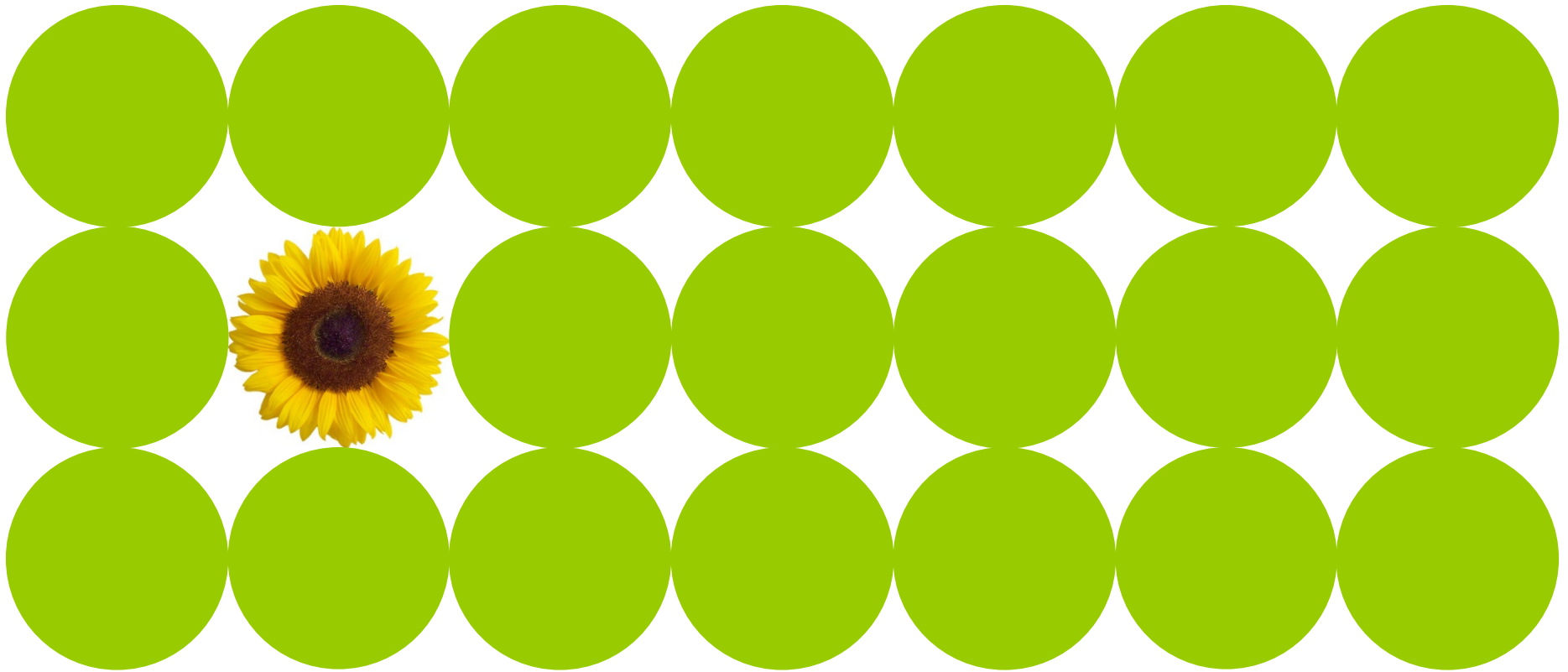


Aluminium industry and market



Torkil Sletten, Head of Strategy and Industry Analysis
18 September, 2012

Agenda

- Hydro and the aluminium industry
- Macro and end-use demand
- Primary aluminium market
- Bauxite and alumina market



1

Hydro and the aluminium industry

The big challenges of our generation

Growth must be sustainable

Millions climb out of poverty



Increasing energy demand



Climate change



Aluminium is the metal of the future



- **Lightweight**
 - 1/3 density of steel
- **Recyclability**
 - 5% of original energy consumption
 - 75% of all aluminium produced still in use
- **Corrosion resistant**
 - Oxide layer
- **Formability**
 - Extrusion, rolling, casting
 - Low melting point vs. steel
- **Excellent conductivity**
 - Thermal – electrical
- **Alloying technology**
 - Gives wide range of physical properties

Properties lead to increased market share

- Aluminium intensive urbanization and infrastructure
- Climate challenge – aluminium as part of the solution
- Recyclability more important with high energy prices

Aluminium is part of the solution

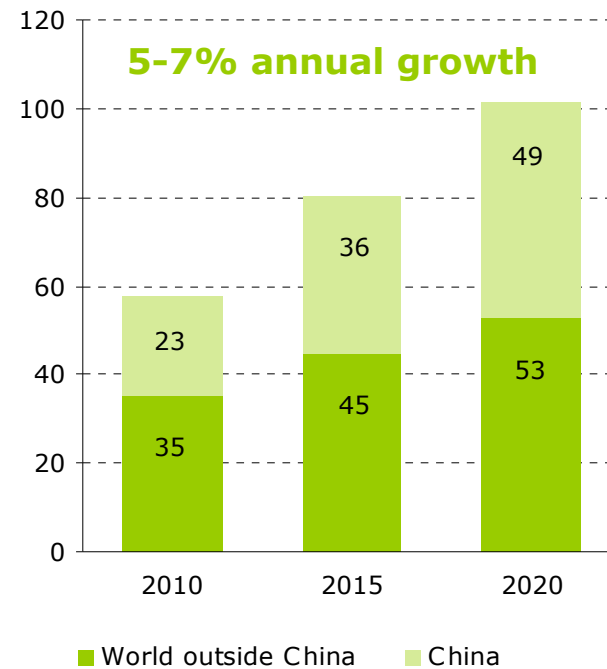
Global trends



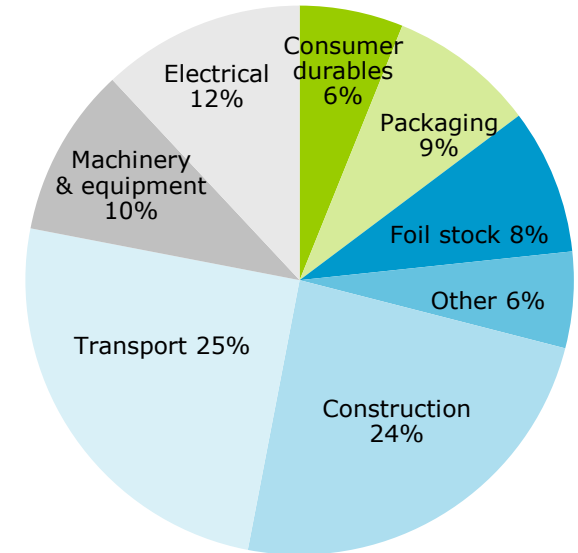
Capabilities



Demand for semis
Million mt



Share of semis consumption
2011 – 62 million mt



Source: CRU

“Worth its weight in aluminium”

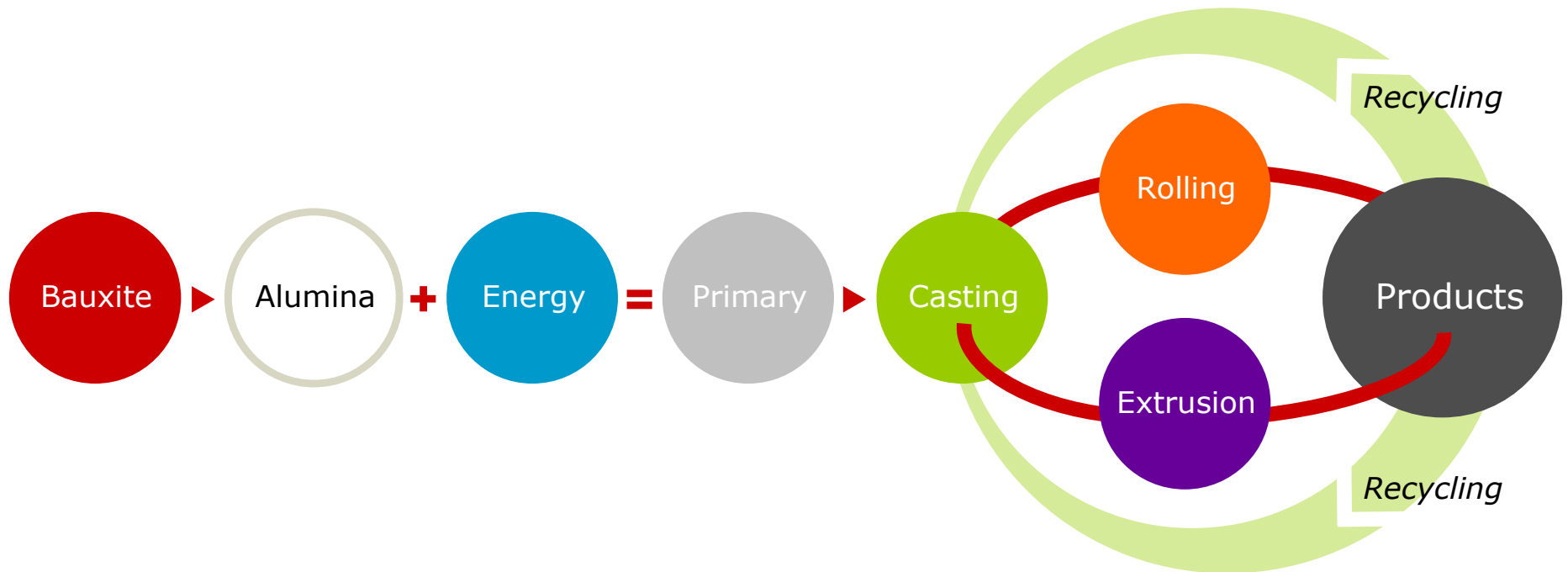


Nye Audi A6 Avant – verdt sin vekt i aluminium

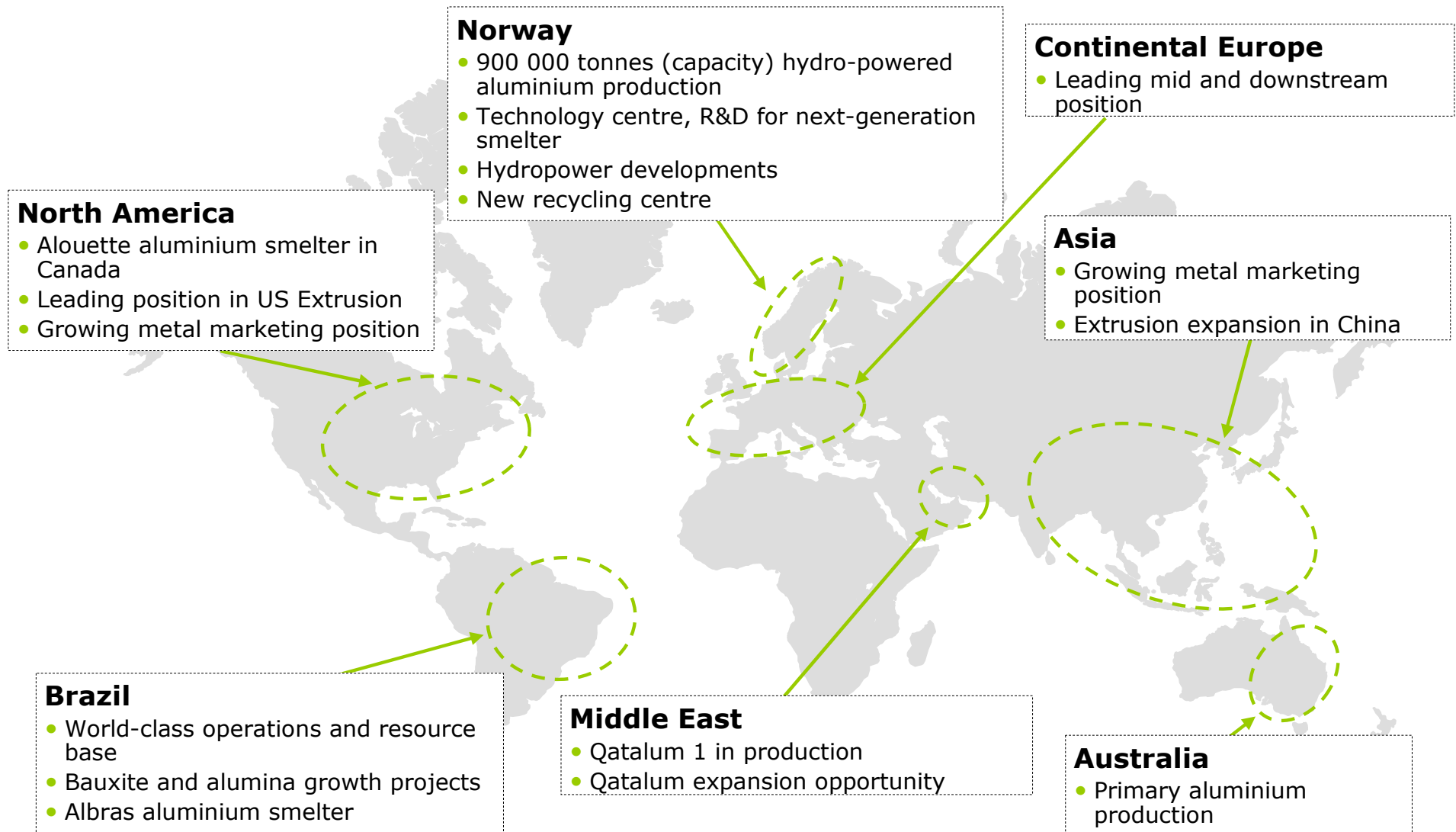
Audi A6 Avant har aldri vært lettere. Audi ultra lettvektsteknologi med avansert aluminiumhybridkonstruksjon gir deg en effektiv bil med fantastiske kjøreegenskaper. Karosseriet består av 20 % aluminium og veier 30 kilo mindre enn forrige generasjon. Totalvekten er redusert med opptil 70 kilo. 3.0 TDI-motoren er slanket med 25 kilo i forhold til forgjengeren. Førermiljøet er fullpakket med Audi connect-teknikk som MMI Touch med Bluetooth, trådløs internettilgang og Google Earth 3D-navigasjon. Legg til satellittstyrte, adaptive lys, og opplev en bil for businessstungvektene. Velg mellom flere effektive motoralternativer. Drivstofforbruk 0,50 - 0,82 l/mil ved blandet kjøring. CO₂-utslipp 132 - 190 g/km.

