Outlook for Aluminium

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22 August 2007

THE MELBOURNE MINING CLUB

Aluminium Industry Dynamics

- Rapid growth in global consumption
- China – self sufficiency accelerating
- Brazil, India, Russia – consumption growing
- New capacity growth – capital cost escalation
- Energy – higher long term costs, plus carbon
- Alumina and aluminium cost curves have moved up
- Outlook for long term prices
- Bauxite supply capacity – now stretched
- Industry consolidation – continuing

Aluminium Industry Dynamics

The massive escalation in prices, as well as costs of building new capacity, has rendered previous assumptions about long run prices embarrassingly redundant. The mining industry (and the investment banking community) is floundering with respect to what the appropriate basis to forecast long run prices should be

Macquarie Commodities Research – August 2007

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Aluminium Production Cycle

Bauxite

4-5 tonnes

Refining

Alumina

2 tonnes

Smelting

Aluminium

1 tonne

Manufacturing

End-use Products

Recycling

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Why Aluminium?

- **Mechanical Properties**: light, easy to form, machine and cast, high strength alloys
- **Conductivity**: high thermal and electrical conductivity
- **Corrosion Resistance**: most alloys very corrosion resistant
- **Decorative**: silvery white and reflective
- **Impermeable and Odourless**: packaging food and pharmaceuticals
- **Recyclable**: 100%, no properties lost, energy 5%

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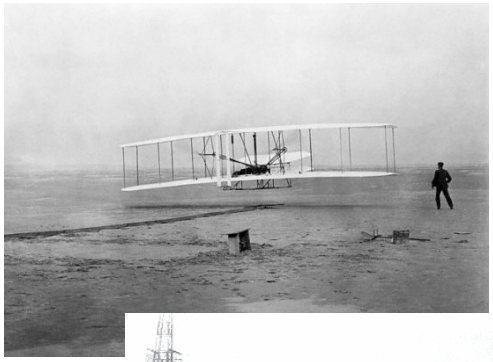
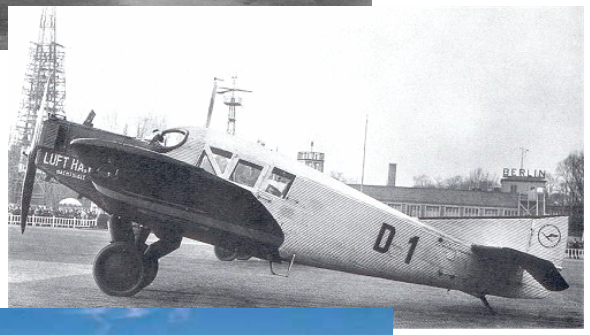
Aluminium & Aerospace: strong growth

- 1903 Wright Brothers' Flyer: aluminium engine
- 1920 Junkers F13: first all-aluminum airplane
- 1990 Space Shuttle: aluminium components
- 2006 Airbus 380 65% aluminium (175mt)
- 2024: World fleet will more than double





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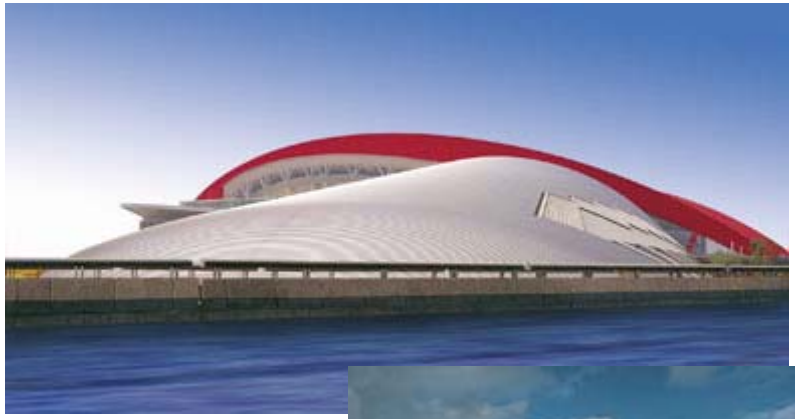
Aluminium & Architecture: strong growth

- Attractive, light and strong
- Low maintenance
- Innovative assembly methods
- Long service life
- Easy to recycle construction scrap and end of life



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Aluminium & Land Transport: strong growth

- Aluminium content in autos doubled in 10 years now ~120kg
- Aluminium lightweighting saves energy and emissions in auto, rail, aerospace, etc

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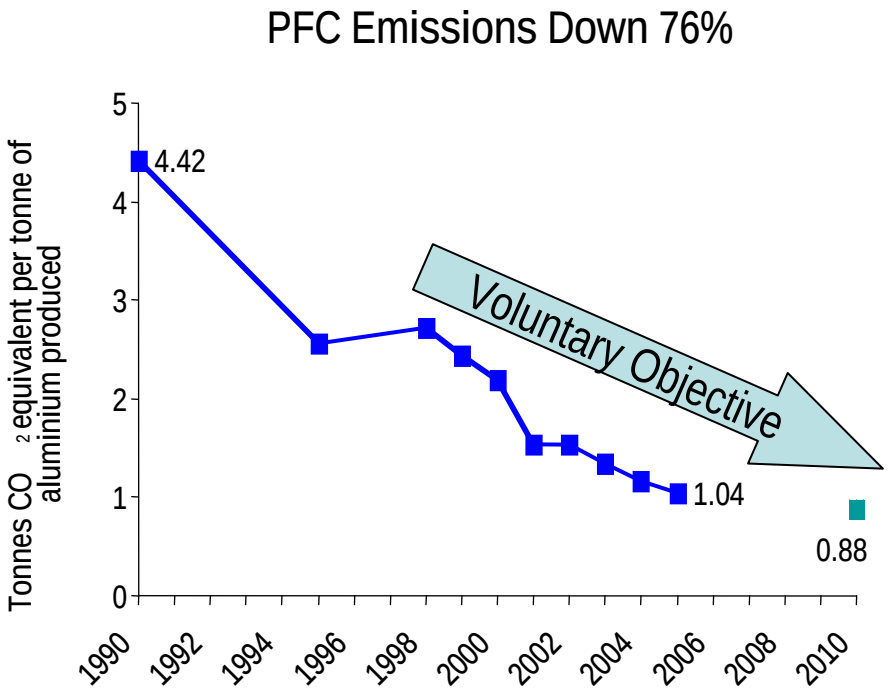
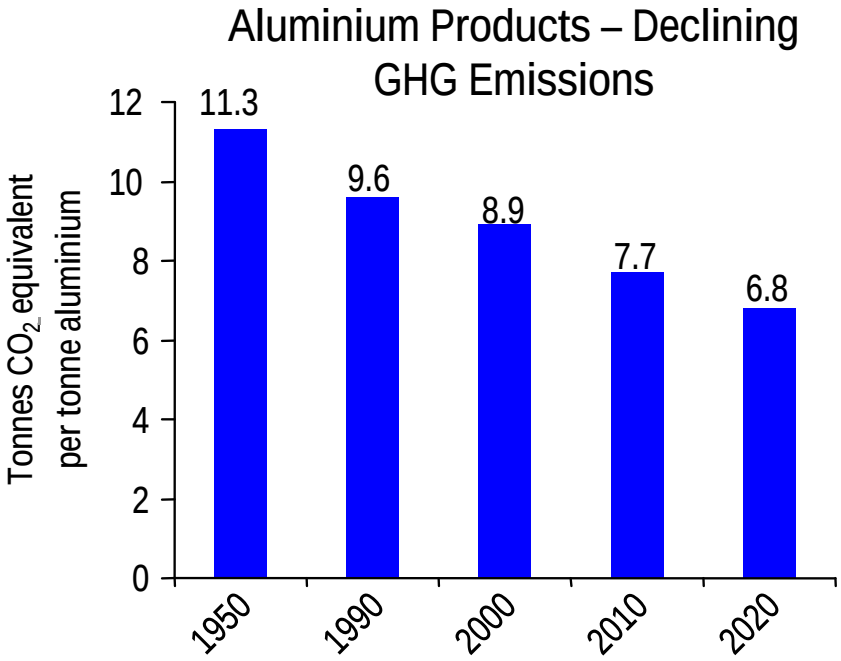
Aluminium & GHG Emissions



