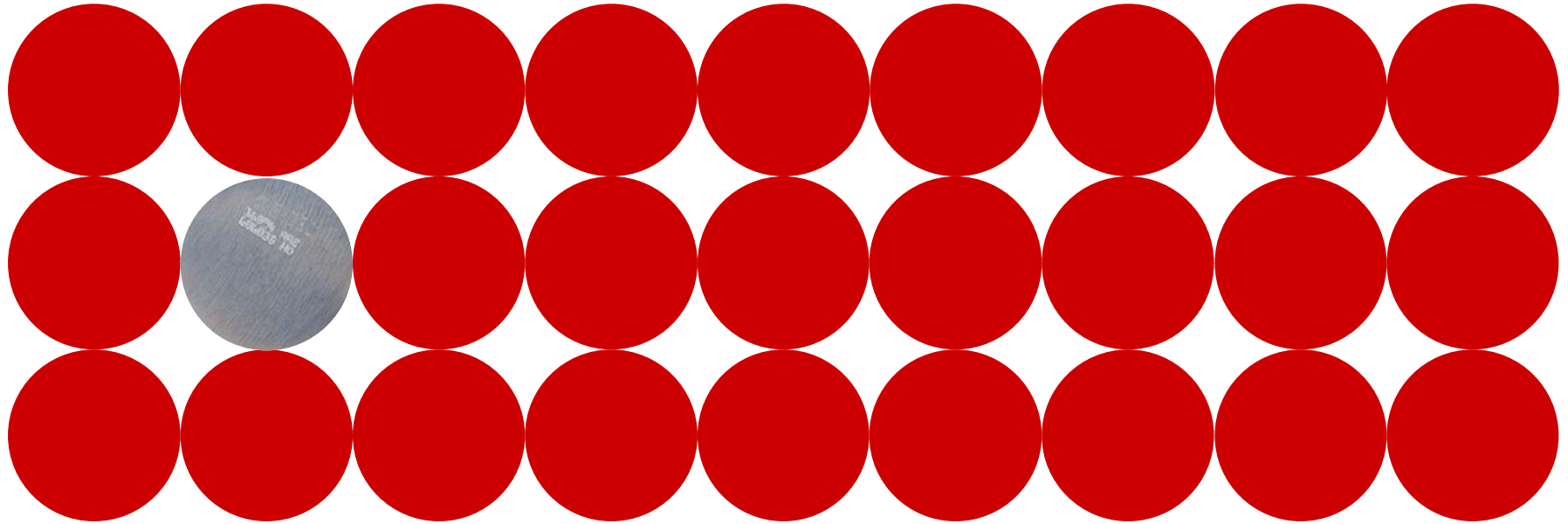


Market Outlook



Arvid Moss, Executive Vice President and Head of Energy and Corporate Business Development
December 1, 2011

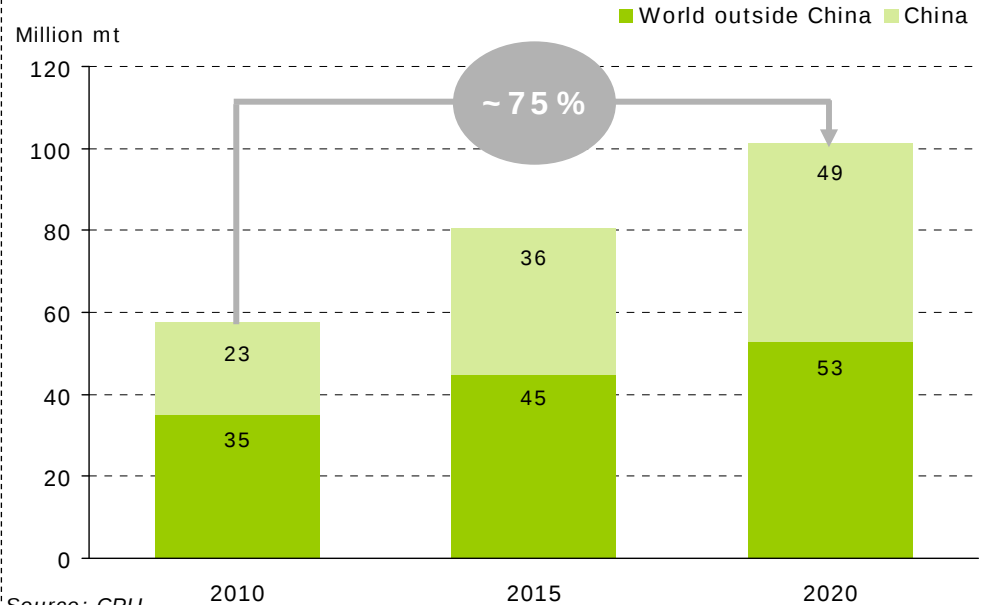
Healthy long-term growth projections

Uncertain and weakening short-term outlook

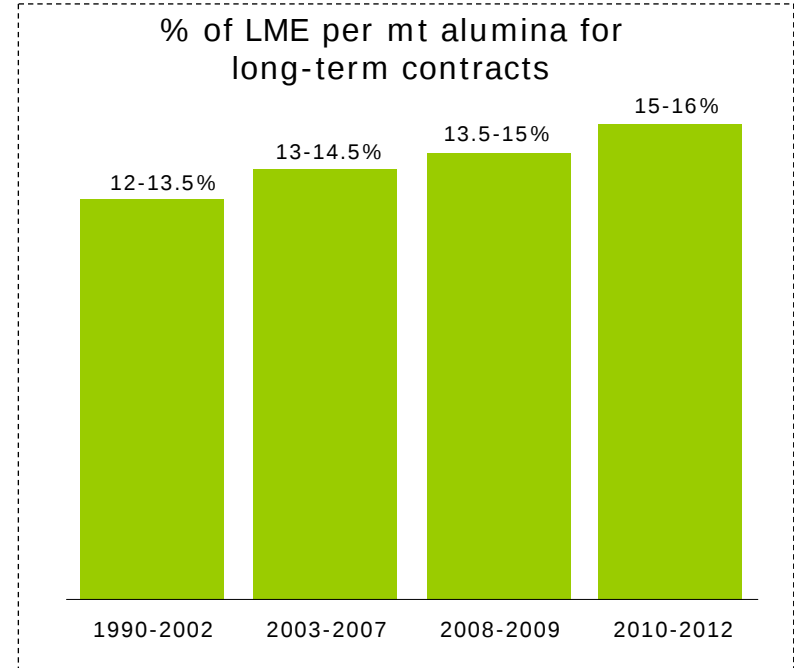
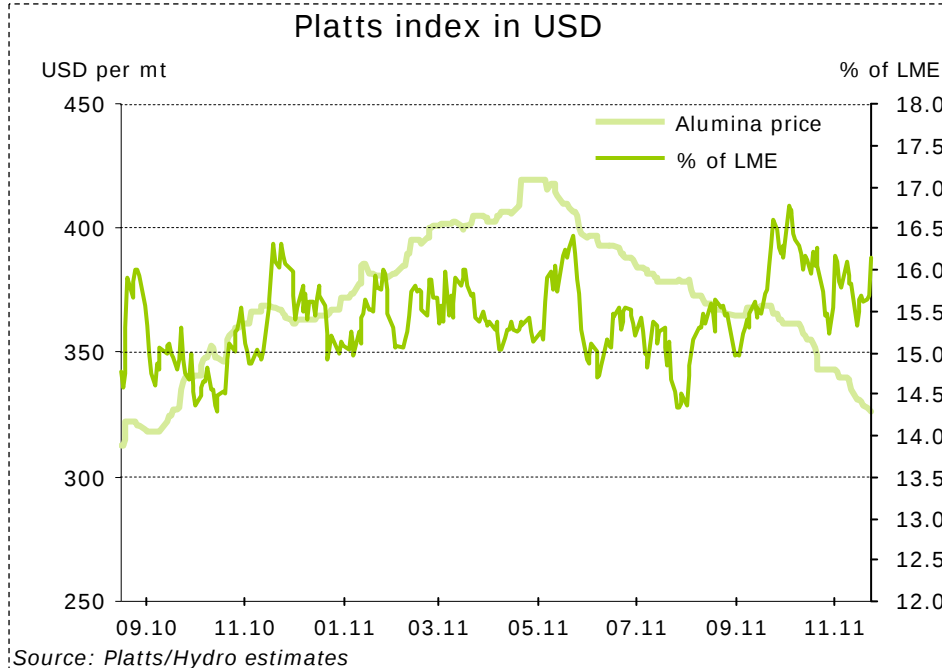
- Agenda

- Price
- Macro development
- Demand
- Aluminium value chain development
- Energy development
- Cost development
- Key take aways

Demand for semis



Alumina price increasing as percent of LME



Aluminium – fundamentals and financial asset

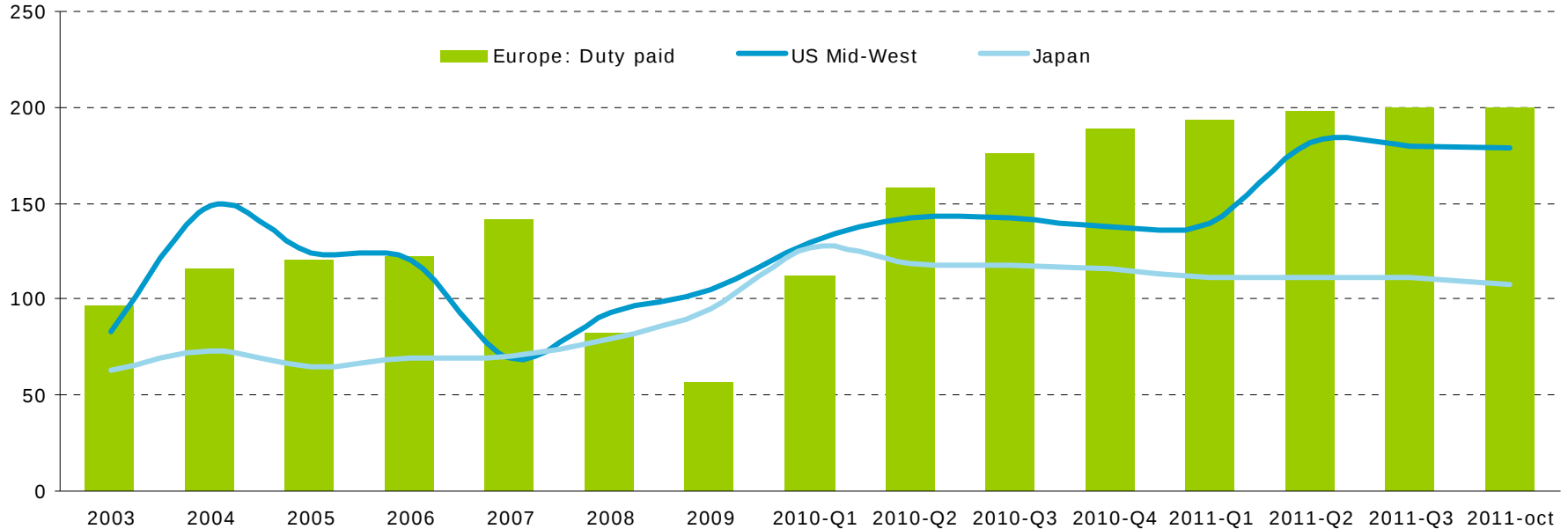
LME 3-month, USD per mt



Source: Reuters Ecowin/Hydro

Tight physical market despite high inventories

Ingot premium, USD per mt

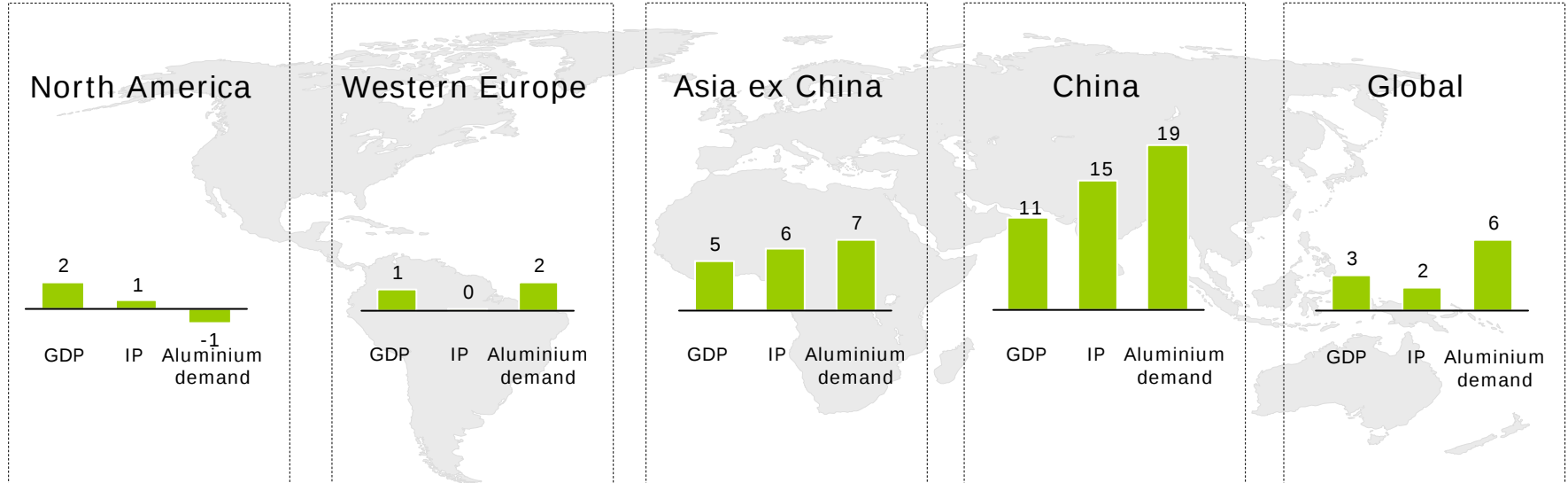


Source: Metal Bulletin/Platts

Strong aluminium demand

Stronger development than IP and GDP last 10 years

CAGR last 10 years (%)

