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# VALE'S PRODUCTION AND SALES IN 4Q21 AND 2021

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# Production and sales in 4Q21 and 2021

**Rio de Janeiro, February 10<sup>th</sup>, 2022** – The main drivers of 2021 production and sales were (i) the increase in Iron Ore production (5% y/y) and sales (9% y/y) driven by greater production in our Minas Gerais operations (17% y/y) partially offset by weaker performance in S11D (-11% y/y); (ii) the strong benchmark price environment (47% y/y); (iii) the strike in Sudbury, stopping our operations for 70 days and contributing to a 9% decrease in Nickel production and 18% decrease in Copper production; and (iv) the improved performance of coal production in Moatize (45% y/y) together with the signing of a binding agreement to sell the asset.

## 2021 production and sales performance<sup>1</sup>

**Vale's iron ore fines production totaled 315.6 Mt<sup>2</sup> in 2021**, 15.2 Mt higher than 2020, as a result of: (i) Serra Leste resumption in late 2020; (ii) production increase of high silica products<sup>3</sup> in Brucutu; (iii) improved performance in Itabira complex, despite the restrictions related with tailings disposal; (iv) Timbopéba operating with six beneficiation lines since March 2021; (v) resumption of wet processing production in Fábrica, together with the production of high silica products; and (vi) higher third-party purchase. These improvements were partially offset by (i) S11D's performance, mainly impacted by the higher strip ratio and lower mining productivity during the year, caused by higher incursion of jaspilite materials in the ore body; and (ii) ROM availability in Mutuca, which is under a licensing process.



**In order to improve S11D performance towards its nameplate capacity, leading to a production of 80-85 Mt in 2022**, Vale is sequentially installing four primary crushers and four

<sup>1</sup> 4Q21 performance analyses available at each businesses section

<sup>2</sup> Including third-party purchases, run-of-mine and feed for pelletizing plants. Vale's product portfolio Fe content reached 63.1%, alumina 1.3% and silica 5.2%.

<sup>3</sup> Taking advantage of higher prices in 2021

mobile crushers to process jaspilite materials, all of them to be operational throughout 1H22. In addition, a new crusher is required to process large compact waste blocks, restricting S11D production capacity on around 5 Mtpy until it is operational by 2025.

**Vale ended the year with around 340 Mtpy of iron ore production capacity** and expects to achieve 370 Mtpy by the end of 2022, after the ramp-up of the tailings filtration plants at Itabira and Brucutu sites and their respective additions in tailings storage capacity (Itabiruçu and Torto dams) during the second half of the year.

**All operations in Minas Gerais affected by the heavy rains of early 2022 have already resumed their regular activities** after the re-establishment of adequate safety conditions. The stoppages impact on Vale's iron ore production was approximately 2 Mt<sup>4</sup>, which does not change our production guidance, as it considers the seasonal impact of the rainy season.

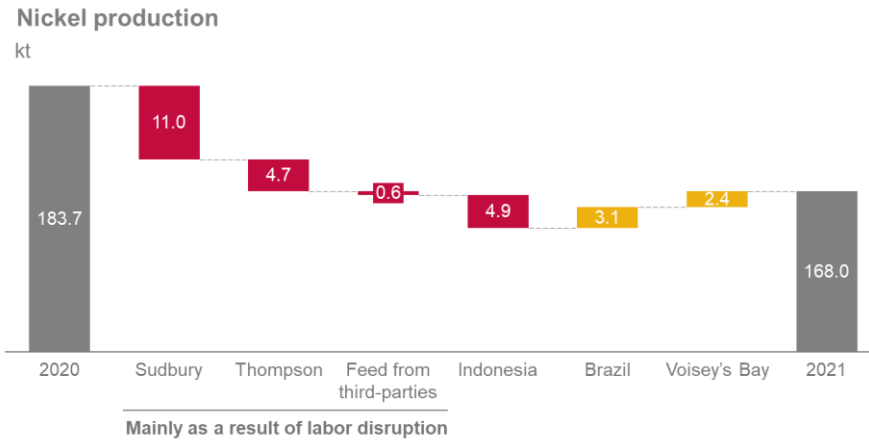
**Vale's pellet production totalled 31.7 Mt in 2021**, 2.0 Mt higher than 2020, as a result of the resumption of Vargem Grande pellet plant in January, but still restricted by pellet feed availability in Itabira and Brucutu, which will gradually improve towards the end of 2022 following the start-up of Torto dam and the raising works in Itabiruçu dam.

