



# VALE'S PRODUCTION AND SALES IN 4Q18



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# Rupture of Brumadinho Dam I

In the early afternoon of January 25th, 2019, there was a rupture of the Dam I in the Córrego do Feijão Mine in Brumadinho (MG) and, since then, Vale has been making every effort to meet the needs of those affected and to mitigate damages.

Since the first days following the rupture of the Dam I, Vale's initiatives have had four main purposes: (i) assistance to the affected people and recovery of the area affected by the rupture of the Dam I; (ii) determination of the causes of the rupture of the Dam I; (iii) ensure the safety of our existing upstream structures and of the communities nearby; and (iv) acceleration of the decommissioning or de-characterization process of our remaining upstream dams.

We will provide extensive details about all those initiatives in the "Report from Administration" that will be published on March 27<sup>th</sup>, 2019.

Following the Brumadinho dam rupture, Vale's iron ore fines annualized production was impacted by the equivalent of about 92.8 Mtpy:

- 40 Mtpy from Feijão, Vargem Grande and Fábrica complexes, as a result of the following events: (i) on February 4th, 2019 (and again on February 20th, 2019), Vale disclosed its intention to advance the decommissioning process of all upstream dams; (ii) on February 18th, 2019, Brazil's National Mining Agency ("ANM" – Agência Nacional de Mineração) published the new Resolution No 4 recommending higher dam safety parameters; (iii) on February 20<sup>th</sup>, 2019, Vale confirmed that Vargem Grande, Grupo and Forquilha I, II and III tailings dams safety parameters could be potentially lower than what the new resolution recommended; and (iv) on February 20<sup>th</sup>, 2019, ANM promoted inspections to the sites and determined the suspension of activities at the entire Vargem Grande Complex and Fábrica mine; as informed in the press release "Clarification on the Vargem Grande, Grupo and Forquilha I, II and III dams", dated March 1<sup>st</sup>, 2019.
- 30 Mtpy from Brucutu mine, following the decision held by the Court of the Comarca of Santa Barbara, within the scope of the public civil action n° 5000153-77.2019.8.13.0572, filed by the Public Prosecution Office of the State of Minas Gerais ("MPMG"), as informed in the press release "Vale reports on Public Civil Actions", dated March 25<sup>th</sup>, 2019.
- 12.8 Mtpy from Timbopeba mine, following the decision held by the 2nd Civil Court of the Comarca of Ouro Preto, within the scope of the public civil action n° 5000435-60.2019.8.13.0461, filed by the MPMG, as informed in the press release "Vale on the Timbopeba mine operations", dated March 15<sup>th</sup>, 2019.
- 10 Mtpy from Alegria mine, following Vale's decision to temporarily suspend on a preventive basis the Alegria mine operation, as informed in the press release "Vale informs on operation of the Alegria mine", dated March 20<sup>th</sup>, 2019.

Pellets production was impacted by 11Mtpy, as result of the stoppage of the Fábrica and Vargem Grande pelletizing plants, as informed in the press release “Vale announces the decommissioning of all its upstream tailings dams”, dated January 29<sup>th</sup>, 2019.

# Production and sales in 4Q18 and 2018

Rio de Janeiro, March 26<sup>th</sup>, 2019 – Vale S.A (Vale) iron ore fines production totaled 101.0 Mt in 4Q18 and 384.6 Mt in 2018, in line with its production guidance.

In 2018, Vale's product portfolio Fe content reached 64.1%, alumina 1.2% and silica 3.9%.

On a quarterly basis, iron ore production totaled 101.0 Mt in 4Q18, 3.8% lower than in 3Q18 due to the usual weather-related seasonality.

Vale quarterly pellet production totaled 15.8 Mt mainly due to the ramp-up of the Tubarão I, Tubarão II and São Luis pellet plants. The annual production of 55.3 Mt in 2018 was in line with the production guidance.

Iron ore fines and pellet sales volume was 96.5 Mt in 4Q18, with sales volumes of iron ore fines reaching 80.5 Mt, 3.9% lower than in 3Q18, as a result of sales that were deliberately postponed to 1Q19 for margin optimization purposes. Vale's pellet sales reached 16.0 Mt in 4Q18, due to the above-mentioned pellet plant ramp-ups and to commercial initiatives to use occasional excess of pellet feed production that was transformed into pellets using third party capacity.