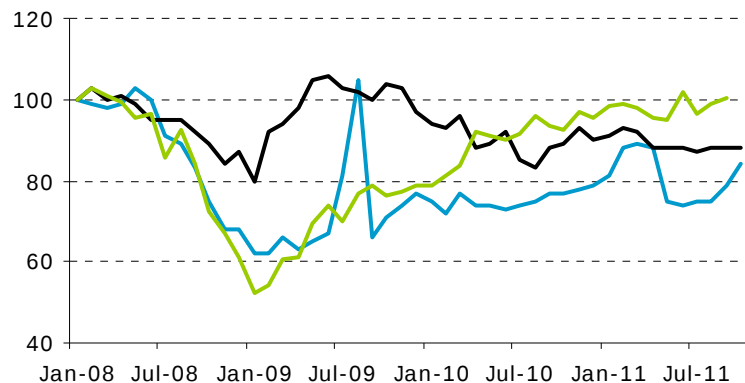


Source: CRU/Global Insight

Automotive indicators picking up - still weak construction activity

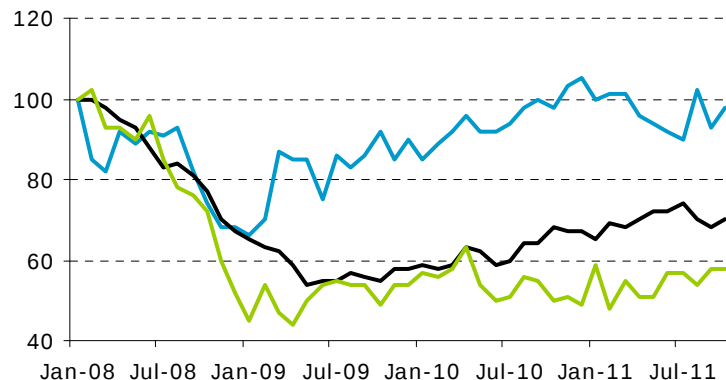
Automotive

January 2008=100



Construction

January 2008=100



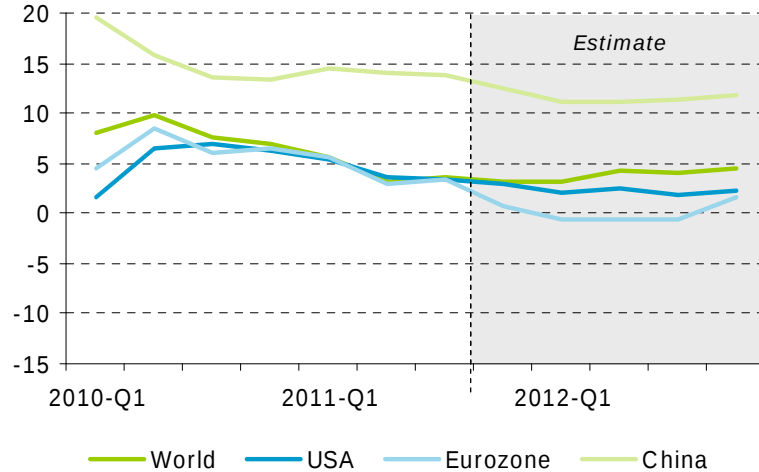
Source: US Department of Commerce, Deutsche Bundesbank, American Institute of Architects, ECB, Directorate General for Economic and Financial Affairs

IP-growth estimated to weaken

Especially in Eurozone

Global IP

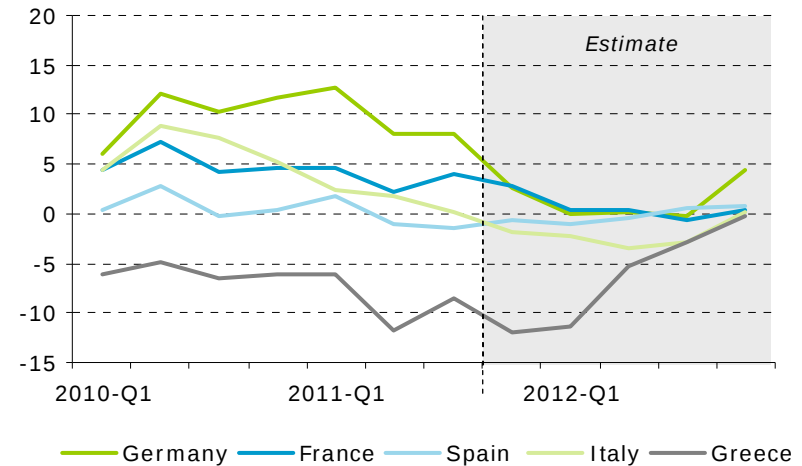
Quarterly, %-change from a year earlier



Source: Global Insight

IP selected EU countries

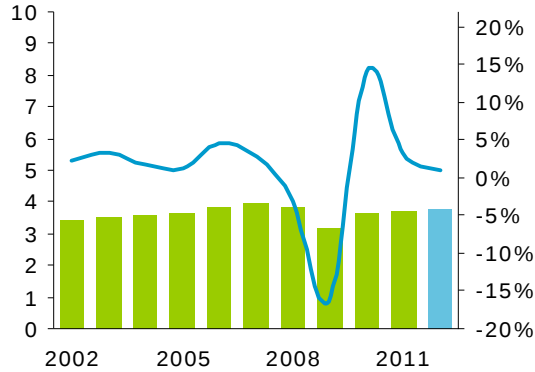
Quarterly, %-change from a year earlier



Rolled products consumption

Western Europe

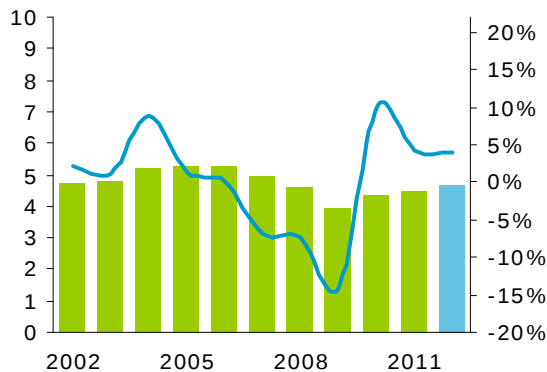
Million mt



- Soft landing assumption for 2012
- Ongoing substitution supporting demand in transport
- Normalizing stock levels

North America

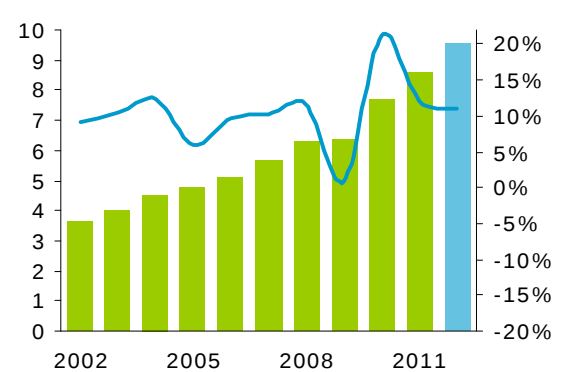
Million mt



- Strong transport markets
- Packaging market saturated
- Moderate recovery in construction during 2012

Asia Pacific

Million mt



- Growth continue on high level
- Strong domestic demand within the automotive and packaging segments
- Risks regarding to export markets

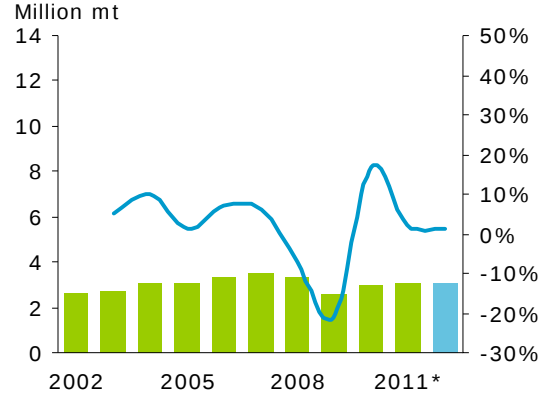
Source: CRU/Hydro

■ Million tonnes

— % growth (RHS)

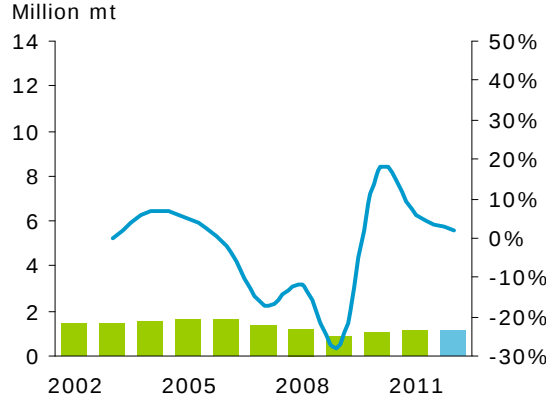
Extruded products consumption

Europe



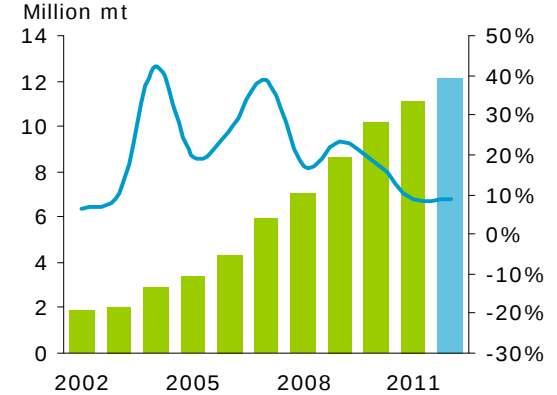
- Building activity remains weak in Europe, especially in Southern Europe
- Consumer confidence low, weak growth expected

United States



- 2011 growth in US shipments driven by duties on Chinese extrusion imports
- Transport and automotive segment expected to stay strong

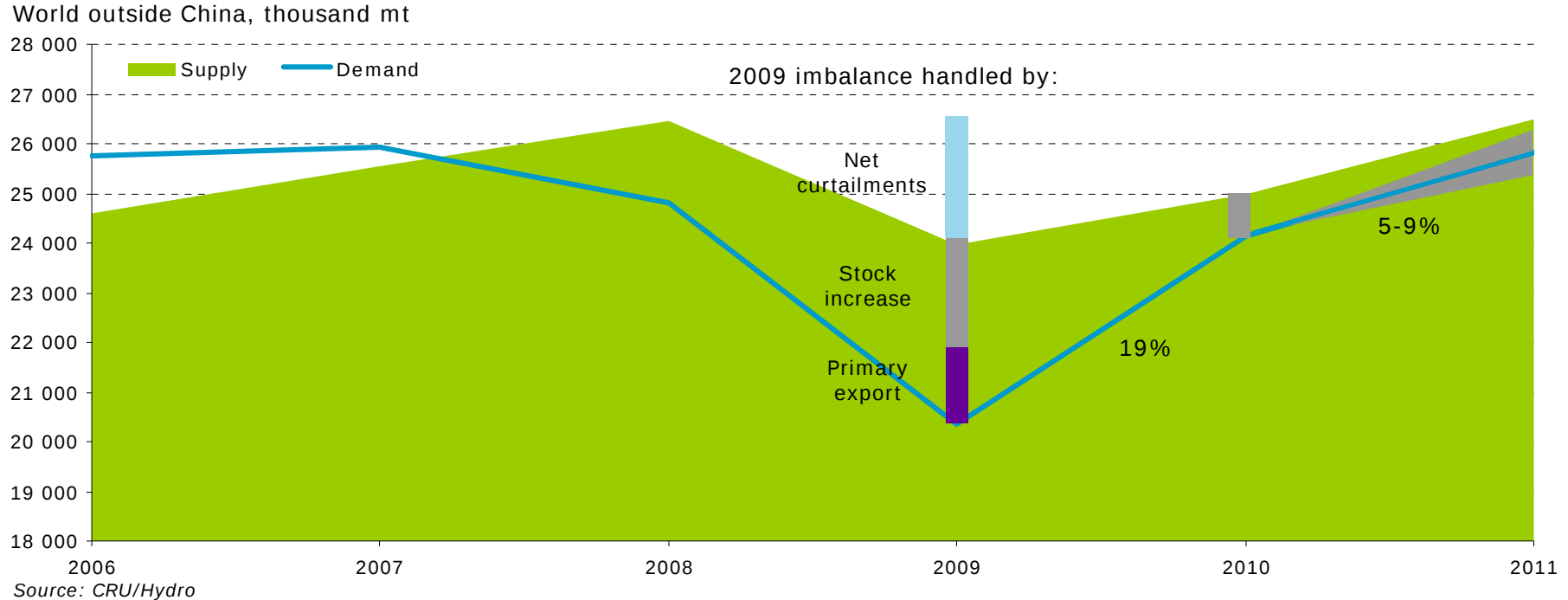
China



- Growth driven by the construction segment
- High production of motor vehicles
- Large investments within infrastructure, such as railway

