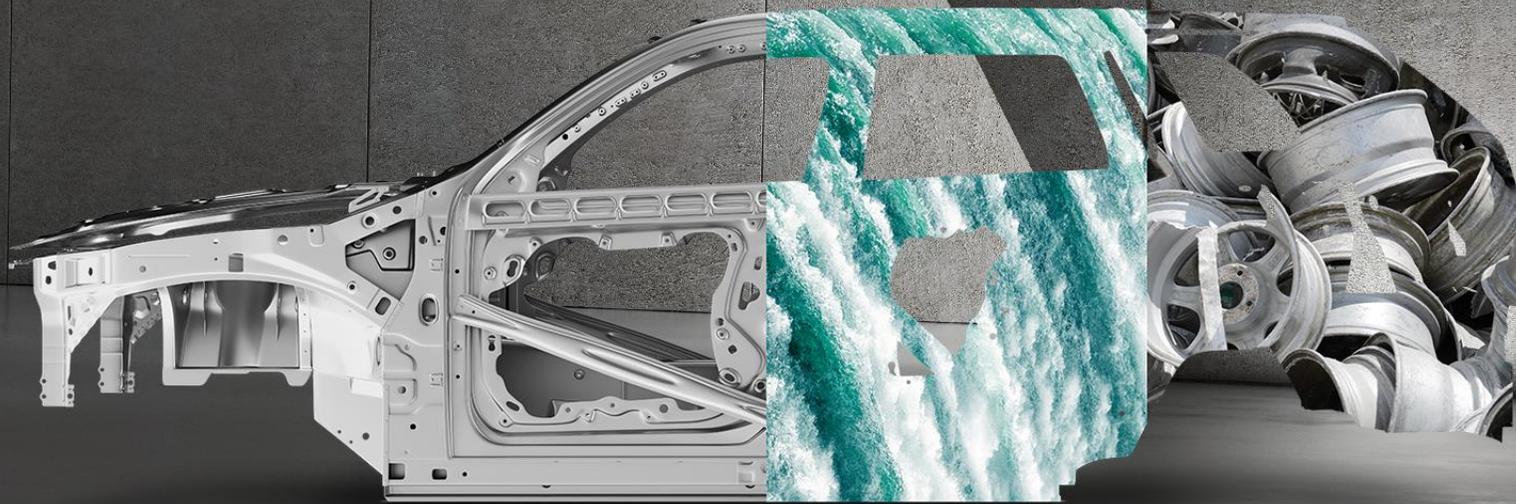




# Capital Markets Day 2023



Vækerø, Norway

November 29, 2023

# Cautionary note



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.

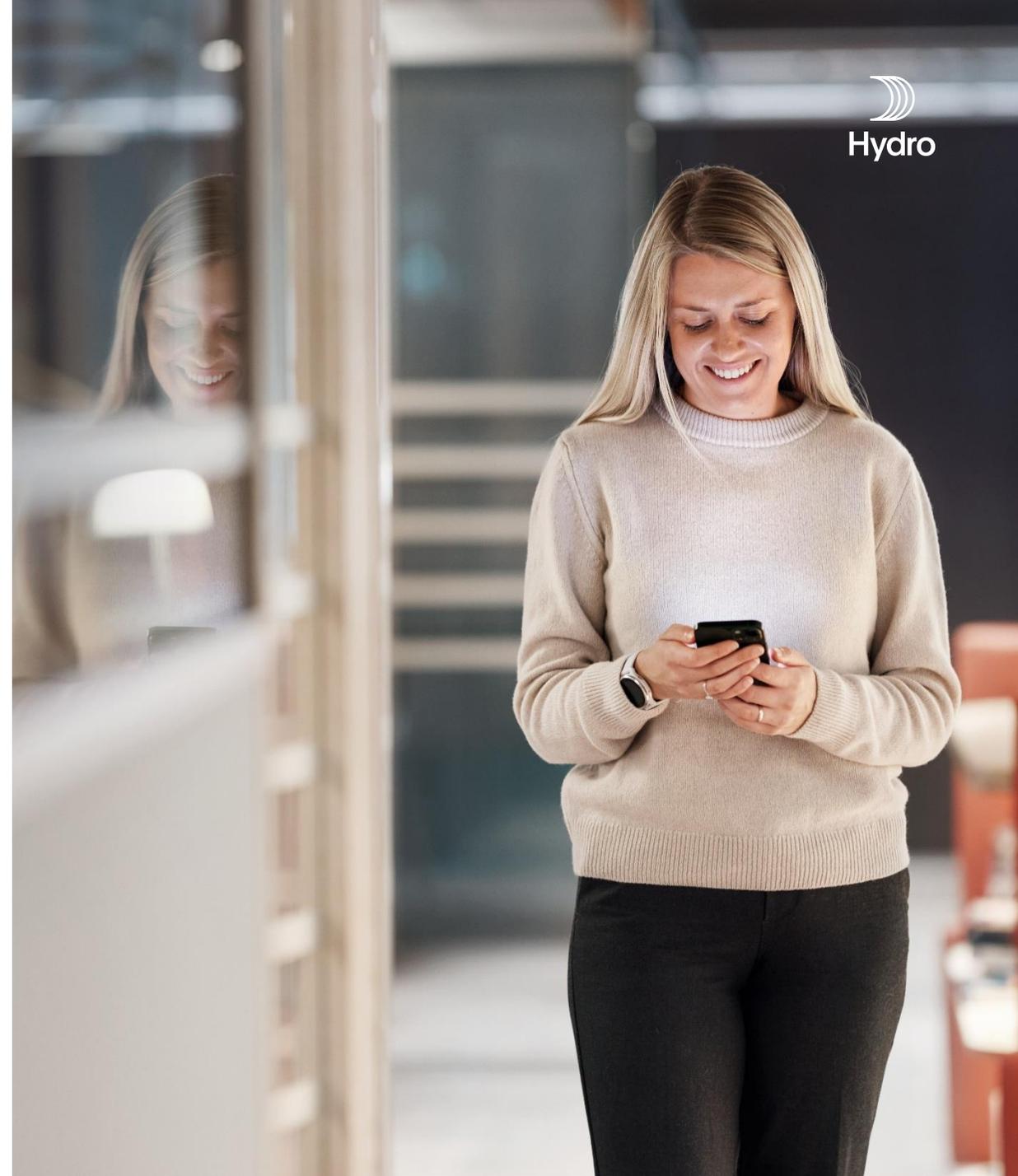
Although we believe that the expectations reflected in such forward-looking statements are reasonable, these forward-looking statements are based on a number of assumptions and forecasts that, by their nature, involve risk and uncertainty. Various factors could cause our actual results to differ materially 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, November 29

All times CET

- 09:00-09:05 Welcome
- 09:00-09:50 Pioneering the green aluminium transition, powered by renewable energy
- 09:50-10:10 Hydro going to market
- 10:10-10:40 Q&A and break
- 10:40-12:00 Business area presentations
- 12:00-13:00 Q&A and lunch
- 13:00-13:40 Strengthened resilience and greener value creation
- 13:40-14:00 Q&A
- 14:15-15:00 Sustainability roundtable
- 15:15-16:00 Finance roundtable





# Pioneering the green aluminium transition, powered by renewable energy

Capital Markets Day 2023

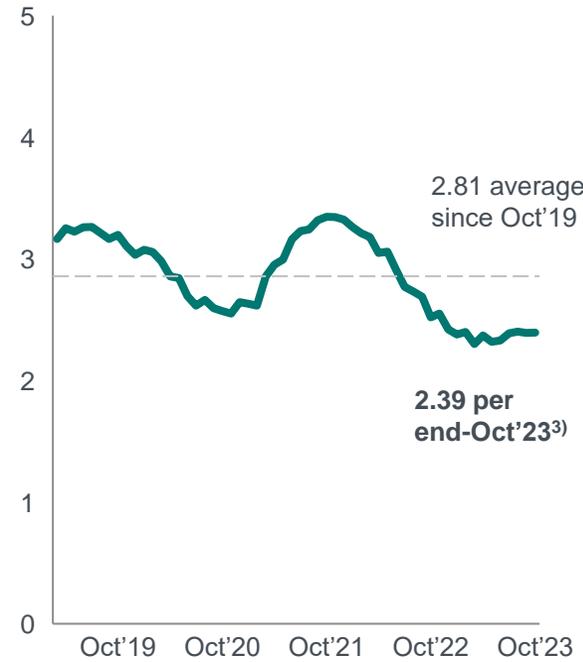
Hilde Merete Aasheim

President and Chief Executive Officer

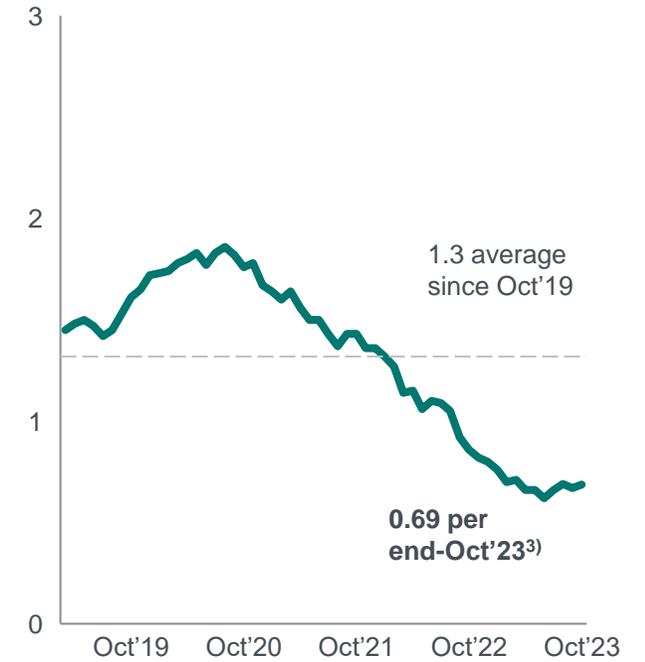


# Health and safety #1 priority

**TRI<sup>1)</sup> per million hours worked**  
12 months rolling average



**HRI<sup>2)</sup> per million hours worked**  
12 months rolling average



1) Total Recordable Injuries includes own employees and contractors

2) High Risk Incidents included own employees and contractors

3) Average over period

# 2020: Set out a forceful agenda towards 2025



Profitability & Sustainability



## 1 Strengthen position in low-carbon aluminium



## 2 Grow in new energy



Develop a more robust, higher earnings and more sustainable company

# Delivered on the 2025 agenda

## Improved earnings

EBITDA margin podium positions in all business areas compared to our peers



## Improved portfolio

Reducing risks and freeing up cash towards areas with higher profitability

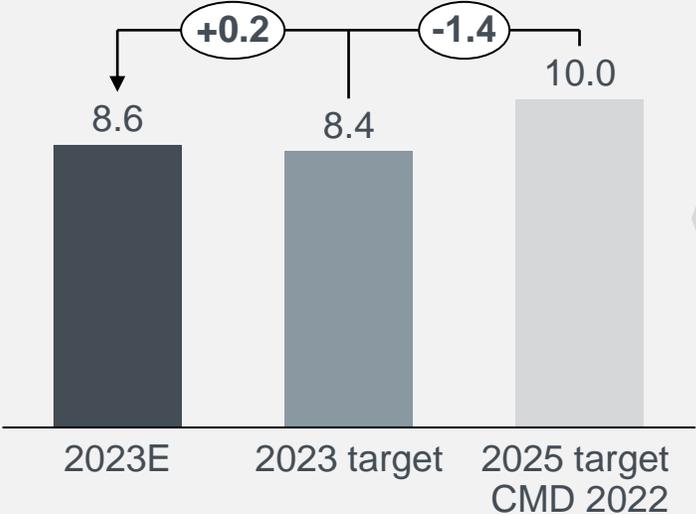


## Improved sustainability

Low-carbon aluminium getting a lot of traction, on track to decarbonize portfolio

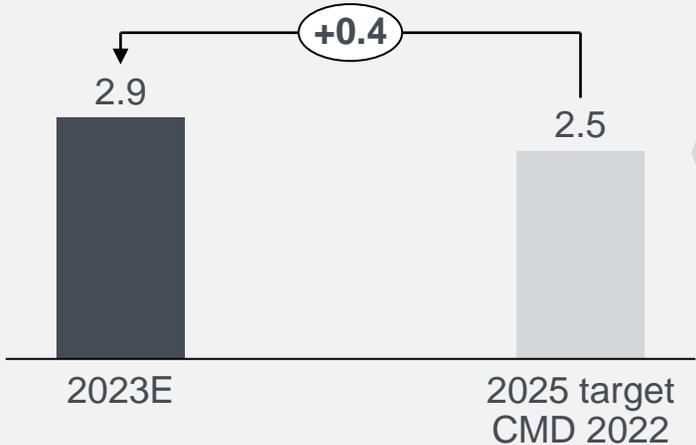


Improvement program  
NOK billion



- Operational excellence
- Fixed cost
- Procurement

Commercial initiatives  
NOK billion



- Green premiums
- Product mix and margins
- Market share growth

# Delivered on the 2025 agenda

## Improved earnings

EBITDA margin podium positions in all business areas compared to our peers



## Improved portfolio

Reducing risks and freeing up cash towards areas with higher profitability



## Improved sustainability

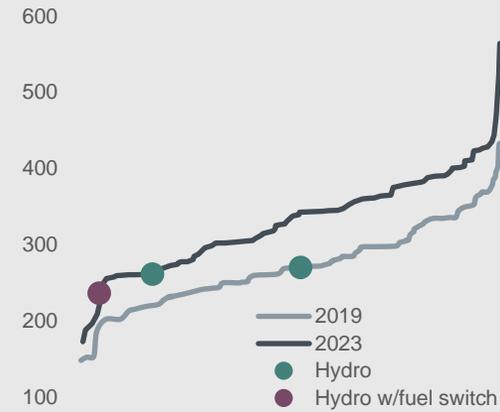
Low-carbon aluminium getting a lot of traction, on track to decarbonize portfolio



## Podium positions in all business areas

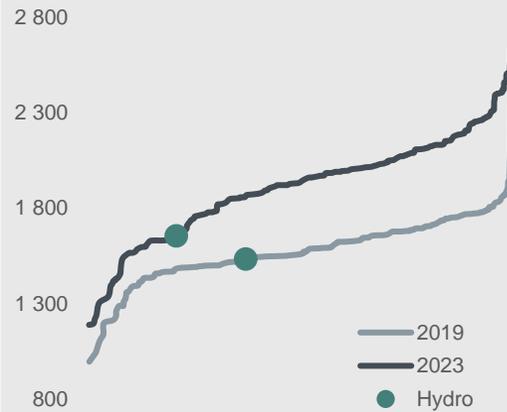
### Bauxite & Alumina

Alumina Cost Curve, USD per tonne<sup>1)</sup>



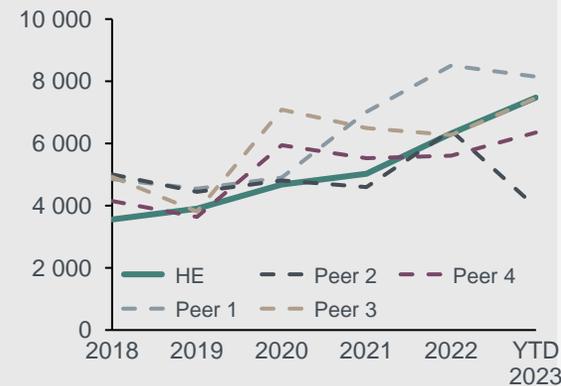
### Aluminium Metal

Smelter Cost Curve, USD per tonne<sup>1) 2)</sup>



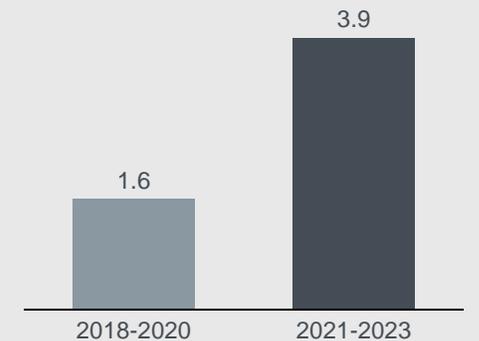
### Extrusions

EBITDA, NOK per tonne



### Energy

Average AEBITDA, NOK billion<sup>3)</sup>



1) Source: CRU, global cost curves. 2) Hydro position: 50% Qatalum, 20% Alouette, 12.4% Tomago, 100% Albras, Slovalco and Norwegian smelters. 3) Excluding Aluminium Metal repurchase / internal buy-back contract, 2023 Q3 YTD annualized

# Delivered on the 2025 agenda

## Improved earnings

EBITDA margin podium positions in all business areas compared to our peers



## Improved portfolio

Reducing risks and freeing up cash towards areas with higher profitability



## Improved sustainability

Low-carbon aluminium getting a lot of traction, on track to decarbonize portfolio



### Reallocating capital

2021



Sale of rolling business

2023



Sell down at Alunorte

### Deliver on strategic priorities

Grow in recycling



Grow in Extrusions



Grow in Hydro Rein capital light



# Delivered on the 2025 agenda

## Improved earnings

EBITDA margin podium positions in all business areas compared to our peers



## Improved portfolio

Reducing risks and freeing up cash towards areas with higher profitability



## Improved sustainability

Low-carbon aluminium getting a lot of traction, on track to decarbonize portfolio



## Climate

On track to achieve **10%** GHG emissions reduction by 2025



Pursuing **HalZero & CCS** For new capacity and existing smelters



## Nature

Deliver on our **1:1 rehabilitation target**



On track to **eliminate landfilling** of recoverable waste by 2040



## Social

Progressing on education goal targeting **500,000 people** YTD 180,000 by 2030



**Just transition framework** implemented in 2023

# 2025: Strategic resilience in a world in transition

## Improved earnings

EBITDA margin podium positions in all business areas compared to our peers



## Improved portfolio

Reducing risks and freeing up cash towards areas with higher profitability



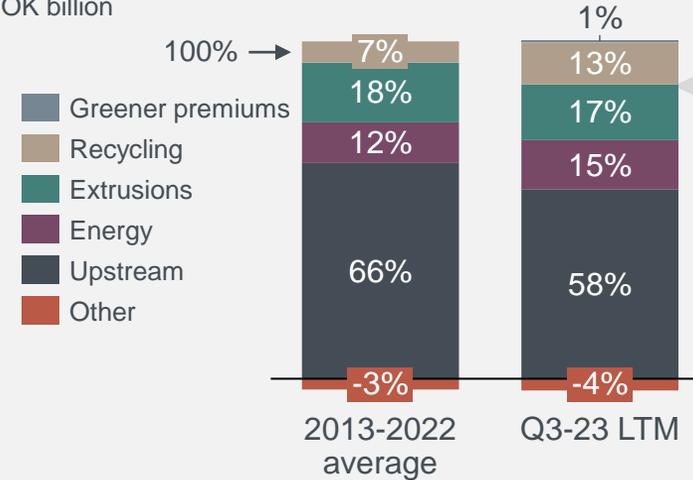
## Improved sustainability

Low-carbon aluminium getting a lot of traction, on track to decarbonize portfolio



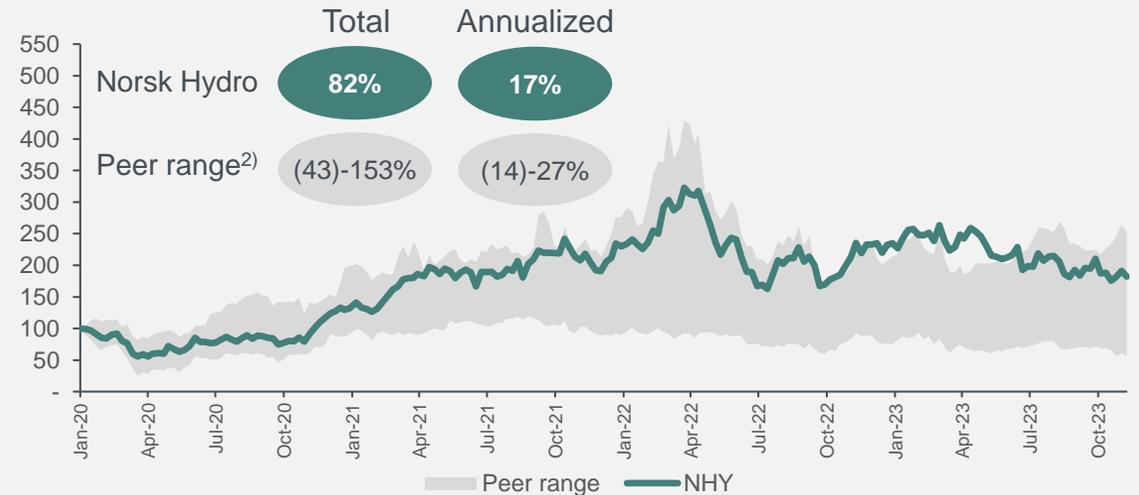
## Simplified operating cash flow development

NOK billion



- Greener volumes and premiums
- More robust earnings portfolio in Extrusions
- Higher share of earnings from recycling

## Stock price index (incl. dividend) / TSR<sup>1)</sup>



1) TSR calculated including reinvesting dividends and Hydro and all peers shown in same currency (USD).  
 2) Peer group includes Nalco, Rusal, Alcoa, Century Aluminium, Hindalco, Chalco, Grupa Kety, Constellium, Kaiser, ProfilGruppen, Tredegar Corporation.  
 Source: Refinitiv Workspace

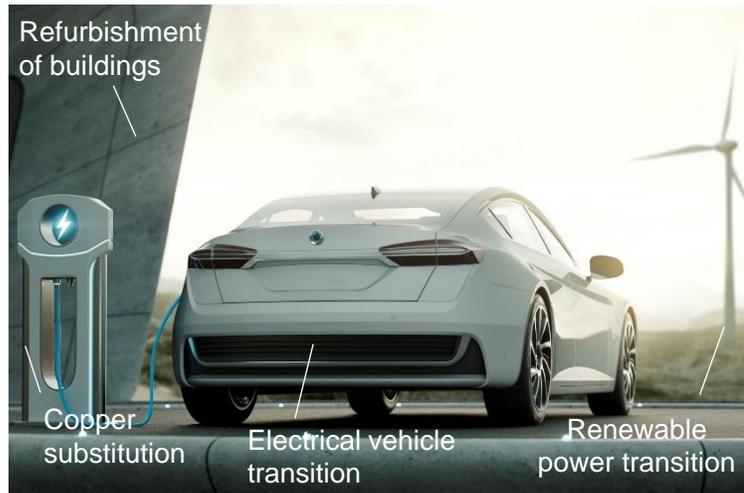
# The world around us has changed since 2020



Megatrends of geopolitical tensions and sustainability converge, driving new risks and opportunities



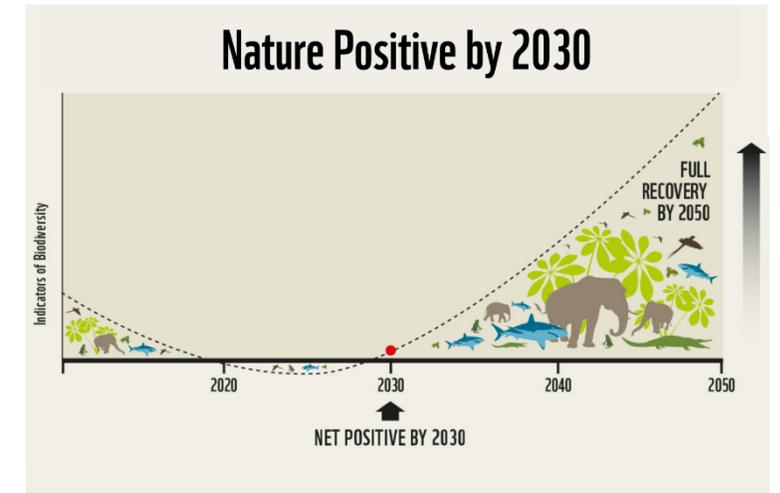
# The future of aluminium in the green transition



