



London November 30, 2017



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### Safety information at The Andaz

- There are no scheduled fire alarm tests today, so if the fire alarms go off please listen to the announcements and follow the instructions
- The Fire Assembly point is over in Exchange Square by the Fat Lady statue
- The Event Management Team will be on hand to assist
- The nearest fire exits to this location are:
  - Out of the entrance doors at the side, and turn to your left or right, the fire exits are indicated by the Green Running Man sign
- In the event of a medical emergency please inform the Event Management Team, who are trained first aiders, or where required, can contact the relevant services



#### Cautionary note in relation to certain forward-looking statements

Certain statements included in this announcement contain forward-looking information, including, without limitation, information relating to (a) forecasts, projections and estimates, (b) statements of Hydro management concerning plans, objectives and strategies, such as planned expansions, investments, divestments, curtailments or other projects, (c) targeted production volumes and costs, capacities or rates, start-up costs, cost reductions and profit objectives, (d) various expectations about future developments in Hydro's markets, particularly prices, supply and demand and competition, (e) results of operations, (f) margins, (g) growth rates, (h) risk management, and (i) qualified statements such as "expected", "scheduled", "targeted", "planned", "proposed", "intended" or similar.

Although we believe that the expectations reflected in such forward-looking statements are reasonable, these forward-looking statements are based on a number of assumptions and forecasts that, by their nature, involve risk and uncertainty. Various factors could cause our actual results to differ materially from those projected in a forward-looking statement or affect the extent to which a particular projection is realized. Factors that could cause these differences include, but are not limited to: our continued ability to reposition and restructure our upstream and downstream businesses; changes in availability and cost of energy and raw materials; global supply and demand for aluminium and aluminium products; world economic growth, including rates of inflation and industrial production; changes in the relative value of currencies and the value of commodity contracts; trends in Hydro's key markets and competition; and legislative, regulatory and political factors.

No assurance can be given that such expectations will prove to have been correct. Hydro disclaims any obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.



#### Agenda

07:30 - 08:00	Light breakfast and registration	11:15 – 11:35	Break
08:00 - 08:05	Welcome	11:35 – 12:40	Hydro's strategic direction
08:05 - 08:45	Hydro		Bauxite & Alumina
08:45 – 09:15	Finance		Primary Metal Rolled Products
09:15 – 09:30	Q&A		Sustainability
09:30 - 09:50	Break	12:40 – 12:55	Q&A
09:50 – 10:35	Market outlook	12:55 – 13:00	Summary
10:35 – 11:00	Extruded Solutions	13:00 – 14:00	Lunch
11:00 – 11:15	Q&A		







# The leading force in aluminium

Adding value across the value chain

Svein Richard Brandtzæg, President and CEO

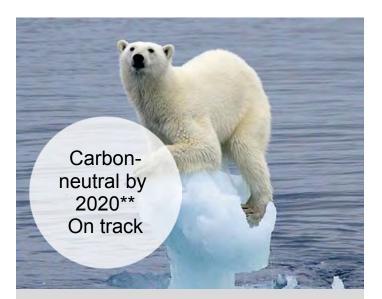
## Lifting the bar for responsibility and sustainability

Good for our people, great for business



#### Safety first

Aiming for an injury-free work environment



#### Part of the solution

Implementing the industry's most ambitious climate strategy



#### **Good citizen**

Making a positive difference, being a partner for social development



\*Own employees until end-October, including Extruded Solutions \*\*From a life-cycle perspective

#### Main developments during 2017

## Bauxite & Alumina



Record-high bauxite & alumina production



Start-up of new state-of-the art dry disposal of bauxite residue using press filter

#### Primary Metal



Karmøy technology pilot on track for first metal Q4 2017



Launch of low-carbon aluminium products 4.0 and 75R

#### Rolled Products



Inauguration of Automotive line 3



Completed modifications at UBC recycling facilty

#### Energy



1.65 TWh wind-based power sourcing\*

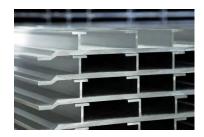


Developing solution to secure continued RSK production

## Extruded Solutions



Becoming 100% owner in Sapa



Record Sapa results through 2017



\* 1.65 TWh from 2021-2039

## Integration of Extruded Solutions on track

The Hydro model allows all business areas to be run according to their specific business drivers and needs



## Organizational structure in place

- New corporate management board for Hydro and management group for Extruded Solutions established
- All corporate staffs of former Sapa incorporated into Hydro or re-assigned into Extruded Solutions
- Extruded Solutions included in Hydro's decentralized operating model



## Initial synergy potential confirmed

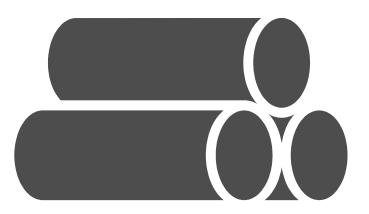
- Confirmed synergies of MNOK 200 per year
- Integration costs estimated at MNOK 400 over the next two-year period
- Further synergy potentials being developed, including innovation and R&D



#### Systems integration on track

- Emergency preparedness in place from Day 1
- Mapping of all IS/IT systems on track and integration roadmaps established
- Reporting routines established for HSE, finance and viability

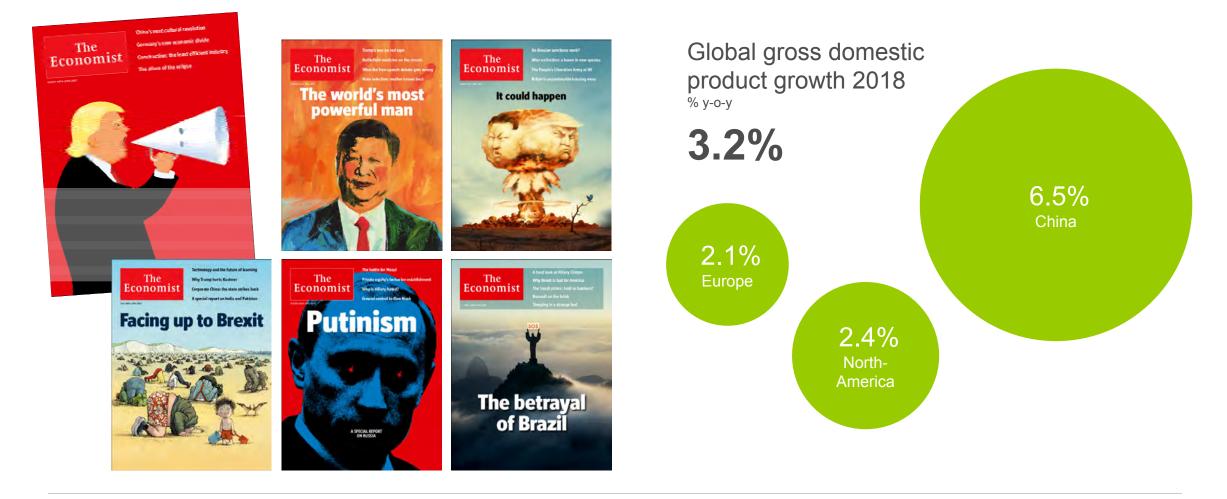




## Aluminium gaining momentum on favorable fundamentals



#### Geopolitical uncertainty, robust global growth



HYDRO

Source: Global Insight

#### China sentiment shifting due to rising environmental concerns

- Aluminium demand continue to grow, but at more moderate level
- Financing becoming increasingly restricted
- Bauxite resources depleting domestically, increasing dependency on imports, in particular from Guinea
- Increasing raw material prices
- Combination of environmental concerns and supply-side reform leading to significant capacity reductions in China
  - Supply-side reform already taking effect, shutdowns of ~3 million mt of smelter capacity and capacity under construction halted
  - Winter shutdowns now the main focus and uncertainty

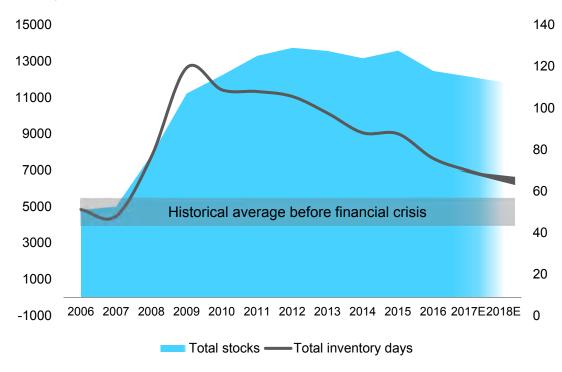




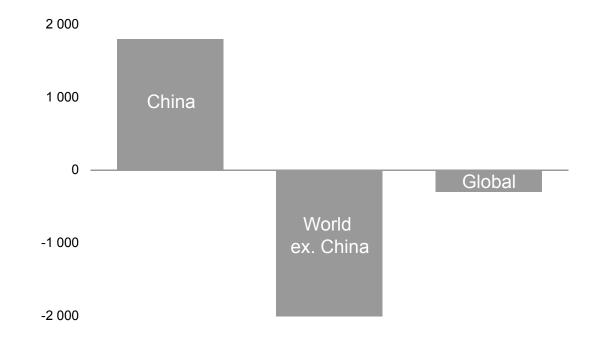
## Global aluminium market expected to be largely balanced in 2018

Inventories trending towards historical levels

#### Inventory levels, reported and unreported Global, in thousand tonnes



#### Expect largely balanced primary market in 2018

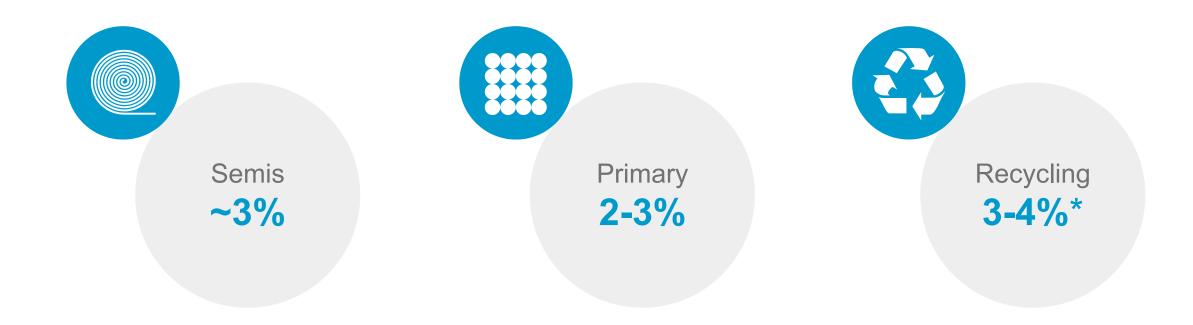




Source: CRU, Hydro analysis

## Continued strong long-term outlook for aluminium

CAGR 2017-2027





## Delivering on Hydro's overall strategic direction



## Fully integrated across the aluminium value chain and markets

Broad products and solutions offering from bauxite to end-user products

	Bauxite	Transport & automotive	Building & construction	Packaging	Electronics & electrical	Machinery & equipment	Consumer durables
	Alumina		10	and Lang			
	Energy						00000
	Primary Metal	Caller -			All Ca		
	Rolled Products						
X	Extrusion						
	Recycling		×		×	$\boxtimes$	



#### Hydro – differentiating through the integrated model

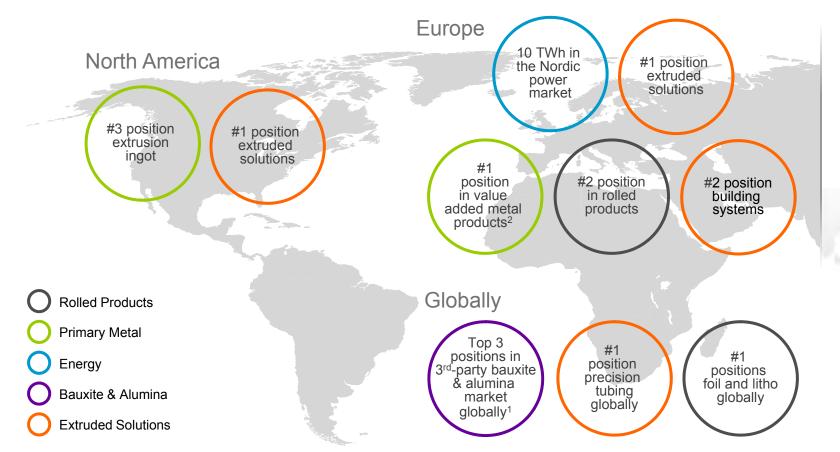
	HYDRO	RioTinto	ALCOA	≣III III≣ SOUTH32	<b>R</b> IUSAL	🌲 Constellium	Centuryaluminum	Novelis	China Hongqise Group Limited	CHALCO
Bauxite		•		•					•	•
Alumina		•							•	
Energy	•	•							•	•
Primary Metal	•	•								•
Rolled Products						•		•	•	•
Extrusion	•					•				•
Recycling						•		•		•



Source: graphical illustration based on company websites/reports, CRU

## Strong global presence throughout the aluminium value chain

Built on market understanding, customer closeness and competence



#### The complete aluminium company

- High-quality bauxite and alumina production in Brazil
- Primary production in Norway, Germany, Qatar, Slovakia, Brazil, Canada, Australia
- 10 TWh captive hydropower production
- European #2 in rolled products
- World leader in aluminium extruded profiles
- Remelting in the US, European recycling network
- Unparalleled technology and R&D organization





<sup>1</sup> Outside China

<sup>2</sup> Extrusion ingot, sheet ingot, primary foundry alloys and wire rod
 <sup>3</sup> Primary Foundry Alloys

## Better, Bigger, Greener

Hydro's aspiration for higher value creation

#### Better

## Raise performance and improve customer offering

- Extend Hydro's leadership in advanced technology and product innovation
- Create value through raw materials access, customer collaboration and integrated model
- Continue benchmark performance and ensure attractive returns over the cycle

## Bigger

## Expand the use of aluminium and strengthen Hydro's platform for growth

- Promote Hydro and aluminium through valueadding products and solutions for our customers
- Be the preferred partner and most trusted voice of the aluminium industry
- Pursue selective growth from raw materials to products, solutions and recycling

## Greener

#### Lead the transition towards sustainable solutions

- Advocate aluminium as a building block for the low-carbon, circular economy
- Continue to improve footprint from own production, recycling and sustainable solutions
- Making a positive difference by strengthening local communities and our business partners





## Creating value across the aluminium value chain



## Leading the industry in innovation, R&D and product development

Driving technological development to support customers, increase market share and lift efficiency





## Why aluminium?

Hydro's strategic direction aims to realize full potential of aluminium's strong qualities and versatility



#### Aluminium

- Lightness and strength
- Durability and formability
- Corrosion resistance
- Conductivity
- Recyclability
- × Energy-intensity



#### Steel

- Strength and durability
- Recyclability
- Price
- × Weight
- × Corrosion
- × Energy-intensity



#### Copper

- Conductivity
  - Corrosion resistance
  - Recyclability
- 🗙 Price
- 🗙 Weight
- × Energy-intensity



## Composites ✓ Lightness ✓ Strength

- × Price
- × Recyclability
- X Climate footprint
- × Energy-intensity



- PVC
- Lightness and formability
   Corrosion resistance
- Price
- X Climate footprint
- × Recyclability
- × Durability



For illustrative purposes only

## Hydro launches its first certified sustainable products

Converting our industry-leading climate position into products for the low-carbon, circular economy



**4.0** has a guaranteed maximum carbon footprint of 4 kg  $CO_2$ / kg aluminium

**75R** has a guaranteed minimum post-consumer scrap content of 75%









### Operational and commercial excellence

Focus on cost efficiency and process technology Centralized business model



#### **Bauxite & Alumina**

- Increased and stabilized production at Alunorte and Paragominas
- Raw material efficiency
- Commercial and procurement improvements



#### Energy

- Highly competitive operational costs
- Strong effort on global sourcing activities
- Commercial excellence



**Primary Metal** 

- Increased productivity and improved consumption factors
- Continued move towards highermargin segments



#### **Metal Markets**

- High share of valueadded products
- Increased use of postconsumer scrap
- Strong customer collaboration and satisfaction

challenges

**Rolled Products** 

High-grading portfolio

operational and ramp-up

Roadmaps to solve



#### **Extruded Solutions**

- Succesfull value-overvolume strategy
- Strong customer collaboration and satisifaction

Raw materials, processing and energy

Primary production, marketing and recycling

Products and solutions

Focus on margin management and product innovation

Decentralized business model



## Industry-leading improvement drive

Improvement target lifted to NOK 3.0 billion 2016-2019, NOK 1.7 billion realized by end-2017



#### Bauxite & Alumina

#### BNOK 1.3 in 2019

- High production at Alunorte and Paragominas, commercial and procurement contributing positively
- Expect to reach BNOK 1.1 already in 2017
- Increasing 2019 ambition from BNOK 1.0 to BNOK 1.3

#### **Rolled Products**

#### BNOK 0.7 in 2019

- Operational and ramp-up issues reducing improvement speed
- Behind the 2017 target
- Expect to reach original BNOK
   0.9 target with 1-year delay

#### **Primary Metal**

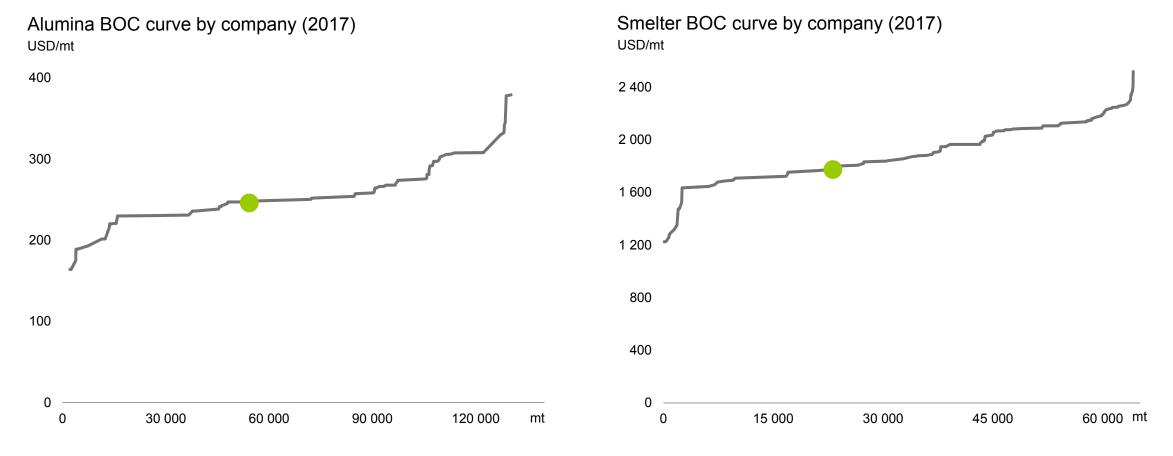
#### BNOK 1.0 in 2019

- Improved overall performance, negative impact from Albras performance
- Behind the 2017 target
- On track for 2019 target

1) Real 2015 terms. Includes some larger investments of NOK 3-3.5 billion NOK in 2015-2019: AL3 and UBC in Rolled Products. Creep projects in Primary Metal. Alunorte debottlenecking in B&A.



#### Among the best positioned in the industry upstream



HYDRO

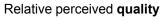
Source: Republished under license from CRU International Ltd

Assumptions: Aluminium cost curve: LME USD 2 100, alumina USD 465, NOK/USD 8.2. Alumina cost curve: caustic soda USD 600, USD/BRL 3.26

## Primary aluminium in premium segment for casthouse products

Extrusion ingots customer value survey 2017\*



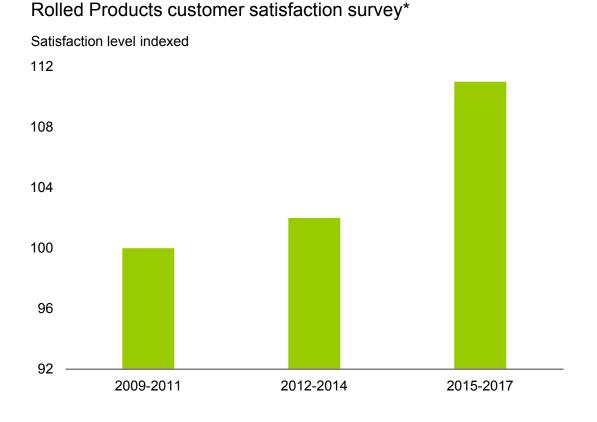




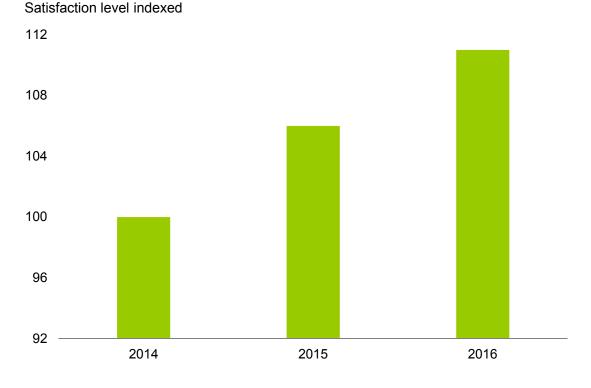
\*2017 Customer satisfaction survey for Europe performed by Malik (PIMS)

## Strong and improving customer satisfaction downstream

Competence, flexibility and advanced products are key success factors



#### Extruded Solutions Europe customer satisfaction survey\*\*



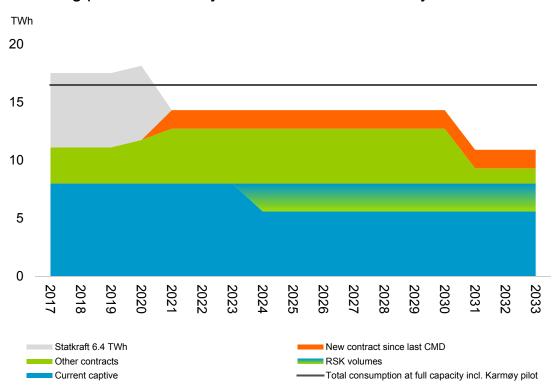
\* Customer survey measuring satisfaction level for customers of Rolled Products. Survey is performed by external company (Skopos) and results are based on answers to a standard set of questions. Rating between 0-100 and indexed in the graph.

