



# Market Outlook

## Investor presentation

Kathrine Fog  
Corporate Strategy & analysis

June 16<sup>th</sup> 2016

# Agenda

- 1 About Hydro
- 2 Market Outlook
- 3 Hydro strategy

# A resource-rich, global aluminium company

With robust positions across the value chain



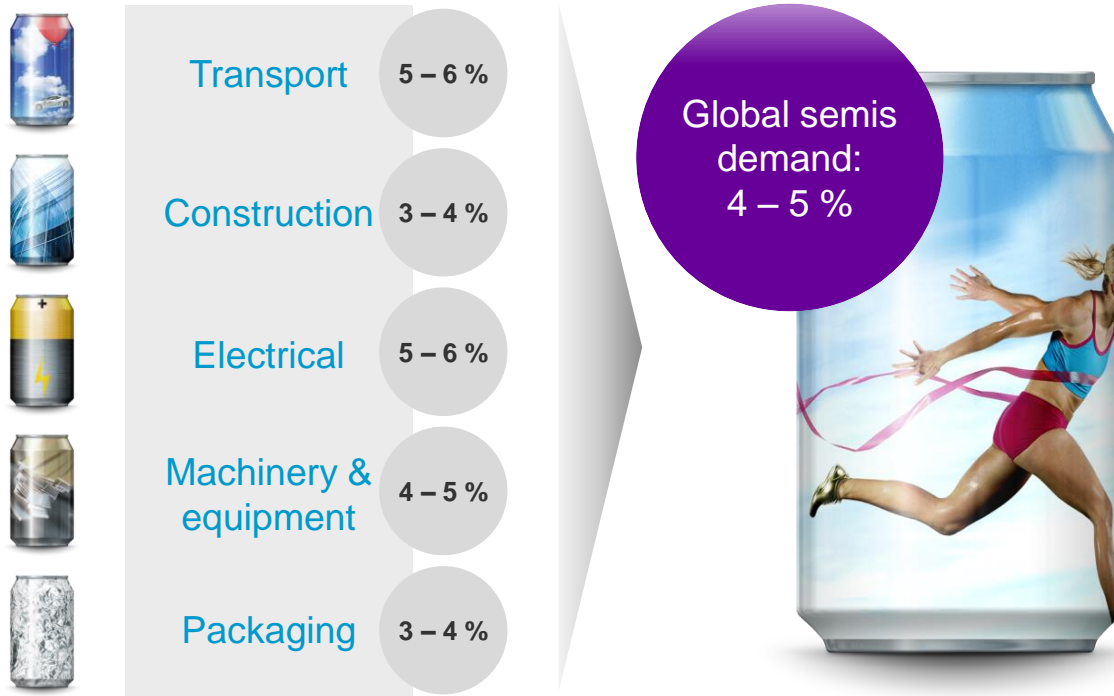
- Global provider of alumina, aluminium and aluminium products
- Leading businesses along the value chain; raw materials, energy, primary metal production, aluminium products and recycling
- 13 000 employees involved in activities in more than 50 countries
- Market capitalization ~NOK 70 billion
- Annual revenues ~NOK 88 billion
- Included in Dow Jones Sustainability Indexes and FTSE4Good

