Hydro

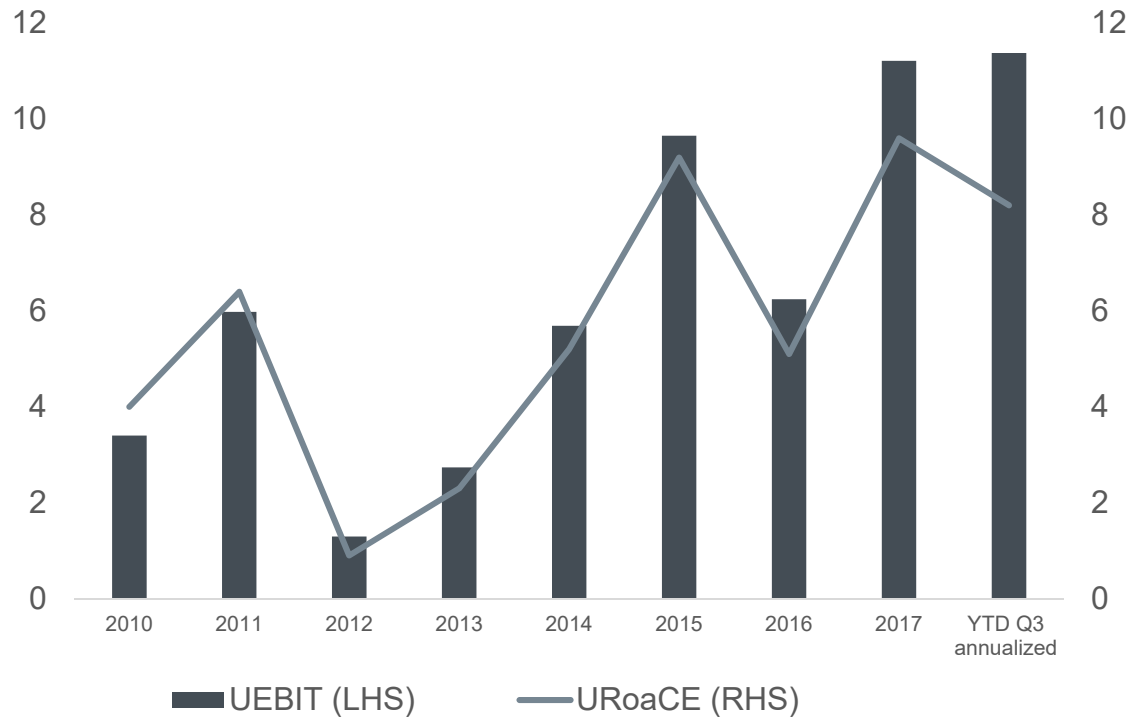
Navigating challenging times, maintaining long-term focus

Svein Richard Brandtzæg, President & CEO

Key priorities from last Capital Markets Day

- Maintaining financial strength and flexibility, providing attractive returns over the cycle
- Strengthening competitiveness and resolving operational challenges
- Differentiating through the integrated model, integrating Extruded Solutions
- Extending leadership in innovation and sustainability
- Improving safety performance

Historical underlying EBIT and underlying RoaCE

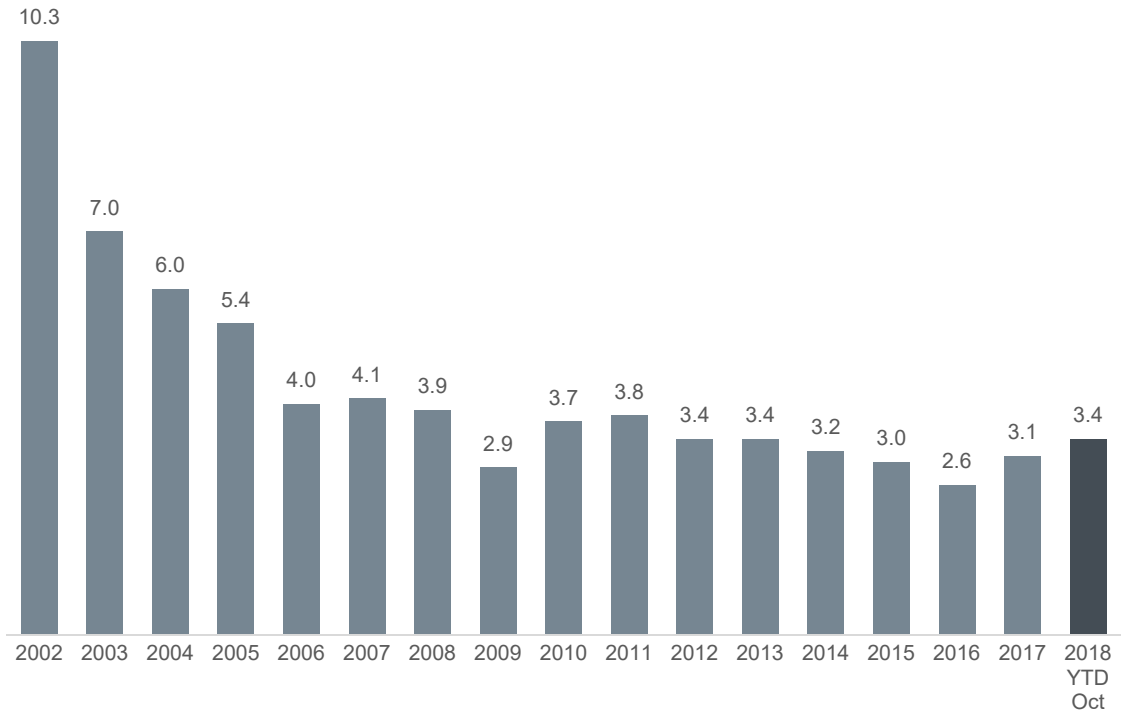


Underlying EBIT adjusted for tax expense / capital employed (current assets, PP&E, other non-current assets, current liabilities, non-current liabilities)

Safety – our top priority

Fatality in November - safety trend requires action

TRI Rate[1)]



1) Total recordable incidents (TRI) rate defined as cases per 1 million hours worked, for own employees

Sustainability and innovation is fully integrated into our business

Hydro

People, Planet, Prosperity

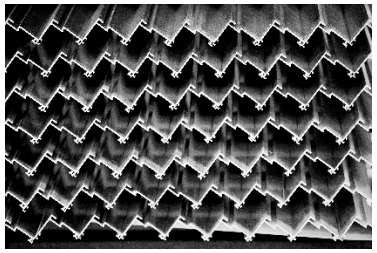
Making a positive difference

Improving our footprint

Driving innovation

Main developments during 2018

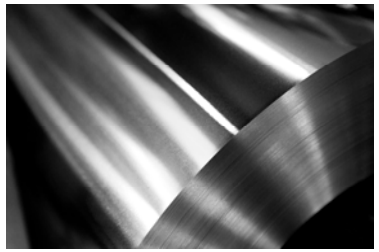
Extruded Solutions



Acquiring 2 plants in Brazil, investing in new press in US

Record results through 2018

Rolled Products



Restructuring foil business

Automotive line 3 picking up speed

Primary Metal

Karmøy Technology Pilot in full production, delivering as planned

Build-decision on Husnes restart and upgrade

Energy

~2.2 TWh renewable power sourcing

Developing solution to secure RSK value

Bauxite & Alumina

Embargoes on Alunorte, 50% production Alunorte, Albras, Paragominas

Signing of technical and social agreements

Our mid-term goals strongly affected by Alunorte situation

	Ambitions	Target	Timeframe	Progress[1]	Status
Better	• Improve safety performance, strive for injury free environment	TRI<2	2020	3.4[2]	🔴
	• Realize ongoing improvement efforts *Better*	BNOK 3.0	2019	(0.5) BNOK	🔴
	• Secure new competitive sourcing contracts in Norway post 2020	4-6 TWh	2020	4.8 TWh[3]	🟢
	• Lift bauxite production at Paragominas	11 mill mt/yr	2018	6.6 mill mt/yr[4]	🔴
	• Lift alumina production at Alunorte	7.0 mill t/yr	2021	3.9 mill mt/yr[4]	🔴
	• Shift alumina sales to PAX-based pricing	➢ 85% PAX[5]	2020	75-80% PAX[6]	🟢
	• Extend technology lead with Karmøy technology pilot	Start production	2H 2017	January 29, 2018	🔴
	• Extend technology lead with Karmøy technology pilot	Full ramp-up	Q2 2018	June 27, 2018	🟢
Bigger	• Realize technology-driven smelter capacity creep	200,000 mt/yr	2025	43,000 mt	🟡
	• Increase nominal automotive Body-in-White capacity	200,000 mt/yr	2017	Ramping-up, qualifications ongoing	🔴
	• Complete ramp-up of UBC recycling line	>40 000 mt/yr	2017	Delayed to Q4 2019	🔴
Greener	• Become carbon-neutral from a life-cycle perspective	Zero	2020	On track	🟢
	• Increase recycling of post-consumer scrap	>250,000 mt/yr	2020	168,000 mt	🔴
	• 1:1 rehabilitation target	1:1	2020	On track[7]	🟢

