9 kt q/q**, driven by the availability of Voisey's Bay-sourced feedstock at Long Harbour. Contained nickel in ore mined at Voisey's Bay increased by 55% y/y as the underground mines continued to ramp up.
- Third-party feed: finished nickel production decreased by 2.1 kt y/y and 3.9 kt q/q**, as planned. The consumption of third-party feed is in line with the strategy to maximize the utilization and performance of our downstream operations.
- Indonesia-sourced material: finished nickel production increased by 4.7 kt y/y**, mainly reflecting the robust performance of the Indonesia-Matsusaka-Clydach flowsheet. **Production decreased by 1.1 kt q/q** as result of planned maintenance at the Matsusaka refinery in March. Nickel in matte production at PTVI was 18.4 kt in the quarter, representing a 1.4 kt increase y/y and a 0.9 kt decrease q/q.
- Onça Puma: nickel production decreased by 4.9 kt y/y and 0.6 kt q/q** as operations have been halted since October 2023 for the furnace rebuild. The rebuild works were completed in mid-March. Currently, the electrical furnace is heating up and the plant is on track to resume production in early May.
- Nickel sales totaled 33.1 kt in the quarter, 6.4 kt lower than quarterly production**, mainly due to VBM's inventory strategy to meet committed sales during planned maintenance at the refineries in Q2.
- Average nickel realized price was US\$ 16,848/t, down 33% y/y and 9% q/q**, mainly driven by a 36% and 4% decrease in LME nickel reference prices y/y and q/q, respectively (US\$ 16,589/t in 1Q24 vs. US\$ 25,983/t in 1Q23 vs. US\$ 17,247/t in 4Q23). In the quarter, the average realized nickel price was 1.6% higher than the LME mainly as a result of higher share of Class I products sales, which are sold at a premium to the market reference price.



ANNEX 1 – Production and sales summary

Iron ore

000' metric tons	1Q24	4Q23	Δ q/q	1Q23	Δ y/y
Northern System	35,929	48,852	-26.5%	35,771	0.4%
Serra Norte and Serra Leste	18,218	28,702	-36.5%	19,450	-6.3%
S11D	17,711	20,150	-12.1%	16,321	8.5%
Southeastern System	19,561	21,595	-9.4%	18,604	5.1%
Itabira (Cauê, Conceição and others)	7,599	7,979	-4.8%	7,439	2.2%
Minas Centrais (Brucutu and others)	6,408	6,658	-3.8%	5,411	18.4%
Mariana (Alegria, Timbopeba and others)	5,555	6,959	-20.2%	5,753	-3.4%
Southern System	15,347	18,949	-19.0%	12,399	23.8%
Paraopeba (Mutuca, Fábrica and others)	6,525	8,758	-25.5%	4,326	50.8%
Vargem Grande (VGR, Pico and others)	8,822	10,191	-13.4%	8,074	9.3%
IRON ORE PRODUCTION¹	70,837	89,397	-20.8%	66,774	6.1%
OWN PRODUCTION	65,024	81,585	-20.3%	63,490	2.4%
THIRD-PARTY PURCHASES	5,813	7,812	-25.6%	3,284	77.0%
IRON ORE SALES	63,826	90,328	-29.3%	55,659	14.7%
FINES SALES²	52,546	77,885	-32.5%	45,861	14.6%
IOCI	9,453	13,074	-27.7%	11,215	-15.7%
BRBF	25,715	45,199	-43.1%	20,345	26.4%
Pellet feed – China (PFC1) ³	2,536	3,279	-22.7%	2,642	-4.0%
Lump	1,809	1,871	-3.3%	1,394	29.8%
High-silica products	8,490	8,646	-1.8%	5,536	53.4%
Other fines (60-62% Fe)	4,543	5,816	-21.9%	4,739	-4.1%
PELLET SALES	9,225	10,285	-10.3%	8,133	13.4%
ROM SALES	2,056	2,158	-4.7%	1,665	23.5%
SALES FROM 3RD PARTY PURCHASE	5,648	7,807	-27.7%	3,545	59.3%

¹ Including third party purchases, run-of-mine and feed for pelletizing plants. Excluding Midwestern System volumes. Vale's product portfolio Fe content reached 62.0%, alumina 1.2% and silica 6.5% in 1Q24.

² Including third-party purchases.

³ Products concentrated in Chinese facilities.

Pellets

000' metric tons	1Q24	4Q23	Δ q/q	1Q23	Δ y/y
Northern System	766	735	4.2%	784	-2.3%
São Luis	766	735	4.2%	784	-2.3%
Southeastern System	4,852	5,618	-13.6%	4,668	3.9%
Itabasco (Tubarão 3)	557	739	-24.6%	951	-41.4%
Hispanobras (Tubarão 4)	688	892	-22.9%	-	n.m.
Nibrasco (Tubarão 5 and 6)	1,153	1,585	-27.3%	1,208	-4.6%
Kobrasco (Tubarão 7)	852	899	-5.2%	948	-10.1%
Tubarão 8	1,601	1,503	6.5%	1,562	2.5%
Southern System	1,219	1,175	3.7%	1,147	6.3%
Fábrica	-	-	-	-	-
Vargem Grande	1,219	1,175	3.7%	1,147	6.3%
Oman	1,629	2,323	-29.9%	1,719	-5.2%
PELLET PRODUCTION	8,467	9,851	-14.0%	8,318	1.8%
PELLET SALES	9,225	10,285	-10.3%	8,133	13.4%

