XVth Analyst & Investor Tour
Canada 2015

For a world with new values.
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1. Vale Base Metals overview
2. Market overview
3. Operations overview
4. Financial and strategic perspective
5. Base Metals Q&A
6. Closing remarks
1 Vale Base Metals Overview
More than a century of Base Metals leadership

1853 – Nickel discovered in the Sudbury area

1902 – The International Nickel Company is formed on April 1

1930 – Completion of an ambitious construction program in Sudbury, Ontario that included mines, smelters, refineries and power plants

1968 – PT Inco Indonesia is formed to develop nickel deposits on the island of Sulawesi; production of nickel in matte began in 1977

1994 – Discovery of the Voisey’s Bay nickel-copper-cobalt deposit in Newfoundland and Labrador; acquired by Inco in 1996

1996 – Extension of Contract of Work (CoW) with Indonesian Government to 2025

2004 – Start up of the Sossego copper mine, Brazil

2006 – Acquisition of Inco by Vale

2011 – Start up of the Onça Puma nickel mine, Brazil

2012 – Start up of the Salobo I copper mine, Brazil

2014 – Start up of the Long Harbour processing plant, Canada

2012 – Start up of the Goro nickel mine, New Caledonia

2014 – Start up of the Salobo II copper mine, Brazil

Extension of PTVI CoW to 2045
Mines and processing facilities across three main hubs

1 Operation in ramp up phase
Geographically diverse asset base

Nickel equivalent¹ production by geography, 2015

Vale's production base is evenly spread across stable, mining friendly jurisdictions

¹ Nickel equivalent production based on 2014 Cu price of US$ 6,862/t and 2014 Ni price of US$ 16,867/t
Source: Company filings and Wood Mackenzie.
An asset base strengthened by strategic investments in new projects and operations

2007-2013 Capex\(^1\) spent vs Base Metals peer spending, US$ billion

<table>
<thead>
<tr>
<th>Company</th>
<th>Capex (US$ billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vale</td>
<td>22.2</td>
</tr>
<tr>
<td>Freeport</td>
<td>18.8</td>
</tr>
<tr>
<td>Norilsk</td>
<td>10.0</td>
</tr>
<tr>
<td>Antofagasta</td>
<td>7.6</td>
</tr>
<tr>
<td>First Quantum</td>
<td>6.5</td>
</tr>
<tr>
<td>Southern Copper</td>
<td>5.0</td>
</tr>
</tbody>
</table>

\(^1\) Includes both growth and sustaining capex.

Source: Vale, company filings
Leading to the second largest nickel reserves in the world

Millions of dry metric tons

<table>
<thead>
<tr>
<th>Nickel mines¹</th>
<th>Copper mines²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norilsk</td>
<td>74.8</td>
</tr>
<tr>
<td>Vale</td>
<td>62.0</td>
</tr>
<tr>
<td>Glencore</td>
<td>56.2</td>
</tr>
<tr>
<td>Eramet</td>
<td>41.2</td>
</tr>
<tr>
<td>Royal Nickel</td>
<td>27.8</td>
</tr>
<tr>
<td>First Quantum Minerals</td>
<td>10.8</td>
</tr>
</tbody>
</table>

¹ Consolidated reserves on a control basis
² Equity ownership of reserves

Source: Vale 2014 20-F, WoodMackenzie
Base Metals nickel operations and projects are well positioned on the industry cost curve

2015 Global Nickel Industry C1 Cash Cost Curve, USD per ton of nickel

1 Shown as forecast to be fully ramped-up for Long Harbour in 2018 and VNC in 2017
Note: Includes all downstream processing costs to finished product
Source: WoodMackenzie, Vale analysis
Likewise, Base Metals copper business is based on highly competitive assets

2015 Global Copper Industry C1 Cash Cost Curve, USD per ton of copper

1 After accounting for the Goldstream transaction, Salobo operation is positioned in the lower 2\textsuperscript{nd} quartile of the cost curve

Source: Wood Mackenzie, Vale
Market Overview
Core Base Metals operations are in nickel and copper

Nickel

- Broad range of product offerings, serving a variety of industries / applications
- Positive medium and long-term market perspective

Copper

- Supplier of copper concentrate, anodes and cathodes
- Expectation of equilibrium in the mid-term as a result of the shutdown of high cost producers
Core Base Metals operations are in nickel and copper

**Nickel**
- Broad range of product offerings, serving a variety of industries / applications
- Positive medium and long-term market perspective

**Copper**
- Supplier of copper concentrate, anodes and cathodes
- Expectation of equilibrium in the mid-term as a result of the shutdown of high cost producers
More than 60% of nickel sales directed to the non-stainless steel market

World nickel demand by application

2014, %

- Stainless Steel: 68%
- Non-stainless steel: 32%

Roughly 70% of the world’s nickel production goes to stainless steel applications

Vale’s nickel sales volume by application

2014, %

- Stainless Steel: 61%
- Non-stainless steel: 39%

Most of Vale’s nickel production goes to non-stainless steel applications

Source: Vale
A broad geographic distribution of sales provides superior commercial flexibility

**World nickel demand by geography**

<table>
<thead>
<tr>
<th>Region</th>
<th>2014, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>52%</td>
</tr>
<tr>
<td>Other Asia</td>
<td>20%</td>
</tr>
<tr>
<td>Europe</td>
<td>8%</td>
</tr>
<tr>
<td>North America</td>
<td>18%</td>
</tr>
<tr>
<td>Rest of World</td>
<td>2%</td>
</tr>
</tbody>
</table>