Aluminium a key enabler for the green transition



Renewable energy is at the core of green transition



Greener is more than low-carbon



# Hydro has a unique position to succeed in this new reality

118 years of industrial experience, solving global challenges through innovation, technological advances and strong commercial mindset

- Market leading position in low-carbon aluminium with a concrete roadmap towards zero
- Unique position with captive renewable energy resources and competence
- Low and robust cost position and strong track record on shareholder value creation
- Preferred supplier and sustainability partner on the way to zero, integrated value chain enables traceability “under one roof”
- Strong positions within the main markets in the EU and North America



# Shifting gear to capture opportunities in a new reality



Key steps for Hydro to lead the green aluminium transition towards 2030



1

Step up growth investments in Recycling and Extrusions to take lead in the market opportunities emerging from the green transition



2

Step up ambitions within renewable power generation



3

Execute on ambitious decarbonization and technology road map and step up to contribute to nature positive and a just transition



4

Shape the market for greener aluminium in partnership with customers

# Step up growth investments in Extrusions



- 1
- 2
- 3
- 4



- Increase market share in high-growth, non-commoditized segments leveraging innovation and solution offerings



- Develop and grow capacity and capabilities through investments in new presses, fabrication, value added services and recycling



- Commercial opportunities from sustainability, through segmentation and greener offerings



- Increase digitalization and standardization to drive procurement excellence and reduce energy consumption

## Extrusions EBITDA

NOK billion (real 2023)



1) Target 2025 in nominal terms as communicated in 2021. Range target for 2030 in real terms

# Step up growth investments in Recycling



- 1
- 2
- 3
- 4



Strengthen scrap sorting capabilities; secure feedstock



Expand global asset base across the value chain

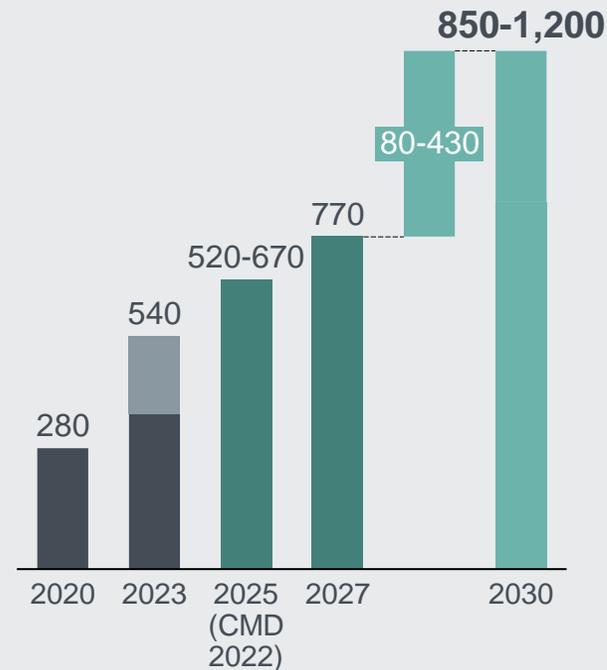


Diversify product portfolio, develop innovative solutions

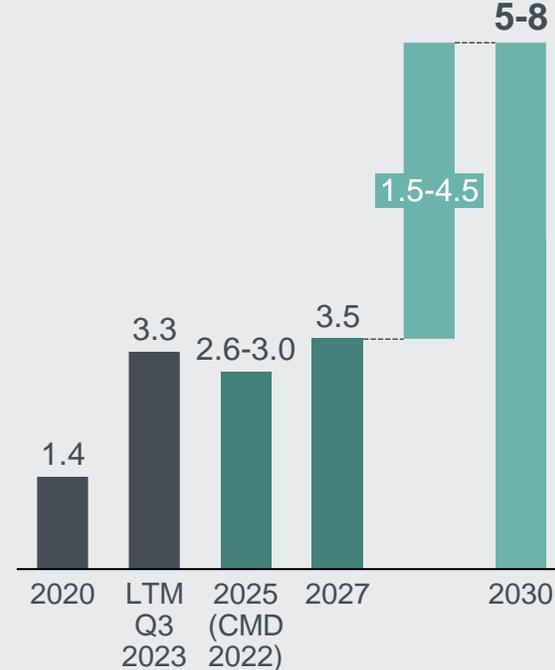


Shape market for recycled products in partnership with customers

PCS capacity<sup>1)</sup>  
Tonnes ('000)



Recycling EBITDA  
NOK billion



■ Realized ■ Target ■ Installed capacity ramping up

1) Range based on capex. High-range include ~70% of further potential capex given market and M&A.

# Step up our ambitions and efforts in renewable power generation

- 1
- 2
- 3
- 4

Secure access to renewable power through hydropower system upgrades and expansions



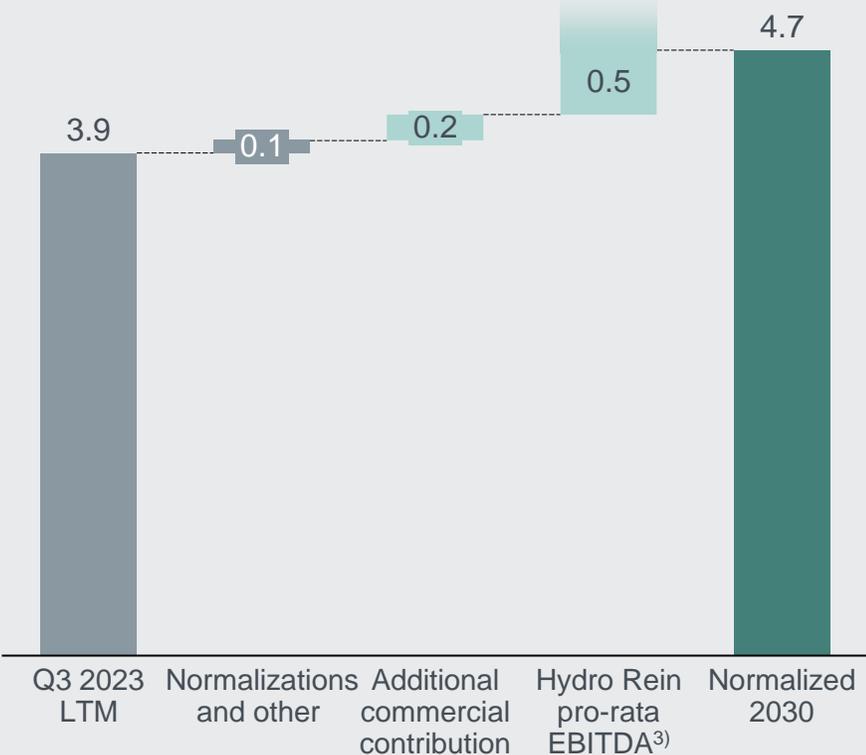
- Grow and upgrade existing hydropower plants to capture peak prices, increasing value of flexibility
- Expand market operations and commercial ambitions based on hydropower reservoir capacity, balancing power from wind and solar and commercial positions

Hydro Rein to deliver onshore wind and solar projects, main focus in the Nordics and Europe



- Pursue profitable projects through JV owned by Hydro and Macquarie Asset Management
- Current portfolio<sup>1)</sup> add 2.4 TWh to Rein's captive power and 5.3 TWh long term PPAs to Hydro
- Sustainable and attractive risk-adjusted returns of eIRR 10-20%

EBITDA 2030 Hydro Energy Classic and Hydro Rein  
NOK billion<sup>2)</sup>



1) Projects in construction and secured 2) Commercial contribution in AEBITDA Q3-23 LTM of NOK 0.5 billion included 3) Hydro's share of joint venture EBITDA from assets. Level pending margins, farm downs, growth, debt level/other funding

# Execute on ambitious decarbonization and technology road map, step up to contribute to nature positive and a just transition



- 1
- 2
- 3
- 4



Forcefully deliver on net-zero roadmap, decarbonizing our value chain from mine-to-components



Contribute to a nature positive future through initiatives on biodiversity, emissions reduction and supply chain management



Improve lives and livelihoods wherever we operate by supporting a just transition

# Hydro maintains 2030 climate target, despite portfolio changes



- 1
- 2
- 3
- 4



Hydro reduces total exposure to GHG emissions<sup>1)</sup> by 47% from 2018 to 2030

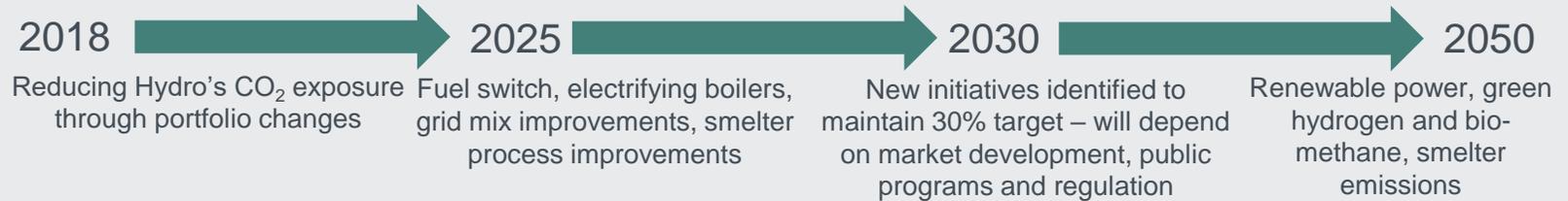


Hydro maintains 30% target by 2030, despite portfolio changes



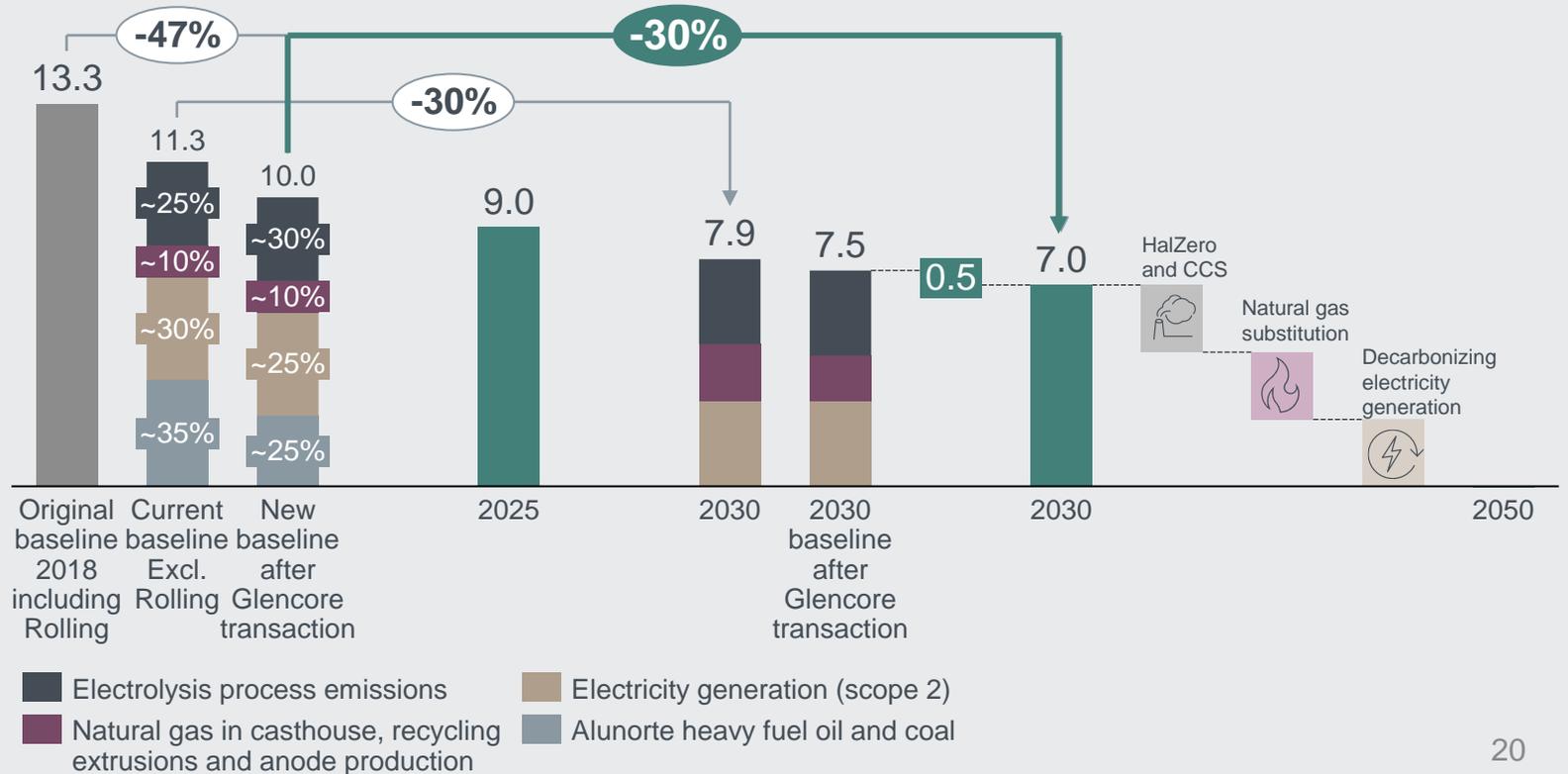
Hydro's ambitions and ability to deliver low-carbon or near zero aluminium remains unchanged

1) Scope 1 and scope 2



## GHG emissions – ownership equity

Million tonnes CO<sub>2</sub>e (% of 2018 baseline emissions)<sup>1)</sup>



# Contribute to a nature positive future through initiatives on biodiversity, waste handling and land-use

1 | 2 | **3** | 4

## No Net Loss Ambition for Paragominas



- No Net Loss of biodiversity for our bauxite mine, from a 2020 baseline
- Strengthening onsite mitigation and rehabilitation
- Investing in conservation and restoration offsets

## Partnerships for Nature Positive Outcomes



- Develop opportunities for positive nature impacts beyond delivering NNL outcome for mine
- Partnership with Imazon and IPAM
- Creating value for nature and society where we operate

## Supply chain emissions



- Establish inventories and baselines for material pollutants linked to Hydro's supply chain by end of 2024
- World Economic Forum's Alliance for Clean Air

# Improving lives and livelihoods wherever we operate by supporting a just transition



- 1
- 2
- 3
- 4

## Just transition framework



Respect and promote human rights



Support positive local development



Invest in education



Responsible supply chain

# Shape market for greener aluminium, in partnership with customers

- 1
- 2
- 3
- 4

Utilize Hydro's combined strengths as a fully integrated company from mine to metal

Partner with strategic customers to grow market for greener aluminium

Partner with Original Equipment Manufacturers to champion joint decarbonization targets



# Greener earnings uplift potential 2030

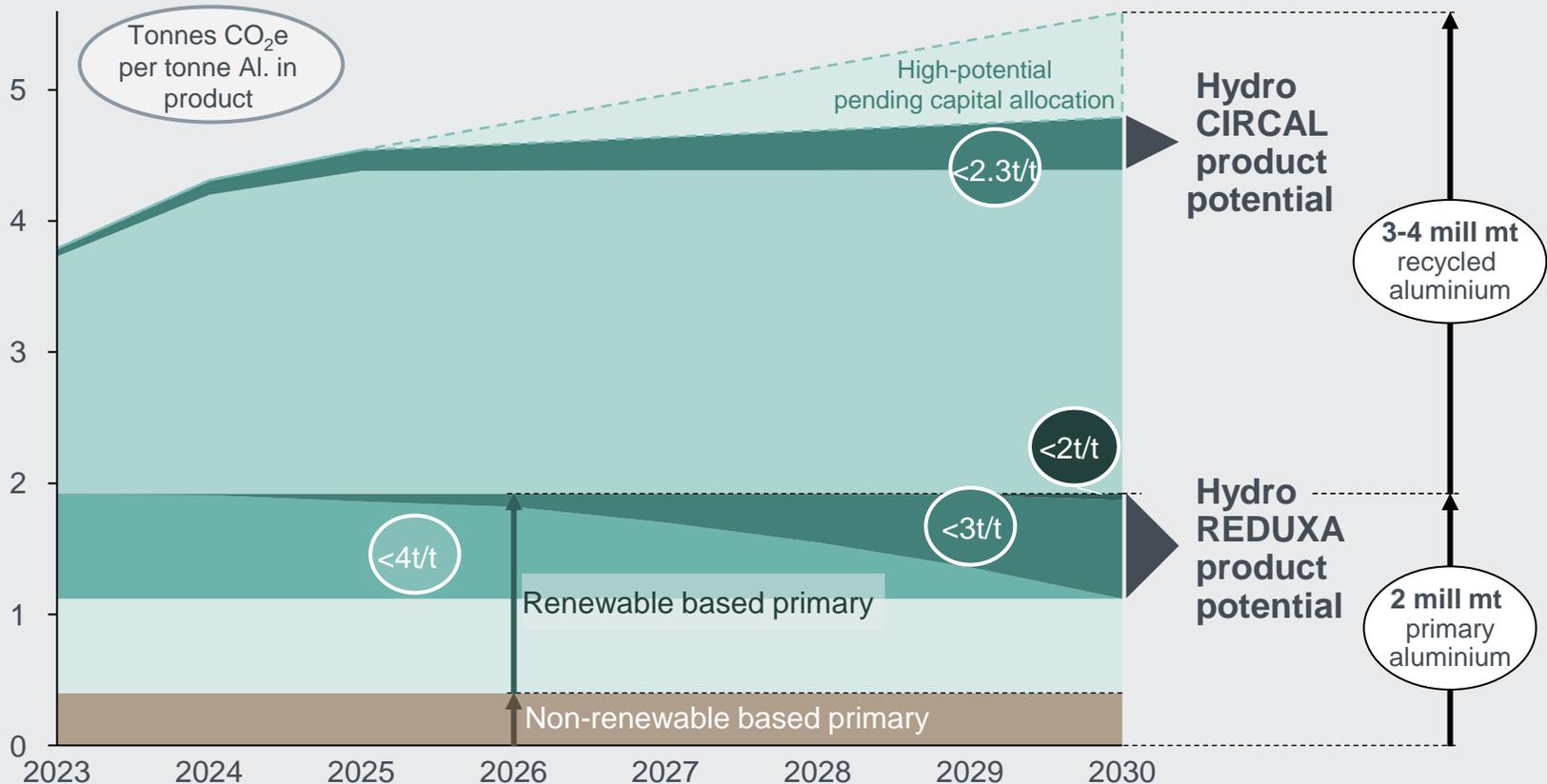


# NOK 2 billion<sup>1)</sup>

Hydro is pioneering the green aluminium transition

## Greener product capability from total aluminium portfolio<sup>1)</sup>

Million tonnes capacity potential



<sup>1)</sup> Based on 2030 EU ETS cost and relative CO<sub>2</sub> reduction vs Hydro REDUXA 4.0 at current industry traded upcharge. Hydro REDUXA and CIRCAL potential based on estimated certification capacity. Primary capacity based on equity share renewable power. Hydro CIRCAL products have post-consumer scrap content > 75%

# Strategic direction – business area implications



Bauxite & Alumina

- Execute on 2030 decarbonization targets and position as sustainability leader
- Develop low-carbon offering
- Strengthen profitability through podium position and optimized capex



Energy

- Pursue profitable captive hydropower growth options
- Hydro Rein JV with Macquarie enables further development of renewable power production
- Batteries to focus on successful execution in current investments
- Hydro Havrand to focus on decarbonization opportunities within Hydro's operations



Aluminium Metal

- Step up growth and be an industry leader within recycling
- Partner with customers to shape markets for low-carbon aluminium
- Deliver on roadmap to net-zero with technology leadership



Extrusions

- Step up growth investments aiming to increase market share in attractive, high-growth segments
- Utilize market leader position to shape the markets for greener aluminium and partner with customers on new greener solutions

Hydro 2030:

# Pioneering the green aluminium transition, powered by renewable energy

## Key priorities towards 2030

1

Step up growth investments in Recycling and Extrusions to take lead in the market opportunities emerging from the green transition

2

Step up ambitions within renewable power generation

3

Execute on ambitious decarbonization and technology road map and step up to contribute to nature positive and a just transition