**Sales volumes of iron ore fines and pellets totalled 309.8 Mt in 2021**, 23.7 Mt higher than 2020 and in line with 2021's production.

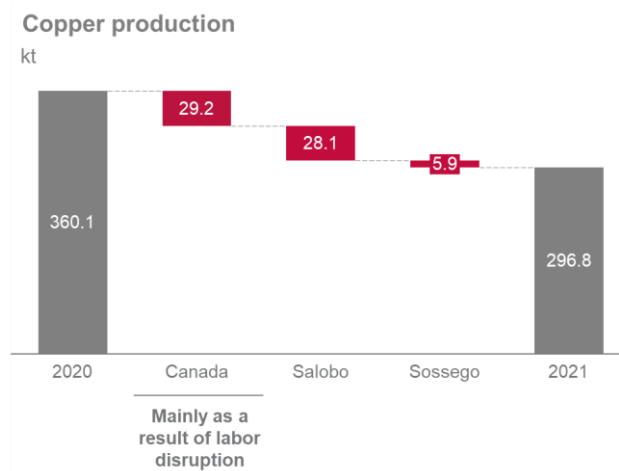
**Production of finished nickel was 168.0 kt in 2021**, 15.7 kt lower than 2020, mainly explained by (i) the labour disruption in Sudbury, which also impacted Thompson sourced concentrates processed at Copper Cliff Smelter; and (ii) lower production from PTVI sourced ore due to reduced matte production rates as COVID-19 travel restrictions demanded the postponement of required furnace maintenance from 2021 to 2022. The positive highlight was the improved performance at Onça Puma, despite extended maintenance performed during the year. In addition, production of Voisey's Bay sourced ore increased due to improved performance at Long Harbour Refinery, achieving best-to-date annual production of 38.1 kt.

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<sup>4</sup> Including third-party purchases.



**Copper production was 296.8 kt in 2021**, 63.3 kt lower than 2020, mainly due to (i) the labour disruption in Sudbury; (ii) SAG mill reliability at Sossego operations, that should be addressed after major ongoing maintenance in 1Q22; (iii) review in maintenance routines in early 2021 at Salobo operations which caused delays to planned maintenance, restrictions to mine movement and impacts on feed grade; and (iv) conveyor belt incident limiting production at Salobo in the fourth quarter. Despite the challenges, mine movement continued to improve at Salobo operation and reached pre safety review levels in the end of the year.



**On December 21st, 2021, Vale announced ([here](#)) the signing of a binding agreement to sell its coal assets in Mozambique**, as part of Vale's reshaping to focus on its core businesses. Vale's coal production reached 8.5 Mt, 2.6 Mt higher than in 2020, driven by an improved performance in 2H21 following the ramp up after plant's revamp.



## Production summary

000' metric tons	4Q21	3Q21	4Q20	2021	2020	% change		
						4Q21/3Q21	4Q21/4Q20	2021/2020
Iron ore <sup>1</sup>	82,473	89,420	84,508	315,610	300,385	-7.8%	-2.4%	5.1%
Pellets	9,073	8,340	7,117	31,708	29,676	8.8%	27.5%	6.8%
Manganese Ore <sup>2</sup>	38	108	119	350	740	-64.8%	-68.1%	-52.7%
Coal	2,819	2,497	1,230	8,497	5,878	12.9%	129.2%	44.6%
Nickel <sup>3</sup>	48.0	30.2	50.8	168.0	183.7	58.9%	-5.5%	-8.5%
Copper	77.5	69.2	93.5	296.8	360.1	12.0%	-17.1%	-17.6%
Cobalt <sup>3</sup> (metric tons)	603	452	625	2,519	2,474	33.4%	-3.5%	1.8%
Gold (000' oz troy)	89	93	120	364	469	-4.3%	-25.8%	-22.4%

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

<sup>2</sup> Vale concluded the sale of its manganese ferroalloy assets in Minas Gerais do the VDL Group. Therefore, from 2022 onwards Vale will not report any activities related to the production and sale of manganese ferroalloys.

<sup>3</sup> Historical figures exclude VNC production.