Source: EAA/AA/CRU/Hydro ■ Million tonnes — % growth (RHS)

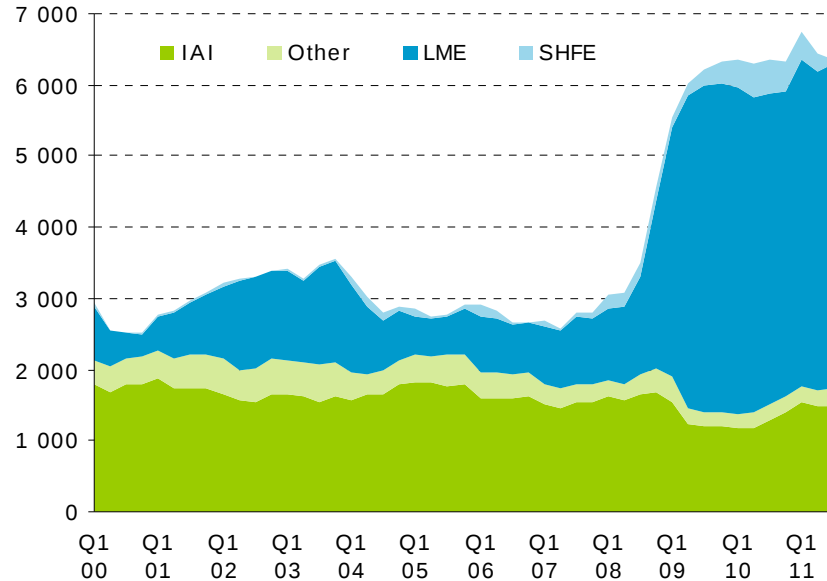
2011 balance – our expectations



Inventories at high level

World reported primary aluminium inventories

Thousand mt



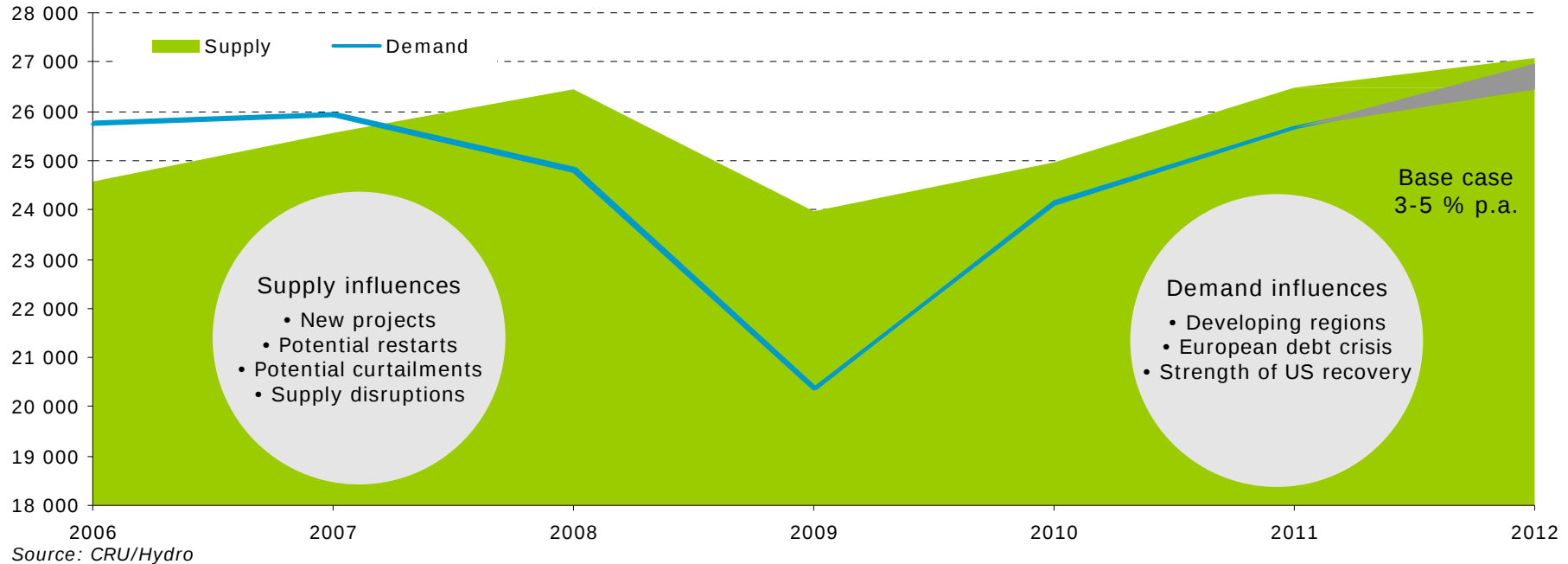
- High inventories well known in market
 - Different views on unreported inventories
- Estimated total reported and unreported inventories ~11 million tonnes
 - Represents ~3 months of consumption
- Financial deals still attractive

Source: CRU

Healthy demand growth expected

Manageable supply/demand balance

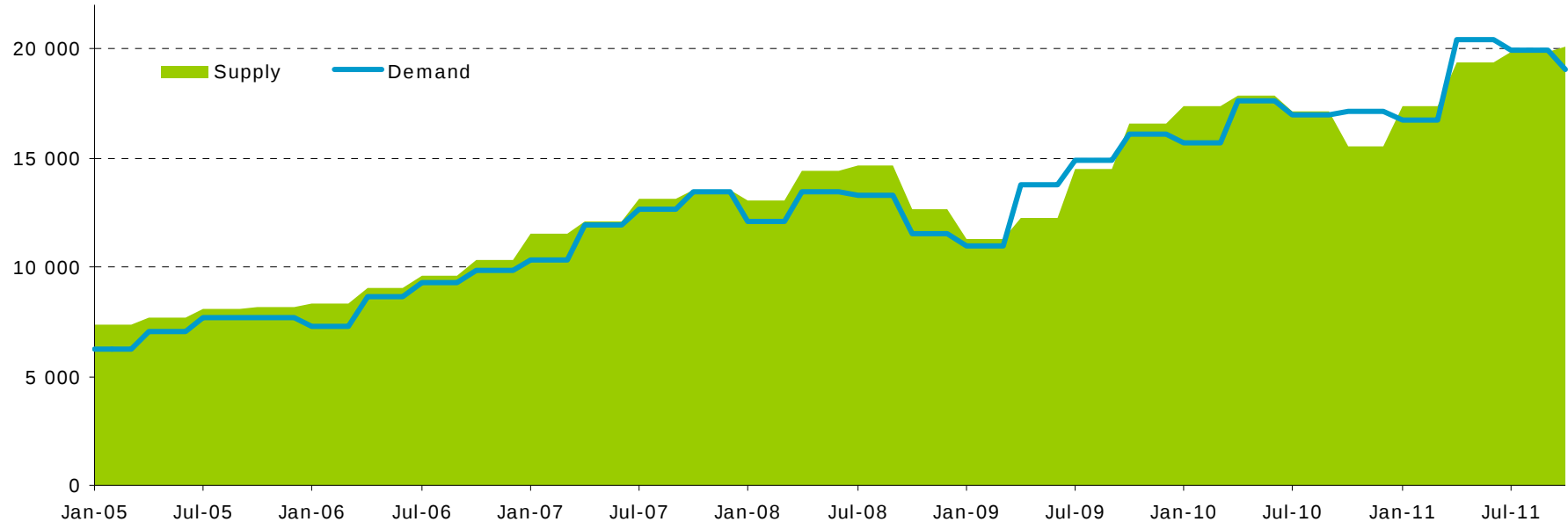
World excluding China, thousand mt



Strong Chinese primary aluminium demand

Balanced supply/demand

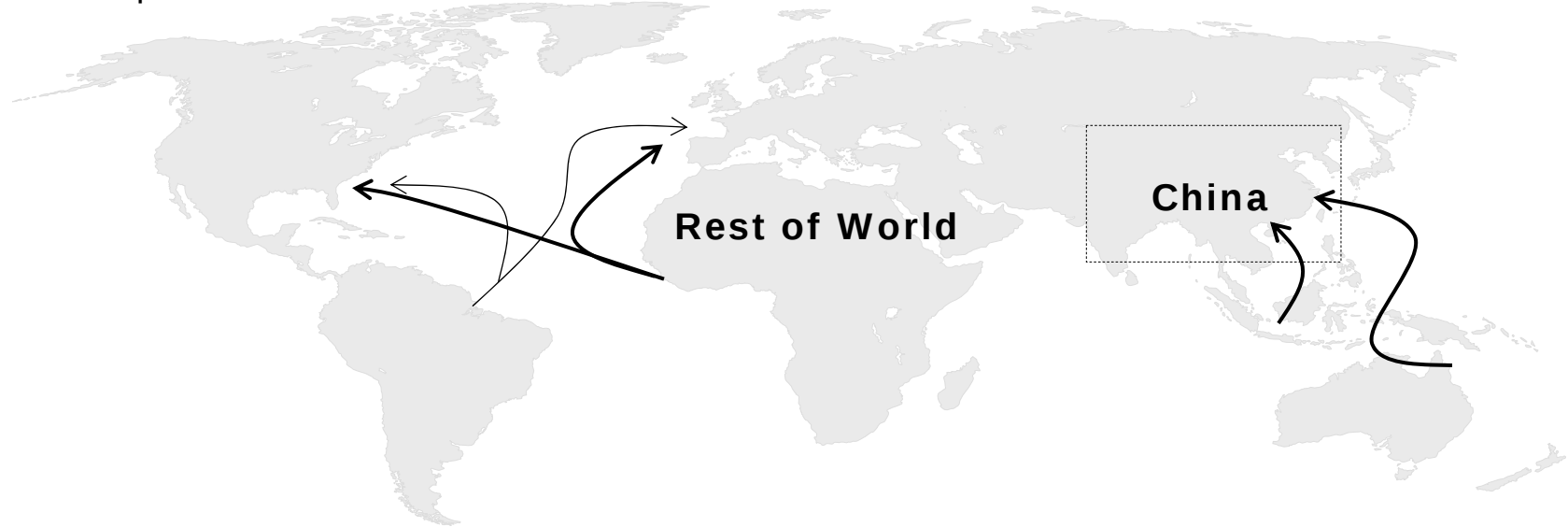
China, thousand mt, annualized



Source: CRU

Third party sales ~20 % of global bauxite production

Bauxite production 2011: ~250 million mt

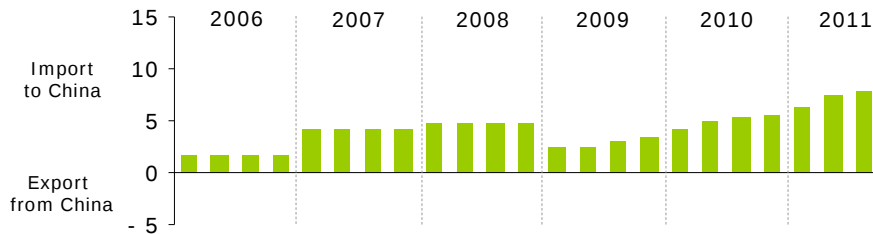


Source: Antaika/Hydro

China highly dependent on bauxite import



Annualized aluminium equivalents*, million mt



- Share of imported bauxite in China in 2011: ~43%
- Quality of domestic bauxite resources is deteriorating
- Indonesia supplies 80% of imported bauxite, Australia the remaining 20%