4

Shape the market for greener aluminium in partnership with customers



# Hydro going to market

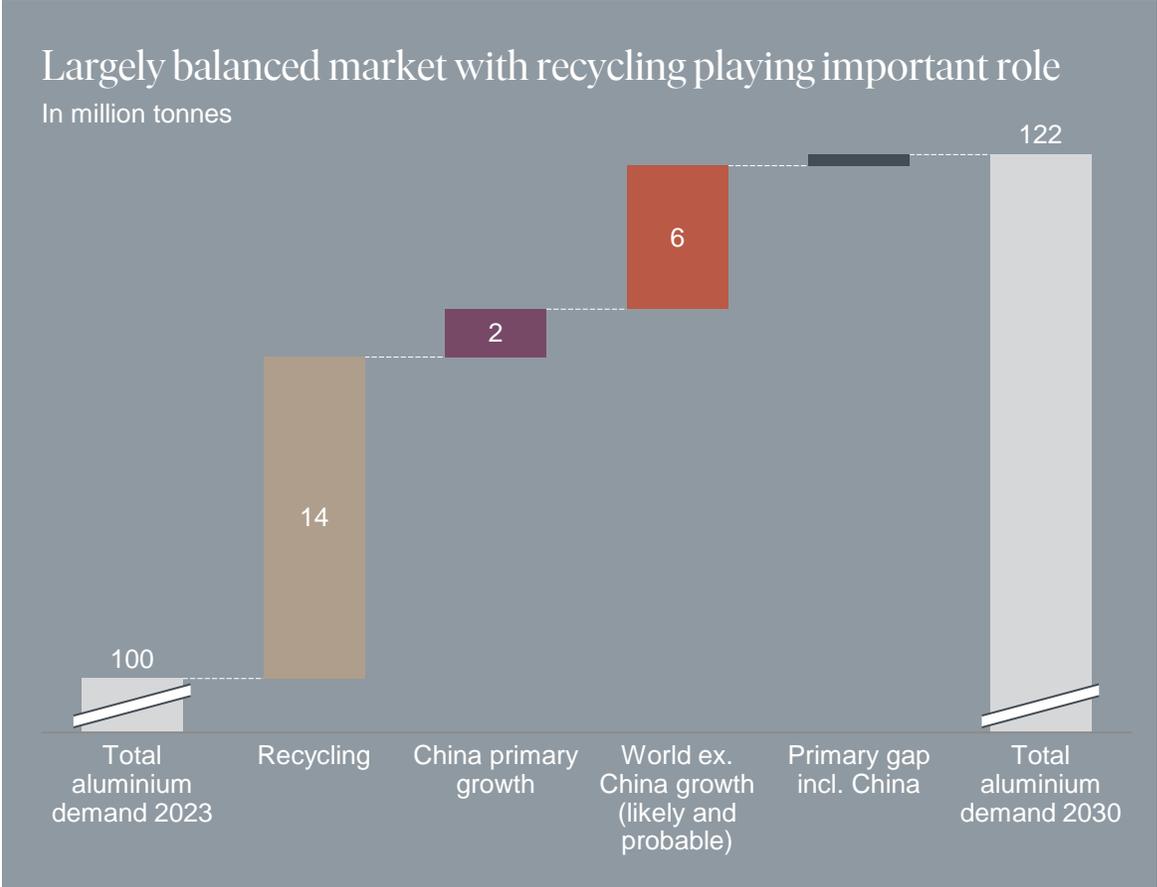
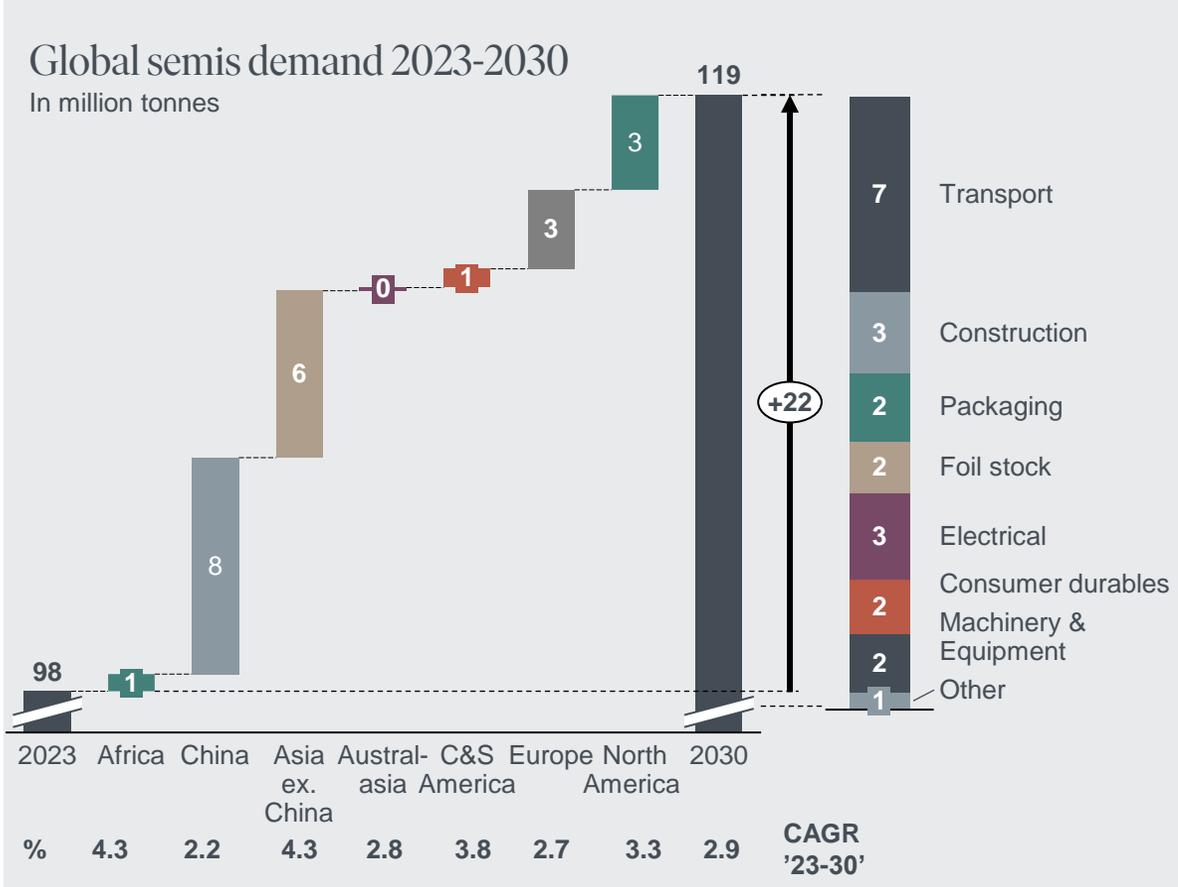
Trond Olaf Christophersen

Executive Vice President, Corporate Development

# Largely balanced markets towards 2030



Healthy demand outlook driven by transport and electrical



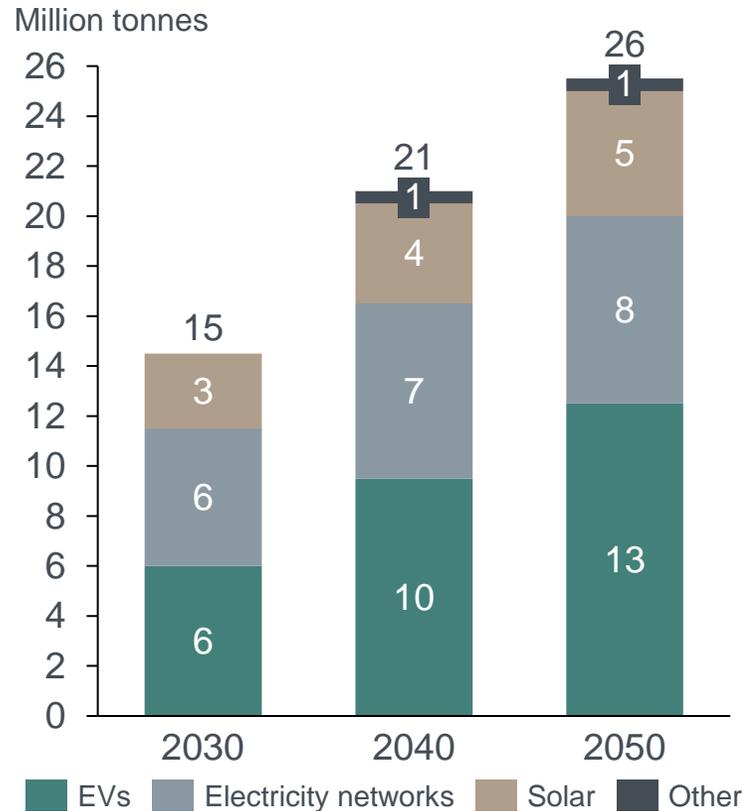
Source: CRU, Hydro Analysis.

# Aluminium is a key enabler for the entire green transition



2030 energy transition will require 15-22 million tonnes aluminium, increasing to 25-42 million tonnes by 2050cc

## Additional aluminium demand from green transition enablers<sup>1)</sup>



### E-mobility transition

Automotive CAGR 2022-30  
**8 - 10%**  
Aluminium content per car to grow by  
**25% in 2030<sup>2)</sup>**

### Circular building & construction solutions

EU set mandatory energy consumption reduction target of **11.7% by 2030**

### Heating & cooling

Market share aluminium from 17% to **25% in 2030<sup>3)</sup>**

### Solar panel solutions

CAGR EU 2022-30 for solar segment  
**10 - 15 %<sup>4)</sup>**

### Copper substitution

Adjusted for conductivity, aluminium is approx **50% lighter** compared to copper <sup>5)</sup>

### Electricity grids

Reaching 1.5 degree scenario will require adding or refurbishing **80 million kms of grids by 2040<sup>6)</sup>**

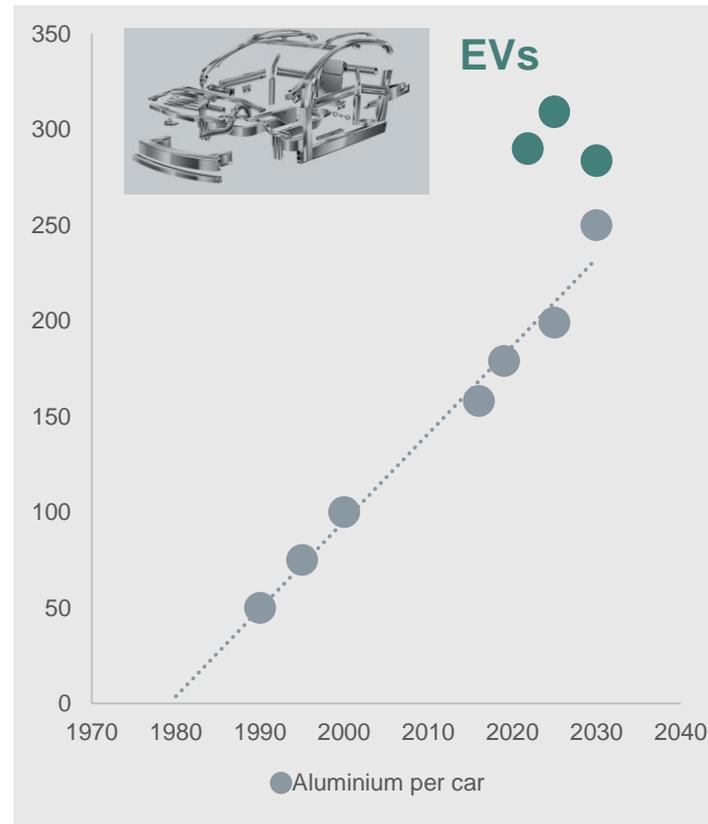
1) Additional demand related to green transition technologies in STEPS scenario. Sources: 2) Ducker 3) Hydro analysis 4) BNEF 5) CRU 6) IEA

# EV transition driving strong growth in aluminium demand

Key choices on component design and material selection are being matured now

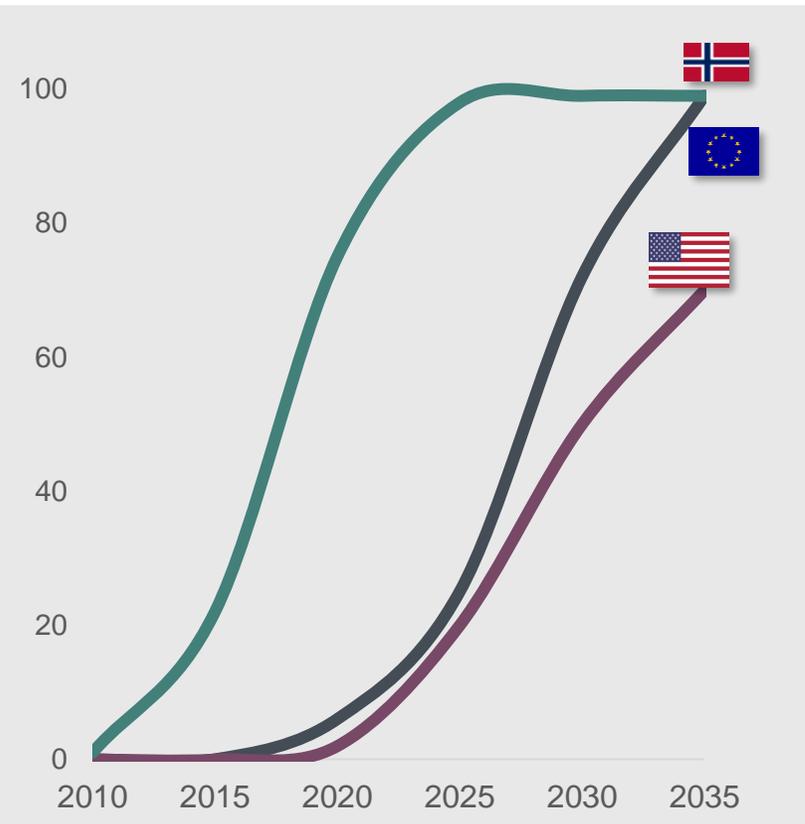
## Aluminium content per car growing

Aluminium in car, kg



## While EV share of sales is growing exponentially

Demand, million tonnes



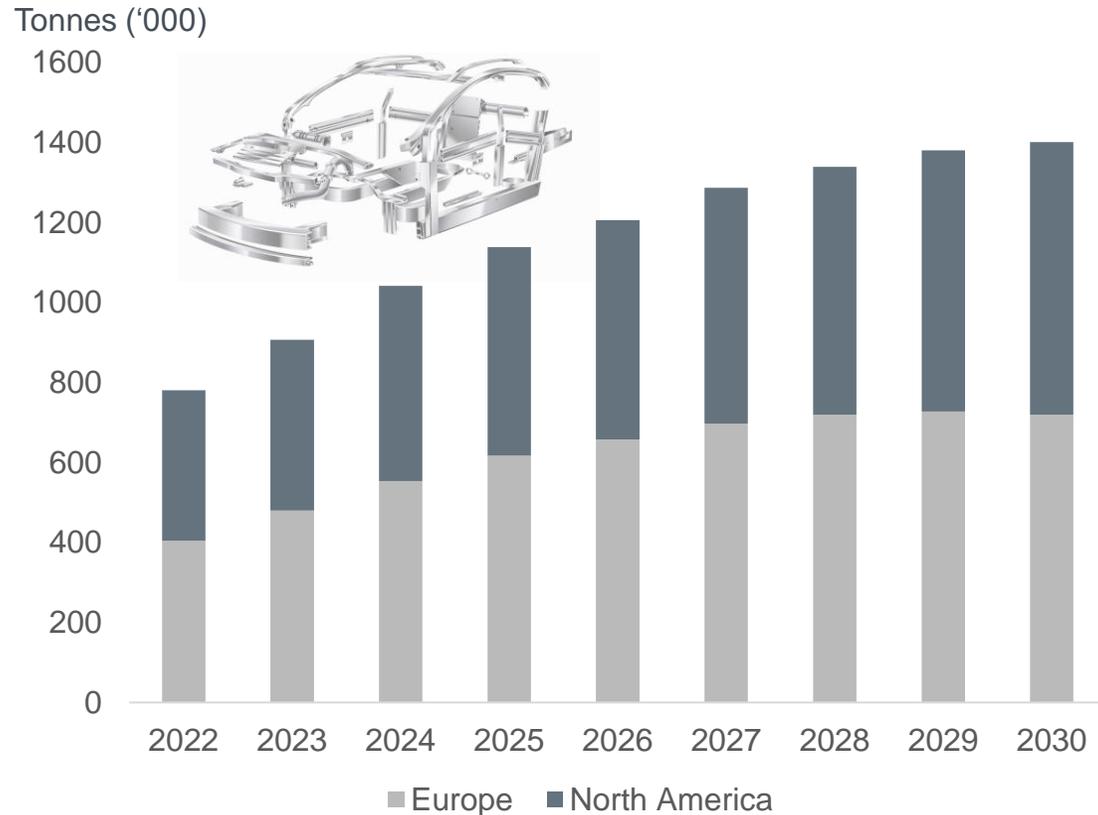
Average aluminium content per car will grow from **205 kg/car in 2022** to **256 kg/car in 2030**

Demand for aluminium from European and American automotive industry to increase by **2.9 million tonnes from 2022-2030**

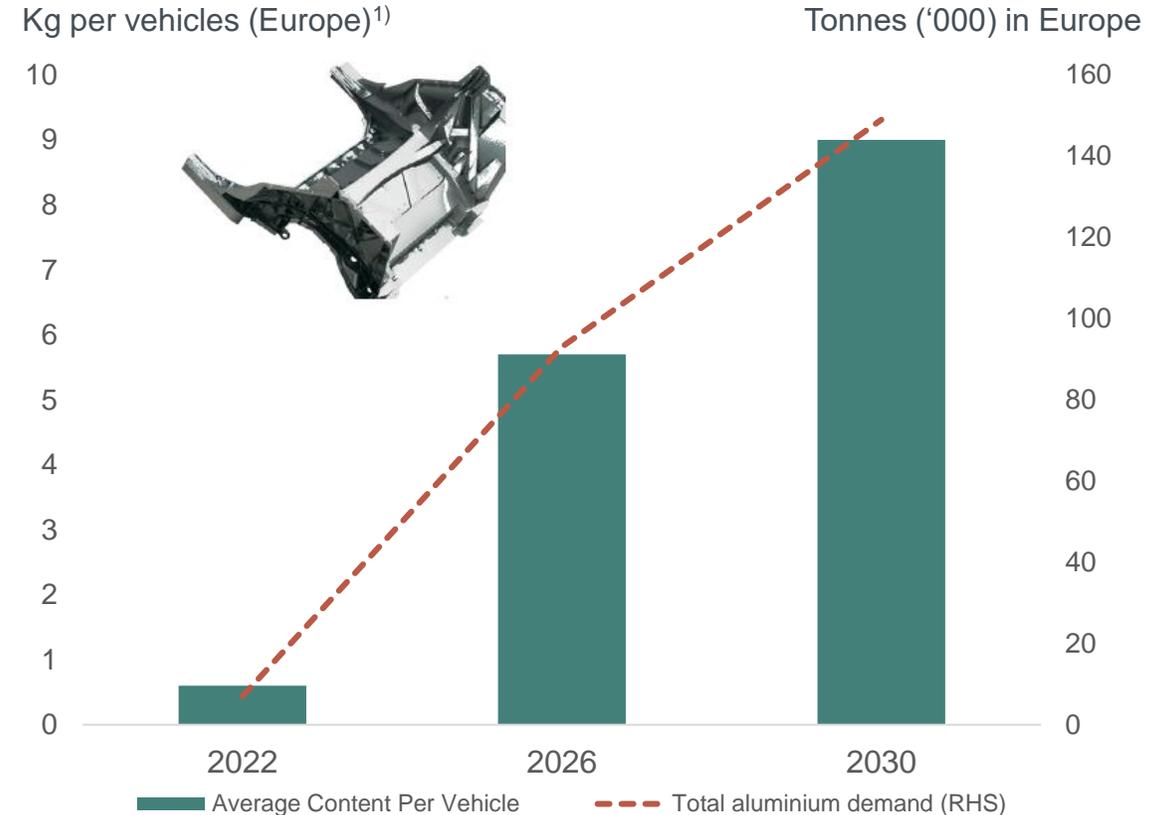
# EVs are not built the same way as internal combustion engines cars

Radical change in design leading to changing dynamics for aluminium usage

## Aluminium demand from extrusions driven by switch to EVs

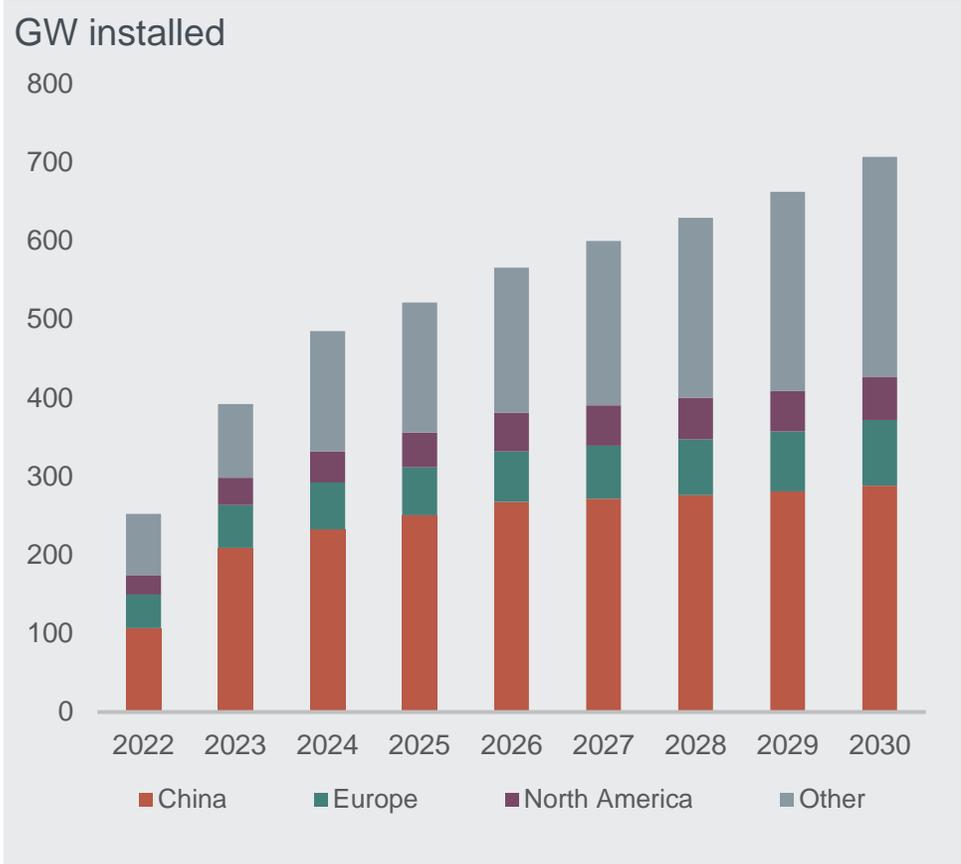


## Use of aluminium large and mega castings accelerating



# Solar market provides strong growth potential for aluminium

Regional growth potential within aluminium mounting systems



CAGR 2022-30  
for global solar  
segment  
**14%**

Chinese domestic  
alu demand from  
solar in 2023  
**~2.8 million  
tonnes**

Potential aluminium  
demand for mounting  
systems in NA and  
Europe  
**600,000 tonnes**