## Sales summary

000' metric tons	4Q21	3Q21	4Q20	2021	2020	% change		
						4Q21/3Q21	4Q21/4Q20	2021/2020
Iron ore <sup>1</sup>	83,147	67,844	82,825	277,508	254,865	22.6%	0.4%	8.9%
Pellets	10,351	8,037	8,486	32,306	31,211	28.8%	22.0%	3.5%
Manganese Ore	35	111	461	573	1,378	-68.5%	-92.4%	-58.4%
Coal	2,650	2,640	1,534	7,849	5,866	0.4%	72.8%	33.8%
Nickel <sup>2</sup>	44.7	41.8	58.8	181.8	183.1	6.9%	-24.0%	-0.7%
Copper	73.7	65.4	93.0	284.5	346.3	12.7%	-20.8%	-17.8%

<sup>1</sup> Including third-party purchases and run-of-mine.

<sup>2</sup> Historical figures exclude VNC production

## Production guidance

	2022
Iron ore (Mt)	320-335
Pellets (Mt)	34-38
Nickel (kt)	175-190
Copper (kt)	330-355

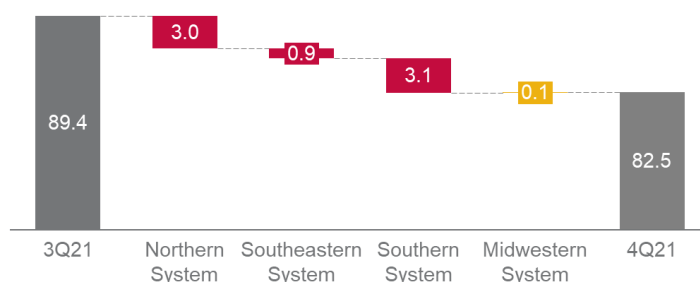
# Iron ore

000' metric tons	4Q21	3Q21	4Q20	2021	2020	% change		
						4Q21/3Q21	4Q21/4Q20	2021/2020
<b>Northern System</b>	<b>50,021</b>	<b>53,020</b>	<b>53,053</b>	<b>188,835</b>	<b>192,266</b>	<b>-5.7%</b>	<b>-5.7%</b>	<b>-1.8%</b>
Serra Norte and Serra Leste	30,958	31,961	31,158	115,135	109,416	-3.1%	-0.6%	5.2%
S11D	19,062	21,059	21,895	73,699	82,850	-9.5%	-12.9%	-11.0%
<b>Southeastern System</b>	<b>18,659</b>	<b>19,532</b>	<b>16,468</b>	<b>69,780</b>	<b>57,285</b>	<b>-4.5%</b>	<b>13.3%</b>	<b>21.8%</b>
Itabira (Cauê, Conceição and others)	7,987	7,795	6,117	28,696	23,913	2.5%	30.6%	20.0%
Minas Centrais (Brucutu and others)	4,664	5,696	3,422	19,306	15,655	-18.1%	36.3%	23.3%
Mariana (Alegria, Timbopeba and others)	6,008	6,041	6,929	21,778	17,717	-0.5%	-13.3%	22.9%
<b>Southern System</b>	<b>12,999</b>	<b>16,137</b>	<b>14,314</b>	<b>54,285</b>	<b>48,368</b>	<b>-19.4%</b>	<b>-9.2%</b>	<b>12.2%</b>
Paraopeba (Mutuca, Fábrica and others)	4,892	6,867	6,717	22,975	23,302	-28.8%	-27.2%	-1.4%
Vargem Grande (Vargem Grande, Pico and others)	8,106	9,271	7,597	31,310	25,066	-12.6%	6.7%	24.9%
<b>Midwestern System</b>	<b>795</b>	<b>731</b>	<b>673</b>	<b>2,710</b>	<b>2,466</b>	<b>8.8%</b>	<b>18.1%</b>	<b>9.9%</b>
Corumbá	795	731	673	2,710	2,466	8.8%	18.1%	9.9%
<b>IRON ORE PRODUCTION<sup>1</sup></b>	<b>82,473</b>	<b>89,420</b>	<b>84,508</b>	<b>315,610</b>	<b>300,385</b>	<b>-7.8%</b>	<b>-2.4%</b>	<b>5.1%</b>
<b>IRON ORE SALES<sup>2</sup></b>	<b>83,147</b>	<b>67,844</b>	<b>82,825</b>	<b>277,508</b>	<b>254,865</b>	<b>22.6%</b>	<b>0.4%</b>	<b>8.9%</b>
<b>IRON ORE AND PELLETS SALES<sup>2</sup></b>	<b>93,498</b>	<b>75,881</b>	<b>91,311</b>	<b>309,814</b>	<b>286,076</b>	<b>23.2%</b>	<b>2.4%</b>	<b>8.3%</b>

<sup>1</sup> Including third-party purchases, run-of-mine and feed for pelletizing plants. Vale's product portfolio Fe content reached 63.1%, alumina 1.3% and silica 5.2%.