01

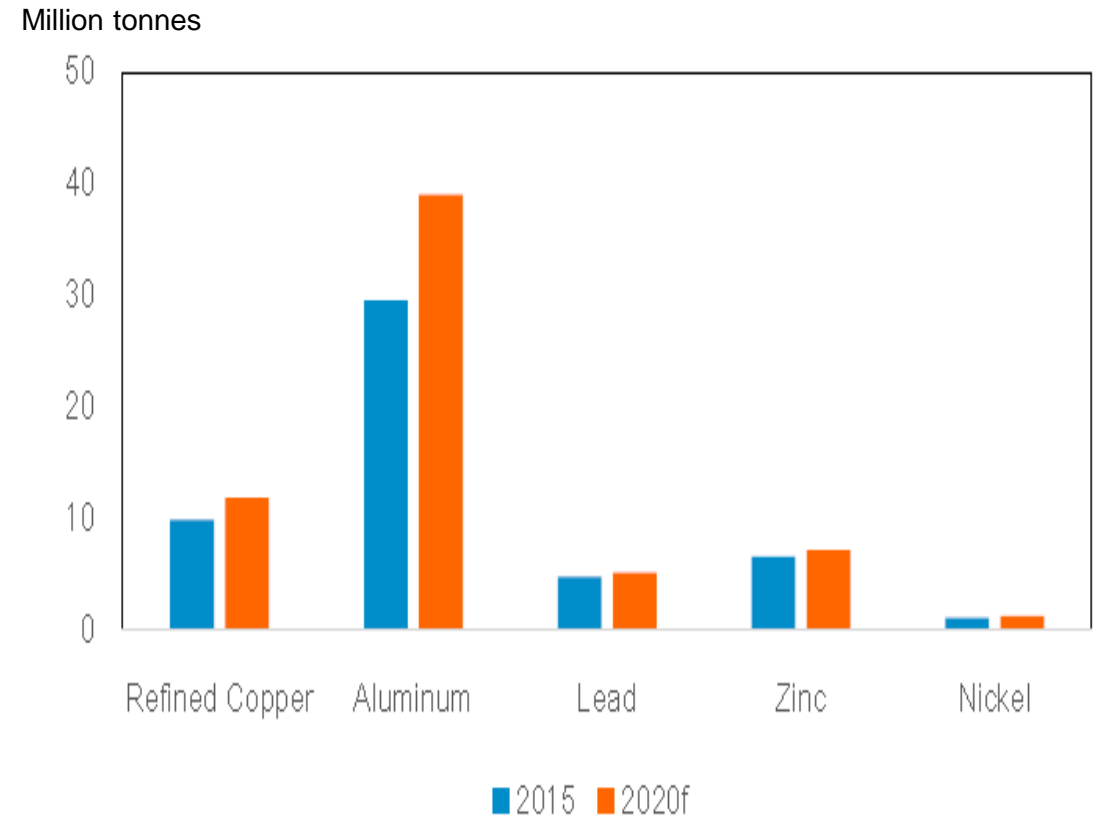
Downstream

# Global aluminium demand first in class

Semis demand CAGR 2015 – 2025



## Chinese primary consumption (consensus forecast)



Source: CRU

# Global aluminium demand first in class

## Steel substitution in automotive



Lighter vehicles in aluminium make a big impact on the climate challenge:

- US CAFE regulations
- EU CO2 emission reduction targets

## Ford Doubles Profits for the Best Quarter in Its History

*Leading the way for Ford was the recently redesigned, aluminum-bodied F-150 pickup, which had strong sales, like those of other trucks and sport utility vehicles, as gas sold for less than \$2 a gallon in many parts of the country.*

*A year ago, Ford was just starting production of the aluminum model, working out hitches in the new manufacturing process. But now its F-150 lines are humming.*

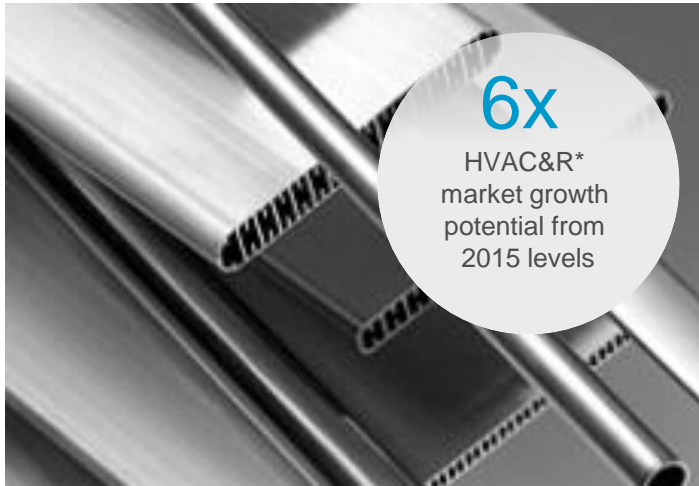
*“They can’t make enough of them,” said David Kudla, chief executive of the investment firm Mainstay Capital Management.*

*New York Times, April 28<sup>th</sup>*



# Global aluminium demand first in class

Copper substitution in HVAC&R, cabling and transmission lines



Aluminium weight and price advantages vs copper on a volume conductivity equivalent basis

## Energy-efficiency legislation supports aluminium

Buildings account for ~ 40% of energy consumption worldwide, triggering response from the legislators



**European Union**  
2012 Energy Efficiency Directive



**US**  
Building Energy Use laws

## Benefits of aluminium in buildings

- Light weight contributes to efficient use of materials
- Design flexibility and formability enable optimized building shapes
- High light reflectivity, electrical and thermal conductivity support overall energy-efficiency
- Recyclability reduces energy consumption from a lifecycle perspective
- Suitable for indoor and outdoor use: corrosion resistant, durable, low maintenance, safe and non-toxic



# Recycling gaining importance

Growth in recycling will contribute to making Hydro carbon-neutral

## Market

- Substantial growth in post-consumed scrap
- Recycling driven by product markets and customer demand
- Both recycling and primary aluminium will be needed to satisfy demand growth

## Hydro's recycling response

- Primary Metal: From remelting to recycling; utilizing more contaminated and end of life scrap
- Rolled Products: Lift recycling potential in the metal balance to reduce cost





