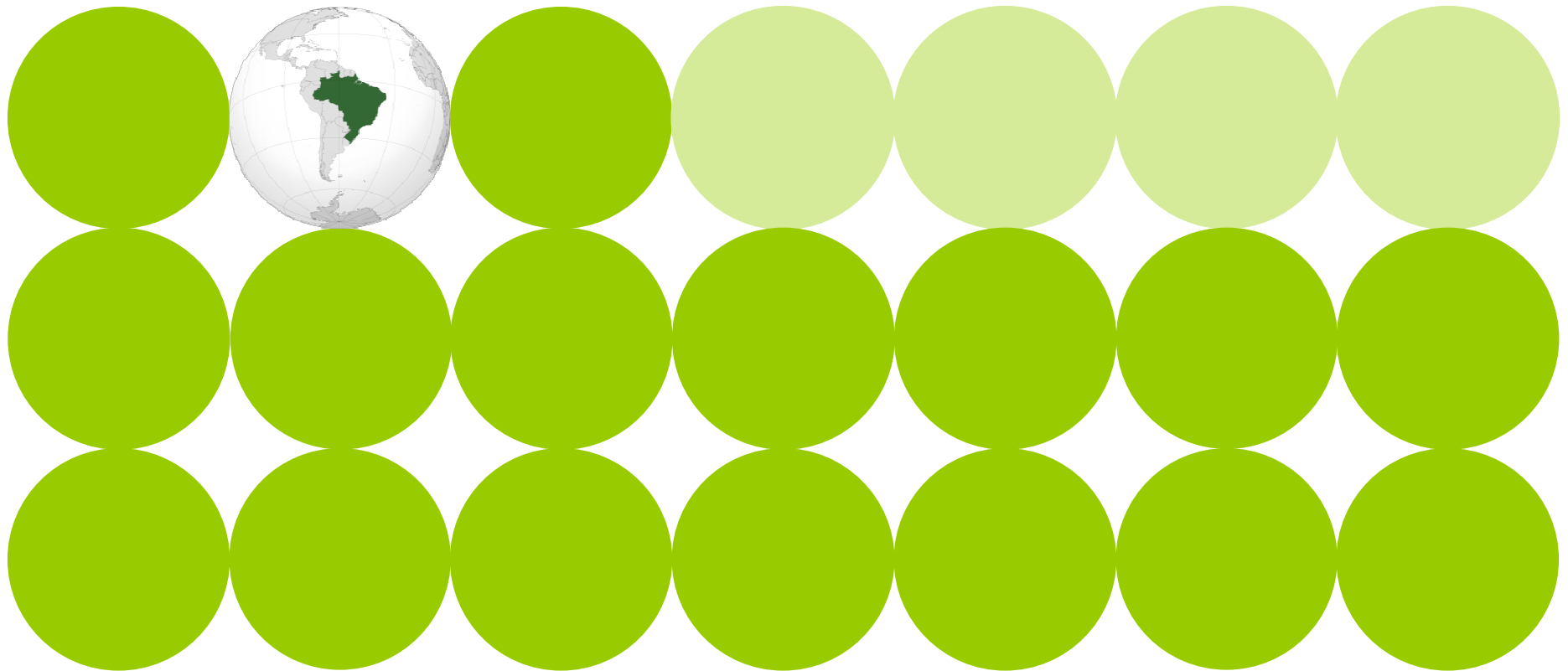


# Bauxite & Alumina

Site visit Brazil



Johnny Undeli, Head of Bauxite & Alumina

November 5, 2012

# Content

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- 2 Market
- 3 Improving our cost position
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# Safety first