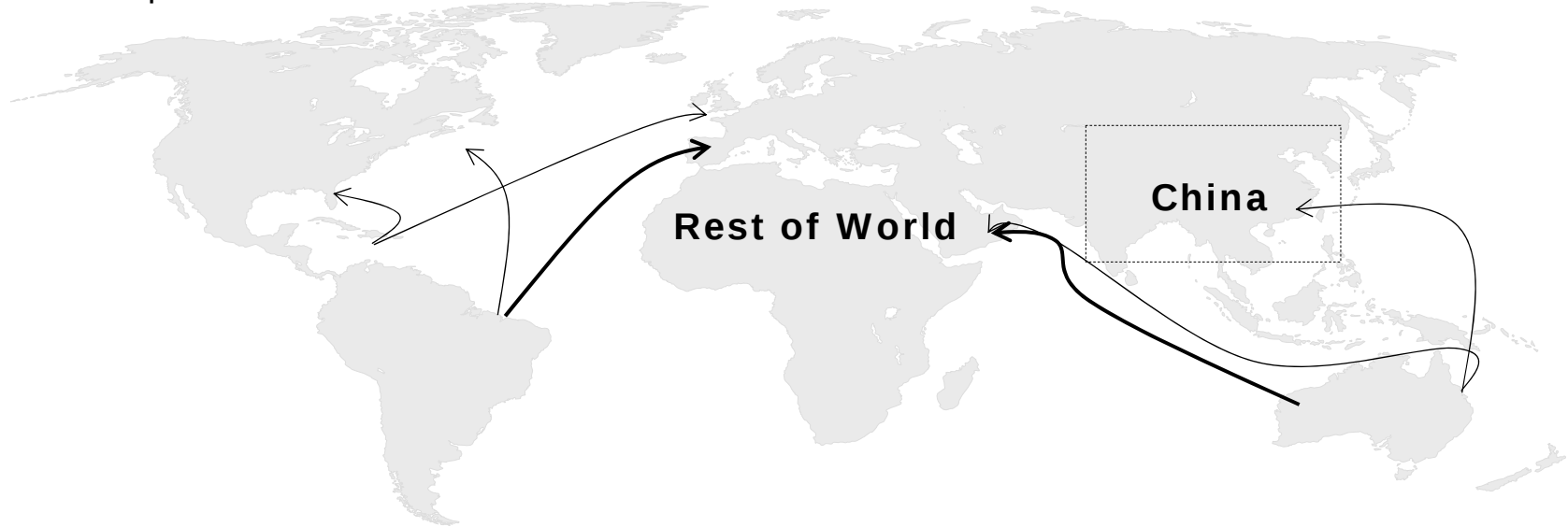
Source: Antaiko/Hydro

■ Bauxite

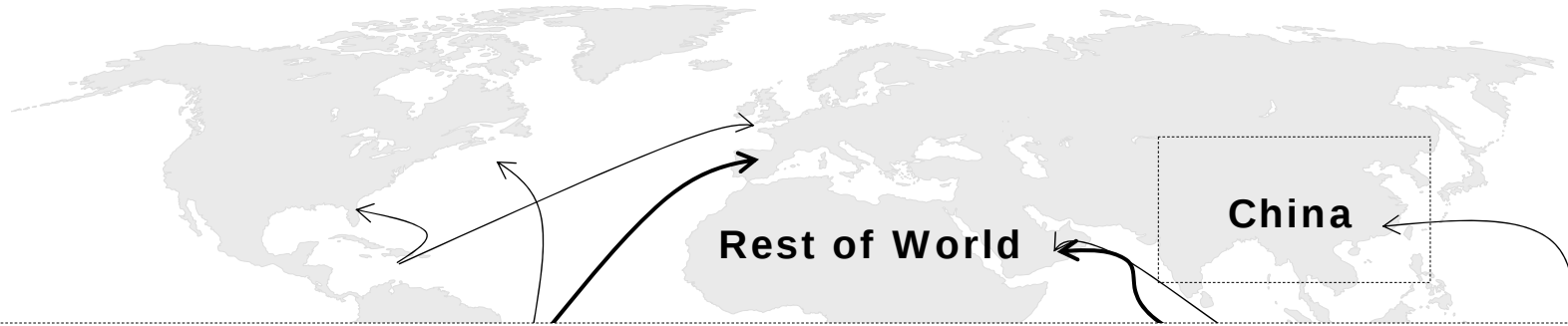
*Bauxite to aluminium conversion factor: 5.4

Third party sales ~35 % of global alumina production

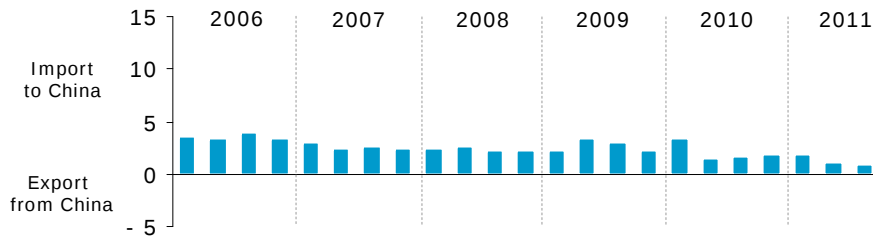
Alumina production 2011: ~90 million mt



Chinese domestic alumina capacity increasing



Annualized aluminium equivalents*, million mt



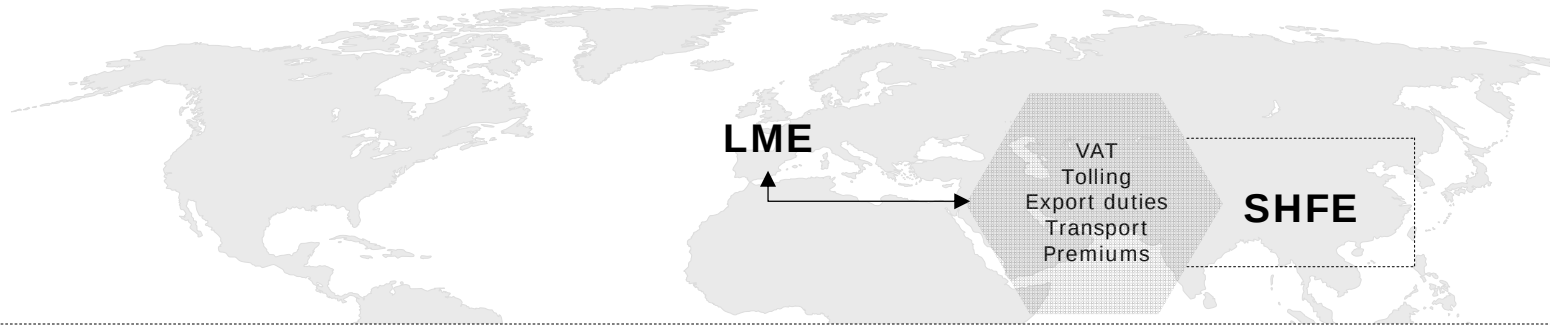
- ~65 % of smelter production in China is not integrated with alumina
- China has capacity to be balanced in alumina

Source: Antaika/Hydro

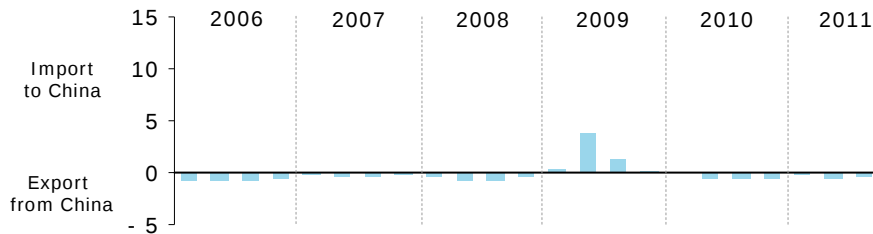
■ Alumina

*Alumina to aluminium conversion factor: 1.925

Chinese trade barriers for primary aluminium



Annualized aluminium equivalents, million mt

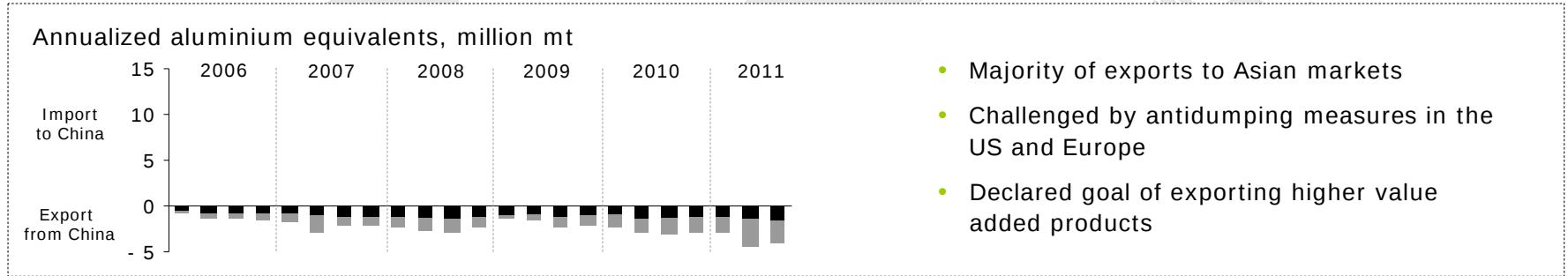


- Declared goal of self-sufficiency in primary aluminium
- Arbitrage opportunities between LME and SHFE in 2009

Source: Antaike/Hydro

Primary Aluminium

China increasing exports of fabricated and semis

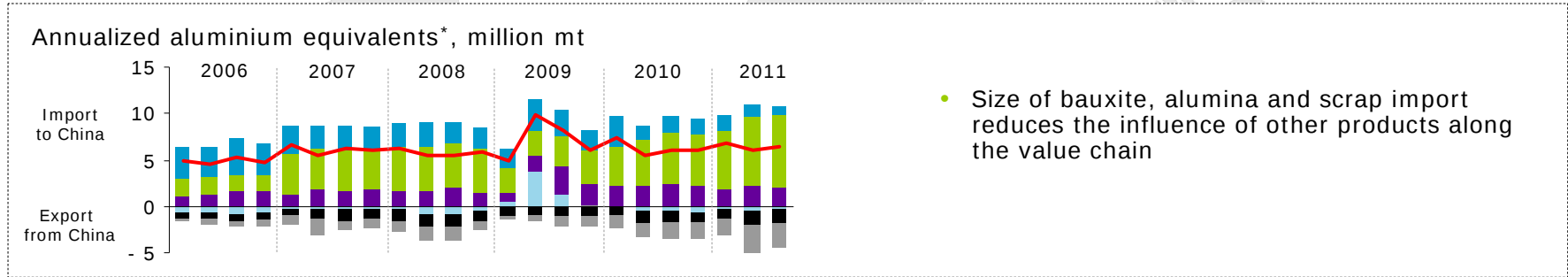


Source: Antaiko/Hydro

■ Fabricated

■ Semis

China – significant net importer of aluminium

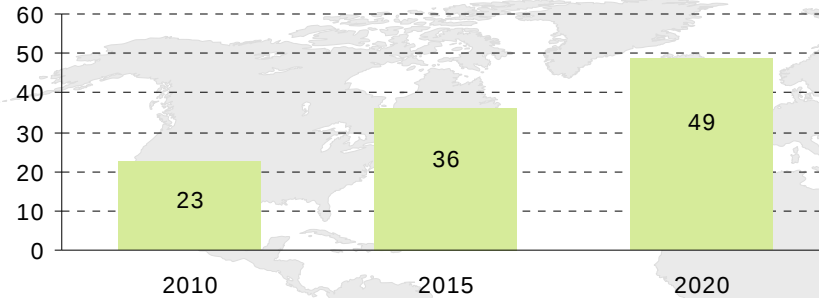


Source: Antaiko/Hydro

Alumina Bauxite Scrap Primary aluminium Fabricated Semis

Demand will increase substantially...