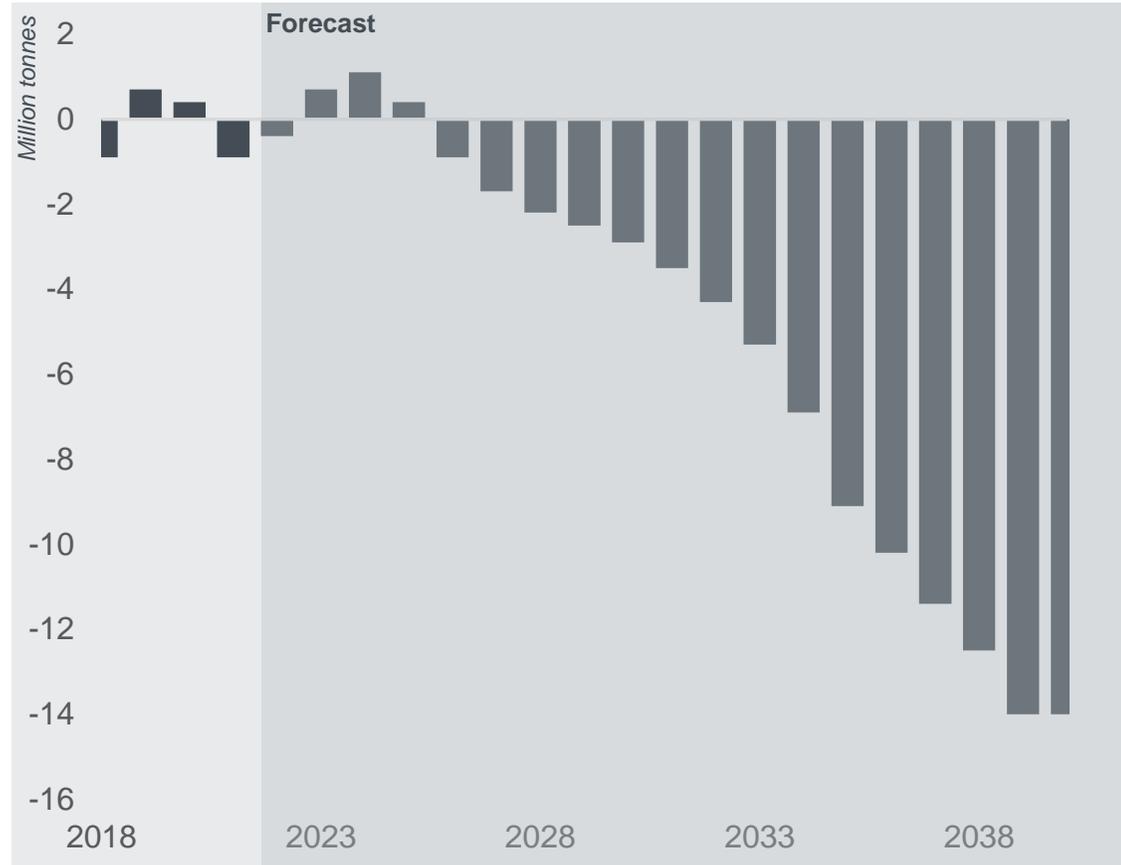


Source: BNEF, Shanghai Metals Market

# Aluminium is an attractive substitute for copper

Especially in segments with high growth from green transition

Copper demand expected to exceed supply from 2027 onwards



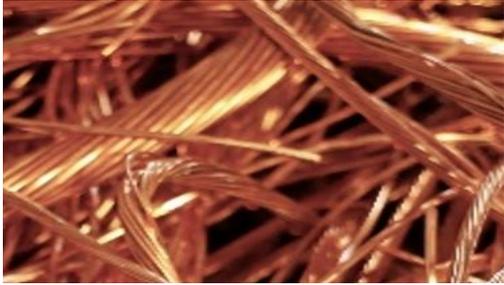
Key substitution facts



**Copper:** ~ \$8,400/t  
**Aluminium:** ~ \$2,200/t



**Price ratio of >3.5x**  
leads to increased substitution away from copper



Aluminium is  
**50% lighter**  
compared to copper  
adjusted for conductivity

# Transition to EVs enables substitution opportunities

EVs contain considerably more copper than combustion engines



## Price, Weight, Emissions

**60-80kg**

Copper content  
in electric  
vehicles

**4x**

Copper content  
compared to  
typical combustion  
engine vehicle

### Application A

Replacing complex copper cabling with  
approx. 3kg of aluminium solution

### Application B

Replacing flexible copper cabling with  
approx. 5 kg of aluminium solution

Potential additional global  
demand in 2030

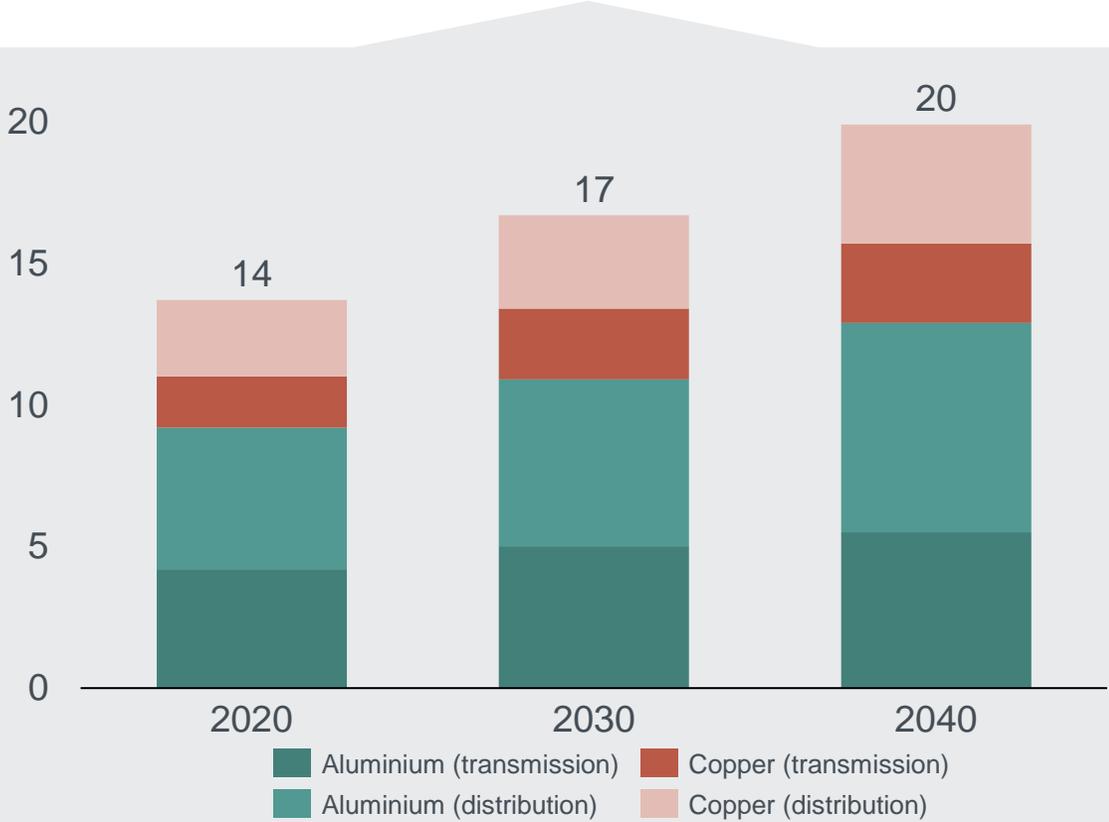
**100kt**

Potential additional global  
demand in 2030

**180kt**

# Green transition drives substantial expansion of electricity grids

Average annual demand for aluminium by 2040 in stated policies scenario  
Million tonnes



Source: International Energy Agency

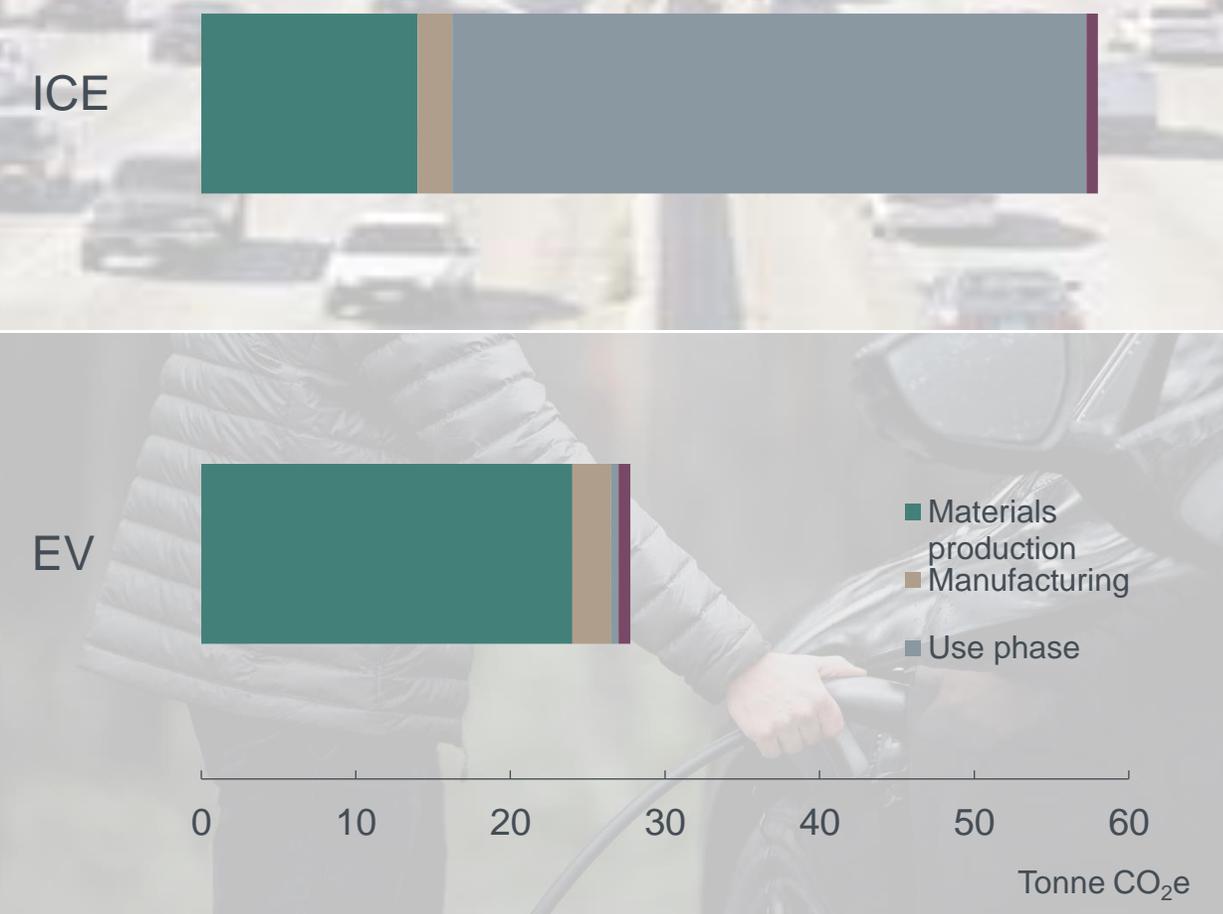


Reaching 1.5 degree scenario requires adding or refurbishing 80 million kms of grids by 2040

International Energy Agency 2023, Electricity Grids and Secure Energy Transitions

# From cutting tailpipe emissions to cutting embedded emissions

## Carbon Footprint ICE vs EV



**83%**

Of the embedded emissions from aluminium, steel and polymer

**+40%**

Emissions from materials, including batteries, increase 40% from ICE to EV<sup>1)</sup>

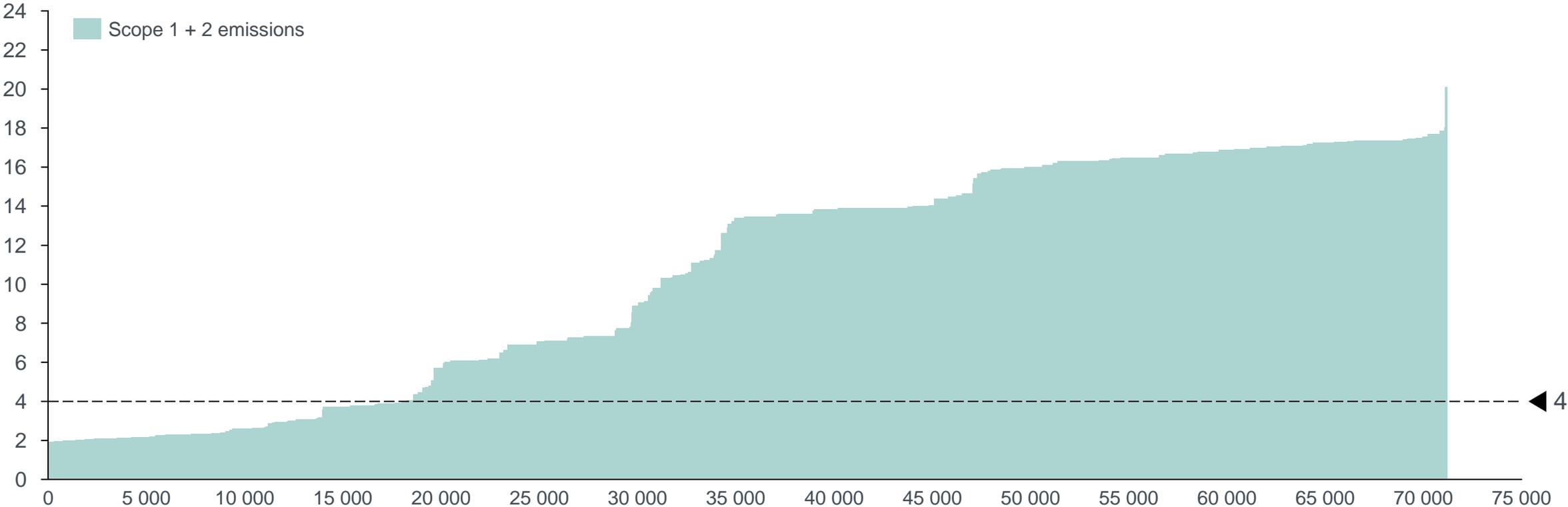
1) Polestar Life Cycle Assessment report

# Aluminium smelter perspective: 18 million mt produced globally with CO<sub>2</sub> footprint below 4 kgCO<sub>2</sub>/kg



## Aluminium smelter emissions curve 2023

Tonnes CO<sub>2</sub>e per tonne Aluminium

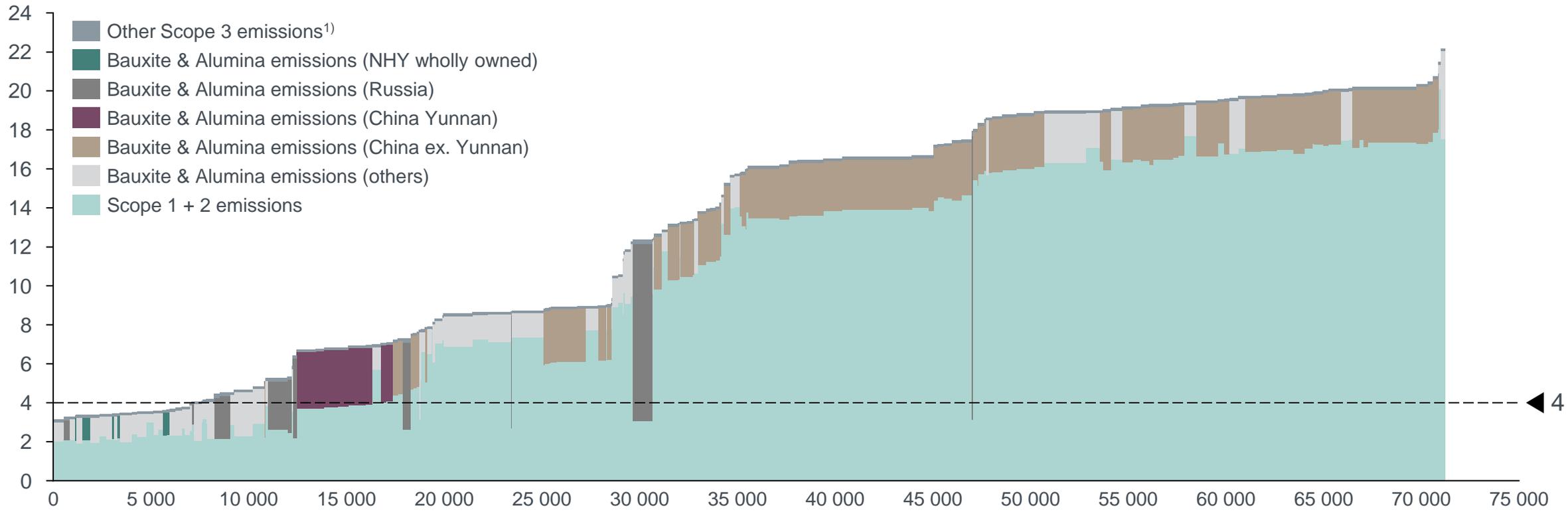


# Full value chain perspective: 7 million mt of primary production with embedded emissions below 4.0 kgCO<sub>2</sub>/kg aluminium



## Cradle-to-gate emissions curve 2023

Tonnes CO<sub>2</sub>e per tonne Aluminium



Source: CRU, Hydro Analysis.  
 1) Transportation, casting, anode transport

# The green transition represents a massive shift for the aluminium industry



## Above market growth towards 2030



8%-10%<sup>1)</sup>



10%-15%<sup>2)</sup>



5%-8%<sup>3)</sup>

1) Automotive CAGR 2022 - 2030  
2) Solar CAGR EU 2022 -2030  
3) HVACR CAGR of major markets 2022-2030

# Many vying to take sustainable aluminium leading positions



Only Hydro with integrated advantage



Share of renewables



Global presence



Primary and recycling capabilities



Decarbonization technology roadmap



Customer co-innovation on end-products



"One roof" mine to component traceability



	Share of renewables	Global presence	Primary and recycling capabilities	Decarbonization technology roadmap	Customer co-innovation on end-products	"One roof" mine to component traceability
Peer 1	Leading	Leading	Mid-range	Leading	Low	Low
Peer 2	Leading	Leading	Mid-range	Leading	Low	Low
Hydro	Significant player in renewable energy	Fully integrated, with global reach	Network of <b>smelters and recyclers</b> , incl. use of PCS at smelters	<b>HalZero</b> and <b>CCS</b> technology development	Close <b>collaboration with customers</b> producing end-products through global presence in Extrusions	Full control from <b>mine to final product</b>
Peer 3	Low	Mid-range	Low	Low	Low	Low
Peer 4	Mid-range	Leading	Low	Mid-range	Leading	Mid-range
Peer 5	Low	Mid-range	Low	Mid-range	Leading	Low

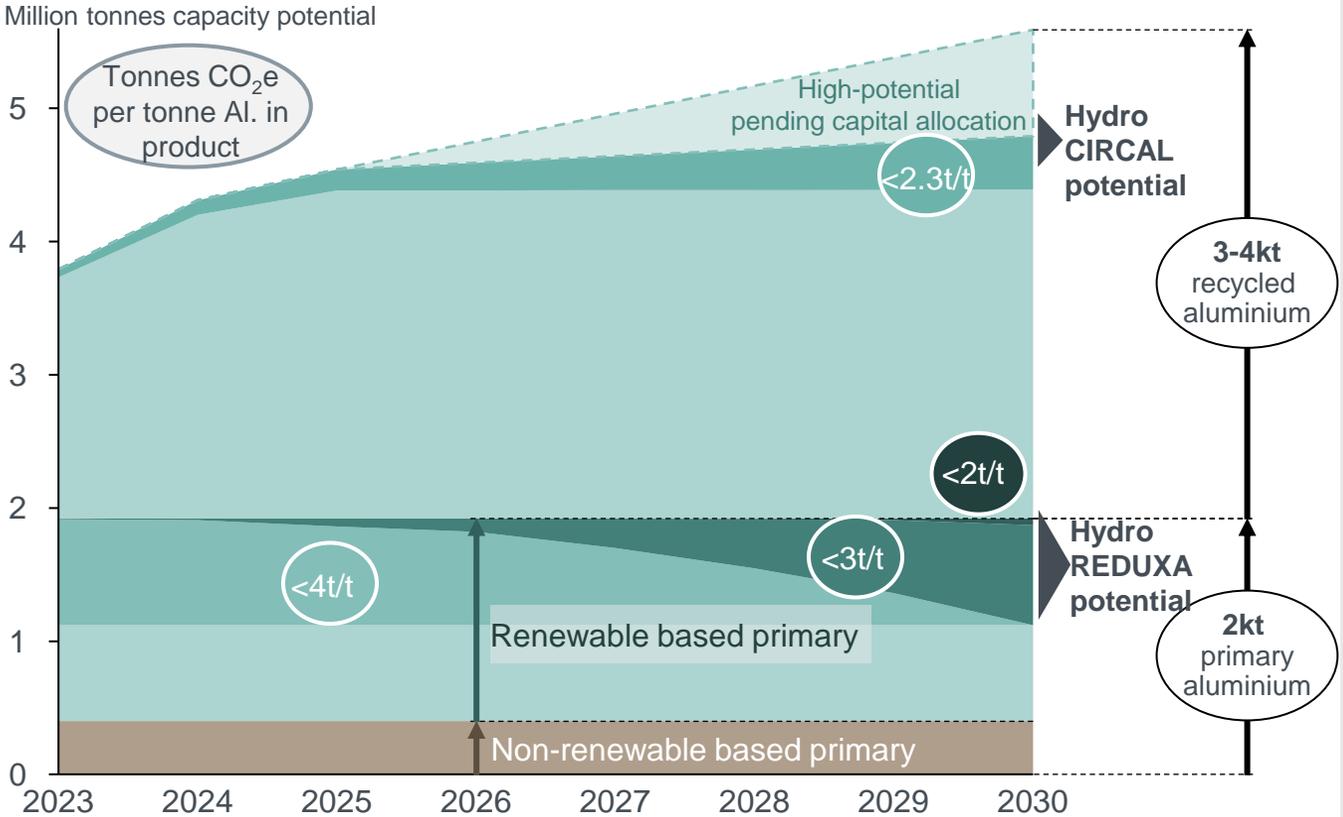
Leading Mid-range Low

Source: company annual and CMD reports

# Positioning Hydro to pioneer the green aluminium transition

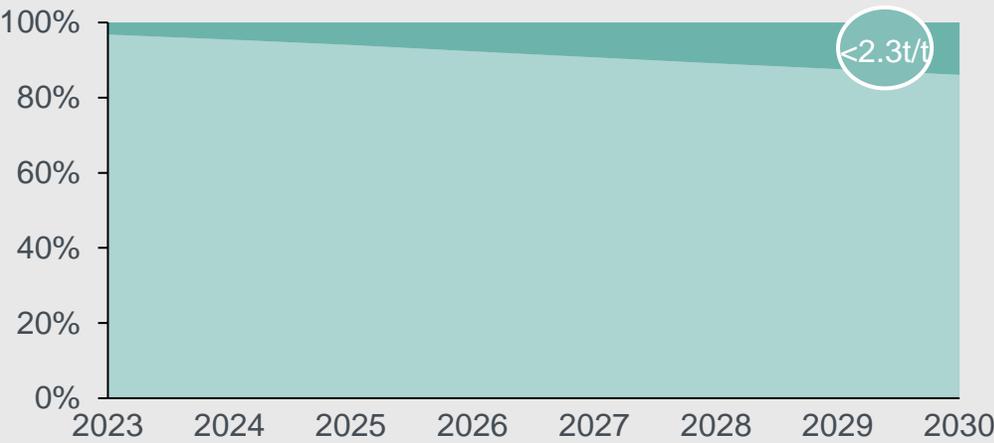
Earnings uplift potential 2030 of NOK 2 billion<sup>1)</sup>

## Greener product capability from total aluminium portfolio<sup>1)</sup>

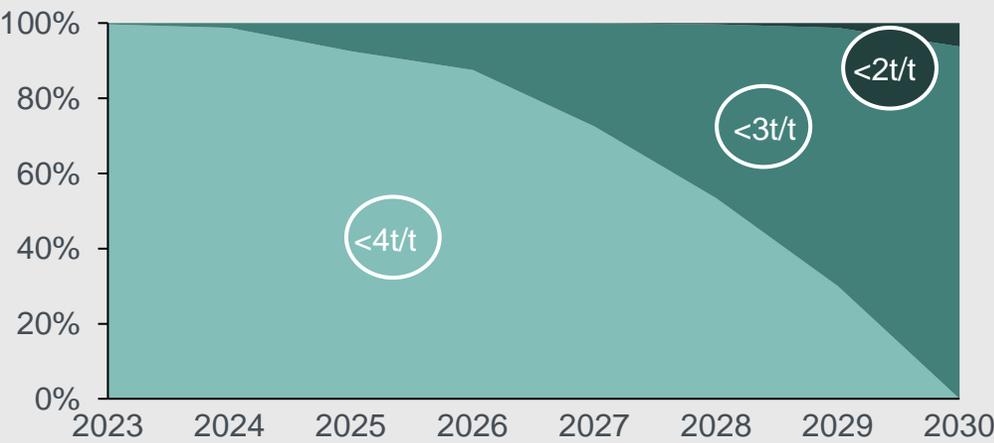


1) Based on 2030 EU ETS cost and relative CO<sub>2</sub> reduction vs Hydro REDUXA 4.0 at current industry traded upcharge. Hydro REDUXA and CIRCAL potential based on estimated certification capacity. Primary capacity based on equity share renewable power. Hydro CIRCAL products have post-consumer scrap content > 75%