**Improved transparency**

**Cultural development**

# Strong social and environmental commitment



**Responsible business**

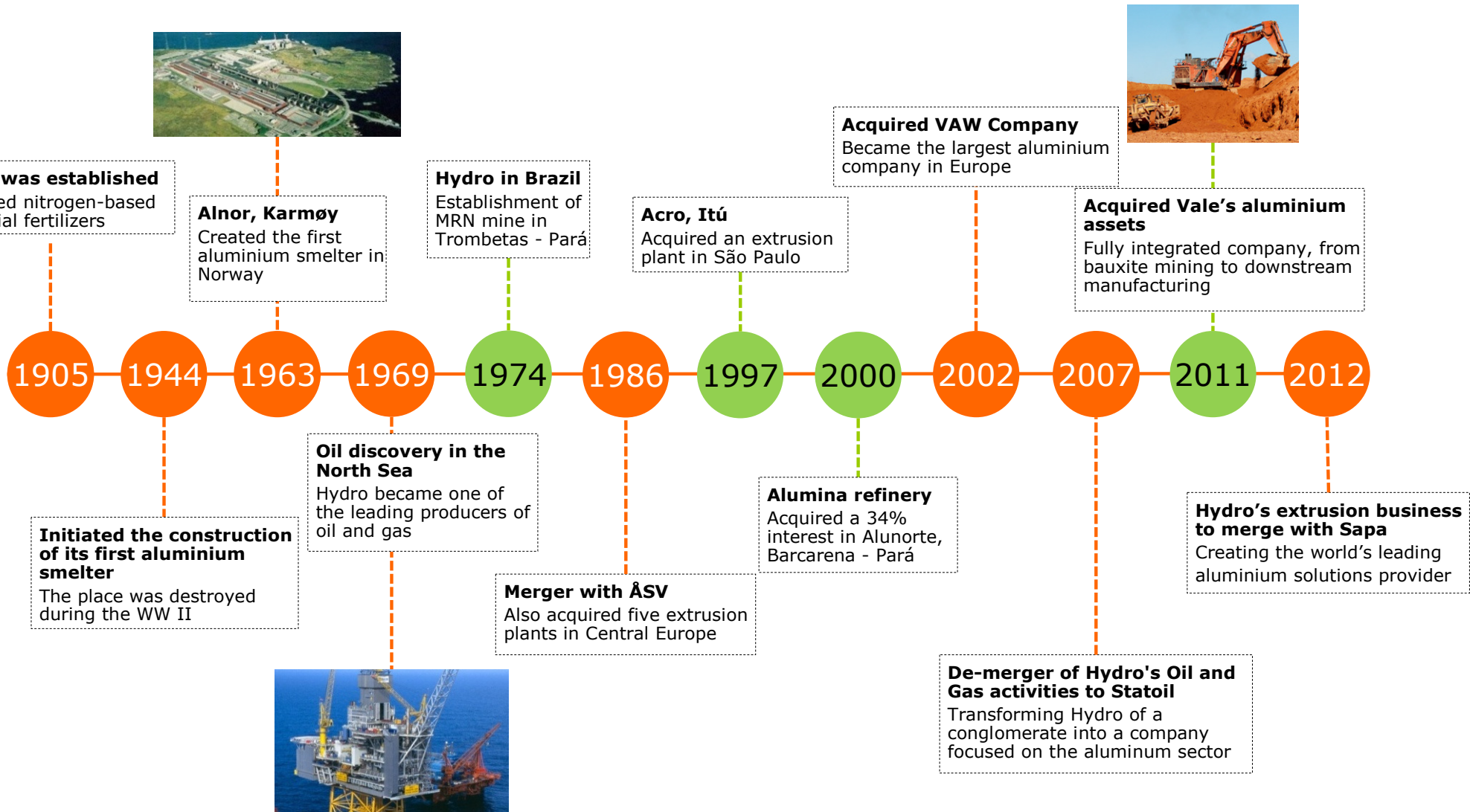
**Viable societies**

1

# Hydro in Brazil

# Hydro Storyline

A history of innovation



# Integrated value chain in Brazil



# World-class asset portfolio



## MRN bauxite mine

- 5% ownership
- Volume off-take agreement for Vale's 40% stake
- Capacity 18 million tonnes



## Paragominas bauxite mine

- 60% ownership, 100% by 2016
- One of the world's largest bauxite mines
- 2011 production 8.2 million tonnes
- Nameplate capacity of 9.9 million tonnes
- Possible expansion to 15 million tonnes
- Long-life resource



## Alunorte alumina refinery

- 91% ownership
- World's largest alumina refinery
- 2011 production 5.8 million tonnes
- Nameplate capacity of 6.3 million tonnes
- Bauxite supplied from Paragominas and MRN
- World-class conversion cost position



## CAP alumina refinery project

- 81% ownership
- Paragominas expansion to be developed in parallel
- Full utilization of the existing bauxite pipeline

**Bauxite  
licenses**

**Refining and mining  
competencies**

**External  
supply contracts**

**Sales contract  
portfolio**



# Strong up-stream position in Brazil

Resource base for several decades



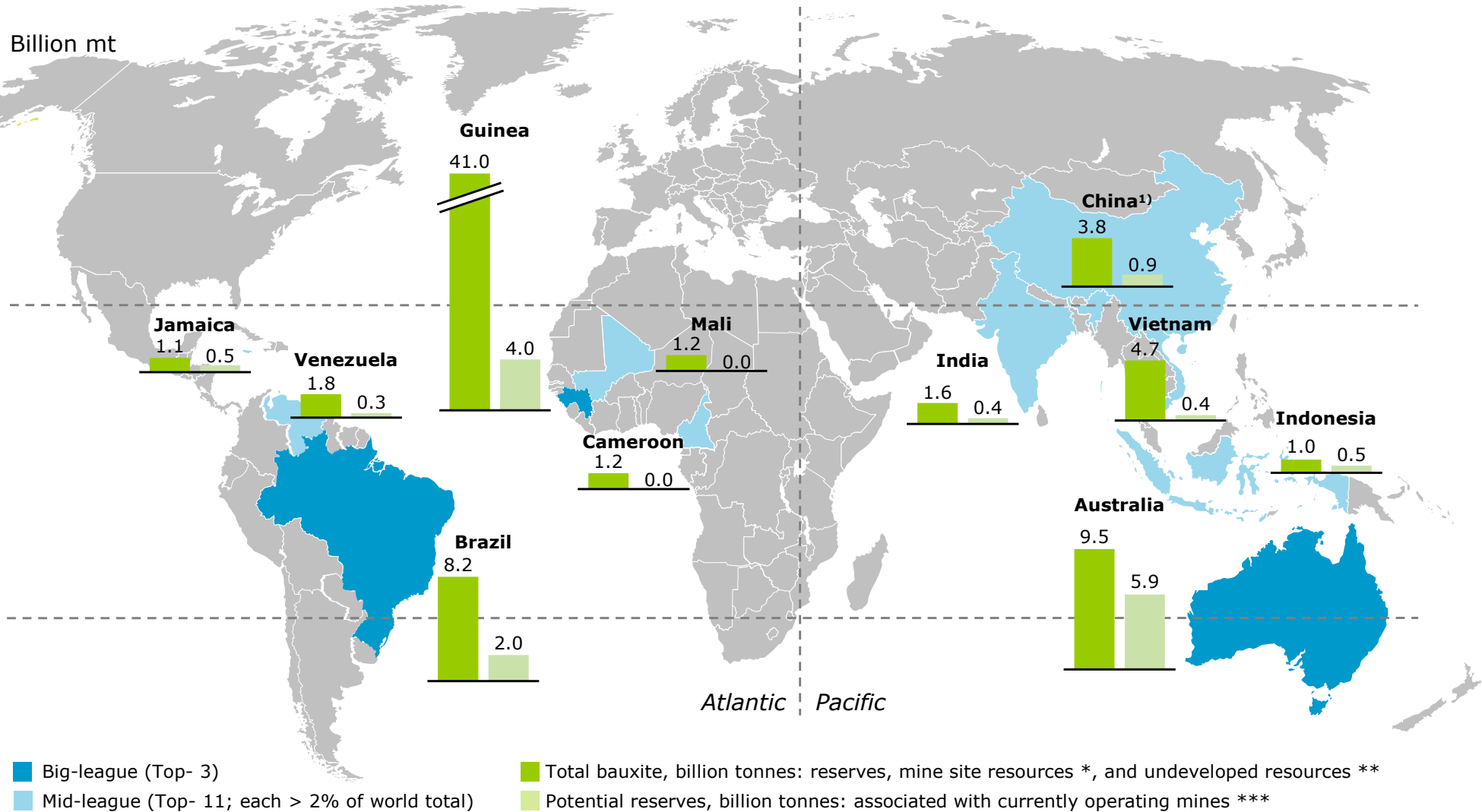
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**Market**



