

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

*) 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



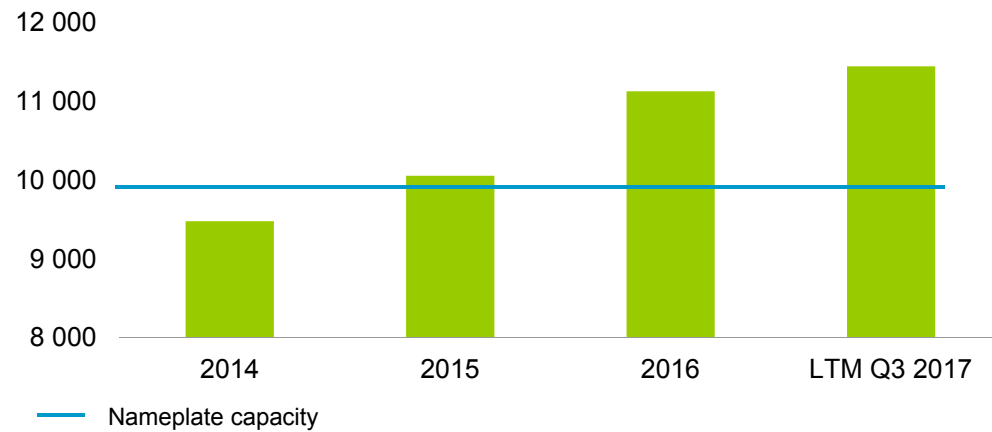


Bauxite & Alumina Better than ever through operational excellence

Silvio Porto, EVP Bauxite & Alumina

Paragominas: New production record achieved

Bauxite production in thousand mt



LTM* 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



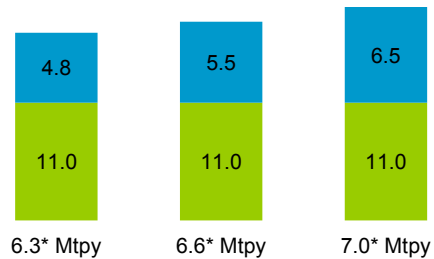
- Reforestation progressing according to plan
- Research partnerships creates basis for state-of-the-art approach to mining rehabilitation
- Closing rehabilitation gap by 2020

* Last twelve months

MRN – important part of Alunorte’s bauxite sourcing strategy

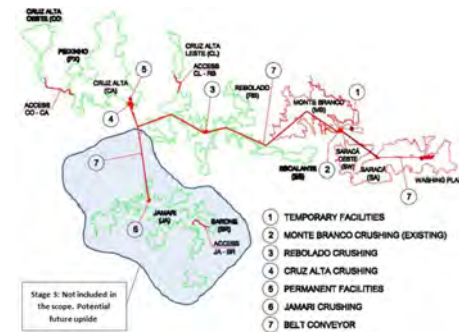
Strategic Importance

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

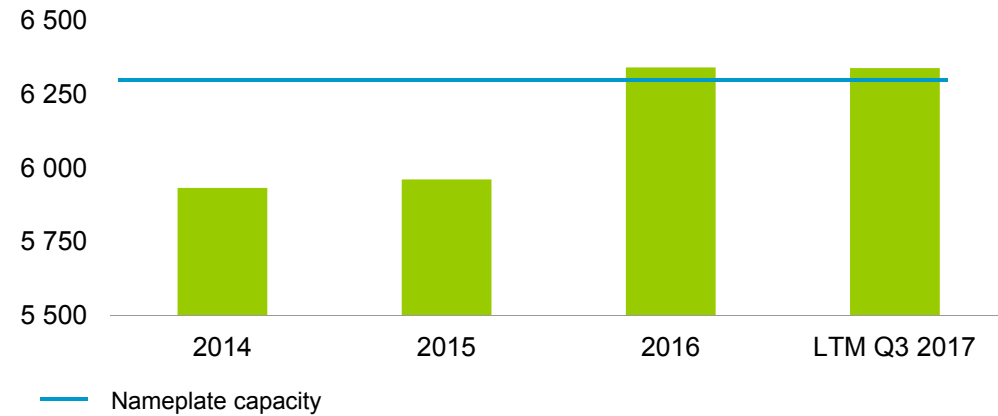


- Bauxite supply to Alunorte secured
- B&A working diligently with all bauxite customers to find solutions
- High attention from B&A management and all shareholders

* 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

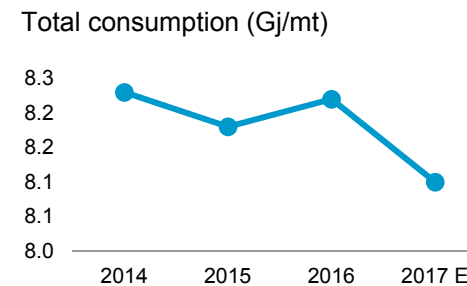
- 6.3 million mt production LTM* Q3 2017
- Improved equipment effectiveness and process stability based on Bauxite & Alumina Business System
- Further debottlenecking needed for 7.0 million mt target
- High quality alumina – preferred by customers

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

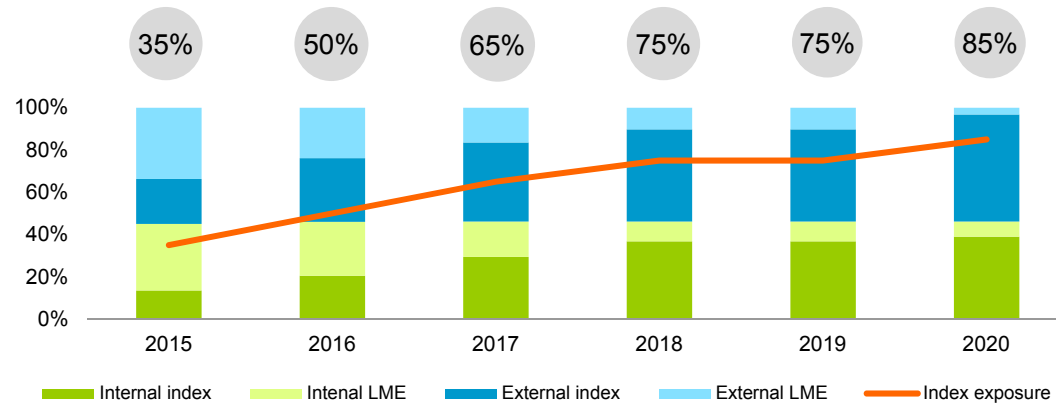


- Energy consumption improved in 2017
- Target improving boiler energy consumption to 7.6 GJ/mt in 2020
- Evaluating potential for usage of gas