Source: IAI

- Target – 80% reduction from 1990 levels



GHG intensity of aluminium shipments - Source: IAI

- Lower emissions from smelters
- Improved energy efficiency
- Increased use of recycled metal

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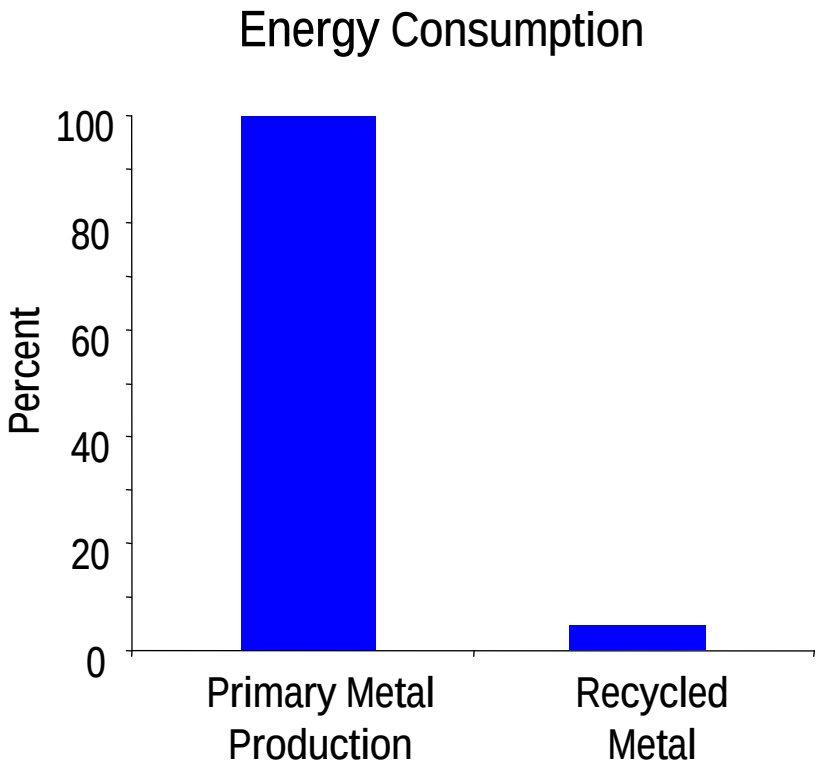
Recycling aluminium conserves energy



- Recycling aluminium uses ≈ 95% less energy than primary aluminium production
- Recycling aluminium saves an estimated 84 million tonnes of GHG per year

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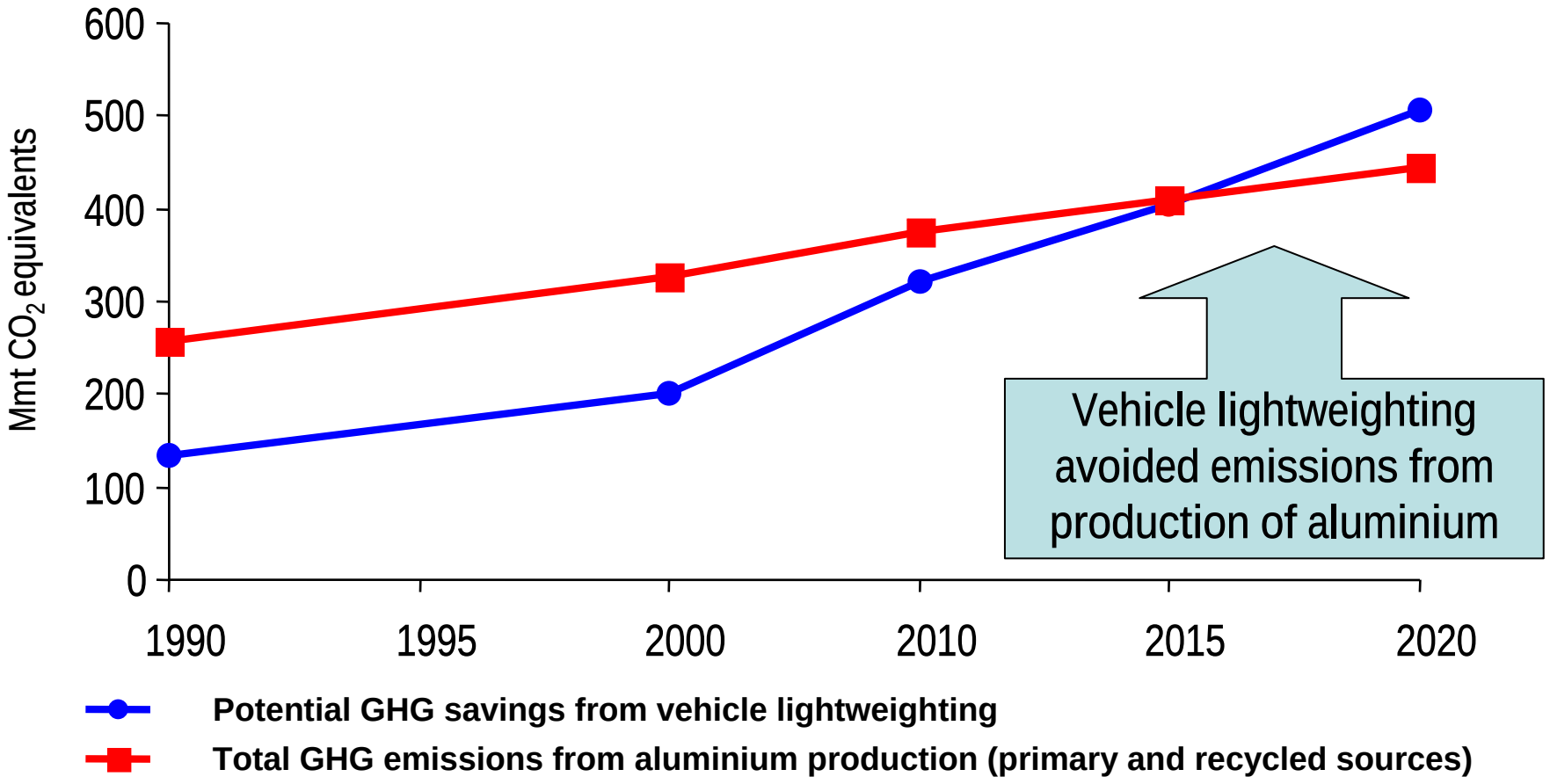
Vehicle lightweighting – emissions reductions offset primary aluminium emissions