As a result, the share of premium products<sup>1</sup> in total sales was 84% in 4Q18 and averaged 82% in 2018. Iron ore fines and pellet quality premiums reached US\$ 11.5/t<sup>2</sup> in 4Q18 vs. US\$ 11.0/t in 3Q18.

The nickel business transitioned to a smaller footprint in 2018 by adjusting investments and production to reflect current market conditions. Thompson transitioned to a mine-mill operation and Voisey's Bay production was adjusted to match the current mine life to the Voisey's Bay Mine Expansion project. Production was also impacted by the corrective maintenance of the shaft at the Coleman mine in 1Q18. Consequently, production of finished nickel totaled 244,600 t in 2018, 15.1% lower than in 2017.

Copper production reached 395,500 t in 2018, 9.8% lower than in 2017, mainly reflecting Vale's strategic decision to reduce its nickel production profile, leading to lower copper by-product from the North Atlantic operations.

Coal production remained practically in line with 2017 as operations faced some bottlenecks, which were augmented by heavy rains during 1Q18. As a response, the Coal business reviewed its business plan and is implementing initiatives to achieve a sustainable and reliable ramp-up from 2019 onwards through the development of mine capacity, higher mine productivity and higher plant yields. However, planned production is estimated to total 6,5 Mt in 1H19 as per the

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<sup>1</sup> Pellets, Carajás, BRBF (Brazilian Blend Fines), pellet feed and Sinter Feed Low Alumina (SFLA)

<sup>2</sup> Iron ore premium of US\$ 8.1/t and weighted average contribution of pellets of US\$3.4/t

budget approved in 2018, despite the increase in total tons moved, as a result of lower ROM grade quality of the mine sections being opened.

## Production summary

| 000' metric tons      | 4Q18    | 3Q18    | 4Q17   | 2018    | 2017    | % change  |           |           |
|-----------------------|---------|---------|--------|---------|---------|-----------|-----------|-----------|
|                       |         |         |        |         |         | 4Q18/3Q18 | 4Q18/4Q17 | 2018/2017 |
| Iron ore <sup>1</sup> | 100,988 | 104,945 | 93,361 | 384,639 | 366,511 | -3.8%     | 8.2%      | 4.9%      |
| Pellets               | 15,812  | 13,878  | 12,898 | 55,304  | 50,300  | 13.9%     | 22.6%     | 9.9%      |
| Manganese ore         | 495     | 482     | 553    | 1,832   | 2,173   | 2.7%      | -10.5%    | -15.7%    |
| Coal                  | 3,108   | 3,194   | 2,576  | 11,605  | 11,260  | -2.7%     | 20.7%     | 3.1%      |
| Nickel                | 64.0    | 55.7    | 78.0   | 244.6   | 288.2   | 14.9%     | -17.9%    | -15.1%    |
| Copper <sup>2</sup>   | 109.8   | 94.5    | 113.5  | 395.5   | 438.5   | 16.2%     | -3.3%     | -9.8%     |
| Cobalt                | 1,437   | 1,028   | 1,650  | 5,093   | 5,811   | 39.8%     | -12.9%    | -12.4%    |
| Gold (000' oz troy)   | 133     | 117     | 139    | 477     | 485     | 13.7%     | -4.3%     | -1.6%     |

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

<sup>2</sup> Excluding Lubambe's attributable production.

## Sales summary

| 000' metric tons      | 4Q18   | 3Q18   | 4Q17   | 2018    | 2017    | % change  |           |           |
|-----------------------|--------|--------|--------|---------|---------|-----------|-----------|-----------|
|                       |        |        |        |         |         | 4Q18/3Q18 | 4Q18/4Q17 | 2018/2017 |
| Iron ore <sup>1</sup> | 80,495 | 83,976 | 79,958 | 308,981 | 291,329 | -4.1%     | 0.7%      | 6.1%      |
| Pellets               | 15,987 | 14,250 | 13,579 | 56,592  | 51,775  | 12.2%     | 17.7%     | 9.3%      |
| Manganese ore         | 442    | 554    | 740    | 1,572   | 1,825   | -20.2%    | -40.3%    | -13.9%    |
| Coal                  | 3,433  | 3,195  | 2,943  | 11,633  | 11,780  | 7.4%      | 16.6%     | -1.2%     |
| Nickel                | 59.6   | 57.3   | 79.8   | 236.4   | 294.6   | 4.0%      | -25.3%    | -19.8%    |
| Copper                | 104.1  | 92.4   | 110.5  | 378.9   | 423.8   | 12.7%     | -5.8%     | -10.6%    |