02

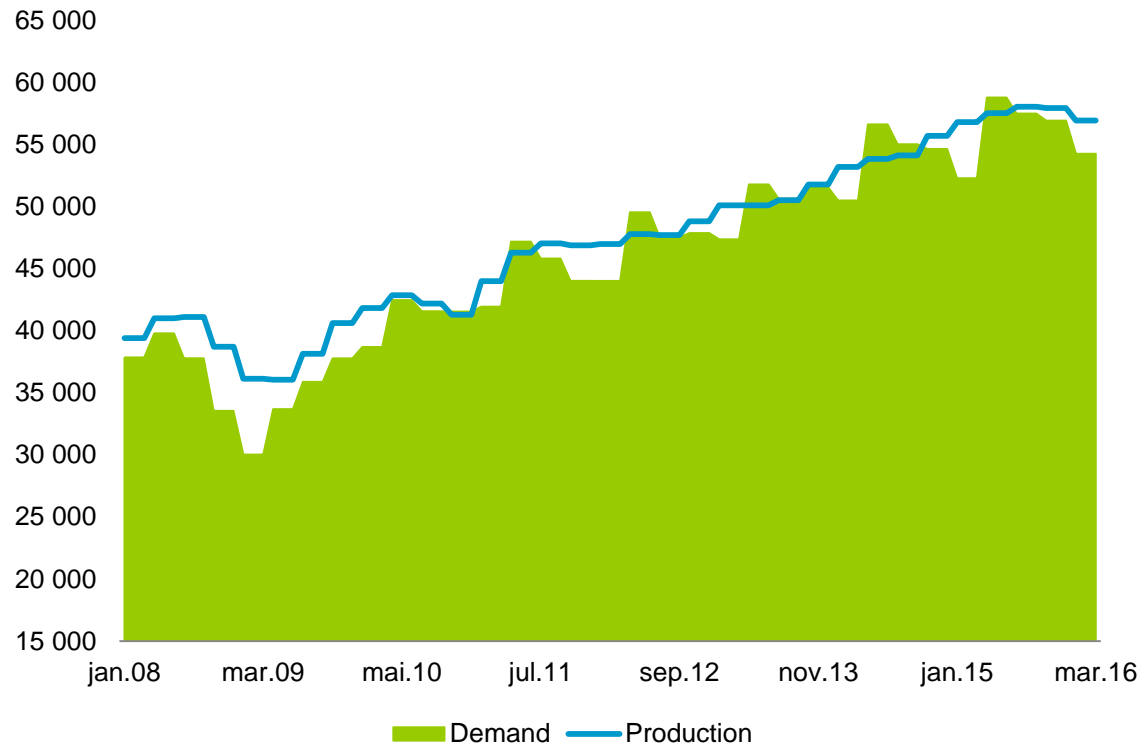
Primary

# Declining global oversupply of primary aluminium

Driven by curtailments and stronger demand

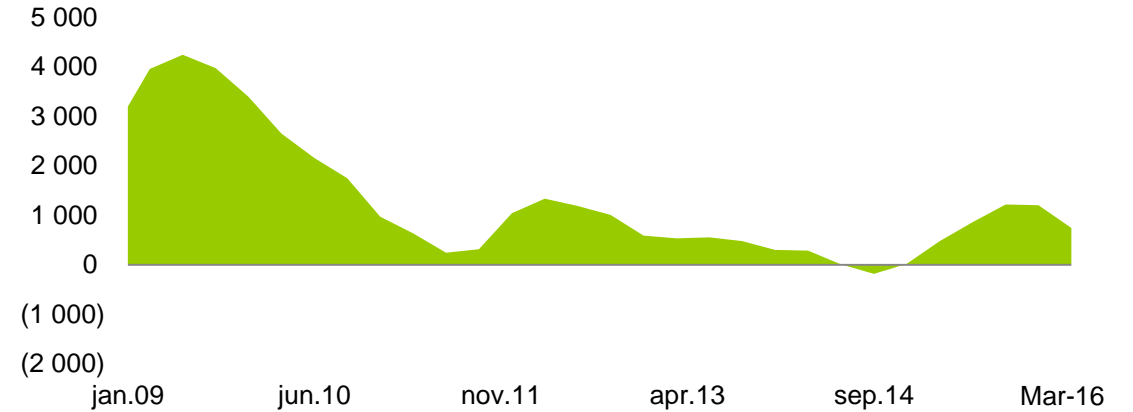
Demand and production (quarterly annualized)

1 000 mt primary aluminium



Production less demand<sup>1)</sup>

1 000 mt primary aluminium



- ~4.9 % demand growth Q1-16 vs Q1-15
  - ~8.1 % China
  - ~1.3 % Western Europe
  - ~1.6 % North America
  - ~(5.3 %) Central and South America
- 2016 demand growth expected unchanged at 3-4 %