70% of total nickel sales volume is directed to Asia

**Vale’s nickel sales volume by geography**

<table>
<thead>
<tr>
<th>Region</th>
<th>2014, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>30%</td>
</tr>
<tr>
<td>Other Asia</td>
<td>30%</td>
</tr>
<tr>
<td>Europe</td>
<td>28%</td>
</tr>
<tr>
<td>North America</td>
<td>11%</td>
</tr>
<tr>
<td>Rest of World</td>
<td>1%</td>
</tr>
</tbody>
</table>

Vale’s sales are more evenly distributed across geographic regions

Source: Vale, WoodMackenzie
New applications helping drive future demand

### End use - world

<table>
<thead>
<tr>
<th>End use</th>
<th>2013, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automotive</td>
<td>7%</td>
</tr>
<tr>
<td>Aerospace</td>
<td>4%</td>
</tr>
<tr>
<td>Other Transport</td>
<td>5%</td>
</tr>
<tr>
<td>Appliances</td>
<td>6%</td>
</tr>
<tr>
<td>Electronics</td>
<td>6%</td>
</tr>
<tr>
<td>Energy</td>
<td>6%</td>
</tr>
<tr>
<td>Chemical, Petrochemical</td>
<td>8%</td>
</tr>
<tr>
<td>Other Engineering</td>
<td>14%</td>
</tr>
<tr>
<td>Building &amp; Construction</td>
<td>11%</td>
</tr>
<tr>
<td>Cutlery/Kitchen</td>
<td>11%</td>
</tr>
<tr>
<td>Intermediate Products</td>
<td>18%</td>
</tr>
<tr>
<td>Others</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
</tr>
</tbody>
</table>

### Examples of new applications

- **Automotive**
- **Aerospace**
- **Other Transport**
- **Appliances**
- **Electronics**
- **Energy**
- **Chemical, Petrochemical**
- **Other Engineering**
- **Building & Construction**
- **Cutlery/Kitchen**
- **Intermediate Products**
- **Others**

Source: Pariser
China represents about 50% of total world demand and still offers growth potential

<table>
<thead>
<tr>
<th>Contained nickel demand</th>
<th>2014, Kt</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>965</td>
</tr>
<tr>
<td>Other Asia</td>
<td>330</td>
</tr>
<tr>
<td>Europe</td>
<td>369</td>
</tr>
<tr>
<td>North America</td>
<td>158</td>
</tr>
<tr>
<td>Other</td>
<td>42</td>
</tr>
<tr>
<td>Total</td>
<td>1,864</td>
</tr>
</tbody>
</table>

Source: Vale, WoodMackenzie, Pariser

1 Total nickel consumption (primary + scrap) adjusted for net trade in intermediates and final products
As the impact from the Indonesian ore ban gains traction, China is becoming increasingly dependent on nickel imports.

### Chinese nickel consumption

<table>
<thead>
<tr>
<th>Year</th>
<th>Chinese NPI Production</th>
<th>Chinese Refined Nickel Production (ex-NPI)</th>
<th>Dependency on imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>111 kt</td>
<td>115 kt</td>
<td>38 kt</td>
</tr>
<tr>
<td>2007</td>
<td>162 kt</td>
<td>123 kt</td>
<td>74 kt</td>
</tr>
<tr>
<td>2008</td>
<td>123 kt</td>
<td>128 kt</td>
<td>87 kt</td>
</tr>
<tr>
<td>2009</td>
<td>227 kt</td>
<td>153 kt</td>
<td>102 kt</td>
</tr>
<tr>
<td>2010</td>
<td>237 kt</td>
<td>165 kt</td>
<td>180 kt</td>
</tr>
<tr>
<td>2011</td>
<td>261 kt</td>
<td>184 kt</td>
<td>267 kt</td>
</tr>
<tr>
<td>2012</td>
<td>265 kt</td>
<td>199 kt</td>
<td>307 kt</td>
</tr>
<tr>
<td>2013</td>
<td>177 kt</td>
<td>493 kt</td>
<td>230 kt</td>
</tr>
<tr>
<td>2014</td>
<td>281 kt</td>
<td>453 kt</td>
<td>232 kt</td>
</tr>
<tr>
<td>2015F</td>
<td>433 kt</td>
<td>361 kt</td>
<td>228 kt</td>
</tr>
</tbody>
</table>

- **Share of world consumption, %**
- **Chinese NPI Production**
- **Chinese Refined Nickel Production (ex-NPI)**
- **Dependency on imports**

Note: Chinese dependency on imports is calculated as nickel consumption minus domestic refined production. 
Source: Vale, WoodMacKenzie
But despite the Indonesian ore ban, the nickel industry “got prices wrong” in 2015

<table>
<thead>
<tr>
<th>2014 headwinds</th>
<th>2015 reality</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Significant stocks of Indonesian ore in China</td>
<td>• Indonesian ore stocks largely depleted</td>
</tr>
<tr>
<td>• Increase in Filipino ore supply</td>
<td>• No further increase in 2015 and/or new countries of origin</td>
</tr>
<tr>
<td>• Chinese de-stocking of cathode</td>
<td>• Chinese imports of nickel improved in 2Q15</td>
</tr>
</tbody>
</table>

Despite a better than expected 2015 to date, concerns with the Chinese economy and cost deflation have helped bring prices down
Concerns over Chinese stainless steel demand have been a key catalyst for falling nickel prices

Source: CRU
The market appears to be assuming a near term surplus in the nickel market driven by a “no growth in China” scenario

Nickel supply/demand balance¹

¹ Does not include any potential supply side shutdowns due to current price environment

Note: Considering CRU’s forecast of 6.44%, 3.07% and 3.73% increase in Chinese primary nickel demand in 2016, 2017 and 2018, respectively; CRU’s forecast includes an increase of 7.93%, 4.59% and 4.54% in Chinese stainless steel melted production in 2016, 2017 and 2018, respectively.