1) Based on 2018 estimate unless stated otherwise
2) YTD Oct-2018, own employees
3) ~2.2 Twh power sourcing since CMD 2017
4) YTD Q3 2018 annualized
5) Based on sourcing volume of ~ 2-2.5 million tonnes per annum
6) Based on sourcing volume of ~ 3.5 million tonnes for 2018
7) 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 necessary to ensure quality rehabilitation to restore biodiversity

Status towards the target
- 🟢 Ambition on track and on target
- 🟡 Ambition behind plan, but on target
- 🔴 Ambition will not meet the target within the timiframe

01

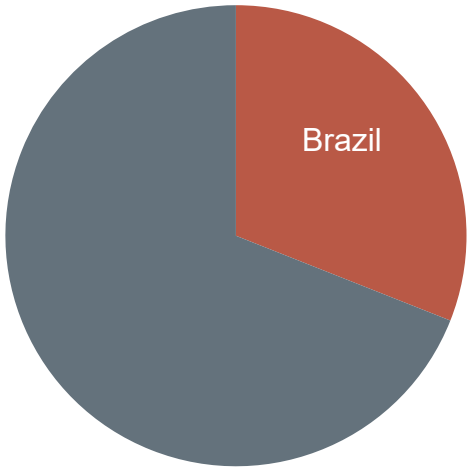
Roadmap to full production in Brazil

Hydro in Brazil

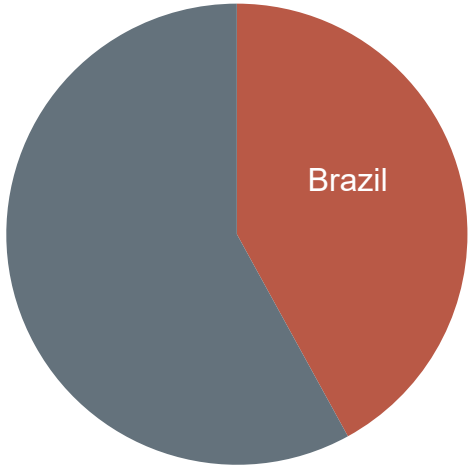
More than 40 years experience

Significant exposure to Brazil

Capital Employed in Brazil
Sept 30, 2018



UEBITDA in Brazil
2017



1974
Enters Brazil with ownership in MRN bauxite mine

2000
Acquires 34% stake in Alunorte alumina refinery

2011
Acquires Vale's aluminium assets

2017
Strengthens position as integrated aluminium company with strong extrusion presence through Sapa

2018
February rainfall event leads to partial curtailment

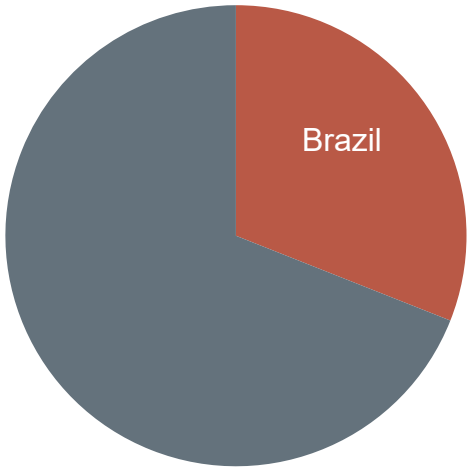
Capital employeed graph excludes BNOK (7.4) in capital employed in Other and Eliminations
Underlying EBITDA graph excludes BNOK (1.1) in underlying EBITDA in Other and Eliminations
Contribution from Brazilian assets in Primary Metal and Extruded Solutions are included in "Brazil" in both graphs

Hydro in Brazil

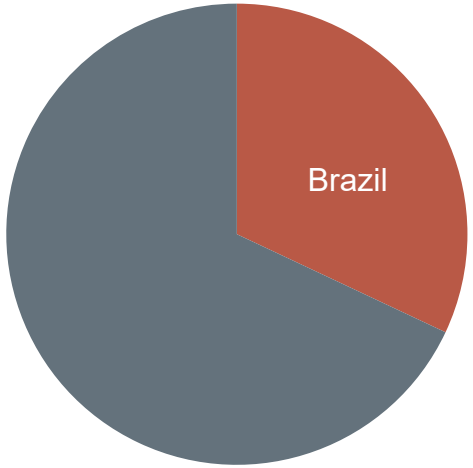
More than 40 years experience

Significant exposure to Brazil

Capital Employed in Brazil
Sept 30, 2018



UEBITDA in Brazil
YTD 2018



1974
Enters Brazil with ownership in MRN bauxite mine

2000
Acquires 34% stake in Alunorte alumina refinery

2011
Acquires Vale's aluminium assets

2017
Strengthens position as integrated aluminium company with strong extrusion presence through Sapa

2018
February rainfall event leads to partial curtailment

Capital employeed graph excludes BNOK (7.4) in capital employed in Other and Eliminations
Underlying EBITDA graph excludes BNOK (0.1) in underlying EBITDA in Other and Eliminations
Contribution from Brazilian assets in Primary Metal and Extruded Solutions are included in "Brazil" in both graphs

Alunorte site

Hydro

World's largest alumina refinery outside China

- Nameplate capacity of 6.3 mtpy, with more than 2 000 employees
- Connected to Paragominas bauxite mine via 244 km slurry pipeline
- Old DRS1 bauxite residue area to be replaced by new DRS2 area, based on press filter technology
- Wastewater treatment system treats process and rain water before discharging into Pará river

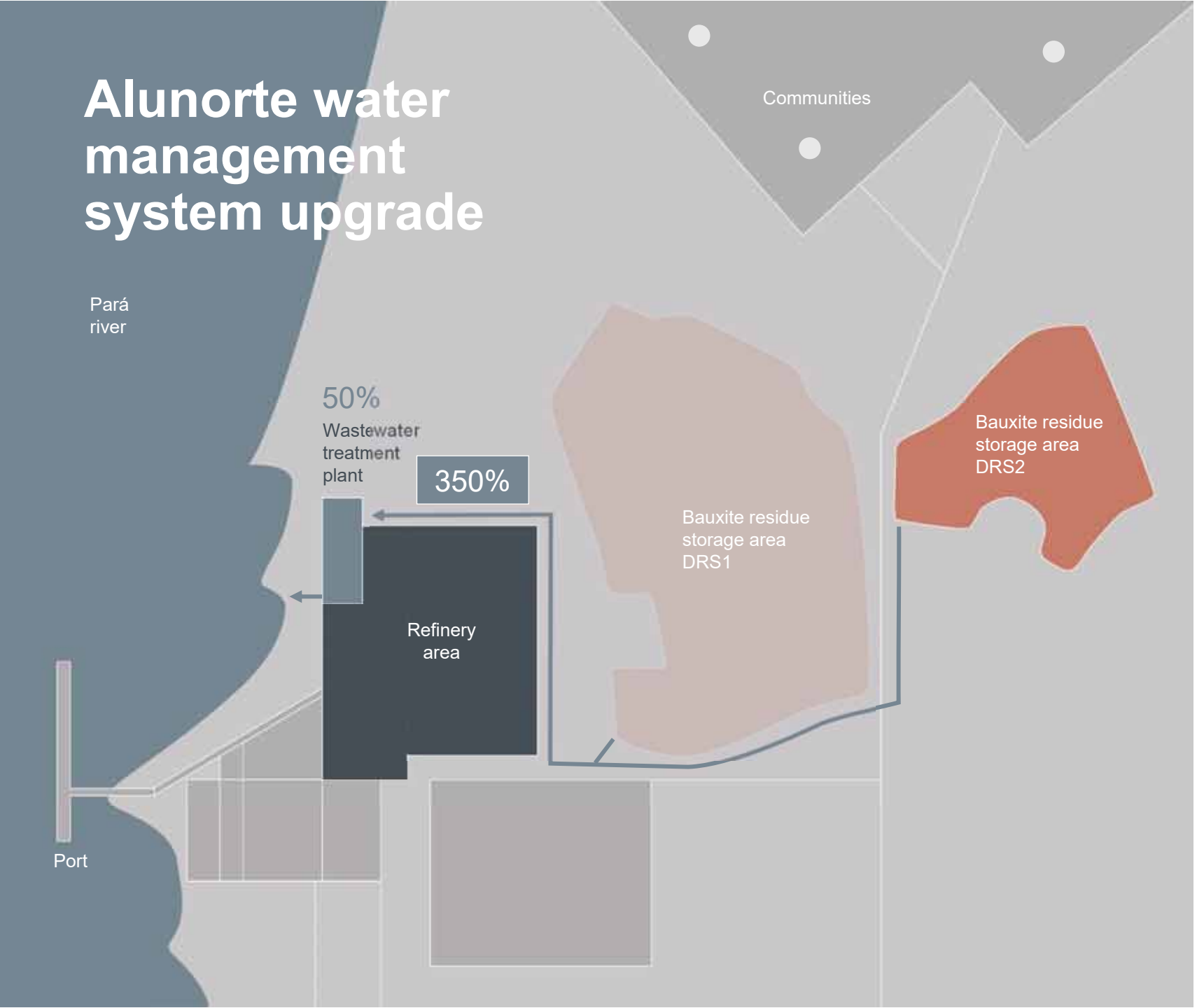
Rainfall event of February 2018

Hydro

Rainfall event on February 16-17

- No spills from bauxite residue areas DRS 1 and DRS2
  - Confirmed by IBAMA and SEMAS
- Unlicensed discharges of rain water from:
  1. Canal Velho
  2. Disused pipes
  3. Coal storage roof
- Internal and external environmental assessments find no evidence of any significant or lasting damage