Source: IAI

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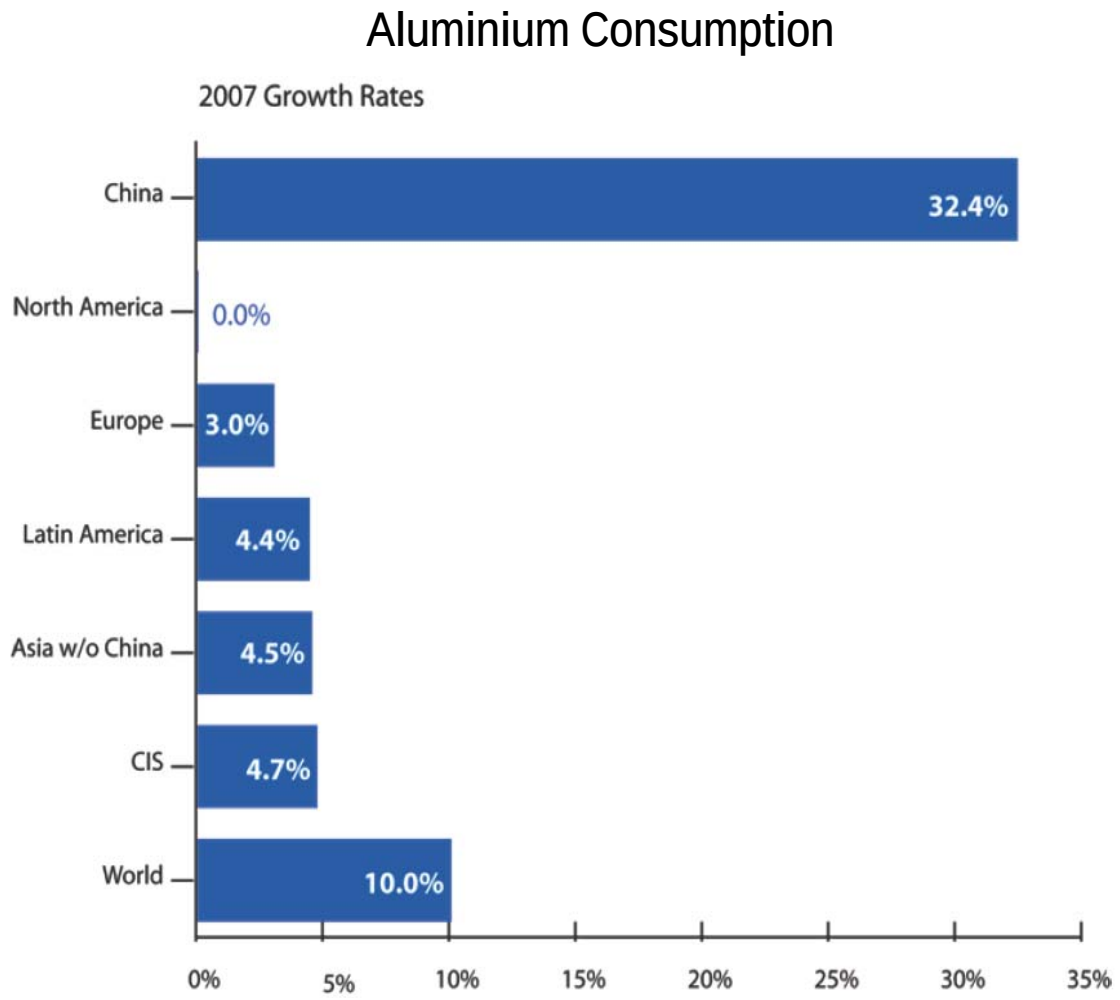
Demand growth – more than just China



Source: Alcoa, June 2007

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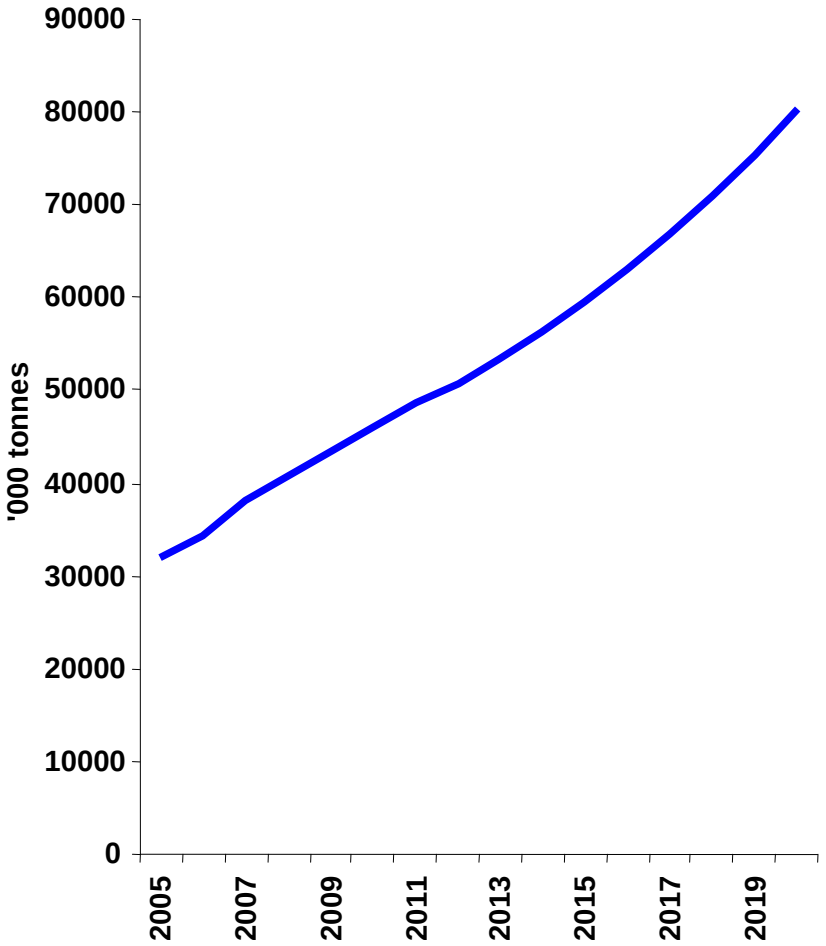
Global Aluminium Demand – forecast to double by 2020