<sup>2</sup> Including third-party purchases and run-of-mine.

## Production variation (4Q21 x 3Q21) Mt



Despite lower production in the quarter, iron ore fines and pellets sales increased 23.2%, mainly from drawdown of transiting inventories formed in 3Q21, leading to a record sales of iron ore fines in a fourth quarter.

Iron ore premium was US\$ 4.7/t<sup>5</sup> in 4Q21, a decrease of US\$ 1.8/t compared to 3Q21 due to (i) US\$ 8.2/t lower spread between 65/62% Fe indexes together with less share of IOCJ on total sales; (ii) lower Fe unit contribution due to lower iron ore price; and (iii) lower contractual pellet

<sup>5</sup> Iron ore premium of US\$ 0.4/t and weighted average contribution of pellets of US\$ 4.3/t.

premiums (-US\$ 20/t for direct reduction pellets and -US\$ 15/t for blast furnace pellets); which were partially offset by the seasonal dividends received from our pellet's JVs. In addition, under an environment of improved prices and lower spot freight costs since the second half of the quarter, Vale maintained the share of sales of high-silica products, which, despite the positive margins, negatively impacted average premiums.

## Northern System

Northern System production decreased 5.7% vs. 3Q21, mainly as a result of (i) higher rainfall levels<sup>6</sup>, restricting mining in deeper pits in Serra Norte; and (ii) higher strip ratio in S11D, due to the presence of jaspilite waste in the ore body.

## Southeastern System

Southeastern System performance slightly decreased vs. 3Q21, from (i) an unscheduled maintenance in a stacker reclaimer in Brucutu impacting site's ore movement in November; and (ii) the depletion of the licensed mining front of Água Limpa.

As expected in Vale's mining plan, in January 2022, Vale temporarily halted Água Limpa's iron ore production due to the low profitability of the current mining front while carrying out a license process of new mining areas. Água Limpa produced 2.5 Mt of iron ore in 2021.

Vale started the commissioning in December 2021 of the two tailings filtration plants located in Itabira complex and expects to start-up Brucutu's plant in the following months. These assets will improve the average quality of Vale's product portfolio with the use of wet processing on the site, while reducing the dependence on dams. Vale is also progressing with the licensing and preparation of areas to receive dry tailings from filtration plants and the works of Itabiruçu dam raising and Torto dam construction.

## Southern System

Southern System production decreased 19.4% vs. 3Q21, resulting from (i) the strong reduction of third-party purchase in October due to iron ore prices drop; (ii) lower production of high silica products in Fábrica; (iii) lower ROM availability in Mutuca, as expected in its mining plan.

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<sup>6</sup> 4Q21 = 397 mm vs. 3Q21 = 84 mm in Serra Norte.