* 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

* 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

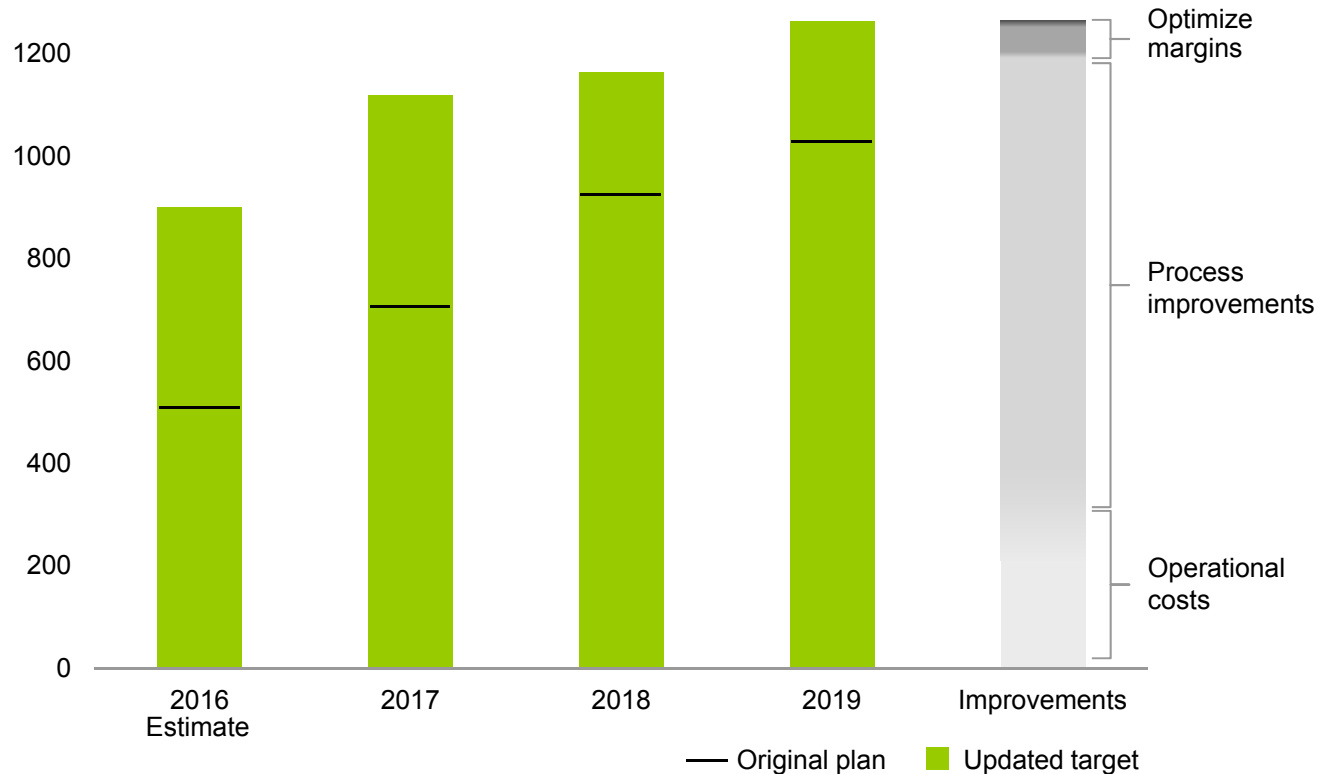
Process improvements

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

Alumina & Hydrate margins

- Reduce demurrage costs
- Lift optimization margin

Improvements in NOK million





Primary Metal

Better, bigger and greener with technology and digitization

Hilde M. Aasheim, EVP Primary Metal

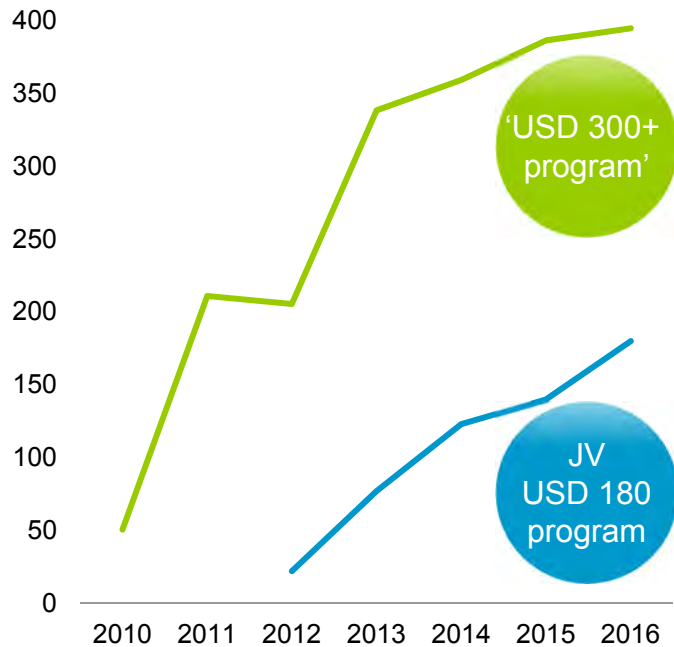
Primary Metal continues ambitious improvement efforts

Will deliver BNOK ~0.5 in period 2018-2019



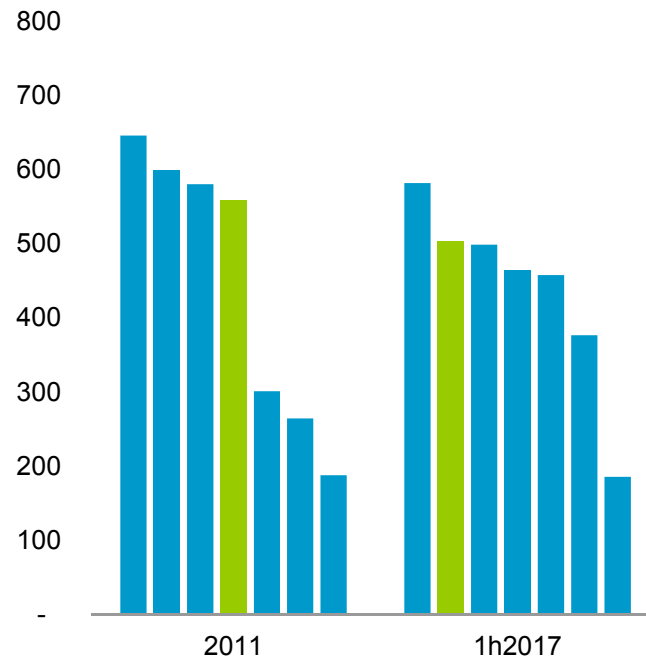
Long history of improvement efforts BNOK 3 delivered 2010-2016

In USD per mt in real terms



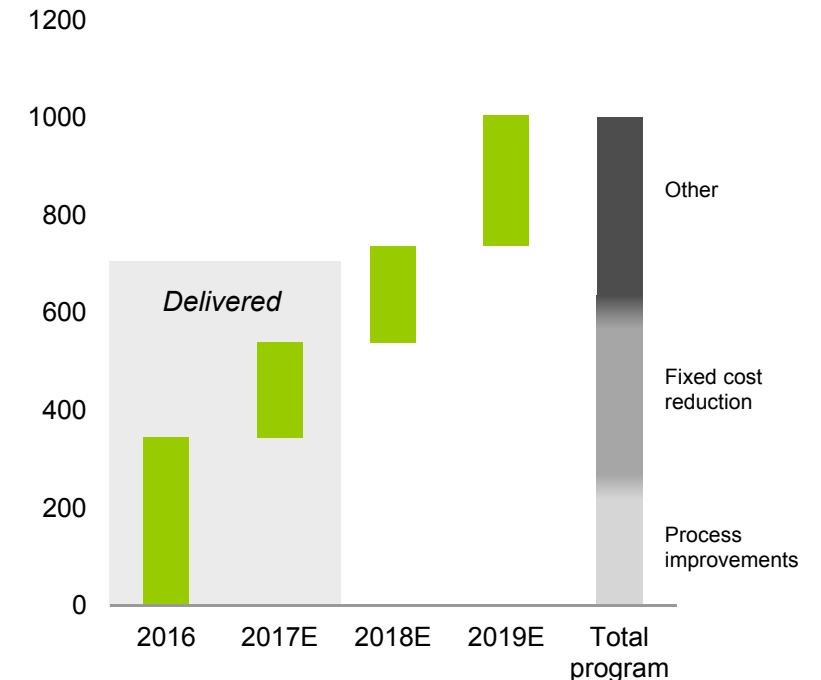
Strengthened relative position

Underlying EBITDA per mt in USD for respective aluminium divisions^{1,2}



BNOK 0.5 to be delivered 2018-2019

In million NOK



1) 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.