## Growing recycling capabilities



## Transforming REDUXA portfolio



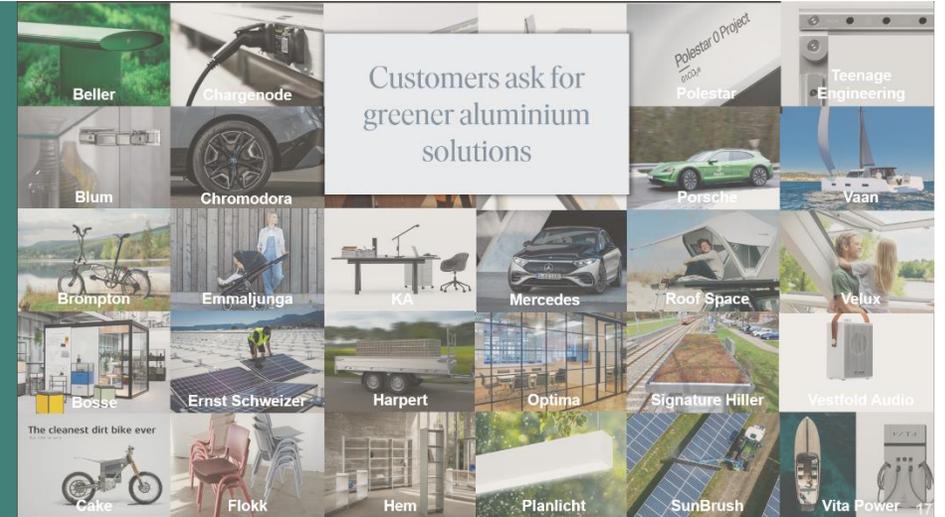
# The unique Hydro offering



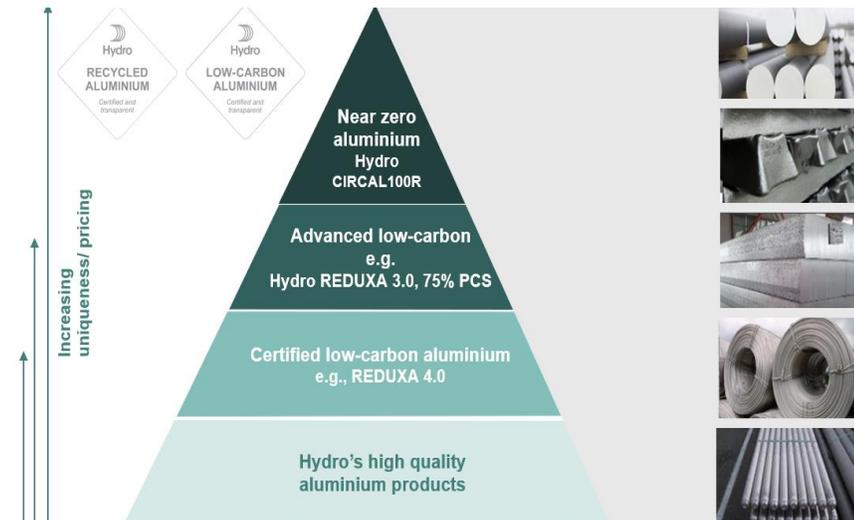
## Integrated value chain offering



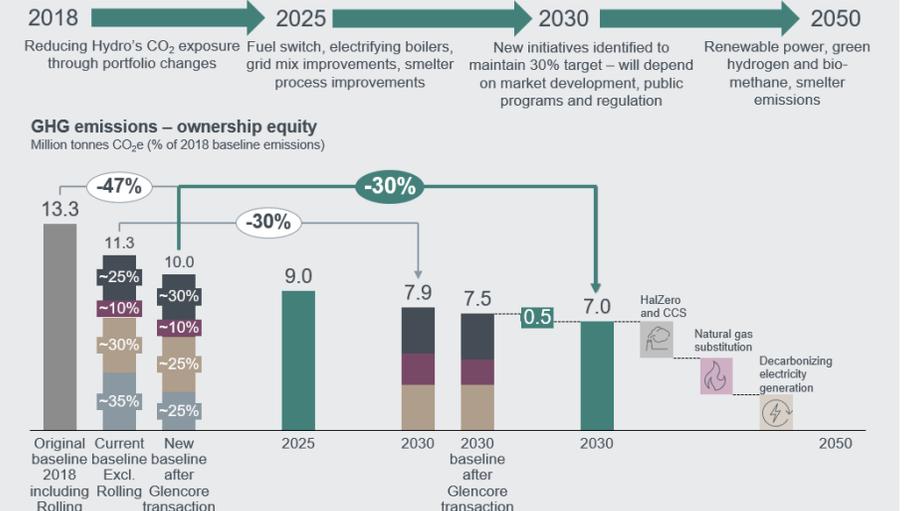
## Strategic partnerships with industry front runners



## Broad low-carbon product portfolio with spearhead products



## Decarbonization roadmap to 2030, and net-zero





# Step up growth in Extrusions

Paul Warton

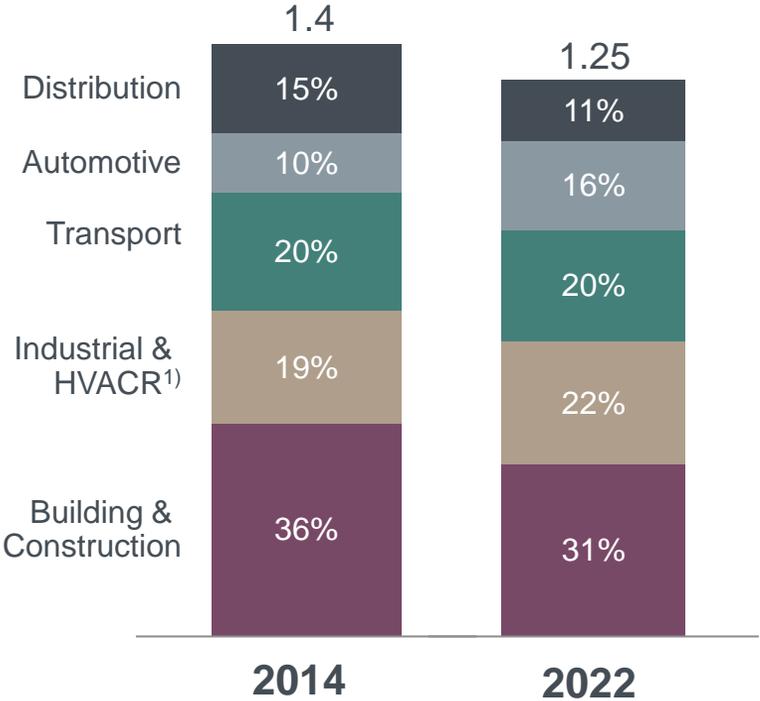
Executive Vice President, Hydro Extrusions

# Hydro Extrusions delivering strong EBITDA uplift through targeting high-growth, advanced segments



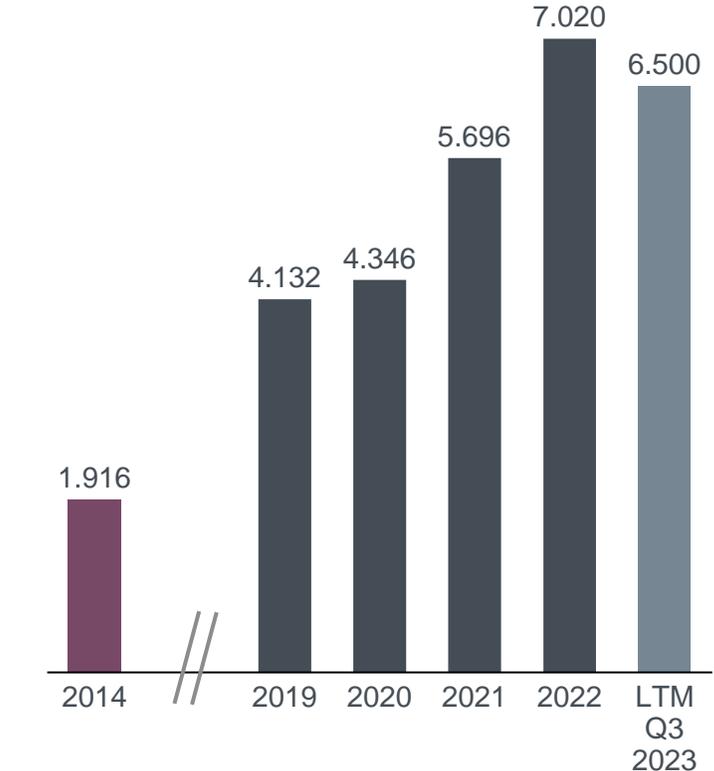
## HE sales volumes split per segment

Million tonnes



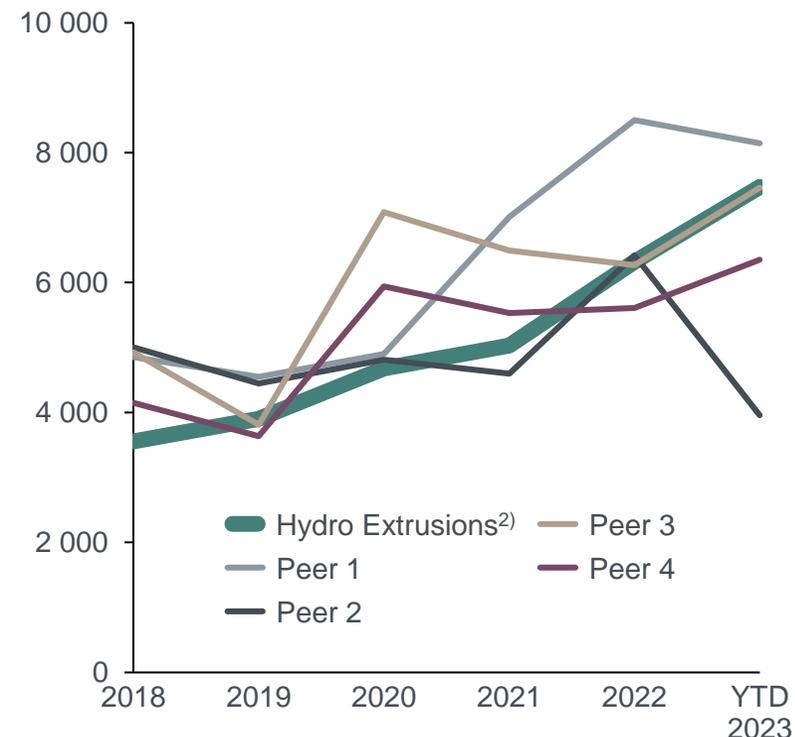
## HE EBITDA

NOK million



## EBITDA per tonne vs peers

NOK per tonne



1) Heat, ventilation, air conditioners & refrigerators  
 2) HE EBITDA adjusted for capitalization of dies to make comparable to peers

# Industry trends towards 2030 are favorable for Hydro Extrusions, driven by customer needs and segment growth

Opportunity to leverage Hydro Extrusions' strengths increases as target segments develop

## Customer needs



- As industries and applications mature, customers demand more developed solutions
- Value added offerings
- New, R&D driven solutions
- Customers will partner with suppliers providing new and advanced solutions, e.g., low-carbon, high R/C content, sustainably produced solutions

## Segment growth



- More growth expected in value added product and solutions area rather than “commodities”
- Attractive segments with 5-10% annual growth
- Key growth segments include Automotive / E-mobility and solar / Renewables / Big & Wide Rail

## HE capabilities



- Strong innovative capacity to provide high-quality advanced solutions
- Developed R&D position that can be further enhanced
- Head start vs competition in sustainability area
- Size, geographical coverage and advanced capabilities to be relevant in differentiated segments

# Hydro Extrusions will leverage opportunities from greener transition to strengthen market positions

## Secular growth drivers in key segments



Automotive CAGR  
2022-30:

8 - 10%



Solar in EU CAGR  
2022-30:

10 - 15%



Copper substitution  
potential, HVAC&R by  
2030, million tonnes:

0.6

## HE positioning and growth ambitions

- Strong global positions, long term relationships with major automotive OEMs
- Proven capabilities, innovation and sustainability as key competitive levers
- Increase share of direct OEM supply and long-term contracts
- Investment projects under execution globally

- HE with strong value offering, including surface treatment and low-carbon aluminium solutions
- Solar mounting systems fit well on existing 7-9 inch presses
- Projects in pipeline to increase capacity

- HVAC&R customers with production in North America and China
- Customer projects with proven solutions for replacing copper with aluminium
- Grow capacity and increase customer solutions

# Critical growth projects under execution, maturing projects to enable profitable growth

Further strengthening flagship plants in the portfolio, leveraging key trends

## Key trends



- Sustainable products with low-carbon footprint
- Recyclability and keeping materials “in the loop”
- Greener energy sourcing



- E-mobility
- Light-weighting of vehicles

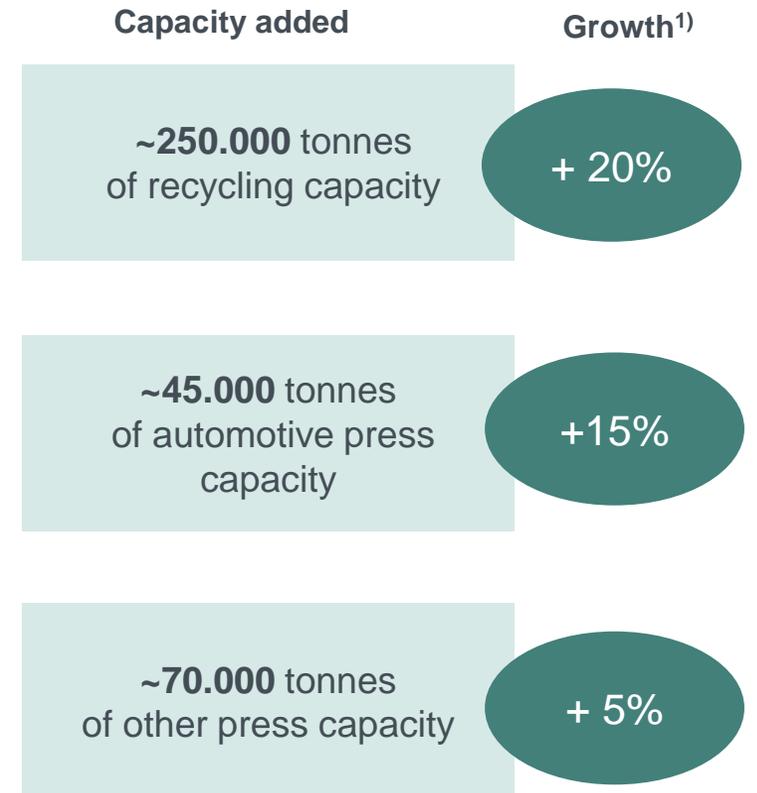


- Customer collaboration: high level of service, tailored solutions, short lead times
- Proximity as clear competitive advantage

## Project under execution

Hungary recycling	
Navarra recycling	
Sjunnen recycling	
US: TDC upgrade and Cressona	
PT China press	
PE coating line	
Phoenix press and fabrication ramp-up	
Hungary and Tønder automotive presses	
Nenzing press	
Rackwitz press	
Cressona press	
COI press (US)	

## Project capacity growth since 2021



1) Compared to base capacity 2021

# Significant automotive growth business last quarters



## Record levels of OEM sole supply contracts

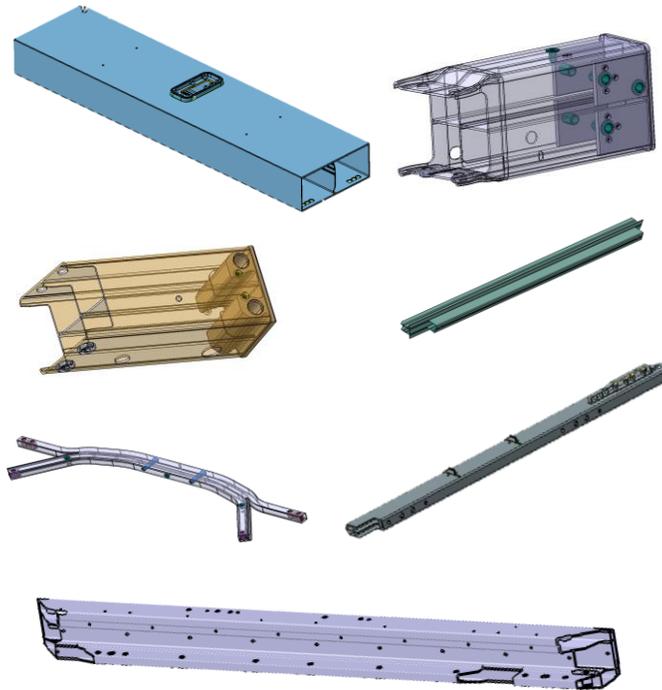
(Revenue in BEUR)