\*\* Customer survey measuring satisfaction level for customers of Extruded Solutions Europe. Percentage of customers being «very pleased» or «pleased» are indexed in the graph

## Securing long-term competitive power sourcing for smelter portfolio

1.65 TWh/year from 2021 sourced for the Norwegian smelter portfolio since last CMD



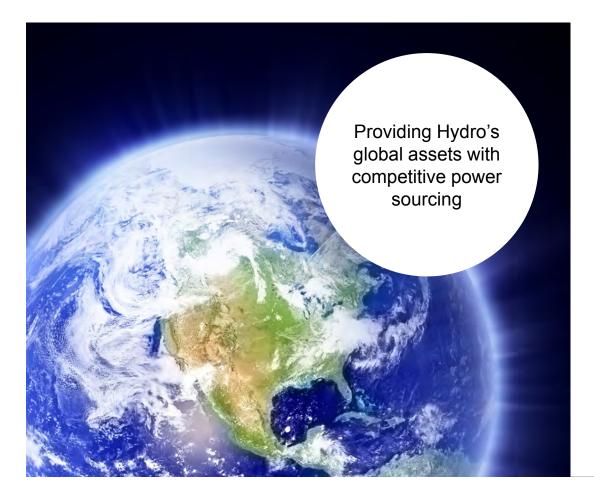


Sourcing platform for fully-owned smelters, Norway\*



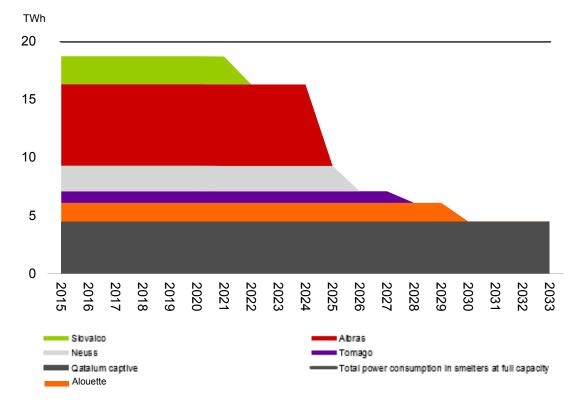
\* Net 8 TWh captive assumed available for smelters

## Securing long-term competitive power sourcing for smelter portfolio

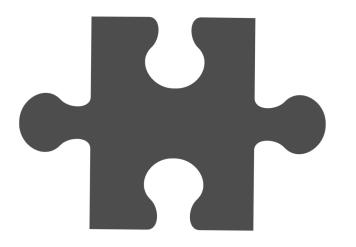


\* Albras and Slovalco on 100% basis

Sourcing platform for JVs and Neuss smelter\*





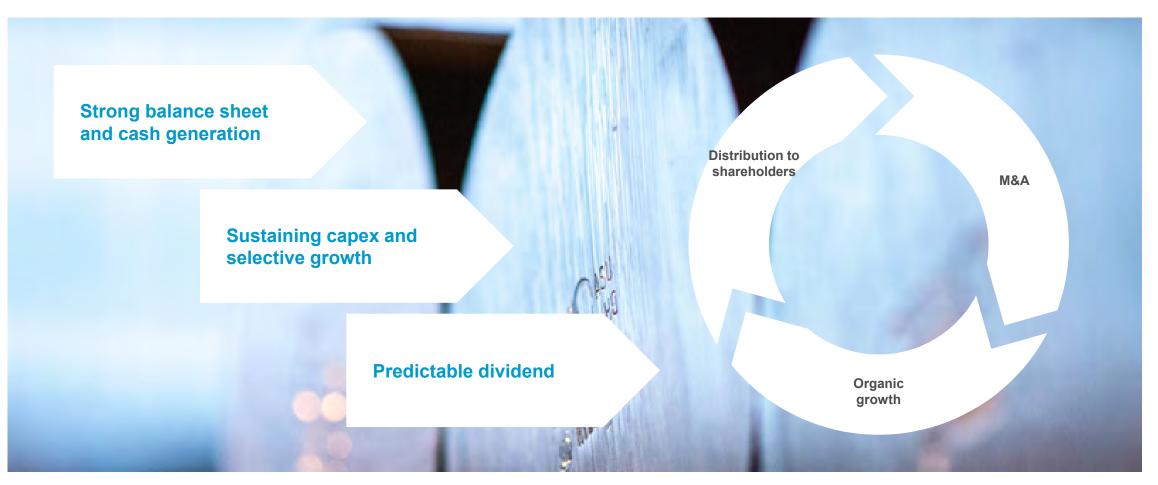


## Our financial framework for increased value-creation



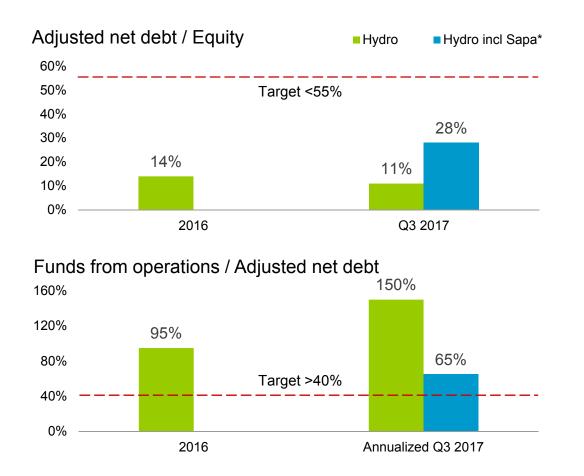
## Driving long-term shareholder value

Priorities for cash over the cycle

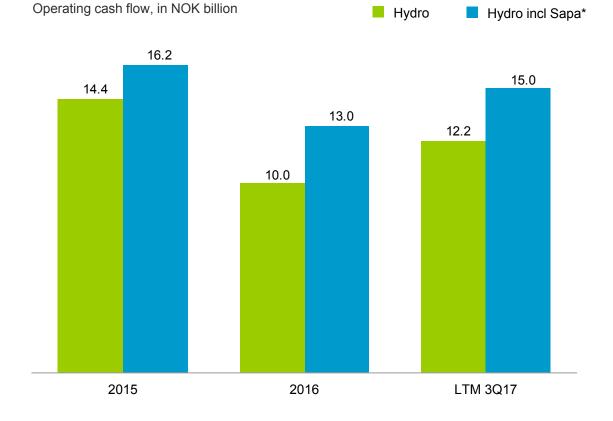




## Strong balance sheet and cash generation



#### Cash flow generation strengthened by Sapa-acquisition\*\*





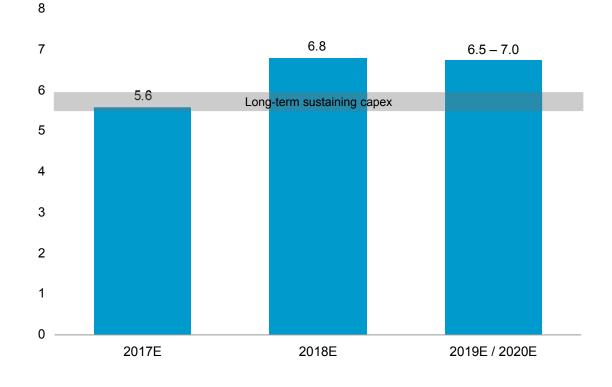
\* Estimate including Sapa

\*\* Cash flow from operations; directly from cash flow statement Hydro/Sapa

## Capital allocation - sustaining capex

#### Sustaining capital expenditures

#### In NOK million



- Long-term sustaining capex BNOK 5.5 6, including Extruded Solutions
- Main sustaining projects 2018-2020:
  - Bauxite residue disposal area
  - Opening of new bauxite mining area
  - Pipeline replacement
  - Primary rectifiers and asset integrity Albras
  - Smelter relining



#### Capital allocation – selective growth

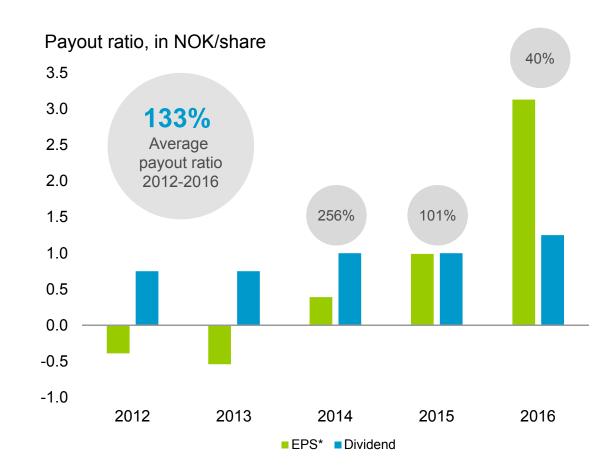


- Presence in full value chain and all market segments gives increased growth opportunities
- Projects evaluated on strategic and economic merit
  - Differentiated cost of capital between business areas
- Incremental growth projects 2018 2020 includes smaller creep and productivity improvements
- Capex related to specific growth projects will be announced when decision is made



#### **Dividend policy**

- Aiming for competitive shareholder returns compared to alternative investments in peers
- Dividend policy:
  - Ordinary dividend: 40% of net income over the cycle
  - Floor of NOK 1.25 per share, committed to a predictable dividend level
- Five-year average ordinary payout ratio 2012-2016 of 133%
- Share buybacks and extraordinary dividends as supplement in periods with strong financials and earnings outlook





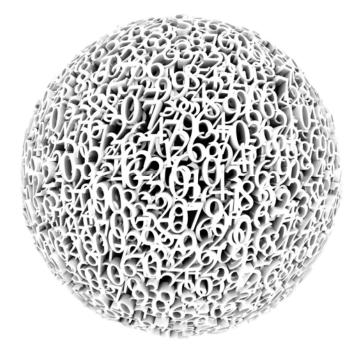
#### \* Earnings per share



Lifting performance, driving value creation, extending industry leadership

- Maintaining financial strength and flexibility, providing attractive returns over the cycle
- Strengthening competitiveness and resolving operational challenges
- Differentiating through the integrated model and integrating Extruded Solutions





## Finance Maximizing the potential for value creation

Eivind Kallevik, CFO

# Prudent financial framework



### Prudent financial framework

Managing industry cyclicality, driving long-term shareholder value



1) Real 2015 terms

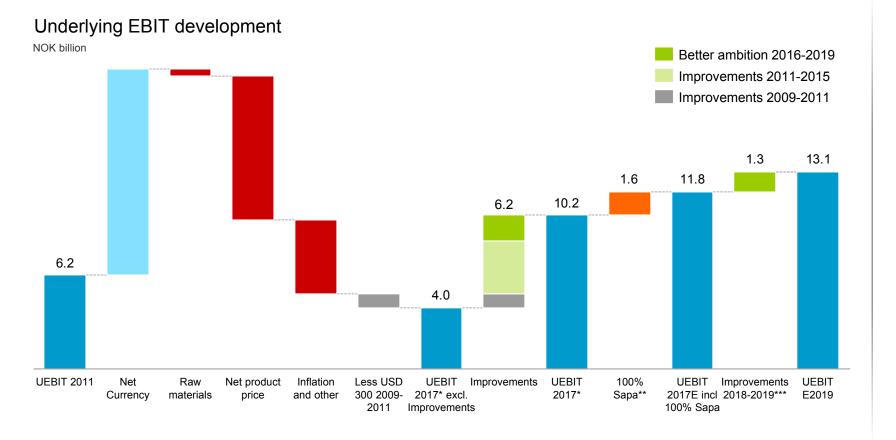
2) Funds from operations / adjusted net debt

3) Adjusted net debt / Equity

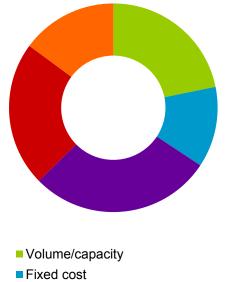
4) With Karmøy Technology Pilot net investment, after ENOVA support and including Extruded Solutions



#### LIFTING CASH FLOW POTENTIAL Supporting earnings with industry-leading improvement ambitions



*Better* improvement ambition by category, 3.0 BNOK 2016-2019



- Process improvement
- Commercial improvements/high-grading
- Other

Hydro UEBIT including Hydro Extrusions before 2013 and 50% of Sapa Net Income after 2013.

\* YTD Q3-2017 annualized

\*\* Sapa 100% Underlying EBIT less 50% underlying net income - Q3 2017 annualized incl. excess value depreciation

\*\*\* Remaining improvement programs in real 2015 terms



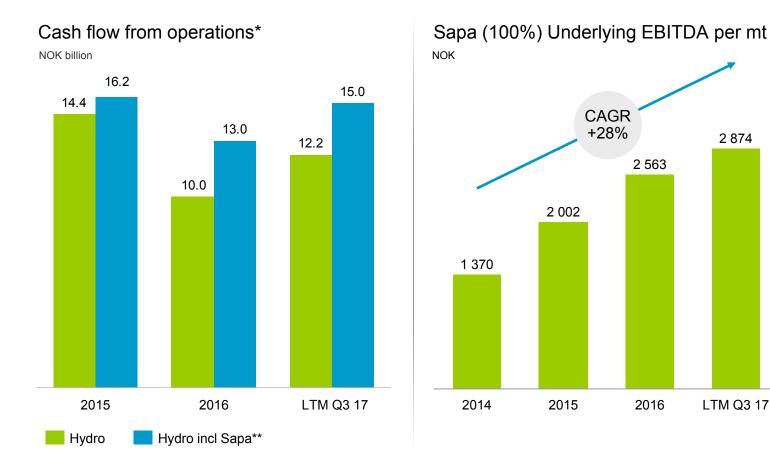
### LIFTING CASH FLOW POTENTIAL Sapa adds significant operating cash flow from day 1, with further improvement potential and growth opportunities

2 874

LTM Q3 17

2 563

2016



- BNOK 1 restructuring on annual basis delivered ahead of plan
- Further potential for value-creation
  - Increasing share of value-added sales \_
  - Simplification and collaboration drive for \_ continued profitability improvement
  - Selective investments in capabilities and \_ capacity to support value-over-volume strategy
- Estimated synergies 200 MNOK per year

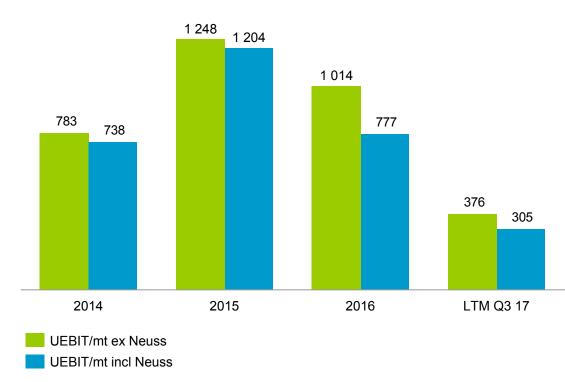


\* From cash flow statements Hydro and Sapa

\*\* Estimate including Sapa

## Rolled Products: Challenging 2017, investing for future growth

Rolled Products Underlying EBIT per mt  $_{\text{NOK}}$ 



- Operational issues reducing cash flow in 2017
  - Production performance at Alunorf and Hamburg have been stabilized
  - Technical issues related to the UBC line mitigated, full ramp-up to >40 000 mt expected by year-end 2018
  - Qualification process ongoing for the Automotive Line 3, technical issues have been identified and are currently being resolved
- Gradual improvement during the next years
  - Negative effect from the Neuss smelter to be mitigated with a more competitive power contract from 2018, positive effect of MNOK 350-400/year
    - Offsetting negative effect of MNOK ~ 250/year in Energy
  - Product mix improvement and further high-grading through ramp-up of UBC and AL3



#### LIFTING CASH FLOW POTENTIAL Increasing margins upstream, raw material cost push

All-in implied primary cost and margin, USD/mt<sup>2</sup>)

2 179

475

1725

2015

8.0

3 700

1 838

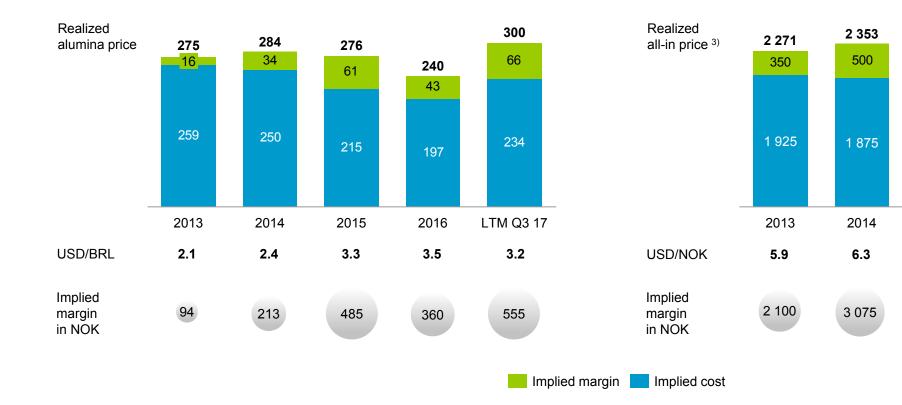
300

1 5 5 0

2016

8.4

2 500



Implied alumina cost and margin, USD/mt<sup>1)</sup>

1) Realized alumina price minus underlying EBITDA for B&A, per mt alumina sales

2) Realized all-in aluminium price minus underlying EBITDA margin, including Qatalum, per mt aluminium sold. Implied primary cost and margin rounded to the nearest "25"

3) Realized LME plus realized premium, including Qatalum

2 1 2 5

425

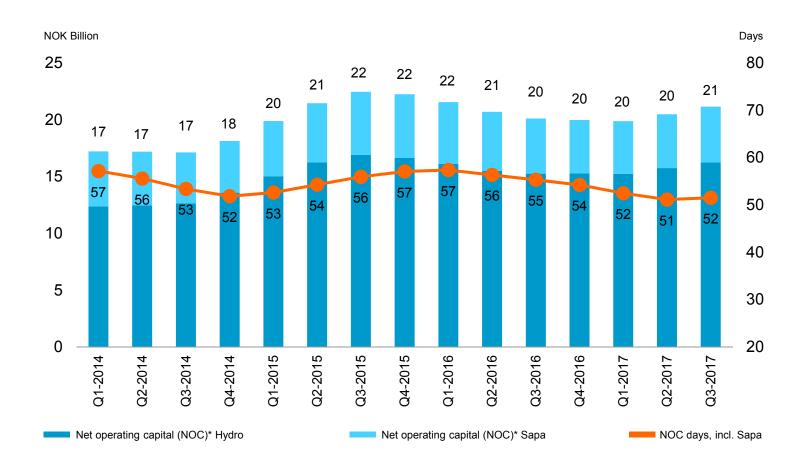
1 700

LTM Q3 17

8.4

3 6 2 5

### LIFTING CASH FLOW POTENTIAL Optimizing working capital remains key priority



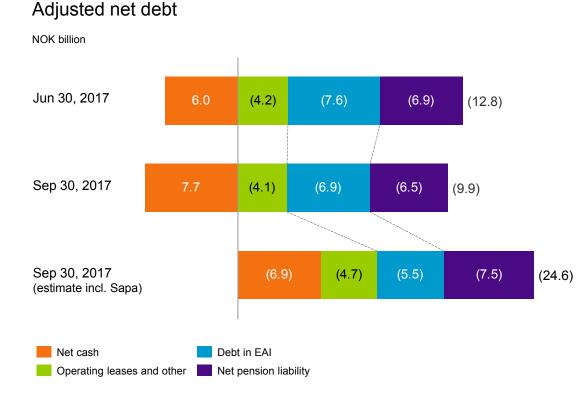
- Net operating capital generally follows LME
- Extruded Solutions average working capital around 5 BNOK
- Extruded Solutions reducing overall net operating capital days due to shorter lead times between suppliers and customers
- Reduced net operating capital days in 2016 and 2017 from the high inventory build-up throughout 2015