Source: CRU, Vale
With demand concerns and higher LME inventories, prices have declined to the depths of the 2009 financial crisis.

Source: Bloomberg
But shifts in LME inventories represent only a fraction of the market

Just over 10% of an iceberg is typically above surface
Nickel has seen improvement in the non-deliverable LME products

Scrap market has tightened in Europe with prices improving from low 70% to mid 80% of contained metal

Record imports into China combined with smaller discounts

Production falling year-over-year as ore availability tightens

Discounts improved in China for non-deliverable units

Weakness in oil & gas and mining with negative impact on non-ferrous alloys

Non-Deliverable LME Products (67% of total)

- Commodity LME deliverable nickel is the least desired by stainless steel mills as they focus on cheaper options first
- This means LME inventories will lag behind any nickel market improvement

Total
Stainless Steel Scrap
FeNi
Nickel Pig Iron
Non-Deliverable finished nickel
Subtotal
Higher Purity nickel
"Commodity" LME Deliverable

100
30
13
16
8
33
19
14
Chinese imports of nickel have increased significantly year-over-year

Chinese net nickel imports¹ (imports – exports)

<table>
<thead>
<tr>
<th>Year</th>
<th>06</th>
<th>07</th>
<th>08</th>
<th>09</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15E²</th>
</tr>
</thead>
<tbody>
<tr>
<td>kt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

+251%

Chinese monthly refined and FeNi imports

<table>
<thead>
<tr>
<th>Year</th>
<th>09</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contained Ni (kt)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Refined Imports
- FeNi Imports

¹ Nickel imports of finished nickel including unwrought nickel, ferro-nickel, amongst other forms used directly by nickel consumers
² Jan-Aug finished nickel imports annualized to full-year

Source: Vale, WoodMackenzie
We believe existing prices are unsustainably low since more than half of producers are losing money at current prices.

2015 Global Nickel Industry C1 cash cost + Sustaining Investments, USD per ton of nickel

As much as 1.3Mt losing money at current prices

Source: Wood Mackenzie, Vale Analysis
In conclusion, our views on nickel are positive

- Nickel prices have fallen to extremely low levels during the typically slower summer months on negative sentiment towards the Chinese economy and associated demand for stainless steel.

- Prices are now at levels where more than half of nickel production is losing money. This is an extreme price level even in an environment of slowing demand.

- Nickel imports into China have reached historical peaks, imports are anticipated to remain at high levels as NPI production declines.

- While the timing of a market upturn will be impacted by Chinese demand growth, the longer-term dynamics remain positive:
  - Scarcity of sulphides and high grade saprolites for nickel.
  - Strained company financial positions to slow supply development.
  - Lower prices may help to support demand growth.
Core Base Metals operations are in nickel and copper

- Broad range of product offerings, serving a variety of industries / applications
- Positive medium and long-term market perspective

Nickel

Copper

- Supplier of copper concentrate, anodes and cathodes
- Expectation of equilibrium in the mid-term as a result of the shutdown of high cost producers
Copper’s properties will continue to drive increased usage

<table>
<thead>
<tr>
<th>Total copper consumption by market sector</th>
<th>Trends</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014 = 27 Mt</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td></td>
</tr>
<tr>
<td>Consumer &amp; General</td>
<td></td>
</tr>
<tr>
<td>Electrical Network</td>
<td></td>
</tr>
<tr>
<td>Transport</td>
<td></td>
</tr>
<tr>
<td>Industrial Machinery</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

- Efficiency in the automotive industry is likely to boost use of copper in more sensitive areas such as engine control and management systems.
- House wiring will require more efficiency as well, especially as use of electrical control systems increases.
- Rural electrification leaves room for increase in demand of copper wire rod.
- Electric motors and turbines that are in continual use will require higher amounts of copper. Substitution by aluminum is less likely due to lower efficiency levels.
- Antimicrobial properties of copper allow it to be used in densely-populated areas (such as shopping malls) and hospitals to avoid spread of infections.

Source: Wood Mackenzie and Copper Development Association
Copper prices have declined over the course of 2015 to their lowest levels since 2009.
As in the nickel market, current prices seem to reflect surpluses associated with a “no growth in China” scenario.

**Copper supply/demand balance**

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>No growth in China</td>
<td>120</td>
<td>250</td>
<td>1,258</td>
</tr>
<tr>
<td>50% of growth in China</td>
<td>352</td>
<td>682</td>
<td>659</td>
</tr>
<tr>
<td>Wood Mackenzie forecast</td>
<td>584</td>
<td>1,114</td>
<td></td>
</tr>
</tbody>
</table>

Note: Considering Woodmac’s forecast of 4.57%, 3.78% and 3.04% increase in Chinese refined copper consumption in 2016, 2017 and 2018, respectively.