Alunorte water management system upgrade



Water management system being future-proofed

- Water basin capacity increased 350 % to safeguard against future climate changes
- Water treatment plant capacity increased 50 %
- Permanent closure of DRS1 will significantly ease pressure on water treatment system

Current status

Production embargo

- By federal court, on Ministerio Publico’s request
- By state environmental agency Semas

DRS2* embargo

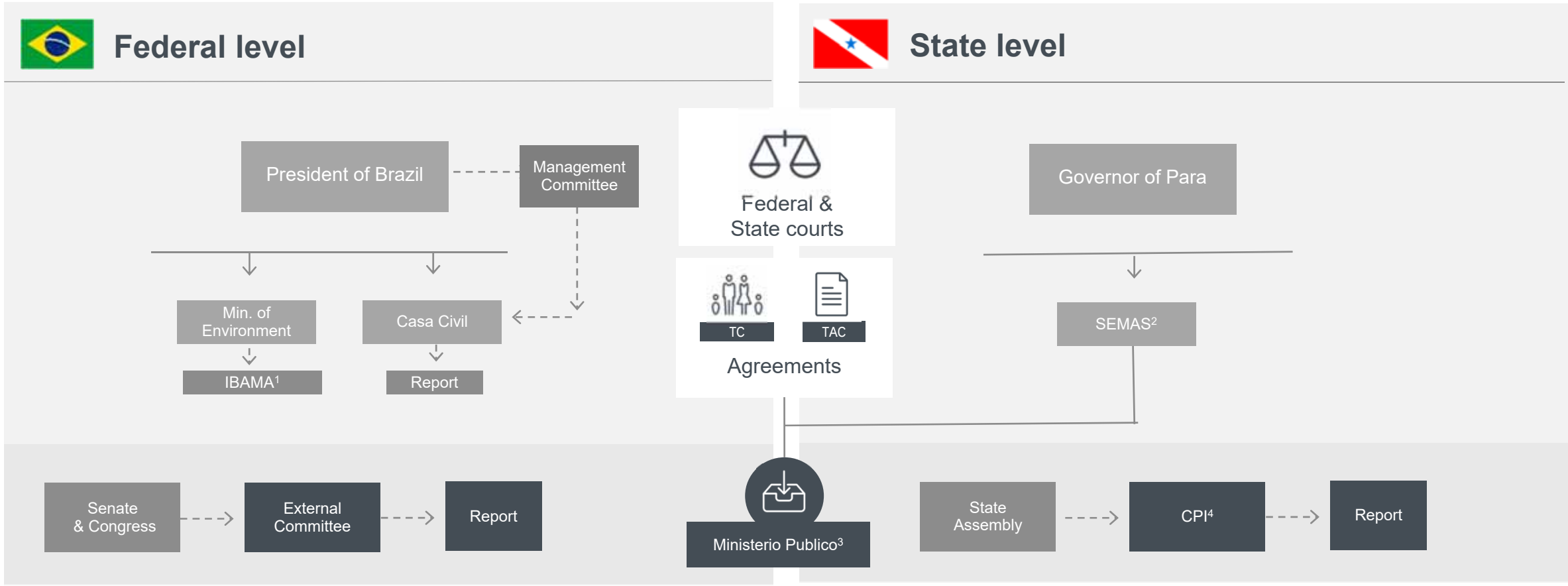
- By federal court, on Ministerio Publico’s request
- Lifted by federal environmental agency Ibama in early October
- Petition filed in court for lifting of DRS2 embargo

Press filter embargo

- Lifted by federal environmental agency Ibama in early October

* DRS2 - new bauxite residue disposal area

TAC and TC agreements important in creating common platform towards normal operations



1) IBAMA: Federal environmental Agency
2) SEMAS: State Secretary of Environment & Sustainability
3) Minsterio Publico at federal and state level
4) CPI: Parliamentarian Committee of Inquiry

Way forward for Alunorte

Process addresses technical, environmental and social aspects

Operations and environment

Today
Alunorte, Paragominas, Albras production at 50%

End-Q4 2018
Increasing water basin capacity by 350%

Q2 2019
Increasing waste water treatment capacity by 50%

Q2/Q3 2019
Adding additional press filter

Social

Shorter term

Local community dialogue

Water distribution, health services, emergency preparedness

Food coupons to communities surrounding Alunorte

Longer term

Investing in projects supporting sustainable urban development in defined communities (TC)

Social and environmental investments under the Sustainable Barcarena Initiative

Process to restore normal production at Alunorte

- Timing for resuming 100% production remains uncertain
- Operational, environmental and social investments in progress, totalling BRL ~1.1 billion
- Continued dialogue with authorities on creating common platform to resume normal operations
- Alunorte capable of running safe operations – improvement initiatives to strengthen robustness

