Overview

- Introduction
- Current scenario
- Consumption – forecast
- Supply – challenges
- Final comments
Introduction
ABAL
Brazilian Aluminum Association

KEY OBJECTIVES:

- PROMOTE ALUMINUM IMAGE
- ENCOURAGE NEW APPLICATION
- INCENTIVATE INDUSTRY COMPETITIVENESS
- PROMOTE HIGH STANDARDS HEALTH / SAFETY / ENVIRONMENT
- PUBLISH INDUSTRY STATISTICS
- RESPONSIBLE TO ISSUE TECHNICAL STANDARDS
- REPRESENT INDUSTRY AT GOVERNMENT LEVELS

62 companies associated 2011

Foundation - 1970
Main actions - 2011

- **COMPETITIVENESS**
  - Energy
  - Imports

- **MARKET DEVELOPMENT**
  - Transports
  - Building & Construction

- **ENVIRONMENT**
  - Climate change
  - National Policy – Residues destination
## Brazilian Aluminum Industry
### Socioeconomic Profile

<table>
<thead>
<tr>
<th>Metric</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jobs (direct, indirect and recycling)</td>
<td>384,000</td>
</tr>
<tr>
<td>Revenue (US$ billion)</td>
<td>14.7</td>
</tr>
<tr>
<td>Paid taxes (US$ billion)</td>
<td>2.8</td>
</tr>
<tr>
<td>Investments (US$ billion)</td>
<td>1.4</td>
</tr>
<tr>
<td>Primary aluminum production (thousand ton)</td>
<td>1,536</td>
</tr>
<tr>
<td>Domestic consumption (thousand ton)</td>
<td>1,300</td>
</tr>
<tr>
<td>Per capita Consumption (kg/inhab/year)</td>
<td>6.7</td>
</tr>
<tr>
<td>Trade balance (US$ million)</td>
<td></td>
</tr>
<tr>
<td>- Exports</td>
<td>3,930</td>
</tr>
<tr>
<td>- Imports</td>
<td>1,176</td>
</tr>
<tr>
<td>- Balance</td>
<td>2,754</td>
</tr>
<tr>
<td>Share of aluminum industry in the total Brazilian exports (%)</td>
<td>1.9</td>
</tr>
</tbody>
</table>

Source: ABAL 2010
Aluminum consumption per capita

kg/ inhabitant/ year

2009

Canada: 25.6
USA: 22.0
Japan: 18.8
EU: 17.5
China: 12.2
Mexico: 8.5
Venezuela: 7.1
Brazil 2010: 6.7
Argentina: 4.2

Source – ABAL – Yearbook 2010
Brazil has “vocation” to produce primary aluminum

- Huge bauxite reserves – Amazon region
  - 3rd. biggest reserve in the world

- High potential for hydro-electricity
Bauxite reserves - worldwide

Total 2009 = 28 billions tons

Australia (5.4)
Brasil (3.5)
Guinea (7.4)
Jamaica (2.0)
Guiana (0.9)
Suriname (0.6)
China (0.8)
India (0.9)
Vietnam (2.1)
Guyana (0.9)
Suriname (0.6)

Bauxite reserves (US Geological Survey – Jan 2011)
Hydro electricity - Potential

GW - Average

Source: ANEEL – National Agency of Electric Energy
Source of electricity – Brazil

Source: ANEEL – National Agency of Electric Energy
Current scenario
Primary production - history

Source: ABAL
<table>
<thead>
<tr>
<th>Company</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bauxite</td>
</tr>
<tr>
<td>Mineração Rio do Norte</td>
<td>X</td>
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<tr>
<td>Norsk Hydro</td>
<td></td>
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<tr>
<td><strong>Alunorte</strong></td>
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<tr>
<td>Albras</td>
<td></td>
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<tr>
<td>Alumar</td>
<td></td>
</tr>
<tr>
<td>Alcoa</td>
<td>X</td>
</tr>
<tr>
<td>VMetais – CBA</td>
<td>X</td>
</tr>
<tr>
<td>Novelis</td>
<td></td>
</tr>
</tbody>
</table>
Brazil – world scenario

