Vale’s strength by higher volumes, improved quality and integrated logistics

21st International Iron Ore Symposium

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The world today looks much different from the ‘boom era’

<table>
<thead>
<tr>
<th>Before...</th>
<th>... and today</th>
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<tbody>
<tr>
<td>Emerging markets growing</td>
<td>Lack of confidence in emerging markets</td>
</tr>
<tr>
<td>Developed economies recovering from economic crisis</td>
<td>Recession, deflationary scenario in developed economies</td>
</tr>
<tr>
<td>China GDP growth of 10% p.a. (avg)</td>
<td>China’s ‘new norm’ (moderate growth, less liquidity)</td>
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<tr>
<td>Chinese downstream demand growing strongly (driven by urbanization)</td>
<td>China’s FAI continues to grow but in a lower pace</td>
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<tr>
<td>Strong appetite for iron ore</td>
<td>Moderate growth in demand and massive addition of iron ore supply</td>
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In the current scenario, crude steel production will grow at a lower pace, while supply has finally caught up

- Intense growth of crude steel production over the last 15 years
- Today, an oversupply while miners make efforts to reduce costs to survive

### Crude Steel Production & Iron Ore Seaborne Trade

<table>
<thead>
<tr>
<th>Year</th>
<th>World CSP 2014 (Mt)</th>
<th>CAGR 2014-19</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>1’661.5</td>
<td>4.2%</td>
<td>Vale estimates, WSA, NBS</td>
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</tbody>
</table>

**Iron Ore Seaborne supply:**

- **CAGR 02-07**: 8.3%
- **CAGR 08-13**: 4.1%
- **CAGR 14-19**: 1.8%

**World CSP 2014:** 1’661.5 Mt +1.2 YoY

**China CSP 2014:** 822.7 Mt +0.9 YoY

**Ex-China CSP 2014:** 838.8 Mt +1.5 YoY

Source: Vale estimates, WSA, NBS
Vale, a global mining company with long-life, low-cost integrated iron ore mines in Brazil

**Integrated iron ore systems in Brazil**

- **4**
  - Northern System
    - PDM Port (4 piers)
    - EFC
  - Southeastern System
    - Tubarão Port (2 piers)
    - EFVM
  - Southern System
    - Itaguaí Port (1 pier)
    - MRS
    - Gualba Port (1 pier)
  - Midwestern System
    - Gregório Curvo Port (1 pier)
    - Granel Port (1 pier)
    - Ports in Argentina

**Iron ore mines**

- **22**

**Mt of iron ore output in 2014**

- **319**

**Mt of pellet output in 2014**

- **43**

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1. Excluding manganese mines
2. Excluding Samarco
3. Excluding Samarco
4. The number of piers refer only to the ones loading iron ore
5. Iron ore transported via road and rail to the fluvial port on Paraguay river

Source: Vale Form 20F 2014
Our improved integrated logistics system is part of our plan to become even more competitive.
Vale has a solid value proposition for its customers

**Increased reserve and production volume**

**CARAJÁS S11D**: the largest iron ore project; truckless system, dry processing plant, greener solutions

**Improved quality at lower costs**

**Southern System Caue Itabiritos**: Concentrator to process harder and lower grade ore

2020 - Cost Curve CFR China normalized to 62% Fe (US$/dmt)

Quality evolution of Vale’s iron ore production
Higher quality products from some of the most competitive assets in the world will replace lower grade material

**N4WS**

- N4WS licensed in 2014
- Pre-stripping completed
- Already mining the first layer of product (“canga”)

**Itabiritos projects**

- Vargem Grande Itabiritos started up in 4Q14
- Conceição Itabiritos II and Cauê Itabiritos will start up in 2015
<table>
<thead>
<tr>
<th><strong>S11D - the largest project in the iron ore industry</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Production capacity:</strong> 90 Mtpy</td>
</tr>
<tr>
<td><strong>Production:</strong> 100% high grade sinter feed</td>
</tr>
<tr>
<td><strong>Start-up:</strong> 2H2016</td>
</tr>
<tr>
<td><strong>Stripping ratio:</strong> 0.27</td>
</tr>
<tr>
<td><strong>Physical progress:</strong> 60% mine, 36% logistics (Apr/15)</td>
</tr>
<tr>
<td><strong>Product yield:</strong> 100%</td>
</tr>
<tr>
<td><strong>Fe:</strong> 65.2 ~ 66.4%</td>
</tr>
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**Reduction in environmental impact**