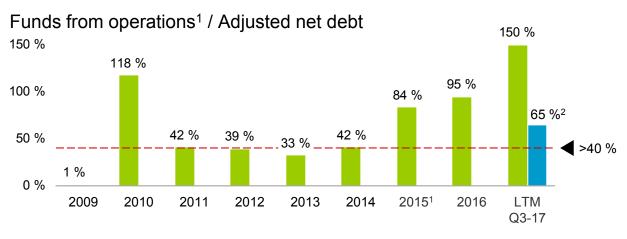
\* Last twelve months moving average

### FINANCIAL STRENGTH AND FLEXIBILITY Maintaining a solid balance sheet and investment-grade credit rating

Strong liquidity, also following the Sapa acquisition



#### Adjusted net debt / Equity 60 % ◀ <55 % 50 % 40 % 32 % 28 %<sup>2</sup> 26 % 30 % 24 % 22 % 20 % 19 % 20 % 14 % 11 % 11 % 10 % 0 % 2009 2010 2011 2012 2013 2014 2016 Q3 2017 2015

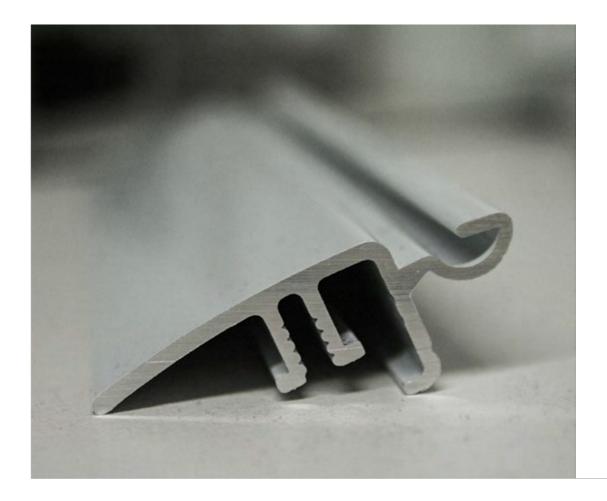


1) 2015 FFO/aND ratio has been restated due to change of definition 2) Estimate including Sapa

📒 Hydro 📃 Hydro incl Sapa



### FINANCIAL STRENGTH AND FLEXIBILITY Successful financing of the Sapa-transaction in the Norwegian and Swedish bond markets

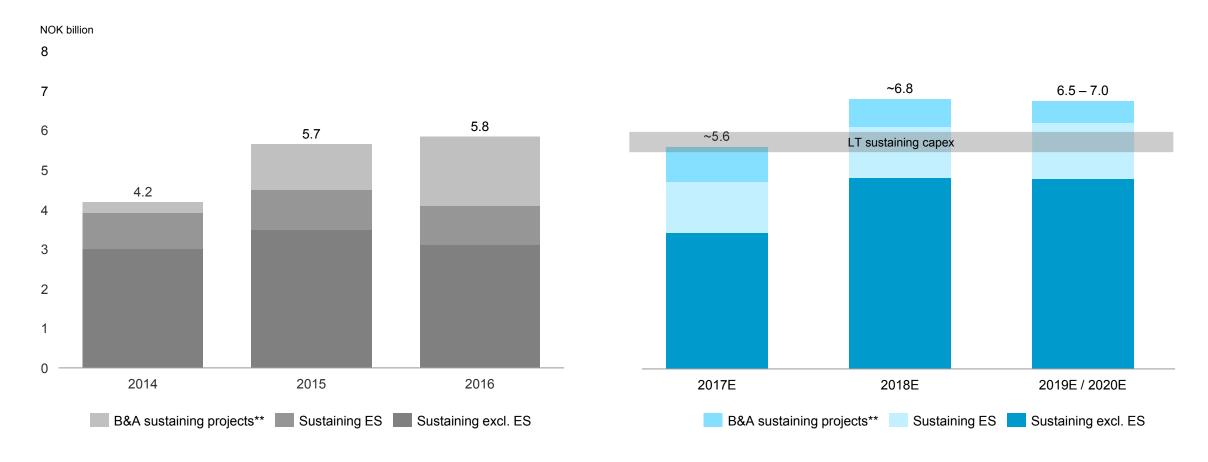


- Successful placement of bonds in Norway and Sweden
- Very strong interest and highly competitive terms achieved
- Total amount: NOK 3 billion and SEK 3 billion
  - 2Y SEK 1 billion fixed rate note with a coupon of 0.125% p.a.
  - 3Y SEK 1 billion floating rate note with a coupon of 3m Stibor + 0.75% p.a.
  - 5Y SEK 1 billion fixed rate note with a coupon of 1.00% p.a.
  - 5Y NOK 2 billion floating rate note with a coupon of 3m Nibor + 0.75% p.a.
  - 7Y NOK 1 billion fixed rate note with a coupon of 2.5% p.a.
- DNB, Nordea and Handelsbanken Joint Lead Managers



# Long-term sustaining capex around NOK 5.5-6.0 billion

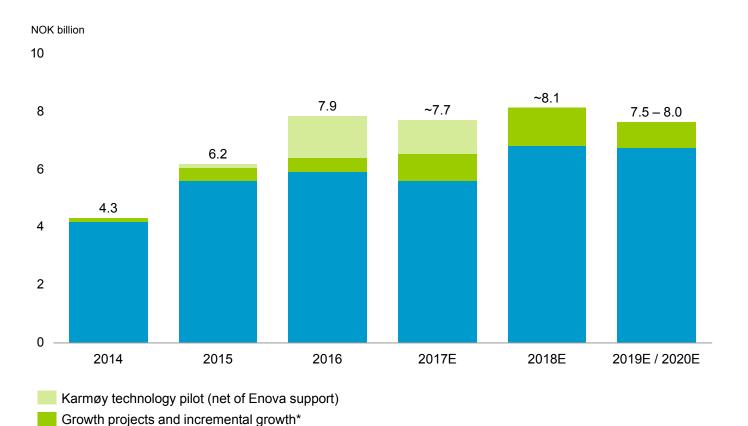
Higher than average sustaining capex 2018-2020 mainly driven by sustaining investments in Brazil





# Growth capex focused on high-grading, recycling and technology

Majority of sustaining capex allocated upstream



• Sustaining projects for 2018-2020:

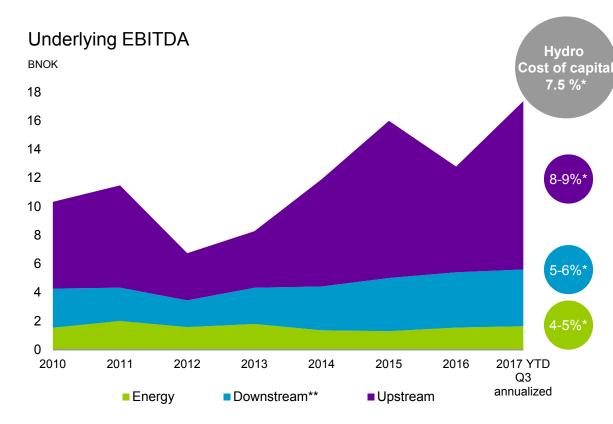
- Bauxite residue disposal area
- Opening of new bauxite mining area
- Pipeline replacement
- Primary rectifiers and asset integrity Albras
- Smelter relining
- Ongoing organic growth projects:
  - Productivity improvements across the portfolio
- Karmøy technology pilot 2015-2018:
  - Gross investment 4.3 BNOK
  - Of which Enova support 1.6 BNOK
  - Net investment 2.7 BNOK
- Capex related to specific growth projects will be announced when decision is made



\* Includes Extruded Solutions

Sustaining capex\*

# Capital allocated across the value chain, based on estimated premium above cost of capital



Increased growth opportunities through presence in full value chain and all market segments

#### Upstream

- Cost of capital reflecting higher capital intensity and expected volatility
- Focus: creep projects, cost efficiency and debottlenecking

#### Downstream

- Lower required cost of capital, more stable margins
- Focus: high grading portfolio, increasing exposure in higher-margin segments
- Energy
- Stable cash flows from high-quality hydro power assets in Norway
- Focus: securing RSK volumes and values, new hydropower projects

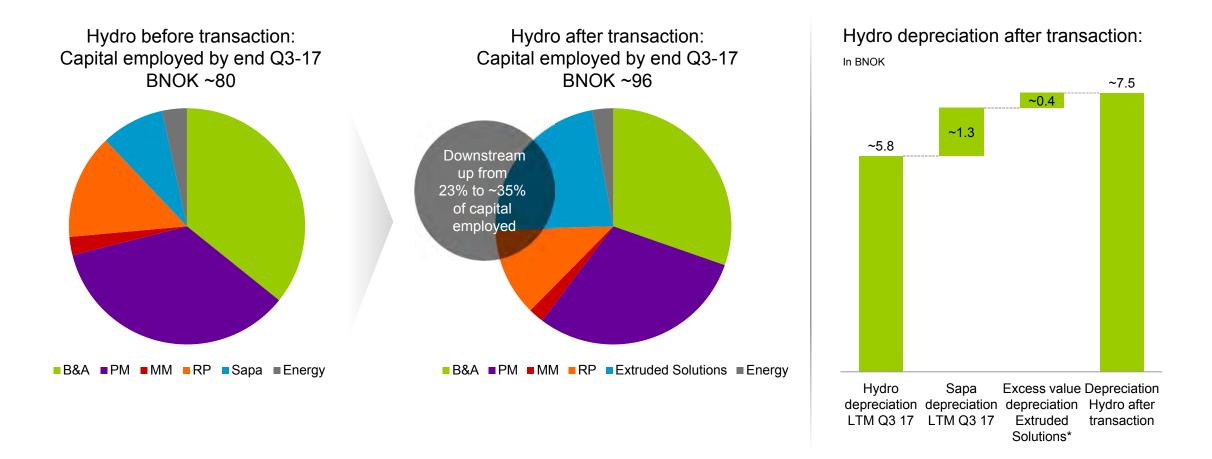
#### Return requirements dependent on project specific risk assessments



\*\* Hydro Extruded Products 2010-2012, 50% of underlying EBITDA Sapa JV 2013-2017 (pro forma figures until closing 2013) Upstream: Bauxite & Alumina, Primary Metal. Downstream: Extruded Solutions, Rolled Products, Metal Markets



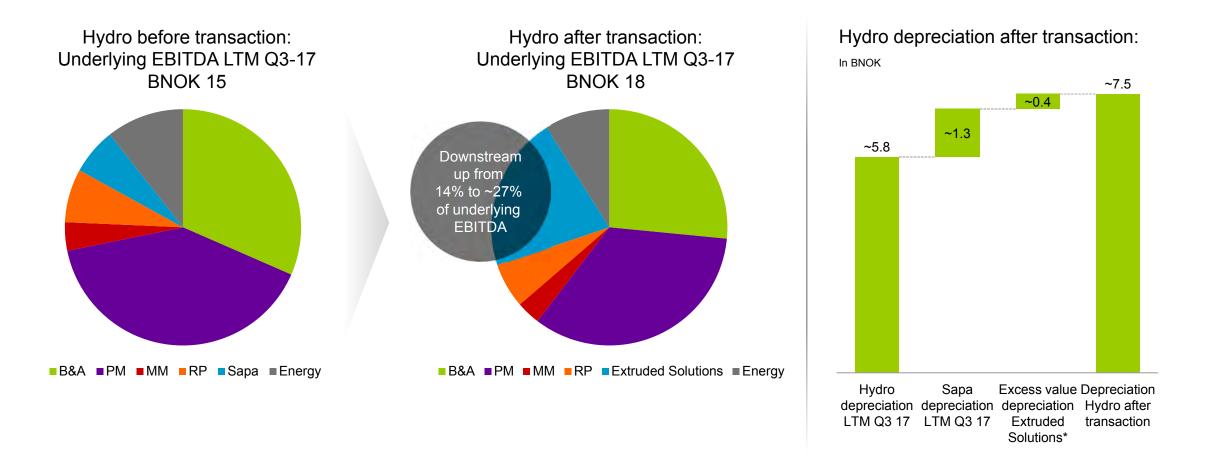
## Increasing relative share of downstream exposure





Capital employed pie-charts excludes other & eliminations of negative ~7.7 BNOK \* Indicative estimate

## Increasing relative share of downstream exposure





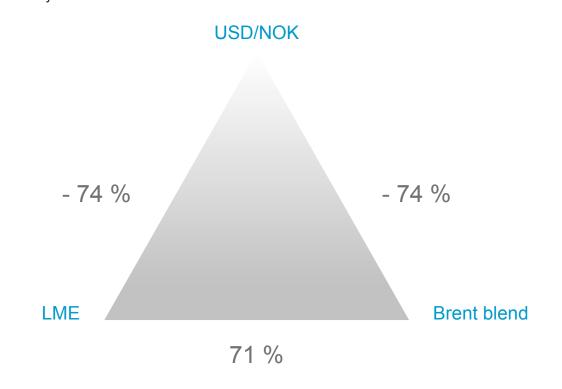
Underlying EBITDA pie-charts excludes other & eliminations of negative ~0.5 BNOK \* Indicative estimate

### EFFECTIVE RISK MANAGEMENT Limited financial hedging, flexible business model

Historical correlations between commodities and currencies indicate a natural earnings hedge

- Hedging strategy
  - Fluctuating with the market: revenues primarily exposed to LME, PAX and USD
  - Volatility mitigated by strong balance sheet
  - Strengthening relative position to ensure competitiveness
- Diversified business
  - Upstream cyclicality balanced with more stable earnings downstream
  - Exposed to different markets and cycles
- Bauxite & Alumina
  - Currency exposure, mainly USD and BRL
  - Exposed to LME and Platts alumina index prices
- Primary Metal
  - Operational LME hedging one-month forward sales
  - Currency exposure, mainly USD, NOK and BRL
- Metal Markets, Rolled Products, Extruded Solutions
  - Operational LME and currency hedging to secure margin
- Flexibility to hedge LME or currency in certain cases
- Long-term debt in currencies reflecting underlying exposures and cash generation, also considering attractiveness in main financial markets

Cross-correlations between currencies and commodities Monthly correlations 1994-2016



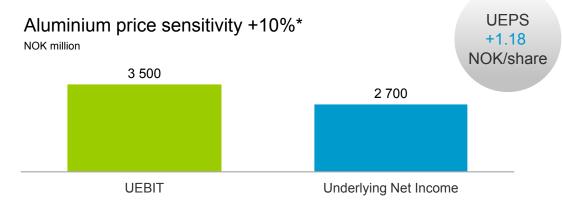


Source: Thomson Reuters, Hydro analysis

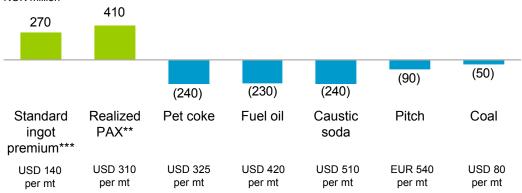
# Sensitivities and scenarios



### Significant exposure to commodity and currency fluctuations



### Other commodity prices, sensitivity +10%\*



#### Currency sensitivities +10%\*

#### Sustainable effect:

NOK million	USD	BRL	EUR	
UEBIT	3 450	(1 210)	(220)	
UEBITDA	3 540	(900)	(80)	
UEPS	1.17	(0.37)	(0.07)	
One-off reevaluation effect:				

Financial items	(70)	610	(1 890)
-----------------	------	-----	---------

 Annual sensitivities based on normal annual business volumes, LME USD 1 925 per mt, fuel oil USD 420 per mt, petroleum coke USD 325 per mt, caustic soda USD 510 per mt, coal USD 80 per mt, USD/NOK 8.10, BRL/NOK 2.50, EUR/NOK 9.40

 Aluminium price sensitivity is net of aluminium price indexed costs and excluding unrealized effects related to operational hedging

 BRL sensitivity calculated on a long-term basis with fuel oil assumed in USD. In the short-term, fuel oil is BRL-denominated

Excludes effects of priced contracts in currencies different from underlying currency exposure (transaction exposure)

· Currency sensitivity on financial items includes effects from intercompany positions

2018 Platts alumina index (PAX) exposure used

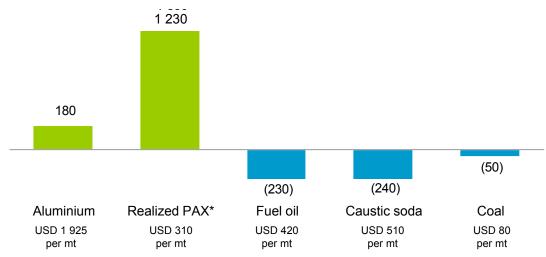


\*\* 2018 Platts alumina index exposure

\*\*\* Europe duty paid standard ingot premium

### Bauxite & Alumina sensitivities

Annual sensitivities on underlying EBIT if +10% in price



#### Currency sensitivities +10%

NOK million	USD	BRL	EUR
UEBIT	990	(820)	-

#### Revenue impact

- ~14.5% of 3-month LME price per tonne alumina
  - ~One month lag
- · Realized alumina price lags PAX by one month

#### Cost impact

#### Bauxite

- ~2.45 tonnes bauxite per tonne alumina
- Pricing partly LME-linked for bauxite from MRN

#### Caustic soda

- ~0.1 tonnes per tonne alumina
- Prices based on IHS Chemical, pricing mainly monthly per shipment

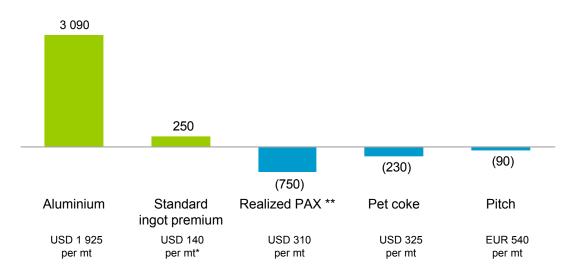
#### Energy

- ~0.11 tonnes coal per tonne alumina, Platts prices, one year volume contracts, weekly per shipment pricing
- ~0.11 tonnes heavy fuel oil per tonne alumina, prices set by ANP/Petrobras in Brazil, weekly pricing (ANP) or anytime (Petrobras)
- Increased use of coal as energy source in Alunorte



### **Primary Metal sensitivities**

Annual sensitivities on underlying EBIT if +10% in price



#### Currency sensitivities +10%

NOK million	USD	BRL	EUR
UEBIT	2 060	(390)	(230)

#### Revenue impact

- Realized price lags LME spot by ~1-2 months
- Realized premium lags market premium by ~1-2 months

#### Cost impact

#### Alumina

- ~1.9 tonnes per tonne aluminium
- ~14.5% of 3-month LME price per tonne alumina, increasing volumes priced on Platts index
  - $\sim$  1-3 months lag

#### Carbon

- ~0.35 tonnes petroleum coke per tonne aluminium,
  - Pace Jacobs Consultancy, 2-3 year volume contracts, quarterly pricing
- ~0.08 tonnes pitch per tonne aluminium, CRU, 2-3 year volume contracts, quarterly pricing

#### Power

- 13.7 MWh per tonne aluminium
- Long-term power contracts with indexations



\* Europe duty paid. Hydro Q3'17 realized premium USD 261 per mt \*\* 2018 Platts alumina index exposure

Currency rates used: USD/NOK 8.10, BRL/NOK 2.50, EUR/NOK 9.40

### Commodities and currencies need to be seen in tandem

Spot prices and currency rates indicate earnings upside

### Underlying EBIT sensitivity to changes in LME and USD/NOK

Change in LME price

Key variables "run-rate"\* vs Q3-17 realized

	Change in UEBIT (BNOK)	- 10%	0	+ 10%
JSD/NOK	+10%	(0.4)	3.5	7.3
Change in USD/NOK	0	(3.5)	0	3.5
Ö	-10%	(6.6)	(3.5)	(0.3)

	Q3-17 realized	Run-rate*	% change	Impact on UEBIT (BNOK)	Impact on UEPS (NOK/share)
LME	1 925	2 100	9 %	3.2	1.1
PAX	310	450	45 %	<mark>1.8</mark>	1.0
USD/NOK	8.1	8.1	0 %	0.0	0.0
BRL/NOK	2.5	2.5	0 %	0.0	0.0
Total				5.0	2.1

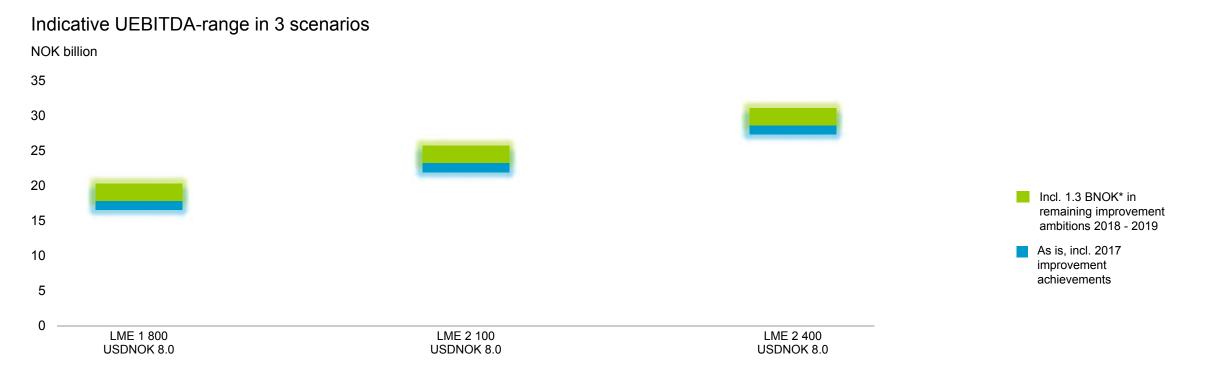
Annual effect



\* Run rate – market rates as of November 23, 2017

### Improvement efforts lift UEBITDA potential

Scenarios are not forecasts, but represent earnings potential based on sensitivities



#### Additional factors influencing earnings (not included in the scenarios):

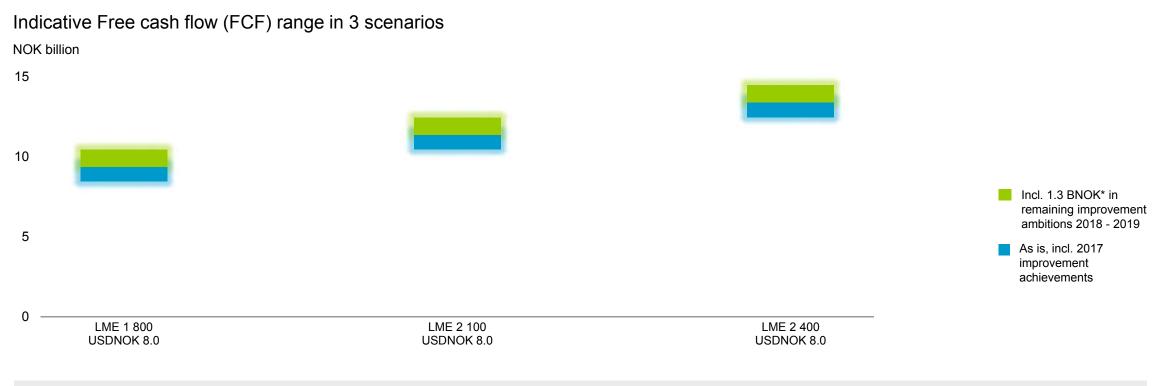
Production volumes, alumina sales pricing on PAX, energy prices, downstream margin developments, raw material cost development, premiums, inflation, currency, depreciation, other

Last 4 quarters underlying EBITDA as basis. USD/NOK 8.0, BRL/NOK 2.5, realized premium above LME 260 USD/mt, PAX 350 USD/mt assumed for all scenarios. Other assumptions unchanged. Improvements used for scenarios exclude Extruded Solutions \* Future improvement efforts in real 2015 terms, before depreciation.



