THE WORLD COPPER MARKET AND THE IMPACT IN CHILEAN ECONOMY

Sergio Hernández
EVP– Chilean Copper Commission

May 17th, 2016
Agenda

- Economic context and mining investment
- Quarterly copper market
- Impact on Chilean mining activity
Agenda

- Economic context and mining investment
Economic context and mining investment

Latest news for mineral commodities

Oil Price Falls as Global Growth Anxiety Weighs on Markets

Mining Ready for M&A Revival, Producers Fight for Survival

Glencore seeks to refinance credit facility

IMF Cuts 2016 Global Economic Growth Outlook to 3.2%

WSJ Survey: Most Economists Expect Next Fed Rate Increase in June

As Dollar Falls, World Perks Up

Fed's change of heart, rally in commodities appears to mark bottom for global economy
Economic context and mining investment

And copper is not an exemption

COCHILCO’s copper price forecast

Source: COCHILCO, CRU Copper Monitor

Mining Ministry | COCHILCO
Economic context and mining investment

Supply reaction didn’t wait...

Production cut or closure
Investment delay or change
Asset sales

Source: COCHILCO, CRU Copper Monitor, Companies press releases
Mining Ministry | COCHILCO
Economic context and mining investment

Copper mining costs

Source: Wood Mackenzie 2015

C1 Ranking Top Producers

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<thead>
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<tbody>
<tr>
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<td>6°</td>
<td>13°</td>
<td>17°</td>
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<td>Peru</td>
<td>12°</td>
<td>3°</td>
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<td>Australia</td>
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<td>1°</td>
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Source: Wood Mackenzie 2015

Mining Ministry | COCHILCO
Agenda

- Quaterly copper market
Quaterly copper market

Latests price trends

Average anual copper price 214.3 c/lb

Source: LME

Mining Ministry | COCHILCO
Quaterly copper market

World refined copper consumption

**CONSUMPTION GROWTH RATE 2015**

- China: 1,3%
- USA: 1,4%
- Europe: -2,9%
- Japan: -7,4%
- Russia: 4,3%
- Others: -0,3%
- World: -47,9%

**CONSUMPTION GROWTH RATE JAN 2015 VS. JAN 2016**

- China: 22%
- USA: -15%
- Europe: -4%
- Japan: -12%
- Russia: 3%
- Others: 6%
- World: -75%

**CHINA: CHANGE IN ANNUAL COPPER CONSUMPTION RATE**

- June-14: 24%
- July-14: 35%
- August-14: 37%
- September-14: 11%
- October-14: 15%
- November-14: 0%
- December-14: 18%
- January-15: 3%
- February-15: 12%
- March-15: 9%
- April-15: 14%
- May-15: -5%
- June-15: 2%
- July-15: 4%
- August-15: 3%
- September-15: 0%
- October-15: 3%
- November-15: 3%
- December-15: 1%
- January-16: 8%
- February-16: 3%
- March-16: 22%

Source: WMS
Quaterly copper market

Copper mine supply

2015: Mine production growth rate

<table>
<thead>
<tr>
<th>Country</th>
<th>Growth Rate</th>
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<tbody>
<tr>
<td>Chile</td>
<td>0.3%</td>
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<tr>
<td>China</td>
<td>2.3%</td>
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<tr>
<td>USA</td>
<td>-0.7%</td>
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<tr>
<td>Peru</td>
<td>23.6%</td>
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<tr>
<td>Congo DR</td>
<td>4.4%</td>
</tr>
<tr>
<td>Australia</td>
<td>-0.9%</td>
</tr>
<tr>
<td>World</td>
<td>4.3%</td>
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</table>

Source: WMS
Quaterly copper market

COCHILCO’s forecast: demand

<table>
<thead>
<tr>
<th>Country</th>
<th>2015 p</th>
<th>2016 F</th>
<th>2017 F</th>
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<td>KTMF</td>
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<td>DIFF.</td>
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<tr>
<td>China</td>
<td>11.451</td>
<td>11.737</td>
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<tr>
<td>USA</td>
<td>1.792</td>
<td>1.810</td>
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<tr>
<td>Europe</td>
<td>3.330</td>
<td>3.370</td>
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<tr>
<td>World</td>
<td>22.736</td>
<td>23.151</td>
<td>415</td>
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Source: COCHILCO
Quaterly copper market

COCHILCO’s forecast: supply

Change in copper mine production
jan Vs mar 2016 (000’ tonnes)

<table>
<thead>
<tr>
<th>Year</th>
<th>January</th>
<th>March</th>
</tr>
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<tr>
<td>2016 E</td>
<td>19.955</td>
<td>20.250</td>
</tr>
<tr>
<td>2017 E</td>
<td>20.542</td>
<td>20.846</td>
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Copper mine production (000’ tonnes)

<table>
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<tr>
<th>Year</th>
<th>2015</th>
<th>2016 f</th>
<th>2017 f</th>
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Source: COCHILCO
Quaterly copper market

COCHILCO’s forecast: copper price

COPPER PRICE FORECAST
2016-2017
C/LB

2015  5,494
2016 f  4,740
2017 f  4,850

COPPER PRICE FORECAST
2016-2017
US$/TON

2015  5,494
2016 f  4,740
2017 f  4,850

Source: COCHILCO
Agenda

- Impact on Chilean mining activity
Impact on Chilean mining activity

Chilean copper mining portfolio 2016

**Under review**
- **Pascua** (Gold, mill US$ 4.500)
- **El Abra Mill** (Cu, mill US$ 5.000)
- **Relincho** (Cu, mill US$ 4.500)
- **Andina 244** (Cul, mill US$ 6.524)

**Budget constraints**
- **Quebrada Blanca Hipógeno** (Cu, mill US$ 5.000 (-mill US$ 590))
- **Marginal Expansion Los Pelambres** (Cu, mill US$ 1.600 (+ mill US$ 410))
- **Arbiodo** (Ind. Min., mill US$ 396 (- mill US$ 107))

**New**
- **Orcoma** (Min. Ind., mill US$ 230)
- **Expansion Molynor** (Met. Plants, mill US$ 240)

*Source: COCHILCO*
Impact on Chilean mining activity

Investment by condition

Low investment probability

**POTENTIAL:** 15,3%

- mill US$ 7,691;
- 2 projects

**POSSIBLE:** 34,4%

- mill US$ 17,235;
- 12 projects

High investment probability

**BASE:** 30,5%

- mill US$ 15,269;
- 11 projects

**PROBABLE:** 19,8%

- mill US$ 9,915;
- 10 projects

Source: COCHILCO

Mining Ministry | COCHILCO
Impact on Chilean mining activity

Investment condition

**Greenfield**
- MMUS$ 17,620
- 16 proyectos

**Brownfield**
- MMUS$ 32,490
- 19 proyectos

Source: COCHILCO
Impact on Chilean mining activity

Copper projects by processing type

Copper

Mill US$ 44,084
23 projects

81.9%
14 projects

15.1%
5 projects

3%
4 projects

0%
0 projects

Source: COCHILCO
Impact on Chilean mining activity
What should we expect from...?

- **Chilean copper production:**
  
  Chilean copper production could reduce its potential to produce 6.0 million tonnes at current prices. Around 50% of total production has costs (C3) under 200 c/lb.

- **Copper price:**


- **Chilean mining investment:**

  Several projects are under review given market conditions, but 50% of mining investment projects in Chile have a good probability of being developed. Most of copper production will come from brownfield milling projects, given natural depletion of leaching deposits.
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