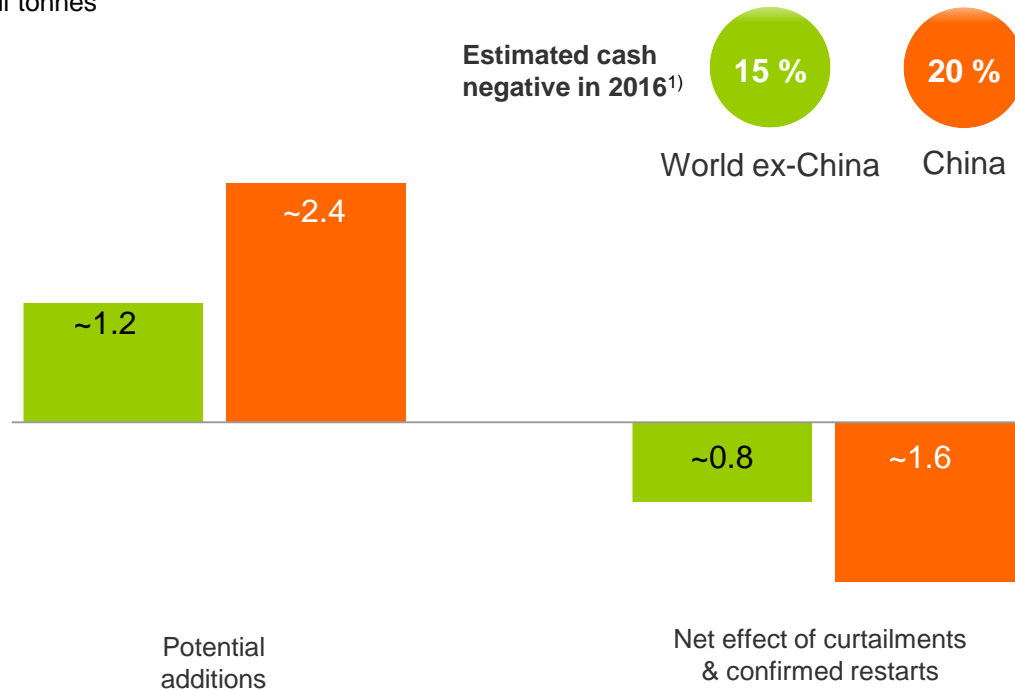
Source: CRU/Hydro

1) Yearly rolling average of quarterly annualized production less demand

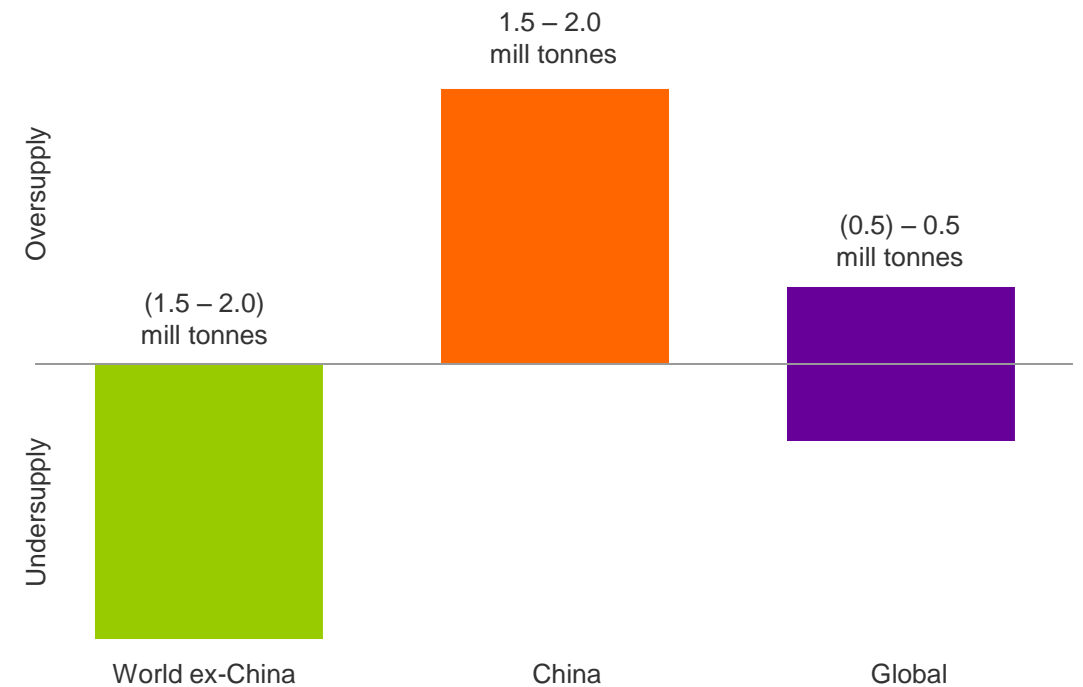
# Aluminium market expected to be largely balanced in 2016

Higher risk of capacity restarts in China amid recent price rally

Supply development 2016  
Mill tonnes



Market balance 2016  
Mill tonnes

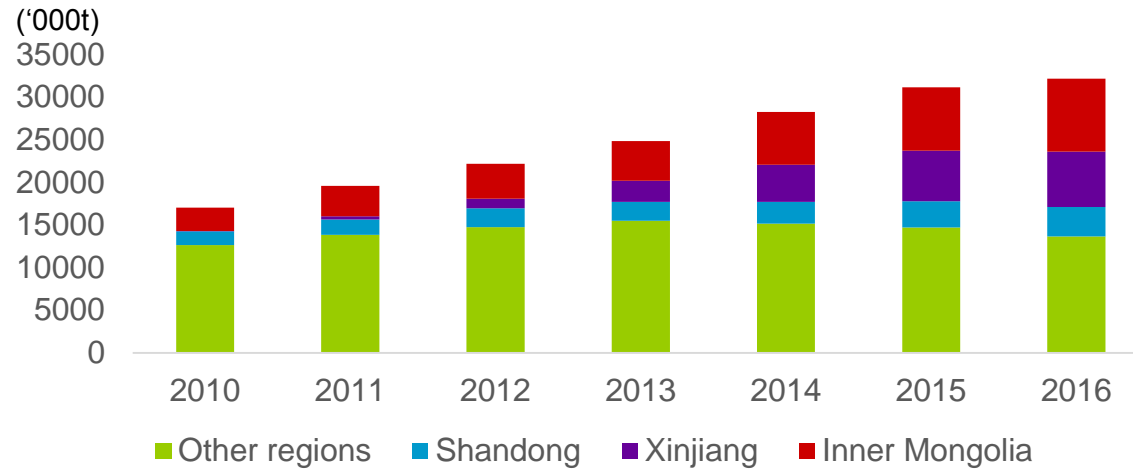


Source: CRU, Hydro Analysis

1) Based on CRU BoC curve 2016 and CRU price assumptions of LME 3m at 1 505 USD/mt and SHFE at 10.950 RMB/mt