# Pellets

000' metric tons	4Q21	3Q21	4Q20	2021	% change			
					2020 4Q21/3Q21	4Q21/4Q20	2021/2020	
<b>Northern System</b>	<b>895</b>	<b>1,020</b>	<b>1,195</b>	<b>3,624</b>	<b>4,173</b>	<b>-12.3%</b>	<b>-25.1%</b>	<b>-13.2%</b>
São Luis	895	1,020	1,195	3,624	4,173	-12.3%	-25.1%	-13.2%
<b>Southeastern System</b>	<b>4,807</b>	<b>4,356</b>	<b>4,174</b>	<b>16,736</b>	<b>17,749</b>	<b>10.4%</b>	<b>15.2%</b>	<b>-5.7%</b>
Itabasco (Tubarão 3)	1,089	972	804	3,386	2,968	12.0%	35.4%	14.1%
Hispanobras (Tubarão 4)	-	-	738	169	2,593	-	-100.0%	-93.5%
Nibrasco (Tubarão 5 and 6)	1,052	1,069	359	3,794	3,433	-1.6%	193.0%	10.5%
Kobrasco (Tubarão 7)	989	826	631	3,225	2,831	19.7%	56.7%	13.9%
Tubarão 8	1,677	1,490	1,642	6,162	5,925	12.6%	2.1%	4.0%
<b>Southern System</b>	<b>745</b>	<b>803</b>	<b>-</b>	<b>3,179</b>	<b>129</b>	<b>-7.2%</b>	<b>n.m.</b>	<b>2364.3%</b>
Fábrica	-	-	-	-	-	-	-	-
Vargem Grande	745	803	-	3,179	129	-7.2%	n.m.	2364.3%
<b>Oman</b>	<b>2,625</b>	<b>2,161</b>	<b>1,748</b>	<b>8,169</b>	<b>7,625</b>	<b>21.5%</b>	<b>50.2%</b>	<b>7.1%</b>
<b>PELLETS PRODUCTION</b>	<b>9,073</b>	<b>8,340</b>	<b>7,117</b>	<b>31,708</b>	<b>29,676</b>	<b>8.8%</b>	<b>27.5%</b>	<b>6.8%</b>
<b>PELLETS SALES</b>	<b>10,351</b>	<b>8,037</b>	<b>8,486</b>	<b>32,306</b>	<b>31,211</b>	<b>28.8%</b>	<b>22.0%</b>	<b>3.5%</b>

## Production overview

Pellet production increased 8.8% vs. 3Q21, due to higher pellet feed availability from Southeastern System mines and fewer maintenances required in Tubarão plants and Oman, which achieved a record production for a quarter. On the other hand, production was partially impacted by lower pellet feed availability in the Northern System and Vargem Grande.

# Nickel

## Finished production by source

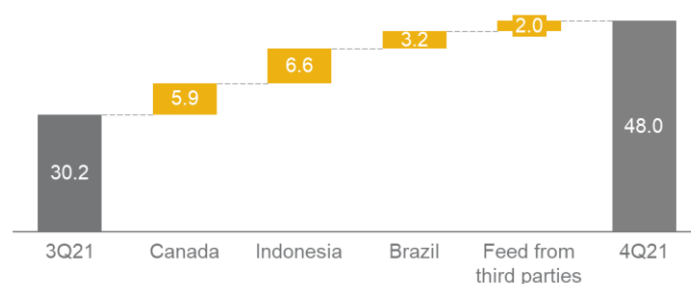
000' metric tons	4Q21	3Q21	4Q20	2021	2020	% change		
						4Q21/3Q21	4Q21/4Q20	2021/2020
Canada	18.3	12.4	22.2	76.2	89.6	47.6%	-17.6%	-15.0%
Sudbury	8.8	2.4	11.2	32.2	43.2	266.7%	-21.4%	-25.5%
Thompson	1.2	0.6	2.1	5.9	10.6	100.0%	-42.9%	-44.3%
Voisey's Bay	8.4	9.4	8.9	38.1	35.7	-10.6%	-5.6%	6.7%
Indonesia	21.7	15.1	20.2	66.7	71.6	43.7%	7.4%	-6.8%
Brazil	5.4	2.2	6.6	19.1	16	145.5%	-18.2%	19.4%
Feed from third-parties <sup>1</sup>	2.6	0.6	1.8	6.0	6.6	333.3%	44.4%	-9.1%
<b>NICKEL PRODUCTION</b>	<b>48.0</b>	<b>30.2</b>	<b>50.8</b>	<b>168.0</b>	<b>183.7</b>	<b>58.9%</b>	<b>-5.5%</b>	<b>-8.5%</b>
<b>NICKEL SALES<sup>2</sup></b>	<b>44.7</b>	<b>41.8</b>	<b>58.8</b>	<b>181.8</b>	<b>183.1</b>	<b>6.9%</b>	<b>-24.0%</b>	<b>-0.7%</b>

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

<sup>2</sup> Excludes VNC sales volumes.

## Production Variation (4Q21 x 3Q21)

kt



In 4Q21, production totalled 48.0 kt, 59% higher than 3Q21, mainly due to Ontario processing operations, which ramped-up from planned maintenance activities following Sudbury labour disruption. Ontario mines continued to ramp up in Q4, while Totten mine remained down for shaft repair during the quarter, and hoisting activities at Totten mine resumed in early February.