Forspranget ligger i teknikken 

Strong positions across aluminium value chain



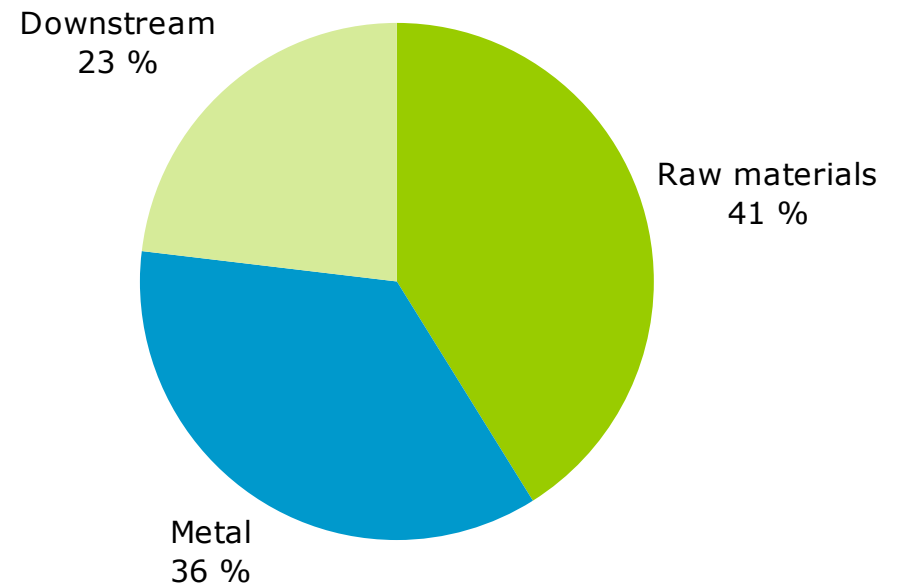
Strong positions across aluminium value chain



Strong positions across aluminium value chain

- Bauxite & Alumina
 - Alumina priced globally
 - Brazilian production portfolio
- Primary Metal
 - Aluminium is a global commodity (LME)
 - Regional premiums
 - Global production portfolio
- Downstream
 - Majority of sales to Europe
 - Increasing global reach
- Energy
 - Net long position in liquid Nordic power market

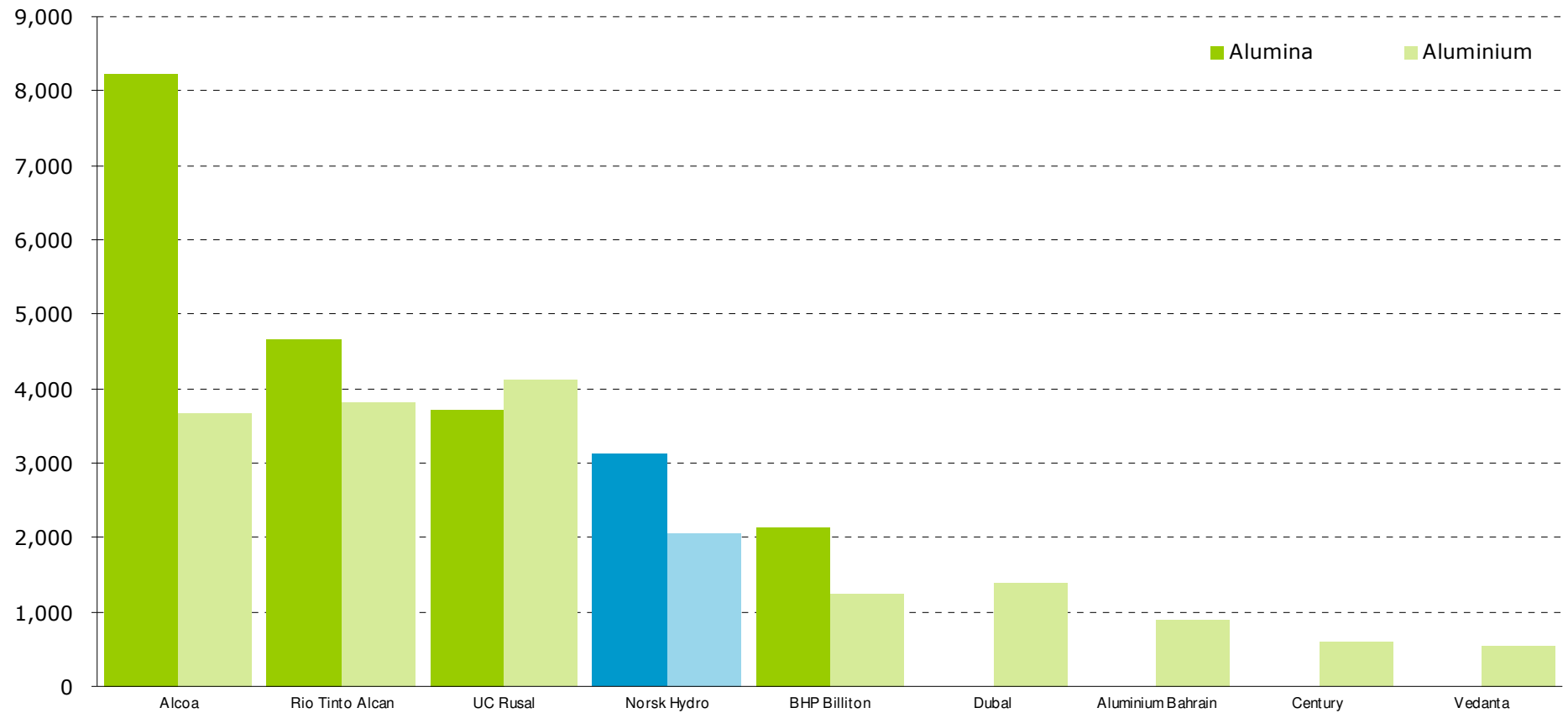
Capital employed, as per June 30, 2012



Graph excludes NOK 8.0 billion in negative capital employed in Other and eliminations

Global industry structure

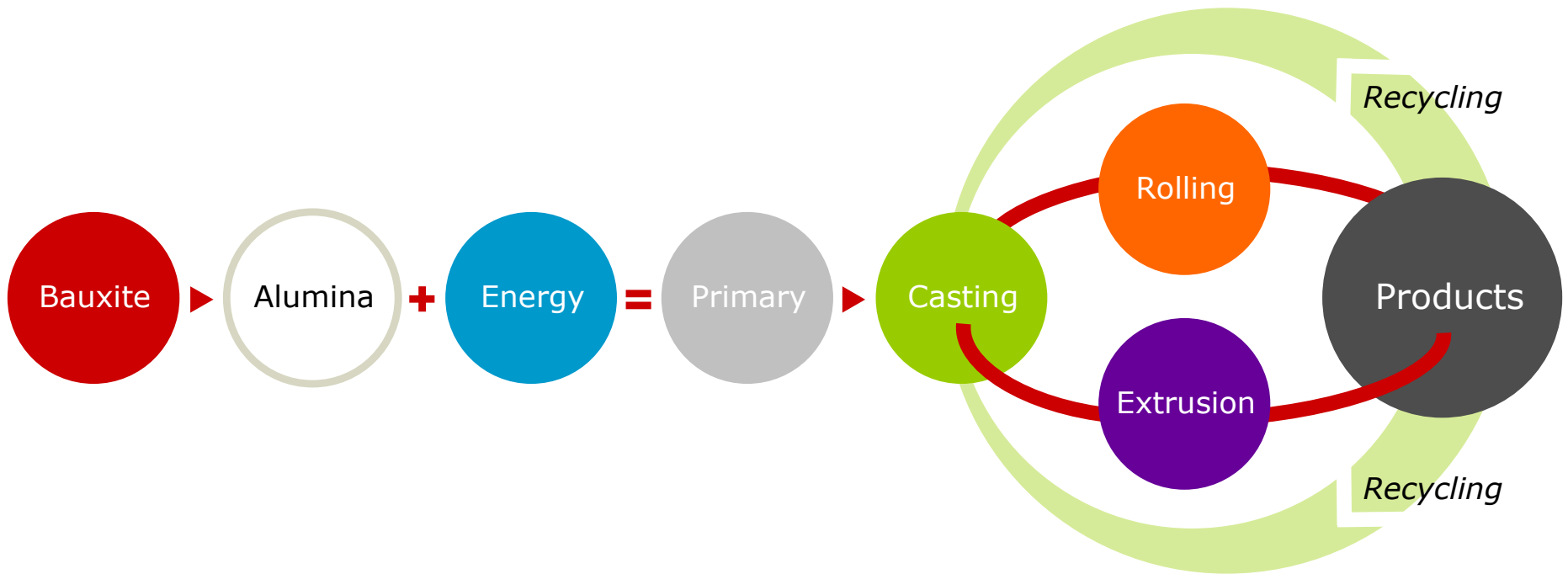
Production in 2011 in aluminium equivalents excl. China, thousand mt



Source: CRU, Hydro

2

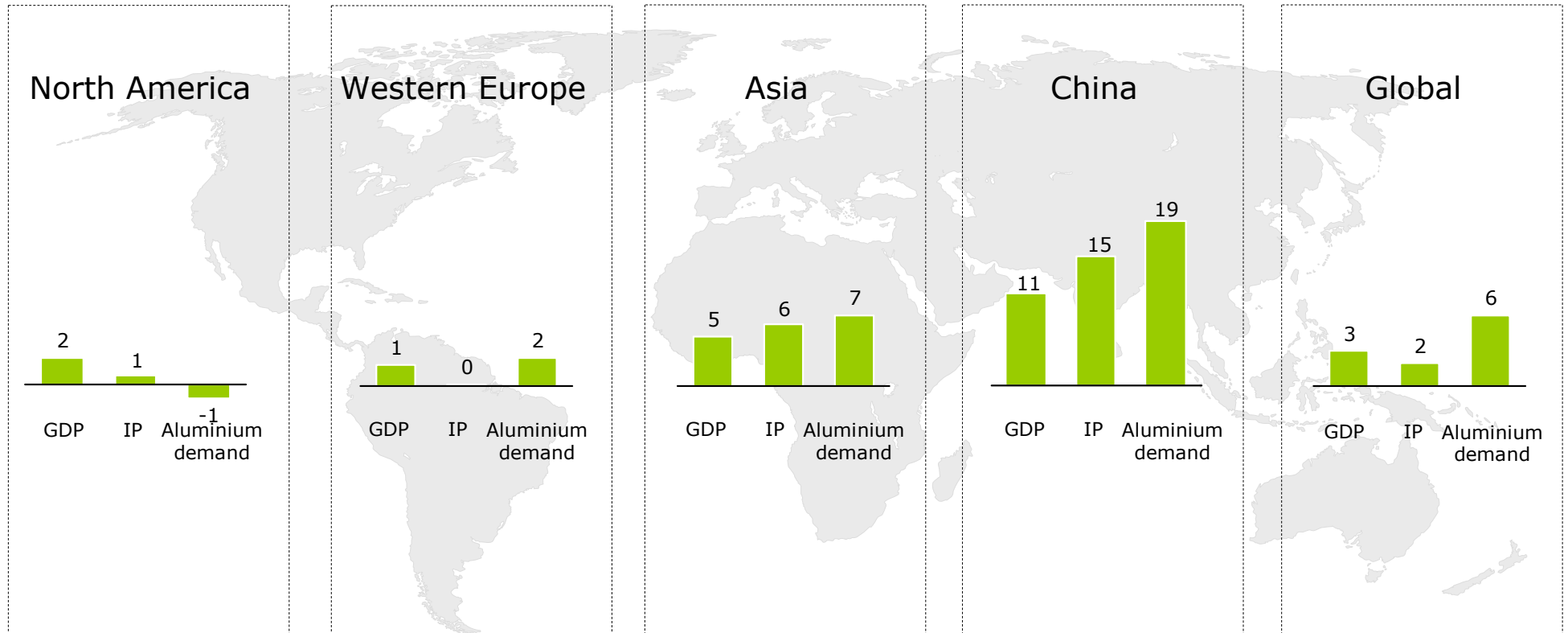
Macro and end-use demand



Strong aluminium demand

Stronger development than IP and GDP last 10 years

CAGR last 10 years (%)