**HYDRO**

# 66% of available bauxite in 3 countries



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

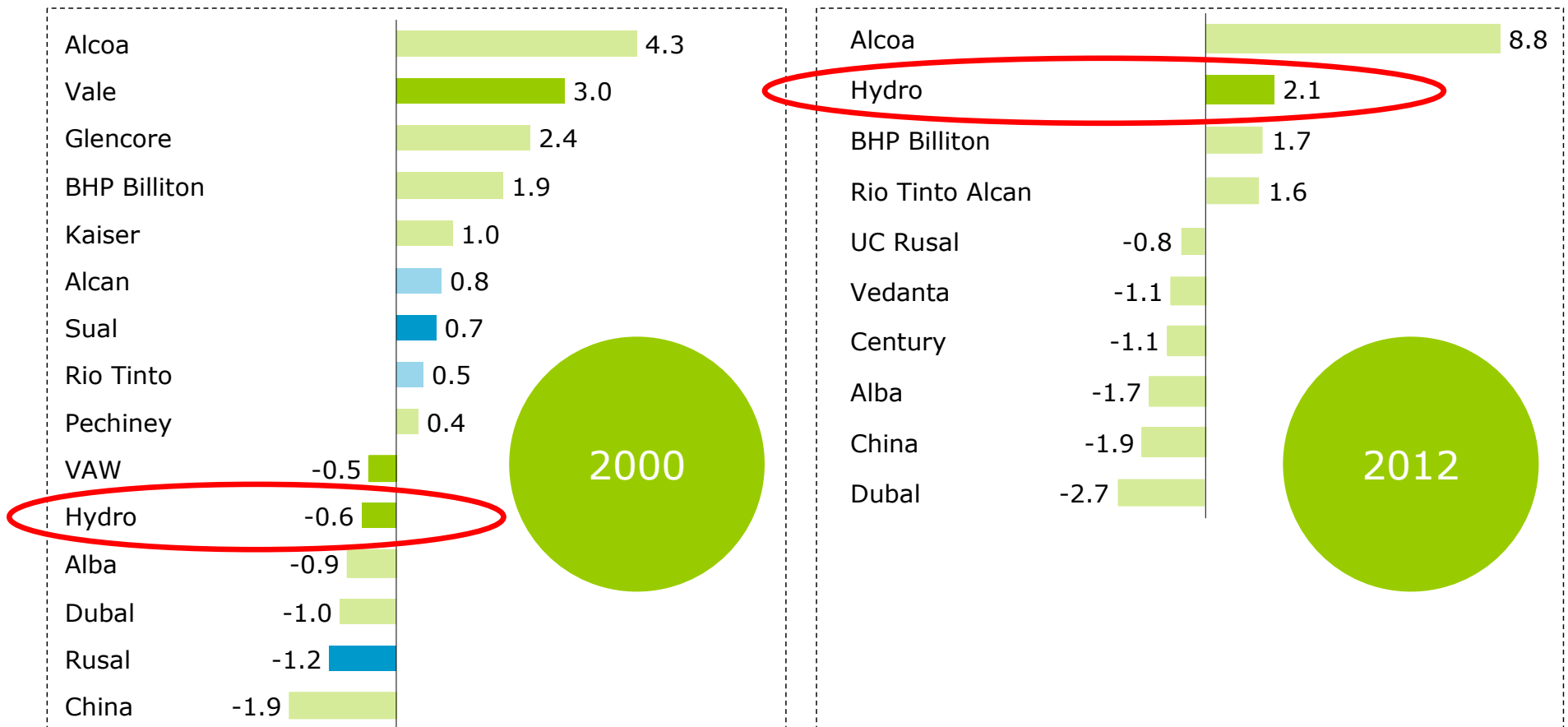
\*\*) Undeveloped resources might or might not become feasible for new mines (quality, size, access, etc)

