

Vale's production and sales in 4Q23 and 2023

Rio de Janeiro, January 29th, 2024

- **Vale's Q4 performance was marked by solid production and sales in all businesses. In December, iron ore achieved its highest monthly output since 2018. Copper production increased by 50% y/y, the highest level since 2018. In nickel, price realization was 7% above LME prices.**
- Iron ore production totaled 89.4 Mt in Q4, increasing by 11% y/y. In 2023, production reached 321.2 Mt, above our 315 Mt guidance, and 4.3% higher y/y as a result of: (i) continued initiatives to improve asset reliability at S11D; (ii) solid performance at Itabira and Vargem Grande complexes; and (iii) higher third-party purchases.
- Pellets production totaled 9.9 Mt in Q4, 19% higher y/y. In 2023, production reached 36.5 Mt, 14% higher y/y, supported by higher pellet feed production at Brucutu. Briquettes production started in Q4, an important step in Vale's strategy to support steelmaking decarbonization by expanding the iron ore agglomerates supply.
- Copper production totaled 99.1 kt in Q4, increasing by 50% y/y. In 2023, production increased by 29% y/y, totaling 326.6 kt, slightly above our revised 325 kt guidance. The improved performance was mainly a result of Salobo 3's successful ramp-up, with production at the Salobo complex increasing by 87% y/y in Q4, as well as the better performance of Sossego's plant.
- Nickel production decreased by 5% in Q4 vs a year ago, while it also decreased 8% in 2023, totaling 164.9 kt, in-line with guidance. The lower production was anticipated considering the transition to underground mining at Voisey's Bay as well as the planned furnace rebuild at Onça Puma.

Production summary

000' metric tons	4Q23	3Q23	4Q22	2023	2022	% change			2024 guidance	2023 guidance
						4Q23/3Q23	4Q23/4Q22	2023/2022		
Iron ore ¹	89,397	86,238	80,852	321,154	307,793	3.7%	10.6%	4.3%	310-320 Mt	~315 Mt
Pellets	9,851	9,175	8,261	36,455	32,111	7.4%	19.2%	13.5%	38-42 Mt ²	~37 Mt ²
Copper	99.1	81.6	66.3	326.6	253.1	21.4%	49.5%	29.0%	320-355 kt	~325 kt
Nickel	44.9	42.1	47.4	164.9	179.1	6.7%	-5.3%	-7.9%	160-175 kt	~165 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	4Q23	3Q23	4Q22	2023	2022	% change		
						4Q23/3Q23	4Q23/4Q22	2023/2022
Iron ore fines ¹	77,885	69,714	81,202	256,789	260,663	11.7%	-4.1%	-1.5%
Iron ore pellets	10,285	8,613	8,789	35,840	33,164	19.4%	17.0%	8.1%
Iron ore ROM	2,158	2,232	1,963	8,290	8,216	-3.3%	9.9%	0.9%
Copper	97.5	73.8	71.6	307.8	243.9	32.1%	36.2%	26.2%
Nickel	47.9	39.2	58.2	167.9	180.8	22.2%	-17.7%	-7.1%

¹ Including third-party purchases.

Price realization summary

US\$/t	4Q23	3Q23	4Q22	2023	2022	% change		
						4Q23/3Q23	4Q23/4Q22	2023/2022
Iron ore fines (CFR/FOB, wmt)	118.3	105.1	95.6	108.1	108.1	12.6%	23.7%	-
Iron ore pellets (CFR/FOB, wmt)	163.4	161.2	165.6	161.9	188.6	1.4%	-1.3%	-14.2%
Copper ¹	7,941	7,731	8,774	7,960	8,052	2.7%	-9.5%	-1.1%
Nickel	18,420	21,237	24,454	21,830	23,669	-13.3%	-24.7%	-7.8%

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\$ 7,867/t in 4Q23 and US\$ 7,903/t in 2023.

Business highlights in 4Q23

Iron Ore and Pellets operations

- **Northern System production increased by 3.8 Mt y/y and 0.7 Mt q/q**, reflecting positive results from continued initiatives to improve asset reliability and operational stability at Serra Norte and S11D.

- **The Southeastern System output was 3.2 Mt higher y/y and 1.2 Mt higher q/q**, driven by (i) Conceição concentration plants' improved performance in Itabira; (ii) higher mining equipment availability at Alegria; and (iii) higher third-party purchases.

