The Global Aluminium Market
An Overview

Trinidad, Dec 6, 2006
Colin Pratt
Aluminium Industry Overview

- Some Basic Facts
- Why Trinidad
- Why Now
- Who’s Who in the Industry
- What’s in it for Trinidad
How Big is it?
Aluminium is the largest of the non-ferrous metals in Global consumption, and second to copper in value.
But one tenth the size of the Steel industry in value (Logarithmic scale)
Where is Aluminium Consumed?
China - over one third of global consumption by 2030

2005
- China: 22%
- Europe/EEA: 23%
- North America: 22%
- Japan: 8%
- Other: 5%

Sectors: EU/EEA, Latin America, India, South & East Asia

Total = 31.9m tonnes

2030
- China: 35%
- EU/EEA: 22%
- North America: 14%
- Japan: 4%

Sectors: Latin America, South & East Asia, CIS and Other Europe, India

Total = 73.7m tonnes
What is aluminium used for?
Global semis consumption by end-use, 2005

- Transport: 31%
- Construction: 19%
- Packaging: 10%
- Foil stock: 8%
- Electrical: 10%
- Consumer durables: 6%
- Machinery & equipment: 9%
- Other: 7%

Total = 44.6m tonnes

Transport sector is single largest market for aluminium semis – representing significant proportions of castings, frps and extrusions.

Construction is the next largest sector for aluminium – and is very important for extrusion demand.

Virtually all packaging demand is in the form of sheet, as is of course, foil stock.

Most wire and cable goes to the electrical sector.

Data: CRU
World primary aluminium consumption: Historical Growth

- **China**: 4.2%/year
- **CIS & E.Europe**: 3.0%/year
- **Western world Consumption**: 0.8%/year
- **Yearly Growth Rates**

- **1950-1954**: 9.3%/year
- **1958-1962**: 2.4%/year
- **1974-1978**: 3.0%/year
- **1982-1986**: 0.8%/year
Long term smelter capacity requirement

- Additional investment required
- Projected capacity
- Required capacity

Million tonnes

- 2000
- 2005
- 2010
- 2015
- 2020
- 2025
- 2030
The global aluminium loop

Bauxite

Metallurgical alumina

Non-metallurgical alumina

Primary aluminium
33m

Primary for secondary
0.8m

New scrap

Direct use of scrap

Recycled aluminium
13m

Secondary aluminium

Old scrap

End of life recycling

Semi-fabricated aluminium
46m

Data: CRU, tonnes

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Power use intensity by industry

(kWh/tonne)

- Chlor-alkali
- Calcium carbide
- Ferrochrome
- Zinc
- Silicomanganese
- Refined nickel
- Sodium chlorate
- Silicon carbide
- Ferrosilicon
- Silicon metal
- Aluminium

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000
Attractive locations for power-intensive industries
World primary aluminium capacity 2006-2010

- 2006 regional capacity mtpy
- 2010 regional capacity mtpy

- World capacity 2006-2010 (million tonnes)
Why Trinidad - Summary

- Availability of power supplies at competitive cost
- Well placed to export to North America and Europe, both of which have increasing import requirements
- Well placed for alumina supplies from Jamaica or Venezuela
- Stable business environment
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Aluminium attractor price 1981-2030 (2006 $/t)

Data: CRU
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The Industry has been consolidating, but also undergoing vertical de-integration

“Old” World

Diversified companies focused upstream
Rio Tinto, BHP Billiton

Aluminium companies focused upstream
Alcan

Independent primary smelters
Alba, Dubal, Chinese smelters

Integrated aluminium companies
Alcoa, Hydro, AMAG

“New” World

CVRD, CVG, Vedanta

Rusal-Sual, Chalco, Nalco

Chinese smelters

Aluar, CBA

Downstream aluminium companies
Novelis, Orkla, Aleris
Corus, Sumitomo, Kobe

Elval, Sural
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What’s in it for Trinidad?

• **Positives**
  - Monetising Energy for Development
  - Employment (primary and secondary)
  - Potential spinoffs
    - Services
    - Downstream industry
  - Economic Diversification

• **Negatives**
  - Environmental Impacts
    - SPL
    - Emissions to air
    - CO2
    - Land use
The aluminum industry is really three different businesses, with different sources of competitive advantage.
Comparable Experiences – where aluminium smelters have been located

- **Mozambique** – Minimizing environmental impacts and encouraging spinoff impacts – Sustainable development focus
- **Bahrain** – Based on low cost gas, but has maximised services and downstream spinoffs
- **Dubai** – Also gas based, industrial development co-exists with tourism in a small country. Not much downstream activity
- **Qatar** – Massive gas reserves, primarily pursuing LNG expansion, but also industrial development (including proposed smelter)
- **Norway** – Large gas reserves and small population – gas has highest value in European market. Norway has developed oil services expertise
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