Copper – Finished production by source

000' metric tons	1Q24	4Q23	Δ q/q	1Q23	Δ y/y
Brazil	60.6	76.7	-21.0%	46.1	31.5%
Salobo	48.4	55.2	-12.3%	32.8	47.6%
Sossego	12.3	21.4	-42.5%	13.3	-7.5%
Canada	21.3	22.4	-4.9%	20.9	1.9%
Sudbury	16.8	15.4	9.1%	16.3	3.1%
Thompson	0.4	2.9	-86.2%	0.1	300.0%
Voisey's Bay	2.7	2.7	0.0%	2.0	35.0%
Feed from third parties ¹	1.3	1.4	-7.1%	2.5	-48.0%
COPPER PRODUCTION	81.9	99.1	-17.4%	67.0	22.2%
COPPER SALES	76.8	97.5	-21.2%	62.7	22.5%
Copper Sales Brazil	56.4	76.3	-26.1%	43.2	30.6%
Copper Sales Canada	20.4	21.2	-3.8%	19.5	4.6%

¹ External feed purchased from third parties and processed into copper in our Canadian operation.

Nickel

000' metric tons	1Q24	4Q23	Δ q/q	1Q23	Δ y/y
FINISHED PRODUCTION BY SOURCE					
Canada	16.9	16.7	1.2%	16.3	3.7%
Sudbury	10.2	10.0	2.0%	9.5	7.4%
Thompson	2.4	3.2	-25.0%	2.5	-4.0%
Voisey's Bay	4.4	3.5	25.7%	4.3	2.3%
Indonesia	18.7	19.8	-5.6%	14.0	33.6%
Brazil	-	0.6	-100.0%	4.9	-100.0%
Feed from third-parties ¹	3.8	7.7	-50.6%	5.9	-35.6%
FINISHED PRODUCTION BY SITE					
Sudbury	13.8	16.2	-14.8%	14.0	-1.4%
Voisey's Bay & Long Harbour	7.7	8.3	-7.2%	8.7	-11.5%
Onça Puma	-	0.6	-100.0%	4.9	-100.0%
Clydach	10.2	10.5	-2.9%	8.2	24.4%
Matsusaka	3.3	3.9	-15.4%	1.9	73.7%
Others ²	4.5	5.4	-16.7%	3.4	32.4%
NICKEL PRODUCTION	39.5	44.9	-12.0%	41.0	-3.7%
NICKEL SALES	33.1	47.9	-30.9%	40.1	-17.5%

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

² Includes intermediates produced in Thompson and PTVI, tolling and others.

Energy Transition Metals by-products – Finished production

	1Q24	4Q23	Δ q/q	1Q23	Δ y/y
COBALT (metric tons)	482	549	-12.2%	597	-19.3%
PLATINUM (000' oz troy)	30	31	-3.2%	34	-11.8%
PALLADIUM (000' oz troy)	39	39	0.0%	40	-2.5%
GOLD (000' oz troy) ¹	104	123	-15.4%	79	31.6%
TOTAL BY-PRODUCTS (000' metric tons Cu eq.) ^{2,3}	38	45	-15.6%	34	11.8%

¹ Includes Gold from Copper and Nickel operations.

² Includes Iridium, Rhodium, Ruthenium and Silver.

³ Copper equivalent tons calculated using average market metal prices for each quarter. Market reference prices: for copper and cobalt: LME spot; for Gold, Silver, Platinum, and Palladium: Bloomberg; for other PGMs: Johnson Matthey.

ANNEX 2 – Energy Transition Metals: Preventive Maintenance scheduled in 2024

	Q1	Q2	Q3	Q4
Copper operations				
Salobo				
Salobo I&II	< 1 week	1 week	1 week	1 week
Salobo III	< 1 week	1 week	1 week	1 week
Sossego				
Sossego	4.5 weeks	4 weeks	1.5 weeks	1.5 week
Nickel operations				
Sudbury				
Coleman			4 weeks	
Creighton		1 week	5 weeks	
Copper Cliff North			3.5 weeks	
Copper Cliff South			2.5 week	
Garson			4 weeks	
Totten			3 weeks	
Clarabelle mill			4.5 weeks	
Sudbury Smelter		5 weeks		
Sudbury Refinery		6 weeks		
Port Colborne (Ni, Co & PGMs)		6 weeks		
Thompson				
Thompson mine			4.5 weeks	
Thompson mill			4.5 weeks	
Voisey's Bay & Long Harbour				
Voisey's Bay		2 weeks		1 week
Long Harbour Refinery		4.5 weeks		
Standalone Refineries				
Clydach		5 weeks		
Matusaka	6.5 weeks			
Indonesia				
PTVI (furnaces/kilns only)	0 weeks	1.5 weeks	1 weeks	<1 week
Brazil				
Onça Puma	11 weeks ¹	<1 week	<1 week	<1 week

¹ Refers to the furnace rebuild. The ramp up after maintenance is not included in the number of weeks.

Note: The maintenance schedule may be deliberately adjusted if it proves beneficial for operations and the overall business. The number of weeks is rounded to 0.0 or 0.5 and may involve more than one maintenance activity within the quarter.

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

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