- **77%** reduction in the use of fuel
- **18,000 MW** of electricity saved per year
- **93%** less water used in the ore processing
- **50%** reduction in greenhouse gas emissions
### Vale’s reserves are key to sustain its high quality & low cost growth

<table>
<thead>
<tr>
<th>Vale’s reserves</th>
<th>Reserves (t)(^1)</th>
<th>Grade (%Fe)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18.1 Bi(^2)</td>
<td>54%</td>
</tr>
</tbody>
</table>

- **Northern System** 7.1 Bi
  - 67% Grade

- **Southeastern System** 5.1 Bi
  - 47% Grade

- **Southern System** 5.6 Bi
  - 44% Grade

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**Note:**
1. Figures in billion metric tonnes (Bi t).
2. Samarco (2.9 Bt) reserves not included. Vale’s equity interest in Samarco’s mines is 50%.
   Including non-operating mines: S11D and Apolo, and the midwestern system.

Source: Vale’s statement of reserves. Form 20F/2014
Ramp-up of Malaysia Distribution Center

Will provide for a throughput of 60 Mty through two berths:
- one import berth with the ability to discharge vessels up to 400,000 DWT
- one export berth for loading vessels up to Capesize

Operational flexibility for handling and blending iron ore
Vale has invested in research and development to create a higher performance product for its clients: Brazilian Blend Fines is now part of Vale’s portfolio.

### Brazilian Blend Fines (BRBF) specification vs. 62% Fe indexes

<table>
<thead>
<tr>
<th>Ore / %</th>
<th>Fe</th>
<th>SiO₂</th>
<th>Al₂O₃</th>
<th>SiO₂/Al₂O₃</th>
<th>P</th>
<th>LOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRBF</td>
<td>63.1</td>
<td>4.60</td>
<td>1.7</td>
<td>2.70</td>
<td>0.06</td>
<td>2.00</td>
</tr>
<tr>
<td>Platts 62%Fe</td>
<td>62</td>
<td>4.5</td>
<td>2.0</td>
<td>2.25</td>
<td>0.075</td>
<td></td>
</tr>
<tr>
<td>TSILA 62%Fe</td>
<td>62</td>
<td>4.0</td>
<td>2.0</td>
<td>2.00</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td>MB 62%Fe</td>
<td>62</td>
<td>3.5</td>
<td>2.0</td>
<td>1.75</td>
<td>0.05</td>
<td></td>
</tr>
</tbody>
</table>

Sinter produced with BRBF presents excellent performance in terms of softening & melting properties.
Vale’s production expansion continues, guaranteeing increased output of the industry’s highest quality iron ore.

Iron Ore Seaborne Fines’ Evolution – Volume vs Quality

Graph represents only Seaborne Fines Supply
Sources: WoodMac, Company’s reports and Vale analysis
The world demands higher quality iron ore

The steel industry faces challenges in producing steel efficiently and yet reduce CO₂ emissions.

Global Trends driving the demand of high quality iron ore

- Quality iron ore
- Steelmakers operating efficiently and with lower emissions
- Productivity
- Environment

Vale’s Alternative for lowering CO₂ emission and increasing productivity

- Increase use of higher quality: IOCJ, SSFT, SSFG, BRBF
- Increase use of pellets

Source: Vale
Regardless of the market environment, Vale will continue to be a leading global supplier of high quality Iron Ore

- **Supply/Demand**: Investments made over the last years deployed. China’s steel production is set to grow at a lower pace.

- **Tough scenario for 2015**: Low cost miners will continue to operate with positive results, while small scale miners will struggle.

- **Vale’s product portfolio**: A brand new product – Brazilian Blend Fines. More IOCJ, better SSFT/G and optimized production flows out of our southern systems.

- **Vale’s positioning**: New projects ramping up, S11D coming on stream well positioned in the cost curve improving Vale’s competitiveness and providing healthy margins from an annual 450 Mt capacity base.
Environmental responsibility

Vale is committed to using natural resources sustainably:

• Vale protects and helps to protect 15,200 KM of Natural Areas;

• Our operations in Carajás occupy less than 3% of the area protected by the company;

• Vale’s target is to reduce our projected 2020 overall greenhouse gas emissions by 5%;

• We are investing in energy efficiency, technological innovation and renewable energy sources (20% of our energy supplies come from these sources).

• In 2014 Vale invested US$ 1.1 billion in social projects (24%) and environmental preservation actions (76%).

You are invited to visit VALE’s 2014 SUSTAINABILITY REPORT at:

http://www.vale.com/EN/aboutvale/sustainability/Pages/default.aspx
Vale. For a world with new values.