Source: WBMS, Macquarie Research, July 2007

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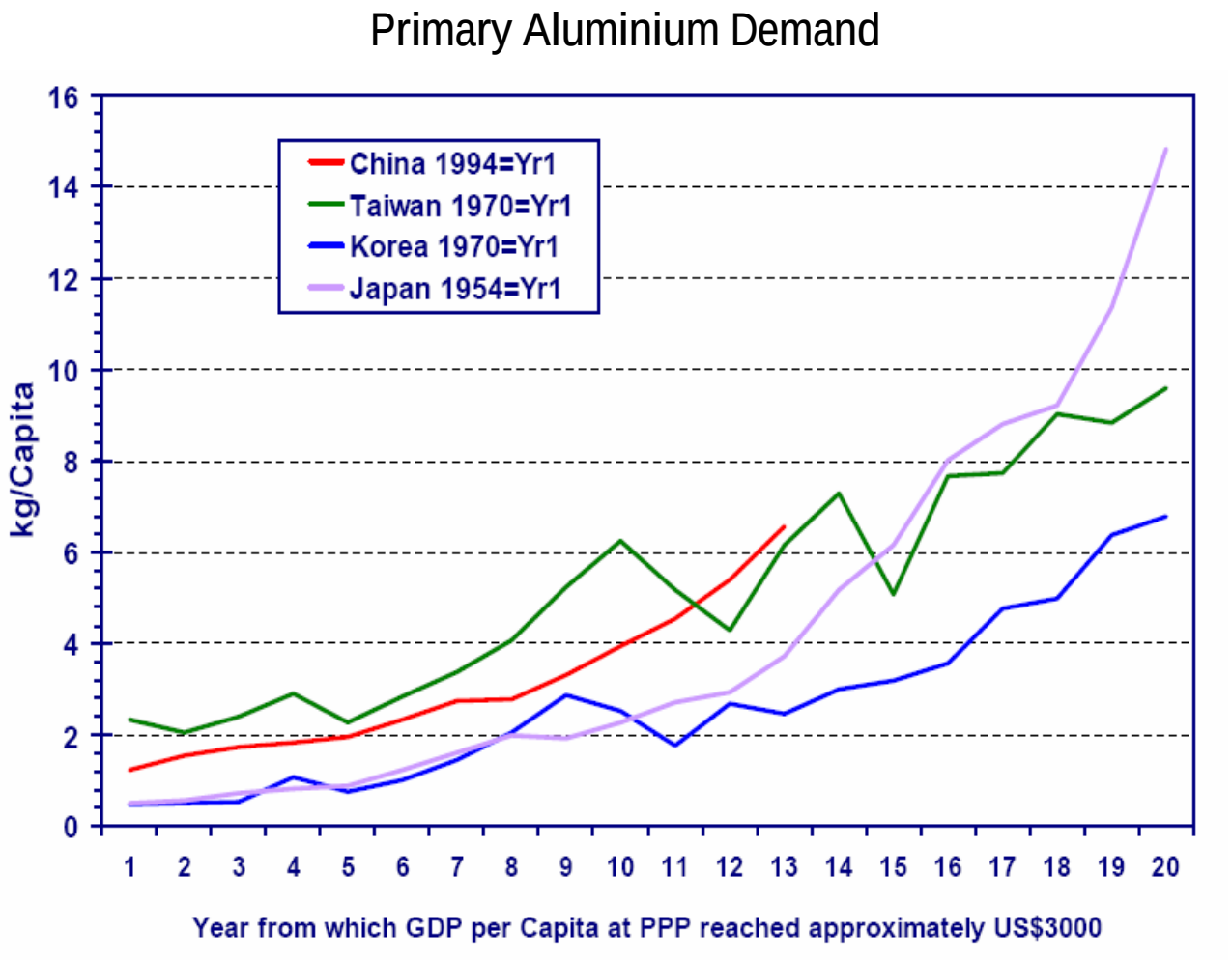
China – on an established development path



Source: Alcan, February 2007

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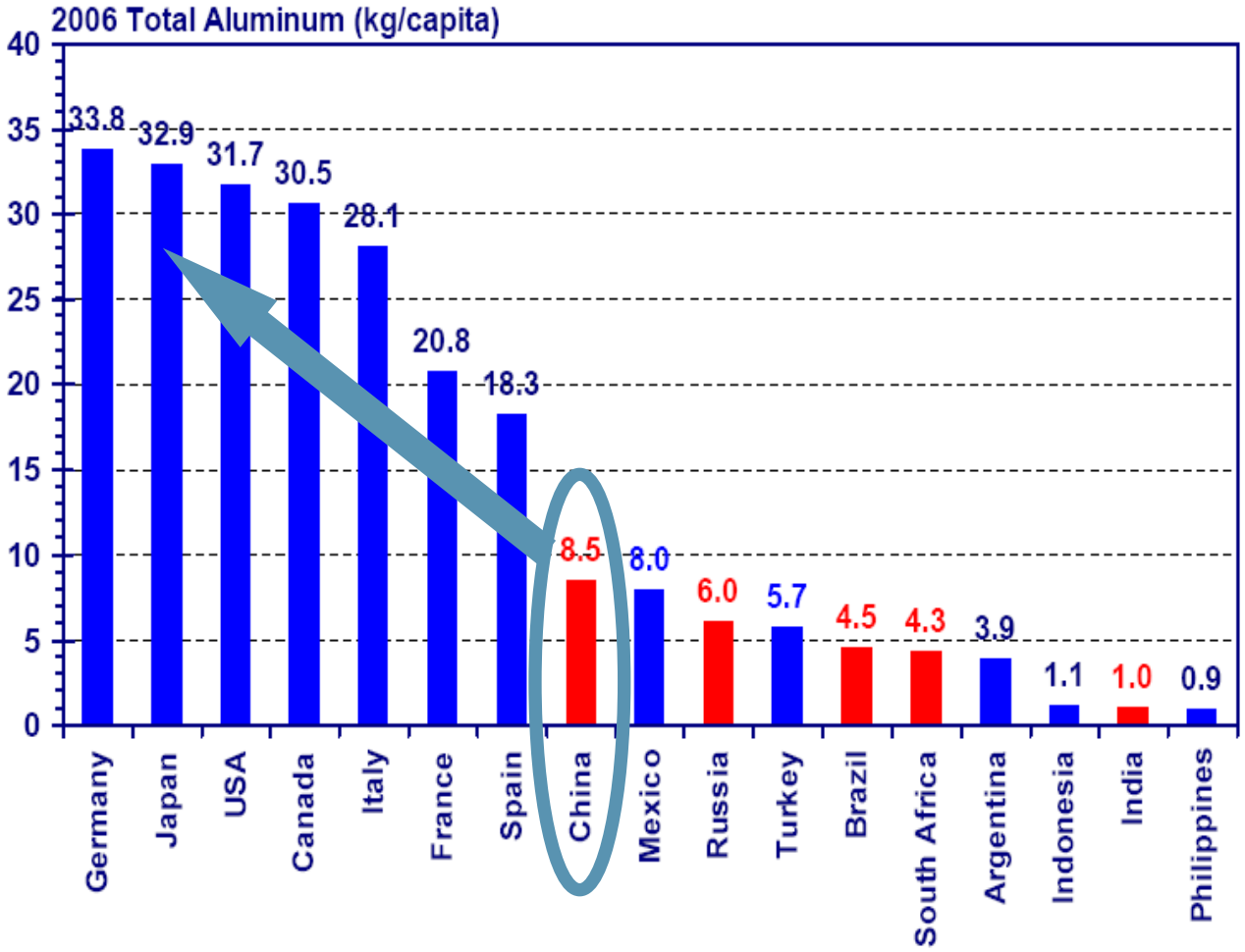
China growth potential