### Improvement efforts and capital discipline contribute to FCF growth...

Scenarios are not forecasts, but represent earnings potential based on sensitivities



#### Additional factors influencing earnings (not included in the scenarios):

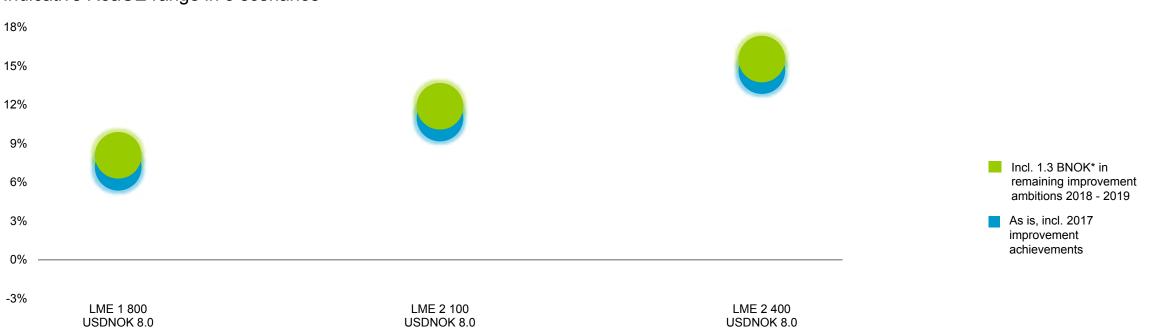
Production volumes, alumina sales pricing on PAX, energy prices, downstream margin developments, raw material cost development, premiums, inflation, currency, taxes, investments, interest expense, depreciation, other

Last 4 quarters underlying EBITDA as basis. USD/NOK 8.0, BRL/NOK 2.5, realized premium above LME 260 USD/mt, PAX 350 USD/mt assumed for all scenarios. Long-term capex 5.5 - 6 BNOK per year Other assumptions unchanged. Improvements used for scenarios exclude Extruded Solutions \* Future improvement efforts in real 2015 terms, before depreciation.



### ...and lift potential for competitive returns

Scenarios are not forecasts, but represent earnings potential based on sensitivities



#### Indicative RoaCE range in 3 scenarios

#### Additional factors influencing earnings (not included in the scenarios):

Production volumes, alumina sales pricing on PAX, energy prices, downstream margin developments, raw material cost development, premiums, inflation, currency, taxes, interest expense, other

Last 4 quarters underlying EBITDA as basis. USD/NOK 8.0, BRL/NOK 2.5, realized premium above LME 260 USD/mt, PAX 350 USD/mt assumed for all scenarios. Other assumptions unchanged. Improvements used for scenarios exclude Extruded Solutions \* Future improvement efforts in real 2015 terms, before depreciation.



# Financial targets and aspiration



### Driving long-term shareholder value

Balancing capital allocation and financial strength

### Solid balance sheet and liquidity

Maintain financial flexibility Enable access to capital markets Navigate through the cycles Manage business risks Act on opportunities

### Capital expenditures

Sustaining capex to ensure operational excellence

Investments to keep market share, reduce costs, strengthen margins



Deliver competitive cash returns to shareholders

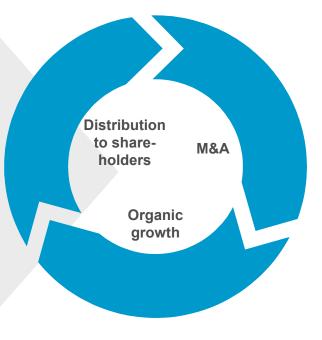
### Long-term shareholder value

 Reinvest in profitable growth

or

 Return to shareholders

Allocation based on best risk-adjusted returns





### Hydro's aspiration underpinned by firm financial targets

#### Medium and long-term

	Ambition	Timeframe	CMD 2017 status
Better improvement ambition	3.0 BNOK	2016-2019	1.7 BNOK 2017E
Long-term sustaining capex	~ 5.5 - 6.0 BNOK	Over the cycle	5.6 BNOK 2017E
Dividend payout ratio	40% of net income	Over the cycle	<b>~133%</b> <sup>1)</sup> 2012-2016
FFO/adjusted net debt <sup>2)</sup>	> 40%	Over the cycle	65% LTM Q3-17 <sup>3)</sup>
Adjusted net debt/Equity	< 55%	Over the cycle	<b>28%</b> Q3-17 <sup>3)</sup>
RoACE	Competitive <sup>4)</sup>	Over the cycle	<b>7.4%</b> <sup>3,5)</sup> LTM Q3-17
	Better B	igger Gree	ener

1) Payout ratio 5 year average - dividend per share divided by earnings per share from continuing operations for the last 5 years

2) FFO – funds from operations

3) Estimate incl Sapa

4) Measured against a relevant peer group

5) Underlying return on average capital employed after tax (RoACE)



# Maximizing long-term value creation potential

- Continuous cost and margin improvements
- Financial strength and flexibility
- Disciplined capital allocation
- Reliable shareholder remuneration policy
- Working capital management
- Effective risk management





## Market Outlook

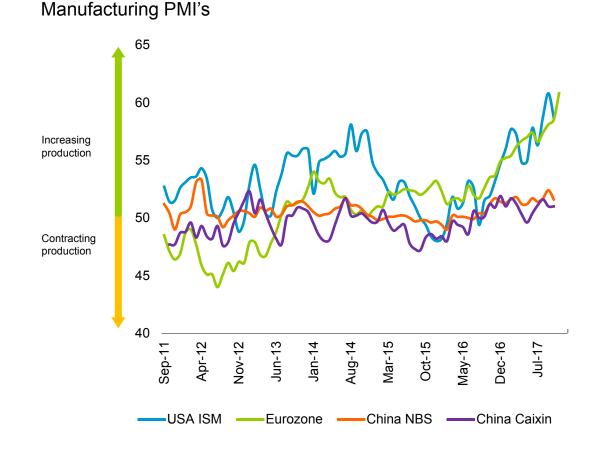
Kathrine Fog, SVP Corporate Strategy & Analyses

# Macro and downstream

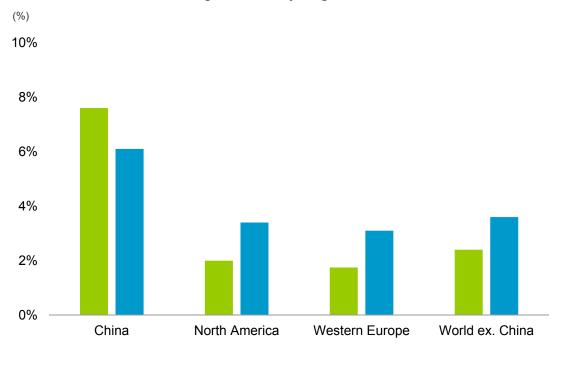


### Improving macro environment evident in aluminium demand

Semis demand at or above GDP in key regions



#### Semis demand annual growth, key regions



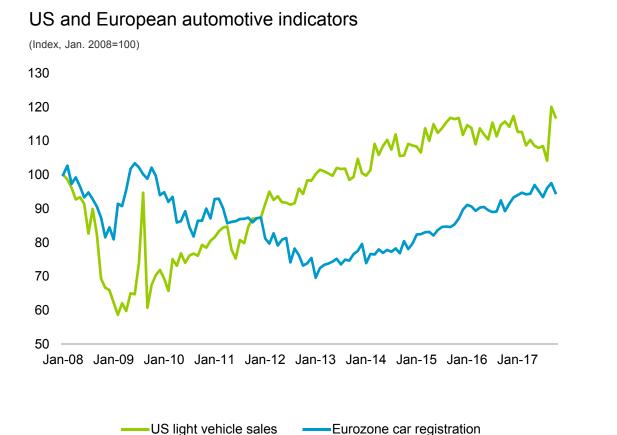
2016 2017



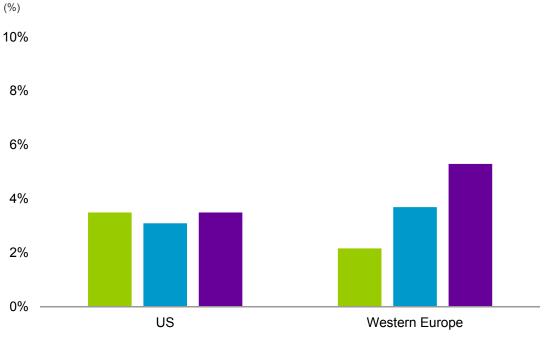
Source: Thomson Reuters, Republished under license from CRU International Ltd

### Substitution trend in automotive progressing

US semis demand in automotive remains positive although car sales have overall moderated in 2017



#### Semis demand in transport, annual growth



■2016 ■2017 E ■2018 E

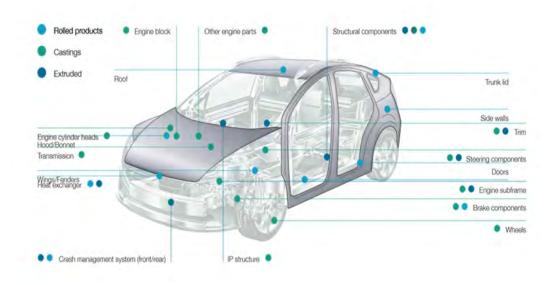


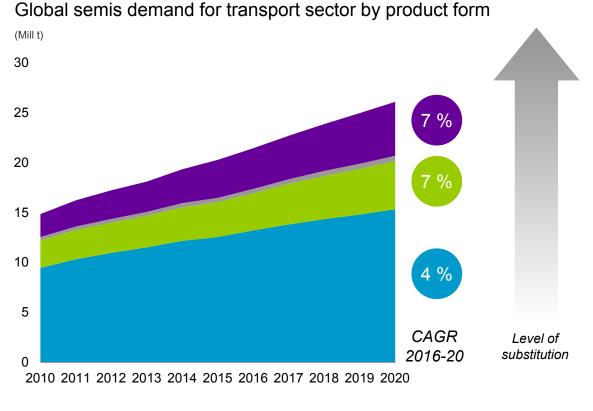
Source: Thomson Reuters, Republished under license from CRU International Ltd

### Automotive demand for aluminium supporting several semis products

Car makers utilizing aluminium to reduce weight and increase fuel-efficiency

High-growth automotive segment with substantial further potential due to aluminium's superior inherent properties





Castings Extrusions Other\* Rolled products



Source: Hydro analysis, Republished under license from CRU International Ltd \*Other includes e.g wire

### New segments and applications supporting aluminium demand



Marine / Offshore applications



Zero-emission electrical car ferries in 100% aluminium for light-weighting



B&C, ex. Supertall buildings



Transportation, truck & trailer applications



Aluminium in solar panels



Industrial applications, ex. furnitures



Middle and high voltage cables, wire and cables for electrical applications



Automotive, stong drive towards EV



### Rolled products demand driven by transport segment

Transport share increasing in total rolled products demand

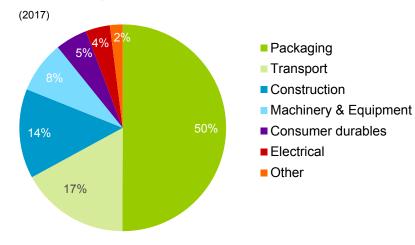
### General rolled products demand, selected regions



#### Expected market development

- Continued substitution trend in transport main demand driver
- Growth in packaging driven by can stock and foil in emerging markets

Global segment composition, rolled products



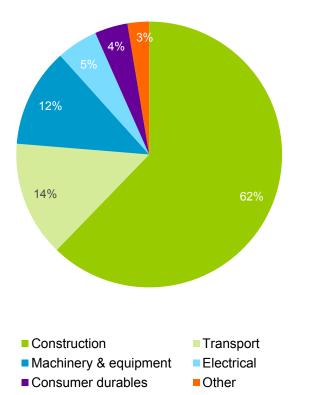


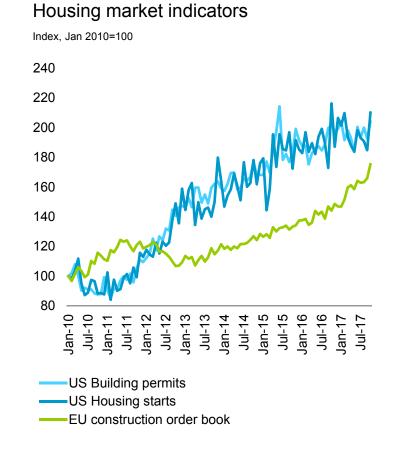


Source: Hydro Analysis, Republished under license from CRU International Ltd \*Total EU27+EFTA

## Extrusion market supported by continued momentum in B&C market and improving demand in transport

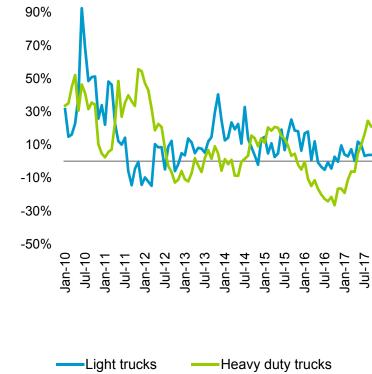
Global segment composition, extrusion (2017)





US truck and trailer market

Monthly shipments, annual growth





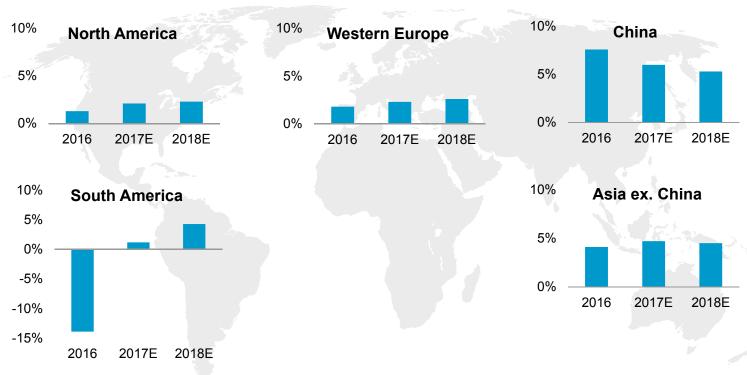
Source: Thomson Reuters, Hydro Analysis, Republished under license from CRU International Ltd

## Solid extrusion demand growth in several key regions

Gradual improvement expected in Europe, Chinese demand growth estimated to moderate

#### Extrusion demand, selected regions

YoY-growth



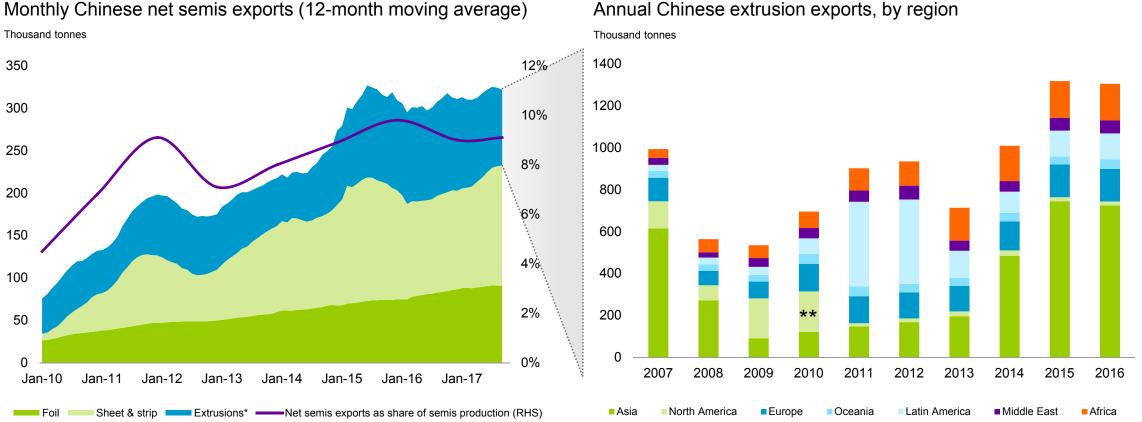
#### Expected market development

- US housing market still sustaining positive momentum
- Construction activity in Europe
   continues to improve from low levels
- South America returning to positive demand growth
- Softer construction growth impacting Chinese demand



#### Largely stable Chinese semis exports last year

Limited extrusion exports to Europe and North America, extrusion stocks transferred from Mexico to Vietnam



Annual Chinese extrusion exports, by region

Source: CRU, Antaike, Hydro Analysis

\*Mainly extrusions, but also including some smaller semis categories such as wire \*\*US extrusion duties imposed in 2010, impacting volumes from 2011