Source: Wood Mackenzie, Vale analysis
Copper prices are now starting to cut deeper into the cost curve

2015 Global Copper Industry C1 cash cost + Sustaining Investments, USD per ton of copper

Source: Wood Mackenzie, CRU
Decline of supply forecasts for the copper industry indicates concerns with operating capability at current prices

Global refined copper supply forecast, Mt

2015: 22,963 Mt, 22,546 Mt (4Q14)
2016: 24,428 Mt, 23,173 Mt (3Q15)
2017: 25,087 Mt, 24,215 Mt

Source: Wood Mackenzie
We see copper having support at current prices with a positive longer-term future

- Copper prices have fallen to low levels on Chinese demand concerns. Prices being supported above levels seen during the Financial Crisis in 2009
- Physical availability of cathode has improved from recent years, however, supply disruptions are helping to partially offset this weakness
- A number of supply shutdowns have been announced in 2015 in response to the current low prices. We anticipate that the upper end of the cost curve will continue to help support prices
- Medium-term outlook is a balance between projects ramping-up and the uncertain demand outlook
- Longer-term, we remain optimistic on copper given structural supply side issues
3 Operations overview
Mines and processing facilities across three main hubs

**North Atlantic**
- Thompson
- Voisey’s Bay
- Clydach
- Port Colborne
- Sudbury
- Long Harbour

**South Atlantic**
- Salobo
- Sossego
- Onça Puma

**Asia Pacific**
- Dalian
- KNC
- Matsuzaka
- VTL
- PTVI
- Vale New Caledonia

¹ Operation in ramp up phase
North Atlantic operations combine a distinct set of operating assets with lower cost, value-added brownfield opportunities.

**Vision**

- One of the lowest cash cost operations in the Base Metals industry
- Mining and processing a broad range of metals (nickel, copper, PGMs)
- Cost competitive operation even under stressful pricing scenarios
- High reserves/resource and long mine life
- Positioned for a brighter future in terms of costs and productivity, after key investments (single furnace, Thompson optimization and Long Harbour)

**Financial and production highlights**

<table>
<thead>
<tr>
<th></th>
<th>US$ million and kt, 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBITDA</td>
<td>2,072</td>
</tr>
<tr>
<td>Sustaining Capex¹</td>
<td>406</td>
</tr>
<tr>
<td>Nickel Production</td>
<td>143</td>
</tr>
<tr>
<td>Copper Production</td>
<td>152</td>
</tr>
</tbody>
</table>

¹Note: Does not include Capex for replacement projects
Leveraging low-cost brownfield opportunities to support production levels in Sudbury

Situation

- Low cost mines currently operational (Coleman, Creighton, Stobie, Garson, Copper Cliff and Totten)
- Key initiatives to further increase productivity, reduce costs and improve environmental sustainability:
  - AER
  - Single Furnace Operation
  - Totten ramp-up

Opportunities

- Start the development of the Victor mine by 2019
- Optimize the development of the Copper Cliff mine through a staged approach
  - Stage 1 capex of US$ 22 million for 2016
- Continue investments in brownfields exploration to extend life of existing mines

Vision

Integrated mining, milling, smelting and refining operations to process ore into finished nickel with a nominal capacity of 66,000 tpy
The Clean AER project will enable us to cut emissions to industry-benchmark levels

**Emission reductions in Sudbury**

Kt of SO₂

- **1970**
- **1975**
- **1980**
- **1985**
- **1990**
- **1995**
- **2000**
- **2005**
- **2010**
- **2015**

**Highlights**

- Emissions control through converter circuit and single furnace operation
- 85% reduction in sulphur dioxide
- 35-40% reduction in dust and metals emissions
- Commissioning planned from 2015 through 2017
- Capex of US$ 1 billion
- Total disbursement of US$ 433 million and construction progress of 30% by the end of August
Copper Cliff’s Single Furnace strategy will improve production yields of copper and nickel

**Highlights**

- Avoidance of US$ 1 billion in capex with the decision to operate a single furnace
- Ongoing flowsheet reconfiguration to increase nickel production
  - Increased production of copper concentrate and intermediates (as opposed to copper anodes)
  - Resulting furnace capacity utilized to process nickel
The opening of Totten in 2014 further extends mine life in Sudbury

**Highlights**

- First new Vale mine in Sudbury in 35 years
- Opened in 1Q14 with Capex fully spent, totalling US$759 million
- 12,500 t of nominal Ni and 9,500 t of Cu capacity
- High-grade ore body
  - Ni grade of 1.50%
  - Cu grade of 1.98%
- Low unit cost production and high margins driven by a high contribution of copper and PGMs
Copper Cliff Mine’s staged development allows the efficient use of resources leveraging the basin’s natural ore distribution.

Phased approach allows cash conservation by deferring planned infrastructure.
Victor is the best undeveloped project in the Sudbury basin

**Key characteristics**

- Recent exploration is delineating world class polymetallic mineralization at depth with potential to extend LOM
- Victor deposit has 19 years of life of mine with a total volume of finished nickel of 255,000 t
- Victor nickel deposits were delineated with the focus being on the contact nickel zone which was drilled to an indicated resource
- Deep 14N zone intersections of 44.5 meters grading 16% Cu, 3.5% Ni and 20 gpt Pt+Pd+Au
- Project approval in 2018
Within the Sudbury Basin, significant synergy potential exists from infrastructure overlaps that have largely gone uncaptured.