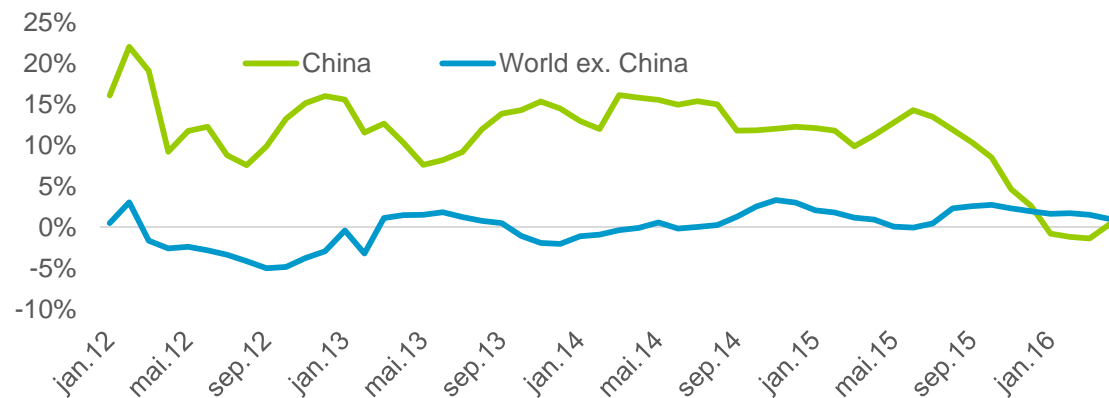
# Concentrated Chinese primary capacity expansions

## Limited restarts



- Smelter expansions largely taken place in Shandong, Xinjiang and Inner Mongolia
- Traditionally high cost; new smelters added further down on the global cost curve
- Value chain integration increasing
- Three major Chinese players among global six largest producers
  - Weiqiao
  - Xinha
  - Chalco