## Partnerships with large OEMs



## Advanced offering of added value activities and fabrication services



## Across geographies and units



# Reducing own emissions and helping customers improve their products' sustainability towards 2030



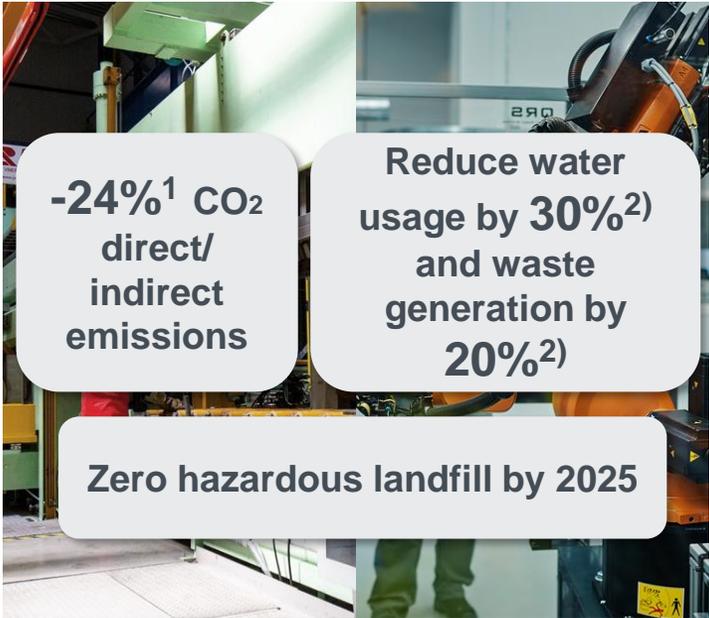
## Greener sourcing



**-27%<sup>1)</sup> CO<sub>2</sub> emissions on extrusion billets**

Reduce own emissions

## Greener production



**-24%<sup>1)</sup> CO<sub>2</sub> direct/indirect emissions**

**Reduce water usage by 30%<sup>2)</sup> and waste generation by 20%<sup>2)</sup>**

**Zero hazardous landfill by 2025**

Reduce own emissions

## Greener products



**EPD**

**LCA**



**Hydro LOW-CARBON ALUMINIUM**  
Certified and transparent

**Hydro RECYCLED ALUMINIUM**  
Certified and transparent

Help customers improve their products sustainability

Confirm and improve with labels and certifications

1) Baseline 2018. 2) Baseline 2019

# Reducing own emissions and helping customers improve their products' sustainability towards 2030



## Greener sourcing

### Greener Sweden

Pilot project towards net-zero



### Renewables in the U.S.

Spanish Fork plant fully solar powered



## Greener production

### PV-powered press

Solar-powered press in Poland



### Hydrogen-fueled recycling

World's first batch produced in Spain



## Greener products

### Shaping the market

First project with Hydro CIRCAL 100R



### Greener partnerships

Partnering with customers and others



# Customers from all industries partnering with Hydro Extrusions to make greener products



**VELUX®**

Partnering to cut carbon emissions from its value chain in half by 2030



**cake**

Cleanest Dirt Bike Ever project to remove emissions from production by 2025



**Schweizer**

Solar panel systems made from low-carbon aluminium extrusions



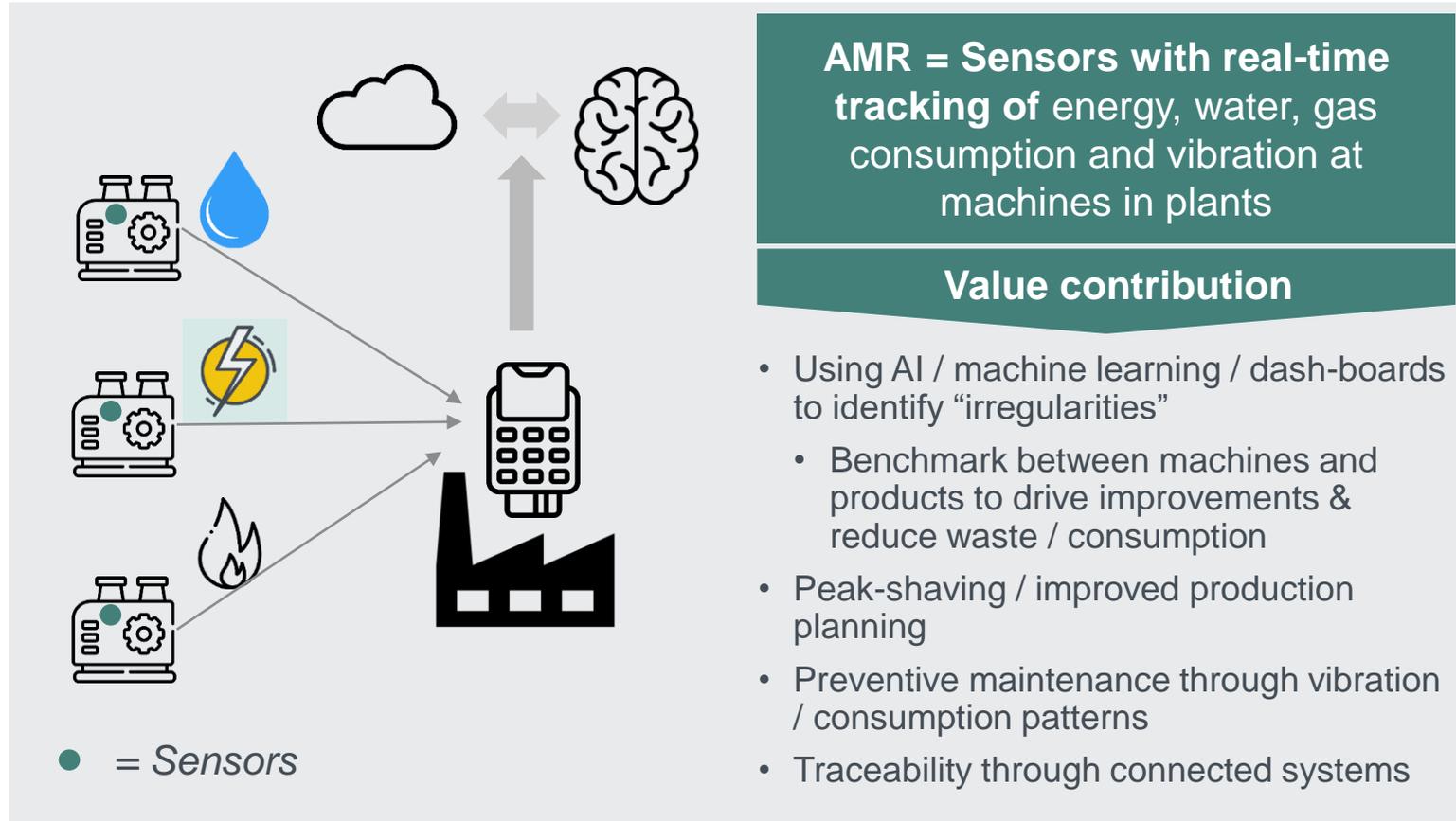
**HAY**

Light and flat-packed BOA conference tables made with Hydro CIRCAL

# Digitalization, AI and automation

Key levers to improve performance and profitability

## AMR = Automatic Meter Reading



## Automation

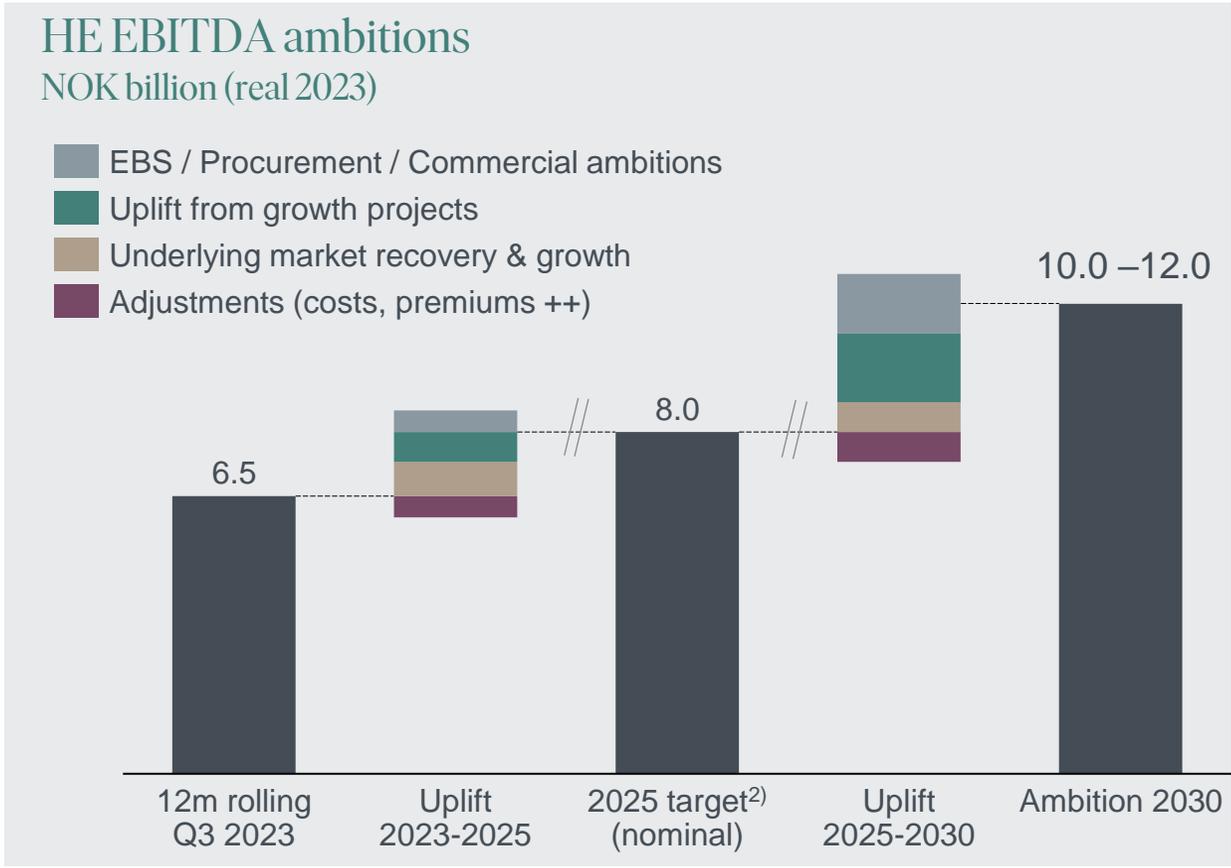
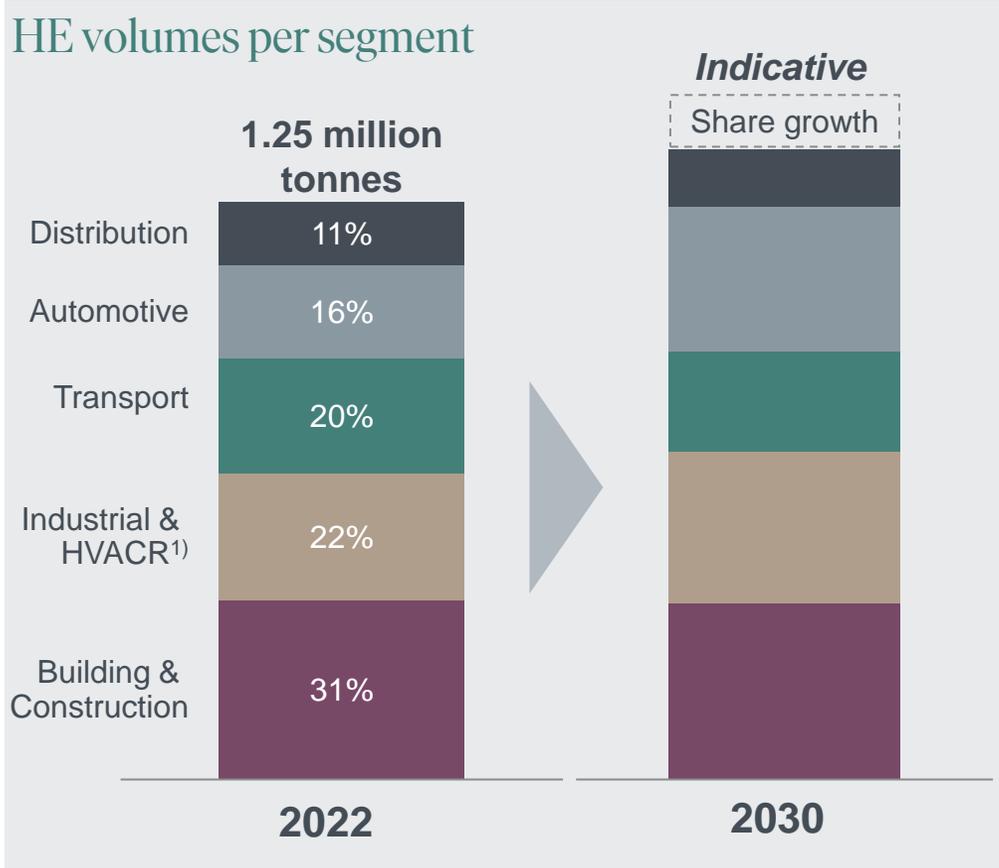
- PT Taicang Fabrication – reducing 95 FTEs through Automation & EBS<sup>1)</sup> (>20% of work-force)
  - Ergonomic, quality, safety and finance
- Automatic quality controls enable delivering millions of parts without quality issues



# HE increasing profitability towards 2030 through uplift from growth projects and underlying improvements



Growing market share in dedicated segments, further operational and commercial improvements



1) Heat, ventilation, air conditioners & refrigerators  
 2) Target of 8 BNOK in 2025 in nominal terms as communicated in 2021. Range target 2030 in real terms



# Hydro Extrusions 2030 strategic direction



- Growing with the **underlying markets**
- Growing in non-commoditized segments fitting with HE's capabilities
- Continue to compete based on capabilities and service
- + **Market share growth** ambition in high-growth, profitable segments



- Investments to support capabilities and **ability to compete through high service levels**
- **Press and fabrication capacity, value added services and recycling**



- **Sustainability** giving **commercial** opportunities
- **Segmentation** and improved **greener offerings** as key levers



- Increased **digitalization** throughout value-chain
- **Standardization** will generate value through the value-chain – from understanding profit to driving procurement and reducing energy consumption



# Step up growth in Recycling

Eivind Kallevik

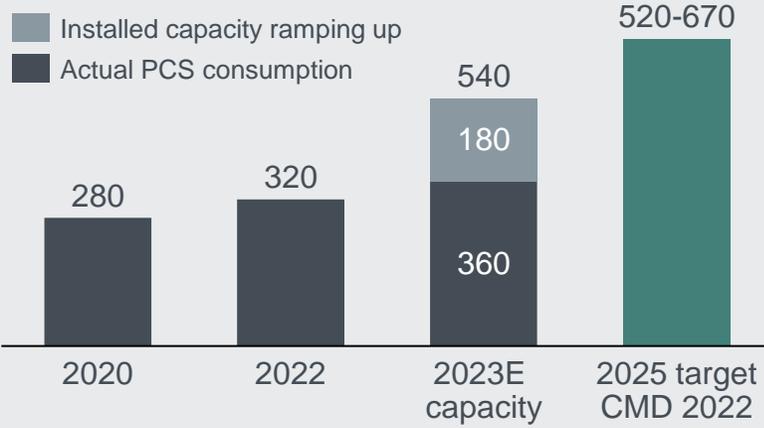
Executive Vice President, Hydro Aluminium Metal

# 2025 recycling targets achieved with 2023 year-end installed capacity

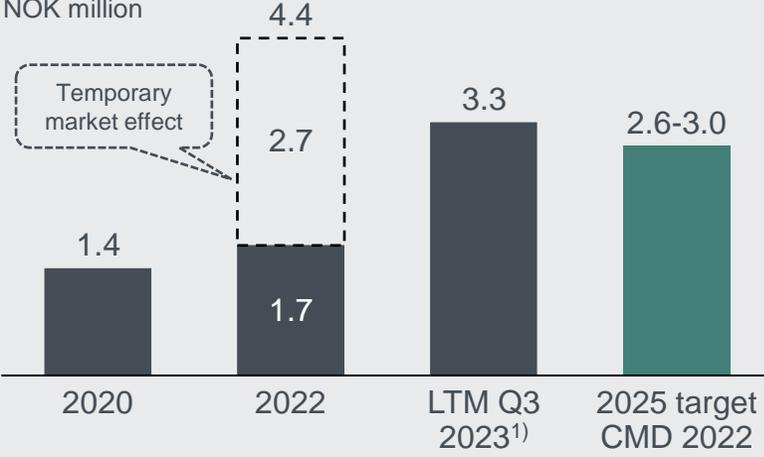
## Recent recycling projects with production and post-consumer scrap capacity Tonnes ('000)



## Post Consumer Scrap Consumption and targeted capacity, tonnes ('000)



## EBITDA NOK million



1) Incl. Alumetal from July 1

# Megatrends support recycling agenda

Increasing focus on circular economy from both consumers and regulators

## ∞ Innovate for circularity

**From projects to recycling**

**Back to window**  
over and over again

- Process design – closed loops
- Product design – lower material use
- Reuse and refurbish (second life)

## ♻️ Waste to value

- Reduce waste generation
- Reuse and upcycle waste streams to products

## 🌿 Technology

**Global semis demand (Mt)**

	2022 demand	Incremental demand 2030 vs 2022
PCS	17%	36%
Process scrap <sup>1</sup>	13%	14%
Primary	70%	51%
<b>Total</b>	<b>98</b>	<b>Δ 29</b>

← 100%

- Capture and recycle products at end-of-life
- Improve scrap sorting
- Increase recycling efficiency
- Technology advancement

## 🌐 Regulatory frameworks

- End-of-life Directive
- EU waste shipment regulation
- Critical raw materials act
- CO<sub>2</sub>-regulations

# Post-consumer scrap generation is increasing

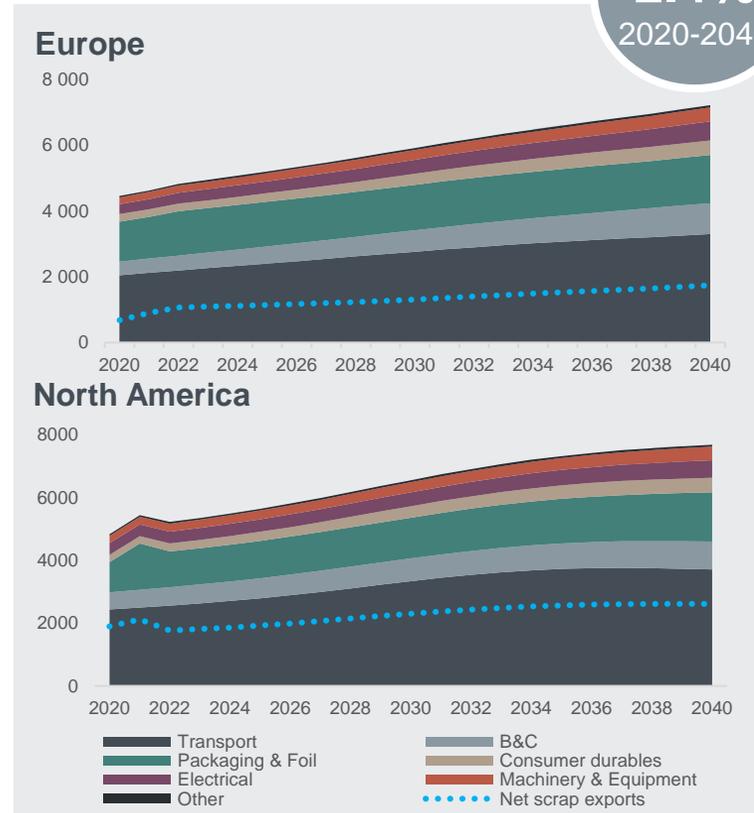


But multiple hurdles exist for its utilization

## Post-consumer scrap recovery

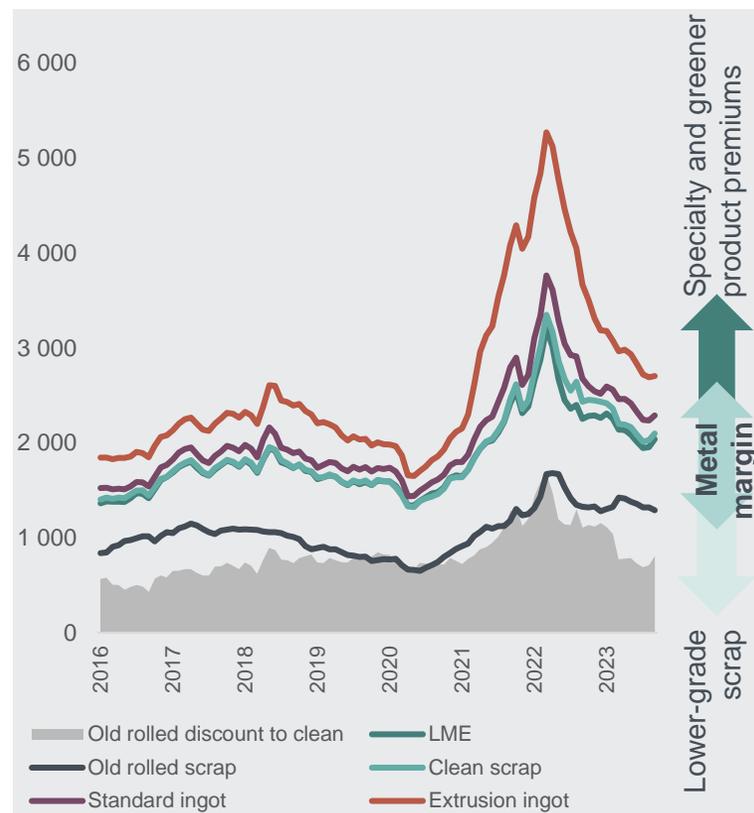
Tonnes ('000)

CAGR  
**2.4%**  
2020-2040



## Price spread scrap

Clean vs. complex post-consumer scrap, EUR/tonne

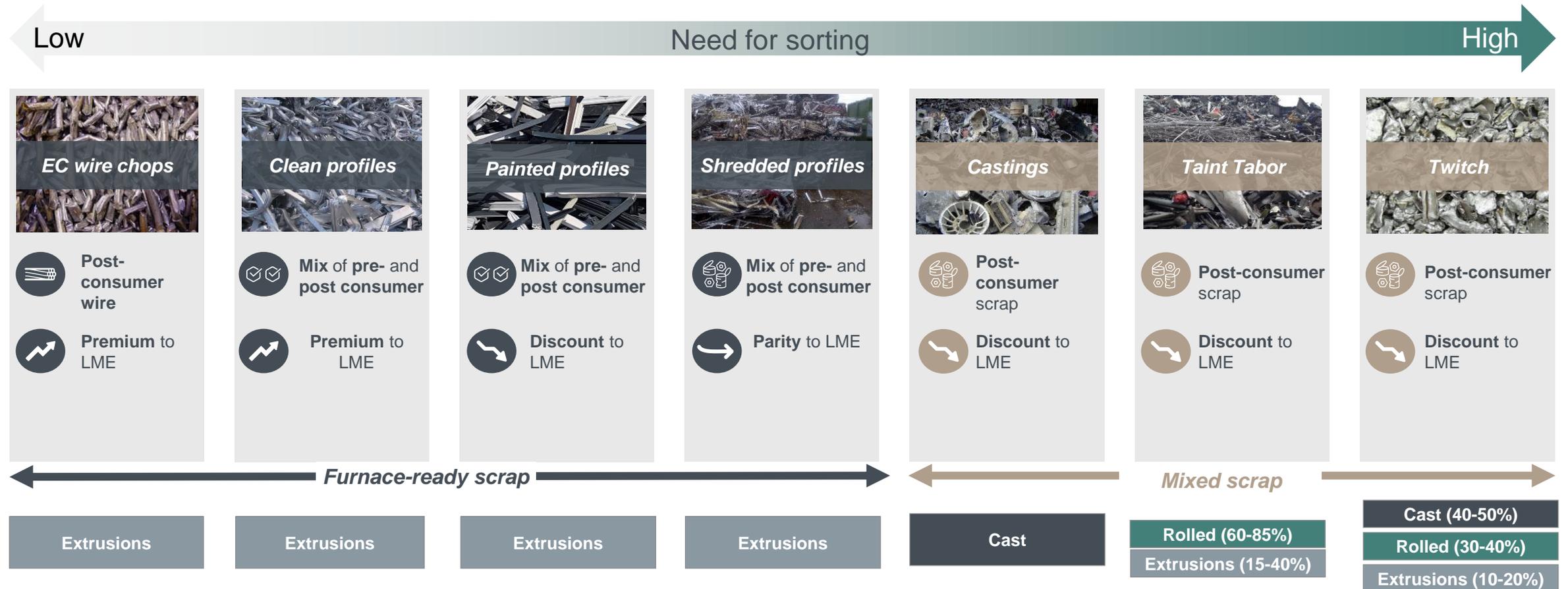


## Key trends in aluminium recycling

- Growth in recycling and billet capacity pressuring margins on “clean” scrap feedstock
- Large export volumes from Europe and North America to Asia
- Regulatory changes and protectionism measures affecting future scrap market
- Increasing generation and more interest in lower-grade scrap, but multiple challenges:
  - Supply chain complexity
  - Contamination
  - Collection
  - Sorting limitations
  - Logistics

# Mixed scrap types require sorting capabilities and ability to convert to various products

Securing access to the right scrap – key success factor



# Diversifying and high-grading recycling product portfolio across markets and geographies



Successfully completed organic and inorganic projects in 2023 include:



**Cassopolis greenfield recycler, MI USA**

## Introducing Hydro CIRCAL, increasing EI market share in the US

- 40kt of PCS per year enabling delivery of similar volumes of Hydro CIRCAL® to the North American market
- Lowest carbon extrusion ingot offering in North America



**State-of-the art HyForge line in Rackwitz, Germany**

## Diversifying portfolio and growing high-margin HyForge capacity

- Ramping-up the HyForge line in Rackwitz Germany
- Forging stock geared towards the automotive industry



**Alumetal acquisition**

## Entering the recycled FA market with Alumetal acquisition

- Advanced sorting capabilities and capacity
- Opportunity to utilize more scrap grades
- Identified synergies of 10-15 MEUR by 2027



**AluSort – JV Hydro & Padnos, USA**

## Securing access to scrap, industrializing HySort technology in the US

- Invested 4MUSD in a 50:50 JV with scrap-yard operator Padnos in MI, US
- Installing HySort equipment; total capacity ~36 kt p.a.
- Supplying Cassopolis with suitable fractions; marketing the rest externally

# Hydro has a proven track record developing recycling capabilities

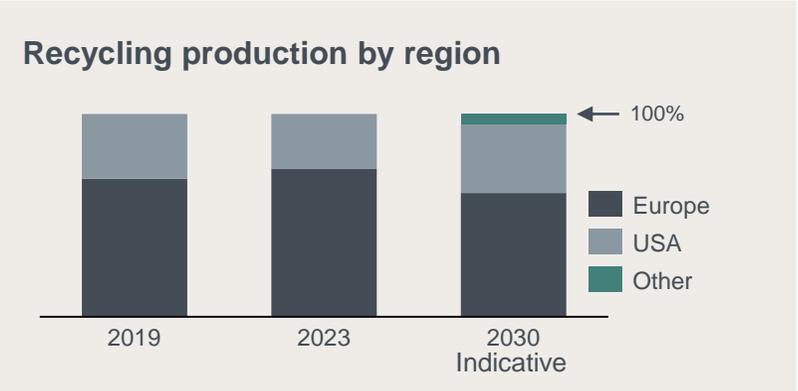
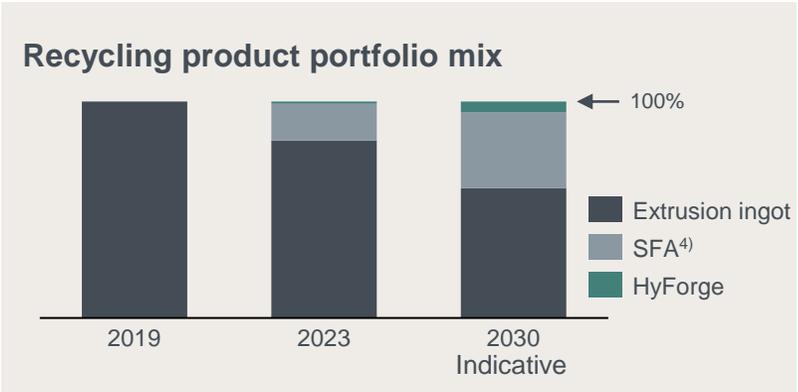


Increasing use of PCS and sorting capacity <sup>1)</sup>

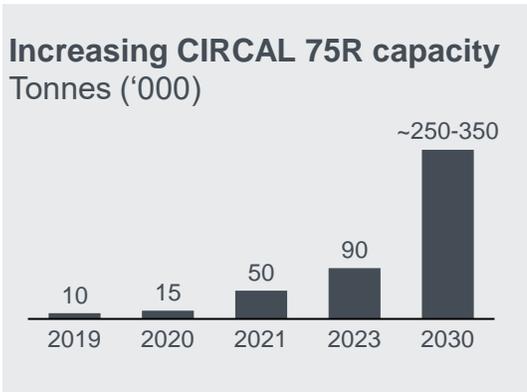
**+40%**  
PCS use  
2019 to 2023

**+100 kt**  
Sorting capacity  
2019 to 2023

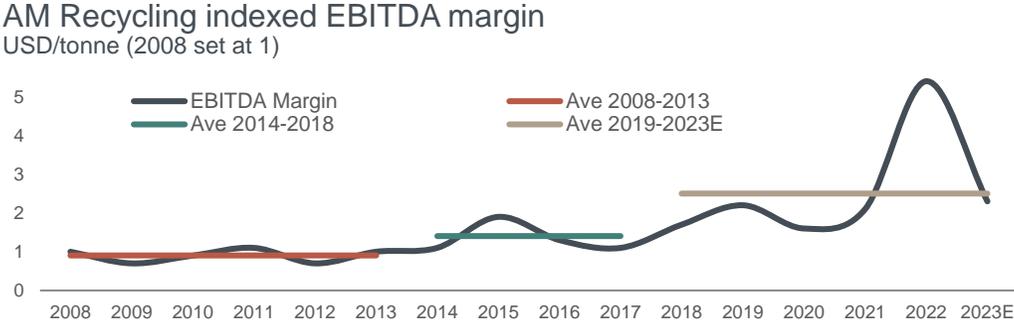
Diversifying asset and product portfolio <sup>2)</sup>