Source Data: Alcan, February 2007

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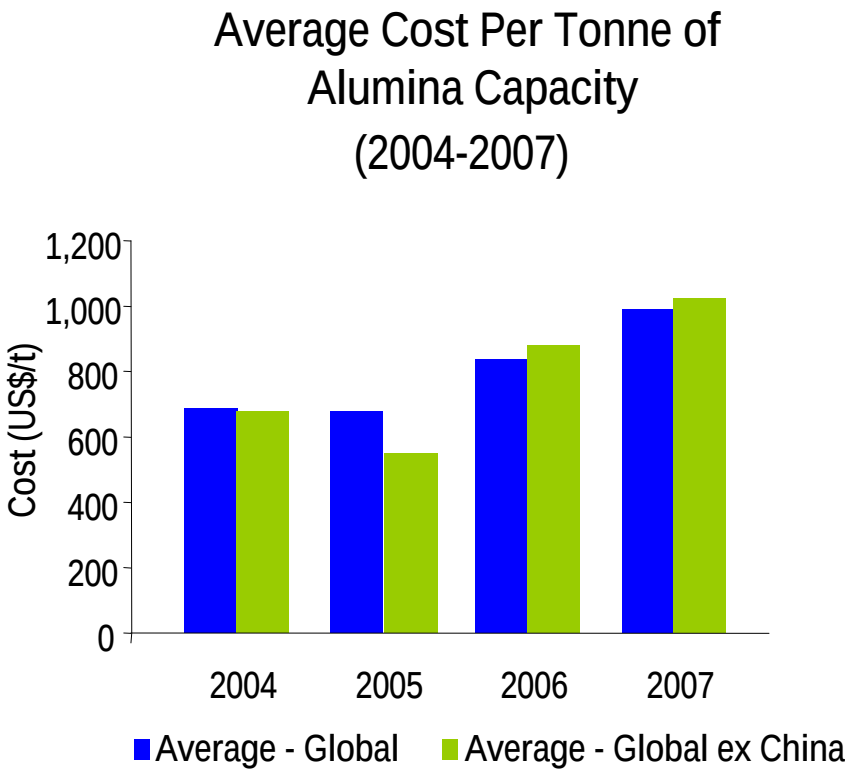
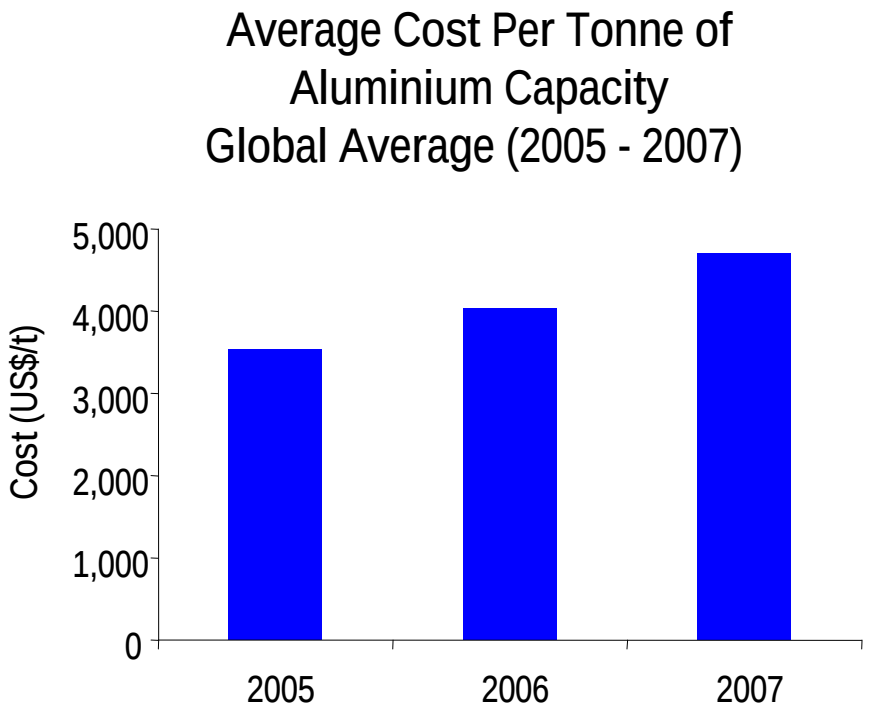
Rising costs of new capacity





Source: Industry Periodicals

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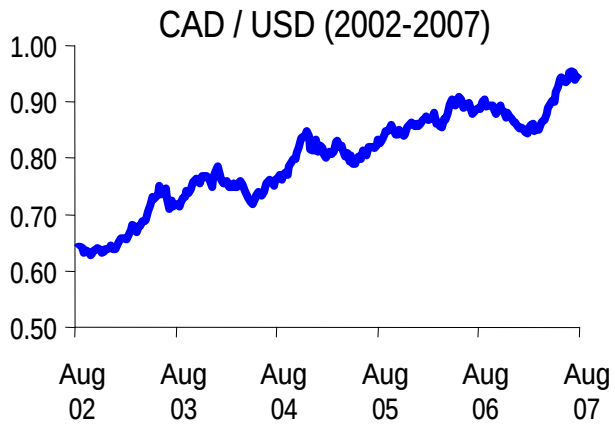
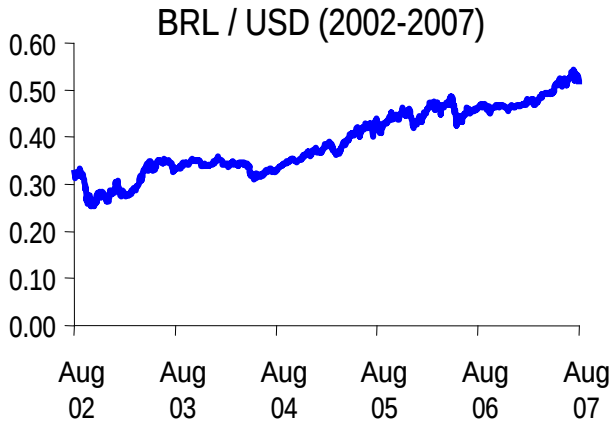
A new world order on energy