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

Source: Roskill and Hydro analysis

# Alumina industry consolidating

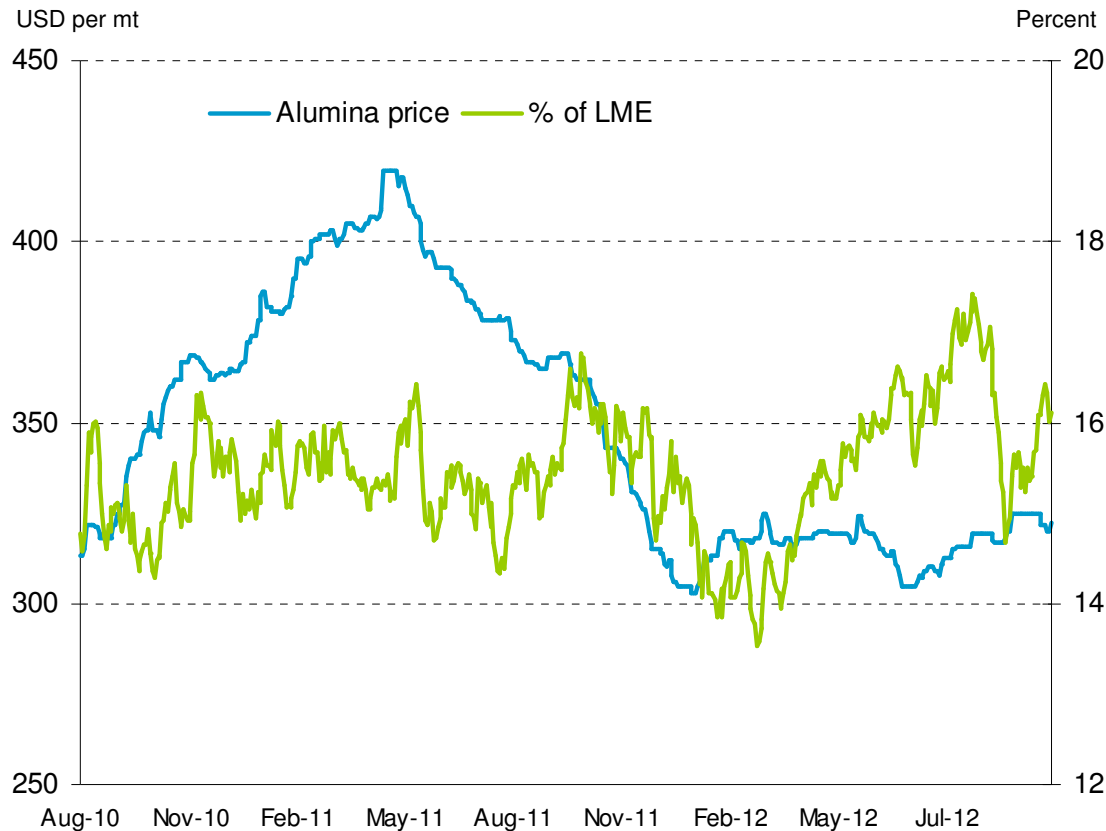
Net long alumina position, million tonnes