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

## Iron ore

| 000' metric tons                       |                |                |               |                |                | % change      |               |              |
|--|----------------|----------------|---------------|----------------|----------------|---------------|---------------|--------------|
|  | 4Q18           | 3Q18           | 4Q17          | 2018           | 2017           | 4Q18/3Q18     | 4Q18/4Q17     | 2018/2017    |
| <b>Northern System</b>                 | <b>52,911</b>  | <b>53,919</b>  | <b>46,683</b> | <b>193,641</b> | <b>169,152</b> | <b>-1.9%</b>  | <b>13.3%</b>  | <b>14.5%</b> |
| Northern and Eastern ranges            | 37,023         | 37,784         | 38,955        | 135,615        | 146,968        | -2.0          | -5.0%         | -7.7%        |
| S11D                                   | 15,888         | 16,135         | 7,728         | 58,026         | 22,184         | -1.5%         | 105.6%        | 161.6%       |
| <b>Southeastern System</b>             | <b>26,532</b>  | <b>28,016</b>  | <b>26,038</b> | <b>104,390</b> | <b>108,552</b> | <b>-5.3%</b>  | <b>1.9%</b>   | <b>-3.8%</b> |
| Itabira                                | 11,254         | 10,929         | 10,333        | 41,719         | 37,837         | 3.0%          | 8.9%          | 10.3%        |
| Minas Centrais                         | 9,184          | 9,705          | 8,456         | 36,016         | 37,651         | -5.4%         | 8.6%          | -4.3%        |
| Mariana                                | 6,094          | 7,382          | 7,249         | 26,655         | 33,064         | -17.4%        | -15.9%        | -19.4%       |
| <b>Southern System</b>                 | <b>20,985</b>  | <b>22,378</b>  | <b>19,998</b> | <b>84,138</b>  | <b>86,423</b>  | <b>-6.2%</b>  | <b>4.9%</b>   | <b>-2.6%</b> |
| Paraopeba                              | 6,687          | 7,270          | 6,362         | 27,295         | 26,287         | -8.0%         | 5.1%          | 3.8%         |
| Vargem Grande                          | 5,114          | 5,775          | 5,033         | 21,368         | 23,264         | -11.4%        | 1.6%          | -8.2%        |
| Minas Itabirito                        | 9,185          | 9,333          | 8,604         | 35,475         | 36,871         | -1.6%         | 6.8%          | -3.8%        |
| <b>Midwestern System</b>               | <b>559</b>     | <b>632</b>     | <b>643</b>    | <b>2,470</b>   | <b>2,417</b>   | <b>-11.6%</b> | <b>-13.1%</b> | <b>2.2%</b>  |
| Corumbá                                | 559            | 632            | 643           | 2,470          | 2,417          | -11.6%        | -13.1%        | 2.2%         |
| <b>IRON ORE PRODUCTION<sup>1</sup></b> | <b>100,988</b> | <b>104,945</b> | <b>93,361</b> | <b>384,639</b> | <b>366,511</b> | <b>-3.8%</b>  | <b>8.2%</b>   | <b>4.9%</b>  |
| <b>IRON ORE SALES<sup>2</sup></b>      | <b>80,495</b>  | <b>83,976</b>  | <b>79,958</b> | <b>308,981</b> | <b>291,329</b> | <b>-4.1%</b>  | <b>0.7%</b>   | <b>6.1%</b>  |
| <b>IRON ORE AND PELLETS SALES</b>      | <b>96,481</b>  | <b>98,226</b>  | <b>93,537</b> | <b>365,573</b> | <b>343,104</b> | <b>-1.8%</b>  | <b>3.1%</b>   | <b>6.5%</b>  |