BAUXITE
World Production – 2010 (215.5 million tons)

40.0 million tons in 2016
(expansion Norsk Hydro – Paragominas)

Source: World Metal Statistics – November 2011
Brazil – world scenario

ALUMINA
World Production – 2009 (76.8 million tons)

13.0 million tons in 2016
(expansions Alunorte, Alumar and new plant Norsk Hydro)

Brazil – world scenario

Source: World Metal Statistics – November 2011
Primary aluminum production
Brazil

2010

- Albras = Norsk Hydro 51% - NAAC 49%
- Alumar = Alcoa 60% - BHP Billiton 40%
- VMetais CBA = Brazilian Co. 100%

Source: ABAL Yearbook 2010
Domestic consumption - 2010

Total = 1,300 kton

- Packaging: 30%
- Transports: 22%
- Building & Construction: 14%
- Electrical: 9%
- Consumer durable: 11%
- Machinery: 5%
- Others: 9%

Source: ABAL Yearbook 2010
Aluminum consumption Forecast
Aluminum consumption - forecast

Premises

- Brazilian GDP (Gross Domestic Products) is growing 5.2% per year, above the average GDP world growing
  - Investments in infra-structure
  - Better conditions in the country’s macroeconomic
  - Per capita purchase power increasing in the period
  - Historically the growing of aluminum consumption is higher than the GDP
  - Opportunities in the Building & Construction sector
    - Lack of habitation/ special government programs
  - Important sports events to be held in Brazil (Soccer World Cup 2014 and Olympic games 2016)
GDP – growing until 2020

Average 3,5%

Source: ABAL
Aluminum consumption

• Growing until 2020
  – Scenario 1
    • GDP 3.5% py
    • Aluminum consumption = 6.6% py
  – Scenario 2
    • GDP 5.2% py
    • Aluminum consumption = 9.1% py
Supply - Challenges
Supply & Demand

Supply: scenario 1 (9.1% a.a.)
Demand: scenario 2 (6.6% a.a.)

Source: Getulio Vargas Foundation – ABAL - 2010
Supply

• Shut down of Valesul and Novelis Aratu (150 ktons)
  – Energy cost
• There are no investments announced for greenfield smelters in medium term
• Possible expansion of VMetais - CBA (100 ktons) – brownfield
• Rio Tinto Alcan studying an smelter for 700 ktons/ year in Paraguay
  – Raw material from Brazil
  – Energy from Itaipu (huge hydropower)
    • 50% Brazil and 50% Paraguay
Hydro electricity - self generation

- Only for aluminum industry
- Forecast - investments US$ 4.6 billions for 14 hydropower station including US$ 2.4 billions of the Aluminum Industry
Supply & Demand

Supply – based only on electricity from self generation

- PRIMARY ALUMINUM
- PRIMARY ALUMINUM + SCRAP
- DOMESTIC CONSUMPTION (SCENARIO 8,9% p.y)

2012 Demand in equilibrium with supply

Fonte: ABAL
Final comments
Final comments

• The domestic consumption in Brazil will grow at least 6.0 % per year, following the increasing of GDP, in next 8 years.

• If the Government establish a Industrial Policy for aluminum to be competitive, mainly in terms of energy cost, all aluminum chain will be positively affected
  – Investments in greenfield smelters/ brownfield expansions
  – Investments in down stream semi-manufacturing operations .
Final comments

• If the energy price remains in the current levels, Brazil will import primary metal to supply the growing of downstream operations.

• The main concern, and the worst scenario – the imports will be as semi-manufactured products or even final products instead of primary metal.
MORE INFORMATION FOR THE PRELIMINARY PROGRAM
AND OTHER DETAILS, IN THE SITE

www.exporealuminio.com.br