2) 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



Initiatives in place to lift Albras performance

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



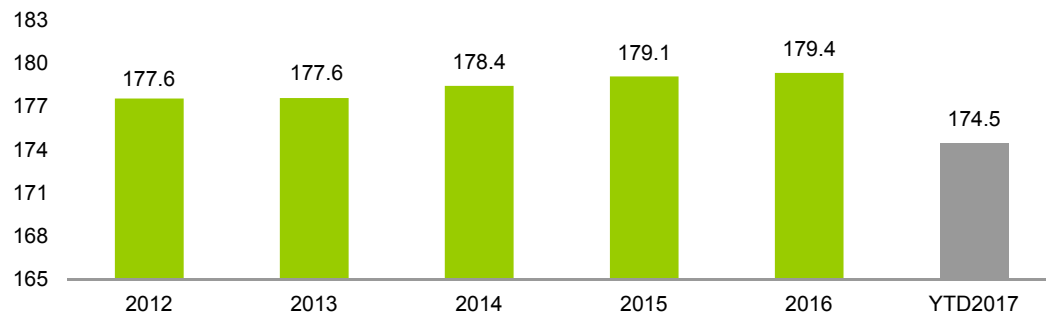
2017 improvement efforts behind plan at Albras due to asset integrity issues

- 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

Amperage (kA)



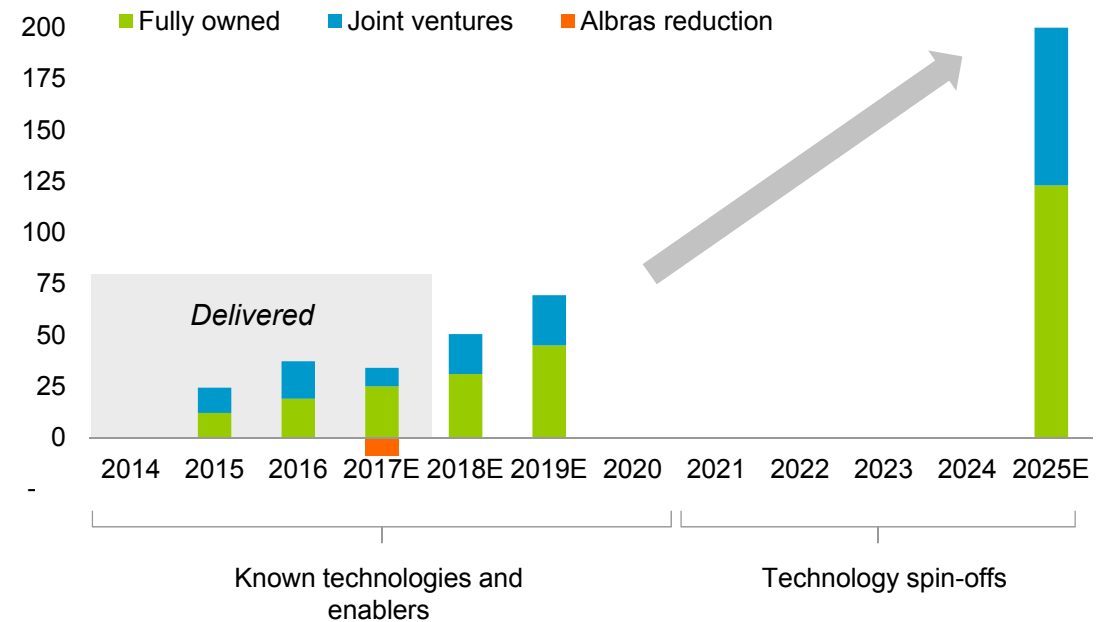
Karmøy Technology Pilot enabling spin-offs to existing smelters



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

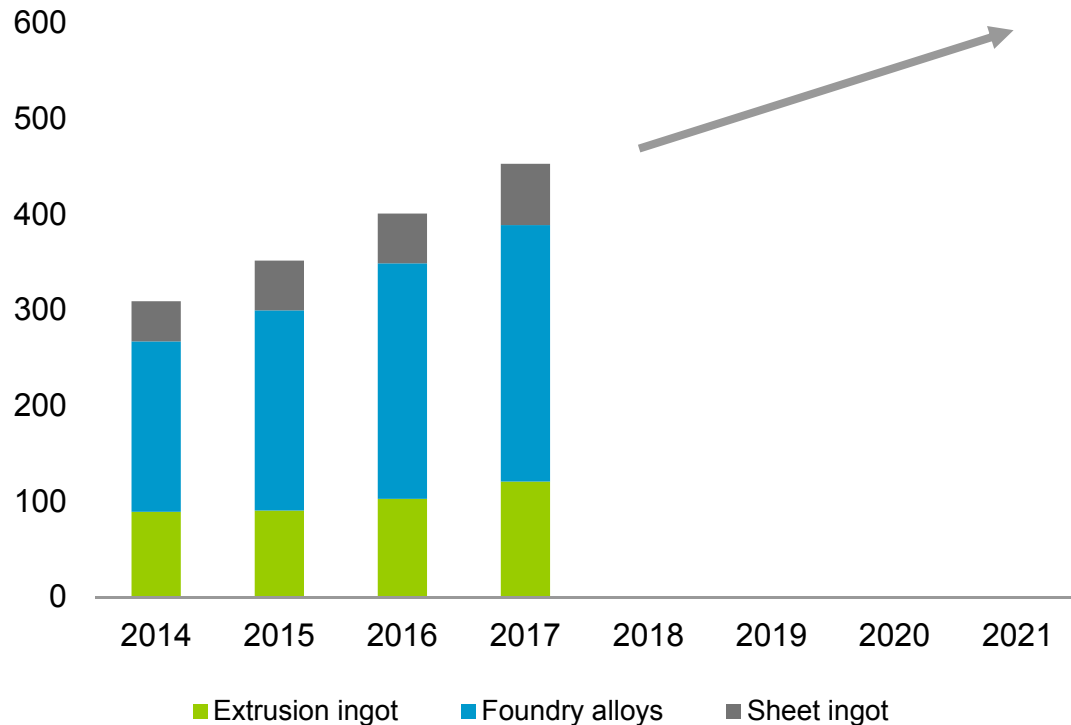
* Calculation based on actual EBITDA margin YTD Q3 2017