Expanding specialty and greener product offerings <sup>3)</sup>



Lifting profitability through the cycle



1) Average PCS consumption in the AM extrusion ingot recycling plants. 2) AM global recycling portfolio; 2023 based on Alumetal production since July 1, 2023. 3) Extrusion ingot Hydro CIRCAL recycling in AM and HE recycling plants and remelters, Europe and US. 4) SFA = scrap-based foundry alloy

# Stepping up activities across the recycling value chain



Continuing to transform scrap into sustainable solutions for our customers



## Selected projects in the pipeline addressing key market trends



**Kety upgrade,  
Alumetal, Poland**

SFA products for **automotive** e.g. gigacastings, electrical engine housing



**Torija greenfield recycler,  
Spain**

**Specialty casthouse** equipped to produce advanced products also for automotive; large CIRCAL capacity

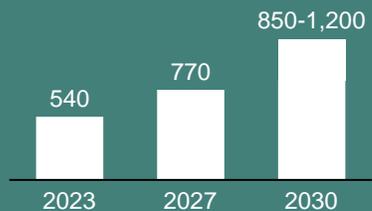


**New HyForge line,  
Henderson, USA**

Introducing HyForge for **automotive applications** in the US

# Hydro with competitive advantages in recycling

Recycling 2030 ambitions:



**850-1,200**  
kmt PCS capacity

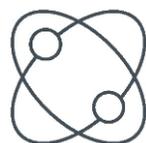


**NOK 5-8** billion  
EBITDA potential



## Full value chain with multiple product outlets

- Large recycling asset base in Europe and North America
- Broad range of products – extrusion ingot, sheet ingot, foundry alloys, HyForge, Master alloys
- Ability to utilize and upcycle mixed scrap



## Sorting & production technology

- Technical and metallurgical competence
- Production optimization know-how from scrap to product
- Patented HySort technology, in-house R&D



## Close customer & supplier relations

- Local presence and market insight in core locations
- Established relationships with scrap suppliers
- Partnerships and close cooperation with customers
- Commercial intelligence and strong value chain positioning



# Primary aluminium roadmap to zero

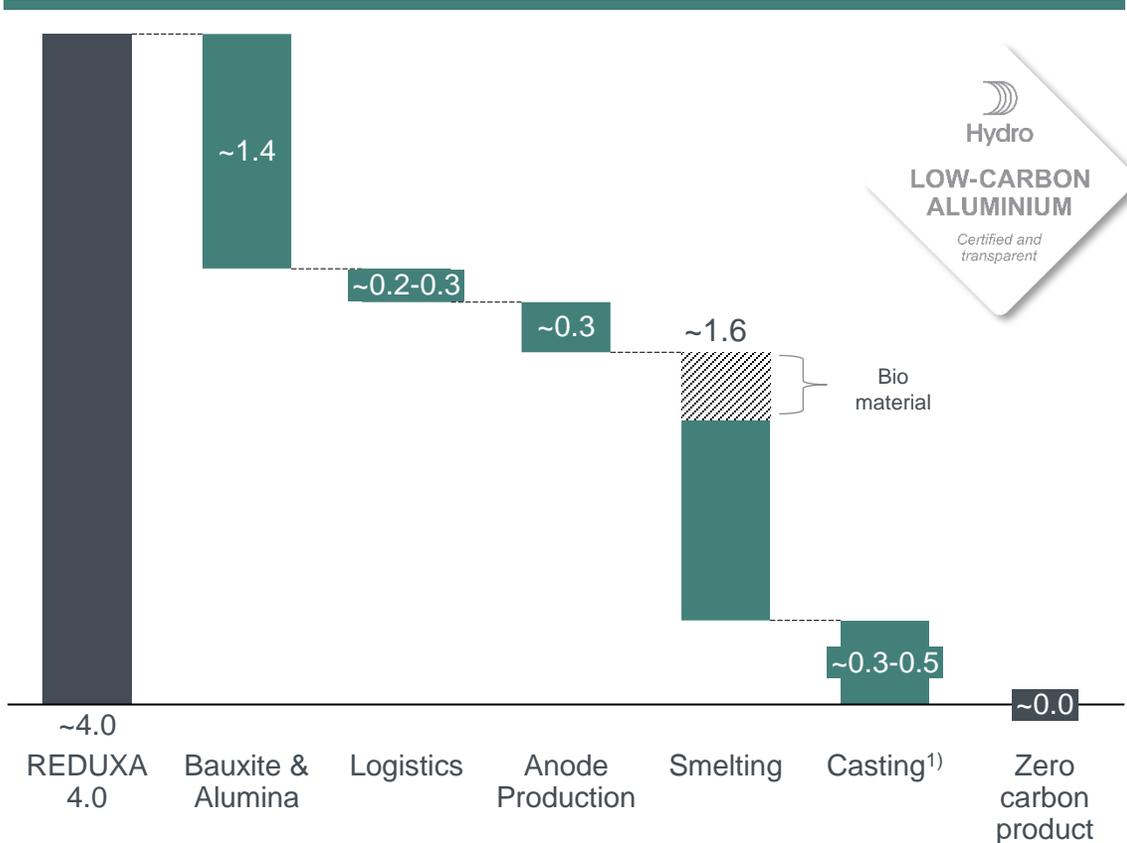
Eivind Kallevik

Executive Vice President, Hydro Aluminium Metal

# Widening our scope to reach zero CO<sub>2</sub> emissions

Structured approach to reduce emissions throughout primary value chain

CO<sub>2</sub>e emissions kgCO<sub>2</sub>/kgAl



1) Casting includes cold metal remelting

Renewable power is crucial for our path to net-zero

Pursuing optionality across value chain. Initiatives on track

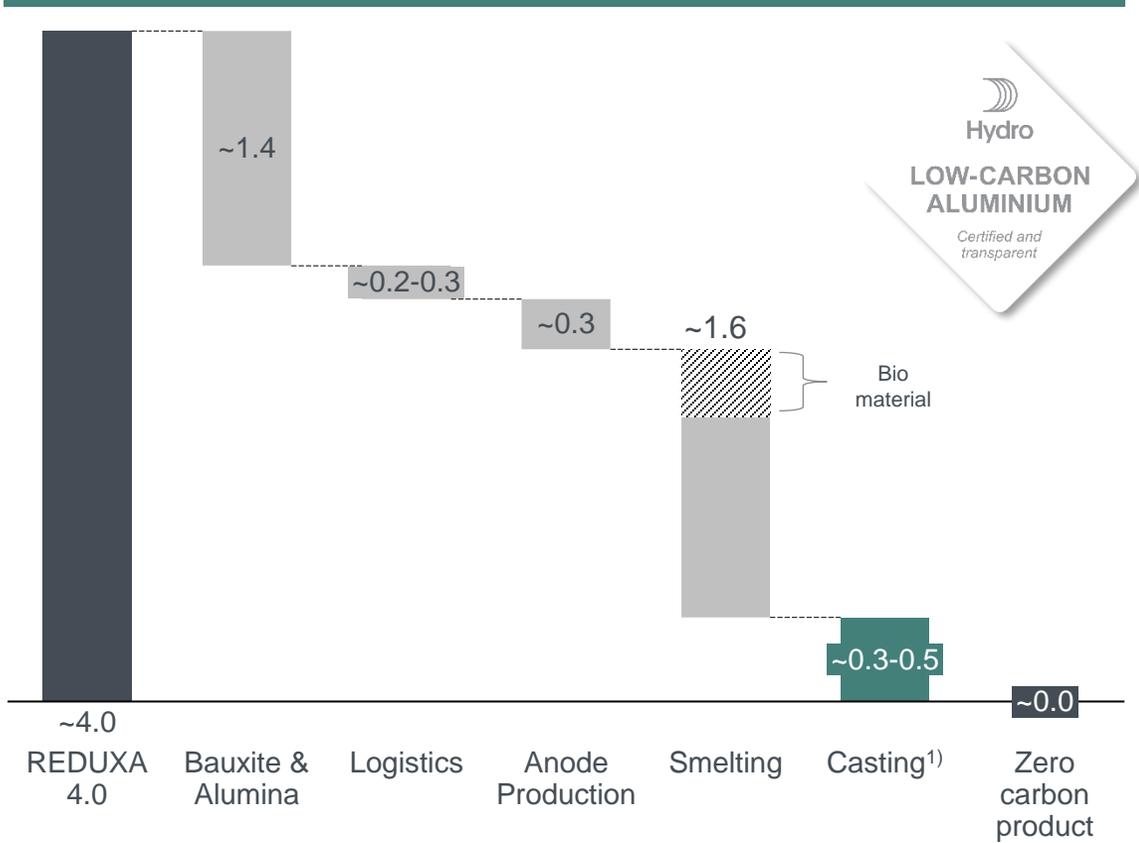
Introducing greener anode program

Increased focus on shipping emissions resulting in further reduction potentials

# Pursuing optionality to decarbonize casthouses

Important milestones for all initiatives: bio-methane, hydrogen and direct electrification

CO<sub>2</sub>e emissions kgCO<sub>2</sub>/kgAl

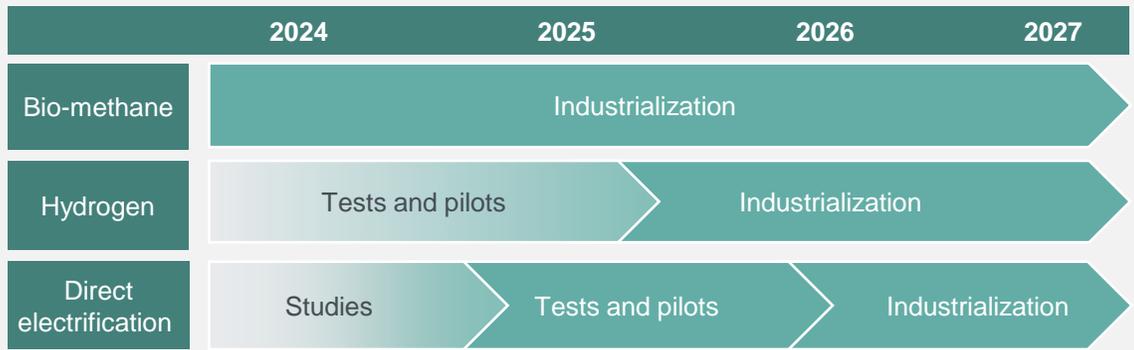


1) Casting includes cold metal remelting

## Starting industrialization of bio-methane from 2024, stepping up activities in electrification

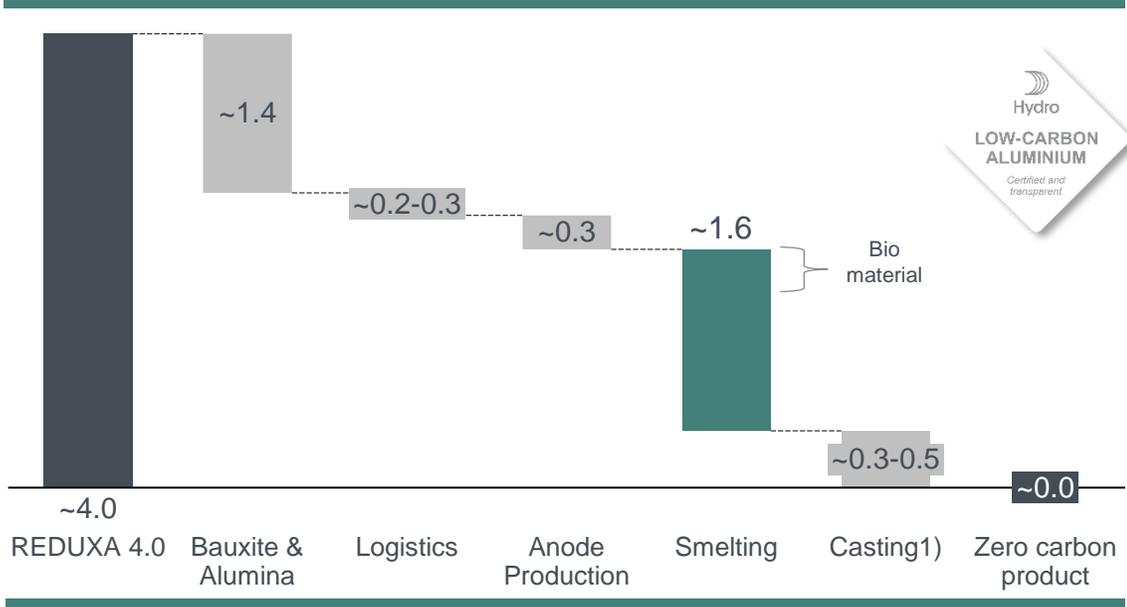
Bio-methane	Hydrogen tests and pilots:	Direct electrification pilots:
<ul style="list-style-type: none"> <li>Introducing bio-methane at Sunndal plant – Commercial agreement with Havila to deliver from 2024</li> </ul>	<ul style="list-style-type: none"> <li>Navarra test 2023 – successful</li> <li>Årdal PFA Test</li> <li>Høyanger Recycling hydrogen pilot</li> </ul>	<ul style="list-style-type: none"> <li>Sunndal Plasma Pilot</li> <li>Høyanger Recycling Electrification Pilot</li> </ul>

### Timeline

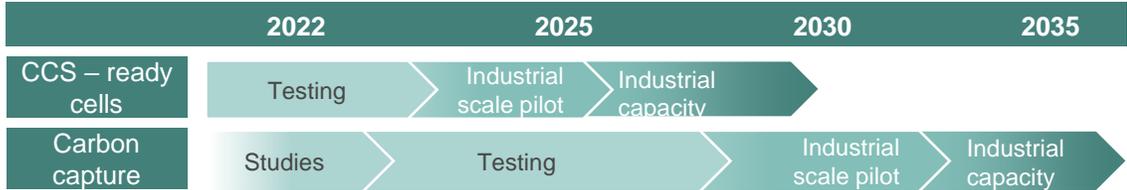


# Electrolysis decarbonization on track – carbon capture

CO<sub>2</sub>e emissions kgCO<sub>2</sub>/kgAl

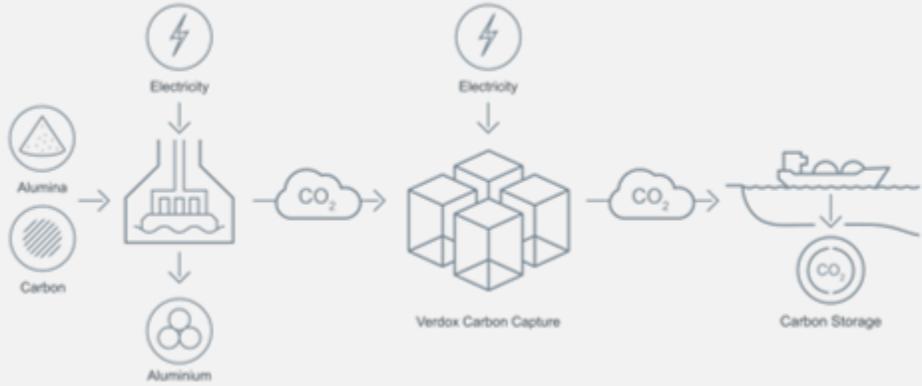


## Timeline



1) Casting includes cold metal remelting

## Technology shift for existing aluminium smelters

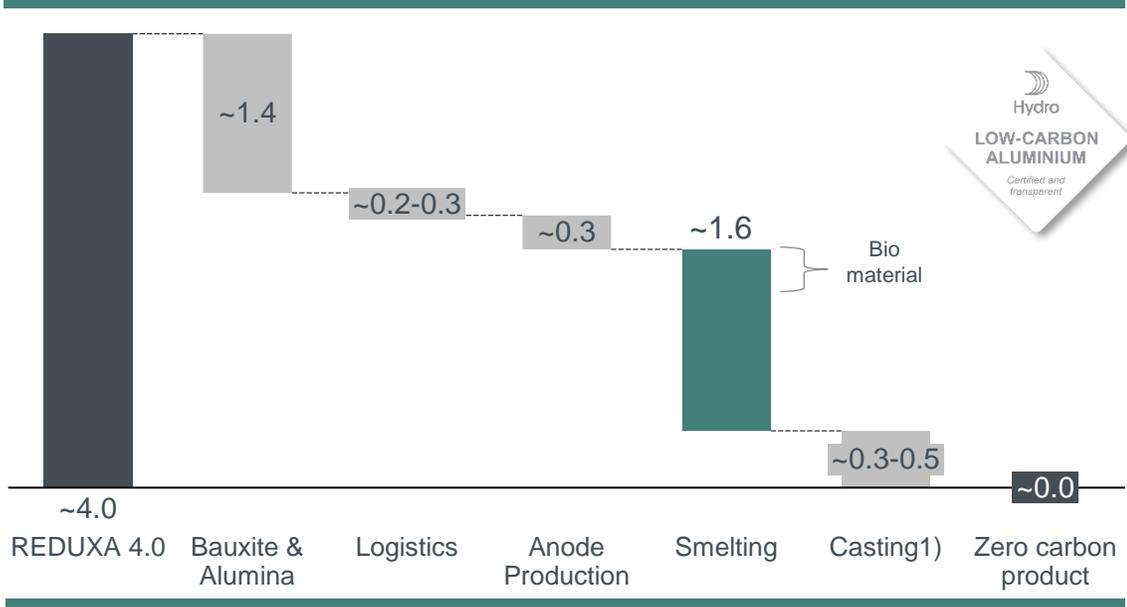


- Testing of Verdox technology ongoing at Sunddal
- Installing capture ready cells as part of ongoing relining process
- On track to deliver first CO<sub>2</sub> capture in 2024 and industrial scale pilot volumes by 2030



# Electrolysis decarbonization on track - HalZero

CO<sub>2</sub>e emissions kgCO<sub>2</sub>/kgAl



## Timeline



1) Casting includes cold metal remelting

## Ground-breaking technology to change the game



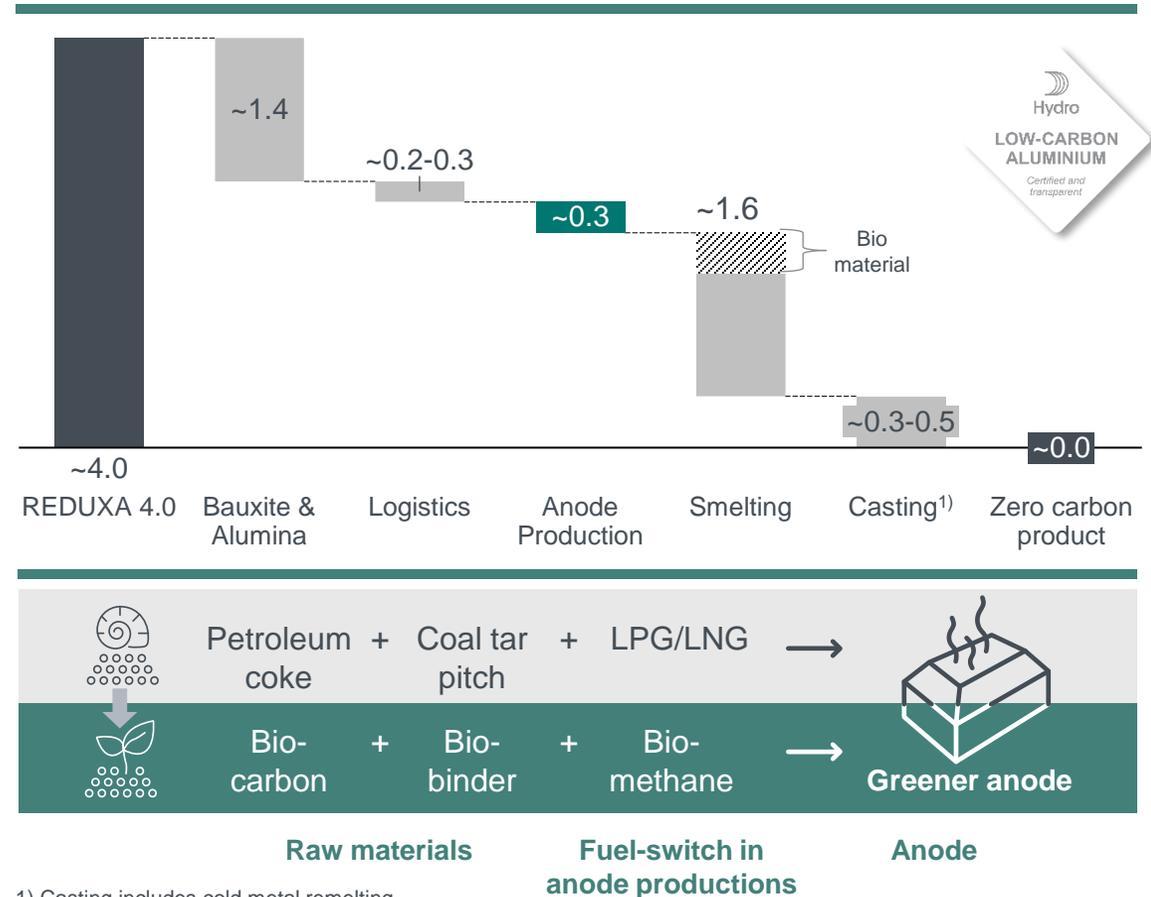
- Approval to start construction of new test facility in Porsgrunn - expected to be operational by 2025
- On track for first metal by end 2025 and industrial pilot volumes by 2030



# Anode decarbonization

Utilizing bio-materials in anode production triggers potentials for below zero emissions

## CO<sub>2</sub>e emissions kgCO<sub>2</sub>/kgAl



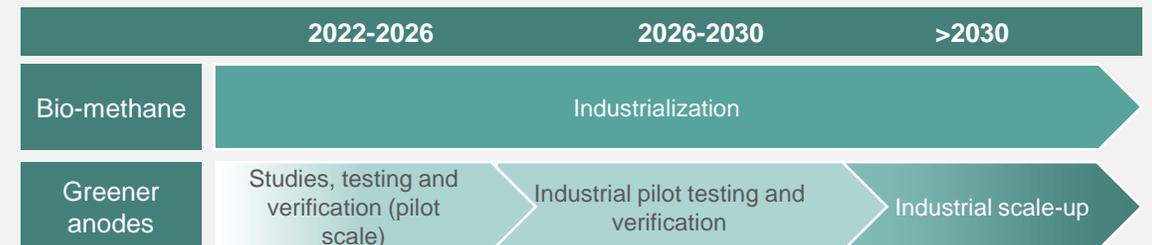
## Bio-methane and bio-materials in the process

- Fuel switch to bio-methane in anode baking furnace – Havila contract
- Substitution to bio-based packing materials

## Bio-materials in anodes

- Substitute fossil materials to bio-carbon and bio-binder in anode
- Potential to reduce the CO<sub>2</sub>, PAH and S emissions
- Collaboration with external suppliers and research institutions
- Potential below zero CO<sub>2</sub> emissions from electrolysis off-gas capture