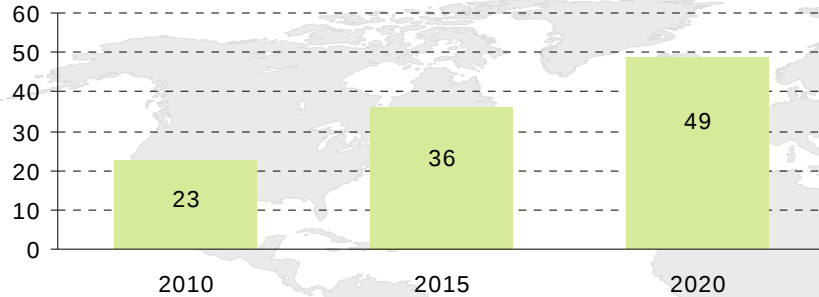
Demand for semis, China, million mt



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

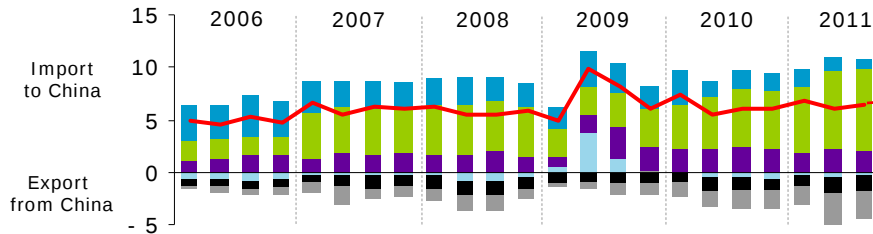
...as a consequence, China will be increasingly short upstream

Demand for semis, China, million mt



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

Annualized aluminium equivalents*, million mt



Illustrative development

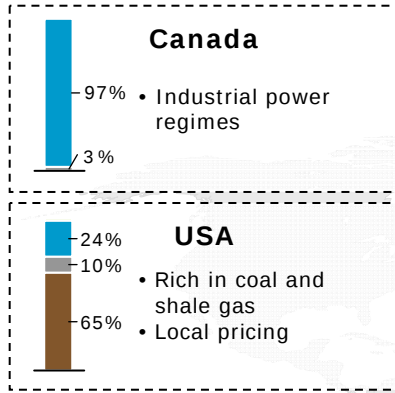
...which translates to increased net imports for China upstream in the aluminium value chain

Source: CRU/Antaiko/Hydro

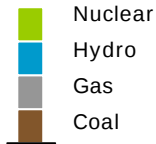
- Alumina
- Bauxite
- Scrap
- Primary aluminium
- Fabricated
- Semis

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

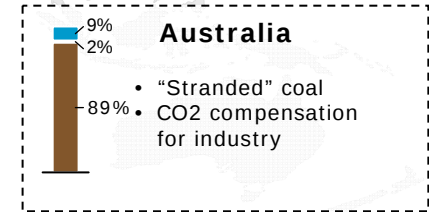
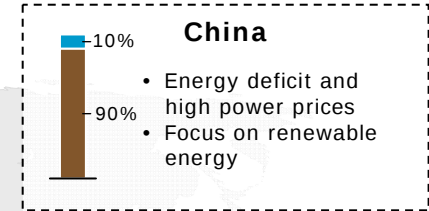
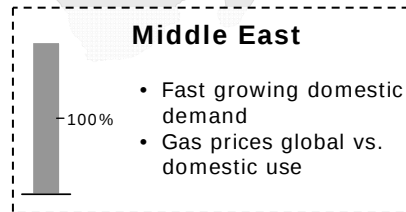
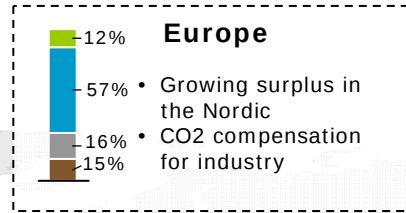
Regional differences in smelter power sourcing



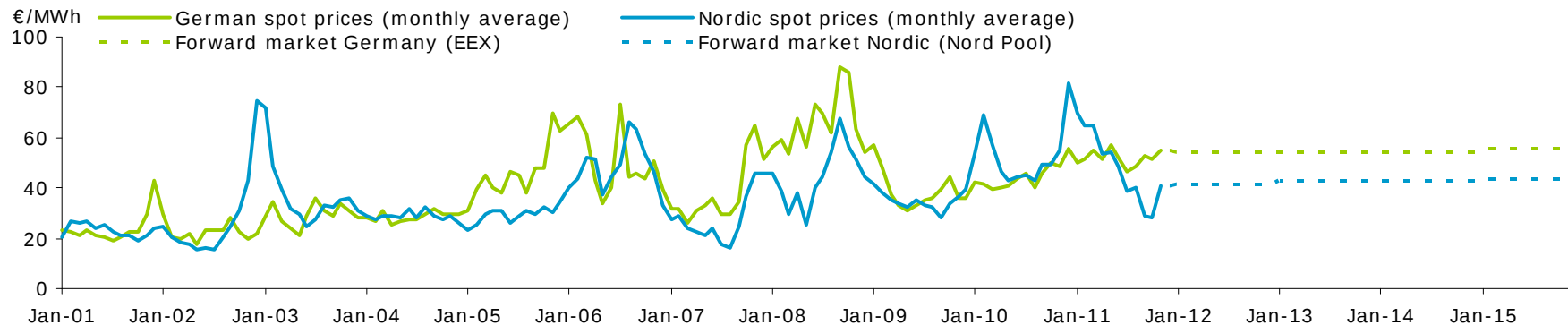
Power source used in aluminium smelters in 2011



Source: CRU/Hydro



Volatile European electricity market



German power market

- Nuclear capacity being phased out
- Share of renewable capacity increasing strongly
- Dependent on exchange with neighbor countries
- Persisting high coal and gas prices
- Low CO₂ price
 - Less emissions due to economic slowdown

Nordic power market

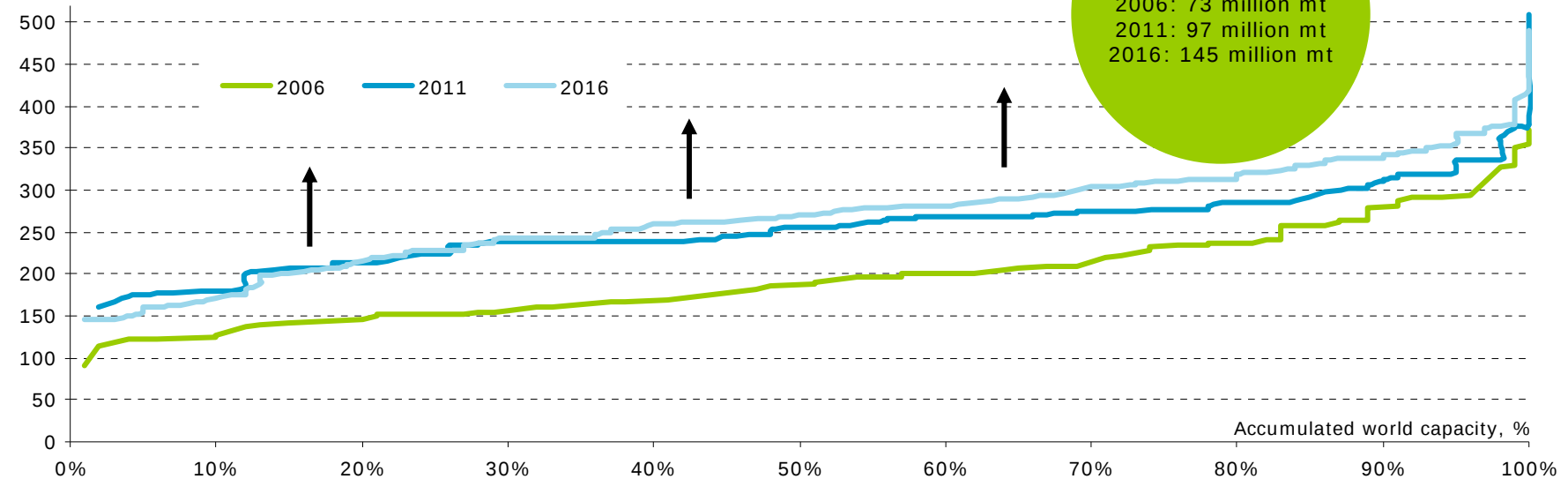
- Growing energy surplus
- Increasing volatility
 - Dependency on weather
 - Dependency of unpredictable renewable power
- Persisting high coal prices
- Low CO₂ price impact due to low CO₂ price

Source: Nord Pool, EEX

Alumina cost curve lifted by cost pressure

Business operating cost alumina

USD per mt

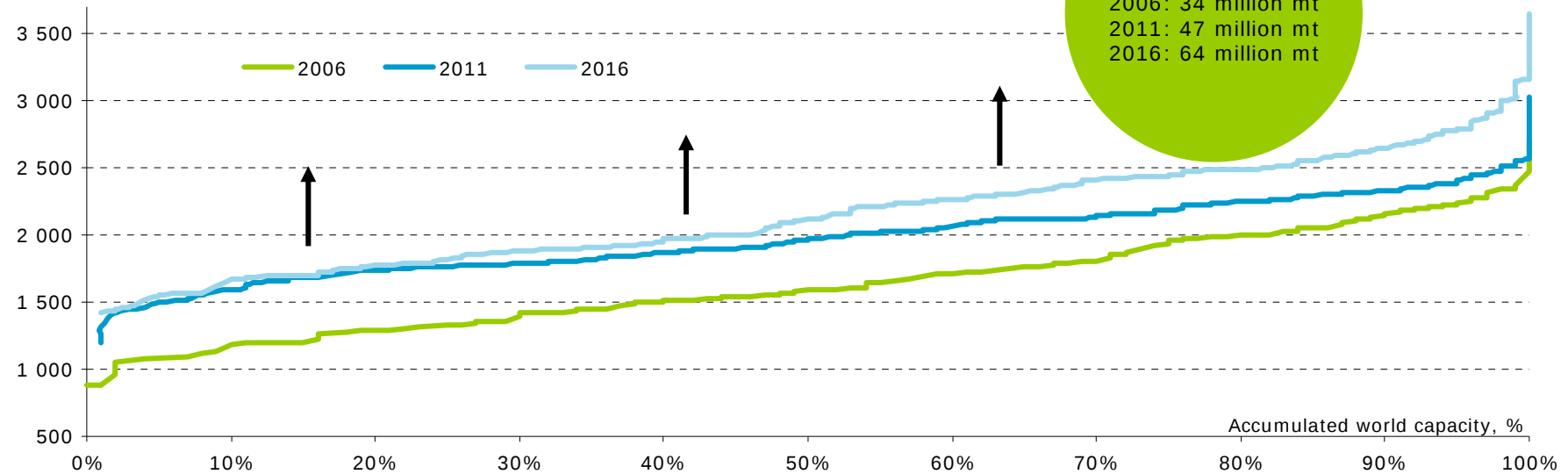


Source: CRU, 2011: LME USD 2 438 per mt. Same LME and currency assumptions

Aluminium cost curve lifted by cost pressure

Business operating cost aluminium

USD per mt

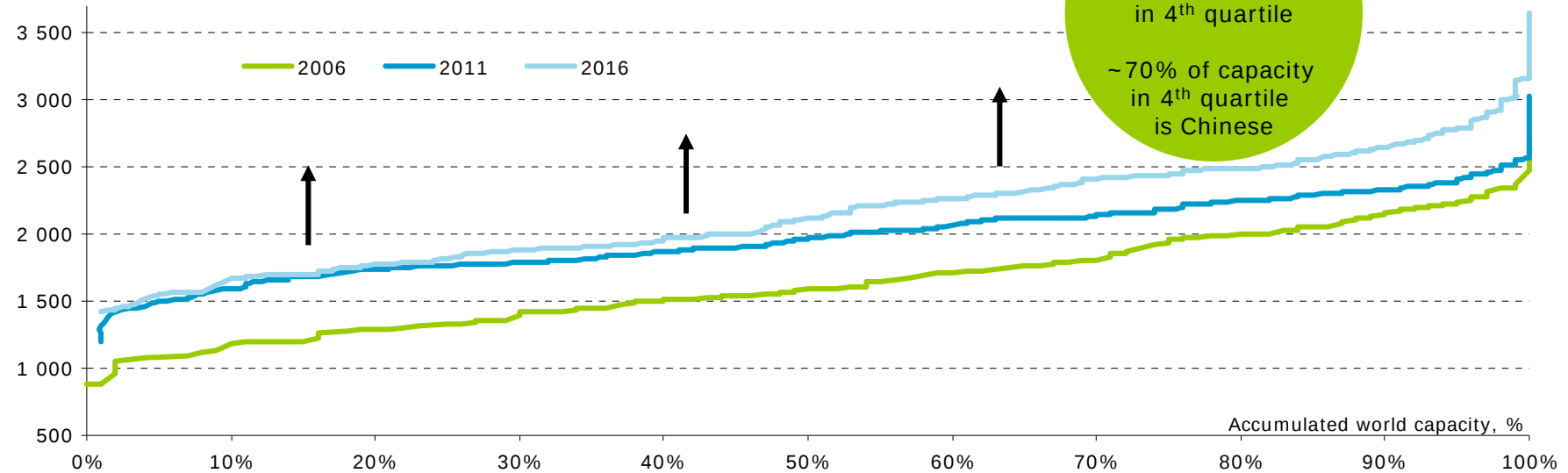


Source: CRU, LME USD 2 438 per mt. Same LME, alumina and currency assumptions

Aluminium cost curve lifted by cost pressure

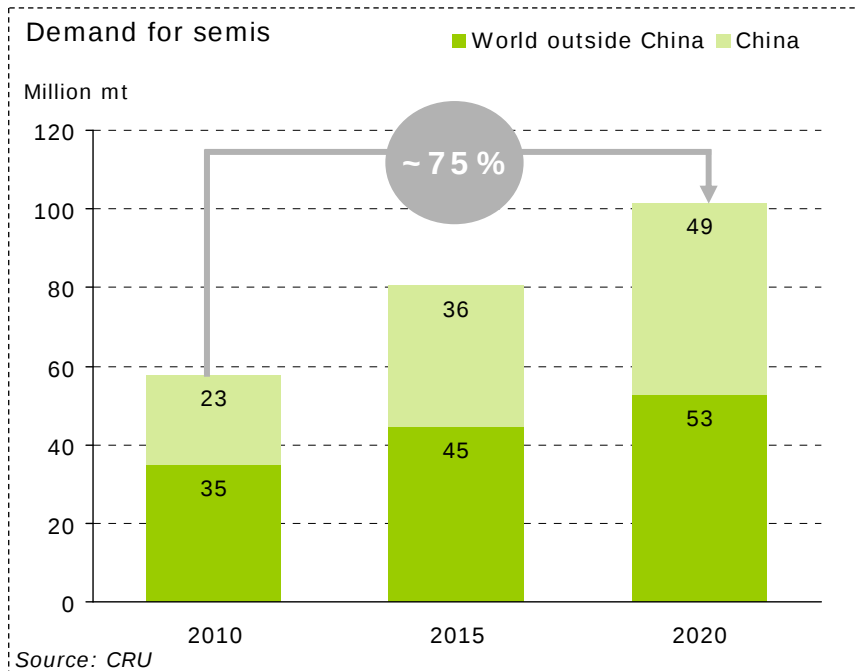
Business operating cost aluminium

USD per mt



Source: CRU, LME USD 2 438 per mt. Same LME, alumina and currency assumptions

Market outlook summary



Lower growth expected in 2012

- European debt crisis
- Positive impact from US recovery
- Continued growth in China and developing regions