Vale Assets within the Sudbury Basin:

- Coleman / McCreedy East
- Garson
- Blezard
- Ella North
- Capre
- Victor
- Copper Cliff Smelter
- Kelly Lake
- Copper Cliff Nickel Refinery
- Totten
- CCM
- Stobie
- Clarabelle Mill
- Glencore’s Nickel Rim
Optimizing our production flowsheet with the phasing out of Thompson’s smelter and refinery

**Situation**
- Costs and expenses reduced by more than US$ 2,500/t, enhancing relative competitiveness and placing Thompson in the second quartile of the nickel mining operations cost curve
- Smelting and refining operations compliant with environmental regulations until 2019

**Vision**
- Low cost mining and milling operation supplying high-quality concentrate to the market and to Vale’s North Atlantic operations

**Opportunities**
- Transition to mining and milling operation by 2019
  - Phase out of smelting and refining operations
  - Feed Long Harbour’s spare smelting and refining capacity with Thompson concentrate
  - Sell the remainder to market
Thompson registered lower mining and processing costs both in Canadian and US Dollars

### Mining and processing costs

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015E</th>
<th>2016E</th>
</tr>
</thead>
<tbody>
<tr>
<td>$Cdn/t</td>
<td>8,811</td>
<td>7,570</td>
<td>7,320</td>
<td>7,395</td>
<td>6,924</td>
</tr>
<tr>
<td>Mine &amp; Mill</td>
<td>5,142</td>
<td>3,907</td>
<td>4,004</td>
<td>3,733</td>
<td>3,908</td>
</tr>
<tr>
<td>Processing</td>
<td>3,669</td>
<td>3,663</td>
<td>3,316</td>
<td>3,662</td>
<td>3,016</td>
</tr>
</tbody>
</table>

### Total mining and processing costs

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015E</th>
<th>2016E</th>
</tr>
</thead>
<tbody>
<tr>
<td>US$/t, $Cdn/t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manitoba Operations US $</td>
<td>13,953</td>
<td>11,477</td>
<td>11,324</td>
<td>11,127</td>
<td>10,832</td>
</tr>
<tr>
<td>Manitoba Operations Cdn $</td>
<td>11,132</td>
<td>10,418</td>
<td>9,723</td>
<td>8,723</td>
<td>8,023</td>
</tr>
</tbody>
</table>
Ramping up and capturing operational synergies in Long Harbour

**Situation**
- Currently ramping up and operating with a blend of Voisey’s Bay concentrate and PTVI matte
- Completion of purification circuits ongoing

**Opportunities**
- Feed Long Harbour directly from Voisey’s Bay by the end of 2015
  - Capture operational synergies
  - Increase value-added volumes
  - Reduce operating costs
- Achieve significant operational improvements:
  - Reduce pre-operating expenses by US$20 million in 2016
  - Reduce operating costs in 2016 and 2017

**Vision**

Hydrometallurgical facility processing Voisey’s Bay concentrate and producing 50,000 tpy of nickel and associated copper and cobalt
Completion of Long Harbour’s ramp-up expected by the end of 2018

kt

Finished nickel production
Monthly production

Yearly Production

Finished nickel production
Extending mine life in Voisey’s Bay (VB)

Vision
More than 14 years of low-cost nickel mine operations with nominal capacity of 40,000 tpy, feeding Long Harbour

Situation
- Moving forward with the development of the Voisey’s Bay underground mine, a world-class nickel reserve of 496 kt
- Mine development aligned with commitments signed with the Newfoundland and Labrador Government

Opportunities
- Operate Voisey’s Bay Underground with initial start of production in 1Q20, concurrent with the ramp down of the Ovoid
- Optimize flowsheet with the processing of Voisey’s Bay concentrate in Long Harbour
- Develop the VB underground in an optimized timeframe
  - Disbursements already included in Vale’s sustaining capex guidance
  - Disbursement of US$ 121 million in 2016 and US$ 366 million in 2017
  - Internal Rate of Return over 20%
Mines and processing facilities across three main hubs

North Atlantic
- Thompson
- Voisey’s Bay
- Clydach
- Port Colborne
- Sudbury
- Long Harbour

South Atlantic
- Salobo
- Sossego
- Onça Puma
- Lubambe

Asia Pacific
- Dalian
- Matsuzaka
- KNC
- VTL
- PTVI
- Vale New Caledonia

¹ Operation in ramp up phase
South Atlantic offers low-cost copper development alongside production growth opportunities in ferro-nickel

**Vision**

- Low operational cost with cheap brownfield opportunities in copper (Salobo III, Cristalino, 118, Alemão and Visconde) and Onça Puma’s second furnace
- Production of premium concentrate up to 38% copper content, gold and ferro-nickel
- Large copper reserves of 8.8¹ Mt and long mine life
- Opportunity to increase ferro-nickel production to 50,000 t

¹ Total metal contained in mineral reserve
Profiting from the Salobo III growth option and the cash inflow stemming from the goldstream transaction

**Situation**

- Largest copper deposit ever found in Brazil with more than 50 years of mine life
- Production began in May 2012 at 12Mtpa and expanded to 24Mtpa in June 2014
- Reserves of 7.9 Mt\(^1\) and low-cost brownfield expansion opportunities
- 80% capacity utilization with the ongoing ramp-up of Salobo II

**Opportunities**

- Develop Salobo III taking advantage of the future upfront payment negotiated with Silver Wheaton for the expansion of the mine
  - Raise up to US$ 500 million from Silver Wheaton
  - Leverage current experience with Salobo’s ore body

**Vision**

Concentration plant with 12 Mtpy capacity to reclaim previously stockpiled ore – processing at lower cost – along with substantial gold by-product volumes

---

\(^1\) Total metal contained in mineral reserve
Salobo with its future expansions defines the Northern Hub of our copper province in Carajás.
Benefiting from the successful overhaul of Onça Puma’s furnace 1 to plan the revamp of furnace 2 at the appropriate time

**Vision**

Mining, smelting and refining operation producing high quality ferro-nickel, prepared to operate with two furnaces, with a nominal capacity of approximately 50,000 tpy

**Situation**

- Operational ramp-up of Furnace 1 successfully completed within a record 6 months
- Increased production capacity with optimized production flow
  - Utilization of two kilns units to feed a single furnace
  - Production capacity increased from 25 kt to 28 kt by 2017 with investments as low as US$ 1.5 million

**Opportunities**

- Revamp furnace 2 for US$ 200 million to achieve a nominal capacity of 50,000 t
- Reduce unit cost with increased production volumes
Ramp-up of Onça Puma’s furnace 1 in about six months after the successful revamp of the furnace.