Source: Hydro

# Successful introduction of alumina index pricing

Platts index\*

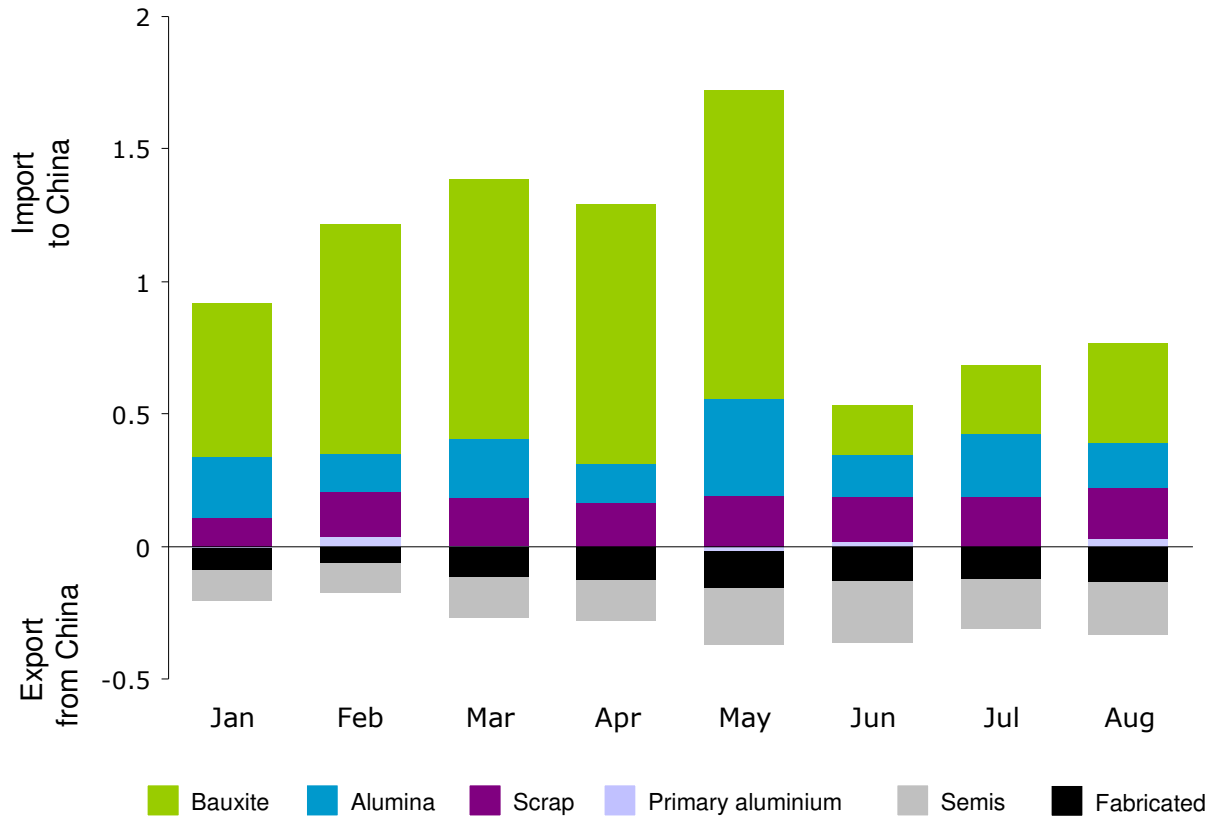


\*Platts started spot notifications in August 2010

- Alumina index increasingly accepted since introduction – creating market transparency
- Main reference for short-term contracts
- Alumina price relative to LME increased in recent years
- Longer-term contracts more likely to be index than LME-linked

# Chinese bauxite imports drop on Indonesian export ban

Aluminium equivalents\* in 2012, million mt



- Bauxite and alumina
  - Strong increase in bauxite imports in April/May, low levels June to August
  - Bauxite import from Atlantic region
  - 200% growth in alumina imports YTD 2012 vs 2011
- September imports:
  - Bauxite similar to June
  - Alumina similar to July

Source: CRU/Antaika/Hydro

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

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## **Improving our cost position**



HYDRO

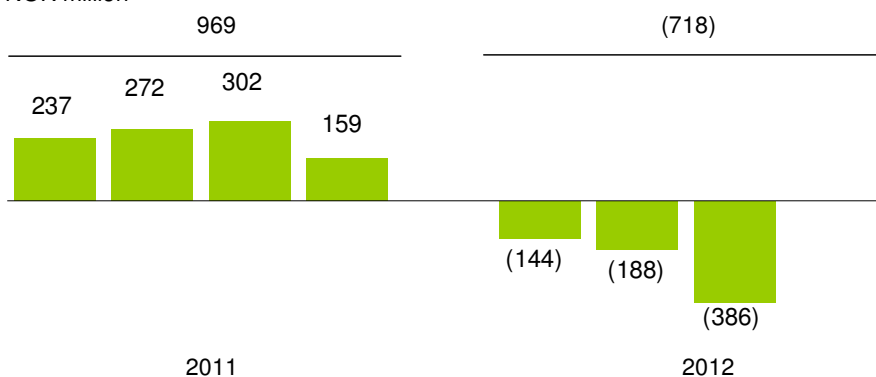
# Bauxite & Alumina

Key figures	Q3 2012	Q2 2012	Q3 2011
Alumina production, kmt	1 441	1 491	1 553
Total alumina sales, kmt	1 683	1 888	2 092
Realized alumina price, USD/mt	270	296	345
Apparent alumina cash cost, USD/mt	261	268	280
Bauxite production, kmt	2 439	2 115	2 186
Underlying EBITDA, NOK million	42	250	775
Underlying EBIT, NOK million	(386)	(188)	302



## Underlying EBIT

NOK million



Numbers for Q1 2011 are pro forma.

## Q3 operating results

- Significantly reduced alumina price, due to lower LME
- Record-high bauxite production, alumina slightly down
- Reduced sales volume

## Outlook

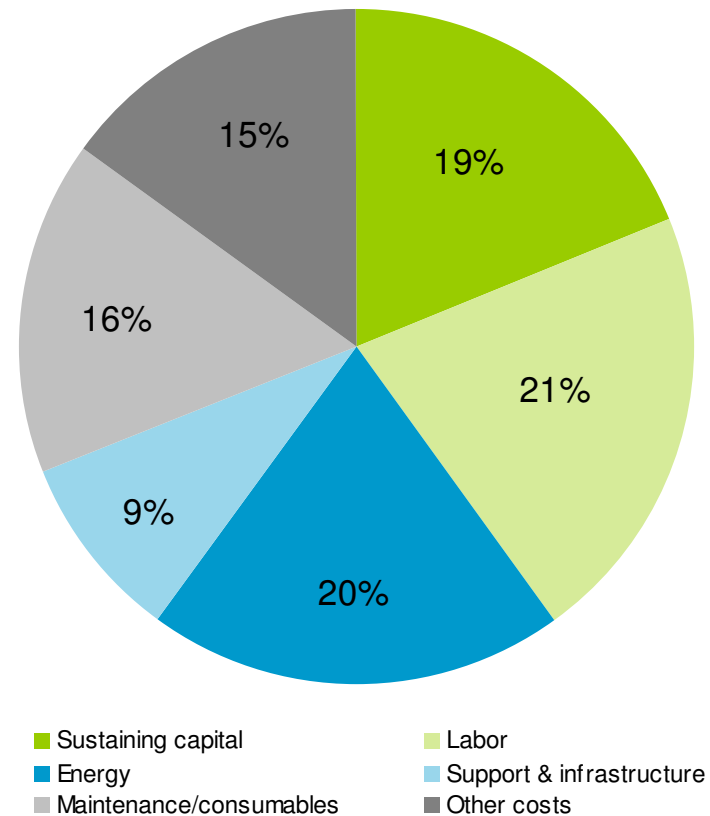
- Increased alumina production, stable bauxite production
- Alumina priced with approx one month lag to LME
- Reduced cash cost, mainly due to ICMS exemption