02

Financial framework, competitive positions

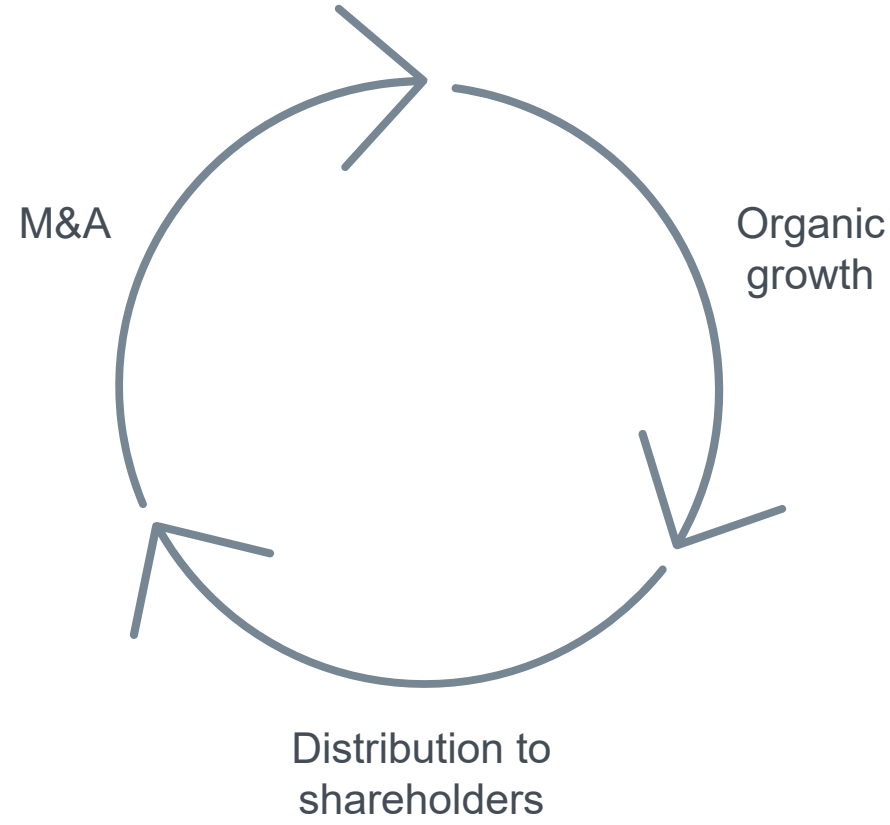
Driving long-term shareholder value

Balancing capital allocation and financial strength

Solid balance sheet and liquidity

Capital expenditures

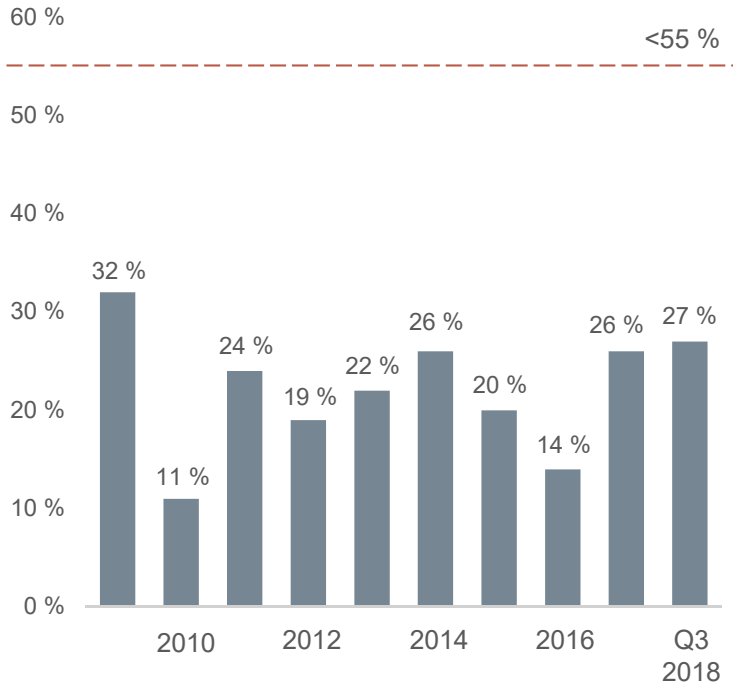
Predictable and competitive dividend



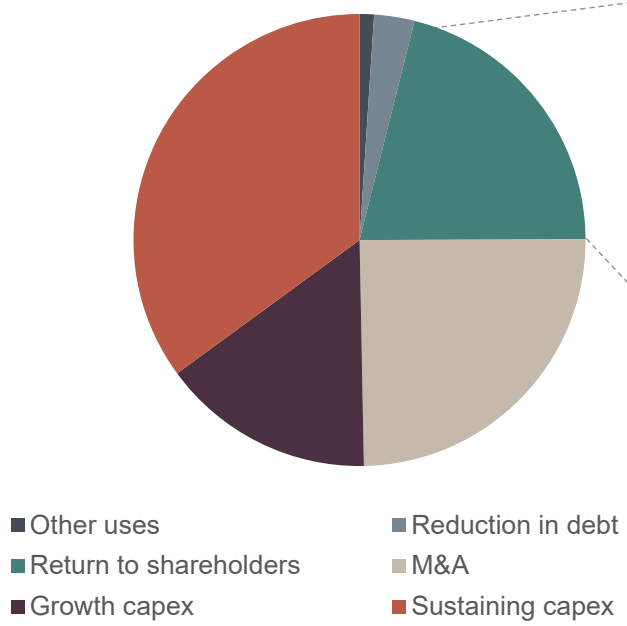
* Allocation based on best risk-adjusted returns