Significant cost reductions and achievement of production targets have paved the way for positive cash flow generation.
Mines and processing facilities across three main hubs

1 Operation in ramp up phase
Asia Pacific operations encompass high-quality ore deposits along with downstream facilities to add value to our mined output

**Vision**

- Highly productive asset base, mining and processing in some of the richest laterite mineral deposits in Asia
- Broad product portfolio with upstream and intermediate nickel products such as Tonimet, Utility nickel, nickel matte, nickel oxide, nickel hydroxide cake and cobalt carbonate
- Long life-span of assets in high-quality ore deposits

**Financial and production highlights**

<table>
<thead>
<tr>
<th></th>
<th>US$ million</th>
<th>kt, 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBITDA</td>
<td>813</td>
<td></td>
</tr>
<tr>
<td>Sustaining Capex</td>
<td>203</td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td>143</td>
<td></td>
</tr>
</tbody>
</table>
Increasing production capacity at PTVI, one of the core assets of our Base Metals portfolio

Vision

Open cast mining area and related processing facilities (producer of an intermediate product) with a nominal capacity of approximately 80,000 tpy of nickel in matte

Situation

- Successful extension of the Contract of Work
  - Extension of license to operate until 2045
  - Preservation of strategic mineral deposits
  - Contractual support for future brownfield and greenfield expansions
  - Negotiation of royalty rates ranging from 2% to 3% of sales revenues

Opportunities

- Potential for expanding our mining and processing facilities
  - Optimize staged expansion to maximize value and derisk investments
  - Stage 1: 20% annual increase in nickel in matte production - from 75 kt to 90 kt
  - Stage 2: increase production via 5th line expansion - up to 115 kt
A significant resource in PTVI

PTVI Reserves/Resource

<table>
<thead>
<tr>
<th>Million tonnes of nickel contained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserve</td>
</tr>
<tr>
<td>Resource</td>
</tr>
<tr>
<td>Bahodopi/Pomalaa</td>
</tr>
<tr>
<td>Sorowako area</td>
</tr>
</tbody>
</table>

- 4.6M tons of resource in the Sorowako area allowing for brownfield expansion and continued extension of mining life (over 50 years of life at current production rates)
- More than 4.6M tons of nickel contained in mineral resource at Bahodopi and Pomalaa allowing potential for Greenfield projects
- Both Bahodopi and Pomalaa represent world-class deposits from a tonnage and grade point of view
- Potential for continued expansion of the resource base with further exploration and adjusting for lower cut-off grades over time

Source: Vale
At VNC operational performance will define its future

**Vision**

Turn VNC into a profitable, cash flow positive operation producing 57 kt per year of nickel oxide and nickel hydroxide cake along with 4.5 kt of cobalt in carbonate form

**Situation**

- Ramp-up taking longer than expected
- Operation generating negative cash flows
- Capacity utilization currently at 60% and expected to reach 75% by year end

**Opportunities**

- Achieve operational targets in 2016
  - Achieve 45 kt, 79% of capacity
  - Reduce costs to US$ 13,000/t
  - Forecast pre-operating costs of US$ 315 million in 2015
- Derisk VNC and halt losses in 2016
Financial and Strategic Perspective
Increased production of nickel and copper towards 2019

**Nickel**

- **kt**
- Sudbury
- Thompson
- Voisey’s Bay
- Sorowako
- Onça Puma
- VNC

**Copper**

- **kt**
- Sudbury
- Thompson
- Voisey’s Bay
- Salobo
- Lubambe
- Sossego

*Note: The graph shows the production of nickel and copper from 2012 to 2019, with a focus on the projected increase towards 2019.*
Low Capex and long life of mine in copper

**Capex estimates**
US$/Kt of copper equivalent

<table>
<thead>
<tr>
<th>Project</th>
<th>Capex estimates US$/Kt of copper equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sossego Underground</td>
<td>8.6</td>
</tr>
<tr>
<td>Cristalino</td>
<td>7.5</td>
</tr>
<tr>
<td>Visconde</td>
<td>1.9</td>
</tr>
<tr>
<td>Salobo III</td>
<td>5.9</td>
</tr>
</tbody>
</table>

**Life of mine**
Years

<table>
<thead>
<tr>
<th>Project</th>
<th>Life of mine Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sossego Underground</td>
<td>14</td>
</tr>
<tr>
<td>Cristalino</td>
<td>21</td>
</tr>
<tr>
<td>Visconde</td>
<td>12</td>
</tr>
<tr>
<td>Salobo III</td>
<td>32</td>
</tr>
</tbody>
</table>

Industry average: 14.9
### Low Capex and long life of mine in nickel

**Capex estimates**

US$/Kt of nickel equivalent

<table>
<thead>
<tr>
<th></th>
<th>Fafa + Puma</th>
<th>Victor</th>
<th>Copper Cliff</th>
<th>Manitoba</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capex estimates</td>
<td>27.9</td>
<td>49.8</td>
<td>46.0</td>
<td>13.1</td>
</tr>
</tbody>
</table>