Driving innovation to further strengthen our position in the market

Continue to capture strong growth in automotive segments

Sales to automotive in Europe

Mt per year

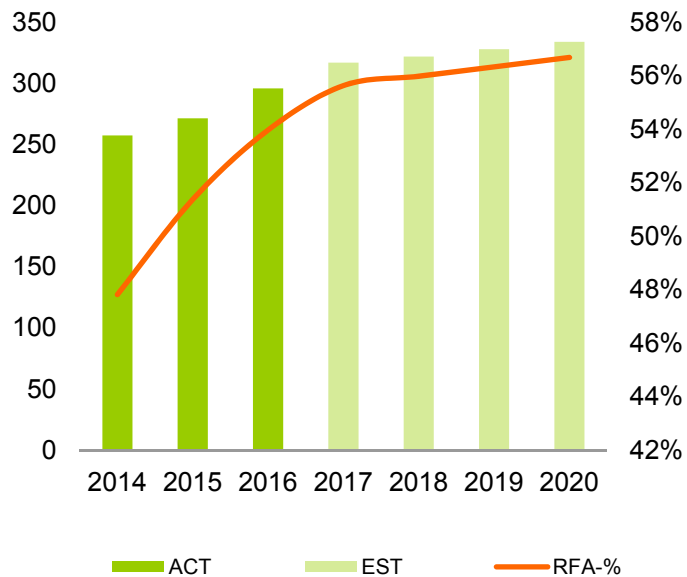


* Europe only. Forward view based on current outlook for market development and production capacities

Growing in recycling

Targeting 30% increase in RFA Sales

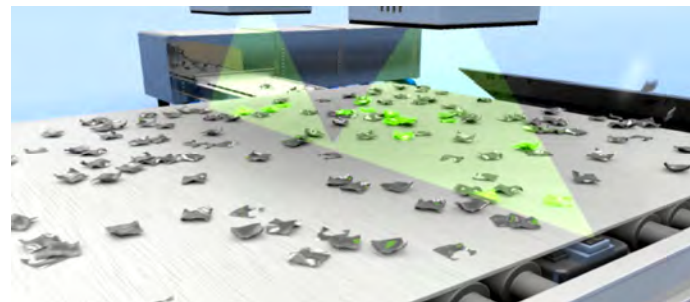
RFA sales for EI remelters, in mt



Sales of Recycling Friendly Alloys* from remelters to increase by ~80 000 mt from 2014 to 2020 (more than 50% of total)

* RFA: Recycling friendly alloys

Investing in the leading recycling capabilities and technology



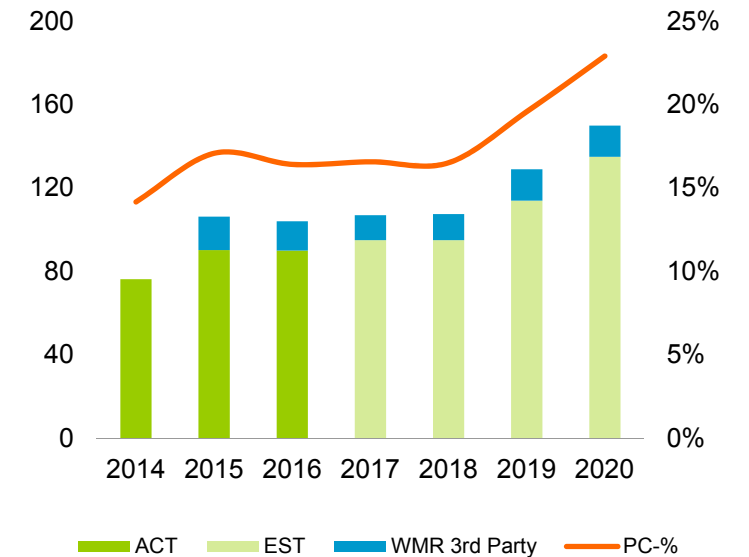
Hydro scrap sorting technology



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)