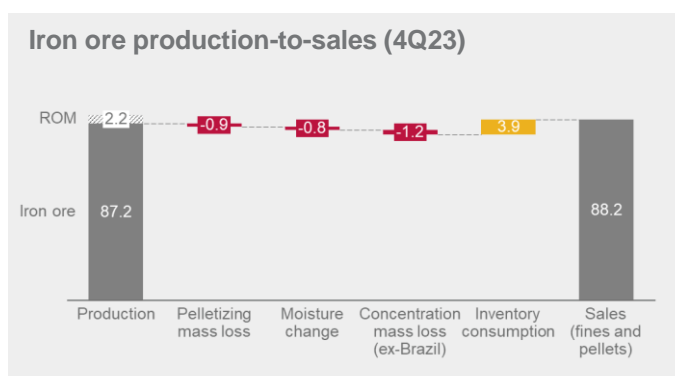
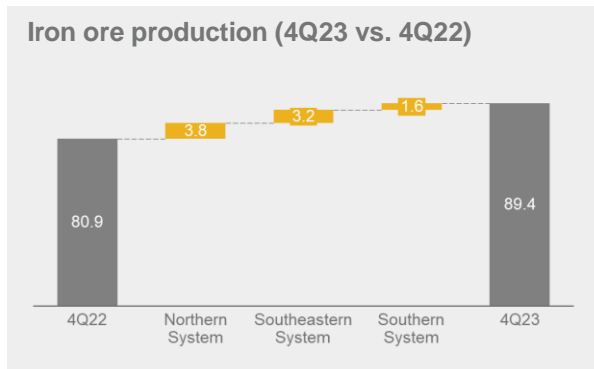
- **Southern System production increased by 1.6 Mt y/y and 1.2 Mt q/q**, mainly driven by (i) improved performance at the Vargem Grande Complex; and (ii) higher third-party purchases, partially offset by lower production at Viga, which resumed operations in late November, as well as lower run-of-mine output.

- **Pellet production increased by 1.6 Mt y/y and 0.7 Mt q/q**, driven by an increase in pellet feed supply from Brucutu, resulting in higher pellet output from the Tubarão plants, partially offset by planned maintenance at the São Luis and Oman plants in October. In Q4, Vale started producing iron ore briquettes at the Tubarão Complex, and volumes will start to be recorded in 1H24.

- **Iron ore fines and pellet sales reached 88.2 Mt in the quarter, 9.8 Mt higher q/q and flat y/y**, driven by higher production and inventory sales, taking advantage of favorable market conditions.

- **The average realized iron ore fines price was US\$ 118.3/t**, US\$ 13.2/t higher q/q, largely attributed to higher benchmark iron ore prices and a positive impact from forward price adjustments. **The average realized iron ore pellet price was US\$ 163.4/t**, relatively flat q/q, as the positive effect from higher benchmark iron ore prices was offset by lower quarterly pellet premiums.

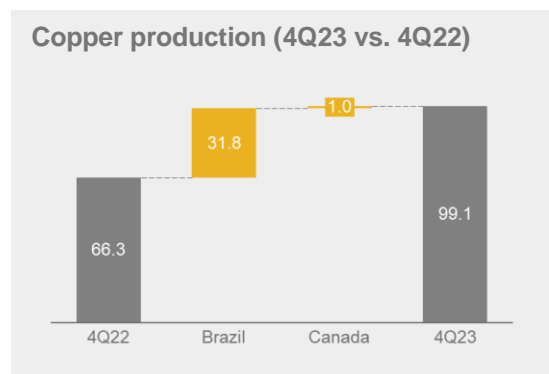
- **The all-in premium totaled US\$ 1.6/t¹**, US\$ 2.2/t lower q/q and US\$ 3.8/t lower y/y. Given market conditions in Q4, with lower discounts for high-silica products as well as lower premiums for high-grade products, Vale decided to increase high-silica products' share in the sales mix, while rebalancing premium iron ore inventories (IOCJ and BRBF), maximizing its product portfolio value.



¹ Iron ore premium of US\$ -1.1/t and the weighted average contribution of the pellet business of US\$ 2.6/t.