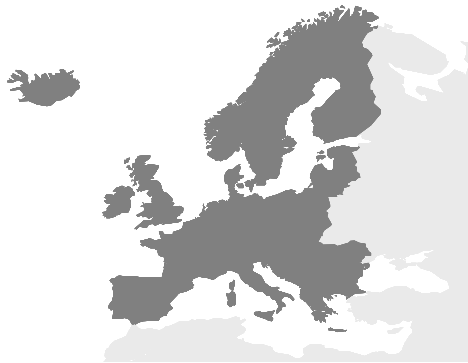


Source: CRU/Global Insight

Synchronized global slowdown – central banks come to the rescue

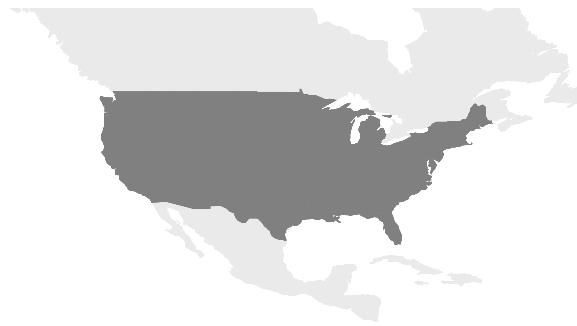
Macro economic development

Europe



- GDP-growth fell in Q2 and the Euro-zone is likely in recession
- Weak PMI-figures point to poor industrial activity going forward
- Plans for bond-buying programs established

United States



- IP fell in August and PMI indicates further lower growth in production
- Weak consumer sentiment in August
- QE3 initiated on the back of insufficient job growth

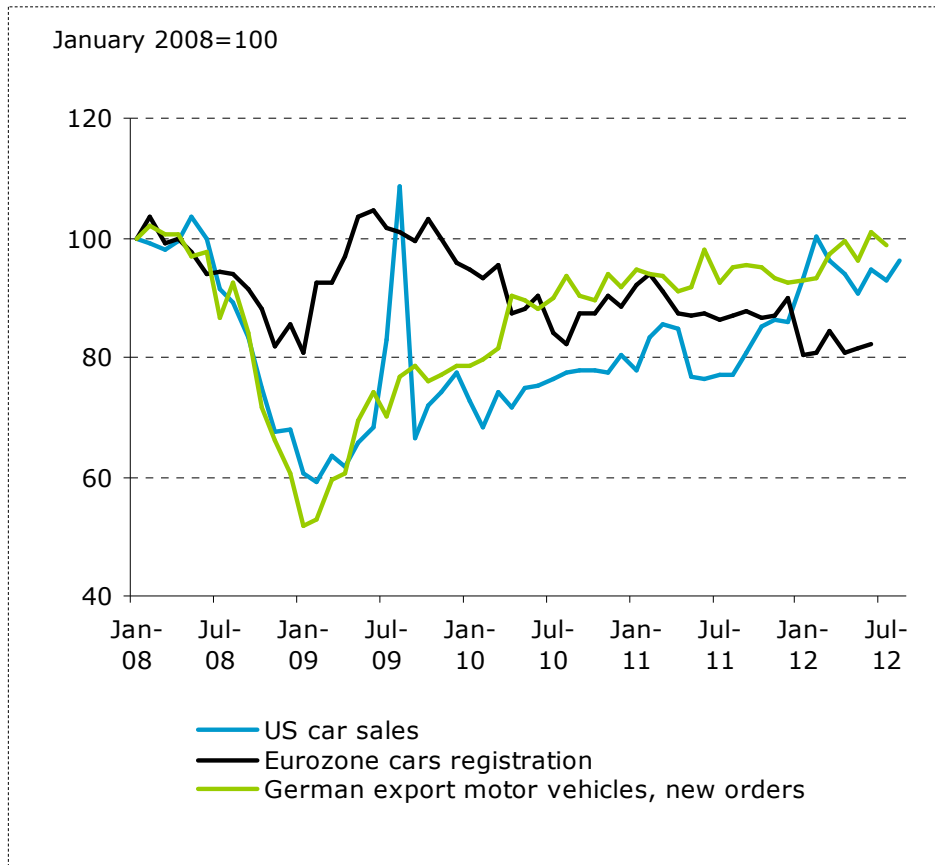
China



- GDP growth Q2 at 7,6%, the sixth consecutive quarter of falling growth rates
- Weak IP growth in August
- Fall in exports to the EU
- Low inflation may lead to more policy measures

Automotive indicators picking up - still weak construction activity

Automotive



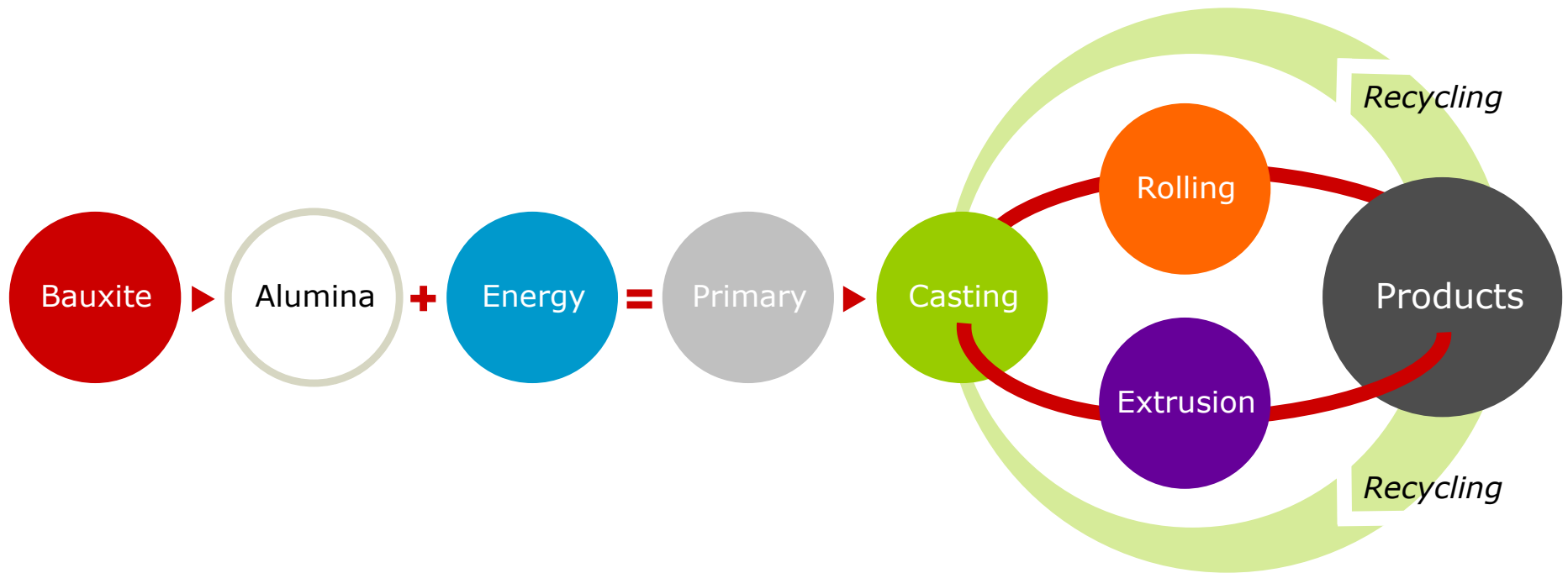
Construction



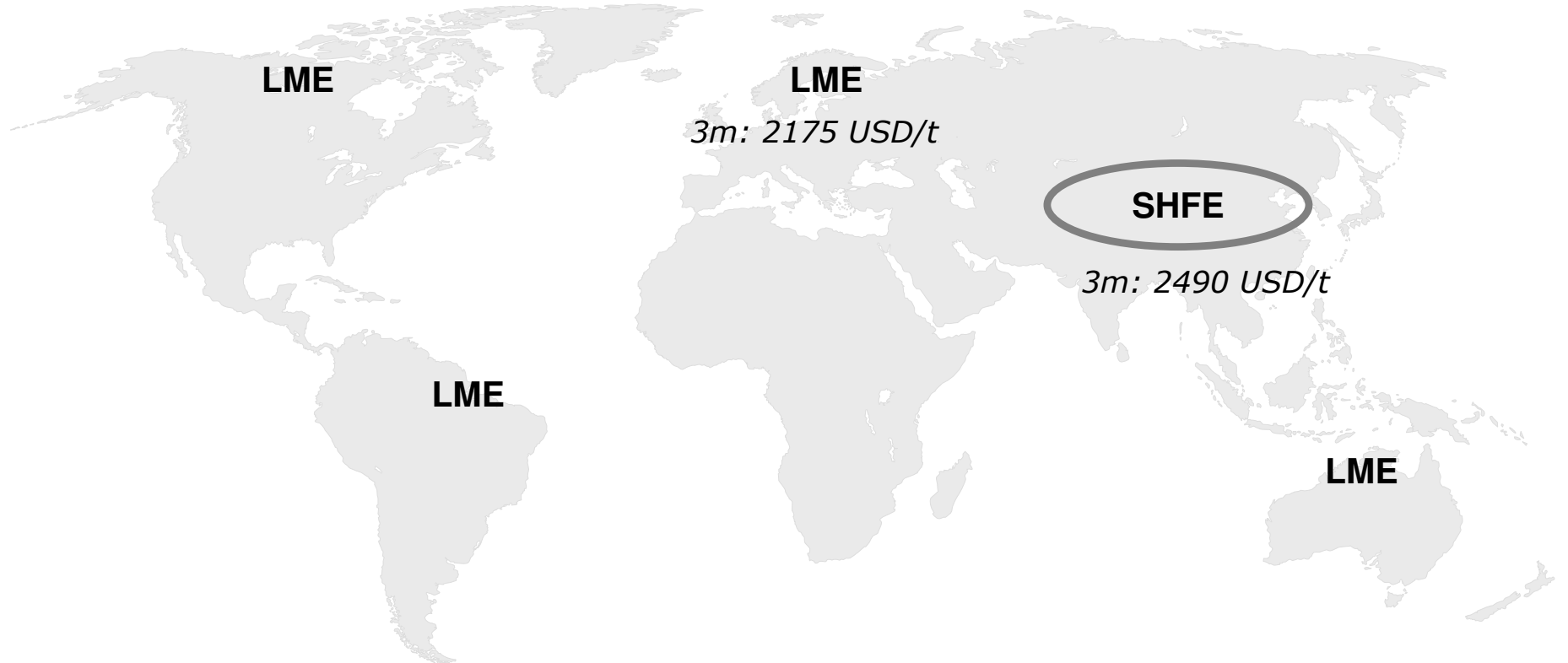
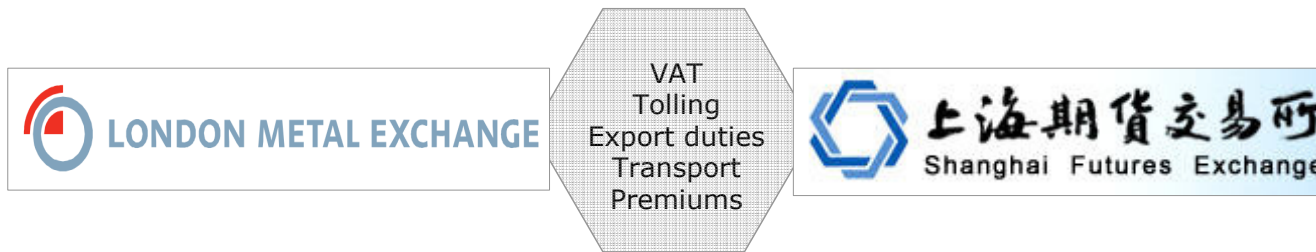
Source: US Department of Commerce, Deutsche Bundesbank, American Institute of Architects, ECB, Directorate General for Economic and Financial Affairs

3

Primary aluminium

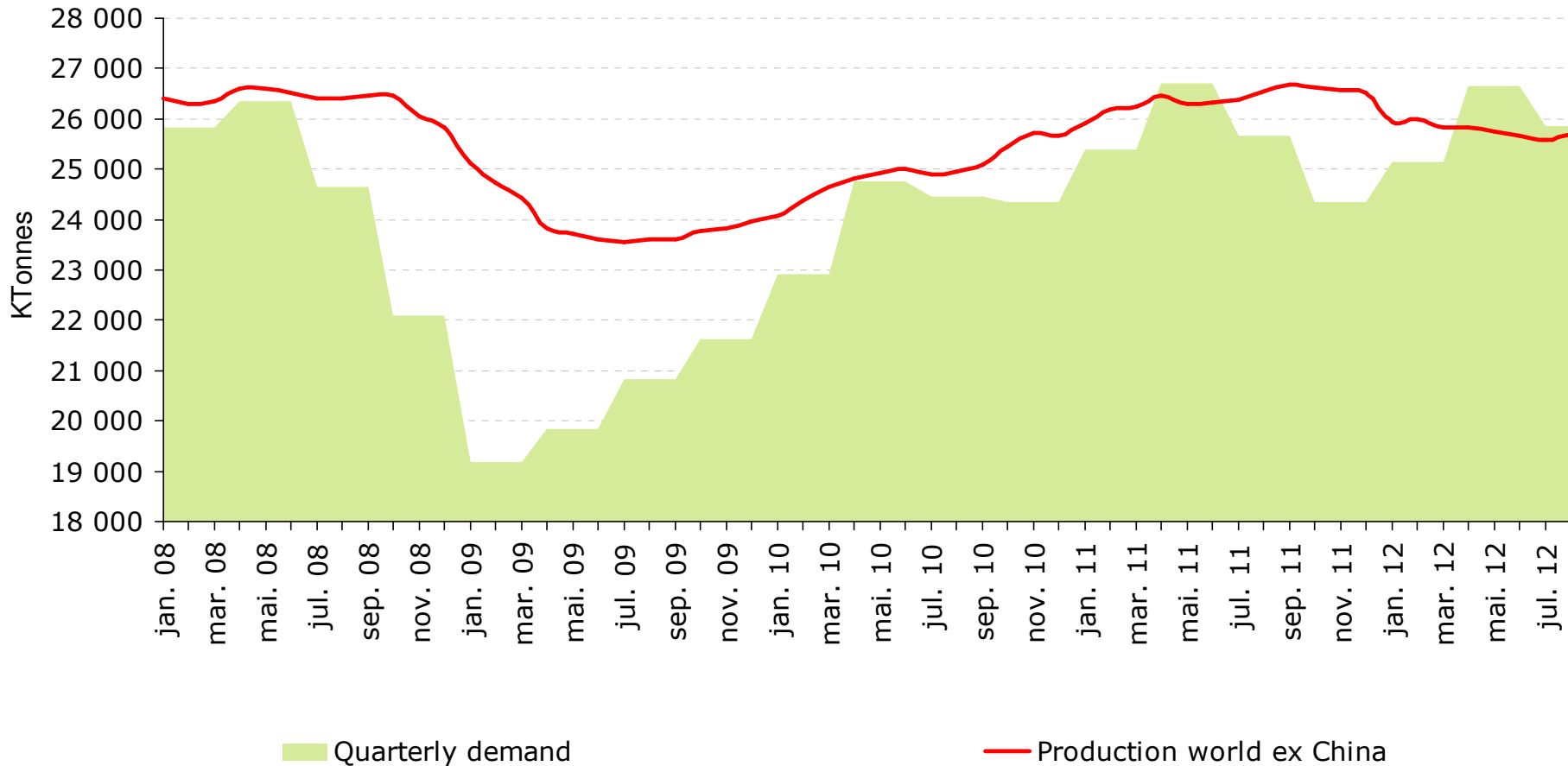


Two markets for primary metal



Market deficit in world ex. China in Q2, expected to narrow in Q3

Global ex China (annualized)