## Annualized growth per month

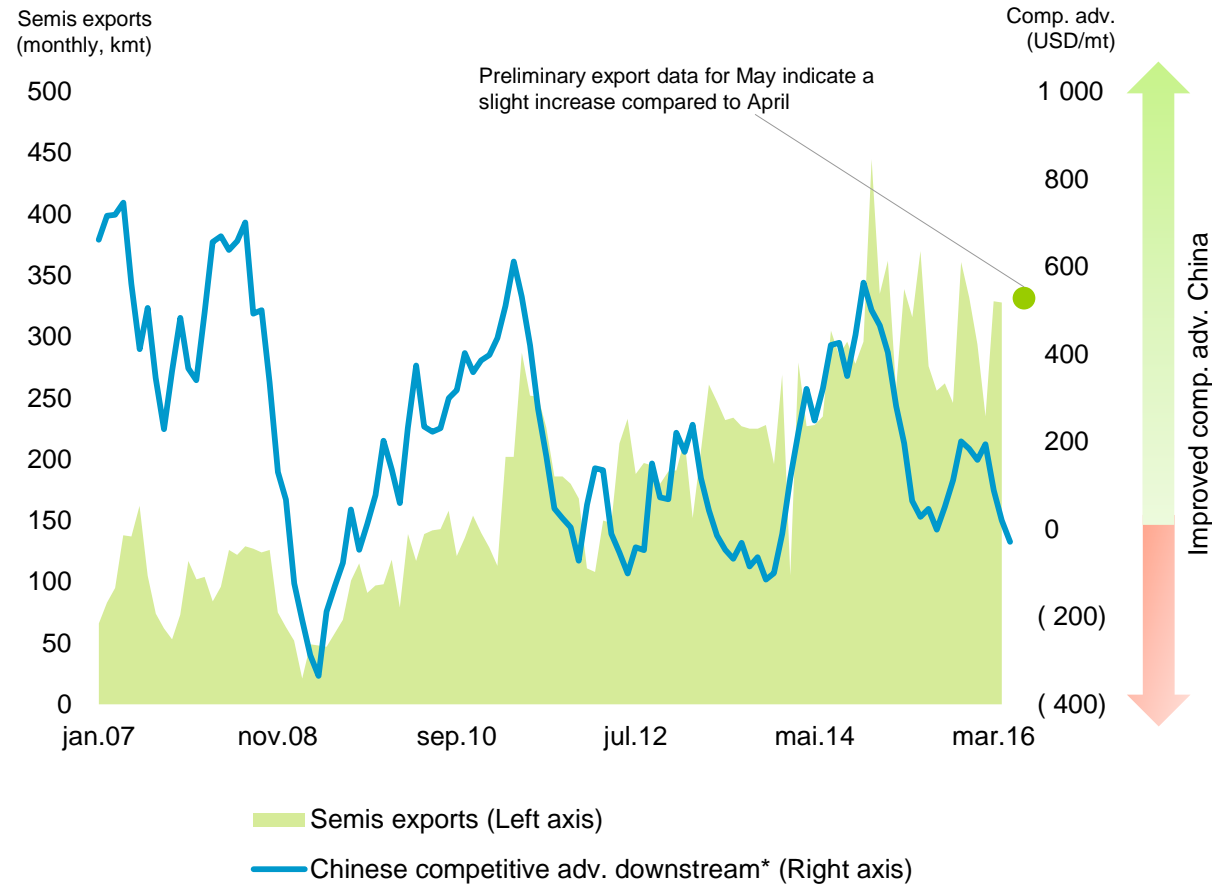


Source: CRU, Hydro analysis



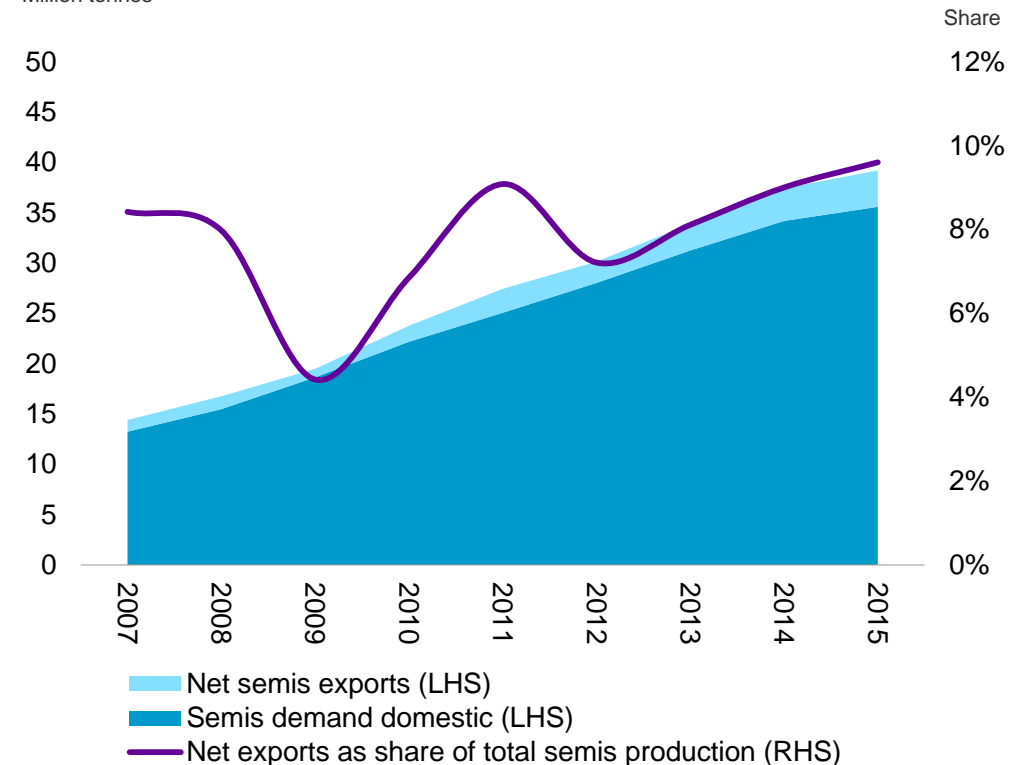
# Semis exports moderating slightly amid decreased arbitrage

Semis exports largely stable as share of Chinese semis production



## Net semis exports as share of total semis production

Million tonnes



Source: CRU/Ecowin

Est. metal cost China versus Europe:

LME cash + European duty-paid standard ingot premium

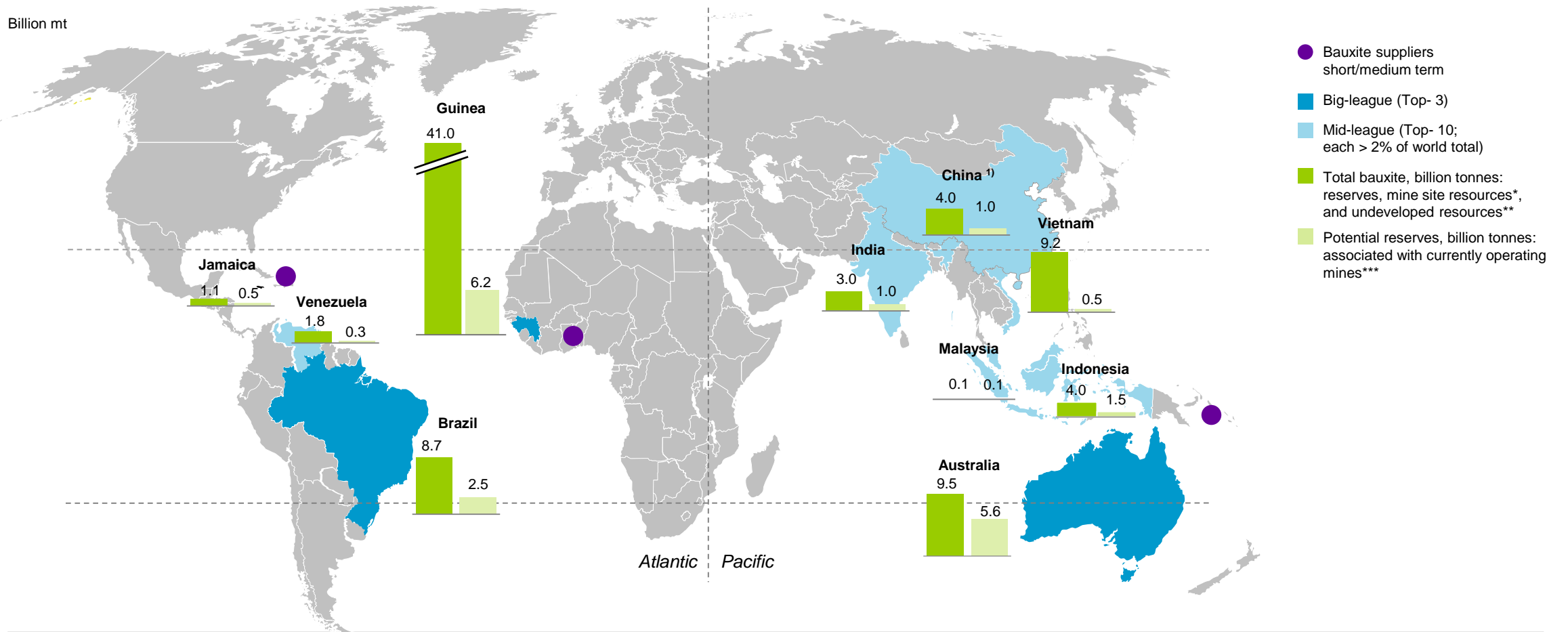
China: SHFE cash + avg. local premium + freight - export rebates (~13%)