## Trade flows partly impacted by trade measures

Chinese semis exports by destination – Asia key region



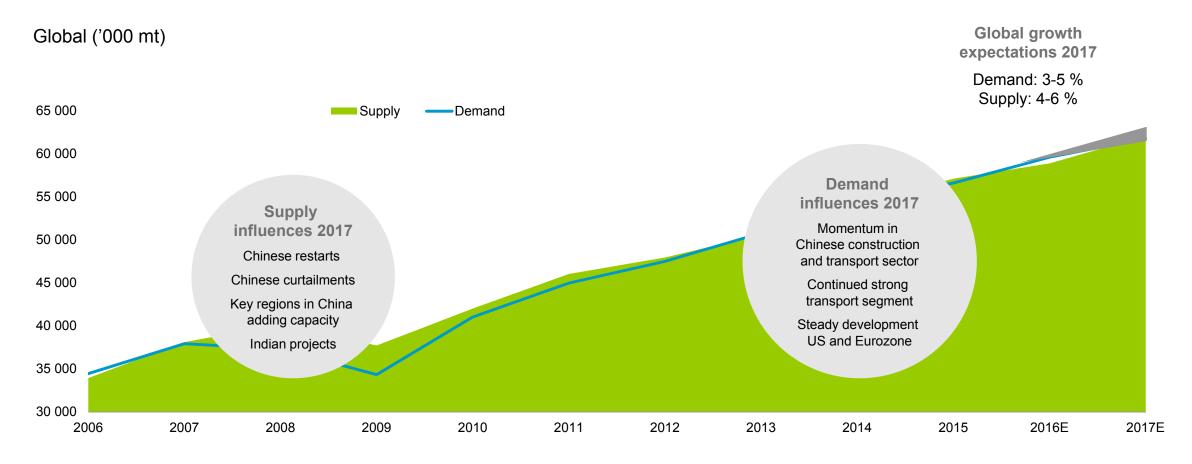
Source: Hydro Analysis, Antaike



## Primary metal market



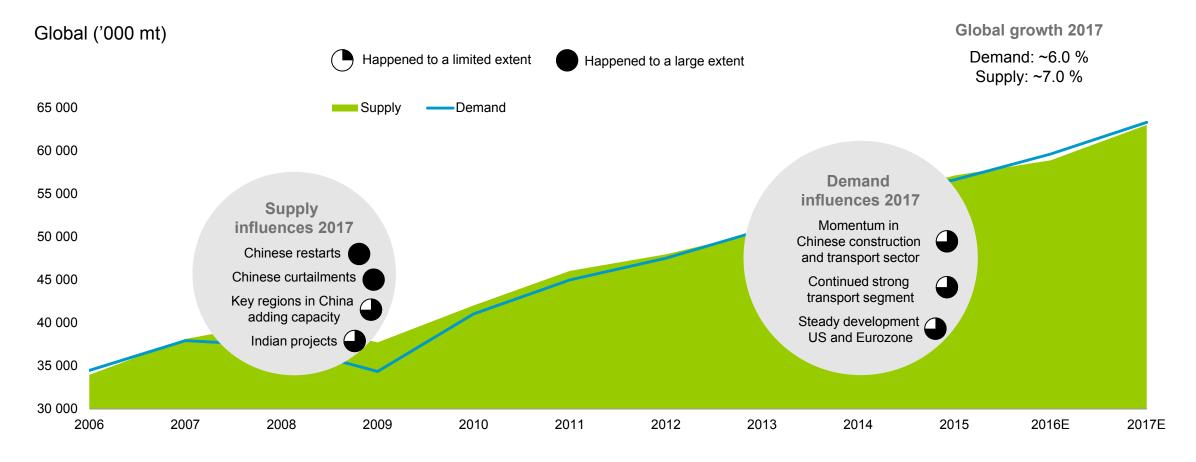
## Recap CMD 2016: Global primary market expected to be largely balanced also in 2017



U Hydro

## Global primary market for 2017 in small deficit

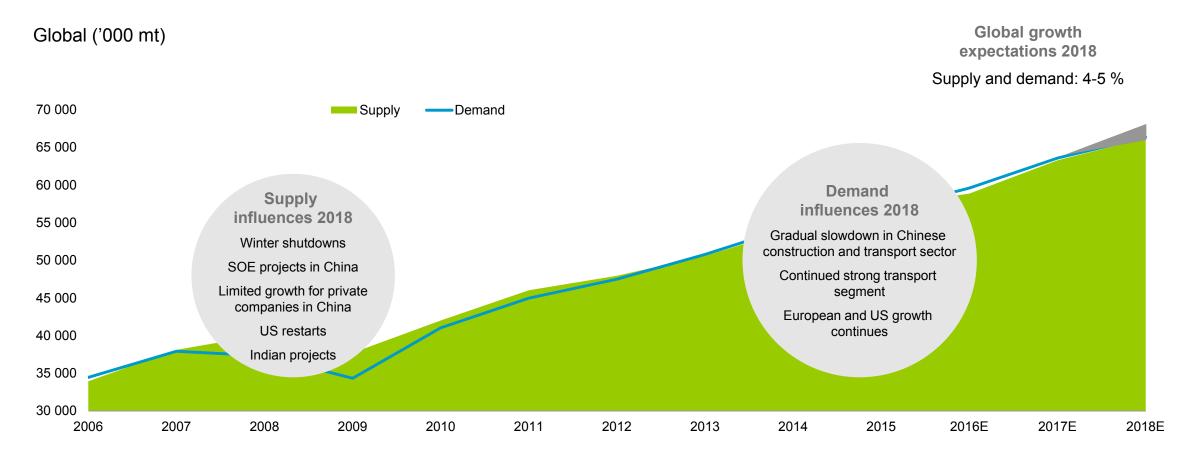
Both supply and demand higher than expected





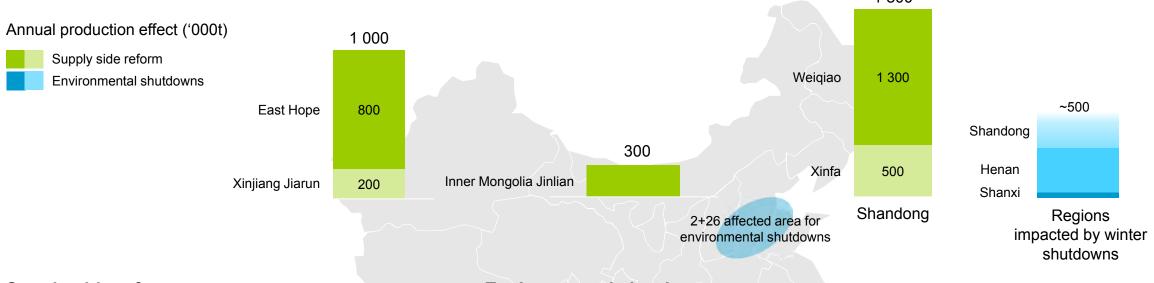
## Global primary market expected to be largely balanced in 2018

Primary supply and demand growth expected to be largely similar





## Supply-side reform and environmental shutdowns moderating Chinese primary supply growth



#### Supply-side reform

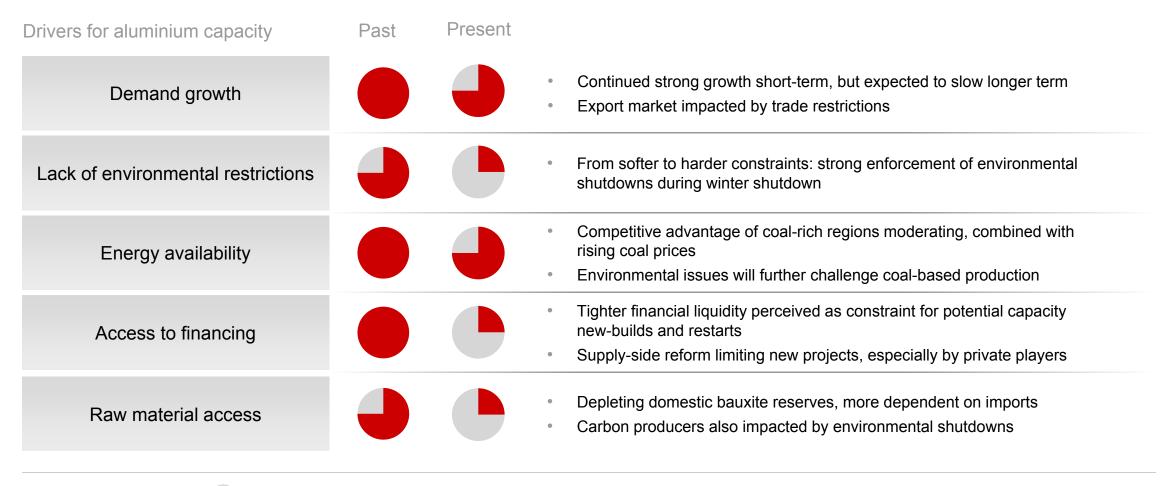
- Due to lack of approvals several operational smelters have been forced to shut down production
- Private companies such as Weiqiao, East Hope and Xinfa have been most affected to date
- Planned and potential projects have also been affected by the policy, subduing production growth going forward

#### **Environmental shutdowns**

- Several industries, including steel, cement, coal and aluminium have been ordered to halt production during the winter heating from November 15th and March 15<sup>th</sup>
- The winter season shutdowns are also impacting carbon anode and alumina production
- The primary shutdowns in Shandong are related to Xinfa, as Weiqiao is not estimated to further cut its aluminium production during the winter season due to largely overlap with supply-side reform



## Key drivers for China's aluminium expansion losing momentum





Supportive of capacity expansions

Moderating capacity expansions

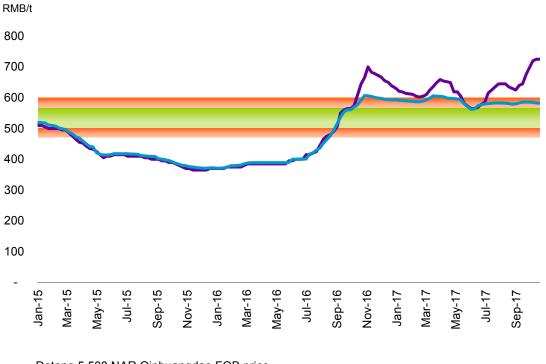
## Chinese energy market reforms impacting aluminium smelter cost

Reforms expected to even out power prices across the specter of Chinese aluminium producers

#### **Chinese Power Market Reform:** Key objectives

Standardize and strengthen supervision of captive power plants	Implement power pricing mechanisms reflecting market fundamentals
Remove cross-subsidization and regulate T&D tariffs at cost-plus levels	Promote direct power purchase and power trading

#### Chinese Steam Coal Price Band



Datong 5,500 NAR Qinhuangdao FOB price

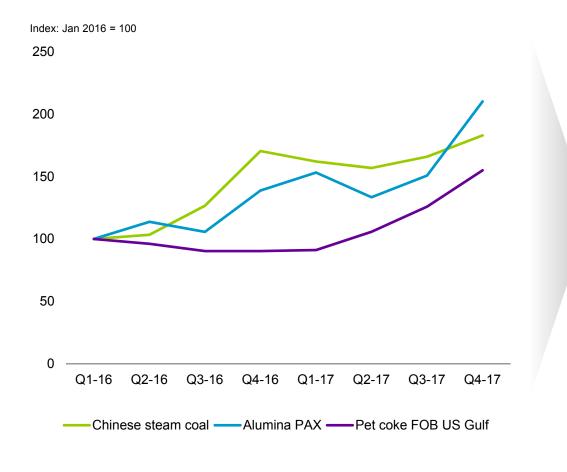
Bohai-Rim steam-coal price index, 5,500 NAR

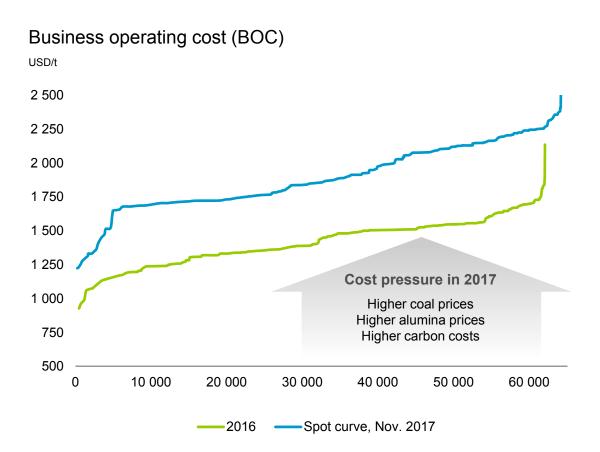


Source: IHS

## Higher and steeper cost curve in 2017 compared to 2016

Higher end of the cost curve dominated by Chinese smelters



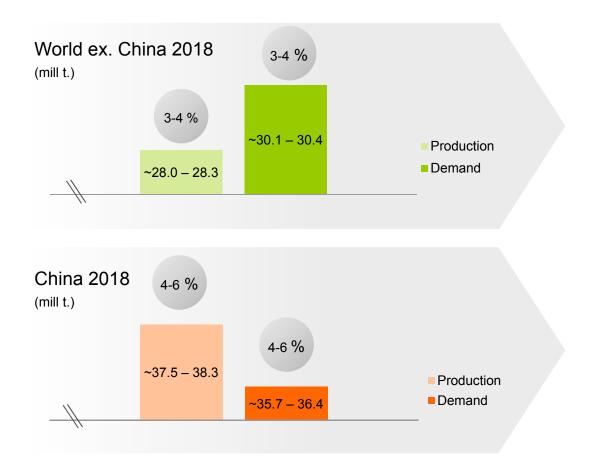


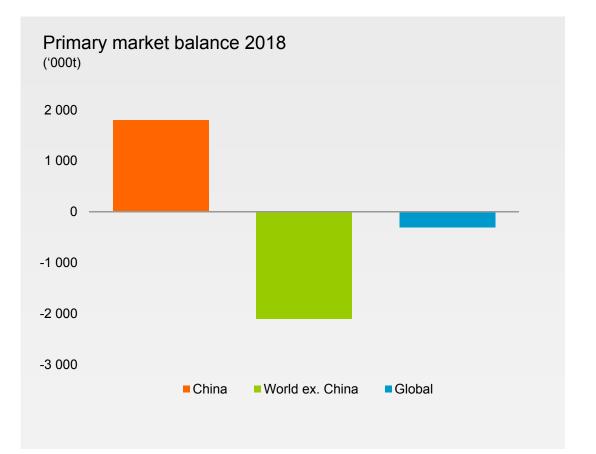


Source: Hydro analysis, IHS, Platts, Republished under license from CRU International Ltd

## Primary aluminium market to be largely balanced in 2018

Market balances largely similar compared to 2017





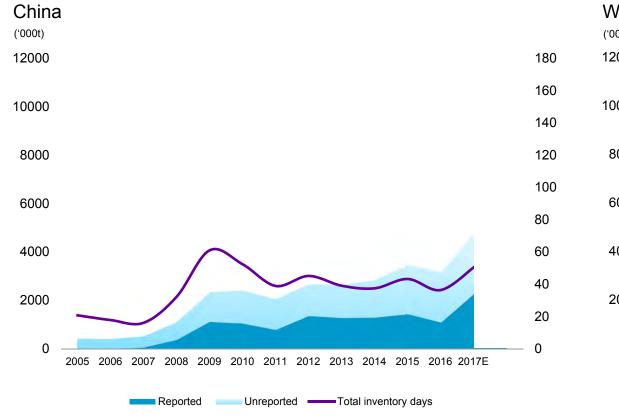


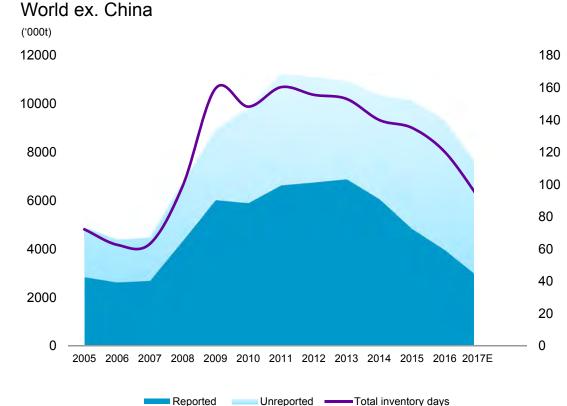
Source: CRU, Hydro analysis % Growth fro

Growth from 2017 to 2018

## Stocks outside China continue to decrease, while Chinese stocks have moved higher

Chinese exports not fully filling up deficits outside China

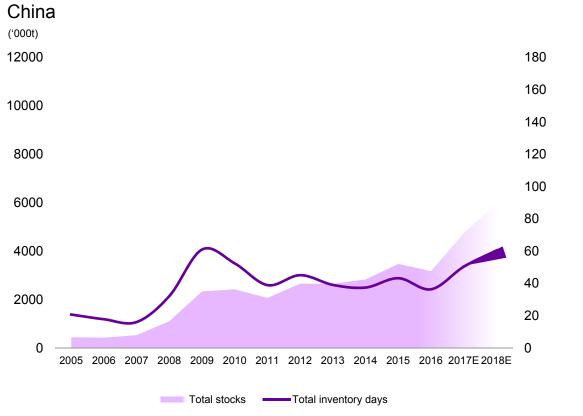


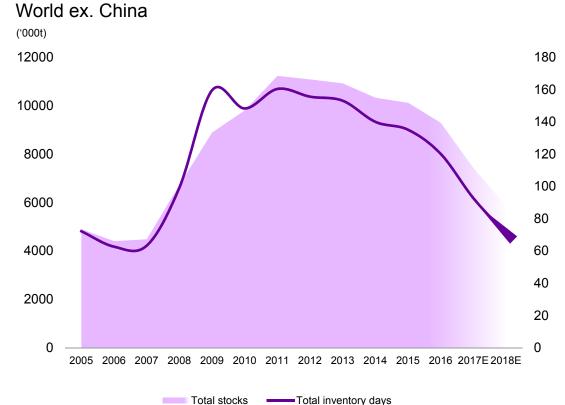




## Inventory days approaching historically tight levels in world outside China in 2018

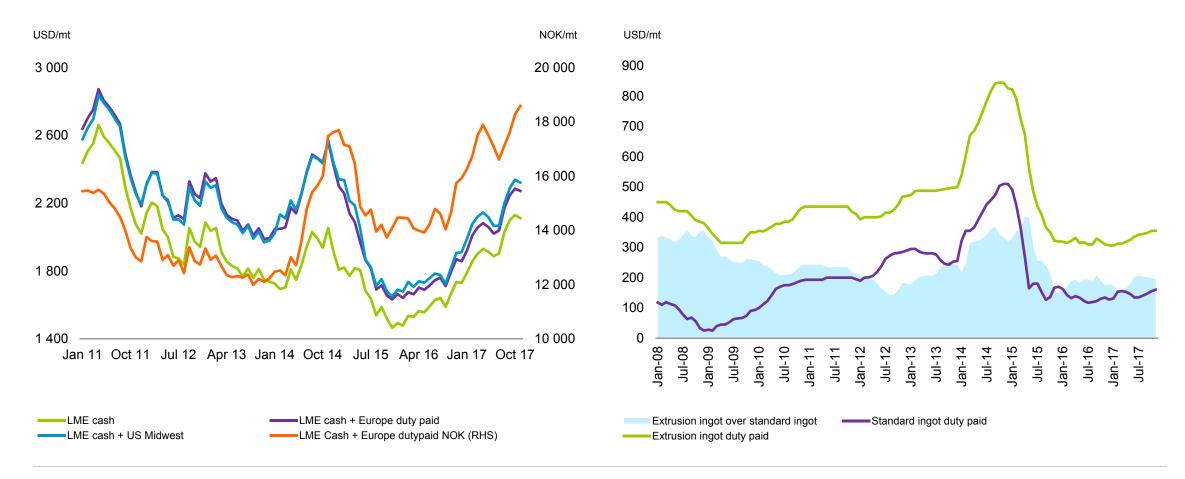
Chinese inventory days expected to increase, but not substantially







## All-in price level supported by higher LME and premiums in 2017, prices in NOK supported by continued weak NOK vs USD





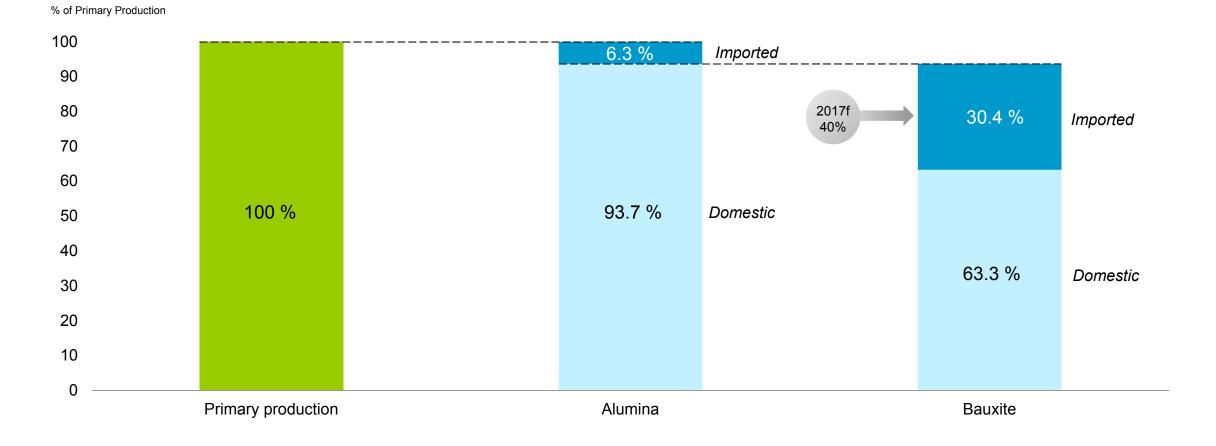
Source: Metal Bulletin, MW/MJP: Platts, Reuters Ecowin, Hydro analysis

# Bauxite and alumina market



## Chinese primary production dependent on imported resources

Around 37% based on imported raw material (average 2013-2017)