- Increasing impact of CO_2e
- Lifting the cost curve for alumina/aluminium
- Smelters migrating to stranded power sources
- Aluminium in demand for lightweighting

AUD, CAD and BRL – stronger against USD





Source: Bloomberg, IRESS

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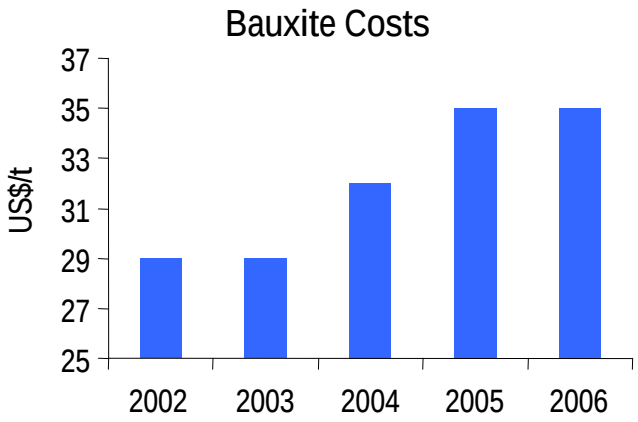
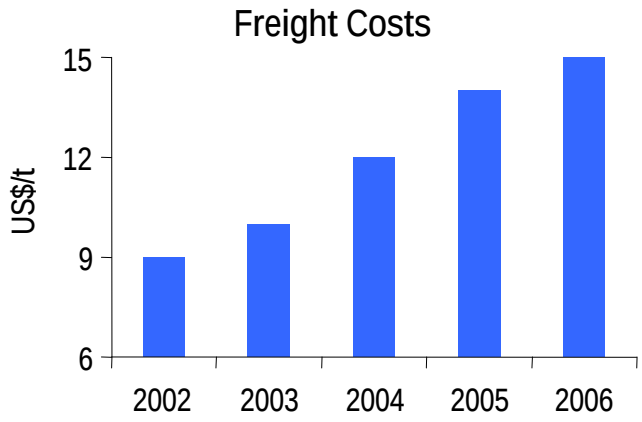
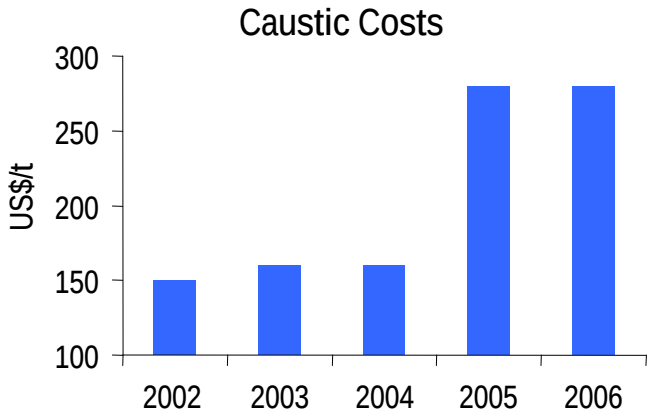
Alumina refinery input costs







Source: Brook Hunt

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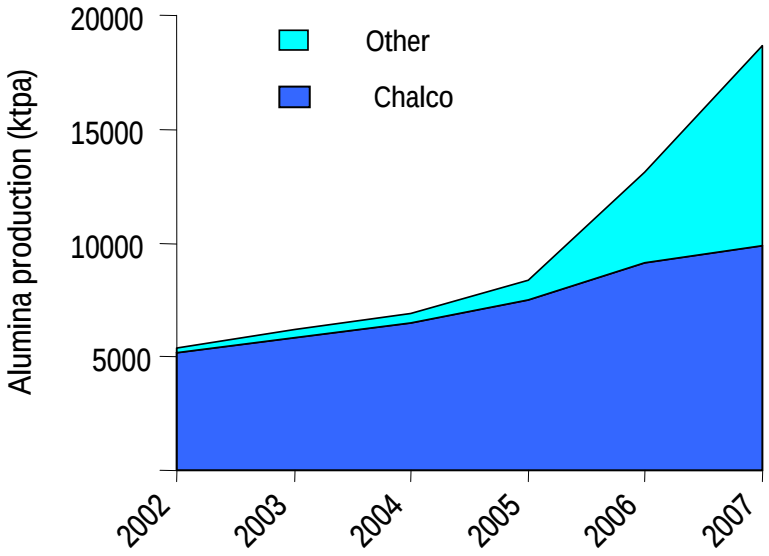
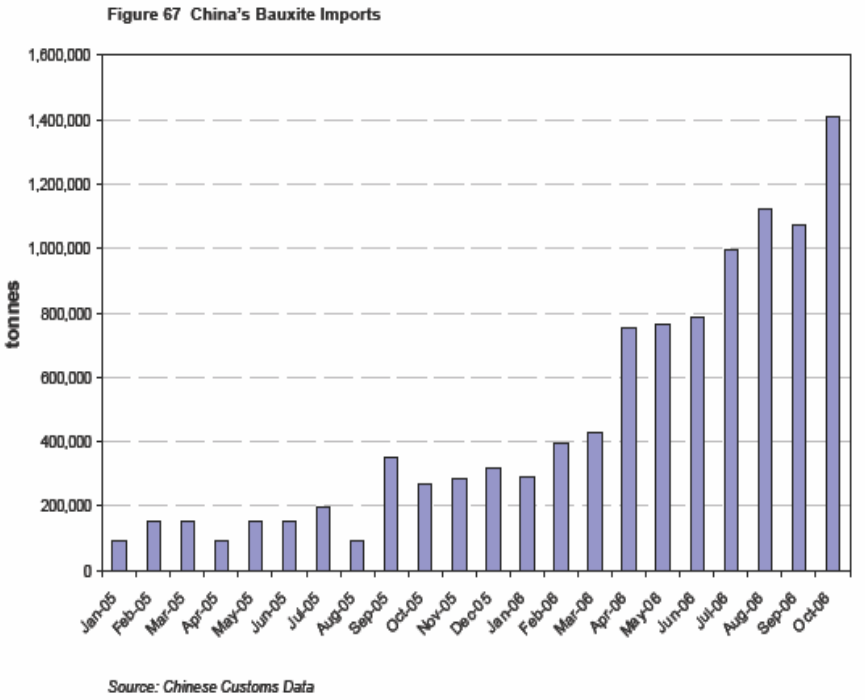
China demand driving tighter bauxite market