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

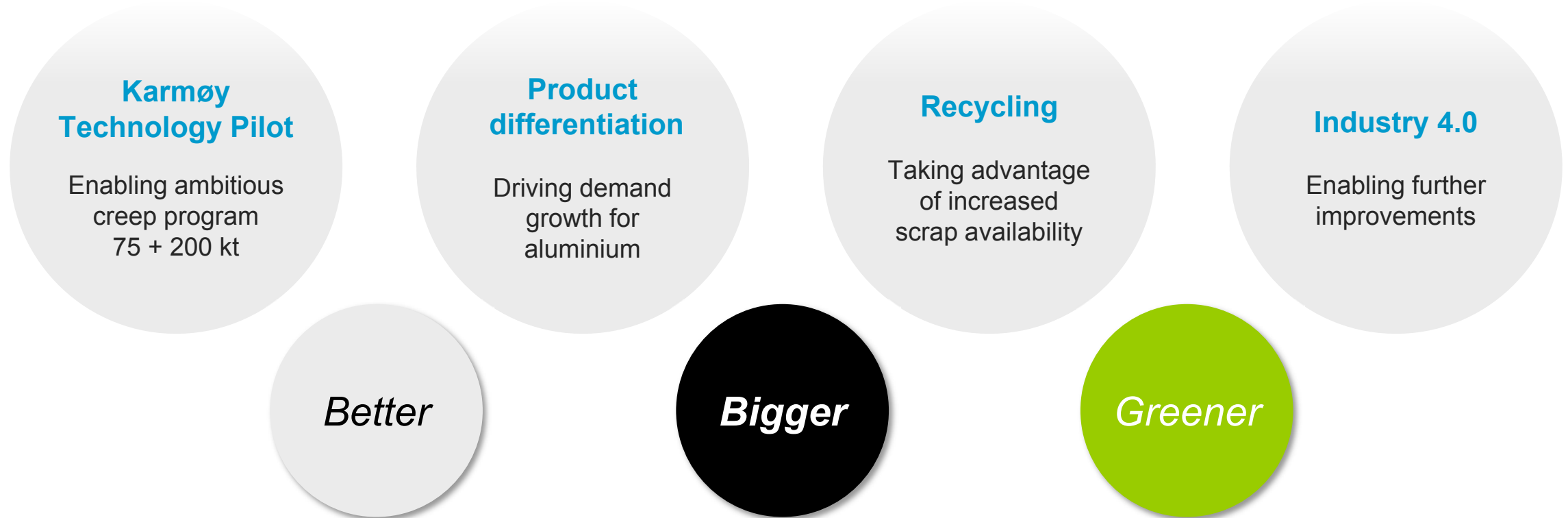


Digital and predictive maintenance

Virtual supply chain

Better, bigger and greener with technology and digitization

Strengthening our competitive position further





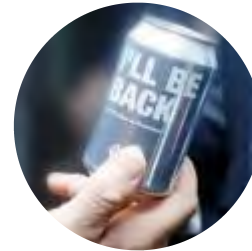
Rolled Products

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



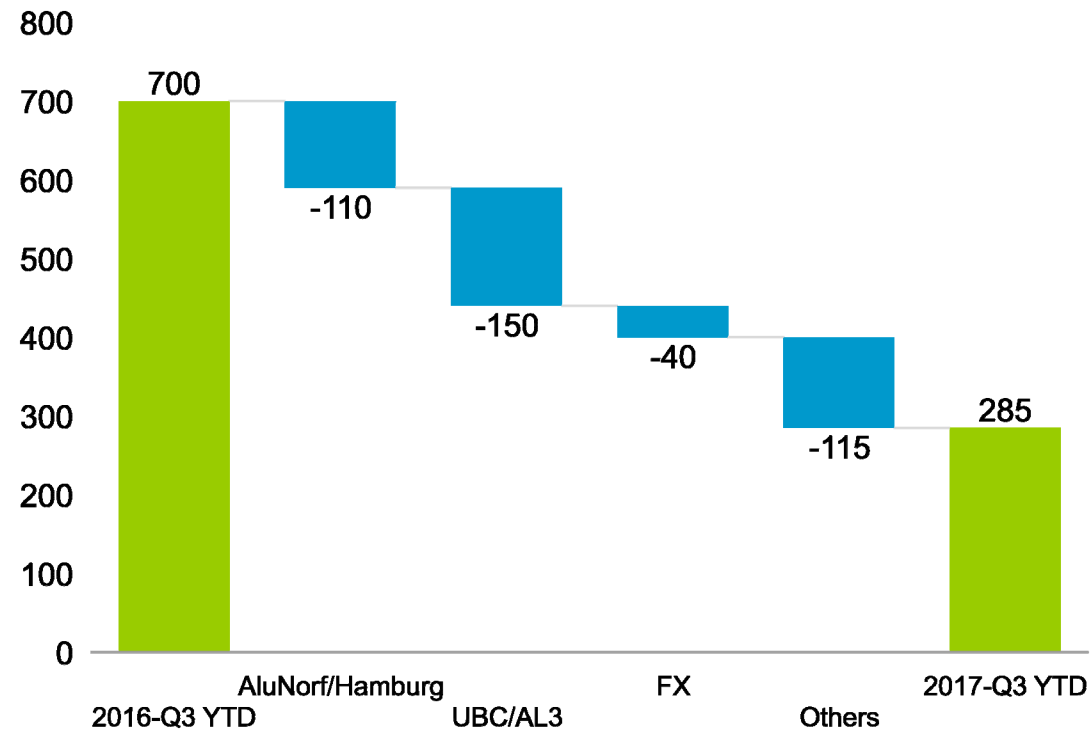
Ambition	Automotive Gain No.2 position in Europe	Foil Fostering No.1 position in high-end plain foil Europe	Beverage can Grow No.2 position in Europe	Lithography Defend global No.1 position	Special products Strengthen No.1 positions in Europe
Market growth ¹	<ul style="list-style-type: none"> World ~11% Europe ~9% Steel substitution 	<ul style="list-style-type: none"> World ~3% Europe ~1% Follows population 	<ul style="list-style-type: none"> World ~4-5% Europe ~2-3% Steel substitution 	<ul style="list-style-type: none"> World ~0% Europe ~ - 3% Declining printing 	<ul style="list-style-type: none"> Europe ~2-3% Batteries, renewables and other new potentials
Focus areas	<ul style="list-style-type: none"> Successful ramp-up of AL3 	<ul style="list-style-type: none"> Broaden customer base Increase technical foil 	<ul style="list-style-type: none"> Successful ramp-up of UBC² line Growth in Europe 	<ul style="list-style-type: none"> Focus on quality, service and innovation 	<ul style="list-style-type: none"> Grow strategic product volumes
COST EFFICIENCY ALUNORF PERFORMANCE					

1) Market growth as compound annual growth rate 2016 – 2021 in %
 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

RP Underlying EBIT - YTD Q3 2017 vs YTD Q3 2016



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

Ramp up of used beverage can recycling line in progress

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



- 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*

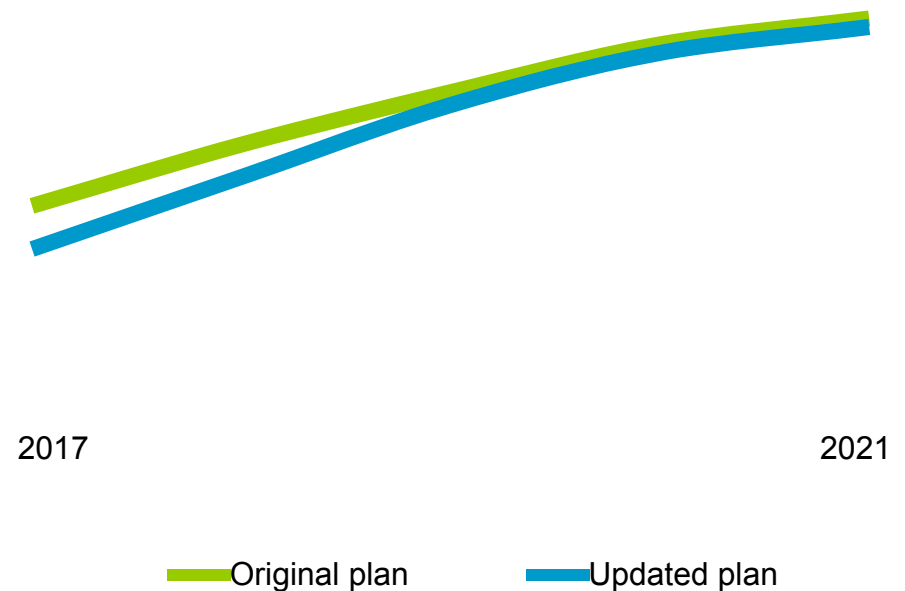
* from a lifecycle perspective

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

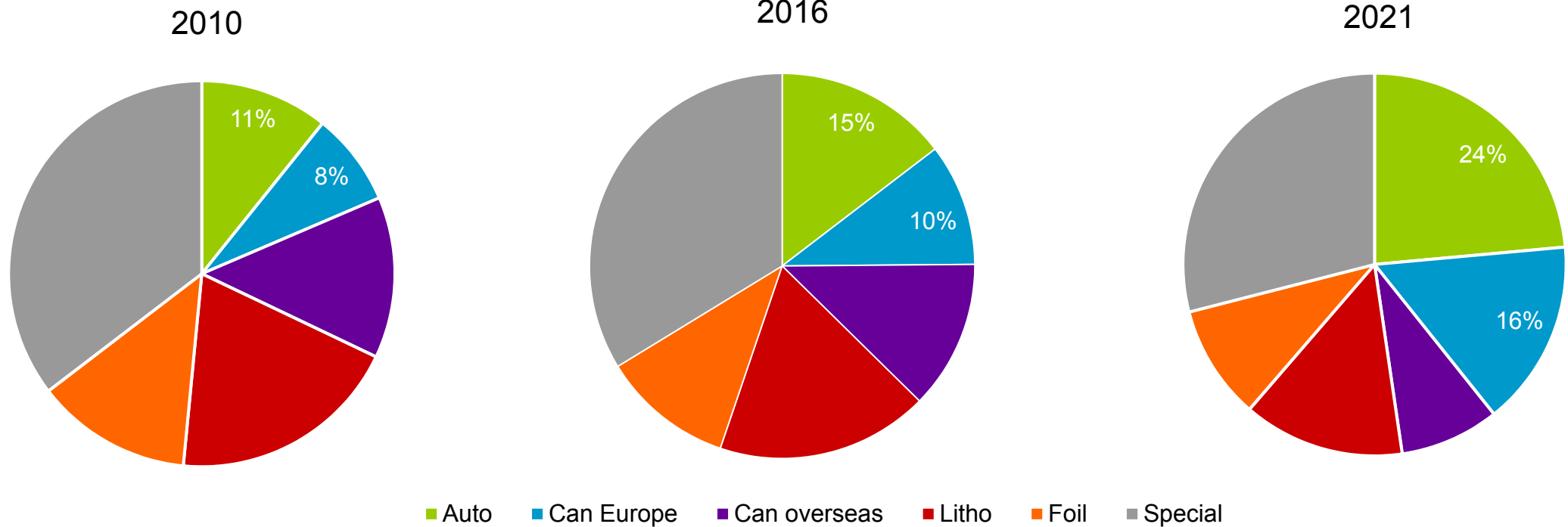
Indicative BiW ramp-up plan vs original plan