**Life of mine**

Years

<table>
<thead>
<tr>
<th></th>
<th>Fafa + Puma</th>
<th>Victor</th>
<th>Copper Cliff</th>
<th>Manitoba</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years</td>
<td>53</td>
<td>19</td>
<td>23</td>
<td>14</td>
</tr>
</tbody>
</table>

¹ CCM capex estimates encompass the three development stages
Meanwhile we keep delivering opex reductions

<table>
<thead>
<tr>
<th>Opex – nickel operations</th>
<th>Opex – copper operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>US$/t</td>
<td>US$/t</td>
</tr>
<tr>
<td></td>
<td>1H14</td>
</tr>
<tr>
<td>North Atlantic¹</td>
<td>2,694</td>
</tr>
<tr>
<td>South Atlantic (Onça Puma)</td>
<td>4,636</td>
</tr>
<tr>
<td>Asia Pacific (PTVI)</td>
<td>7,709</td>
</tr>
</tbody>
</table>

Note: After by-product credits
¹ 1H15 North Atlantic costs were unusually high due to lower by-product prices and a fire incident in Sudbury; North Atlantic 2015F costs are trending at US$4,400/t
And reducing our expenses\textsuperscript{1,2}

US$ millions

\begin{itemize}
\item 2012: 1,840
\item 2013: 1,414
\item 2014: 861
\item 2015E: 741
\end{itemize}

\textsuperscript{1} Net of depreciation and amortization.
\textsuperscript{2} Includes SG&A, R&D, Pre-operating and stoppage and Other expenses.

Sound EBITDA generation going forward even with moderate increases in nickel and copper prices

EBITDA 2018, US$ Bi

<table>
<thead>
<tr>
<th>Copper Price (US$/t)</th>
<th>5,000</th>
<th>5,500</th>
<th>6,000</th>
<th>6,500</th>
<th>7,000</th>
<th>7,500</th>
</tr>
</thead>
<tbody>
<tr>
<td>10,000</td>
<td>1.4</td>
<td>1.6</td>
<td>1.7</td>
<td>1.9</td>
<td>2.1</td>
<td>2.3</td>
</tr>
<tr>
<td>12,000</td>
<td>2.0</td>
<td>2.2</td>
<td>2.4</td>
<td>2.6</td>
<td>2.8</td>
<td>2.9</td>
</tr>
<tr>
<td>14,000</td>
<td>2.6</td>
<td>2.8</td>
<td>3.0</td>
<td>3.2</td>
<td>3.4</td>
<td>3.6</td>
</tr>
<tr>
<td>16,000</td>
<td>3.3</td>
<td>3.4</td>
<td>3.6</td>
<td>3.8</td>
<td>4.0</td>
<td>4.2</td>
</tr>
<tr>
<td>18,000</td>
<td>3.9</td>
<td>4.1</td>
<td>4.3</td>
<td>4.4</td>
<td>4.6</td>
<td>4.8</td>
</tr>
<tr>
<td>20,000</td>
<td>4.5</td>
<td>4.7</td>
<td>4.9</td>
<td>5.1</td>
<td>5.3</td>
<td>5.5</td>
</tr>
</tbody>
</table>

- Modest increases in commodity prices produce an amplified impact on our EBITDA generation
- As we ramp-up our copper production, our EBITDA will be more sensitive to changes in copper prices
Closing Remarks
We have been successful in overcoming our challenges in 2015 and still cognizant of the work ahead in 2016.

In 2015 we have managed to close the anticipated cash flow gap, pay dividends and preserve the balance sheet...

...and we are prepared to meet head on the 2016 challenges driven by demand uncertainty and volatility in commodity prices...

...and we expect a positive FCF by 2017 without further divestments of assets as we generate between US$13bi and US$20bi¹ in EBITDA by 2018, strengthening the balance sheet and paying higher dividends.

¹ Considers exchange rate of 3.5 BRL/USD, IODEX Platts between 50-60 USD/t, Ni LME prices between 12,000-15,000 USD/t and Cu LME prices between 7,000-9,000 USD/t.
In the last three years we have reduced our expenses\(^1,\)\(^2\) by more than US$ 5 billion

\[\text{US$ million} \]

\[\begin{align*}
&2012: 7,117 \\
&2013: 4,521^3 \\
&2014: 3,547 \\
&2015E: 2,061
\end{align*}\]

\[\begin{align*}
&\text{US$ million} \]  \\
&\text{3Q14: 809} \\
&\text{4Q14: 1,204} \\
&\text{1Q15: 638^4} \\
&\text{2Q15: 633}
\end{align*}\]

\(^1\) Net of depreciation and amortization.  
\(^2\) Includes SG&A, R&D, Pre-operating and stoppage and Other expenses.  
\(^3\) Excludes the positive one-off impact of US$ 244 million of the goldstream transaction in 1Q13  
\(^4\) Excludes the positive one-off impact of US$ 230 million of the goldstream transaction in 1Q15.  
\(^5\) Includes US$ 107 million of provisions from environmental obligations, US$ 98 million due to the write-down of thermal coal stocks and US$ 90 million due to the write-down of the ICMS credits.

Source: Company reports of 2012, 2013, 2014 and 2Q15, 2015 expected
Base Metals has consistently reduced costs in both nickel and copper.