Source: CRU

Strong pick-up latest weeks

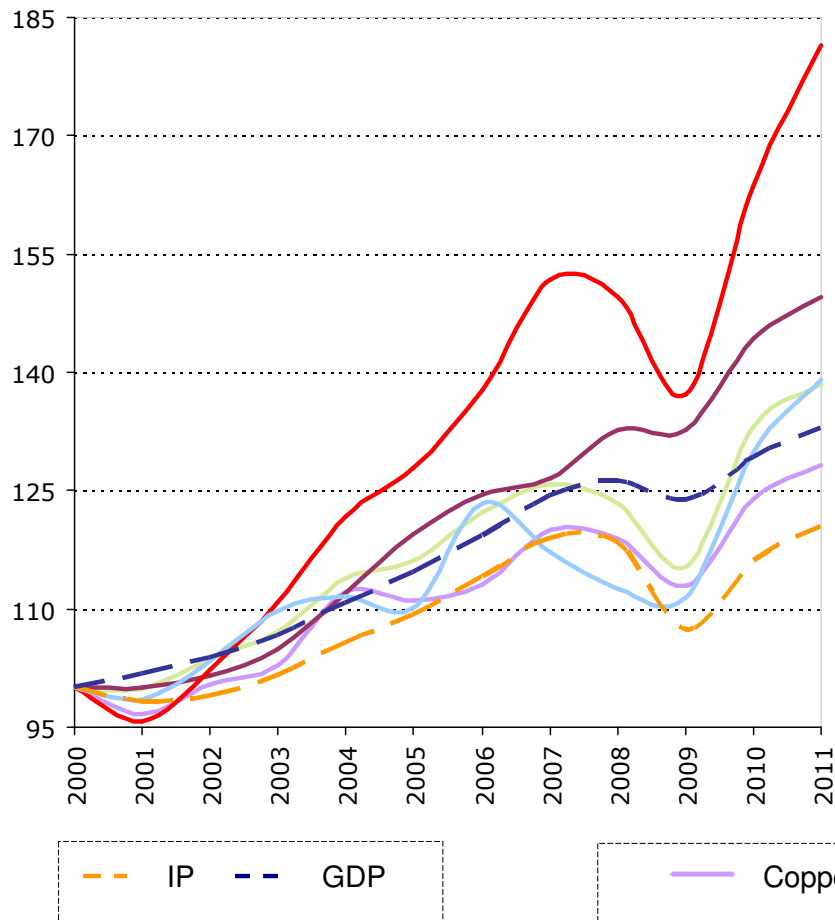


- Volatile aluminium price
 - Reflecting uncertain macro-economic outlook
 - High inventories from long period of oversupply
- Industry profitability challenge