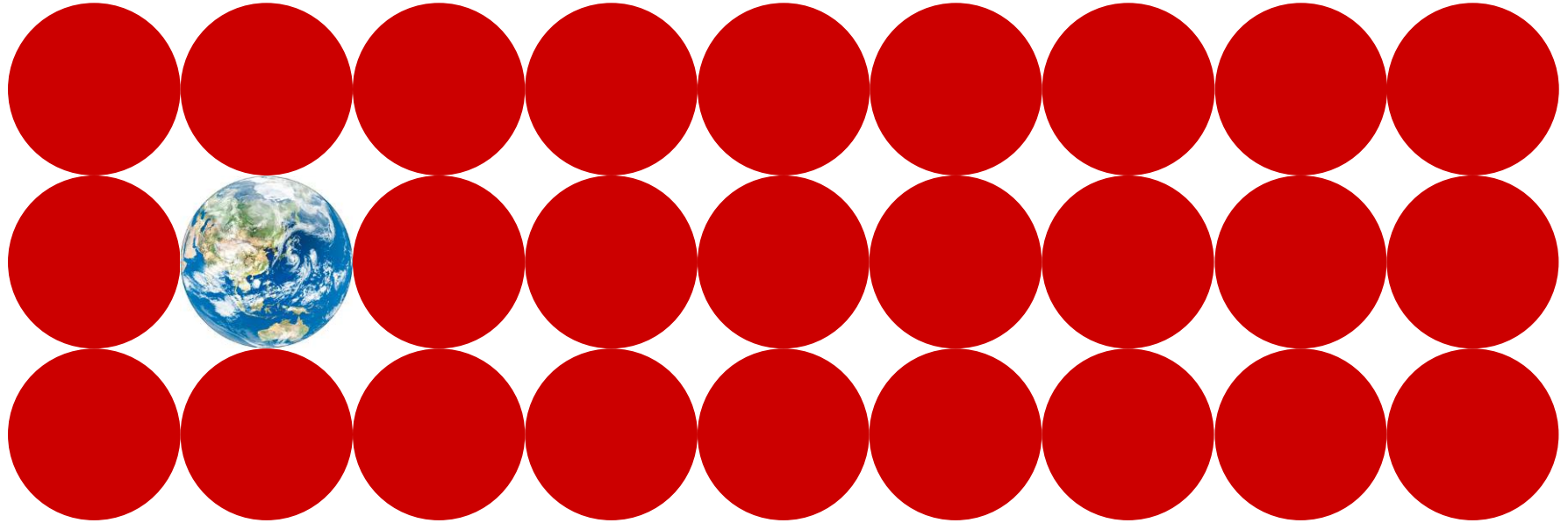
Still strong long term projections

- Emerging markets
- Urbanization
- Infrastructure building
- China short on upstream aluminium

Aluminium price dependent on

- Macroeconomic development
- Energy prices and USD impacting the cost support level
- Raw material price development
- Attractiveness of financial deals

Capturing full potential in Bauxite & Alumina



Johnny Undeli, Executive Vice President and Head of Bauxite & Alumina
Fernando Simões Henriques, Head of Operations
December 1, 2011

Agenda



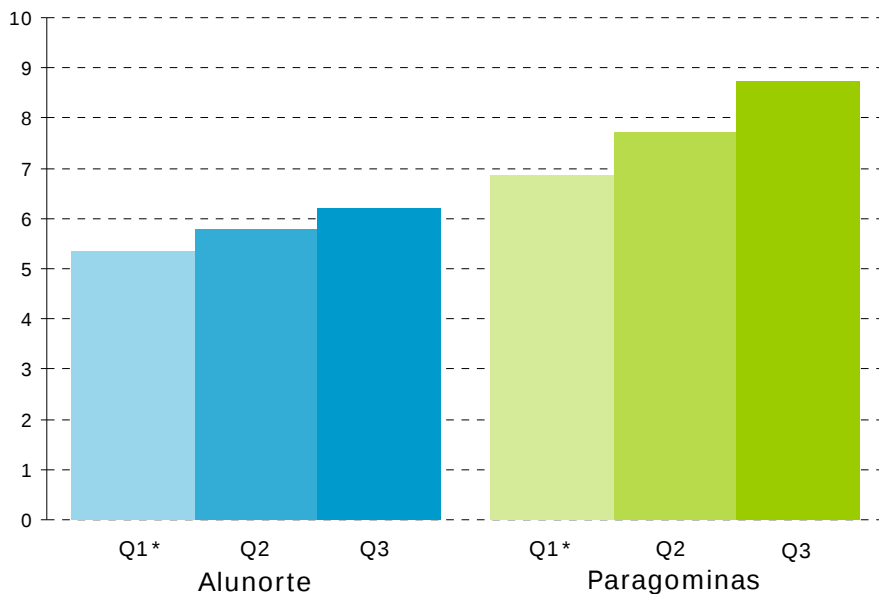
- World class operations and organization
- Production process and operational improvements
- Summary

1

**World class
operations and
organization**

Further improved bauxite and alumina production

Annualized production, million mt



*Pro-forma

- Alunorte production up 16% from Q1 to Q3 2011
- Paragominas production up 27% from Q1 to Q3 2011
- Continued focus on implementing Hydro production system

Stabilize and improve further



- Solid progress in production volumes
 - Supported by continuous improvement culture
- Positive alumina market development
 - Index market has been accepted – and Hydro is participating
- Expansion projects maturing
- Stakeholder relations well established
 - Authorities
 - Customers
- Social dialogue developing positively



HYDRO

MY PLEDGE

My role in Hydro's value chain is important. Through determined cooperation, I commit myself to developing Hydro's Bauxite & Alumina operations all the way from B to A. Our common targets are an annual production of 9.9 million metric tons of bauxite in Paragominas and 6.3 million metric tons of alumina in Alunorte. Every day I will try to do better than yesterday – The Hydro Way.



de B até A

MEU COMPROMISSO

Meu papel na cadeia produtiva da Hydro é muito importante. Eu estou determinado a cooperar e me comprometo a participar da melhoria das operações da área de Bauxita e Alumina da Hydro de B até A. Nossas metas comuns são a produção anual de 9,9 milhões de toneladas de bauxita na Hydro Paragominas e de 6,3 milhões de toneladas de alumina na Alunorte. A cada dia eu buscarei fazer melhor do que fiz antes, de acordo com o "HYDRO WAY".



Operational momentum will give results

Production growth - Capital discipline - Continuous improvement



Paragominas

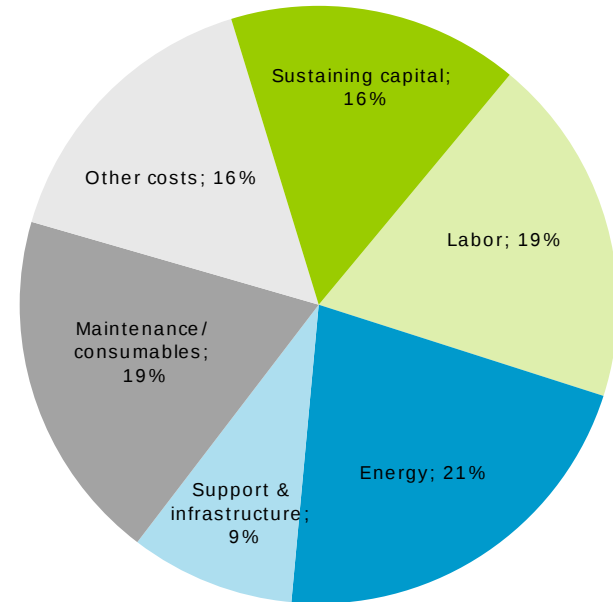
One of the world's largest bauxite mines

- Record production in 2011
 - Q3 production 8.7 million mt on annual basis
- Target to stabilize and continue to deliver production increases
- Possible expansion: up to 15 million mt
- Current reserve life: 30 years
 - ~300 million mt
 - Long-life resource

Bauxite mining costs in Paragominas

- Energy cost – power and fuel
- Labor cost
 - Influenced by Brazilian wage level
 - Productivity improvements
- Maintenance and consumables
 - Influenced by Brazilian inflation
- Large fixed cost base
 - Important to increase production

Paragominas bauxite mining costs Jan-Sep 2011





Alunorte

World's largest alumina refinery

- Improving production in 2011
 - Q3 production 6.2 million mt on annual basis
- Targeting stable production above 6 million tonnes
- World-class conversion cost position
- Modern technology
- Bauxite supplied from Paragominas and MRN

Excellent Alunorte alumina quality

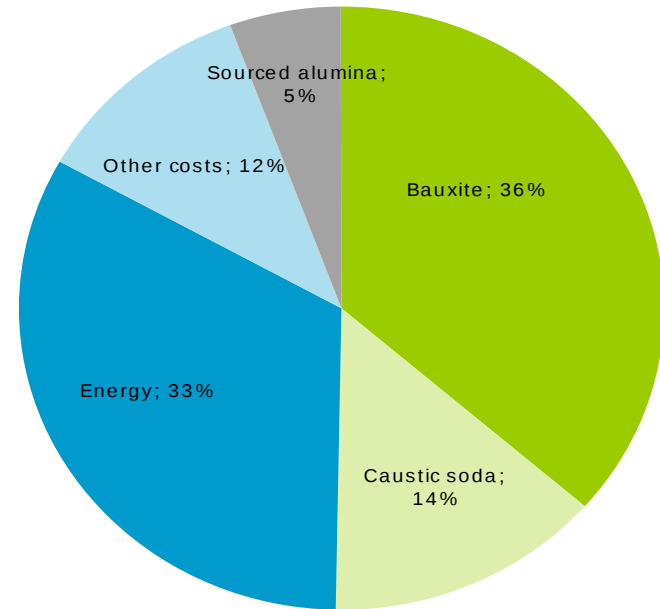


- High-quality bauxite as basis
- Low content of fines
- Low content of non-organic materials
 - Gallium, phosphor and titanium
- High degree of consistency
 - Low variability on high-quality alumina
 - Customers have preference for Alunorte alumina compared with other sources

Favorable integrated alumina cash cost position

- Integrated alumina cash cost position Jan-Sep 2011
 - USD 273 per tonne
 - Alunorte, Paragominas and sourced alumina
- Bauxite
 - Cash cost to be improved as Paragominas increase production and pipeline is fully utilized
- Energy
 - First-quartile energy consumption – 8 MJ/mt
 - Energy mix of heavy fuel oil and coal
- Caustic soda
 - Competitive caustic soda consumption due to bauxite with low level of reactive silica
- Other costs
 - Maintenance, labor and other
- Sourced alumina
 - Alumina purchased for resale