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

Automotive to support high-grading ambitions

Sales by segment



Innovation as strong driver for increased competitiveness

Customer surveys outline Hydro as the preferred innovation partner



LIBS System
for sorting of
automotive scrap
successfully installed
at R&D center Bonn –
optimizing scrap loop and
supporting automotive
growth ambitions

LIBS = Laser induced breakdown spectroscopy



HPS^{plus}
The next generation
of lithographic sheet
brought to the
market by Hydro -
improving surface
for higher process
speed in offset plate
printing

HPS = Hydro pre-treated surface

Way forward on NOK 900 million improvement ambition

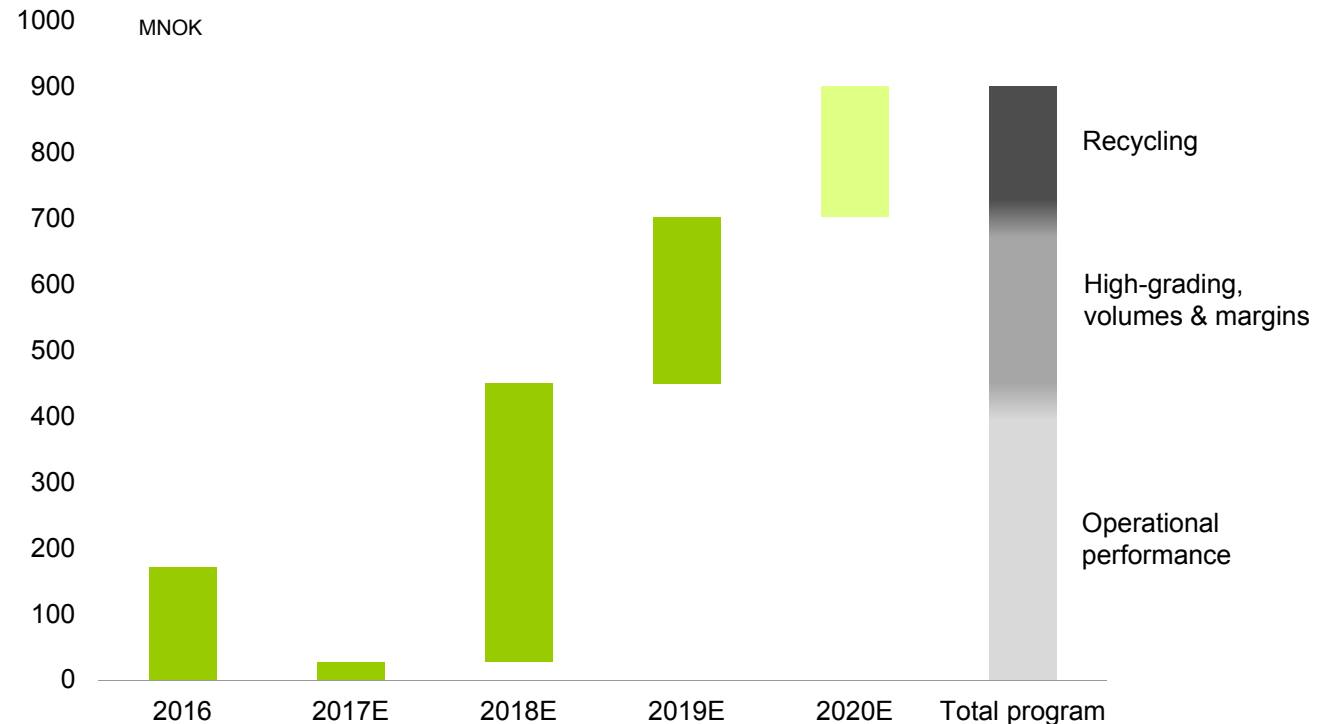
Challenging to meet ambition in 2019, risk of 1 year delay due to operational issues



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





The future belongs to sustainable businesses

Aavid 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



Resource depletion



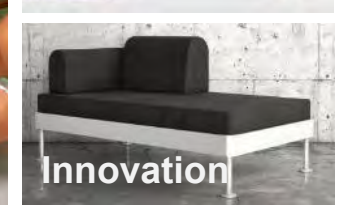
Climate challenge



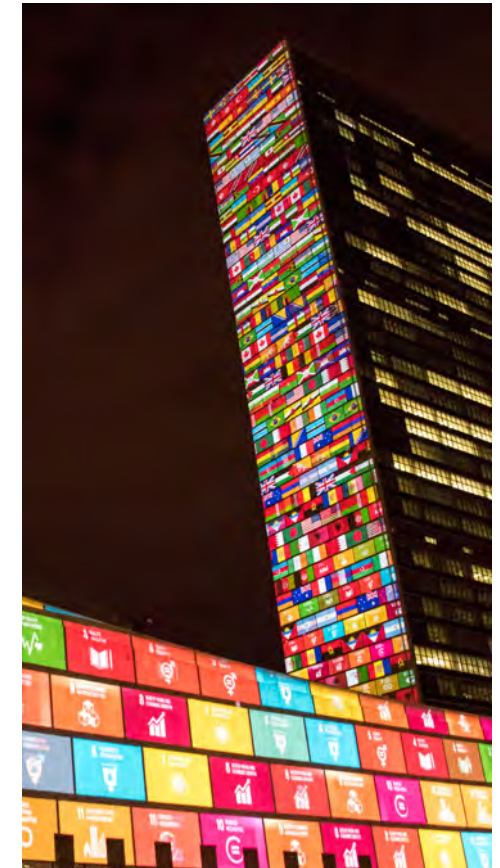
Technology driving solutions for the future