Solid balance sheet, balanced capital allocation, competitive pay-out ratio

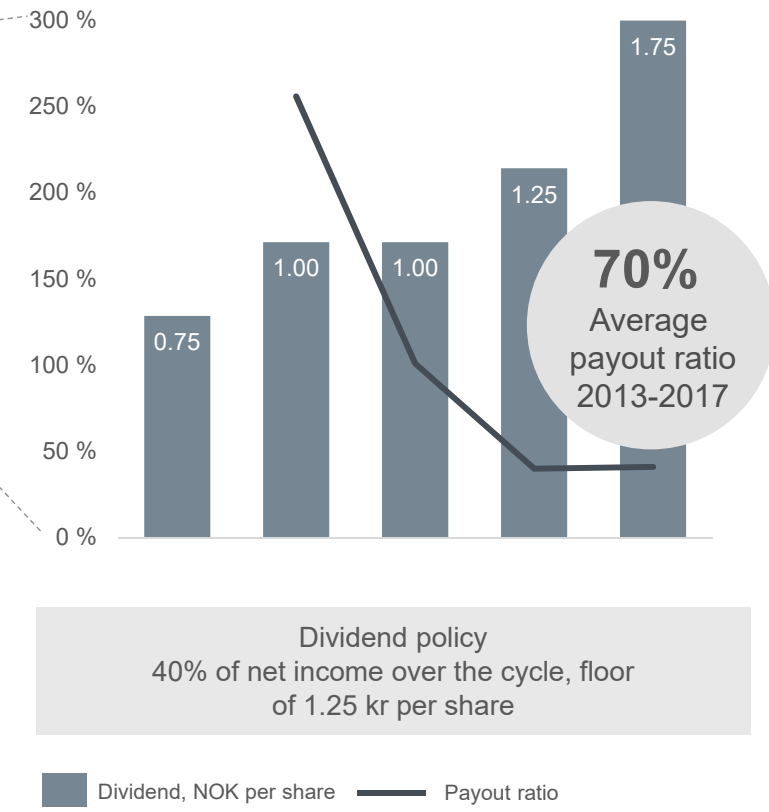
Adjusted net debt / Equity



Uses of cash 2015-Q3 2018

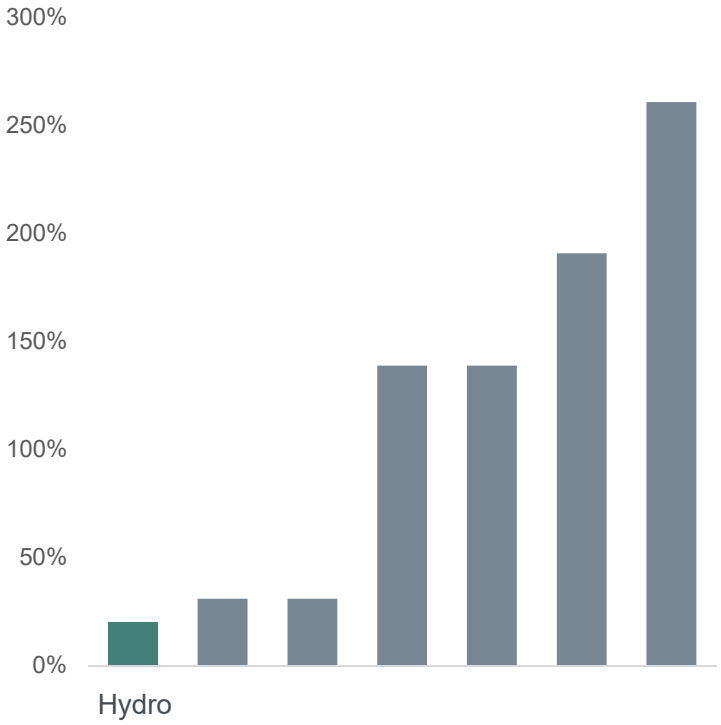


Dividend per share and payout ratio

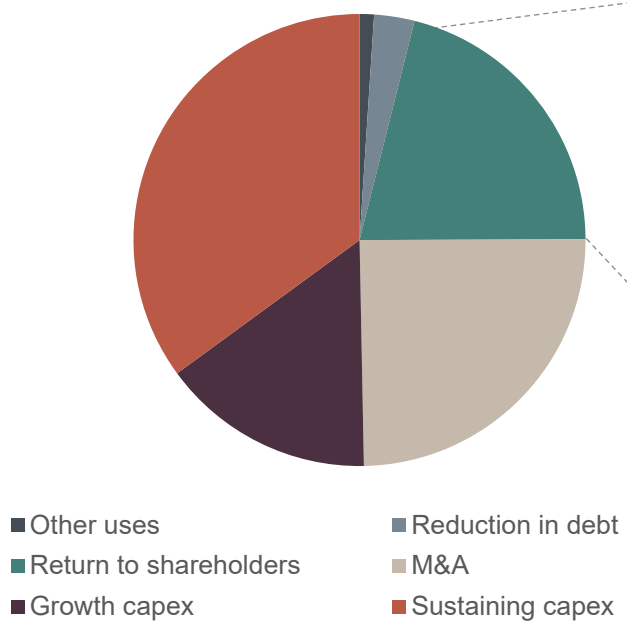


Solid balance sheet, balanced capital allocation, competitive pay-out ratio

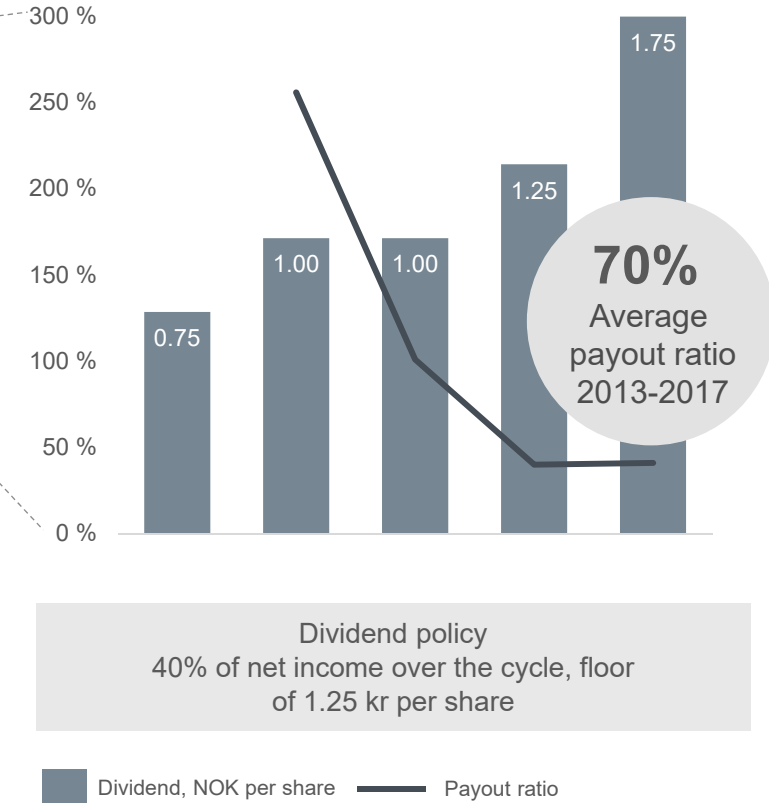
Debt/equity compared to peers*



Uses of cash 2015-Q3 2018



Dividend per share and payout ratio



Dividend policy
40% of net income over the cycle, floor of 1.25 kr per share

Source: Debt/equity - Nasdaq
*Peers include Alcoa, Arconic, Rusal, Chalco, Century, Hindalco
Total debt/Total Equity end-2017 = (Long Term Debt + Short Term Debt & Current Portion of Long Term Debt) /Equity attributable to shareholders

Strong positions across the value chain

Upstream

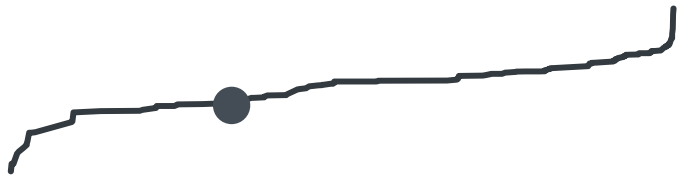
Competitive cash cost position upstream

Alumina BOC curve by company[1] (2018)

USD/mt

Smelter BOC curve by company[2] (2018)

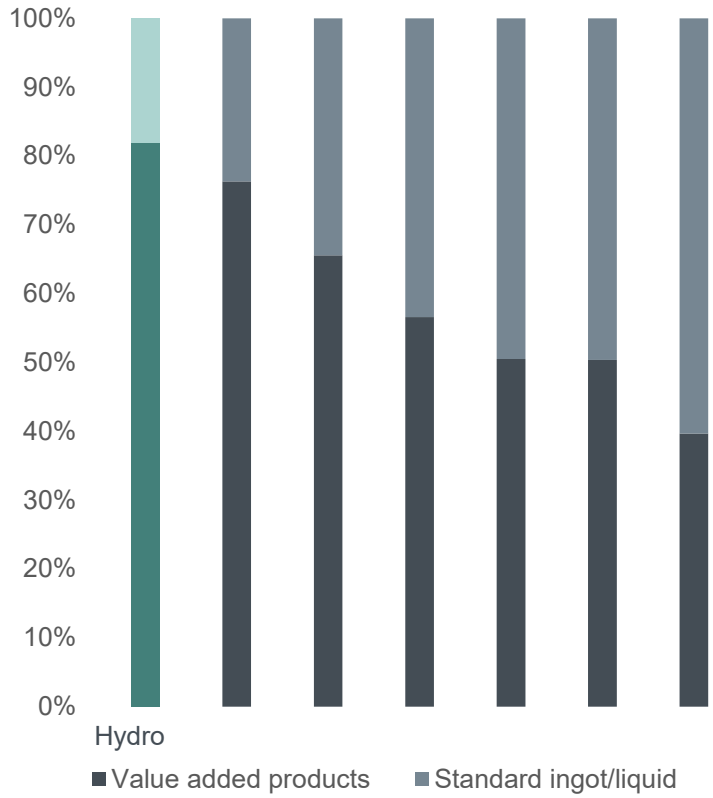
USD/mt



Source: Republished under license from CRU International Ltd
1) Alumina cost curve: caustic soda USD 600, USD/BRL 3.75
2) Aluminium cost curve: LME USD 1 945, alumina USD 412, NOK/USD 8.5
Assumed 100% production at Alunorte and Albras

Midstream

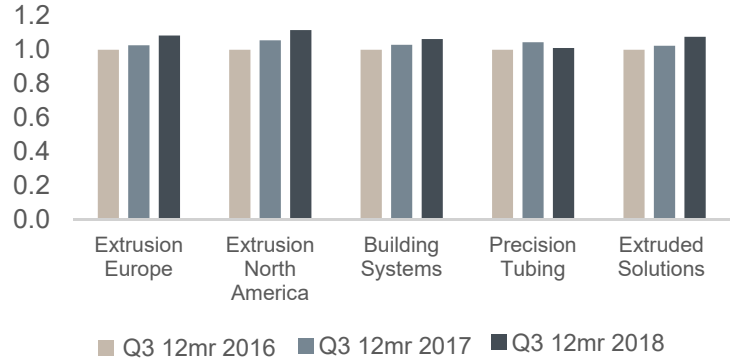
Strong position in value added products[1]



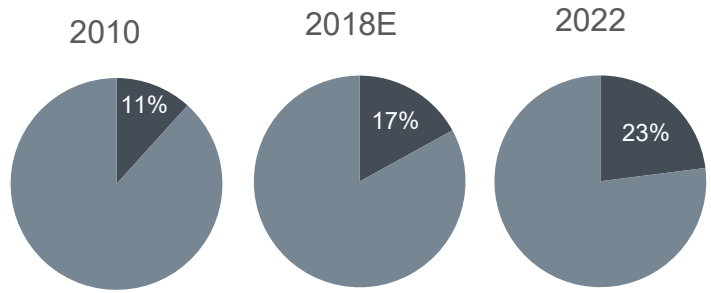
Source: Republished under license from CRU International Ltd
Actual figures for Hydro sales 2017
1) % of total shares being value added products; extrusion ingot, wire rod, sheet ingot and primary foundry alloy

Downstream

Improving NAV[1,2] in Extruded Solutions



Increasing automotive share in Rolled Products[3]



1) Net Added Value: calculated as operating revenues less cost of material, including freight costs out
2) NOK indexed, translated to NOK based on Q3 2018 12 m rolling currency rates
3) In percentage of total sales

Better improvement program hit by Alunorte situation

Will not meet 2019-target of BNOK 3*

Bauxite & Alumina

- 50% production at Alunorte and Paragominas with strong negative impact on improvement program
- 2016-17 improvements more than offset by negative 2018 effects
- 2019 target of BNOK 1.3
- E2018 accumulated delivery of negative 1.0 BNOK

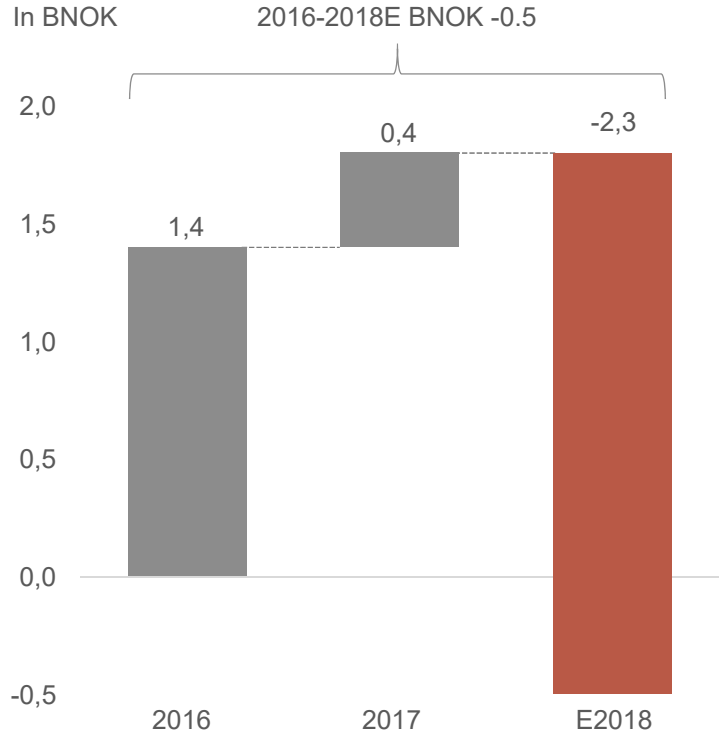
Rolled Products

- Benefit from AL3, UBC and cost performance
- Operational and ramp-up issues reducing improvement speed
- 2019 target of BNOK 0.7
- E2018 accumulated delivery of 0.4 BNOK