03

B&A

# Large and concentrated bauxite resources

But many challenges for future developments



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.

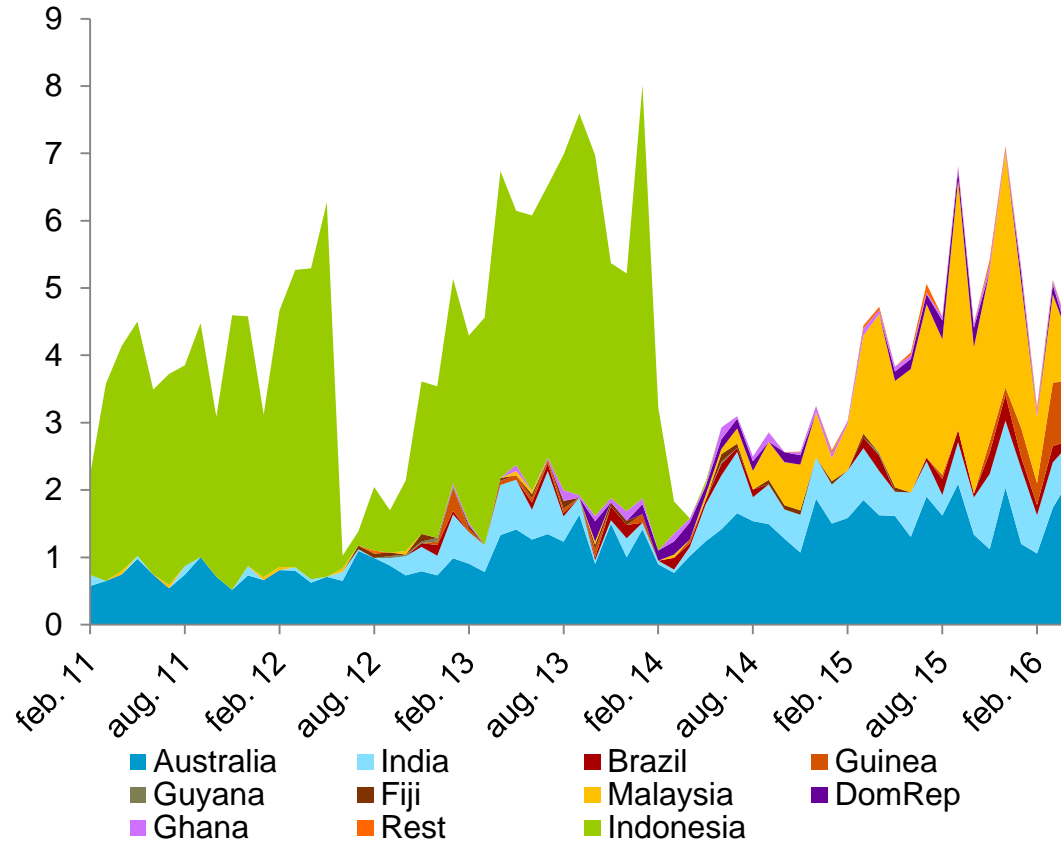
Source: Roskill and Hydro analysis



# Monthly Chinese Bauxite imports decrease in the first quarter

Driven by lower shipments from Malaysia offset by higher shipments from Guinea

Monthly Chinese bauxite imports  
Million mt



Bauxite prices

USD/mt



Source: China Customs

# Alumina prices weaken on looser Chinese market balance

Driven by ~5 million tonnes of Chinese alumina capacity re-starts

Platts alumina index (PAX)



- Year to date average 236.5 USD/t, 15.3% of LME
- Average May price of 259.1 USD/mt
  - Currently trading at 246 USD/mt FOB (June 14 2016)
- Current price \$20/t down from YTD peak, driven by lower prices in China.
  - Chinese alumina refining capacity re-starts have exceeded smelter re-starts.
- Narrowed Atlantic discount throughout the year
  - Tighter Atlantic alumina market balance after Alcoa curtailed refining capacity in the US and Suriname