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

Improving
our
footprint



Making a
positive
difference

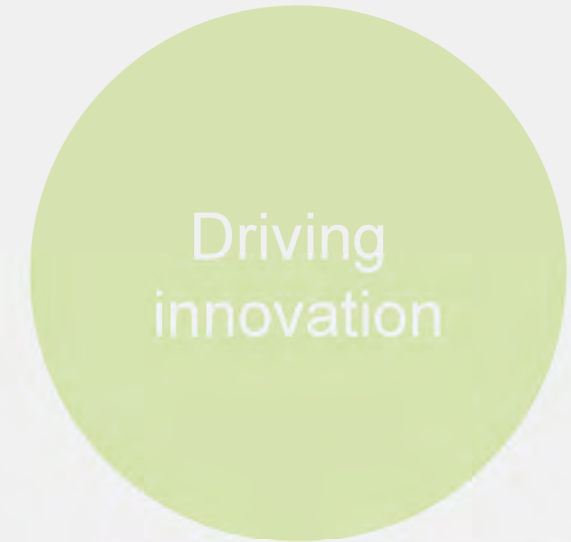


Driving
innovation



Making responsibility and sustainability a competitive edge

Planet, people, prosperity

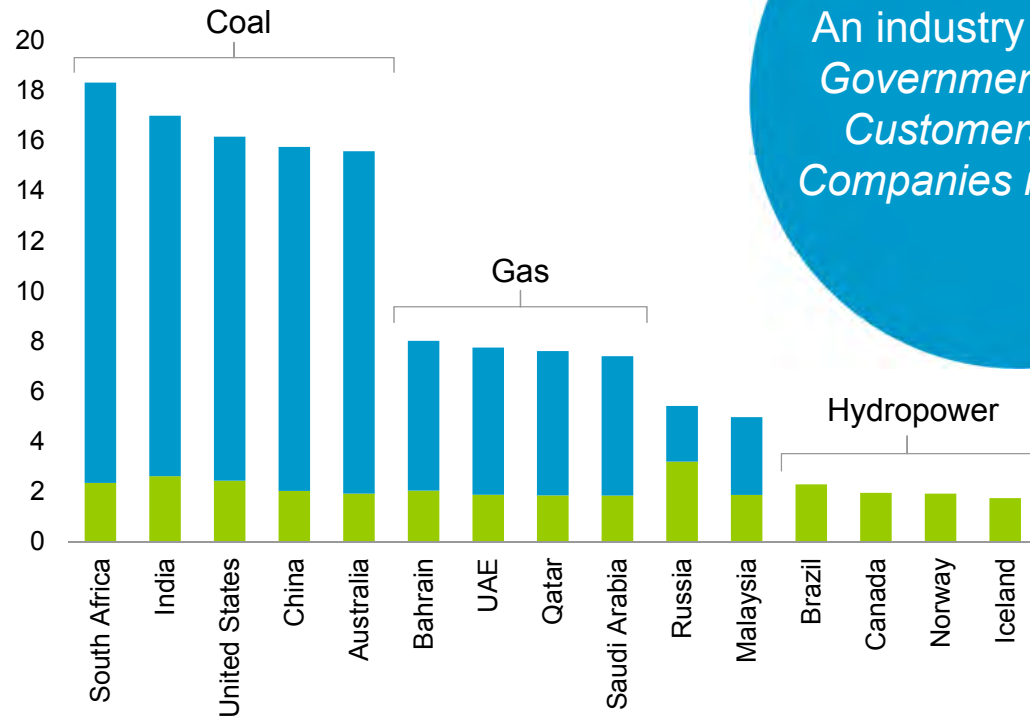


The climate paradox

Increasing share of aluminium production is coal-based

CO2 emissions and main energy source in aluminium production by country

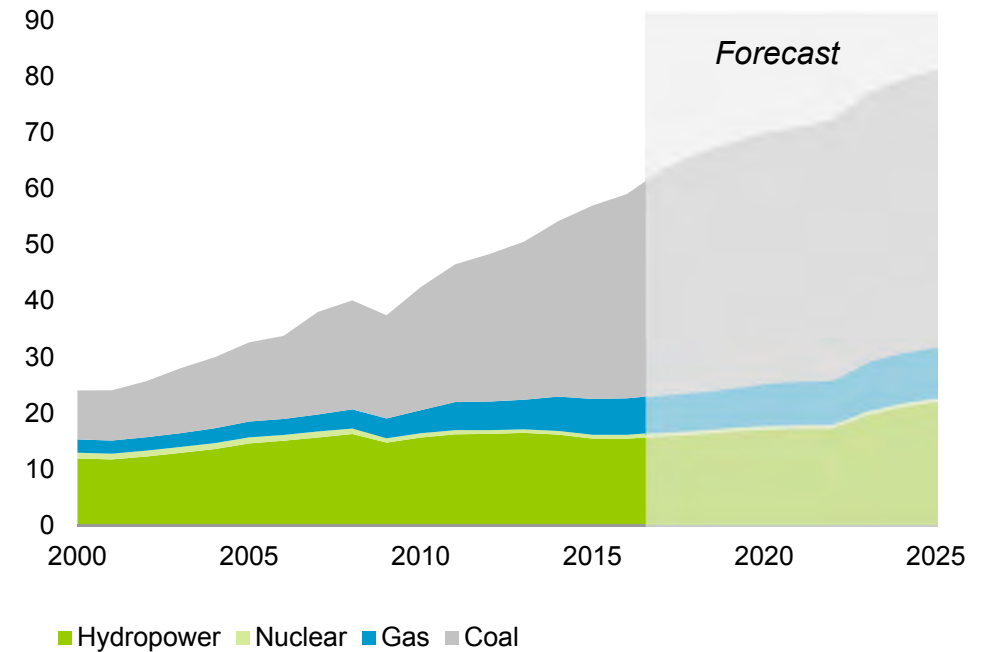
Tonne CO2 / tonne aluminium



An industry challenge
 Governments will act
 Customers will act
 Companies need to act

Aluminium production by power source

Mill tonnes



Source: CRU

Our global industry's most ambitious climate strategy

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



Production
– reduction in
own emissions



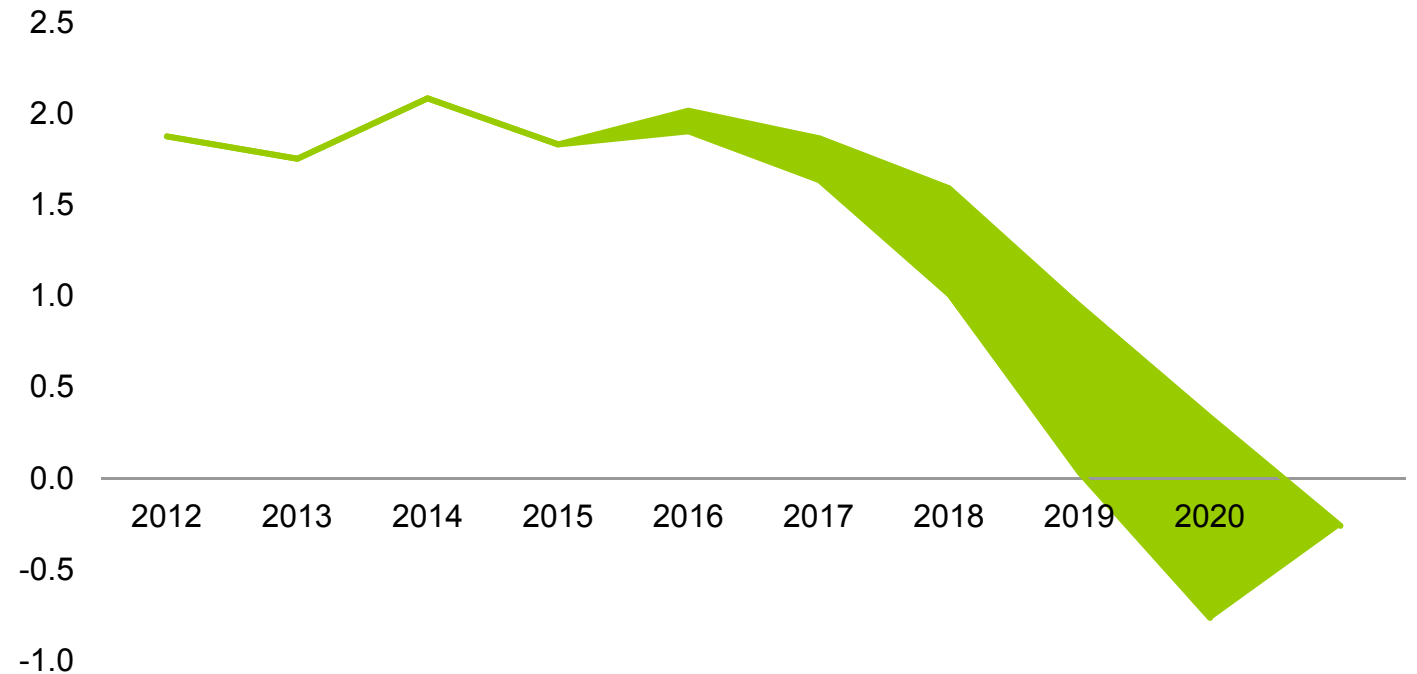
Products – use
phase benefits



Recycling of
post-consumer
scrap

Hydro's CO2 emissions from a life-cycle perspective*

Million kg Co2



* 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*

Improving our footprint




13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND

Making a positive difference



4 QUALITY EDUCATION
8 DECENT WORK AND ECONOMIC GROWTH
16 PEACE AND JUSTICE STRONG INSTITUTIONS

Driving innovation



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION

Targeting the fundamental drivers of long-term development

Aligned with community expectations and needs, and through local partnerships



Contribute to quality education in our communities*



Promote decent work throughout the value and supply chain
Foster economic growth in our communities*