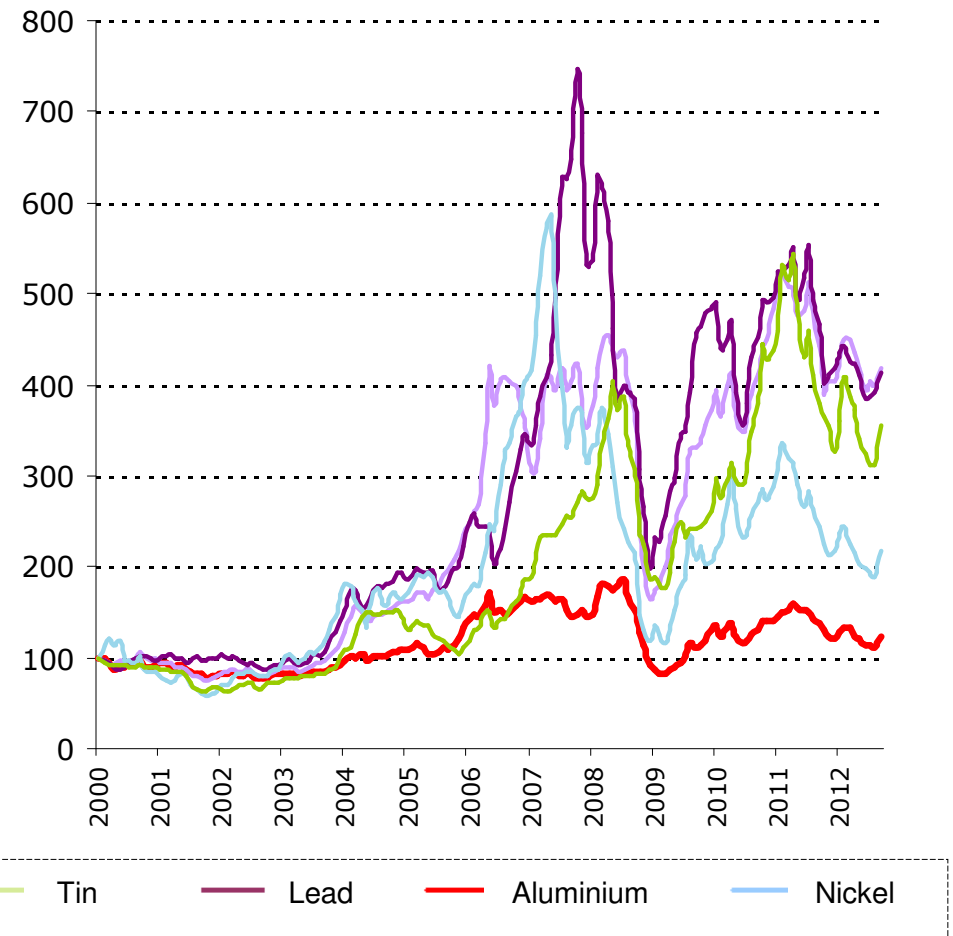
Source: Reuters Ecowin

Despite strong demand, aluminium is the price laggard

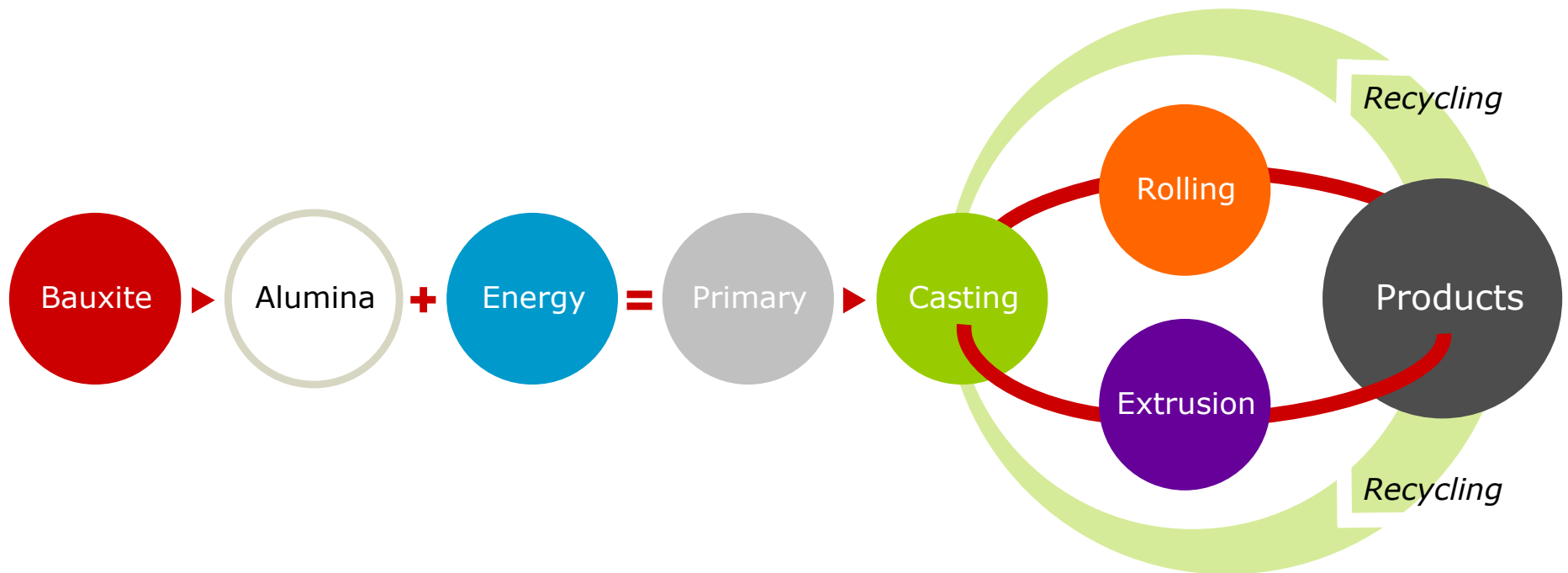
Yearly consumption.
Index. 2000=100



3m LME price.
Index. 2000=100

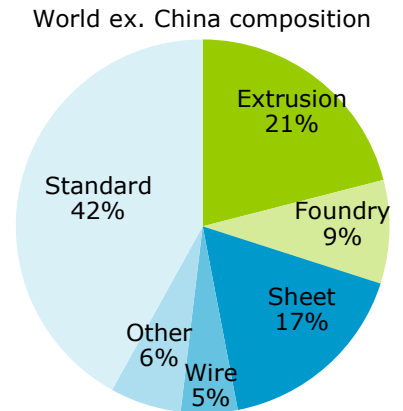


Source: CRU/Global Insight



Standard ingot – a product that has to be remelted

- 42 % of casthouse production is standard ingot



Value added products

Standard ingot



Extrusion ingot



Foundry alloy



Sheet ingot



Wire rod

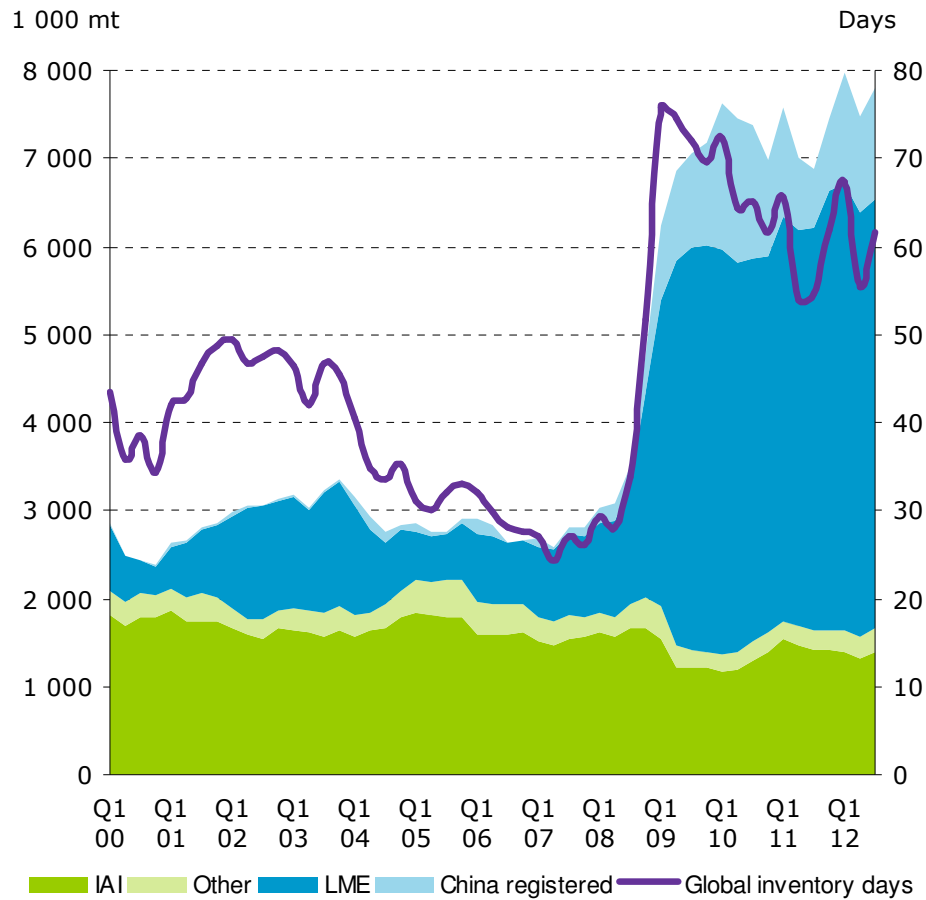


Source: CRU

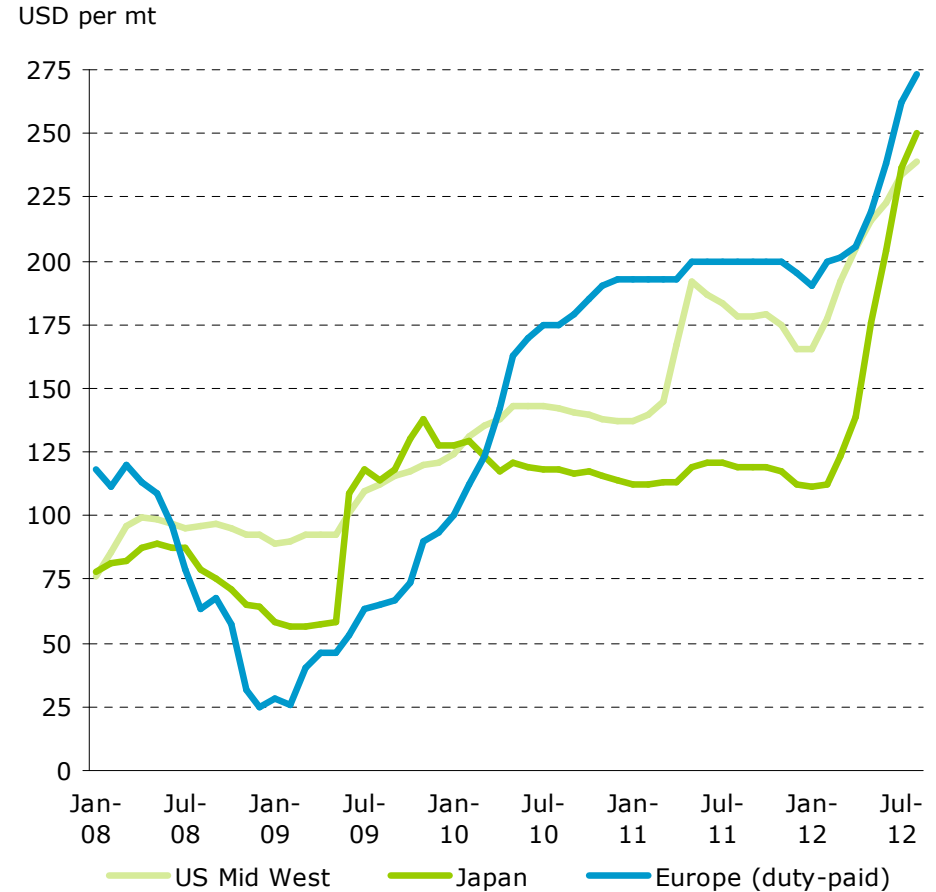
Ingots premiums continue to rise

Inventories remain tied up in financial deals

World reported primary aluminium inventories*



Regional ingot premiums, monthly averages



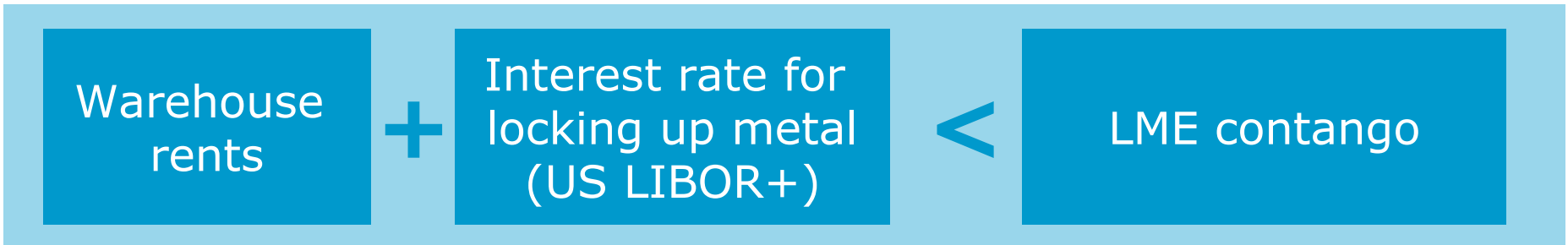
Source: CRU/Hydro

*Latest figures: August 2012

Source: Metal Bulletin, MW/MJP: Platts

Why are financial deals attractive?

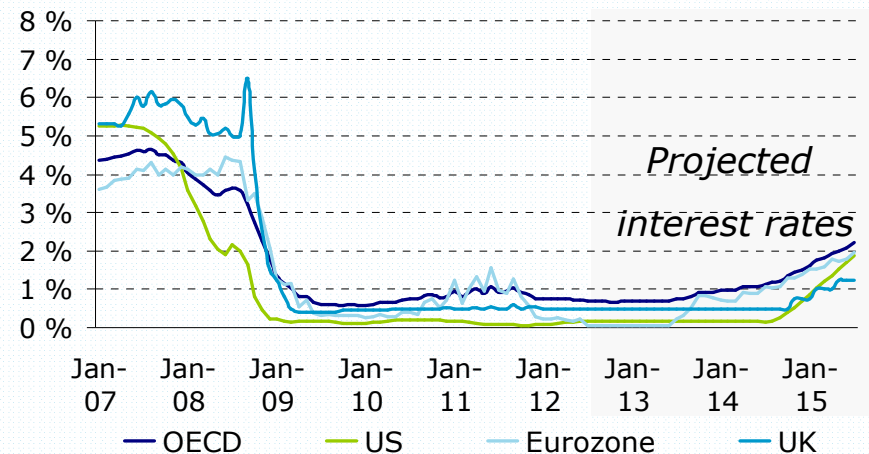
The attractiveness of financial deals is dependant on the following equation;



The current situation

- The equation above currently gives holders of metal a risk-free return
- Central bank liquidity pushing interest rates to record-low levels

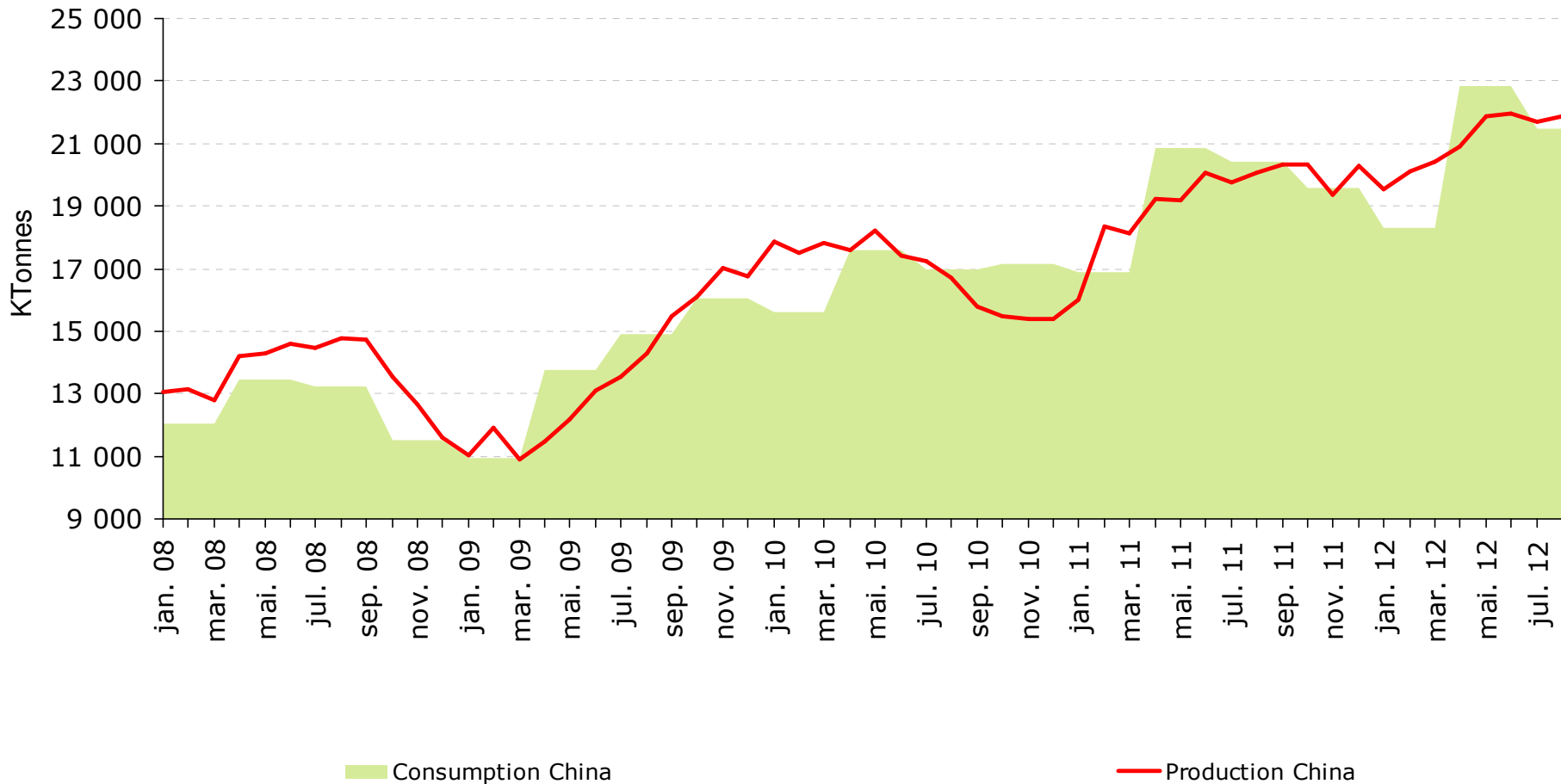
Low interest rates



Source: Global Insight, August 2012

Production and consumption growth in China remains strong

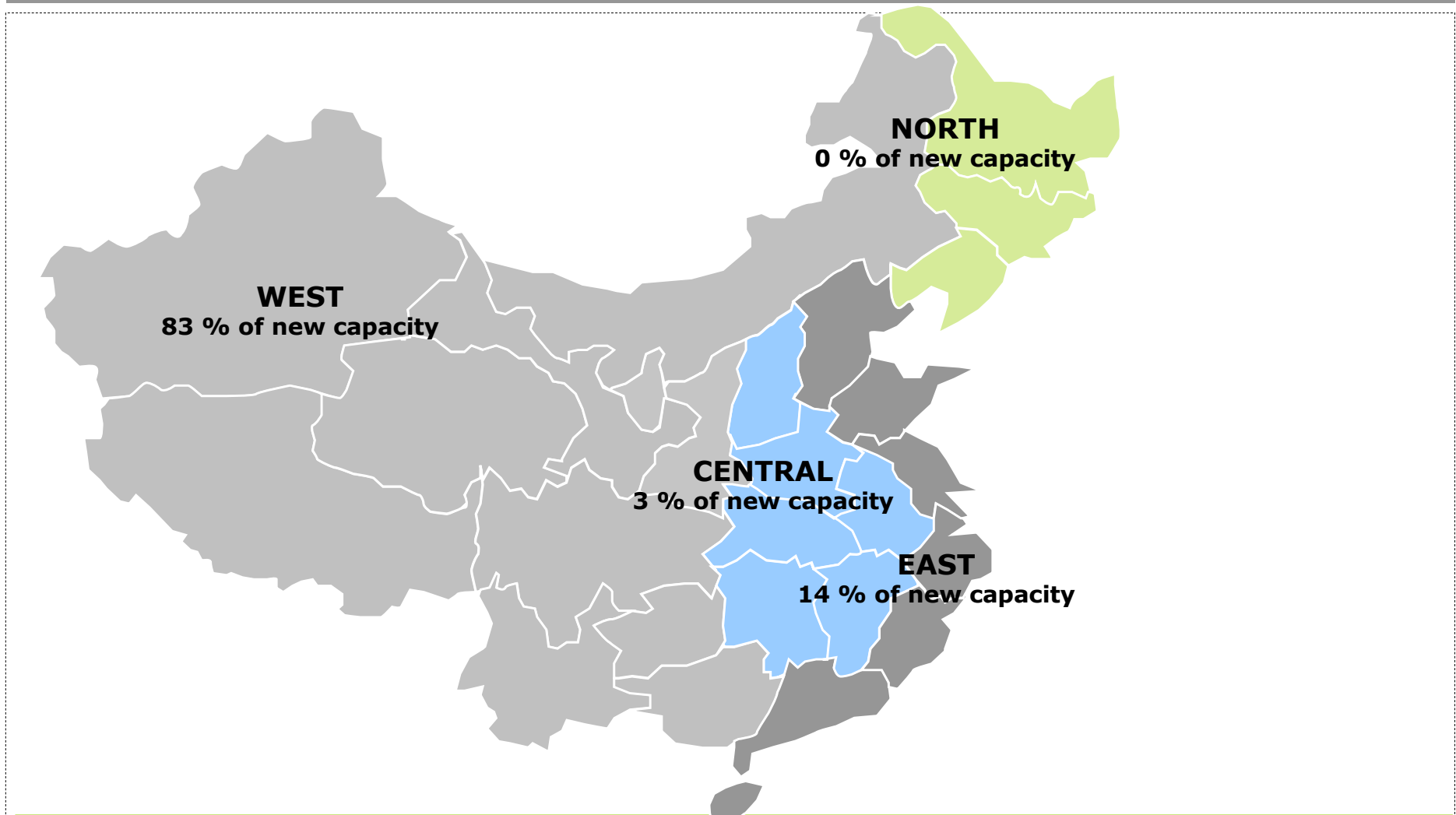
China (annualized)