# 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

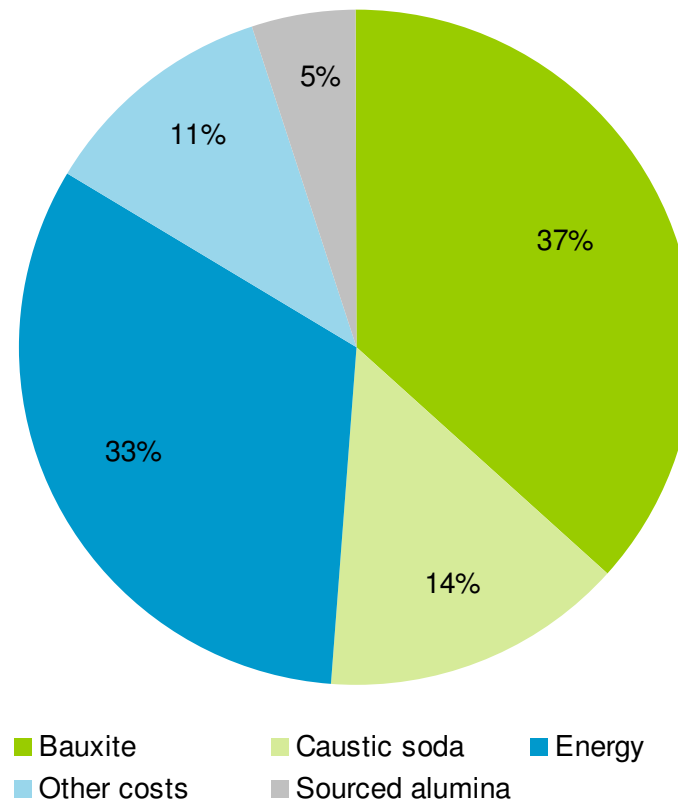
Paragominas bauxite mining costs 2011



# Favorable integrated alumina cash cost position

- Integrated alumina cash cost position 2011
  - USD 266 per mt
  - 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

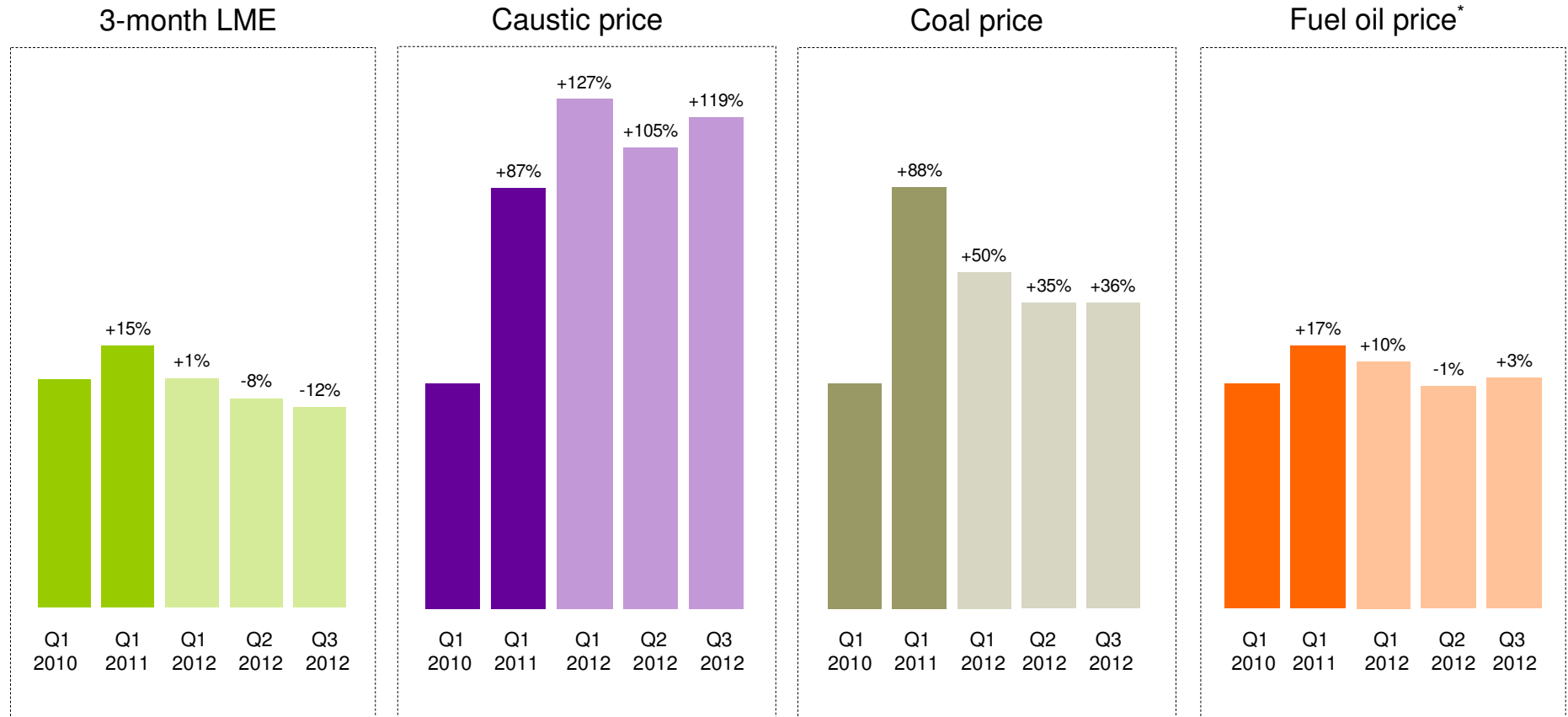
Integrated alumina cash cost position 2011