Copper operations

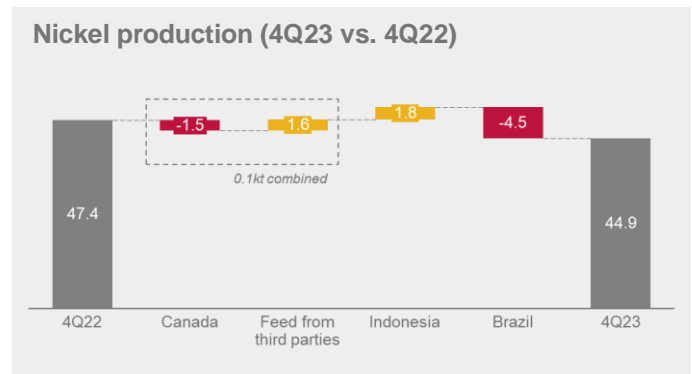
- **Salobo copper production increased by 25.6 kt y/y and 5.6 kt q/q** with the Salobo 3 ramp-up and the continuous increase in plant availability and productivity at the Salobo 1&2 plants. Salobo Complex throughput achieved a pace of 32.3 Mtpy during a 90-day period (August-November).
- **Sossego copper production increased by 6.1 kt y/y and 4.3 kt q/q** as the mining plan moved into higher-grade zones. In December, Sossego achieved record results: (i) the best monthly rate at the SAG mill since 2021, and (ii) the best milling rate since 2020, as well as the highest copper contained production since 2021, achieved in November.
- **Copper production in Canada increased by 1.0 kt y/y and 7.5 kt q/q**, mainly driven by higher copper precipitate production in Thompson and increased copper production in Voisey's Bay, as underground mining operations ramp up.
- **Copper sales² totaled 97.5 kt in the quarter, 25.9 kt higher y/y and 23.7 kt q/q**, driven by higher production.
- **Average copper realized price was US\$ 7,941/t, 2.7% higher q/q**, mainly a result of positive provisional price adjustments, as the average LME reference price was lower than the average forward curve at the end of the quarter.



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

- Finished nickel production from Sudbury-sourced ore decreased by 1.1 kt y/y**, mainly due to the longer planned maintenance at Creighton mine for partial repair of the shaft, which impacted timing and flow of ore feed material to mill. **Production increased by 1.9 kt q/q**, following annual mine maintenance performed in Q3.
- Finished nickel production from Thompson-sourced ore increased by 0.8 kt y/y and 1.9 kt q/q**, mainly as a result of intermediate product recovery from precipitates as part of the circular mining initiative.
- Finished nickel production from Voisey's Bay-sourced ore decreased by 1.1 kt y/y and 0.4 kt q/q** driven by the ongoing planned transition from the Ovoid open pit mine depletion to the underground VBME project ramp-up. Contained nickel in ore mined increased by 2.2 kt y/y as the underground mines continue to ramp up.
- Finished nickel production from third parties increased by 1.6 kt y/y and 1.8 kt q/q**. The consumption of third-party feed is in line with the strategy to maximize the utilization and performance of our downstream operations.
- Finished nickel production from Indonesia-sourced material increased by 1.8 kt y/y and 2.7 kt q/q**, mainly reflecting the higher availability of nickel in matte from Indonesia. Nickel in matte production was 19.1 kt in the quarter, the highest since 4Q21, as it continues to benefit from the improved mine and furnace performance.
- Nickel production at Onça Puma decreased by 4.5 kt y/y and 5.2 kt q/q** as operations are halted for the furnace rebuild to be completed in 1Q24.
- Nickel sales totaled 47.9 kt in the quarter, 3.0 kt higher than quarterly production**, as expected, mainly due to inventory sales built in Q3 to cover the Onça Puma furnace rebuild.
- Average nickel realized price was US\$ 18,420/t, down 13.3% q/q**, mainly due to 15.2% lower LME reference prices q/q. The average realized nickel price in Q4 was 7% higher than the LME reference price, mainly due to the impact of positive hedging results and the higher share of Class I products in sales mix, sold at higher premiums.