Source: CRU

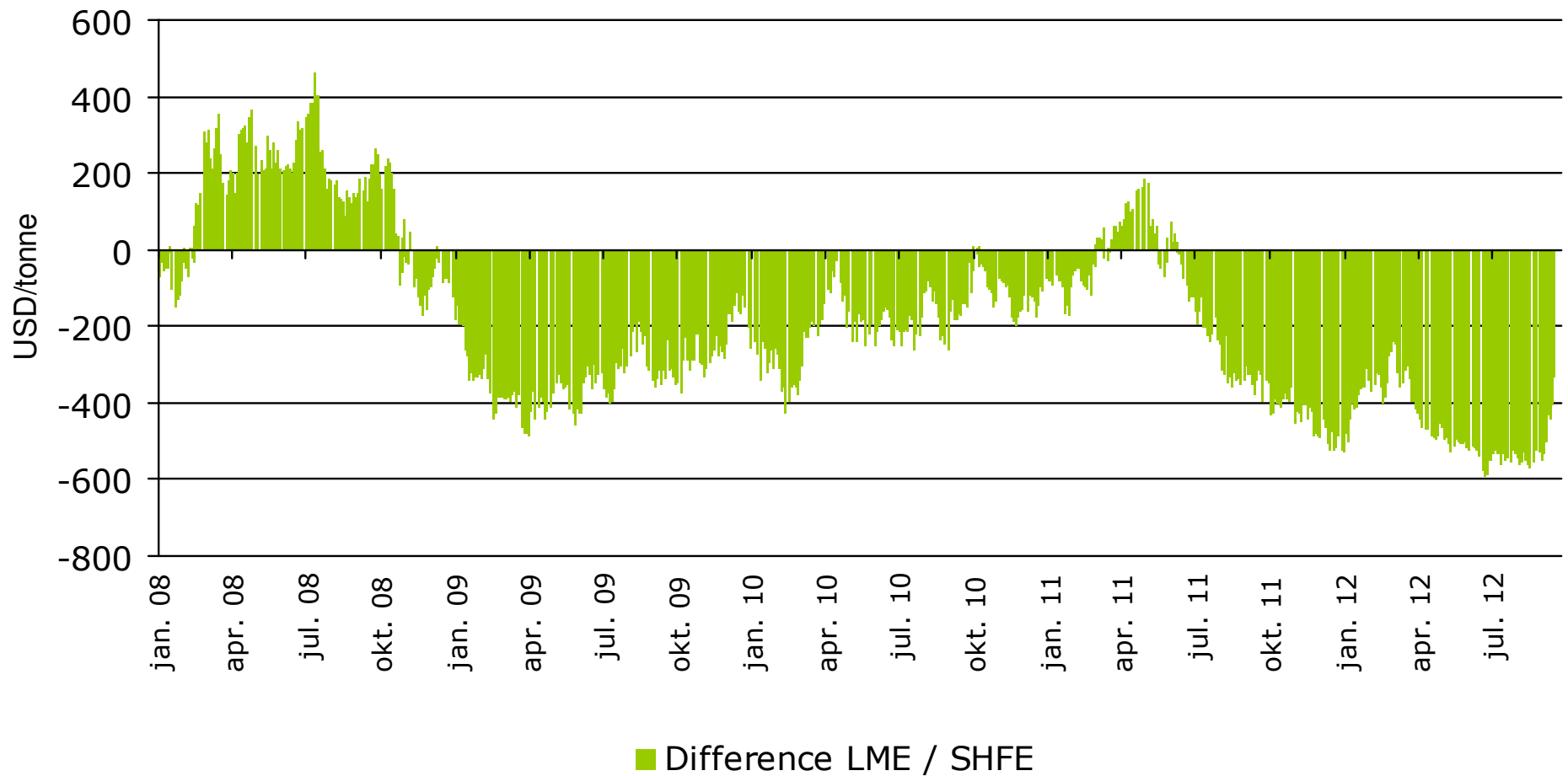
New capacity in North-Western provinces

Primary aluminium capacity development 2011-2015



Source: CRU, Hydro Analysis

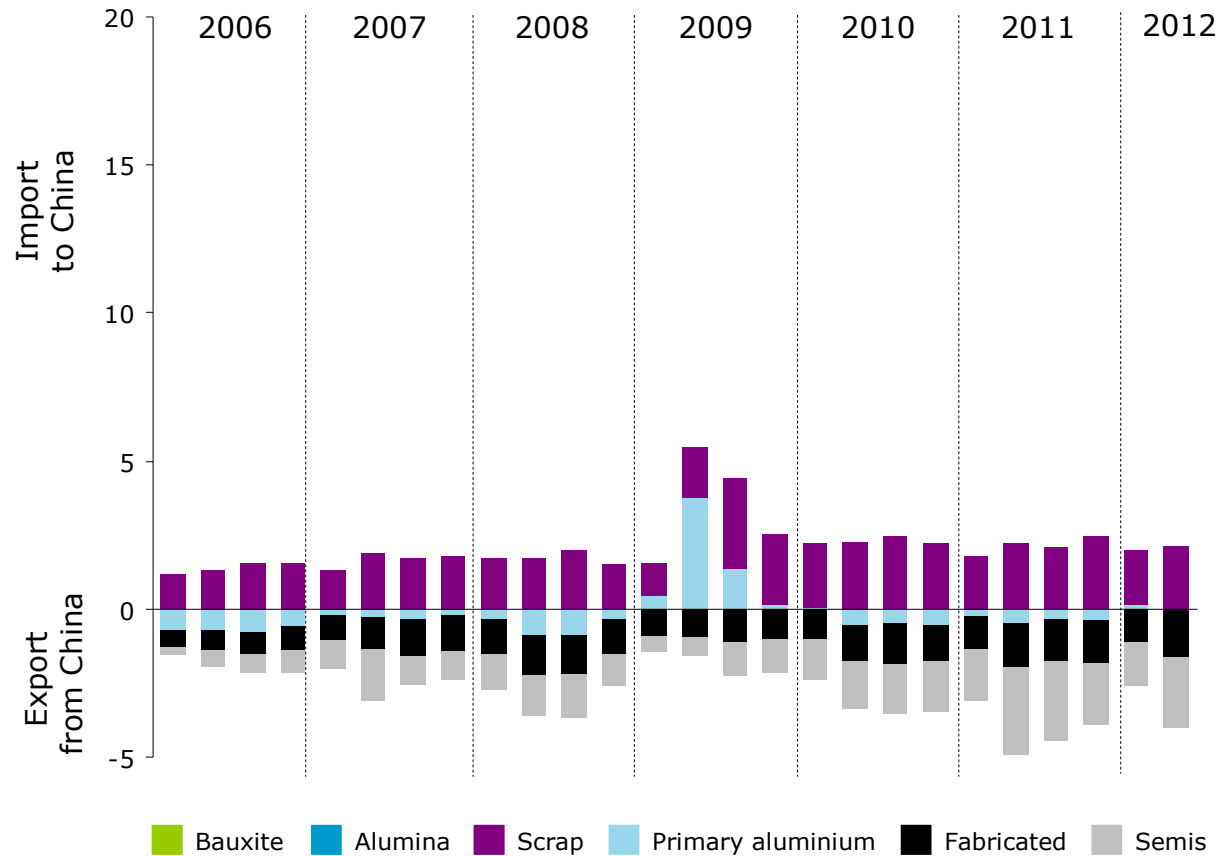
Present LME/SHFE difference



Source: Reuters Ecowin / Hydro

China exporter of downstream products and balanced in primary

Annualized aluminium equivalents*, million mt



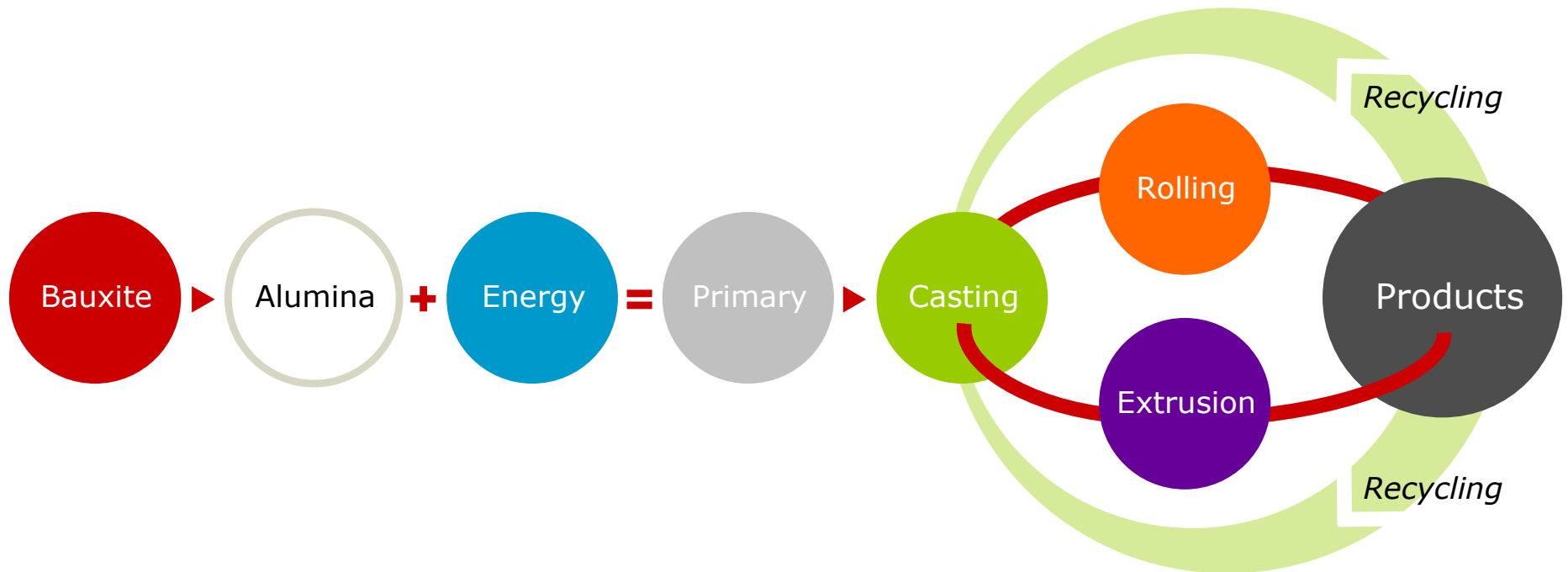
- Primary aluminium
 - Expected to remain broadly balanced short term
- Fabricated and semis
 - Exports at 2011 levels