Integrated alumina cash cost position Jan-Sep 2011





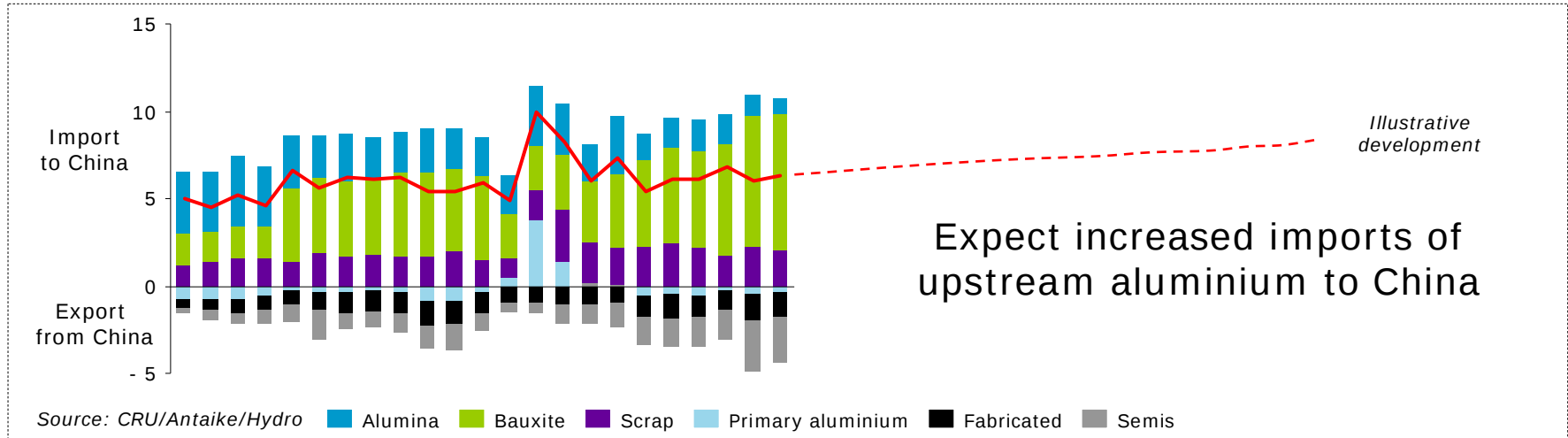
Main market and commercial take-aways

No.1: China – major importer of upstream aluminium long-term

No.2: Industry-wide cost-increase and fight for resources

No.3: Index pricing becoming widely accepted

China short in upstream aluminium

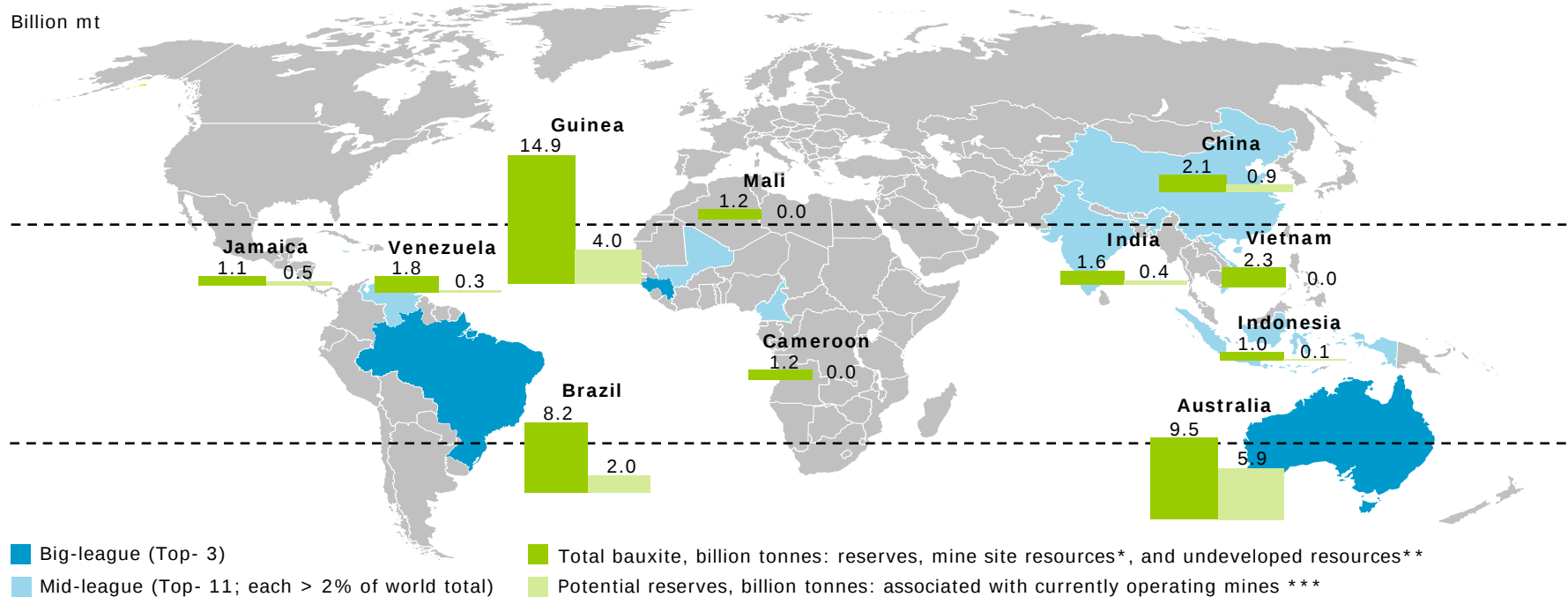


- China mainly importing bauxite and alumina
- Global alumina market expected in balance

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

66 % of available bauxite in 3 countries

Billion mt



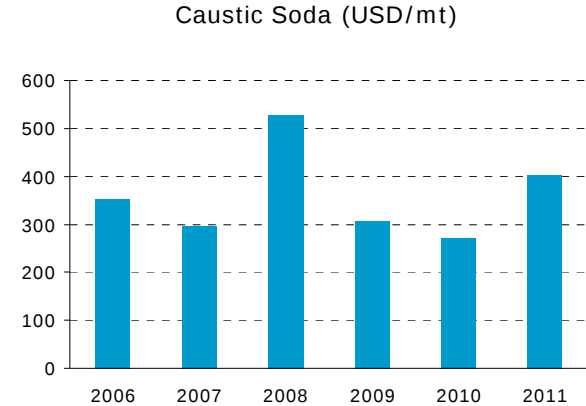
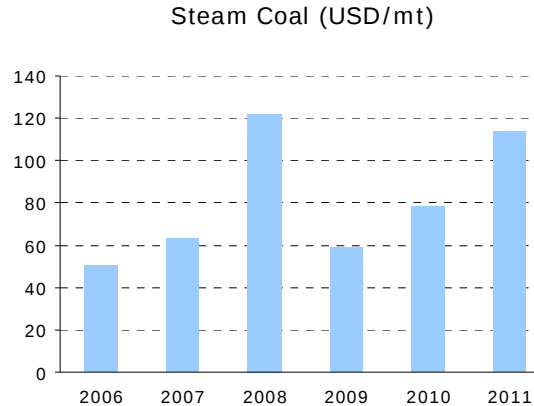
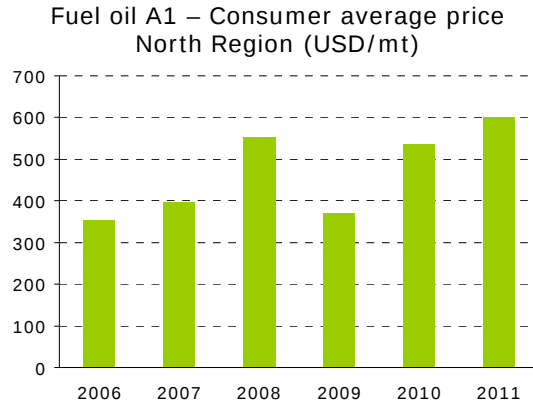
*) Mine site resources are known bauxite resources that do not currently qualify as reserves for various reasons

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

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

Source: Roskill and Hydro analysis

Raw material cost pressure



Sourcing Strategy

- Close relationship with the operations
- Support suppliers to develop new solutions
- Flexibility to take advantage of favorable market conditions
- Challenge operations to test alternative materials

Source: Bloomberg, Platts Bolivar index, CMAI/Harriman

Alumina pricing shifting from LME-link to market fundamentals



- Future pricing should reflect fundamentals of bauxite and alumina value chain
- Spot market activity is important
- New norm for the industry
 - Index pricing and shorter-term contracts (3-4 years)
 - Getting wider acceptance in the market

Hydro's commercial strategy

- Actively promoting index pricing
 - Providing spot market liquidity
 - Reporting trades
- Focus on selling to end-users based on a global portfolio
- Establish a premium for Alunorte quality
- Relatively minor volumes available for sale before 2016
- Selling 1.5-3 million mt annually of MRN bauxite externally

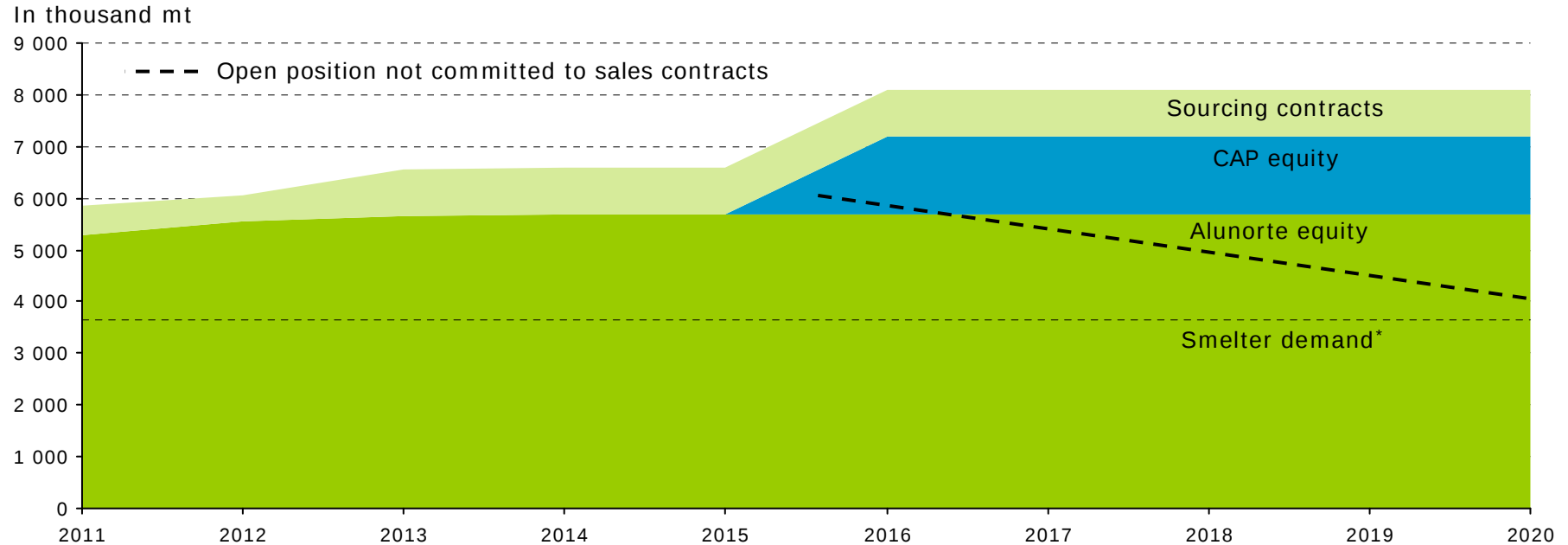


External alumina sourcing



- 1.6-1.7 million mt of external alumina sourcing in 2011
- Long term off-take agreement with Rio Tinto
 - Increasing with 400 000 mt annually when Yarwun expansion is in operation
- Short- and medium term contracts
 - To balance and optimize position geographically
 - Various pricing mechanisms
 - Older contracts linked to LME
 - New contracts mostly index
 - Fixed USD per mt for short-term contracts

Attractive alumina position



*Sunndal 3 line assumed back in operation, Neuss and Sørådal at 2011 production level