ANNEX 1 – Production and sales summary

Iron ore

000' metric tons	4Q23	3Q23 ³	4Q22	2023	2022	% change		
						4Q23/3Q23	4Q23/4Q22	2023/2022
Northern System	48,852	48,188	45,097	172,968	171,555	1.4%	8.3%	0.8%
Serra Norte and Serra Leste	28,702	28,833	26,486	97,986	102,298	-0.5%	8.4%	-4.2%
S11D	20,150	19,355	18,611	74,982	69,257	4.1%	8.3%	8.3%
Southeastern System	21,595	20,350	18,405	82,344	72,644	6.1%	17.3%	13.4%
Itabira (Cauê, Conceição and others)	7,979	7,619	7,007	31,399	27,283	4.7%	13.9%	15.1%
Minas Centrais (Brucutu and others)	6,658	5,939	5,395	24,546	20,759	12.1%	23.4%	18.2%
Mariana (Alegria, Timbopeba and others)	6,959	6,791	6,003	26,398	24,602	2.5%	15.9%	7.3%
Southern System	18,949	17,701	17,350	65,841	63,594	7.1%	9.2%	3.5%
Paraopeba (Mutuca, Fábrica and others)	8,758	8,214	8,403	28,870	30,106	6.6%	4.2%	-4.1%
Vargem Grande (VGR, Pico and others)	10,191	9,488	8,947	37,061	33,488	7.4%	13.9%	10.7%
IRON ORE PRODUCTION¹	89,397	86,238	80,852	321,154	307,793	3.7%	10.6%	4.3%
OWN PRODUCTION	81,585	79,073	75,872	297,170	289,330	3.2%	7.5%	2.7%
THIRD-PARTY PURCHASES	7,812	7,165	4,980	23,984	18,463	9.0%	56.9%	29.9%
IRON ORE SALES	90,328	80,559	91,954	300,919	302,042	12.1%	-1.8%	-0.4%
FINES SALES²	77,885	69,714	81,202	256,789	260,663	11.7%	-4.1%	-1.5%
PELLET SALES	10,285	8,613	8,789	35,840	33,164	19.4%	17.0%	8.1%
ROM SALES	2,158	2,232	1,963	8,290	8,216	-3.3%	9.9%	0.9%
SALES FROM 3RD PARTY PURCHASE	7,807	6,646	5,051	23,580	18,497	17.5%	54.6%	27.5%

¹ Including third party purchases, run-of-mine and feed for pelletizing plants. Excluding Midwestern System volumes. Vale's product portfolio Fe content reached 62.1%, alumina 1.3% and silica 7.2% in 4Q23.

² Including third-party purchases.

³ Third-party purchase distribution between Southeastern and Southern Systems complexes were reinstated.

Pellets

000' metric tons	4Q23	3Q23	4Q22	2023	2022	% change		
						4Q23/3Q23	4Q23/4Q22	2023/2022
Northern System	735	1,037	739	3,221	3,212	-29.1%	-0.5%	0.3%
São Luis	735	1,037	739	3,221	3,212	-29.1%	-0.5%	0.3%
Southeastern System	5,618	4,403	3,616	19,323	14,677	27.6%	55.4%	31.7%
Itabasco (Tubarão 3)	739	801	960	3,495	2,725	-7.7%	-23.0%	28.3%
Hispanobras (Tubarão 4)	892	720	-	1,669	-	23.9%	n.m.	n.m.
Nibrasco (Tubarão 5 and 6)	1,585	837	1,131	4,760	3,465	89.4%	40.1%	37.4%
Kobrasco (Tubarão 7)	899	557	178	3,204	3,034	61.4%	405.1%	5.6%
Tubarão 8	1,503	1,488	1,347	6,195	5,451	1.0%	-11.6%	13.6%
Southern System	1,175	1,107	1,222	4,629	4,305	6.1%	-3.8%	7.5%
Fábrica	-	-	-	-	-	-	-	-
Vargem Grande	1,175	1,107	1,222	4,629	4,305	6.1%	-3.8%	7.5%
Oman	2,323	2,628	2,684	9,283	9,919	-11.6%	-13.5%	-6.4%
PELLET PRODUCTION	9,851	9,175	8,261	36,455	32,111	7.4%	19.2%	13.5%
PELLET SALES	10,285	8,613	8,789	35,840	33,164	19.4%	17.0%	8.1%