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

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

## Pellets

| 000' metric tons           |               |               |               |               |               | % change        |              |             |
|----------------------------|---------------|---------------|---------------|---------------|---------------|-----------------|--------------|-------------|
|                            | 4Q18          | 3Q18          | 4Q17          | 2018          | 2017          | 4Q18/3Q18       | 4Q18/4Q17    | 2018/2017   |
| <b>Northern System</b>     | <b>919</b>    | <b>32</b>     | <b>-</b>      | <b>950</b>    | <b>-</b>      | <b>2,771.9%</b> | <b>n.m.</b>  | <b>n.m.</b> |
| São Luis                   | 919           | 32            | -             | 950           | -             | 2,771.9%        | n.m.         | n.m.        |
| <b>Southeastern System</b> | <b>9,087</b>  | <b>8,701</b>  | <b>7,890</b>  | <b>33,570</b> | <b>30,830</b> | <b>4.4%</b>     | <b>15.1%</b> | <b>8.9%</b> |
| Tubarão 1 and 2            | 1,214         | 1,112         | -             | 3,750         | -             | 9.2%            | n.m.         | n.m.        |
| Itabasco (Tubarão 3)       | 1,136         | 1,093         | 1,157         | 4,336         | 4,552         | 3.9%            | -1.8%        | -4.7%       |
| Hispanobras (Tubarão 4)    | 1,145         | 1,122         | 1,160         | 4,103         | 4,606         | 2.0%            | -1.3%        | -10.9%      |
| Nibrasco (Tubarão 5 and 6) | 2,405         | 2,264         | 2,372         | 9,270         | 9,615         | 6.2%            | 1.4%         | -3.6%       |
| Kobrasco (Tubarão 7)       | 1,312         | 1,232         | 1,311         | 4,774         | 4,817         | 6.5%            | 0.1%         | -0.9%       |
| Tubarão 8                  | 1,875         | 1,878         | 1,890         | 7,337         | 7,239         | -0.2%           | -0.8%        | 1.4%        |
| <b>Southern System</b>     | <b>2,564</b>  | <b>2,543</b>  | <b>2,605</b>  | <b>10,617</b> | <b>10,268</b> | <b>0.8%</b>     | <b>-1.6%</b> | <b>3.4%</b> |
| Fábrica                    | 991           | 1,057         | 989           | 4,062         | 3,825         | -6.2%           | 0.2%         | 6.2%        |
| Vargem Grande              | 1,573         | 1,485         | 1,616         | 6,555         | 6,443         | 5.9%            | -2.7%        | 1.7%        |
| <b>Oman</b>                | <b>2,612</b>  | <b>2,603</b>  | <b>2,403</b>  | <b>9,537</b>  | <b>9,203</b>  | <b>0.3%</b>     | <b>8.7%</b>  | <b>3.6%</b> |
| <b>Others</b>              | <b>630</b>    | <b>-</b>      | <b>-</b>      | <b>630</b>    | <b>-</b>      | <b>n.m.</b>     | <b>n.m.</b>  | <b>n.m.</b> |
| <b>PELLETS PRODUCTION</b>  | <b>15,812</b> | <b>13,878</b> | <b>12,898</b> | <b>55,304</b> | <b>50,300</b> | <b>13.9%</b>    | <b>22.6%</b> | <b>9.9%</b> |
| <b>PELLETS SALES</b>       | <b>15,987</b> | <b>14,250</b> | <b>13,579</b> | <b>56,592</b> | <b>51,775</b> | <b>12.2%</b>    | <b>17.7%</b> | <b>9.3%</b> |

## Manganese ore and ferroalloys

| 000' metric tons                |            |            |            |              |              | % change      |               |               |
|---------------------------------|------------|------------|------------|--------------|--------------|---------------|---------------|---------------|
|                                 | 4Q18       | 3Q18       | 4Q17       | 2018         | 2017         | 4Q18/3Q18     | 4Q18/4Q17     | 2018/2017     |
| <b>MANGANESE ORE PRODUCTION</b> | <b>496</b> | <b>482</b> | <b>553</b> | <b>1,831</b> | <b>2,173</b> | <b>2.9%</b>   | <b>-10.3%</b> | <b>-15.7%</b> |
| Azul                            | 289        | 272        | 352        | 1,028        | 1,419        | 6.3%          | -17.9%        | -27.6%        |
| Urucum                          | 167        | 175        | 178        | 670          | 673          | -4.6%         | -6.2%         | -0.5%         |
| Morro da Mina                   | 40         | 34         | 23         | 133          | 81           | 17.6%         | 73.9%         | 64.2%         |
| <b>MANGANESE ORE SALES</b>      | <b>442</b> | <b>554</b> | <b>740</b> | <b>1,572</b> | <b>1,825</b> | <b>-20.2%</b> | <b>-40.3%</b> | <b>-13.9%</b> |
| <b>FERROALLOYS PRODUCTION</b>   | <b>43</b>  | <b>42</b>  | <b>38</b>  | <b>168</b>   | <b>149</b>   | <b>2.4%</b>   | <b>13.2%</b>  | <b>12.8%</b>  |
| <b>FERROALLOYS SALES</b>        | <b>36</b>  | <b>37</b>  | <b>34</b>  | <b>141</b>   | <b>133</b>   | <b>-2.7%</b>  | <b>5.9%</b>   | <b>6.0%</b>   |