# Continued raw material cost challenge

LME price lags important raw material prices

Indexed (Q1 2010=100)

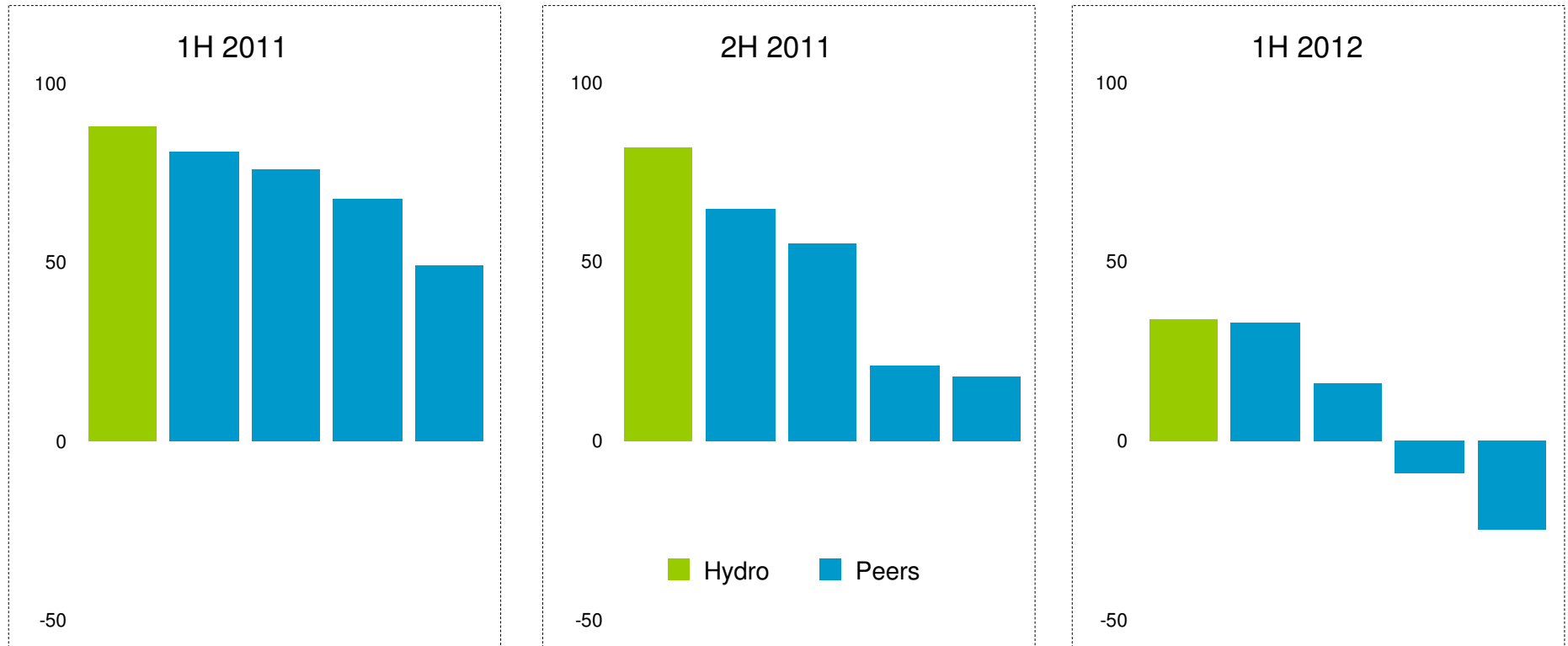


Source: EcoWin (LME), CMAI/Harriman (Caustic soda), Platts Bolivar Index (Coal), ANP (Fuel oil)