2

Production process and operational improvements

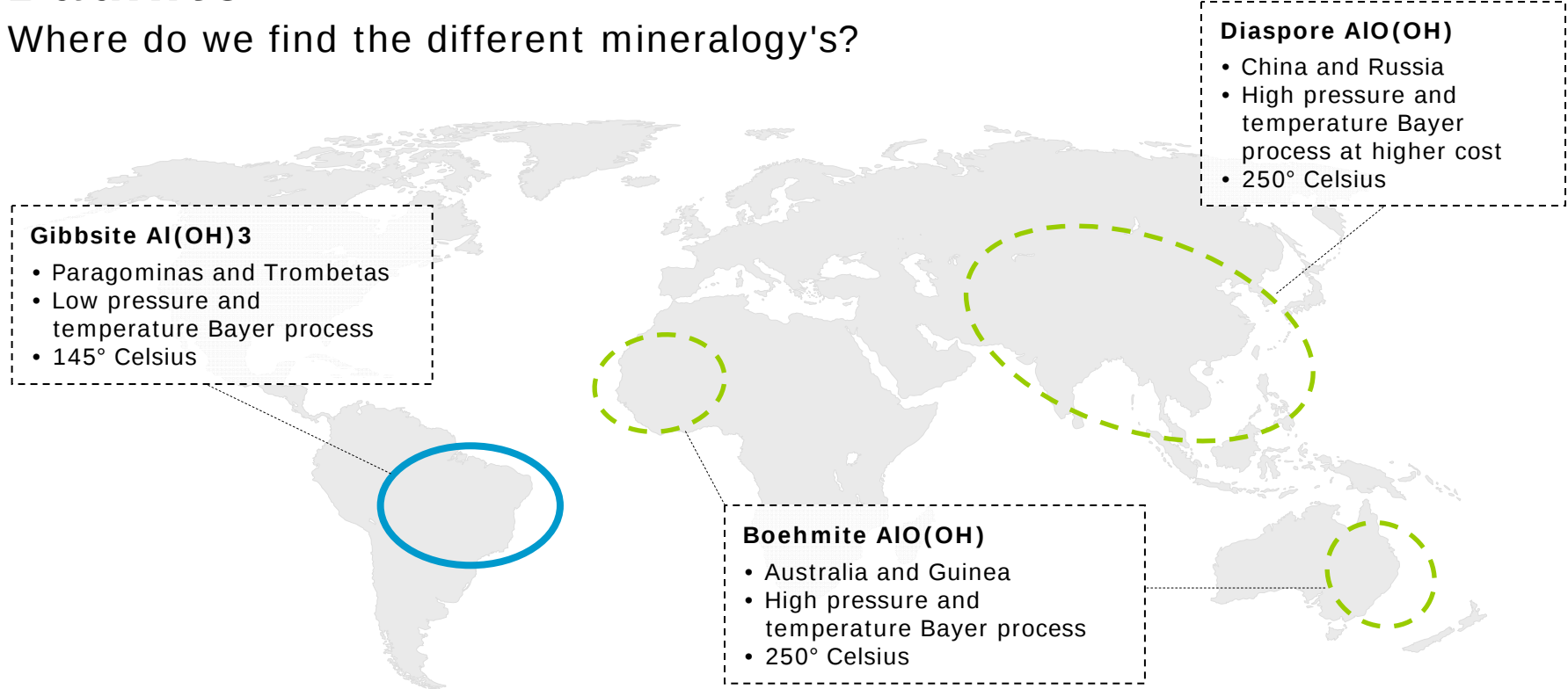
What is bauxite?



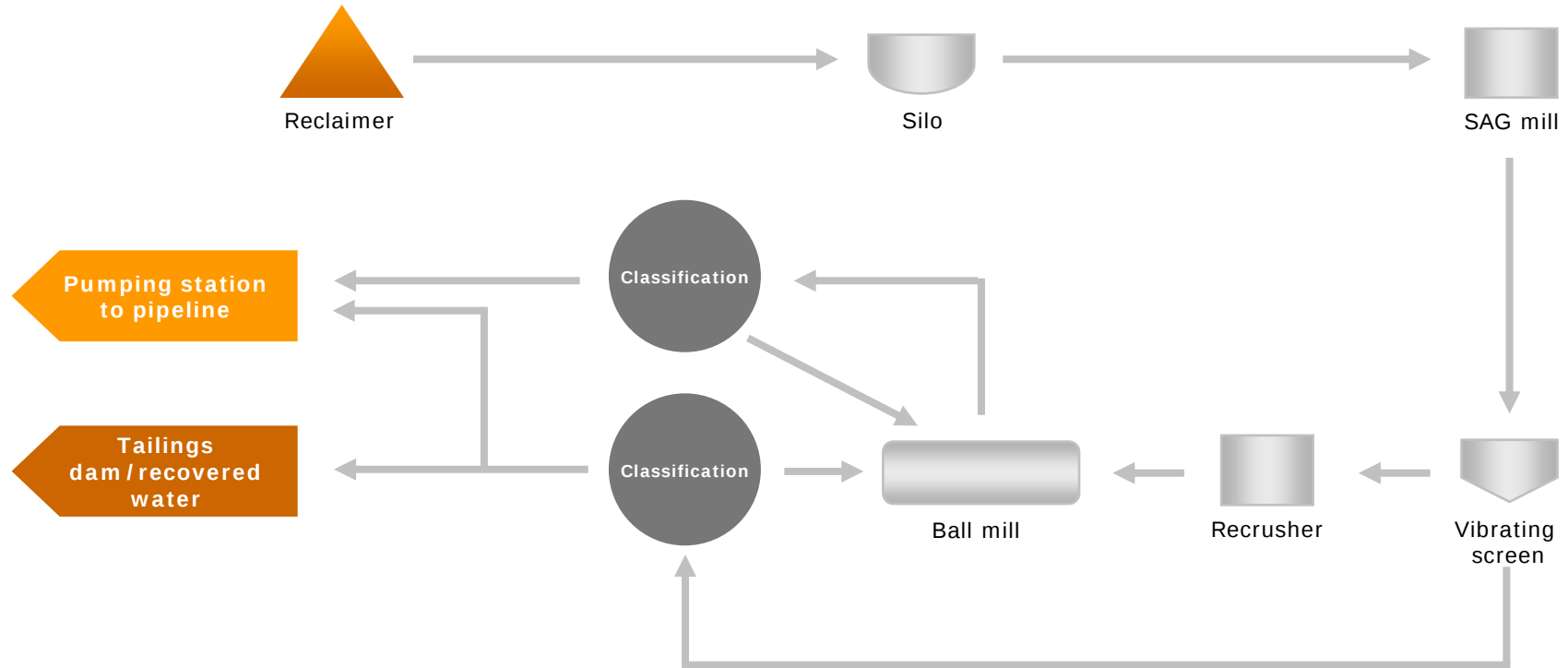
- Rock composed mainly of aluminum oxide and aluminum hydroxide minerals
 - Other materials: iron hydroxides, clay, silt and free silica
- 3 main qualities
 - Gibbsite $\text{Al}(\text{OH})_3$
 - Boehmite $\text{AlO}(\text{OH})$
 - Diaspore $\text{AlO}(\text{OH})$

Bauxite

Where do we find the different mineralogy's?



Paragominas – production process



Paragominas – production process

Strip mining

- Strip mining allows for quick environmental recovery
- Bauxite found in 0.5-2.5 meter layers 4-18 meters below ground

Beneficiation plant

- 2 beneficiation plants, each with annual capacity of 5 million mt
- Remove clay from the ore and grind the final product to pipeline transportation
- Grinding - SAG mill, tertiary crusher and ball mill
- Classification – depending on fine size
- Economics - improve available alumina and reduce reactive silica



Paragominas – production process

Pipeline

- 244 km pipeline from Paragominas to Alunorte
- Only bauxite slurry pipeline in the world
- 15 million mt annual capacity
- Low environmental impact
- Transport slurry to Alunorte with 50% solids
- Delivery to Alunorte's dewatering filters



Operational improvements

- Preventive maintenance
 - Less unplanned production stops
- Feeding rate up 10% since 2010
- More fines sent to Alunorte dewatering
- Housekeeping
- Continuous improvements



27% increase in production from Q1 to Q3 2011

Bauxite mining going forward



Traditional technology

- Smaller equipment
- More manpower intensive
- Actual mining fleet
 - ~170 trucks, excavators etc,
 - ~850 FTEs (Operation & Maintenance)

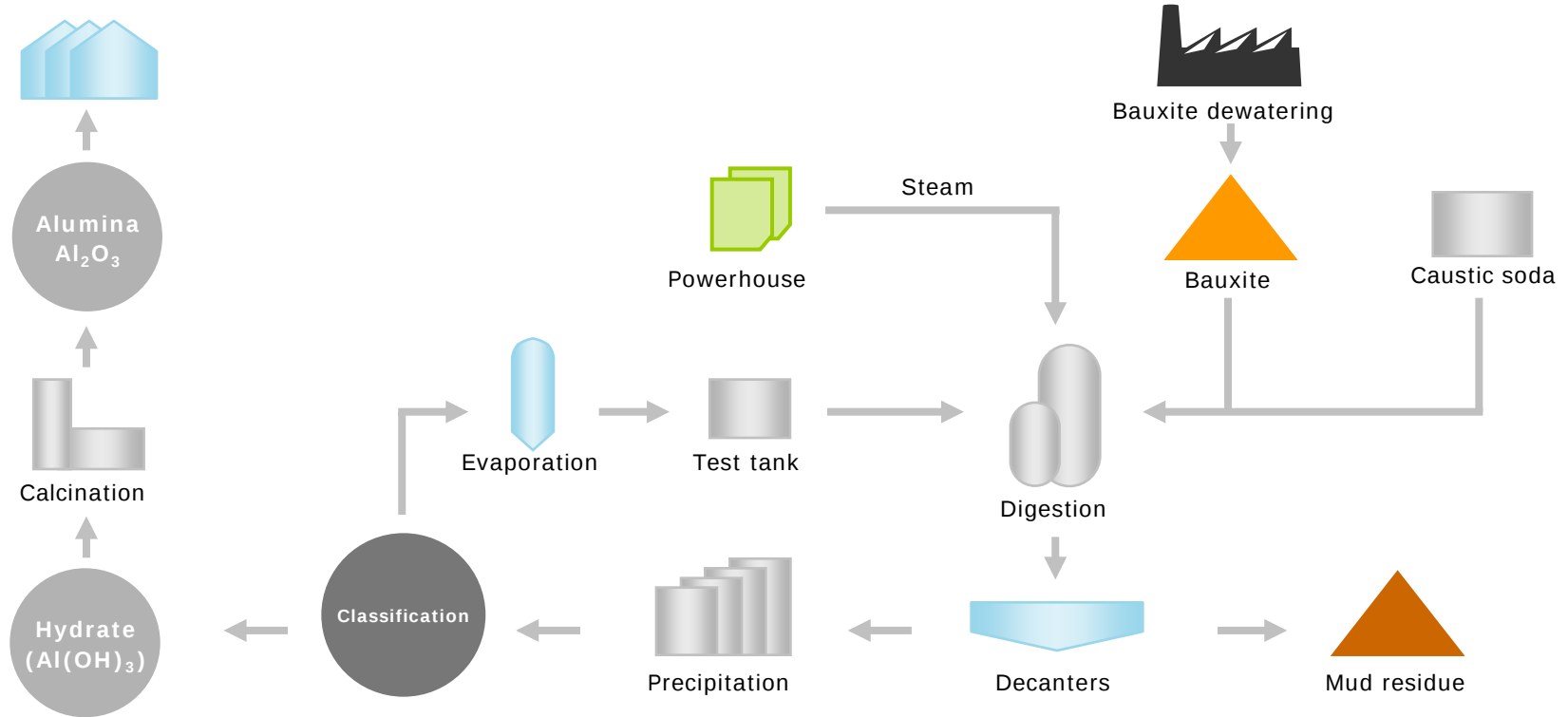


New Technologies

- Bucket wheel excavator & cross pit spreader (overburden)
- Surface Miner (bauxite excavation)
- Load distance conveyor belt and bigger trucks (bauxite transportation)



Alunorte - production process



Alunorte – production process

Bayer process

- Bauxite shipped by boat (MRN) or pipeline (Paragominas)
- Liquidity removed in dewatering filters
- Caustic soda added in the digestion
 - Pressure and heat added, resulting in a sodium aluminate solution
- Settling in the decanters
 - Impurities will settle at the bottom
 - Filtered liquor pumped to the precipitators



Alunorte – production process

Bayer process

- Precipitation
 - Cooling of liquor
 - Alumina hydrate added to start precipitation of pure alumina particles
 - Settle at bottom of tanks, transferred to the calcination
- Calcination
 - Heating process
- Result is fine white powder - alumina



Operational improvements

Housekeeping

Before



After





Stopping leakages in Alunorte

Operational improvements

Stopping leakages

Before



After



Operational improvements

Dewatering



8% *

Demurrage costs



69% *

Safety improvement



38% *

- Availability of all lines
- Dewatering
- Housekeeping
- Safety
- Port availability

16% increase in production from Q1 to Q3 2011

* Jan-Sep 2011 vs 2010. Safety measured as TRI

Alunorte going forward



- Continuous improvement
- Preventive maintenance
- Hydro production system

Key operational priorities



- Safety and housekeeping improvement focus
- Maximize synergies between Alunorte and Paragominas
- Implement integrated management system
- Improve efficiency to achieve nameplate production capacity
- Industry benchmark in HSE and CSR

3

Summary

Strong social and environmental commitment

- Social dialogue process initiated
- Health and safety top priority
 - Ambition to become world class in mining and refining of bauxite
 - Our HSE culture to be the foundation for excellent operation
- Green municipality
 - Reforestation



Solid progress - 9 months after completion



- Integration on track
- Strong production growth



- Good stakeholder dialogue
 - Well established relations with unions and government
- Solid development in health and safety

Bauxite & Alumina priorities



- Stabilize and improve further
- Increase capacity utilization
- Operational excellence and strong cost focus
- Benchmark social and environmental performance
- Develop growth opportunities
- Capitalize on long position in bauxite and alumina

A large, solid green circle is positioned on the left side of a light green rectangular background. The circle is centered vertically and horizontally within its portion of the frame.

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