# Nickel

## Finished production by source

| 000' metric tons                     | 4Q18        | 3Q18        | 4Q17        | 2018         | 2017         | % change     |               |               |
|--------------------------------------|-------------|-------------|-------------|--------------|--------------|--------------|---------------|---------------|
|                                      |             |             |             |              |              | 4Q18/3Q18    | 4Q18/4Q17     | 2018/2017     |
| Canada                               | 27.1        | 19.5        | 37.9        | 103.9        | 136.9        | 39.0%        | -28.5%        | -24.1%        |
| Sudbury                              | 14.1        | 9.2         | 17.7        | 50.6         | 61.9         | 53.3%        | -20.3%        | -18.3%        |
| Thompson                             | 1.9         | 1.9         | 7.0         | 14.8         | 23.0         | 0.0%         | -72.9%        | -35.7%        |
| Voisey's Bay                         | 11.1        | 8.4         | 13.2        | 38.6         | 51.8         | 32.1%        | -15.9%        | -25.7%        |
| Indonesia                            | 19.9        | 20.6        | 19.0        | 72.1         | 73.1         | -3.4%        | 4.7%          | -1.4%         |
| New Caledonia <sup>1</sup>           | 8.3         | 7.5         | 10.9        | 32.5         | 40.3         | 10.7%        | -23.9%        | -19.4%        |
| Brazil                               | 5.5         | 6.1         | 6.0         | 22.9         | 24.7         | -9.8%        | -8.3%         | -7.3%         |
| Feed from third parties <sup>2</sup> | 3.2         | 2.1         | 4.2         | 13.1         | 13.1         | 52.4%        | -23.8%        | 0.0%          |
| <b>NICKEL PRODUCTION</b>             | <b>64.0</b> | <b>55.7</b> | <b>78.0</b> | <b>244.6</b> | <b>288.2</b> | <b>14.9%</b> | <b>-17.9%</b> | <b>-15.1%</b> |
| <b>NICKEL SALES</b>                  | <b>59.6</b> | <b>57.3</b> | <b>79.8</b> | <b>236.4</b> | <b>294.6</b> | <b>4.0%</b>  | <b>-25.3%</b> | <b>-19.8%</b> |

<sup>1</sup> Production at VNC reached 8,800 t in 4Q18, while production of finished nickel from VNC totaled 8,300 t in 4Q18, the differences stemming from the time required for processing into finished nickel.

<sup>2</sup> External feed purchased from third parties and processed into finished nickel in our Canadian operations.

# Copper

## Finished production by source

| 000' metric tons         | 4Q18         | 3Q18        | 4Q17         | 2018         | 2017         | % change     |               |               |
|--------------------------|--------------|-------------|--------------|--------------|--------------|--------------|---------------|---------------|
|                          |              |             |              |              |              | 4Q18/3Q18    | 4Q18/4Q17     | 2018/2017     |
| <b>BRAZIL</b>            | <b>77.3</b>  | <b>72.8</b> | <b>75.6</b>  | <b>284.8</b> | <b>293.1</b> | <b>6.2%</b>  | <b>2.2%</b>   | <b>-2.8%</b>  |
| Sossego                  | 25.1         | 22.8        | 22.6         | 92.2         | 99.7         | 10.1%        | 11.1%         | -7.5%         |
| Salobo                   | 52.2         | 50.0        | 53.0         | 192.6        | 193.4        | 4.4%         | -1.5%         | -0.4%         |
| <b>CANADA</b>            | <b>32.5</b>  | <b>21.7</b> | <b>37.9</b>  | <b>110.6</b> | <b>145.4</b> | <b>49.8%</b> | <b>-14.2%</b> | <b>-23.9%</b> |
| Sudbury                  | 21.8         | 17.1        | 25.4         | 72.3         | 98.3         | 27.5%        | -14.2%        | -26.4%        |
| Thompson                 | 0.3          | 0.4         | 0.7          | 1.3          | 1.7          | -25.0%       | -57.1%        | -23.5%        |
| Voisey's Bay             | 7.8          | 2.5         | 9.2          | 25.7         | 33.5         | 212.0%       | -15.2%        | -23.3%        |
| Feed from third parties  | 2.6          | 1.7         | 2.6          | 11.3         | 11.9         | 52.9%        | 0.0%          | -5.0%         |
| <b>COPPER PRODUCTION</b> | <b>109.8</b> | <b>94.5</b> | <b>113.5</b> | <b>395.5</b> | <b>438.5</b> | <b>16.2%</b> | <b>-3.3%</b>  | <b>-9.8%</b>  |
| <b>COPPER SALES</b>      | <b>104.1</b> | <b>92.4</b> | <b>110.5</b> | <b>378.9</b> | <b>423.8</b> | <b>12.7%</b> | <b>-5.8%</b>  | <b>-10.6%</b> |