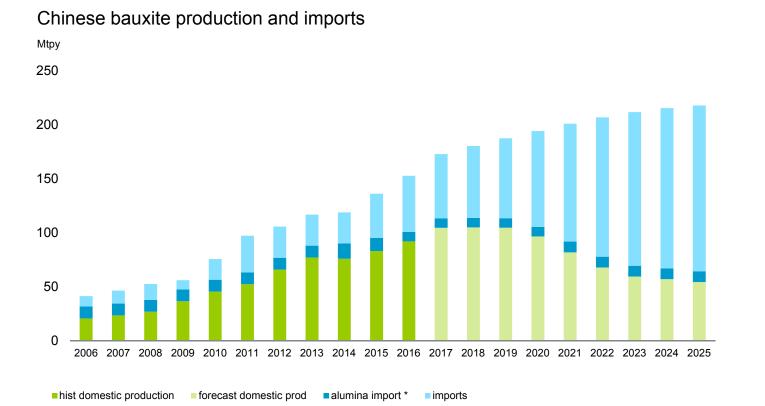




Source: CRU, China customs, 2017 forecast Hydro analysis

## Bauxite production in China to decline, triggering more imports

Chinese bauxite imports set to increase



- Depleting resources not sufficient to sustain operations in key provinces:
  - inland refineries may convert to imported bauxite or relocate to southern provinces
  - new refinery capacity in coastal region, dependent on imported bauxite
  - refinery capacity outside of China

Bauxite (equivalent) imports could increase from ~70 Mtpy in 2017 to ~150 Mtpy in 2025

Source: CM Group (ept 2017, \$50/t cif bauxite scenario) \* alumina imports as bauxite equivalent

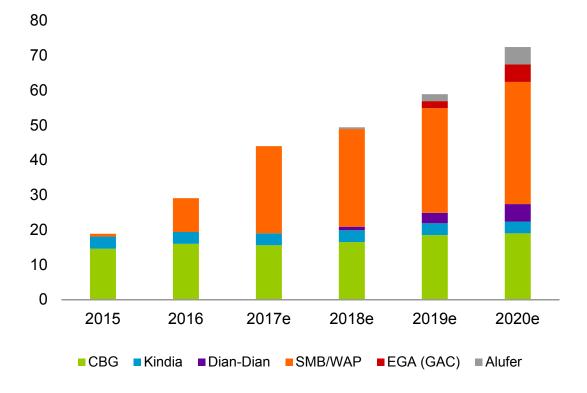


## Guinea's bauxite production is rising

Projects to add 25-30 Mtpa of bauxite export capacity, resource base could support additional volumes

- Committed capacity increasing to ~70 Mtpy by 2020
- Substantial bauxite resources available
  - 20+ billion mt within 150 km of coast
  - Low reactive silica
- Chinese SOE bauxite and alumina projects more likely following USD20bn loan to Guinea
- Social instability could hamper investments
  - Higher HSE and community standards required

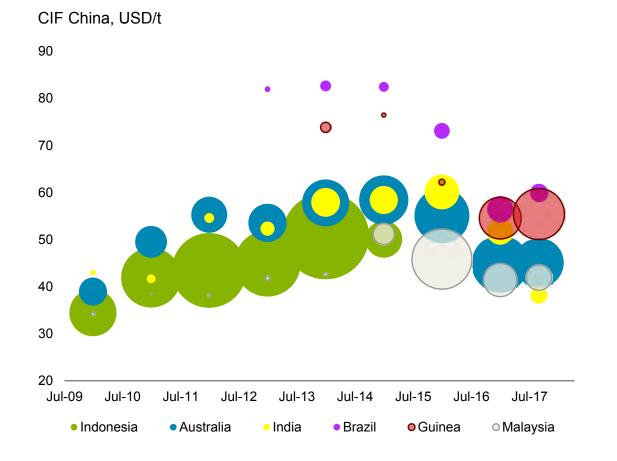
#### Guinea bauxite production (million mt)



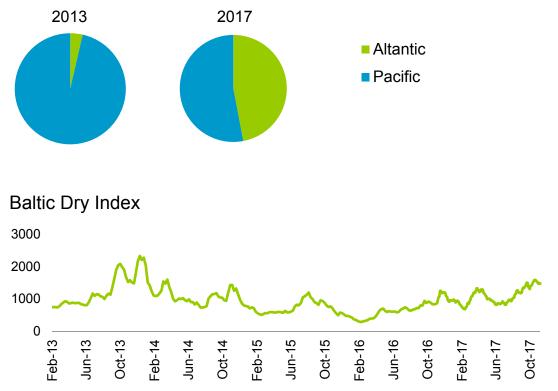


## Chinese bauxite imports increasingly exposed to freight

Freight represents ~20 to 60% of the CIF price, freight rates increasing from low levels



#### Origin of Chinese bauxite imports

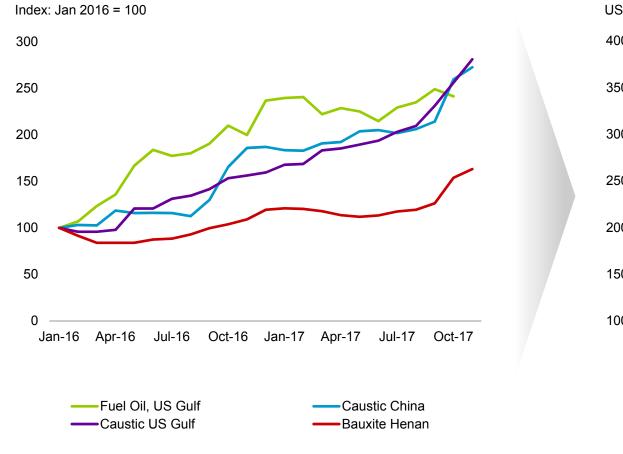


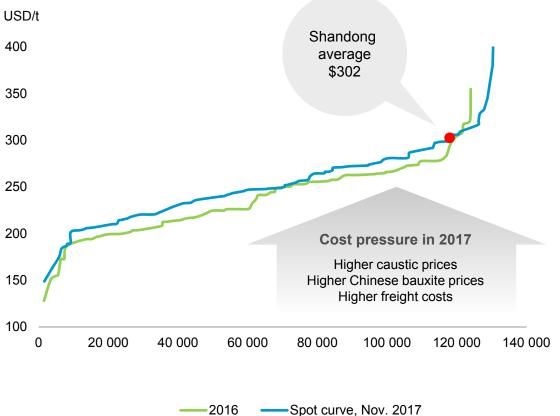


Source: China customs, Bloomberg, Hydro analysis Note: 2017 is Jan-Sep annualized

## Higher alumina cost curve in 2017 compared to 2016

Higher end of the cost curve dominated by Chinese refineries



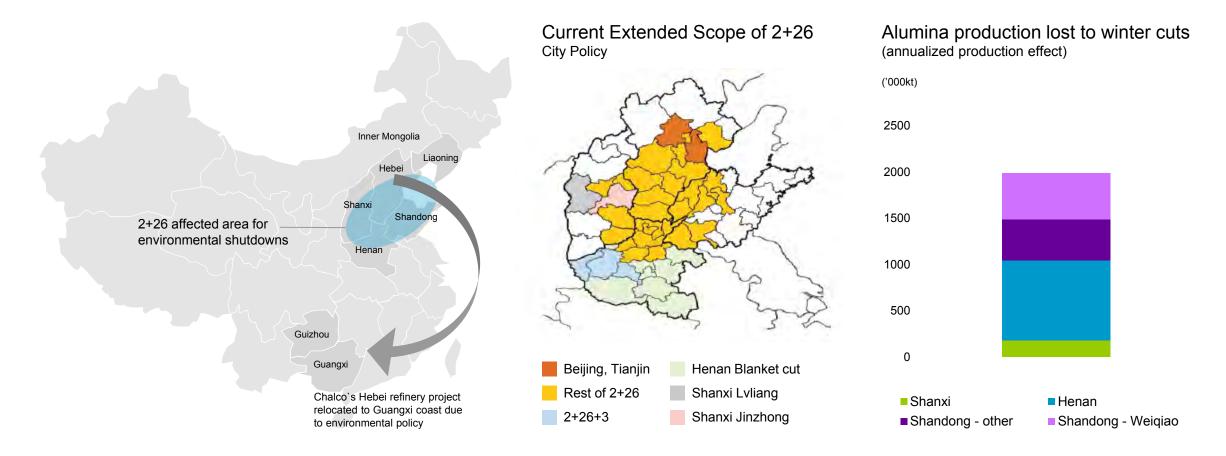




Source: Bloomberg, IHS, CM, CRU

## Chinese winter shutdowns affecting alumina supply

Overall alumina impact likely to exceed smelter winter shutdowns

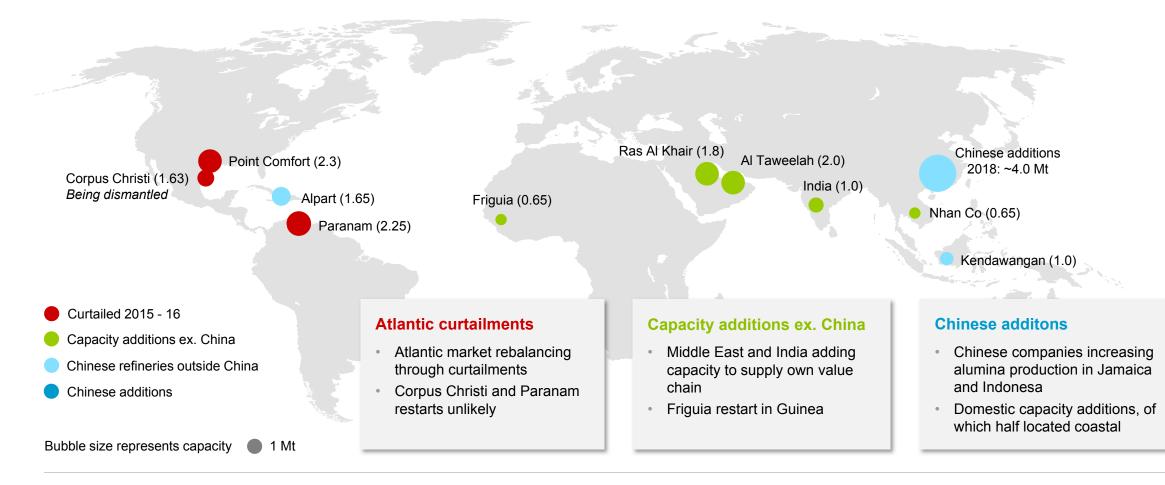




Source: CM, CRU

### Alumina market balancing, Chinese additions also outside China

Limited capacity increases outside China





Source: Hydro analysis

#### Alumina prices rise amid policy implementation uncertainty

Market tightness, high metal prices, and increasing costs support prices

#### Recent alumina price drivers

#### **Market balances**

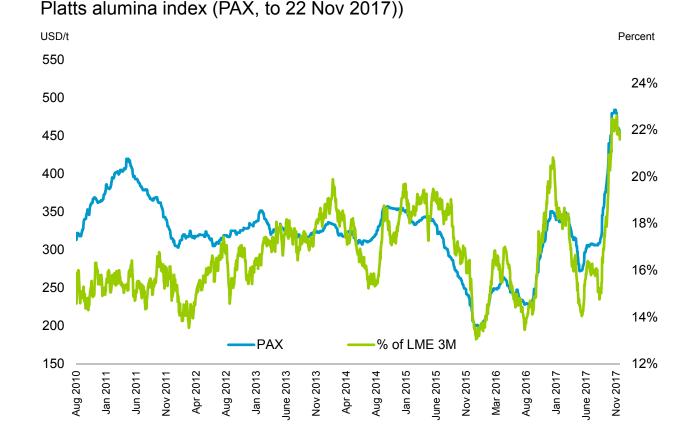
- New smelter projects ramping up in China
- Re-stocking ahead of winter
- Tighter market balance in China, less volumes available outside China

#### **Cost inflation**

- Higher caustic soda costs
- Higher transport costs in China (road & rail)
- Higher Chinese domestic bauxite prices

#### **Other factors**

- Environmental inspections, shut down of unsafe and small bauxite mines
- Uncertainty regarding upcoming winter heating season cuts



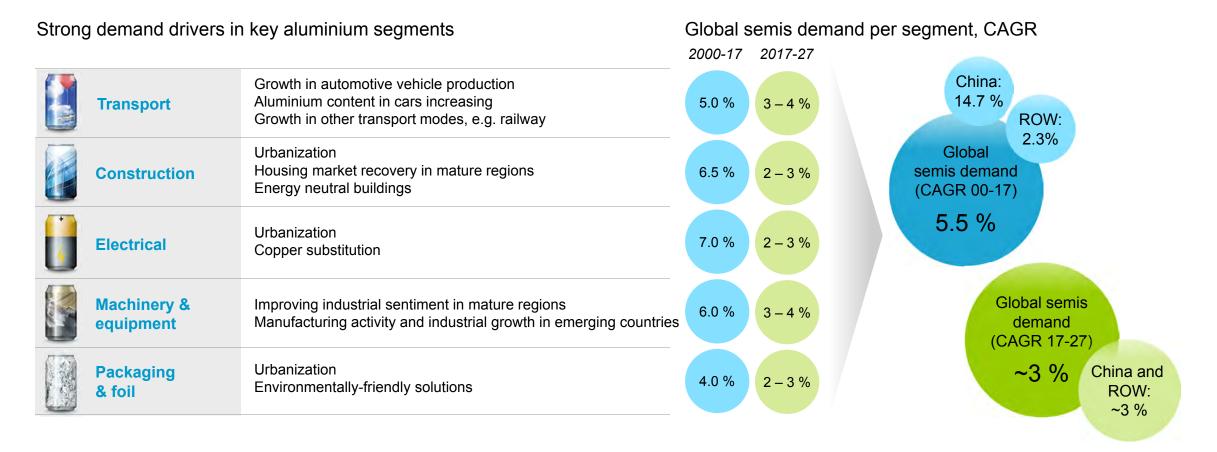
Source: Platts, Bloomberg

# Long-term outlook and summary



## Strong growth drivers across segments providing solid demand outlook

Still encouraging demand outlook from strong base – converging demand China and outside China





## Growth in global semis demand creates opportunities for both primary and recycled material

Solid growth for semis, primary and recycling

CAGR 2017 - 2027





Source: CRU, Hydro Analysis

\* Post-consumer and fabrication scrap

\*\* Unallocated creep estimated at same level as unallocated disruptions

- Solid long-term demand outlook supported by strong growth drivers across segments
- Chinese primary supply moderating due to policy reform
- Global primary market largely balanced this year and next
- Cost curve pressured upwards by rising alumina and coal prices, with regional differences
- Recycling growth accelerating with increased generation of post-consumer scrap
- Chinese bauxite import dependency continues to increase
- Alumina market impacted by cost push and tighter market balances

## Better Bigger Greener



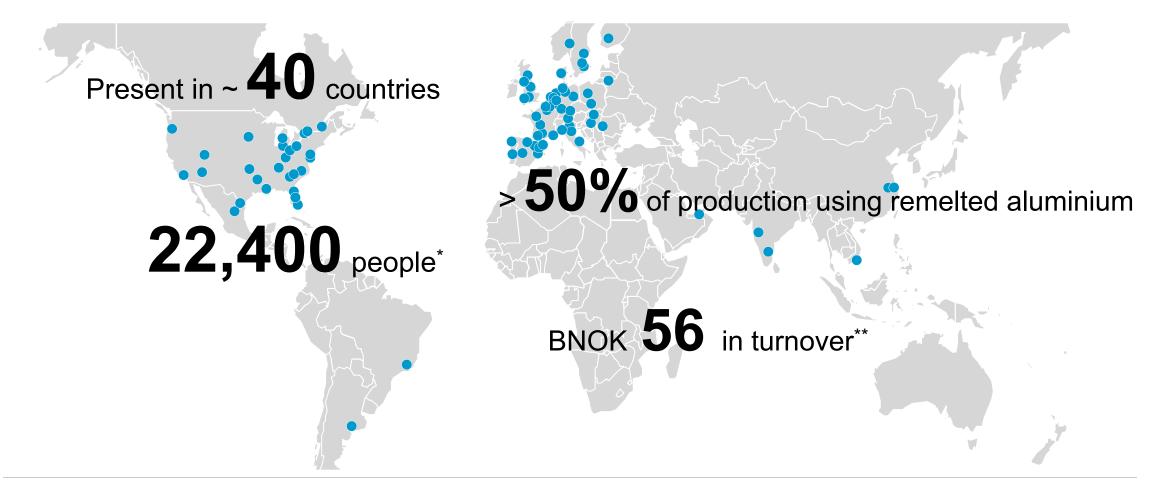




# From extrusions to solutions

Egil Hogna, EVP Extruded Solutions

#### Extruded Solutions – #1 in the global aluminium extrusion industry



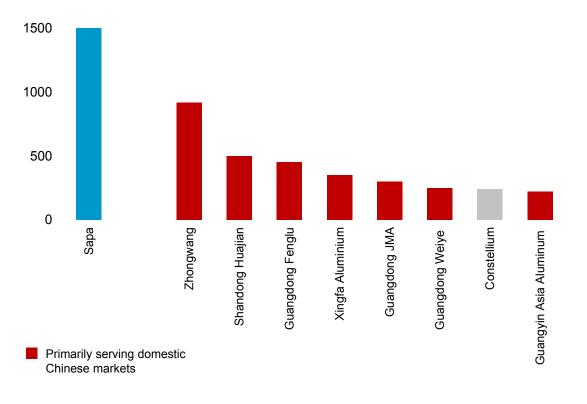


\* As of end-2016 \*\* Rolling 12 months Q3 2017

## The global extrusion champion – worldwide reach, local presence

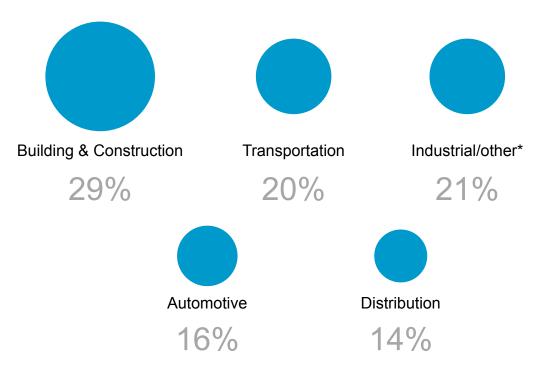
Clear leader in a fragmented industry where closeness to customers and markets are key success factors

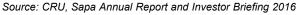
Unrivalled position as **#1 extrusions provider globally** Extrusion sales volumes (2016), in thousand mt



#### Customers in diversified end-markets

(Share of Extruded Solutions sales volumes)





\* Including HVAC&R, Heating, ventilation, air conditioning and refrigeration

## Unique market positions, built on European and US strongholds

22,400 highly competent people across the world

#### **Extrusion Europe**



- Market leader focusing on value-added products
- 22% market share
- 40 locations, 9,400 people

RevenueEBITDABNOK 21.6BNOK 1.3

#### Extrusion North America



- Uniquely positioned as the only coast-to-coast supplier
- 24% market share
- 23 locations, 6,300 people

RevenueEBITDABNOK 21.3BNOK 1.5

#### Precision Tubing



- Technology leader in selected market niches
- 35% market share globally
- 17 locations, 3,100 people

RevenueEBITDABNOK 6.5BNOK 0.7

#### **Building Systems**



- Leading European player with multi-brand portfolio
- 18% market share in Europe
- Presence in 29 countries, 2,800 people

Revenue	EBITDA
BNOK 7.4	<b>BNOK 0.6</b>

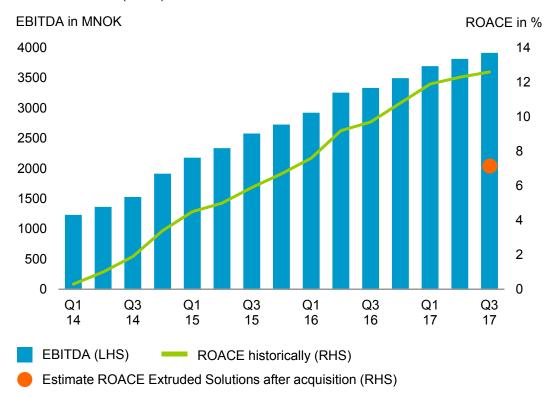


All revenue and EBITDA figures are last twelve months as per Q3 2017

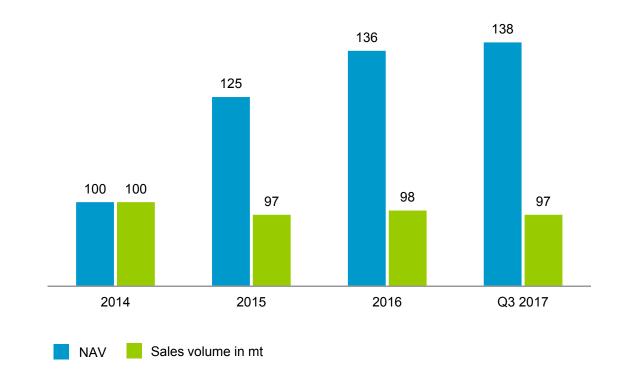
#### Proven track-record of value creation with further potential