Source: Platts, Ecwin, China Customs, CRU

04

# An inside look on China

# General take aways from latest China visits

- Demand growth led by rebound in construction market, supported by stimulus measures
- Restarts of primary smelters are so far limited and slow
- Somewhat increasing hurdles for aluminum entrants in general: mainly financing, captive power opportunities and environmental regulations
- “China will focus on China”
- Global primary cost curve flattening on lower Chinese power prices, while slope of alumina curve is more attractive as new refineries in Shandong area are added in the 3<sup>rd</sup> and 4<sup>th</sup> quartile
- More imports expected from Guinea, and Guinea recognized as a necessary resource





Hydro's response

Aspiration = inspiration

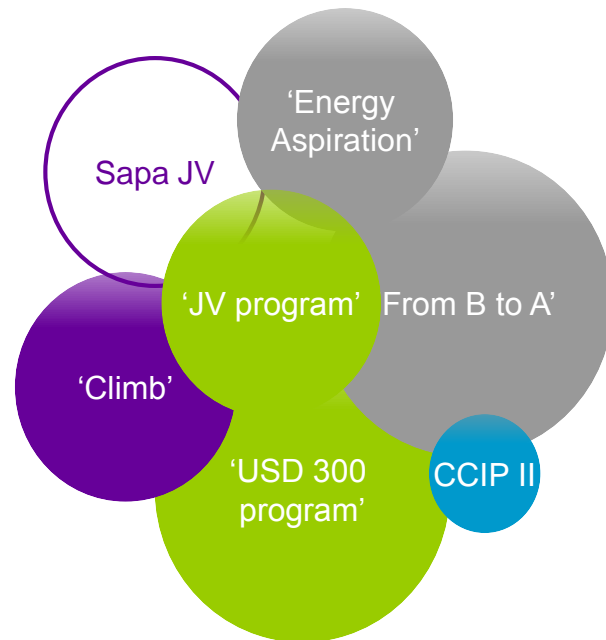


*Better Bigger Greener*

# Better: proven track-record of productivity gains continues

## Hydro's improvement drive until 2015

Total improvements 2011-2015:  
BNOK 4.5<sup>1</sup>

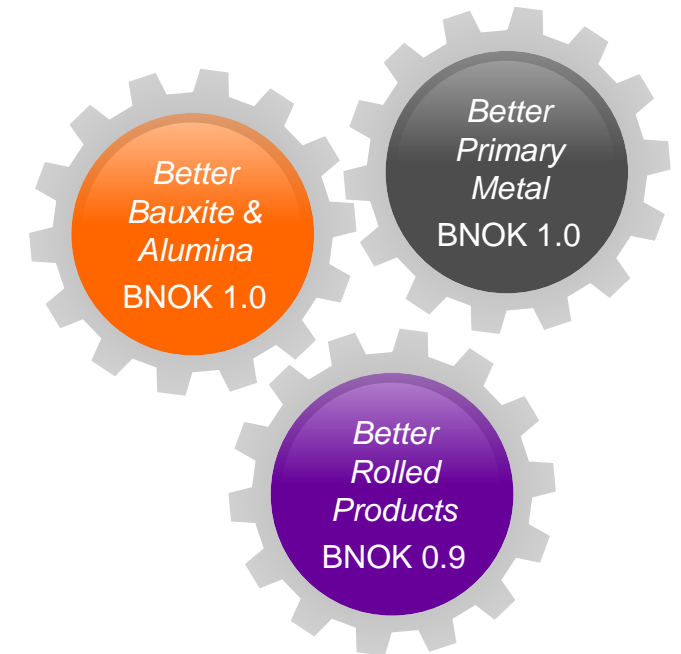


## Hydro's new improvement ambition

Total improvements of  
BNOK 2.9 from 2016-2019<sup>2</sup>



## Tailor-made ambitions across the value chain



1) Includes USD 300 from 2009

2) Includes some larger investments of 3.2 billion NOK in 2015-2019: AL3 and UBC in Rolled Products, 100+100kt capacity creep in Primary Metal, Alunorte debottlenecking in B&A.

3) Real 2015 terms

# Bigger: a solid platform for building an even stronger Hydro



production start **2017** | annual production **75.000 tonnes** aluminium

**15% more energy efficient** compared to world average

world's **lowest CO<sub>2</sub> footprint**



RECYCLING LINE GERMANY HYDRO

**Recycling 50,000 tonnes** of Europe's total of 450,000 tonnes = **3,300,000,000 cans**





# Greener: Carbon-neutral from a life-cycle perspective by 2020

Hydro  
carbon neutral  
in 2020

From a life-cycle  
perspective



Integrated into business strategy in all business areas

- Increasing energy-efficiency and reducing emissions in production processes in aluminium plants, rolling mills, and alumina refinery
- Increasing production of renewable hydropower, evaluating potential of switching to renewable energy sources or natural gas in production processes
- Developing products and solutions, establishing partnerships with advanced customers, and identifying new applications for metal and downstream products
- Supporting global energy-efficiency goals by helping customers reduce energy consumption and emissions and by promoting sustainable frameworks
- Reducing waste and saving ~95% of energy by recycling of post-consumed scrap in Primary Metal and Rolled Products
- Utilizing advanced sorting technology and developing recycle-friendly alloys

Aspiration = inspiration



*Better Bigger Greener*