China's Alumina Production



Source: Brook Hunt

China's Bauxite Imports



Source: Chinese Customs Data

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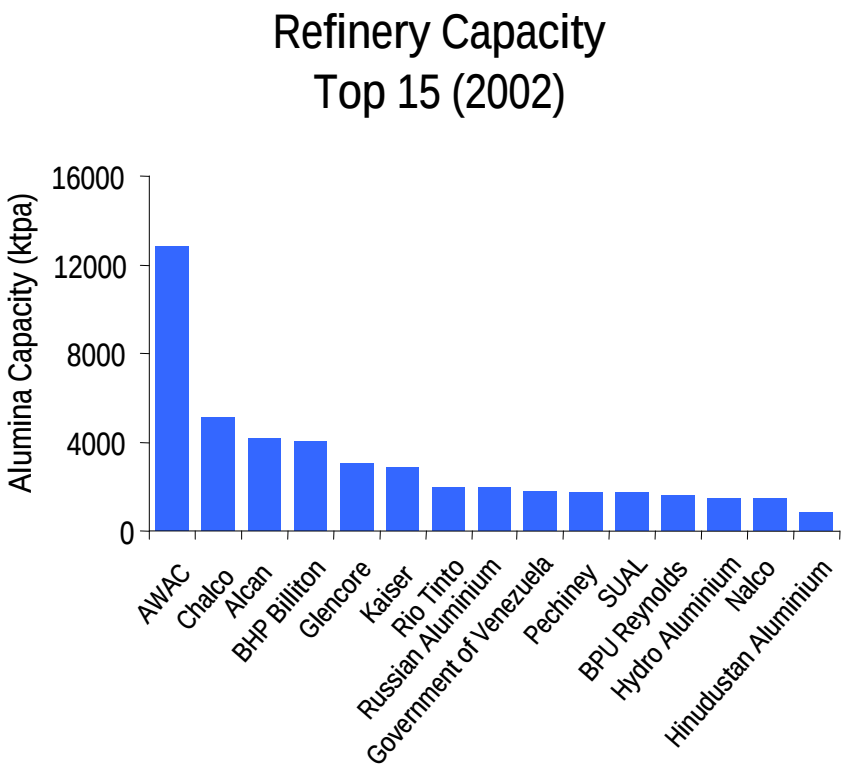
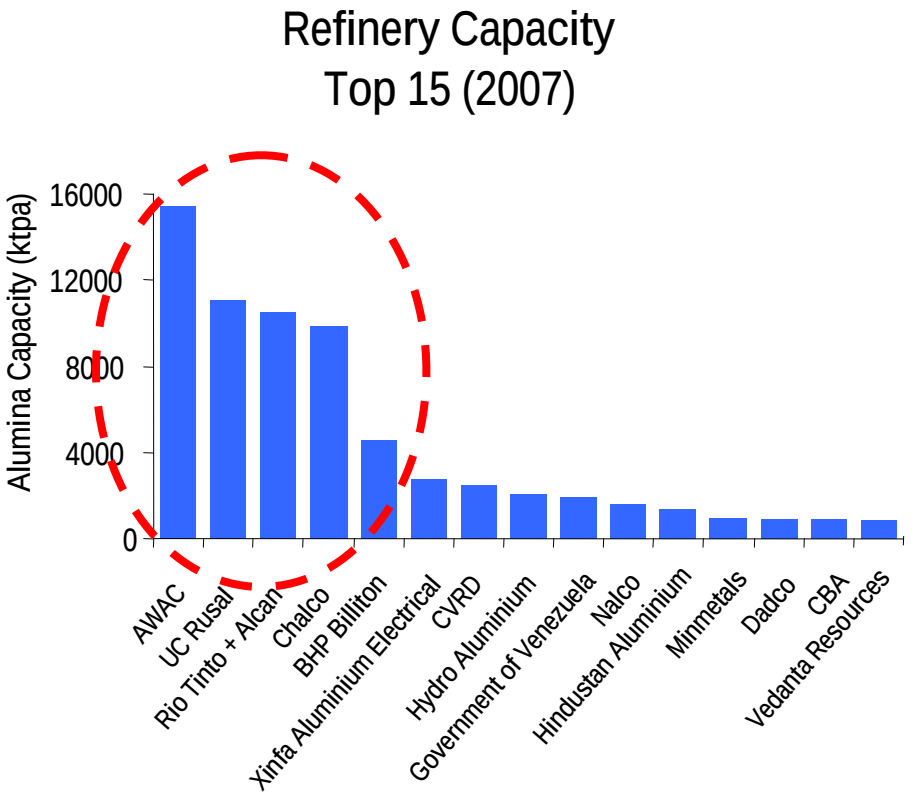
Higher long term aluminium prices

- Driven by a new cost environment
  - Higher raw material costs
  - Increasing energy prices
  - Currency appreciation
  - Construction cost escalation
  - Supply chain constraints
  - High cost marginal production capacity
- Support a high price environment

Alumina refinery capacity consolidating





Source: Brook Hunt;