Successful value-over-volume strategy

Last 12 months underlying EBITDA After-tax ROACE (100%)



Net added value<sup>\*</sup> per kg (NOK, indexed to 2014)

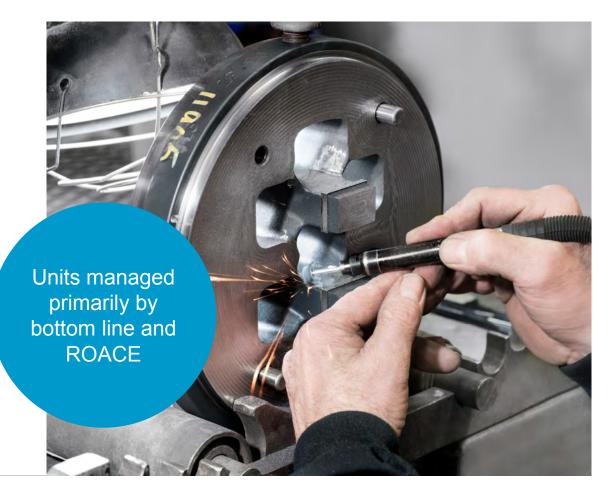




\* Net Added Value: calculated as operating revenues less cost of material, including freight costs out

#### Strategic principles in Extruded Solutions

- Make a decent profit decently safety, quality and compliance
- **Positive dissatisfaction** be happy, but not satisfied
- Fail fast and learn from it
- Value over volume and the power of available capacity
- **Develop unique niches** with Extruded Solutions offering
- "Self-playing piano" benchmarking across all units
- Earn your right to grow = safety, quality and compliance + ROACE above cost of capital
- **Profitable growth** through innovation and consolidation





#### Our competitive advantages are strengthened as part of Hydro



Unmatched technology competence

2 Value chain width and depth



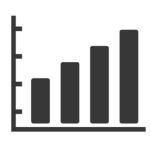
Global reach and local presence

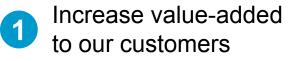


Our strategy is about "value over volume" with simplification and collaboration to avoid waste of resources

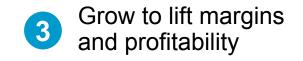








2 Simplify and collaborate





## Moving from simple extrusions to more advanced solutions



More than half of our billets are remelted from scrap in our own cast houses



Fabrication and assembly to customer specific products or modules



Extrusions are often cut and joined



Surface treatment for long life and low maintenance costs



## Targeting the high-tech, high-competence segments of extrusion

Increased focus on value-add, specialized and advanced product niches





### Increasing our capabilities also through sustaining investments



- Sustaining capex BNOK 1.3-1.5
- Includes productivity and reliability improvements, safety investments and replacement projects
- Replacing parts that are worn-out increases reliability and drives stability and quality in the processes
- New presses, paint lines and more are part of the sustaining investments



The new press in Hungary is being installed

## Profitable growth and sustainability combined

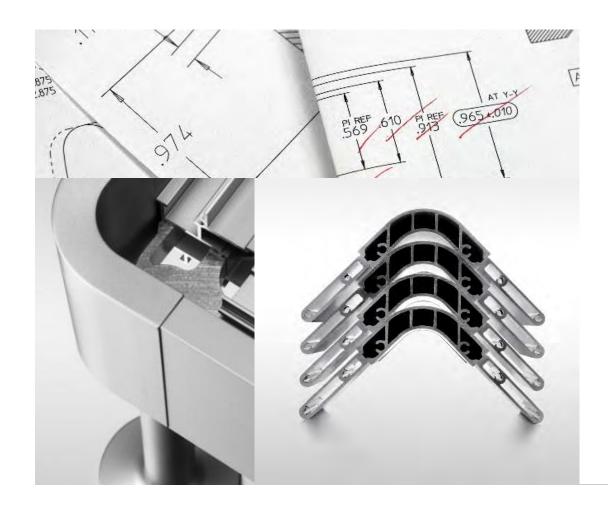
Re-opening the Bedwas factory in Wales

- Bedwas will supply the automotive industry, focusing on electrical vehicles
- A key customer is the London Electrical Vehicle Company, with its new zero-emissions capable black cab
- Investment of £9.6 million in plant refurbishment and new equipment
- Investment backed by £0.55 million from the Welsh government





## Shaping the furniture of future with IKEA



- From extrusions to solutions
- IKEA purchasing: Got a problem? Ask Hydro – they will solve it
- Innovation support from the beginning
  - Strong product development
  - Fast and flexible in-house prototyping
  - Superior surface finish
  - One-stop shop



## Shaping the furniture of future with IKEA

The soon-to-be launched Delaktig sofa



- Complete base frame in extruded aluminium
- Knocked down in a cardboard box
- Assembled by the customers
- Sales start Feb 2018
- 100% of the aluminium (frame, legs, feet) is recyclable



### **Priorities as Extruded Solutions**



- Further improve within safety, quality and compliance
- Increase share of value-added solutions to customers through commercial excellence and innovation
- Continue simplification drive to reduce complexity and non-value adding activities
- Lift margins and create more customer value through selective growth







## Strategic direction Better, Bigger, Greener

## Better, Bigger, Greener

Hydro's aspiration for higher value creation



Raise performance and improve customer offering





Expand the use of aluminium and strengthen Hydro's platform for growth Lead the transition towards sustainable solutions



## Ambitious mid-term strategic goals within the Hydro aspiration\*

	Ambitions	Target	Timeframe	Progress <sup>1</sup>	Status
Better	<ul> <li>Improve safety performance, strive for injury free environment</li> <li>Realize ongoing improvement efforts <i>Better</i></li> <li>Secure new competitive sourcing contracts in Norway post 2020</li> <li>Lift bauxite production at Paragominas</li> <li>Lift alumina production at Alunorte</li> <li>Shift alumina sales to PAX-based pricing</li> <li>Extend technology lead with Karmøy technology pilot</li> </ul>	TRI<2 BNOK 3.0 4-6 TWh 11 mill mt/yr 7.0 mill t/yr ≻ 85% PAX <sup>5</sup> Start production	2020 2019 2020 2018 2021 2020 2H 2017	2.8 <sup>2</sup> 1.7 BNOK 2.65 TWh <sup>3</sup> 11.2 mill mt/yr <sup>4</sup> 6.3 mill mt/yr <sup>4</sup> ~65% PAX <sup>6</sup> First metal Q4 2017	
Bigger	<ul> <li>Realize technology-driven smelter capacity creep</li> <li>Lift equity bauxite production</li> <li>Increase nominal automotive Body-in-White capacity</li> <li>Complete ramp-up of UBC recycling line</li> </ul>	200,000 mt/yr 19 mill t/yr <sup>7</sup> 200,000 mt/yr >40 000 mt/yr	2025 Long-term 2017 2017	34,000 mt NA Delayed ramp-up Delayed output-speed	•
Greener	<ul> <li>Become carbon-neutral from a life-cycle perspective</li> <li>Increase recycling of post-consumed scrap</li> <li>1:1 rehabilitation target</li> </ul>	Zero >250,000 mt/yr 1:1	2020 2020 2020	On track 146,000 mt/yr On track <sup>8</sup>	•

- \*) All targets and progress are Hydro excluding Extruded Solutions
- 1) Based on 2017 estimate unless stated otherwise
- 2) YTD Oct-2017, own employees
- 3) 1.65 Twh power sourcing since CMD 2016
- 4) YTD Q3 2017 annualized
- 5) Based on sourcing volume of ~ 2.3 million tonnes per annum

6) Based on sourcing volume of ~ 2.3 million tonnes for 2017
7) Provided the acquisition of a 40% stake in MRN from Vale
8) 1:1 rehabilitation of areas available for rehabilitation within two hydrological seasons after release. Revised definition of target takes into account the nature of the mining cycle, and the time lag is necessary to ensure quality rehabilitation to restore biodiversity

- Ambition on track and on target
- Ambition behind plan, but on target
- Ambition will not meet the target







## Bauxite & Alumina Better than ever through operational excellence

Silvio Porto, EVP Bauxite & Alumina

## Paragominas: New production record achieved

### 12 000 11 000 10 000 9 000 8 000 2014 2015 2016 LTM Q3 2017

### Bauxite production in thousand mt

### LTM<sup>\*</sup> Q3 2017 production up 3% from strong 2016

- 11.4 million mt production LTM Q3 2017
- Successfully implemented Bauxite & Alumina Business System
- Improved equipment condition, operating standards and process control

### New mining plateau in operation since mid-2017



- BRL 600 million investment on time and budget
- Improved safety of disposal areas, reduced environmental footprint and cost due to higher solid concentration of tailings

### Zero rehabilitation gap by 2020



- Reforestation progressing according to plan
- Research partnerships creates basis for state-of-the-art approach to mining rehabilitation
- Closing rehabilitation gap by 2020



\* Last twelve months

## MRN – important part of Alunorte's bauxite sourcing strategy

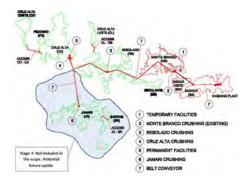
### Strategic Importance

Mtpy Bauxite Paragominas MRN



- Secures strong relative cost position with high quality bauxite
- Reduces operational risk by providing second source of supply

### Long-term issues



- Need to move to new mining area in central / western plateaus
- Mine life extension being discussed with the other partners

### Short-term issues



- Lower production at the bauxite mine
- MRN experiencing problems with its tailing systems

### Update

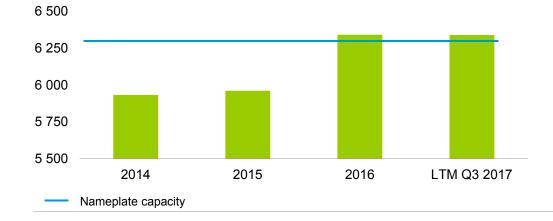


- Bauxite supply to Alunorte secured
- B&A working diligently with all bauxite customers to find solutions
- High attention from B&A management and all shareholders



\* Alumina volumes, bauxite conversion factor 2.5

## Alunorte 7.0: On the way to extended capacity



#### Alumina production in thousand mt

### Significantly improved production stability

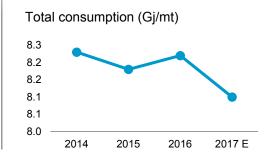
- 6.3 million mt production LTM\* Q3 2017
- Improved equipment effectiveness and process stability based on Bauxite & Alumina Business System
- Further debottlenecking needed for 7.0 million mt target
- High quality alumina preferred by customers

### Bauxite residue deposit investment in startup phase



- State-of-the-art dry disposal of bauxite residue using press filtration
- Reduced required storage area and environmental footprint
- Modifications in 2017/18

#### Lower total energy consumption



- Energy consumption improved in 2017
- Target improving boiler energy consumption to 7.6 GJ/mt in 2020
- Evaluating potential for usage of gas



\* Last twelve months

## Commercial: Successful implementation of strategy



Hydro alumina sales exposure to index pricing increased

Improved alumina & bauxite margins

- New alumina contracts: 100% sold on index
- · Continued focus on CIF terms & end-users
- External bauxite sales of ~2.5-3 million mt pricing mostly linked to Platts alumina index

### Strengthen our position in the hydrate market



- Hydrate prices more stable compared to alumina – partly fixed annually
- New long-term sales contracts established in the US
- Shipments to US & Japan in 2017: 750-800,000 mt\*

#### Getting closer to the Chinese market



- Taking advantage of price arbitrage between China and rest of the world
- Warehousing capability and increased flexibility
- 2017 alumina sales to China: 5-600,000 mt

**U** Hydro

\* In alumina equivalent tons. Total sales of hydrate: 750-800,000 tons, equivalent to 490-525,000 tons of alumina using a factor of 0.654

## Improvement program ahead of plan

Lifting 2019-target from BNOK 1.0 to BNOK 1.3

### Improvement categories

### Operational costs

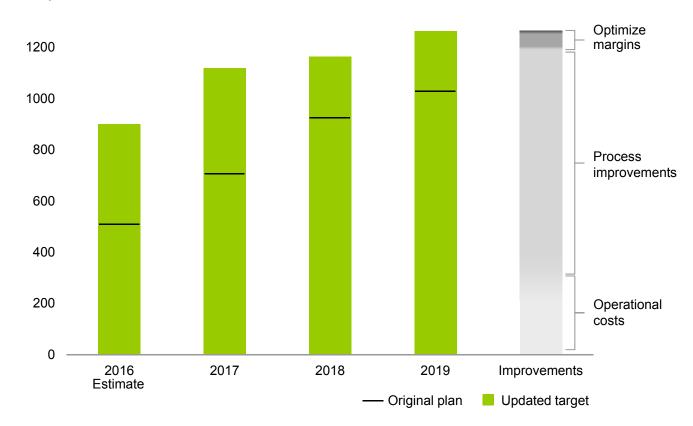
- Optimize purchase conditions for raw materials
- Reduce fixed costs

### Process improvements

- Improve energy consumption and matrix
- Support production above nameplate capacity

### Alumina & Hydrate margins

- Reduce demurrage costs
- Lift optimization margin



Improvements in NOK million

Better Bauxite &

Alumina BNOK 1.3





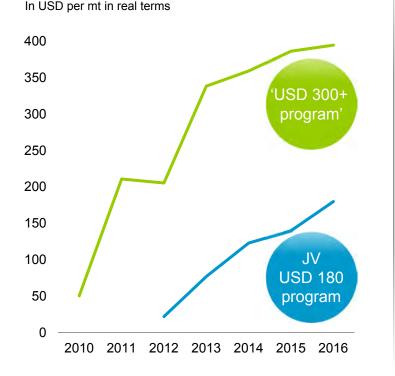
## Primary Metal Better, bigger and greener with technology and digitization

Hilde M. Aasheim, EVP Primary Metal

## Primary Metal continues ambitious improvement efforts

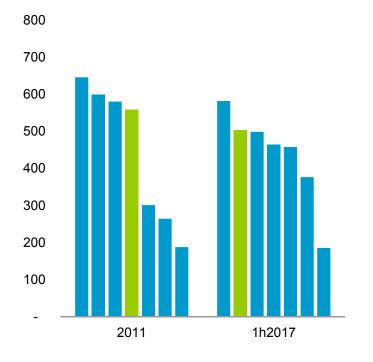
Will deliver BNOK ~0.5 in period 2018-2019

### Long history of improvement efforts BNOK 3 delivered 2010-2016



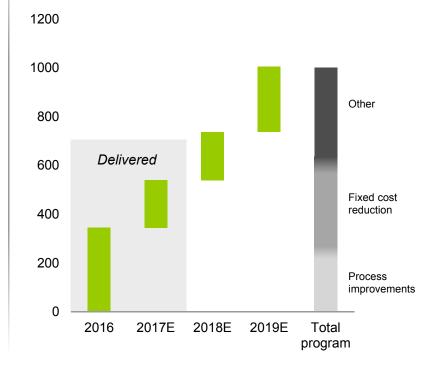
### Strengthened relative position

Underlying EBITDA per mt in USD for respective aluminium divisions  $^{1.2}\,$ 



BNOK 0.5 to be delivered 2018-2019

In million NOK



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 information purposes only. Hydro figures includes Primary Metal, Metal Markets and attributable share of EBITDA and production in Qatalum.
 Companies included in the graph: Hydro, Rio Tinto Alcan, South 32 (BHP), Rusal, Chalco, Alba, Alcoa

NOTE: Chalco has not published own production data for 2016 and 2017. Estimates based on information available from CRU



Better Primary

*Metal* BNOK 1.0

## Initiatives in place to lift Albras performance

Lower improvement speed than planned in Primary Metal for 2017 primarily due to Albras performance



Amperage (kA)



## 2017 improvement efforts behind plan at Albras due to asset integrity issues

- Reduced amperage to relieve high rectifier load
- Higher maintenance costs due to asset integrity issues in carbon plant and with pot tending machines
- Solid cash flow contributor despite setbacks

### Initiatives to lift performance

- Investment in new rectifier
- Carbon plant upgrade
- Major overhaul project of pot tending machines

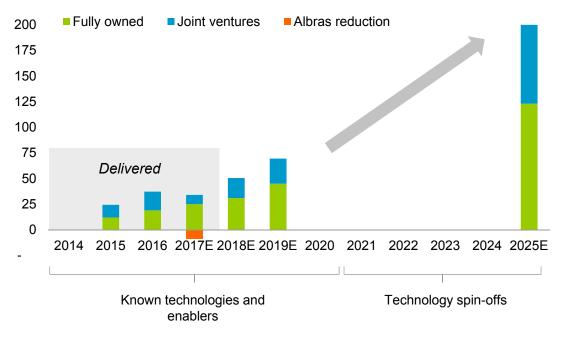


## Karmøy Technology Pilot enabling spin-offs to existing smelters



### Spin-off effects

- ~50% of 200 000 mt creep ambitions estimated annual EBITDA effect of MNOK ~300\*
- Technology implementation program established to tailor-make spin-off packages/solutions for other electrolysis lines



Production at fully owned and joint venture plants 2014-2025 (Ktpy)

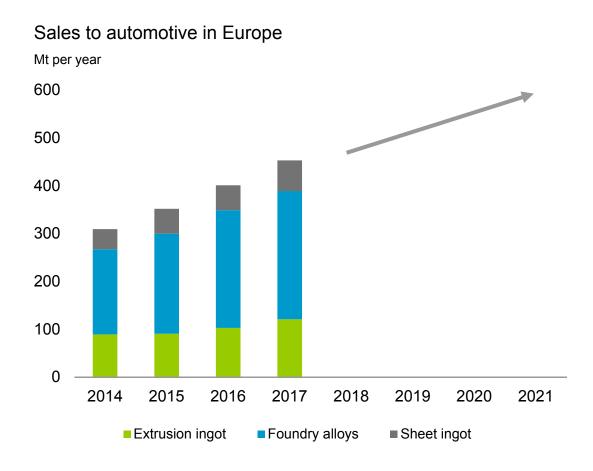
Volumetric increases dependent on positive business cases



\* Calculation based on actual EBITDA margin YTD Q3 2017

## Driving innovation to further strengthen our position in the market

Continue to capture strong growth in automotive segments



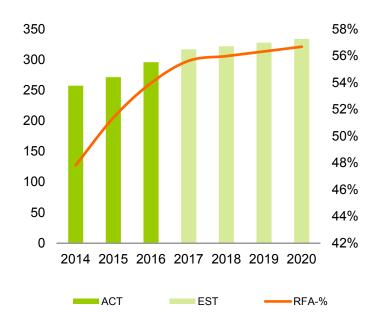




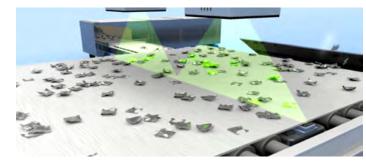
\* Europe only. Forward view based on current outlook for market development and production capacities

## Growing in recycling

Targeting 30% increase in RFA Sales RFA sales for EI remelters, in mt



Sales of Recycling Friendly Alloys\* from remelters to increase by ~80 000 mt from 2014 to 2020 (more than 50% of total) Investing in the leading recycling capabilities and technology



Hydro scrap sorting technology



Facility upgrades with production and environmental benefits

## Targeting 100% increase in post-consumer scrap usage

Post-consumer scrap usage, in mt



Usage of post-consumer scrap to increase from ~75 000 mt in 2014 to ~150 000 mt in 2020 (~23% of total)



\* RFA: Recycling friendly alloys

## Industry 4.0 enabling further improvements

### **Digitized support functions**

Karmøy Technology Pilot scope

Industry 4.0 stretching further



Autonomous processes



Connected operator



Advanced analytics



Automation, robotics and AGV



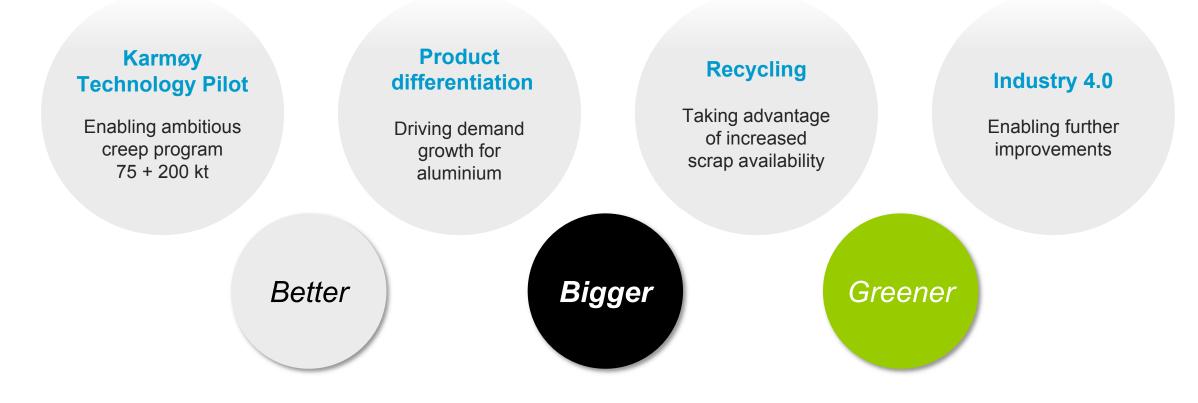
Digital and predictive maintenance

### Virtual supply chain



## Better, bigger and greener with technology and digitization

Strengthening our competitive position further









## Rolled Products Expanding in higher-margin and fast-growing segments

Kjetil Ebbesberg, EVP Rolled Products

## Portfolio high-grading, recycling and cost efficiency are key

Automotive with the highest growth ambitions, recycling of used beverage cans of strategic importance