Nickel sales volumes were 44.7 kt in 4Q21, 6.9% higher than 3Q21, mostly because of increased Ontario nickel production. Nickel sales were below production due to inventory rebuild after the drawdown in 3Q21 following the labour disruption in Sudbury and extended maintenance in Onça Puma.

## Canadian operations

Production from Sudbury and Thompson sourced ore recovered considerably from 3Q21 levels. Copper Cliff Nickel Refinery rates improved after the labour disruption at Sudbury, but results

continued to be affected by Totten mine shaft repairs and the gradual ramp-up of Ontario mines during the quarter. We expect Sudbury operations normalize in 2Q22.

Voisey's Bay source ore production reached 8.4 kt in 4Q21, 10.6% lower than 3Q21 due to scheduled and corrective maintenance during the quarter at Long Harbour Refinery.

### **Indonesian (PTVI) & Asia Pacific operations**

Production of finished nickel from PTVI source reached 21.7 kt in 4Q21, 43.7% higher than 3Q21, as Matsuzaka refinery had a strong performance during the quarter following the production resumption after a failure of the briquetting machine in 3Q21. Clydach Nickel Refinery continued to demonstrate stable performance in Q4.

Nickel-in-matte production at PTVI site reached 17.0 kt in 4Q21, 6% lower than 3Q21, mainly due to scheduled furnace maintenance that began in December 2021 and will continue into 2Q22.

### **Brazilian operation (Onça Puma)**

The strong Onça Puma's production growth in the quarter was due to successful maintenance works during 3Q21, which reduced volumes for that quarter and allowed for a strong performance in 4Q21.

### **Feed from third parties**

Finished nickel produced from third party grew considerably in the quarter mainly due to Copper Cliff Nickel Refinery ramp-up from planned maintenance activities following Sudbury labour disruption. The purchase of third-party feed is a normal process to sustain a regular finished-nickel production flow.

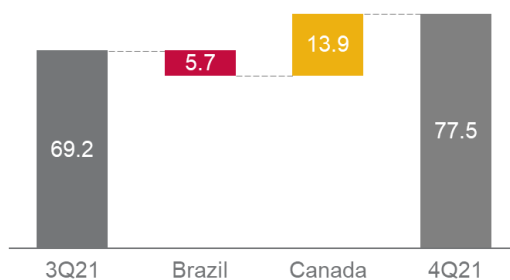
# Copper

## Finished production by source

000' metric tons	4Q21	3Q21	4Q20	2021	2020	% change		
						4Q21/3Q21	4Q21/4Q20	2021/2020
<b>BRAZIL</b>	<b>57.7</b>	<b>63.4</b>	<b>67.5</b>	<b>226.4</b>	<b>260.5</b>	<b>-9.0%</b>	<b>-14.5%</b>	<b>-13.1%</b>
Salobo	33.8	38.0	43.9	144.6	172.7	-11.1%	-23.0%	-16.3%
Sossego	24.0	25.4	23.7	81.8	87.7	-5.5%	1.3%	-6.7%
<b>CANADA</b>	<b>19.7</b>	<b>5.8</b>	<b>25.9</b>	<b>70.4</b>	<b>99.6</b>	<b>239.7%</b>	<b>-23.9%</b>	<b>-29.3%</b>
Sudbury	12.9	1.0	18.5	46.2	76.5	1190.0%	-30.3%	-39.6%
Thompson	0.2	-	0.1	0.4	0.8	n.m.	100.0%	-50.0%
Voisey's Bay	5.1	4.6	6.2	20.2	17.8	10.9%	-17.7%	13.5%
Feed from third parties	1.6	0.3	1.2	3.6	4.5	433.3%	33.3%	-20.0%
<b>COPPER PRODUCTION</b>	<b>77.5</b>	<b>69.2</b>	<b>93.5</b>	<b>296.8</b>	<b>360.1</b>	<b>12.0%</b>	<b>-17.1%</b>	<b>-17.6%</b>
<b>COPPER SALES</b>	<b>73.7</b>	<b>65.4</b>	<b>93.0</b>	<b>284.5</b>	<b>346.3</b>	<b>12.7%</b>	<b>-20.8%</b>	<b>-17.8%</b>
Copper Sales Brazil	52.7	62.3	66.7	216.2	247.2	-15.4%	-21.0%	-12.5%
Copper Sales Canada	21.0	3.1	26.3	68.3	99.1	577.4%	-20.2%	-31.0%