* UC Rusal refinery assets include Sual, Rusal and Glencore

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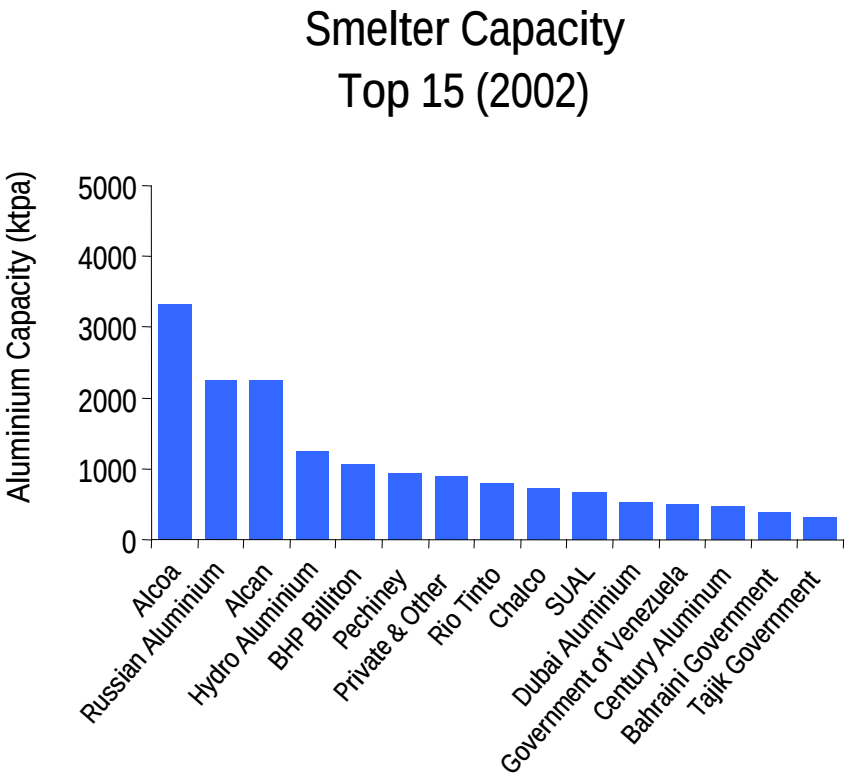
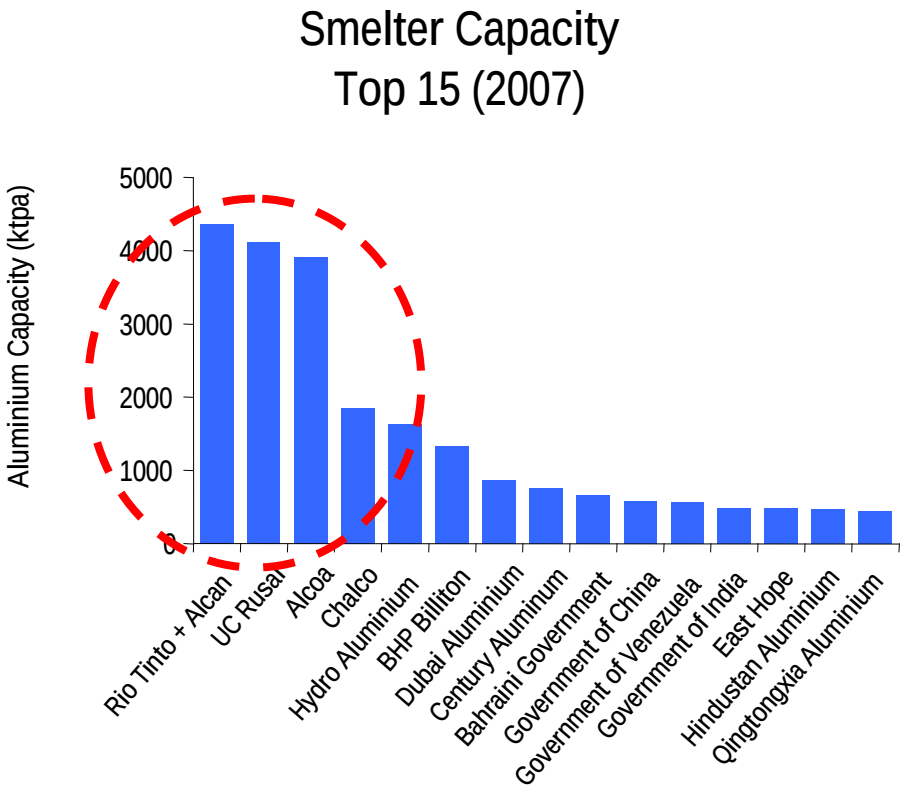
Consolidation in smelting continues





Source: Brook Hunt;

** UC Rusal smelter assets include Sual and Rusal assets*

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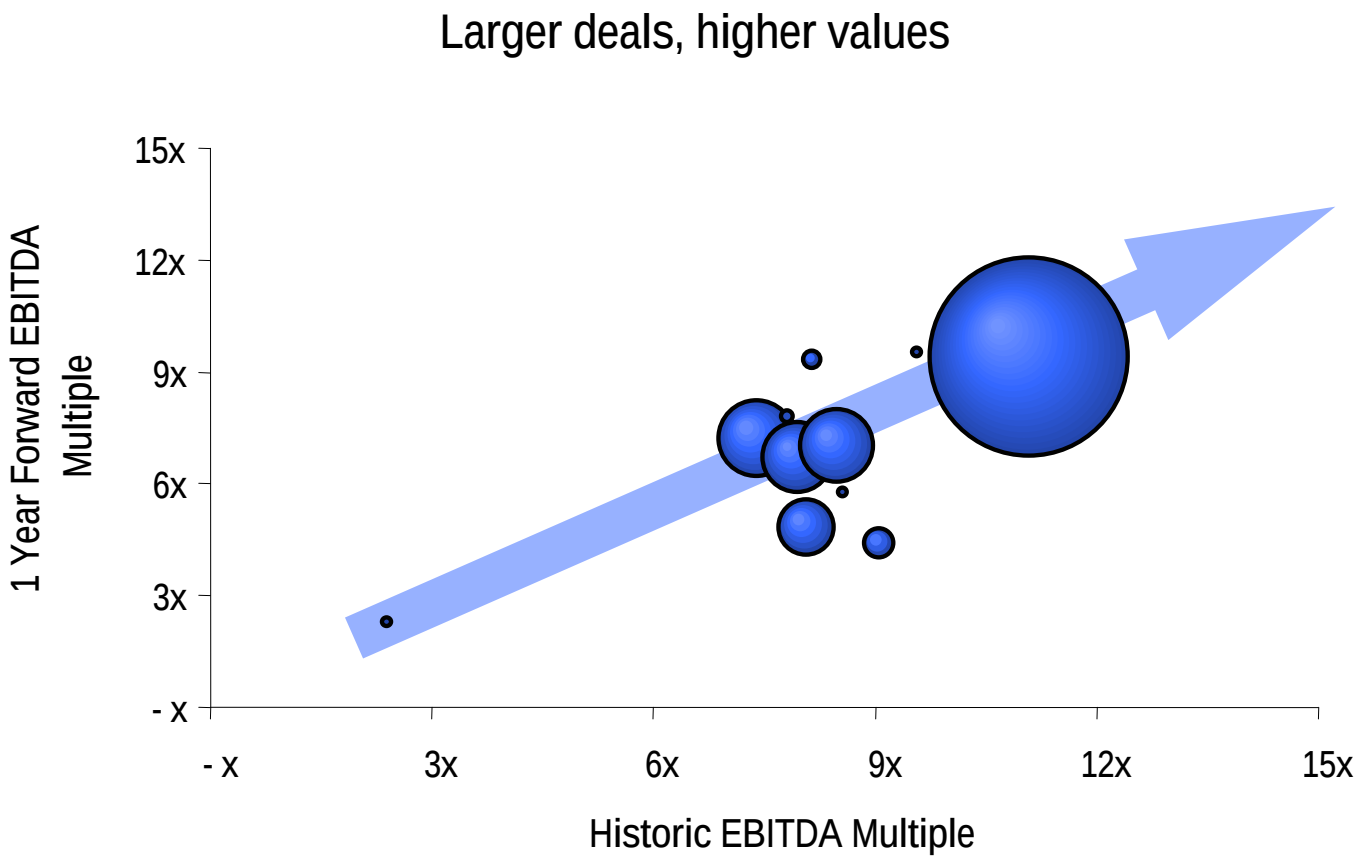
Aluminium sector consolidation



Source: Bloomberg; historic broker reports

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Aluminium industry fundamentals are strong

- Consumption projected to double by 2020
- Consumption growth driven by China
- Supply growth required – 3x growth rate in past 20 years
- Industry consolidation drivers:
  - long life, quality bauxite
  - sustainable low cash cost position
  - long term low cost energy

AWAC is well positioned to grow

- Approx 20% of global refining capacity
- Long life, quality bauxite resources
- Low operating cost
- Production close to major markets
- Long term supply contracts with blue chip customers

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