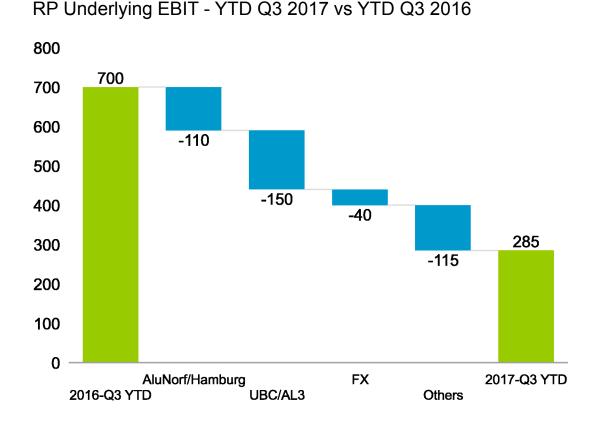
				E CE	
Ambition	<b>Automotive</b> Gain No.2 position in Europe	<b>Foil</b> Fostering No.1 position in high-end plain foil Europe	<b>Beverage can</b> Grow No.2 position in Europe	Lithography Defend global No.1 position	<b>Special products</b> Strengthen No.1 positions in Europe
Market growth <sup>1</sup>	<ul> <li>World ~11%</li> <li>Europe ~9%</li> <li>Steel substitution</li> </ul>	<ul> <li>World ~3%</li> <li>Europe ~1%</li> <li>Follows population</li> </ul>	<ul> <li>World ~4-5%</li> <li>Europe ~2-3%</li> <li>Steel substitution</li> </ul>	<ul> <li>World ~0%</li> <li>Europe ~ - 3%</li> <li>Declining printing</li> </ul>	<ul> <li>Europe ~2-3%</li> <li>Batteries, renewables and other new potentials</li> </ul>
Focus areas	<ul> <li>Successful ramp-up of AL3</li> </ul>	<ul><li>Broaden customer base</li><li>Increase technical foil</li></ul>	<ul> <li>Successful ramp-up of UBC<sup>2</sup> line</li> <li>Growth in Europe</li> </ul>	<ul> <li>Focus on quality, service and innovation</li> </ul>	<ul> <li>Grow strategic product volumes</li> </ul>
	COST EFFICIENCY ALUNORF PERFORMANCE				

2) UBC = Used Beverage Can

Source: CRU/Hydro

## 2017 result influenced by operational issues

AluNorf and Hamburg mainly solved, UBC and AL3 with clear measures in place



Four main performance issues - measures being implemented

- AluNorf production performance stabilized
- Hamburg production performance stabilized
- Used beverage can recycling line actions implemented to solve technical issues
- Automotive line 3 actions implemented to ramp-up production and qualify products



AL3 – automotive Line 3

## Ramp up of used beverage can recycling line in progress

Highly advanced sorting technology, closing the loop for our can customers



\* from a lifecycle perspective

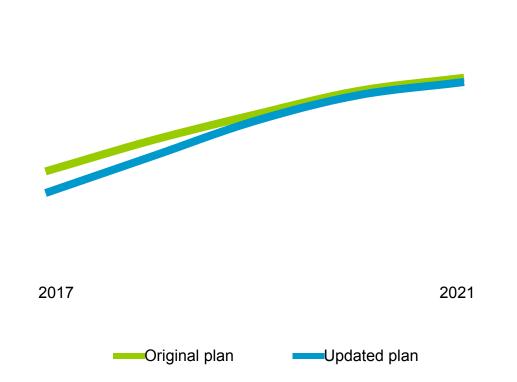
- Ramp-up delayed due to equipment design issues production performance negatively impacted
- Main actions taken:
  - Main design modifications completed in October 2017
  - Reinforced organization
  - Line now technically ready to reach targeted output
- Focus now:
  - Further optimizing of production processes and overall recovery rate – this has priority over volume output
- Output speed of targeted >40 000 mt/yr liquid aluminium expected by year-end 2018
- Efficiently operated, UBC line offer attractive returns and support target of being carbon neutral by 2020<sup>\*</sup>



## Automotive line 3 qualification process ongoing

Potential of the line is well perceived by customers as future technology in automotive

- Line installed within planned investment frame and with good safety performance
- Ramp-up process delayed due to technical issues, impacting qualification process towards customers
  - Qualifications delayed by approx. 6-9 months
  - Mitigating actions taken already showing good improvements
- Overall supplies to customers are balanced by automotive lines AL1 and AL2
- Contracted volumes on track, in line with targeted margins



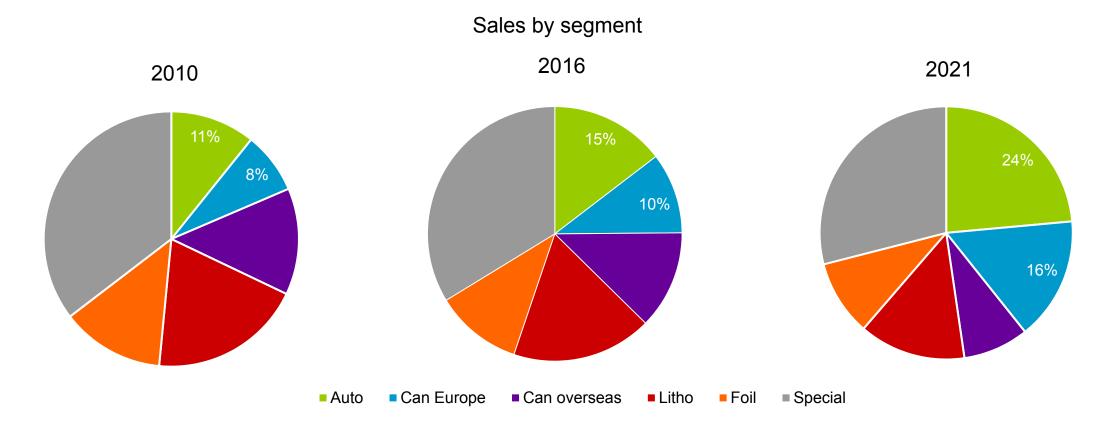
Indicative BiW ramp-up plan vs original plan



BiW = Body in White

## Doubling of automotive share with ramp-up of Automotive line 3

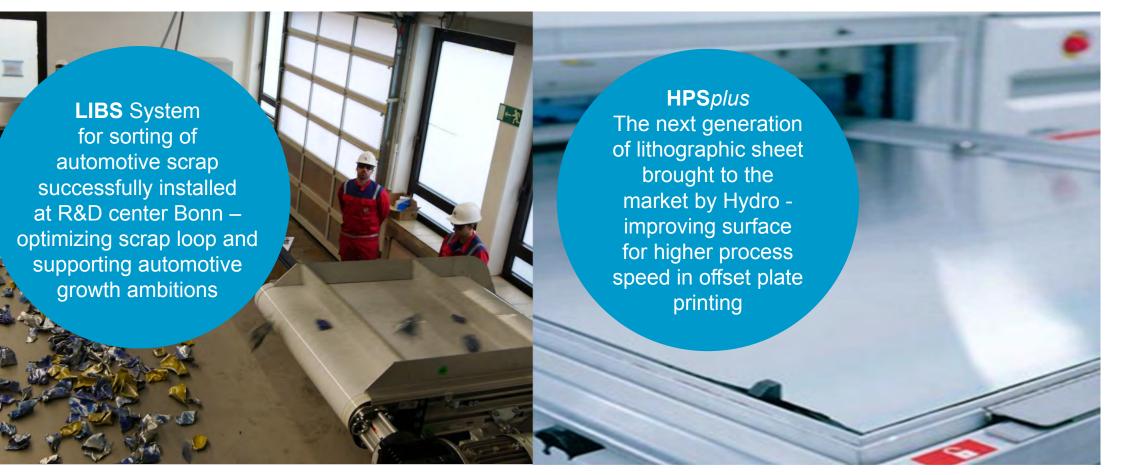
Automotive to support high-grading ambitions





### Innovation as strong driver for increased competitiveness

Customer surveys outline Hydro as the preferred innovation partner



LIBS = Laser induced breakdown spectroscopy

HPS = Hydro pre-treated surface



## Way forward on NOK 900 million improvement ambition

Challenging to meet ambition in 2019, risk of 1 year delay due to operational issues

### Improvements driven by

- Automotive growth
- Recycling
- Operational performance
- Supply chain management
- Product high-grading
- Margin and portfolio mix
- Open and engaged culture



### Improvement ambition Rolled Products



Better Rolled Products

**700 MNOK** 



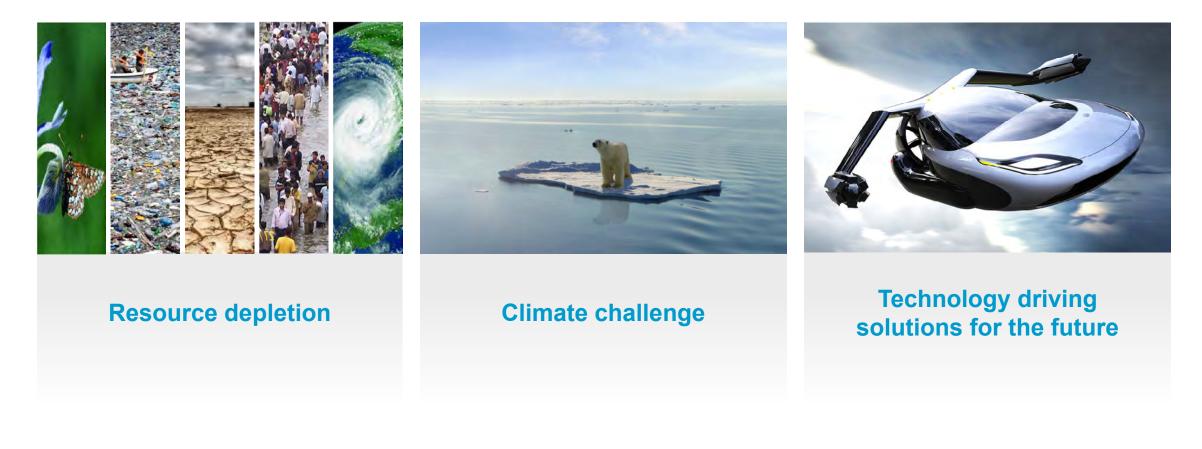


# The future belongs to sustainable businesses

Arvid Moss, EVP Energy and Corporate Business Development

## The world of aluminium is greatly influenced by key long-term trends

Producers, consumers, regulators and end-users





## Responsibility has been part of Hydro's DNA for 112 years

"...create a more viable society by innovative and efficient use of natural resources and products"





# The Sustainable Development Goals cannot be reached without the active participation of business





#### Making responsibility and sustainability a competitive edge

Planet, people, prosperity





#### Making responsibility and sustainability a competitive edge

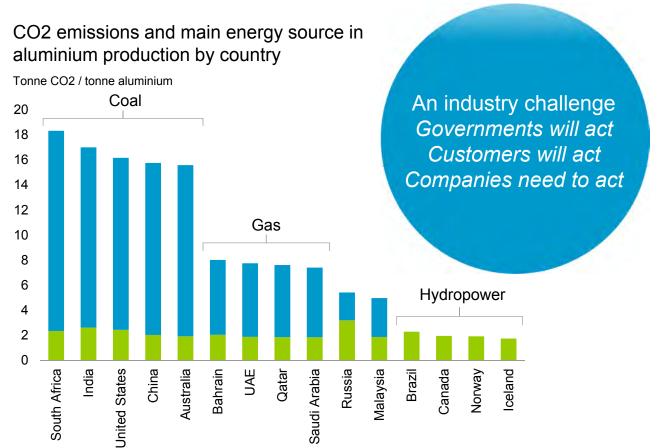
Planet, people, prosperity



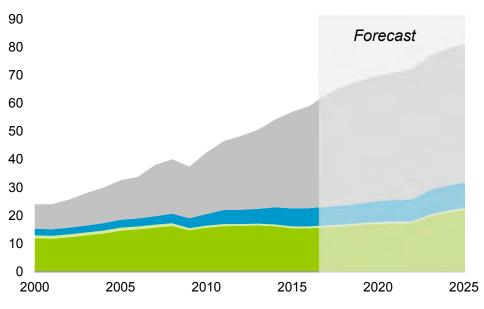


#### The climate paradox

Increasing share of aluminium production is coal-based



## Aluminium production by power source



Hydropower Nuclear Gas Coal

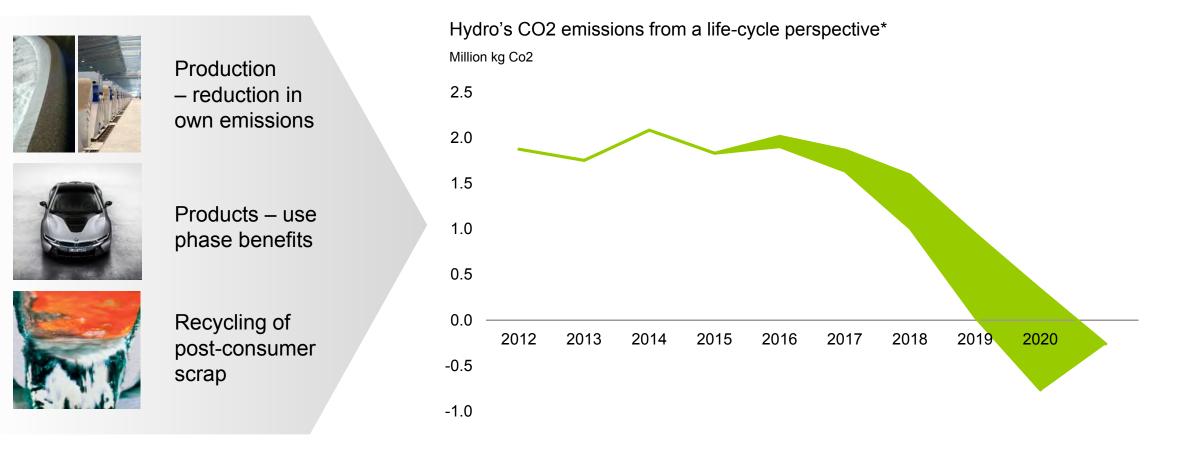


CLIMATE

Source: CRU

### Our global industry's most ambitious climate strategy

Hydro on track to be carbon-neutral from a life-cycle perspective by 2020





13 ACTION

\* Incl Extruded Solutions from 2018

### Strengthening rehabilitation at Hydro Paragominas

Updated targets and research partnership guide rehabilitation efforts to restore biodiversity



#### Updated 1:1 rehabilitation target

- 1:1 rehabilitation of areas available for rehabilitation within two hydrological seasons after mining
- Science-led rehabilitation through the Brazil-Norway Biodiversity Research Consortium







#### A long-term agenda to optimize stakeholder and shareholder benefits

'Business cannot succeed in societies that fail' – World Business Council on Sustainable Development





### Targeting the fundamental drivers of long-term development

Aligned with community expectations and needs, and through local partnerships





\* Communities directly or indirectly affected by our operations

#### Making responsibility and sustainability a competitive edge

Planet, people, prosperity





#### Renewables, flexibility and storage to play together

Competitive long-term sourcing solutions, and making Hydro «Better, Bigger, Greener»

Positioning for the future means:

- Greener competitive sourcing, industrial processes and electrification
- Being a front runner seeking new business options more critical
- Understanding and utilizing changes in energy markets key to both competitive sourcing and exploring new business opportunities



Hydropower Norway, Increased flexibility



Wind Nordic and Brazil - Services and potential equity



I Demand flexibility



Digitalization



Hydro-, solar-, wind-based power purchase agreements



Energy Storage - Batteries, hydrogen, heat applications



Energy 4.0





#### Part of the solution

Use-phase benefits, recycling friendly





Setting new standards in environmentally friendly and sustainable buildings.



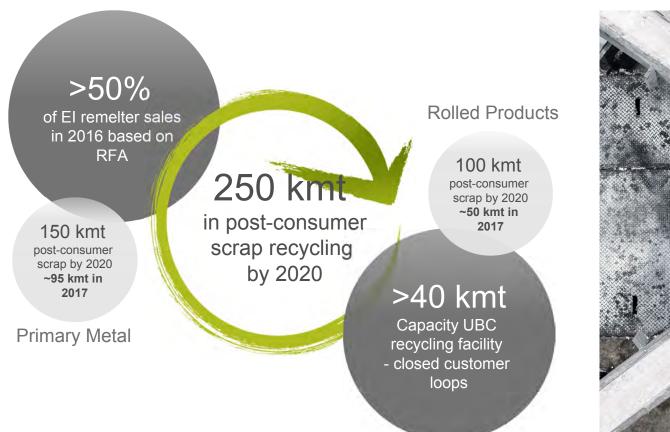
Hydro Extruded Solutions to deliver to the world's first purpose-built, mass-market electric taxi in London.





### Combining high-value outputs with lower cost inputs

Repositioning Hydro's recycling activities, preparing for the circular economy









#### Sustainability and competitiveness hand-in-hand

Sustainability will become more and more important



#### Producers

WWF





#### Commercializing low-carbon aluminium

Promoting responsible aluminium as the metal of the future







### Hydro's climate strategy converted into low-carbon products

Our uniqueness is our integrated value chain, share of hydro-power and post consumer scrap recycling

#### Hydro 4.0



#### Hydro 75R





All-in approach

Maximum or below 4.0 kg CO2e/kg Al

Verified according to ISO 14064 by DNV GL

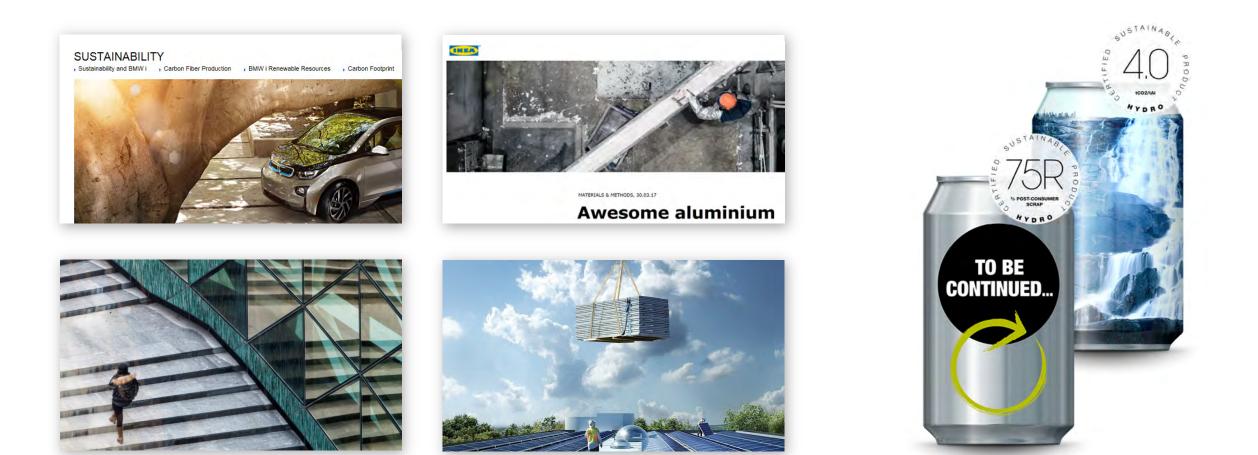


At least 75% post-consumer recycled aluminium

Verified by DNV GL based on traceability and quality principles developed by Hydro



#### Capturing growing markets for low-carbon and recyclable aluminium

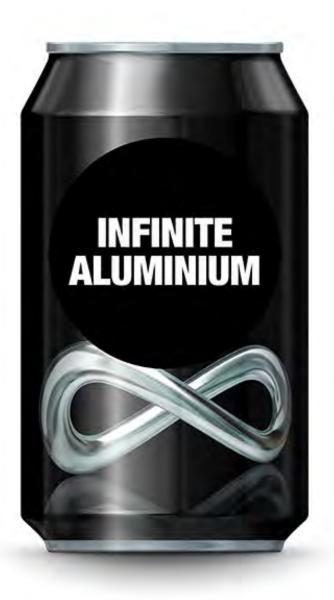




#### Responsibility and business hand in hand









#### Investor Relations in Hydro



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# Next event **Fourth quarter results February 16, 2017** For more information see

www.hydro.com/ir