Copper – Finished production by source

000' metric tons	4Q23	3Q23	4Q22	2023	2022	% change		
						4Q23/3Q23	4Q23/4Q22	2023/2022
Brazil	76.7	66.7	44.9	247.2	171.0	15.0%	70.8%	44.6%
Salobo	55.2	49.6	29.6	180.4	127.8	11.3%	86.5%	41.2%
Sossego	21.4	17.1	15.3	66.8	43.2	25.1%	39.9%	54.6%
Canada	22.4	14.9	21.4	79.4	82.1	50.3%	4.7%	-3.3%
Sudbury	15.4	9.4	16.1	57.9	59.2	63.8%	-4.3%	-2.2%
Thompson	2.9	1.6	1.2	4.7	5.3	81.3%	141.7%	-11.3%
Voisey's Bay	2.7	2.7	1.9	9.6	10.8	0.0%	42.1%	-11.1%
Feed from third parties ¹	1.4	1.2	2.2	7.2	6.8	16.7%	-36.4%	5.9%
COPPER PRODUCTION	99.1	81.6	66.3	326.6	253.1	21.4%	49.5%	29.0%
COPPER SALES	97.5	73.8	71.6	307.8	243.9	32.1%	36.2%	26.2%
Copper Sales Brazil	76.3	61.8	44.7	234.0	166.3	23.5%	70.7%	40.7%
Copper Sales Canada	21.2	12.0	26.9	73.8	77.5	76.7%	-21.2%	-4.8%

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

Nickel – Finished production by source

000' metric tons	4Q23	3Q23	4Q22	2023	2022	% change		
						4Q23/3Q23	4Q23/4Q22	2023/2022
Canada	16.7	13.3	18.2	59.5	73.3	25.6%	-8.2%	-18.8%
Sudbury	10.0	8.1	11.1	38.2	39.0	23.5%	-9.9%	-2.1%
Thompson	3.2	1.3	2.4	7.9	9.9	146.2%	33.3%	-20.2%
Voisey's Bay	3.5	3.9	4.6	13.5	24.4	-10.3%	-23.9%	-44.7%
Indonesia	19.8	17.1	18.0	64.1	63.9	15.8%	10.0%	0.3%
Brazil	0.6	5.8	5.1	17.0	23.6	-89.7%	-88.2%	-28.0%
Feed from third-parties ¹	7.7	5.9	6.1	24.2	18.3	30.5%	26.2%	32.2%
NICKEL PRODUCTION	44.9	42.1	47.4	164.9	179.1	6.7%	-5.3%	-7.9%
NICKEL SALES	47.9	39.2	58.2	167.9	180.8	22.2%	-17.7%	-7.1%

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

Energy Transition Metals by-products – Finished production

	4Q23	3Q23	4Q22	2023	2022	% change		
						4Q23/3Q23	4Q23/4Q22	2023/2022
COBALT (000' metric tons)	549	452	529	1,959	2,434	21.5%	3.8%	-19.5%
PLATINUM (000' oz troy)	31	24	25	125	102	29.2%	24.0%	22.5%
PALLADIUM (000' oz troy)	39	24	33	149	127	62.5%	18.2%	17.3%
GOLD (000' oz troy) ¹	123	117	74	410	289	5.1%	66.2%	41.9%
TOTAL BY-PRODUCTS (000' metric tons Cu eq.) ^{2,3}	45	38	34	156	134	18.4%	32.4%	16.4%

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 and Silver: LME spot for 2Q22 (including 1H22) and NYMEX from 3Q22 onwards; for Platinum and Palladium: NYMEX spot; for other PGMs: Johnson Matthey.

ANNEX 2 – Energy Transition Metals: Maintenance scheduled in 2024

Operation	Q1	Q2	Q3	Q4
Copper operations				
Salobo				
Salobo I&II	< 1 week	<1 week	1.5 week	<1 week
Salobo III	1.5 week	1.5 week	1.5 week	1 week
Sossego				
Sossego	4.5 weeks	1 week	2 weeks	1 week
Nickel operations				
Sudbury				
Coleman			4.5 weeks	
Creighton			9 weeks	
Copper Cliff North			4 weeks	
Copper Cliff South			1.5 week	
Garson			4 weeks	
Totten			2 weeks	
Clarabelle mill			4.5 weeks	
Sudbury Smelter		4 weeks		
Sudbury Refinery		6 weeks		
Port Colborne (Co & PGMs)		5 weeks		
Thompson				
Thompson mine			4.5 weeks	
Thompson mill			4.5 weeks	
Voisey's Bay & Long Harbour				
Voisey's Bay		2 weeks		
Long Harbour Refinery		4.5 weeks		
Standalone Refineries				
Clydach		4.5 weeks		
Matsusaka	4.5 weeks			
Indonesia				
PTVI (furnaces/kilns only)	3 weeks	1 week	4 weeks	3 weeks
Brazil				
Onça Puma	9.5 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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