**Nickel operations after by-products**

<table>
<thead>
<tr>
<th>Year</th>
<th>Cost (US$/t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>12,101</td>
</tr>
<tr>
<td>2013</td>
<td>8,634</td>
</tr>
<tr>
<td>2014</td>
<td>8,312</td>
</tr>
<tr>
<td>2015E</td>
<td>7,626</td>
</tr>
</tbody>
</table>

Cost reduction: **-37%**

**Copper South Atlantic after by-products**

<table>
<thead>
<tr>
<th>Year</th>
<th>Cost (US$/t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>5,512</td>
</tr>
<tr>
<td>2013</td>
<td>4,084</td>
</tr>
<tr>
<td>2014</td>
<td>2,826</td>
</tr>
<tr>
<td>2015E</td>
<td>1,970</td>
</tr>
</tbody>
</table>

Cost reduction: **-64%**
Despite decreases in price, Fertilizers is improving and will generate around US$ 600 million EBITDA in 2015

**MAP**

<table>
<thead>
<tr>
<th>Prices(^1), US$/t</th>
<th>2013</th>
<th>2014</th>
<th>2015E</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>502</td>
<td>485</td>
<td>480</td>
</tr>
</tbody>
</table>

\(-4\%\)

**Phos Rock, Morocco**

<table>
<thead>
<tr>
<th>Prices(^1), US$/t</th>
<th>2013</th>
<th>2014</th>
<th>2015E</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>159</td>
<td>130</td>
<td>125</td>
</tr>
</tbody>
</table>

\(-21\%\)

**Nitrates**

<table>
<thead>
<tr>
<th>Prices(^1), US$/t</th>
<th>2013</th>
<th>2014</th>
<th>2015E</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>332</td>
<td>325</td>
<td>250</td>
</tr>
</tbody>
</table>

\(-25\%\)

**KCI**

<table>
<thead>
<tr>
<th>Prices(^1), US$/t</th>
<th>2013</th>
<th>2014</th>
<th>2015E</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>403</td>
<td>341</td>
<td>333</td>
</tr>
</tbody>
</table>

\(-27\%\)

**Adjusted EBITDA\(^2\)**

<table>
<thead>
<tr>
<th>US$ million</th>
<th>2013</th>
<th>2014</th>
<th>2015E</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>278</td>
<td>600</td>
<td></td>
</tr>
</tbody>
</table>

\(-54\%\)

---

\(^1\) Market reference prices, CFR Brazil

Operational improvements in Mozambique are paving the path for a turnaround in our coal business

**Yield CHPP**
Indexed values, 2013 = 100

<table>
<thead>
<tr>
<th>Year</th>
<th>2013</th>
<th>2014</th>
<th>2015E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield</td>
<td>100</td>
<td>109</td>
<td>118</td>
</tr>
</tbody>
</table>

**Railway energetic efficiency**
Liters / (gross tons * km)

<table>
<thead>
<tr>
<th>Year</th>
<th>2013</th>
<th>2014</th>
<th>2015YTD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td>4,951</td>
<td>4,979</td>
<td>4,512</td>
</tr>
</tbody>
</table>

**Railway energetic efficiency**
Liters / (gross tons * km)

<table>
<thead>
<tr>
<th>Year</th>
<th>2013</th>
<th>2014</th>
<th>2015YTD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td>4,951</td>
<td>4,979</td>
<td>4,512</td>
</tr>
</tbody>
</table>

**Truck productivity**
tph

<table>
<thead>
<tr>
<th>Year</th>
<th>2013</th>
<th>2014</th>
<th>2015YTD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td>420</td>
<td>448</td>
<td>455</td>
</tr>
</tbody>
</table>

**Sales volumes**
kt

<table>
<thead>
<tr>
<th>Year</th>
<th>2013</th>
<th>2014</th>
<th>2015E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td>3,004</td>
<td>3,693</td>
<td>4,720</td>
</tr>
</tbody>
</table>

**COGS Mozambique**
US$/t

<table>
<thead>
<tr>
<th>Year</th>
<th>2013</th>
<th>2014</th>
<th>2015E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td>167</td>
<td>150</td>
<td>138</td>
</tr>
</tbody>
</table>

Operational improvements in Mozambique are paving the path for a turnaround in our coal business.
### Carajás may already be the most profitable iron ore operation in the world

<table>
<thead>
<tr>
<th>Vale Carajás</th>
<th>Rio Tinto Pilbara Blend</th>
<th>Vale’s estimates</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>IOCJ Realized Price²</th>
<th>62.0</th>
<th>53.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1 Cash Cost¹</td>
<td>10.7</td>
<td>14.4</td>
</tr>
<tr>
<td>Royalties</td>
<td>1.2</td>
<td>3.6</td>
</tr>
<tr>
<td>Freight</td>
<td>16.7</td>
<td>5.8</td>
</tr>
<tr>
<td>Expenses</td>
<td>3.5</td>
<td>1.8</td>
</tr>
<tr>
<td>Moisture</td>
<td>5.0</td>
<td>4.5</td>
</tr>
<tr>
<td>Unit Margin</td>
<td>24.9</td>
<td>23.2</td>
</tr>
</tbody>
</table>

1. Cash cost at the port (mine, plant, railroad and port, after royalties) assuming a FX Rate of BRL/USD 3.50
2. Based on Platts price of the period of US$54/t adjusted for a 61% Fe content and a premium of US$ 0.30/dmt
3. Rio Tinto’s C1 cash cost estimated based on Company guidance adjusted by the decreciation of the Australian Dollar of 5% in the period

Source: Vale
The Philippines will struggle to offset Indonesia as a source of nickel ore exports

Nickel contained in Indonesian and Filipino laterite resource

Source: Vale analysis