# Nickel and Cooper by-products

## Finished production by source

|                                       | 4Q18         | 3Q18         | 4Q17         | 2018         | 2017         | % change      |               |               |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|
|                                       |              |              |              |              |              | 4Q18/3Q18     | 4Q18/4Q17     | 2018/2017     |
| <b>COBALT (metric tons)</b>           | <b>1,437</b> | <b>1,028</b> | <b>1,650</b> | <b>5,093</b> | <b>5,811</b> | <b>39.8%</b>  | <b>-12.9%</b> | <b>-12.4%</b> |
| Sudbury                               | 158          | 83           | 225          | 520          | 840          | 90.4%         | -29.8%        | -38.2%        |
| Thompson <sup>1</sup>                 | 24           | 37           | (219)        | 198          | 138          | -35.1%        | -111.0%       | 43.5%         |
| Voisey's Bay <sup>1</sup>             | 557          | 371          | 799          | 1,902        | 1,829        | 50.1%         | -30.3%        | 3.9%          |
| VNC                                   | 561          | 460          | 716          | 2,104        | 2,780        | 22.0%         | -21.6%        | -24.3%        |
| Others                                | 137          | 77           | 130          | 371          | 224          | 77.9%         | 5.4%          | 65.6%         |
| <b>PLATINUM (000' oz troy)</b>        | <b>32</b>    | <b>40</b>    | <b>37</b>    | <b>135</b>   | <b>144</b>   | <b>-20.0%</b> | <b>-13.5%</b> | <b>-6.3%</b>  |
| <b>PALLADIUM (000' oz troy)</b>       | <b>42</b>    | <b>50</b>    | <b>31</b>    | <b>218</b>   | <b>214</b>   | <b>-16.0%</b> | <b>35.5%</b>  | <b>1.9%</b>   |
| <b>GOLD BY-PRODUCT (000' oz troy)</b> | <b>133</b>   | <b>117</b>   | <b>139</b>   | <b>477</b>   | <b>485</b>   | <b>13.7%</b>  | <b>-4.3%</b>  | <b>-1.6%</b>  |

<sup>1</sup> Cobalt by-product has been reclassified between Thompson and Voisey's Bay operations. The reconciliation of previous period volumes attributed a negative amount to Thompson and higher volumes to Voisey's Bay in 4Q18.



# Coal

| 000' metric tons       | 4Q18         | 3Q18         | 4Q17         | 2018          | 2017          | % change     |              |              |
|------------------------|--------------|--------------|--------------|---------------|---------------|--------------|--------------|--------------|
|                        |              |              |              |               |               | 4Q18/3Q18    | 4Q18/4Q17    | 2018/2017    |
| <b>COAL PRODUCTION</b> | <b>3,108</b> | <b>3,194</b> | <b>2,576</b> | <b>11,605</b> | <b>11,260</b> | <b>-2.7%</b> | <b>20.7%</b> | <b>3.1%</b>  |
| Metallurgical coal     | 1,641        | 1,560        | 1,419        | 6,161         | 6,953         | 5.2%         | 15.6%        | -11.4%       |
| Thermal Coal           | 1,466        | 1,634        | 1,157        | 5,444         | 4,307         | -10.3%       | 26.7%        | 26.4%        |
| <b>COAL SALES</b>      | <b>3,433</b> | <b>3,195</b> | <b>2,943</b> | <b>11,633</b> | <b>11,780</b> | <b>7.4%</b>  | <b>16.6%</b> | <b>-1.2%</b> |
| Metallurgical coal     | 1,790        | 1,611        | 1,715        | 6,240         | 7,178         | 11.1%        | 4.4%         | -13.1%       |
| Thermal coal           | 1,643        | 1,584        | 1,228        | 5,393         | 4,602         | 3.7%         | 33.8%        | 17.2%        |