\* ICMS effect not included in graph for Q2 and Q3 2012

# Hydro's position is competitive compared to peers – despite lower LME and weak EBITDA

Underlying EBITDA USD/mt for respective bauxite and alumina divisions

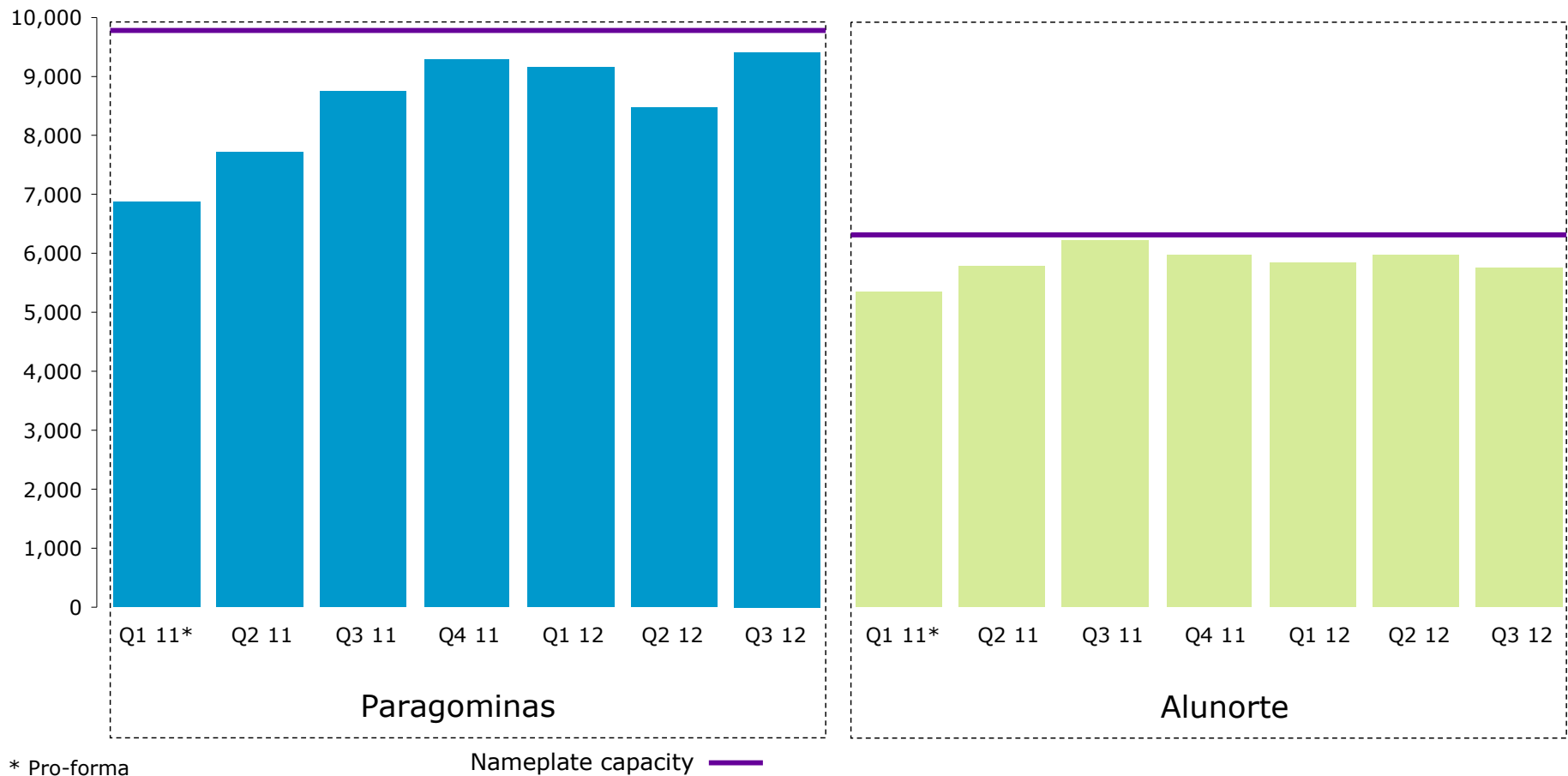


All figures based on public accounting data, not verified by Hydro. Data not adjusted for different accounting principles and non-specified underlying items. Hydro makes no representation as to the accuracy or completeness of such information. The analyses are based on assumptions subject to uncertainty and therefore intended only for general comparisons across companies and should not be used to support any individual investment decision. All results are provided for informational purposes only.

# Significant improvement in Paragominas

Stabilize and improve further

Annualized production thousand mt



# From B to A

**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".*

**HYDRO**

Handwritten signatures include: *Samir, Estelito, André, Adriano Mayer, Kaci, Kaci na Suelly, Felício, Wilmarson, Cesar Vasconcelos, João Antonio Jr., Daniel, Damir, and others.*

# Improvement efforts in Bauxite & Alumina

NOK 1 billion improvement potential next 2-3 years



## Alunorte – Towards 6.3 Mtpy

- Stabilize performance and availability
- Increase productivity
- Improve logistics efficiency
- Optimize efficiency and rightsizing

## Paragominas – Towards 9.9 Mtpy

- Boost production with new technologies
- Increase productivity
- Improve product flow and minimize tailings
- Optimize efficiency and rightsizing

## Commercial

- Base bauxite and alumina pricing on fundamentals
- Increase logistical flexibility and optimize scheduling
- Optimize contract negotiation and logistics



- **Strategic rational verified**
- **Significant improvements achieved**
- **Main focus is "from B to A" improvement program**



4

**Questions?**

[www.hydro.com](http://www.hydro.com)