Primary Metal

- 50% production at Albras impacting improvement program negatively
- 50% production Alunorte with negative impact due to alumina qualities – challenges on operational parameters
- 2019 target of BNOK 1.0
- E2018 accumulated delivery of 0.1 BNOK

BNOK 3.0 *Better* improvement program progress



Better improvement program 2019 targets compared to 2015
* Real 2015 figure

03 Market outlook

Geopolitical events impacting our industry

Aluminium demand remains solid

Geopolitical events impacting trade flows, EU struggling with continued Brexit uncertainty

China moderating primary supply growth, global climate concerns continue to rise

Underlying demand remains solid

2-3% **Global** primary demand in 2019

1-3% **World ex. China** primary demand in 2019

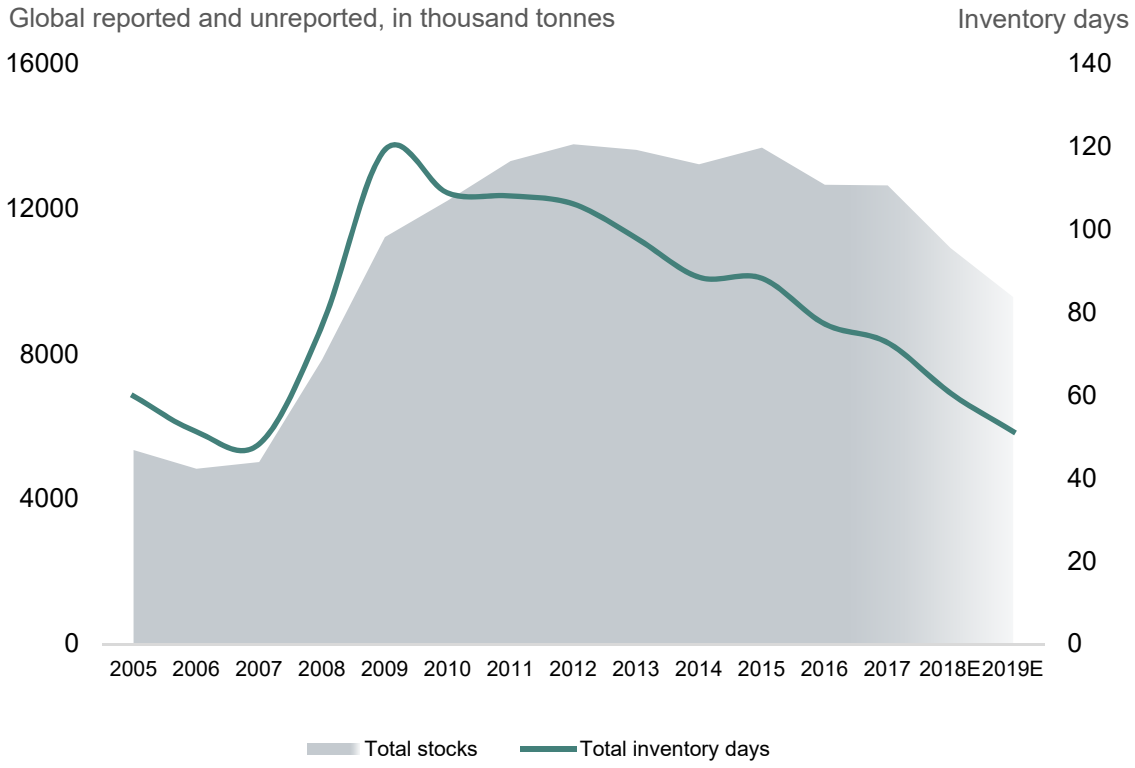
2-4% **China** primary demand in 2019

* Intercontinental panel on climate change

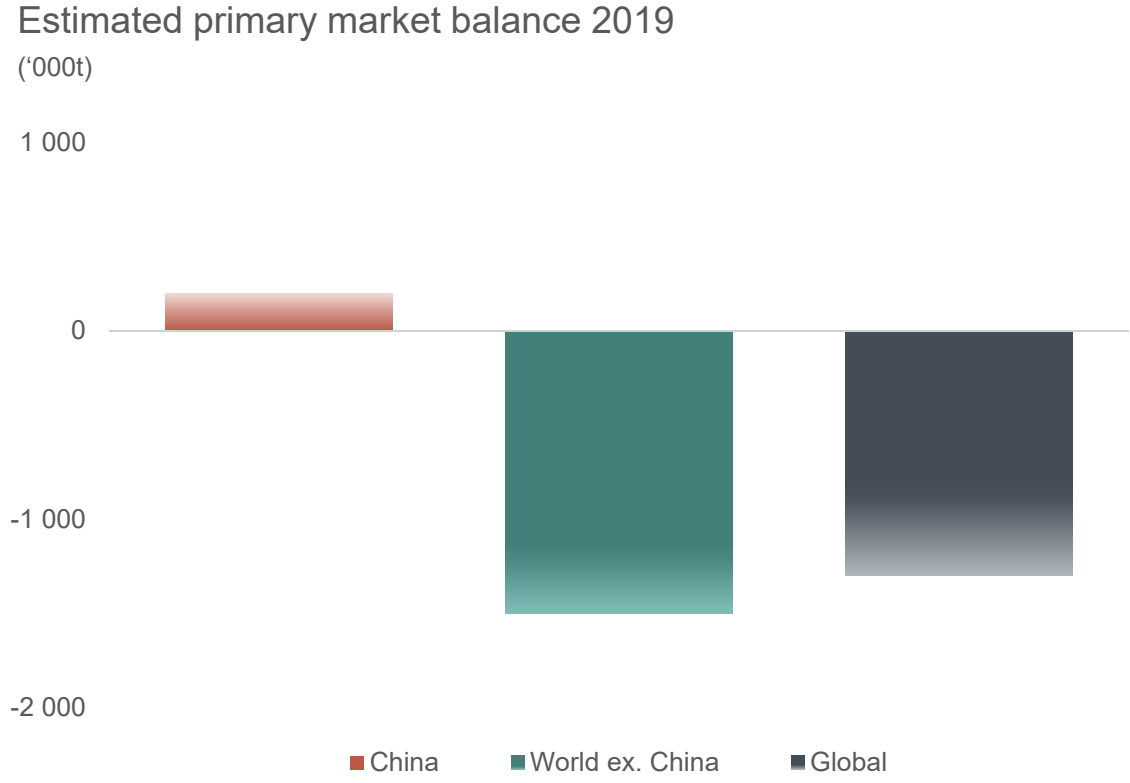
Global aluminium market expected in deficit in 2019

Inventories gradually trending towards historical levels

Inventory levels trending downwards



Estimated primary market balance 2019



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

Aluminium's reach is growing over the next decade in response to key long-term trends

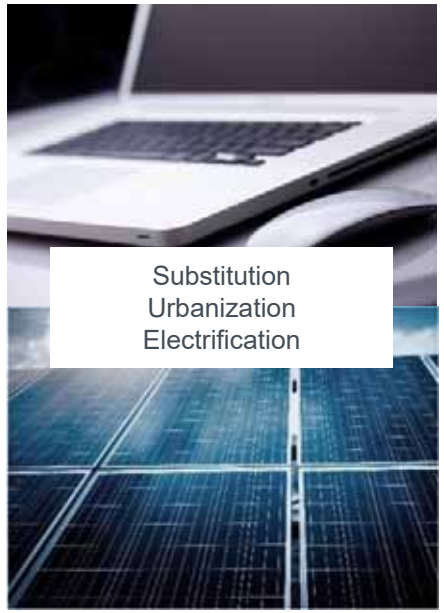
Substitution continues to be a key driver for aluminium

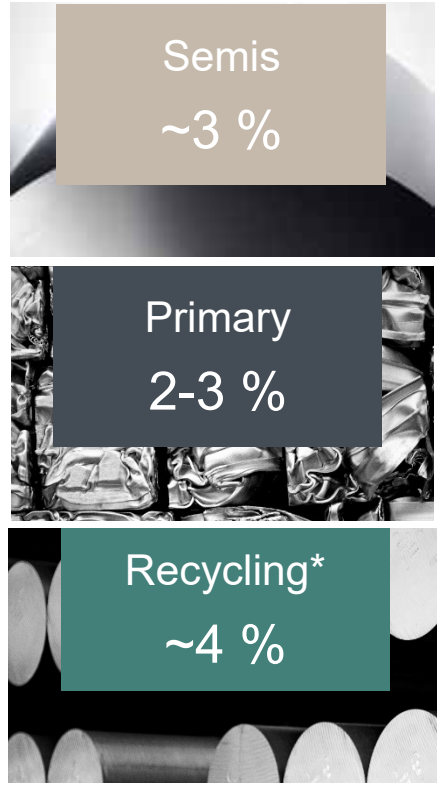
Transport
3-4%

Packaging
2-3%

Building & construction
2-3%

Electrical
2-3%





Global semis demand for segment, CAGR 2018-2028
Source: CRU, Hydro Analysis
* Post-consumer and fabrication scrap