Source: CRU/Antaika/Hydro

* Bauxite/alumina to aluminium conversion factor: 5.4/1.925

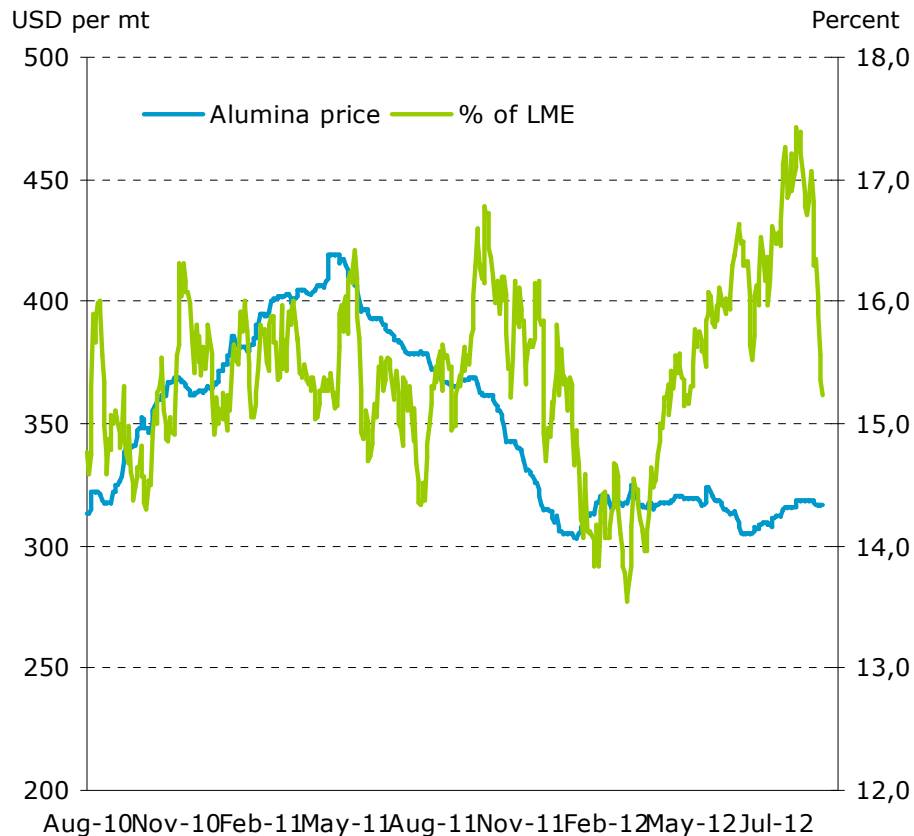
4

Bauxite and alumina



Absolute alumina prices remain low

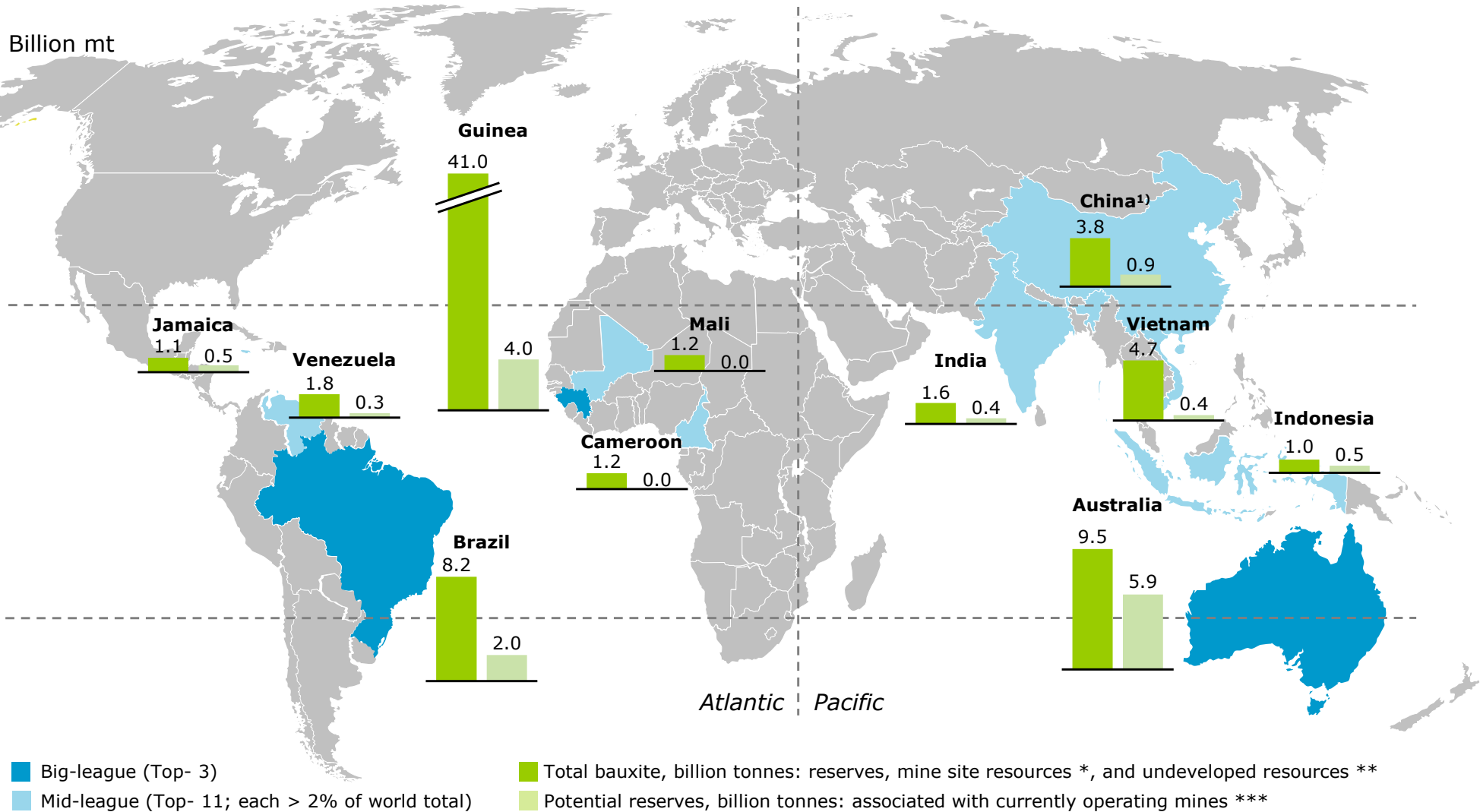
Platts index in USD



- Alumina market outside China in balance, supported by imports to China
- Significant increase in Chinese alumina imports
 - Supported by uncertainty around bauxite exports from Indonesia
 - Alumina price outside China remains below Chinese domestic prices
- Global alumina market oversupplied
 - Assuming Chinese stockpiling

Source: Platts

Concentrated global bauxite reserves - options for China highly uncertain



1) Official reported resources in China (Not CM estimates)

*) Mine site resources are known bauxite resources that do not currently qualify as reserves for various reasons

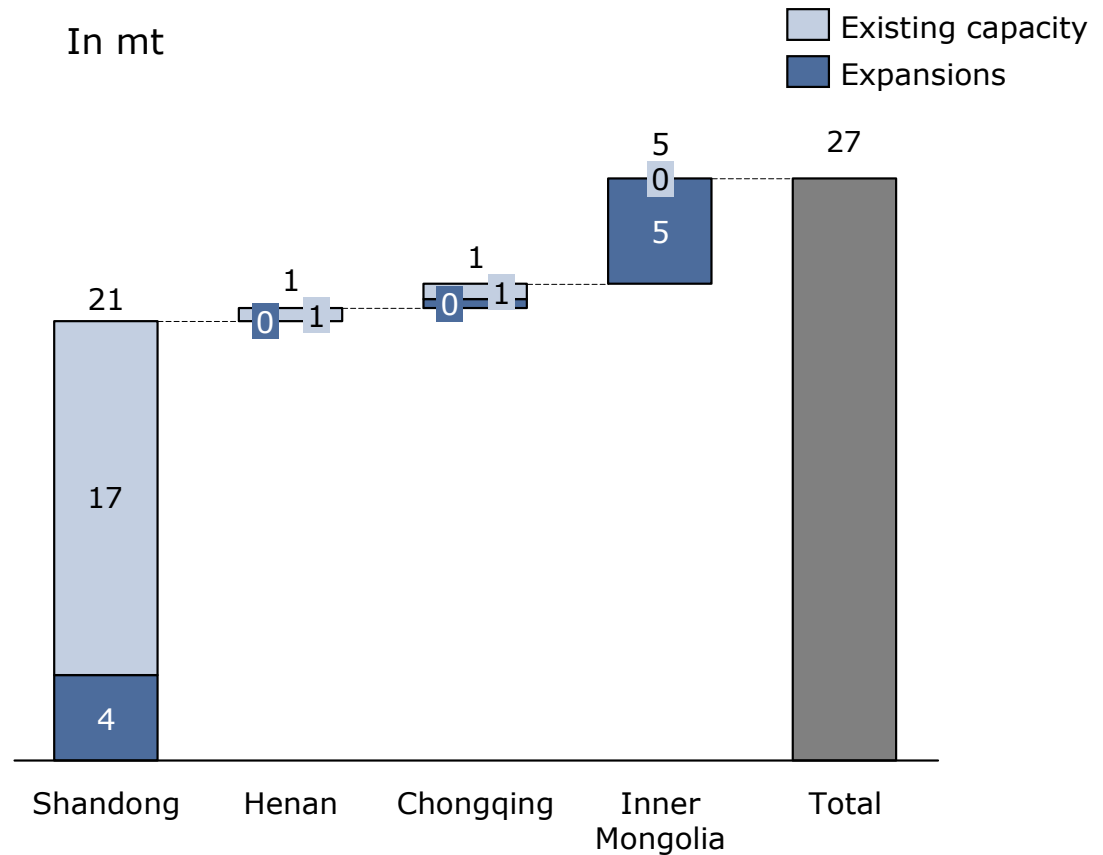
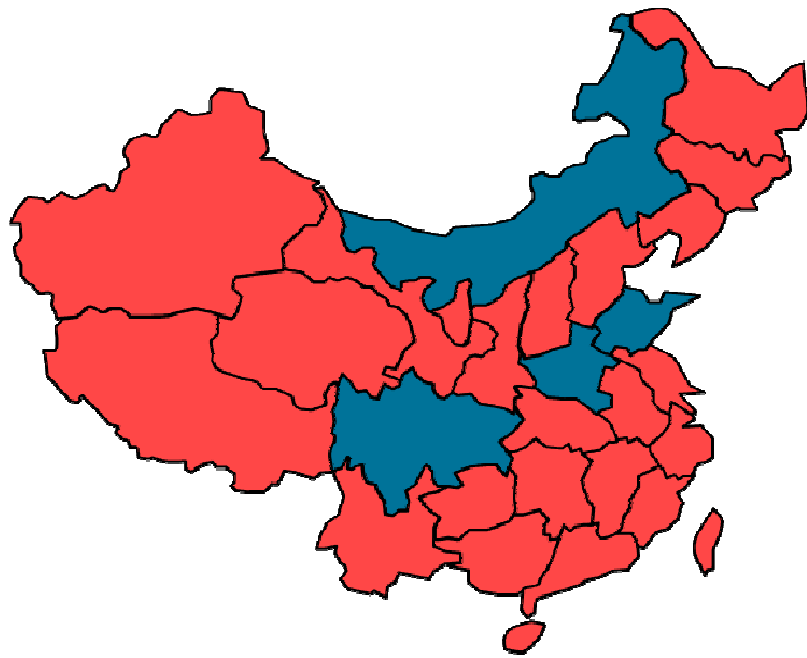
**) Undeveloped resources might or might not become feasible for new mines (quality, size, access, etc)

***) Potential reserves = current reserves (economically extractible) + 70% of mine site resources. Undeveloped resources are excluded.

Source: Roskill and Hydro analysis

Around 1/3 of Chinese alumina capacity is based on imported bauxite

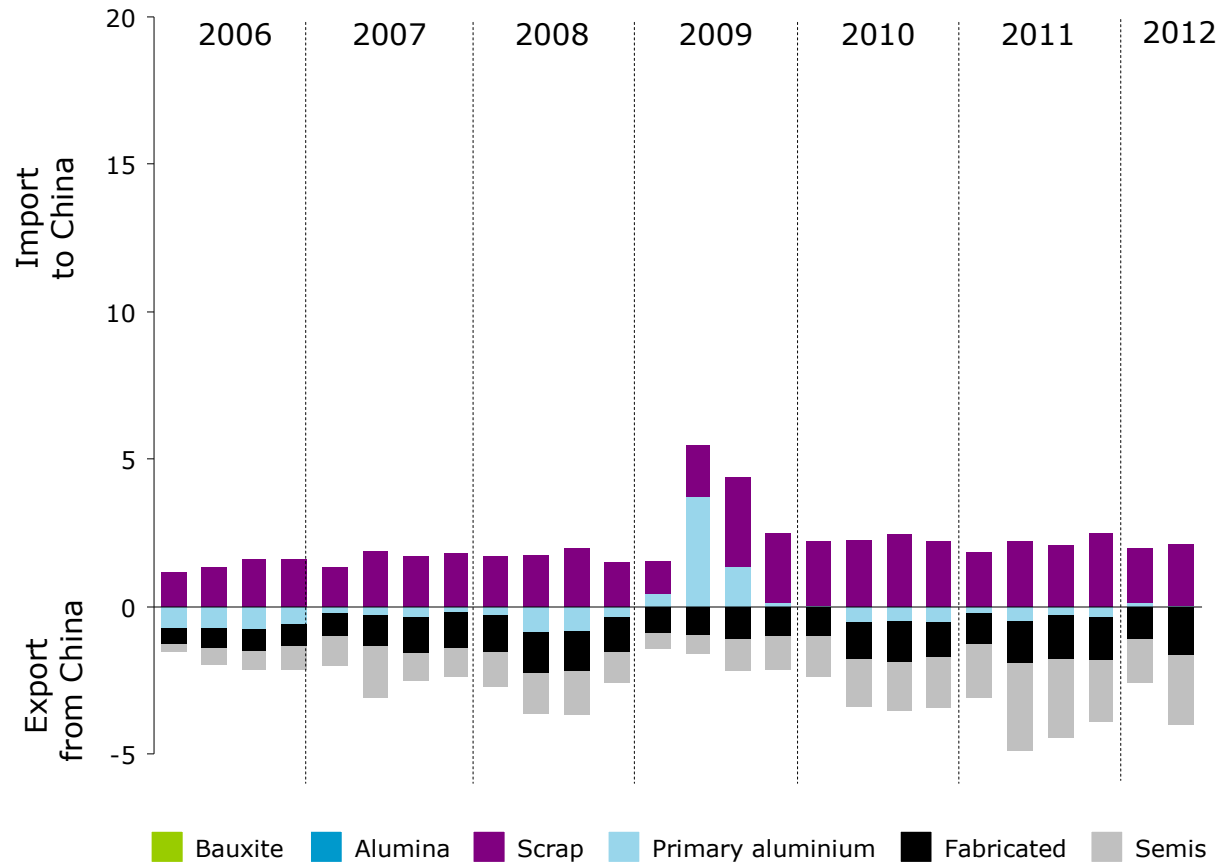
Alumina capacity based on imported bauxite



- Refineries constructed to import of bauxite is not able to use Chinese bauxite due to quality issues, and can therefore not replace imported bauxite with local bauxite