Strengthen local communities and institutions through capacity building
on human rights and good governance

* 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



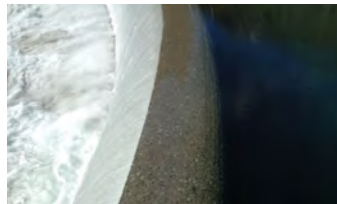
Wind Nordic and Brazil
- Services and potential equity



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



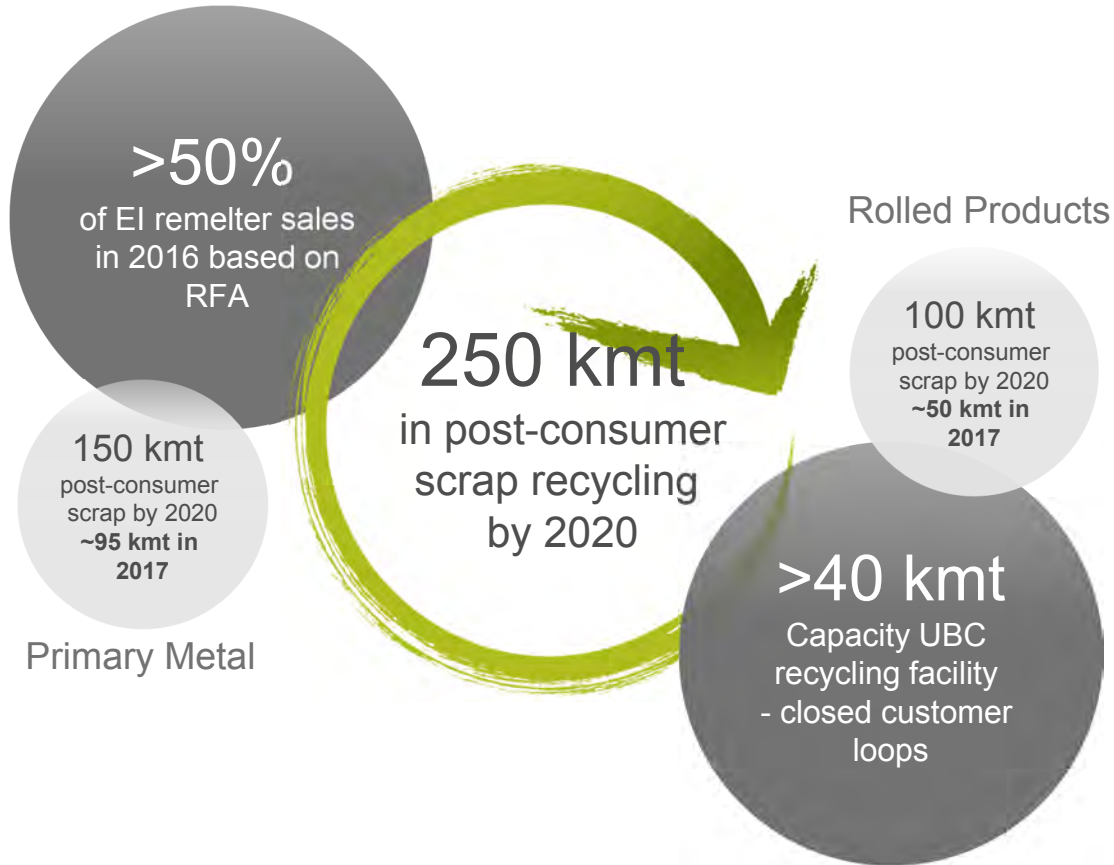
Setting new standards in environmentally friendly and sustainable buildings.



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



HYDRO



Users



Civil society



Commercializing low-carbon aluminium

Promoting responsible aluminium as the metal of the future



Hydro's climate strategy converted into low-carbon products

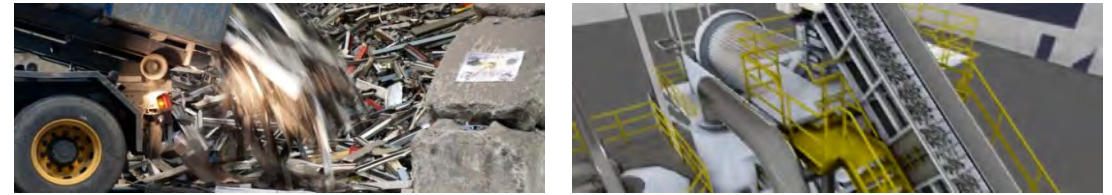
Our uniqueness is our integrated value chain, share of hydro-power and post consumer scrap recycling

Hydro 4.0



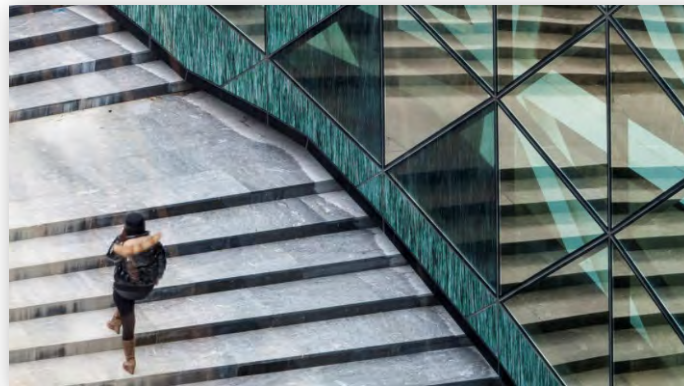
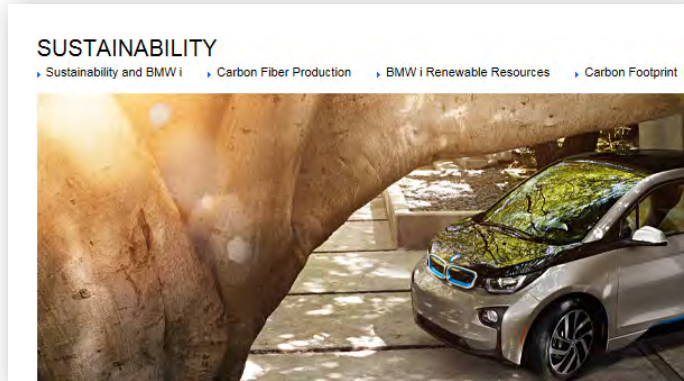
All-in approach
Maximum or below
4.0 kg CO₂e/kg Al
Verified according to
ISO 14064 by DNV GL

Hydro 75R



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