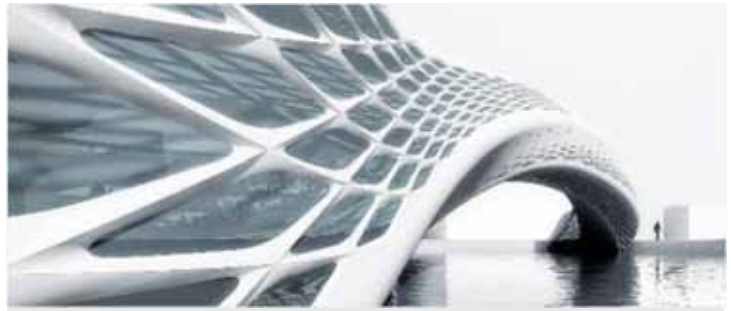
04 Strategic direction

Better, Bigger, Greener

Hydro’s aspiration for higher value creation

Better

Raise performance and improve customer offering



Bigger

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

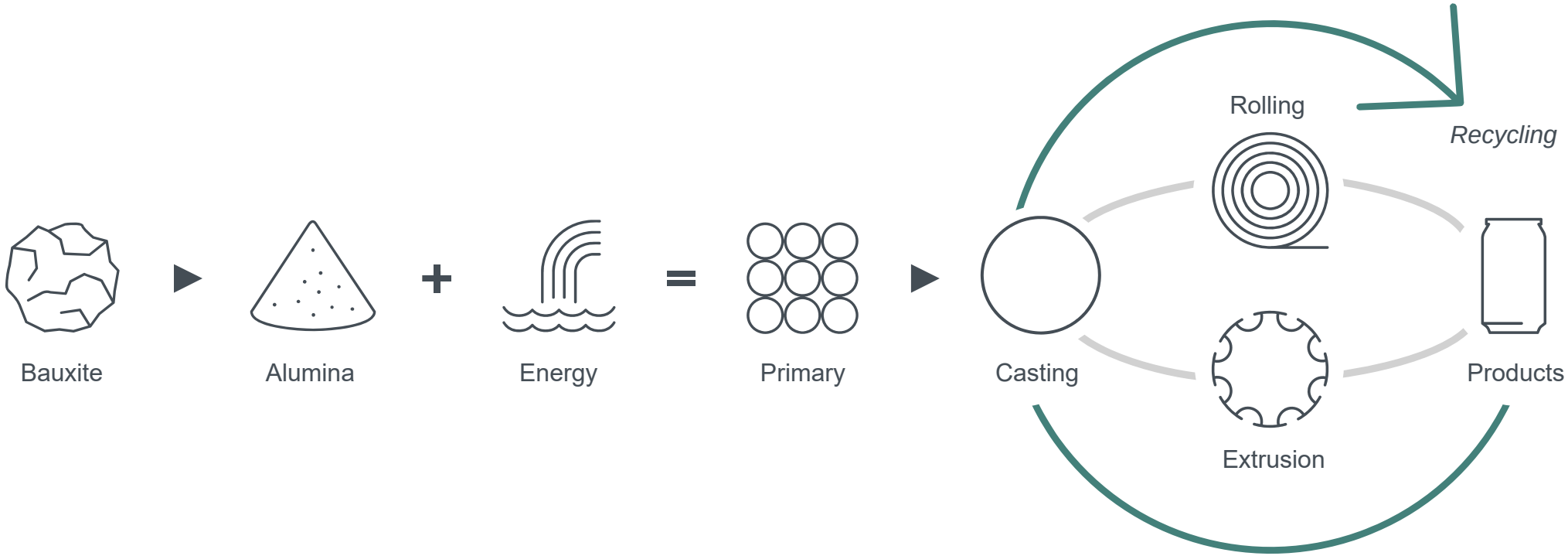
Greener

Lead the transition towards sustainable solutions

A complete value chain for higher value creation

Focus on cost efficiency and process technology
Centralized business model

Focus on margin management and product innovation
Decentralized business model



Raw materials, processing and energy

Primary production, marketing and recycling

Products and solutions

Summary of strategic focus areas going forward

On-going initiatives and strategic ambitions

Bauxite & Alumina

- B&A operations back on track
- Closer collaboration with key stakeholders
- Fuel switch project