## Production Variation (4Q21 x 3Q21)

kt



## Production and sales overview

In 4Q21, copper production reached 77.5 kt, 12.0% higher than 3Q21, as a result of the resumption of Ontario operations after the labour disruption at Sudbury. This increase was partially offset by weaker performance at the Brazilian operations. Salobo's performance was impacted by a conveyor belt fire in October, resulting in plant instability throughout the quarter. In addition, Sossego was impacted by corrective maintenance of the SAG mill, ball mill and pumping system impacting plant availability during the quarter.

In 4Q21, mine movement at Salobo increased 5% compared to 3Q21 reaching 33.3 Mt, in line with pre safety review levels.

Copper sales<sup>7</sup> grew in line with production in the quarter.

<sup>7</sup> Sales volumes are lower compared to production volumes due to payable copper vs. contained copper content: 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 production volumes.

# Base Metals by-products

## Finished production by source

000' metric tons	4Q21	3Q21	4Q20	2021	2020	% change		
						4Q21/3Q21	4Q21/4Q20	2021/2020
COBALT	603	452	625	2,519	2,474	33.4%	-3.5%	1.8%
PLATINUM (000' oz troy)	17	2	31	78	140	750.0%	-45.2%	-44.3%
PALLADIUM (000' oz troy)	19	4	38	98	186	375.0%	-50.0%	-47.3%
GOLD (000' oz troy) <sup>1</sup>	89	93	120	364	469	-4.3%	-25.8%	-22.4%
<b>TOTAL BY-PRODUCTS</b> (000' metric tons Cu eq.) <sup>2 3 4</sup>	<b>29</b>	<b>23</b>	<b>57</b>	<b>137</b>	<b>258</b>	<b>26.1%</b>	<b>-49.1%</b>	<b>-46.9%</b>

<sup>1</sup> Includes gold from Copper and Nickel operations.

<sup>2</sup> Includes iridium, rhodium, ruthenium and silver.

<sup>3</sup> Copper equivalent tonnes calculated using average market metal prices for each quarter. Market reference prices: for copper, cobalt, gold and silver: LME spot; for Platinum and Palladium: NYMEX spot; for other PGMs: Johnson Matthey.

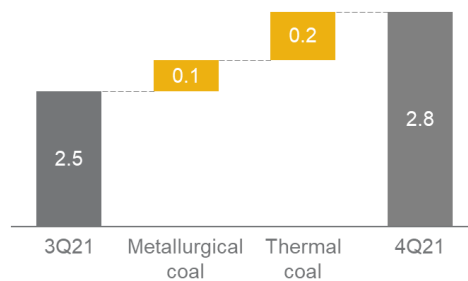
<sup>4</sup> Yearly average was calculated as the sum of copper equivalent production for each quarter of the year.

# Coal

000' metric tons	4Q21	3Q21	4Q20	2021	2020	% change		
						4Q21/3Q21	4Q21/4Q20	2021/2020
<b>COAL PRODUCTION</b>	<b>2,819</b>	<b>2,497</b>	<b>1,230</b>	<b>8,497</b>	<b>5,878</b>	<b>12.9%</b>	<b>129.2%</b>	<b>44.6%</b>
Metallurgical coal	1,195	1,069	658	3,802	3,095	11.7%	81.6%	22.8%
Thermal coal	1,625	1,428	572	4,695	2,783	13.8%	184.1%	68.7%
<b>COAL SALES</b>	<b>2,650</b>	<b>2,640</b>	<b>1,534</b>	<b>7,849</b>	<b>5,866</b>	<b>0.4%</b>	<b>72.8%</b>	<b>33.8%</b>
Metallurgical coal	959	1,150	884	3,295	2,914	-16.6%	8.5%	13.1%
Thermal coal	1,691	1,490	651	4,553	2,952	13.5%	159.8%	54.2%

## Production Variation (4Q21 x 3Q21)

Mt



## Production and sales overview

Coal production in 4T21 continued to perform solidly due to the improved productivity of the revamped plant.

The sales of metallurgical coal were impacted by a derailment, which halted the flow of trains for 4 days in November, delaying some shipments that will be recognized in 1Q22.