Source: C&M

Annualized aluminium equivalents*, million mt

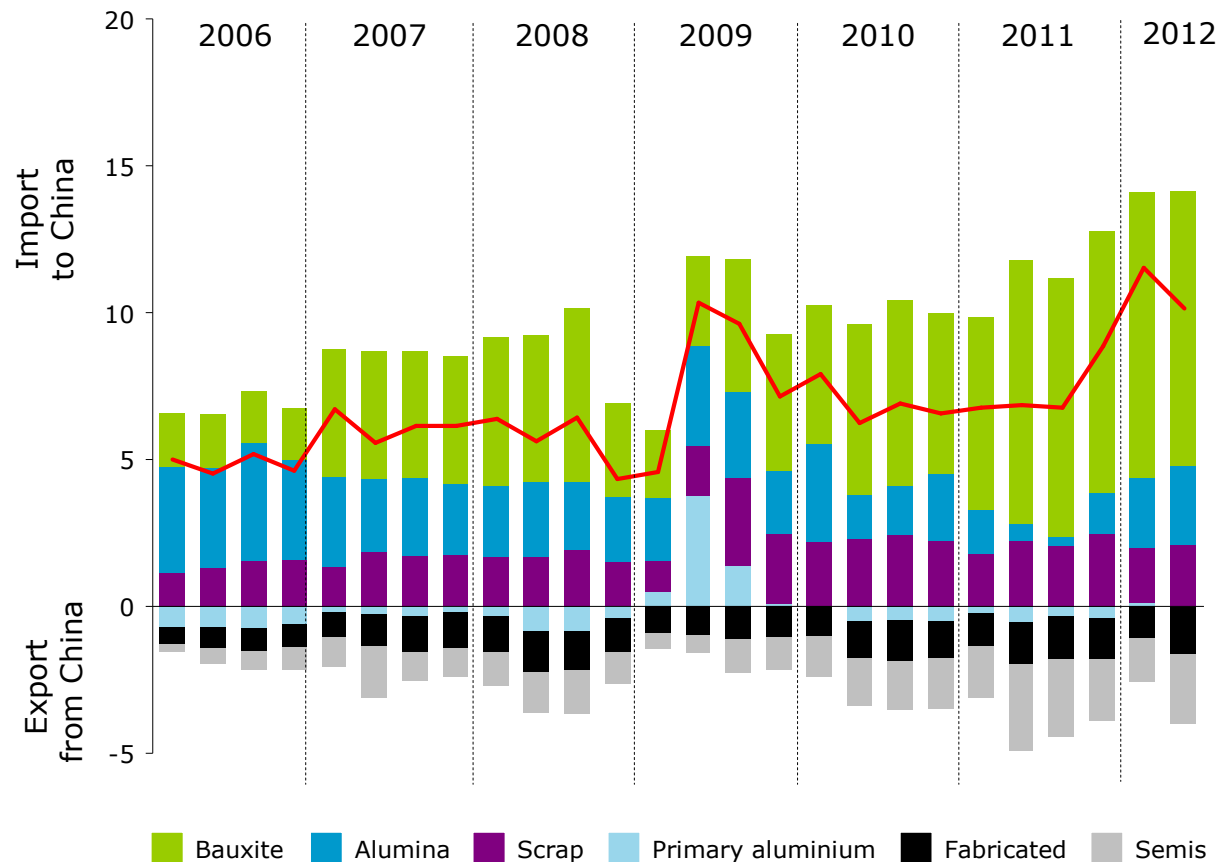


Source: CRU/Antaika/Hydro

* Bauxite/alumina to aluminium conversion factor: 5.4/1.925

Chinese imports of bauxite over last months affected by Indonesian export ban

Annualized aluminium equivalents*, million mt



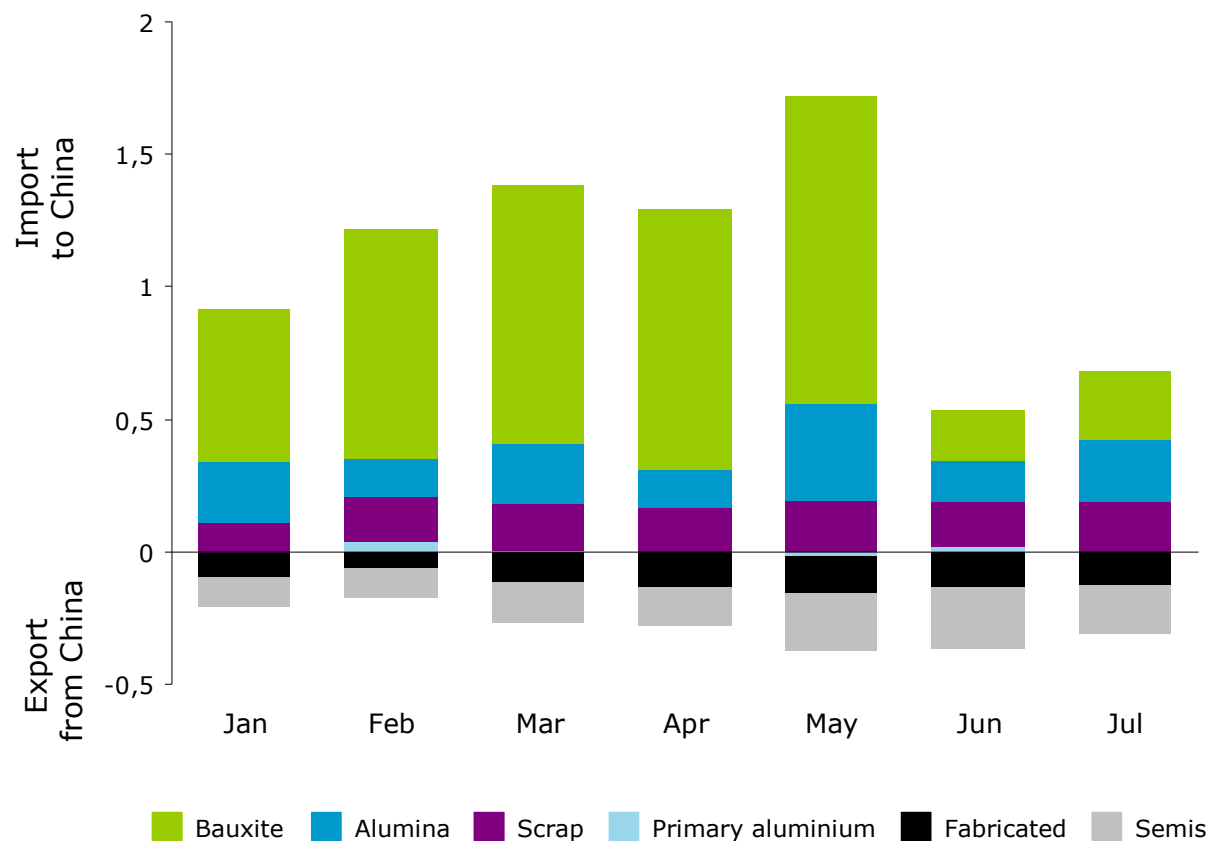
- Bauxite and alumina
- Strong increase in imports in April and May, but low levels of import in June and July
- Significant growth in alumina imports compared to 2011

Source: CRU/Antaika/Hydro

* Bauxite/alumina to aluminium conversion factor: 5.4/1.925

Chinese imports of bauxite over last months affected by Indonesian export ban

Aluminium equivalents* for each month in 2012, million mt



- Bauxite and alumina
 - Strong increase in imports in April and May, but low levels of import in June and July
 - Significant growth in alumina imports compared to 2011

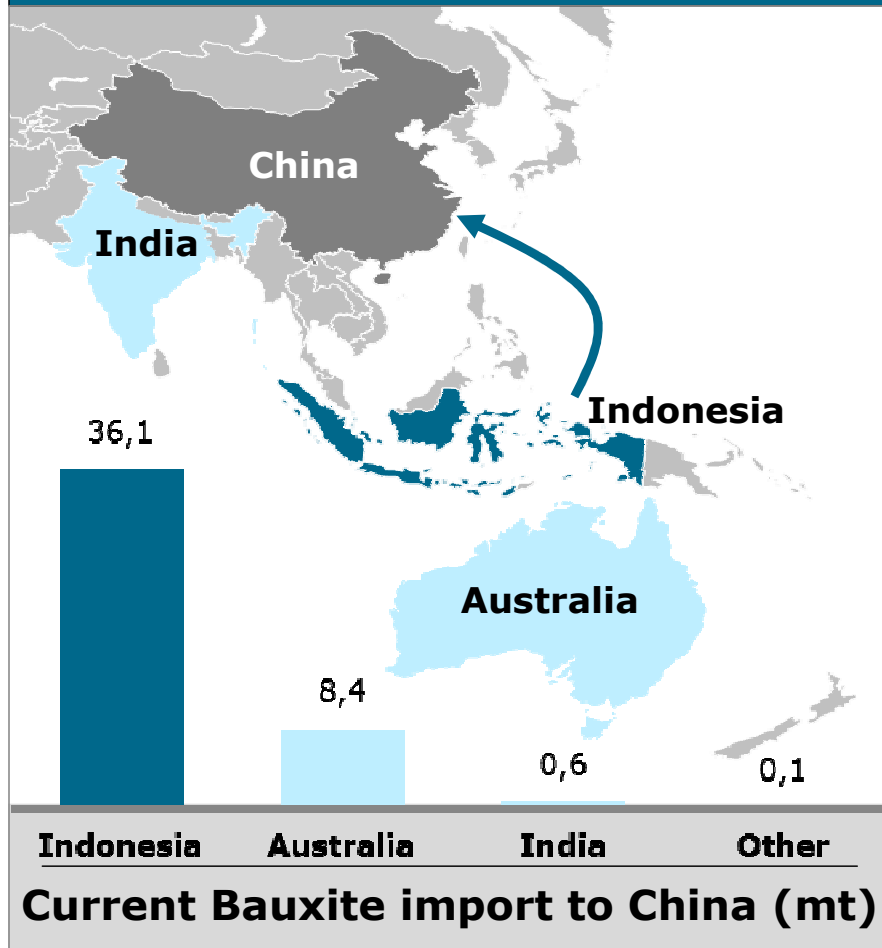
Source: CRU/Antaika/Hydro

* Bauxite/alumina to aluminium conversion factor: 5.4/1.925

Indonesia - major bauxite supplier to China

Exports restricted short term, not sustainable long term

Indonesia largest supplier of gibbsite bauxite to China by far..



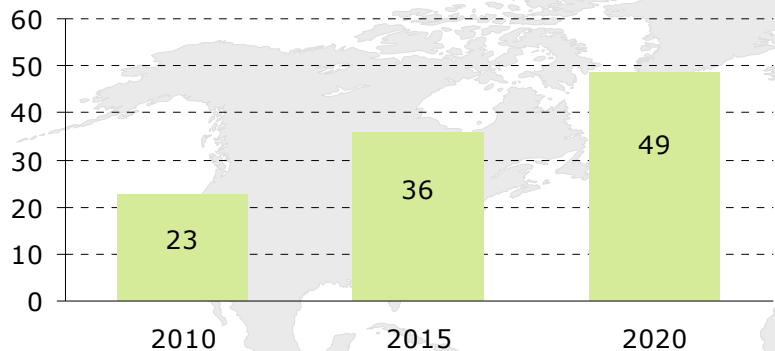
..but future production is expected to decrease significantly

- **Short term:** Government will restrict export
 - Licenses to be given to certain companies
 - Announced increased export tax to 20% in 2012 and 50% by 2013/2014
 - Announced ban of export from 2014, uncertainties regarding implementation
- **Long term:** Production will decrease due to: (independent of policies)
 - Scattered resources depleting over time
 - Inefficient mining practices
 - Competition from more profitable palm oil production

Which alternatives exist for China going forward?

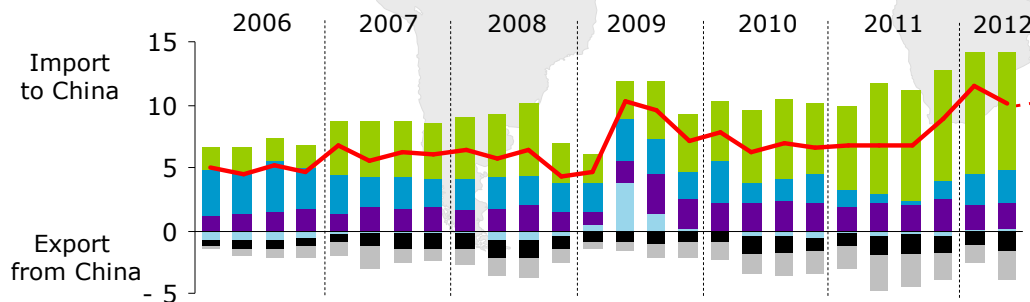
Increased Chinese dependency on import

Demand for semis, China, million mt



China's demand for semis expected to increase substantially going forward...

Annualized aluminium equivalents*, million mt



Illustrative development

...which translates to increased net imports for China upstream in the aluminium value chain

Source: CRU/Antaika/Hydro

■ Alumina
 ■ Bauxite
 ■ Scrap
 ■ Primary aluminium
 ■ Fabricated
 ■ Semis

* Bauxite/alumina to aluminium conversion factor: 5.4/1.925



Summary

Strategy for further value creation

Bauxite & Alumina



- Improvement efforts and cost reduction
- Commercialize
- Attractive growth projects

Primary Metal



- Reposition
- Keep solid cash flow in current assets
- Expand in first quartile assets

Energy



- Increase value of energy business
- Develop current base
- Global approach to power sourcing

Mid- and downstream



- Adjust capacity and cost base to market
- Continue proven high-end product strategy
- Expand selectively in emerging markets

www.hydro.com