Energy

- RSK solution
- New business
- Competitive sourcing

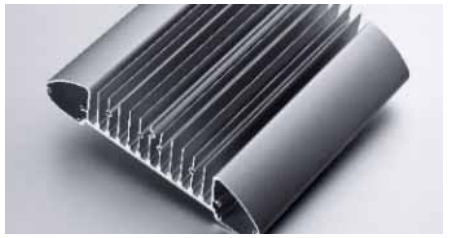
Primary Metal

- Pilot spin-offs
- Husnes restart
- Albras back on track
- Recycling

Rolled Products

- Further growth in automotive
- Recycling
- High-grading product portfolio

Extruded Solutions



- Selective growth
- Value over volume

Innovation, technology, digitization

Sustainability

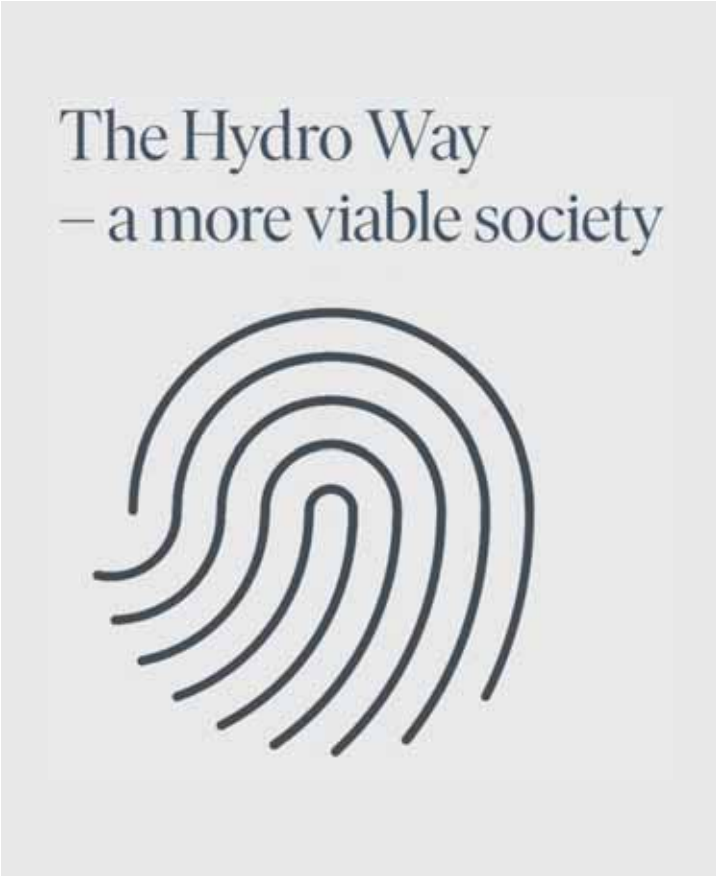
Commercial differentiation

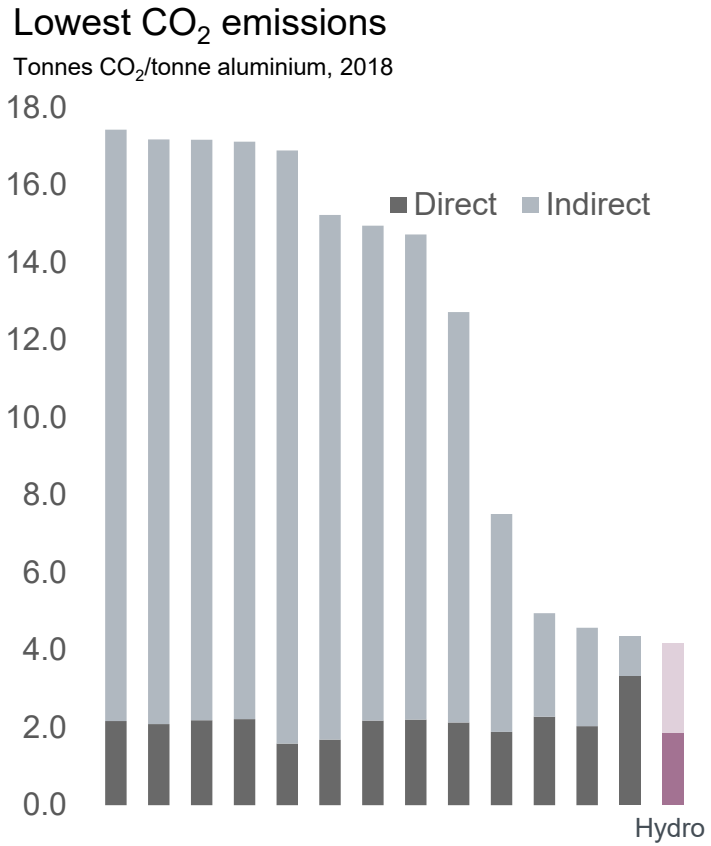
Continuous improvements

05

Innovation and sustainability

Sustainability and innovation – key competitive advantages



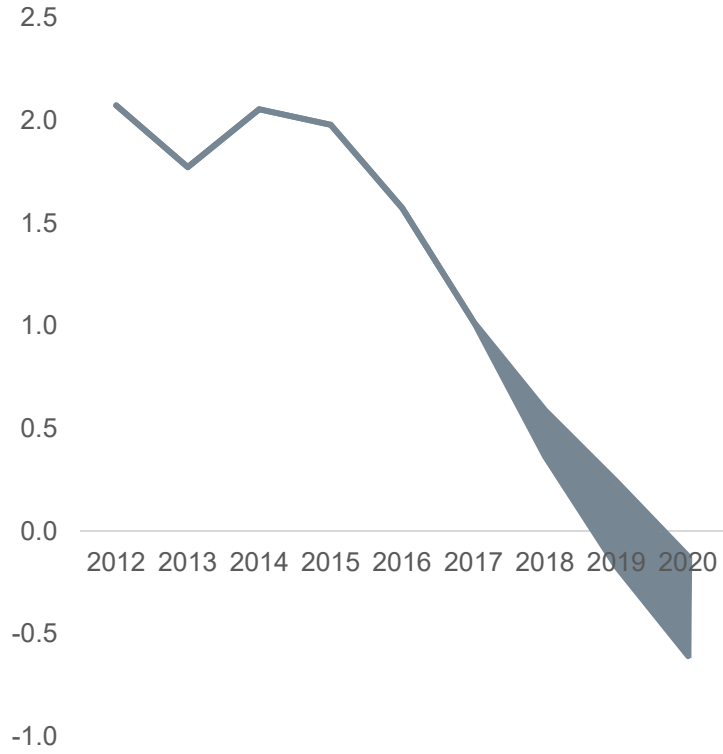


Source: Republished under license from CRU International Ltd

Part of the solution – turning words into action

Industrial strategy, business development and climate ambitions hand in hand

Hydro's climate strategy: Carbon-neutral from a life-cycle perspective by 2020[1]



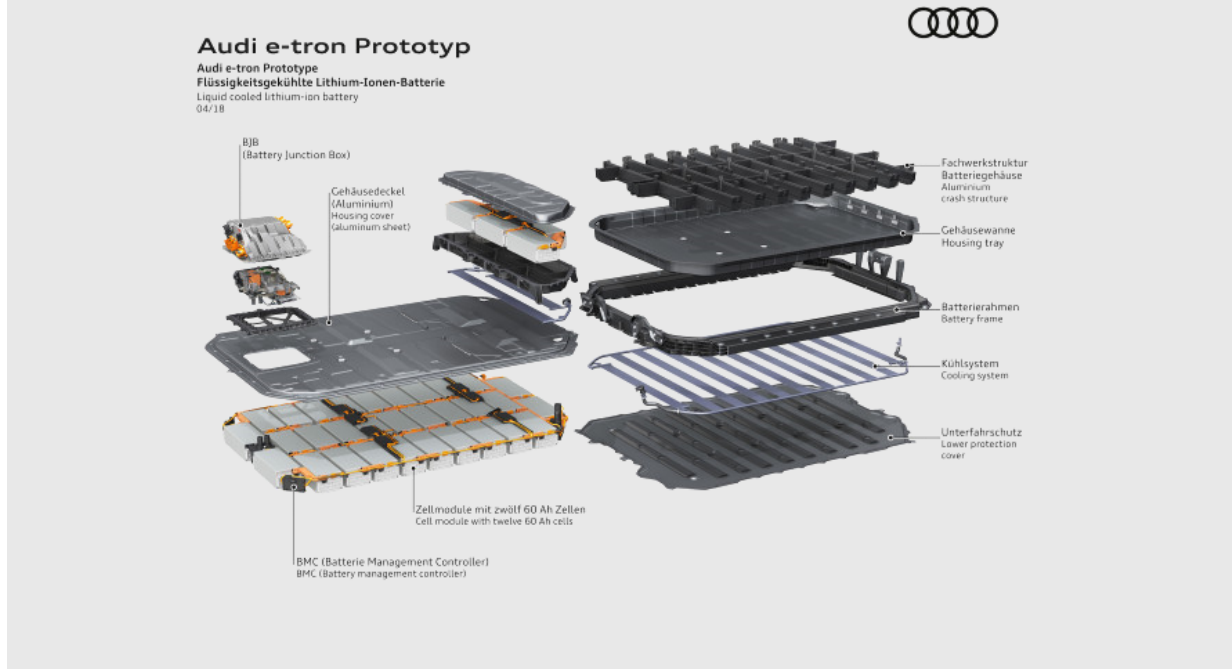
1) In million tonnes Co2

Responsible, low-carbon products for a greener future

Aluminium Stewardship Initiative

Electrification is ramping up, accelerating innovation

- Aluminium is the fastest growing automotive material due to fuel economy focus and stricter emissions standards
- E-mobility is speeding up the aluminium-in-automotive trend as the preferred lightweighting material
- Electric vehicles (EV) could represent more than 30% of global car market by 2030, up from just 4% in 2017
  - Average aluminium content in cars expected to rise from around 180 kg/car to more than 250 kg/car over next 10 years
  - Aluminium content in EV typically around 25% higher than in conventional cars
  - Aluminium content often corresponds to the size of the EV model, from around 170 kg in Nissan Leaf to 650 kg in Tesla X



New innovative combinations for more efficient solutions

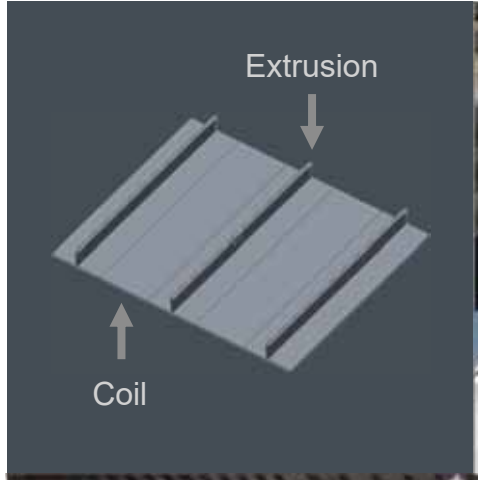
- As a fully-integrated company, Hydro is now able to collaborate on innovations across the value chain
- Combining extruded profiles and rolled aluminium, creating smarter, better and more cost-efficient solutions for a wide range of applications

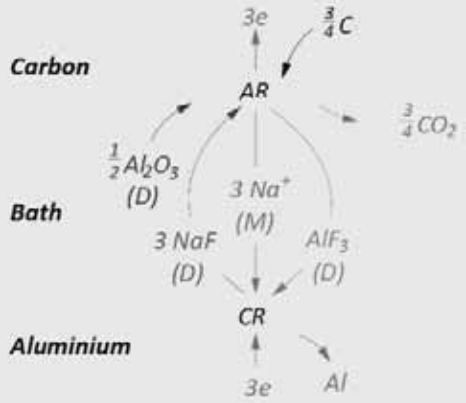
Marine, e.g. ship hulls

Offshore, e.g. helipads and living quarters

Construction, e.g. bridges and I-beams

Large structural components, e.g. train carriages





Towards digital production

Digital twins

Optimizing by combining physical models, sensors and advanced analytics of process data

Process data →

Domain competence →

- Examples include **electrolysis** process and the complete value chain for **extrusion**

Building the future

Aluminium systems can improve a wide range of a building's performance indicators

- Energy performance
- Renewable energy production

- Acoustic performance
- Thermal comfort
- Daylight optimization
- Innovation and design

- Raw materials sourcing and recycling

Hydro key focus areas

Engineering the future, lightweighting our planet

- Resolving Alunorte situation
- Maintaining financial strength and flexibility
- Providing attractive returns over the cycle
- Strengthening competitiveness through continuous improvement, innovation and sustainability