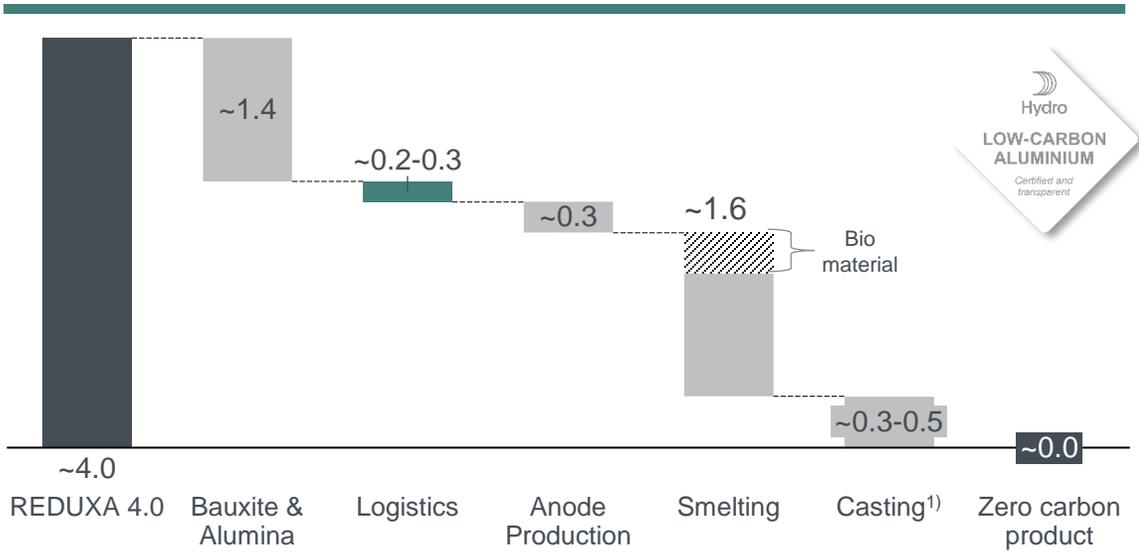
## Timeline



# Logistics decarbonization

Choosing the right solutions leads to reduced emissions. Ambition: 30% reduction by 2030

## CO<sub>2</sub>e emissions kgCO<sub>2</sub>/kgAl



1) Casting includes cold metal remelting

## What we have done

- >95% of AM volumes now have the major transport leg by sea
- 85% emission reduction on container transport from China to Europe
- Moving volumes from truck to barge, rail and sea
- Introducing biofuel on selected trucking routes
- Supply chain improvements

## What we will do

- Developing greener routes
- Exploring opportunities for “green shipping corridors”
- Digitalization and measurement to improve incentive structures and transparency

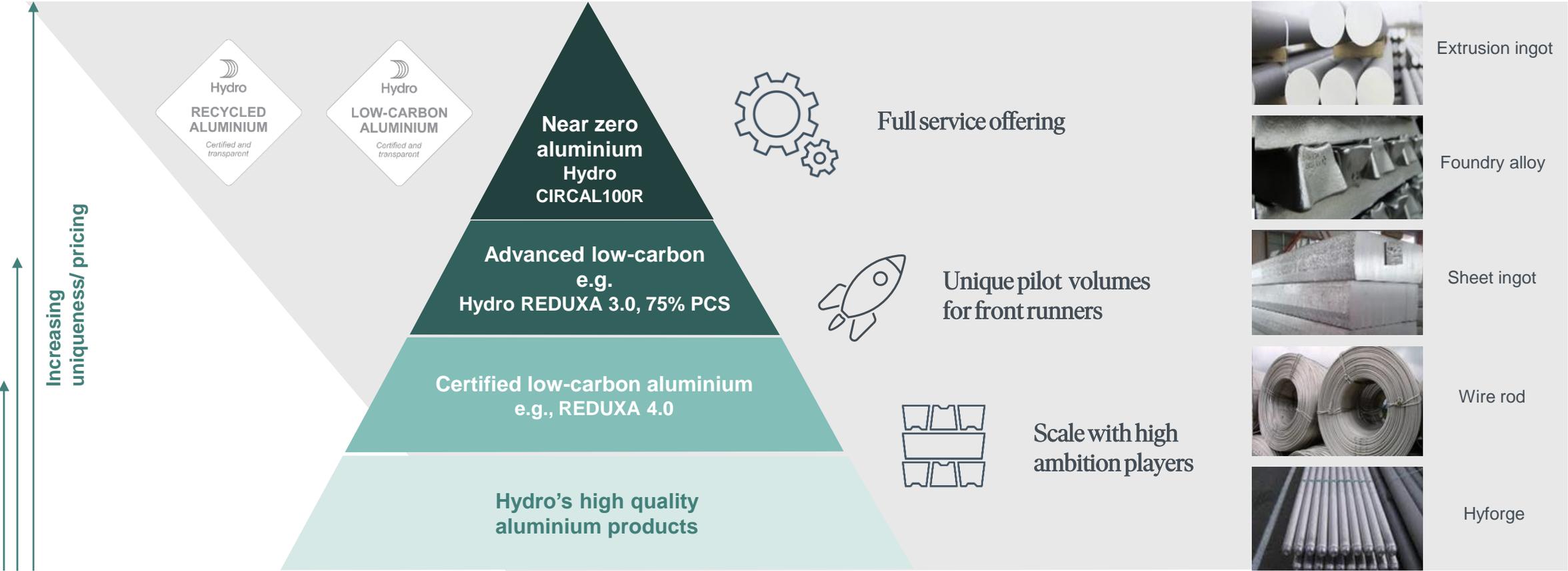
## Timeline



# Hydro has a unique value proposition in aluminium



Going to market with a combined offering of primary and recycled aluminium with a full product spectrum and with tailor-made alloys is unique to AM



# Track record gives solid foundation for new partnerships



Exploring new arenas for collaboration and co-development with existing partners while pursuing new partnerships

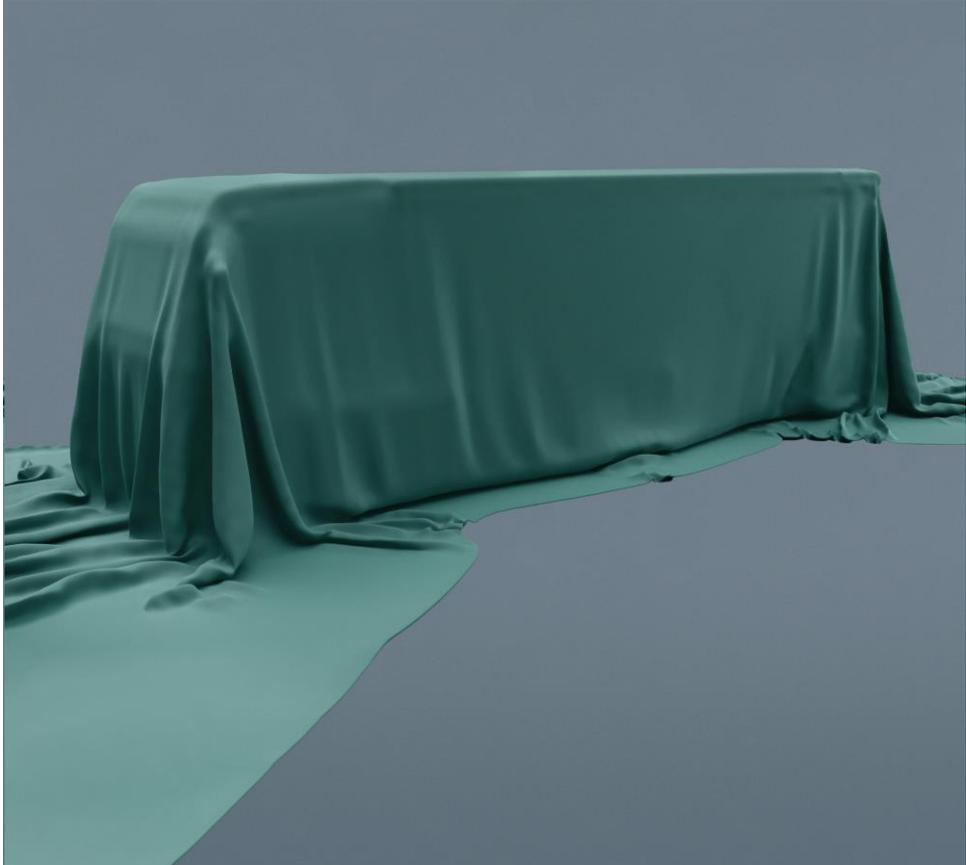
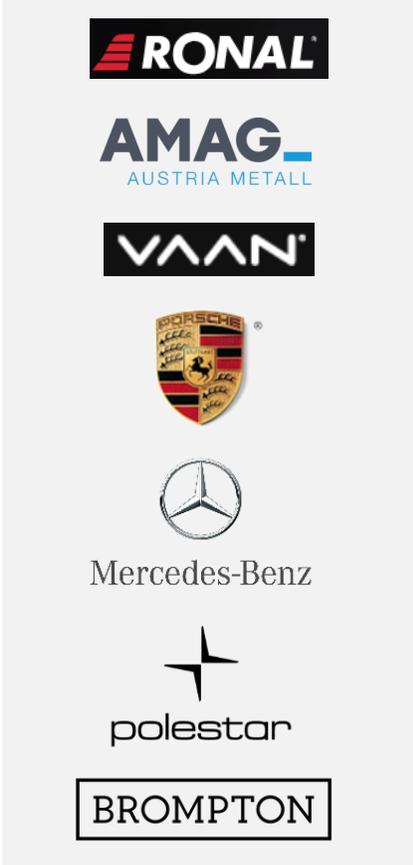
## Our approach

Decarbonization of customer footprint through purchase of low-carbon products

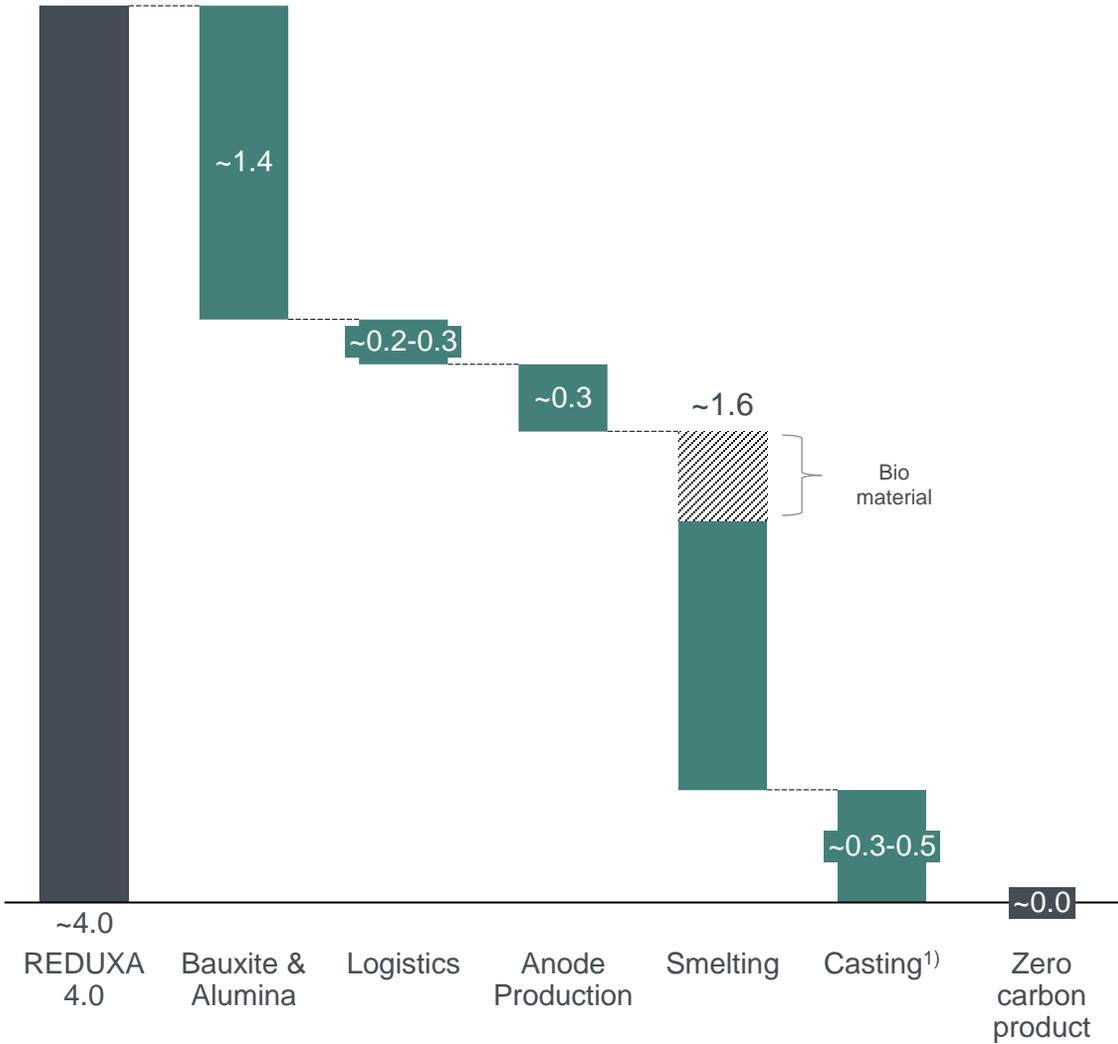
Collaboration on sustainability and co-marketing

Exploring closed-loop concepts and new design options

Shaping next generation products



## CO<sub>2</sub>e emissions kgCO<sub>2</sub>/kgAl



1) Casting includes cold metal remelting

Changing the aluminium game with



transparent and certified from mine to metal



# Hydro Bauxite & Alumina

## Lifting profitability, in a sustainable way

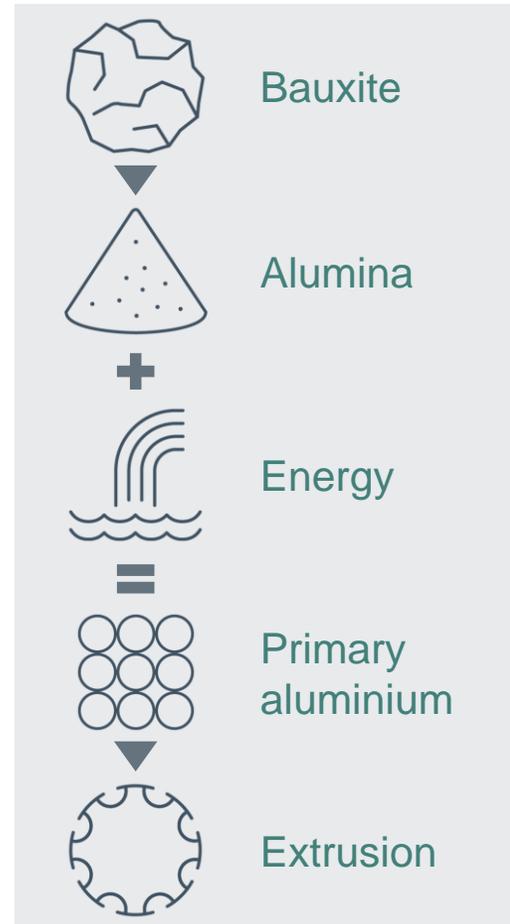
John Thuestad

Executive Vice President, Hydro Bauxite & Alumina

# B&A is an important enabler for low-carbon aluminium



Controlling the top of the value chain



We can produce among the lowest carbon aluminum in the world

**4-6 times**  
lower than the world global primary average

Guaranteeing an integrated supply chain that follows world class ESG practices

Enabling greener premiums for our primary aluminium and extrusion products

**WE ARE FOCUSED ON NET CARBON-NEUTRALITY BY 2039**  
throughout our entire value chain

*Hydro has the highest quality, lowest carbon and most sustainable Alumina in the world allowing us to demand a greener premium from our top customers*

In 2025 B&A will deliver:

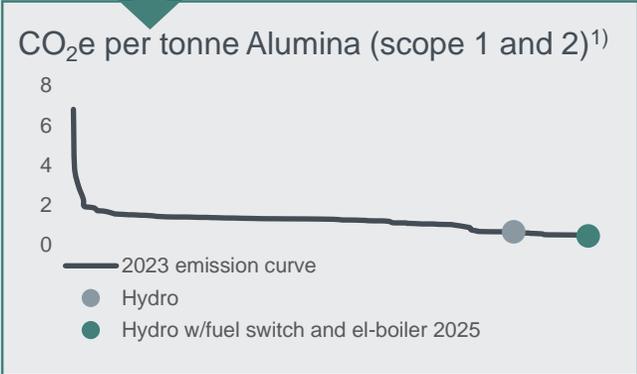
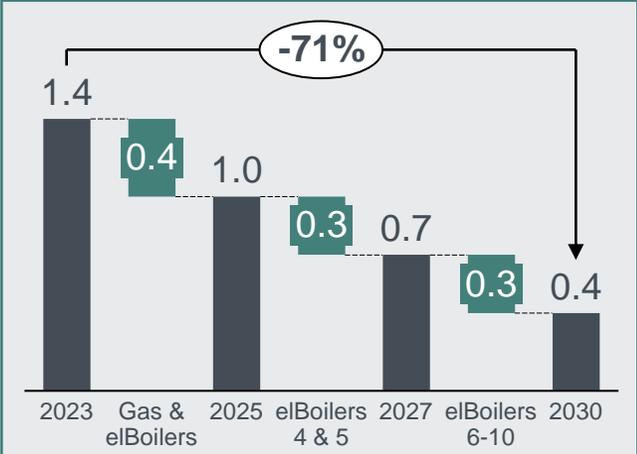
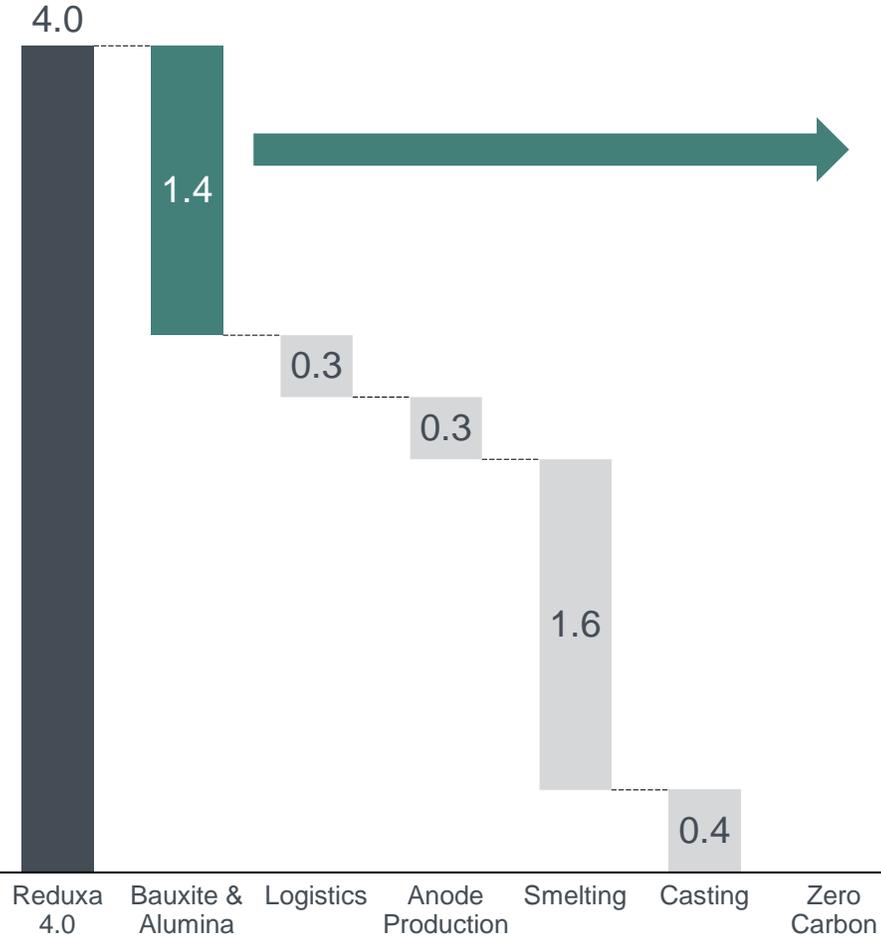
- + 1<sup>st</sup> Decile Energy usage
- + 1<sup>st</sup> Decile Emissions
- + Best Practice Tailings Management
- + Best Practice Residue Management
- + Best Practice Reforestation
- + Best Practice Social Investment
- + Best Practice Community Engagement

---

= **Global EPD + greener premium**

# Alunorte reducing carbon 70% by 2030

CO<sub>2</sub>e emissions kgCO<sub>2</sub>/kgAl



- Already 1<sup>st</sup> Quartile emissions in 2023
- Fuel Switch and three el-boilers will move Alunorte to one of the lowest smelter grade Alumina available (project being executed)
- Further two el-boilers will remove the need to use coal by 2027
- An additional five el-boilers will give us the ability to produce steam without emissions

1) CRU 2023 emission curve



# Contribute to nature positive



## Reforestation

- **Best practice reforestation program** in Paragominas, exceeding 1-to-1 replanting on a strict a three-year cycle:
  - Year 1 = Deforestation
  - Year 2 = Mining
  - Year 3 = Reforestation
- Working together with multiple universities and researches
- Expanding the program and **start rehabilitation outside of our mine**, contributing towards Nature Positive



## Residue management

- Hydro is **current best practice in Residue management** averaging 0.7T of Residue per T of alumina
- **Entered into an agreement with Wave Aluminium** – creating the potential to extract up to 1 million tons of carbon free pig iron from residue each year
- The first phase of the treatment plant will go live in 2024 and will be **capable of processing 50,000T of Residue**

# Investing in the community is our license to operate



## Social Infrastructure

- Construction of **9 Terpaz community centers** (3 already built) targets security, income generation and access to basic services to 1,500 people per day
- Construction of a Technical School with the **capacity to educate 1,200 students per year**



## Community Projects

- Investment in community-based projects **benefitted 80 thousand people since 2018**
- **60 thousand people** with access to education
- **1,400 family farmers** with access to technical support



## Stakeholder Engagement

- **Transparency, dialogue and volunteer work** are performed by a dedicated team
- 178 community leaders are involved in a dialogue forum called Sustainable Barcarena Initiative
- **500 volunteers** worked to benefit 14 thousand people and 70 local organizations

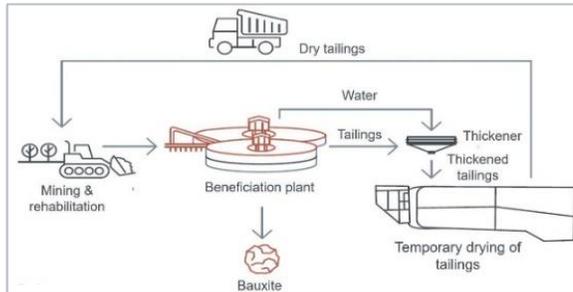
# Focus on driving profitability in a sustainable way



CAPEX: 5.7 BNOK

Improvement program

## Tailings dry backfill



60% IRR

↓1,000HA  
land usage

- Tailings dry backfill **removes the need for tailings dams.**
- **New standard in Brazil** and no new tailings storage areas will be licensed
- Moving away from tailings storage dams **increases safety and saves billions of NOK in CAPEX**

## Fuel switch



26% IRR

- 700 000 tons  
CO<sub>2</sub>

- FSRU arriving at Alunorte by year end
- Upon full conversion, **700,000 tonnes reduced in CO<sub>2</sub> emissions per year and ~USD 25 per tonne improved cash cost** (USD 160-190 million annually<sup>1)</sup>)
- Moving from Brent index (Oil) to Henry Hub (Gas) reduces the price volatility

## El-boilers



>50% IRR

- 400 000  
tons CO<sub>2</sub>

- With the success of 1st electrical boiler (IRR>200%), **two more electrical boilers** are currently being installed
- Powered by **20-year renewable PPA's with Hydro Rein projects**, provide a stable power price for the next 20 years at an average of USD 6 per MWh cheaper than gas



Improvements  
**NOK 3.2 Billion**

Commercial  
**NOK 620 million**

- The Improvement Program brings significant gains through high-energy engagement from the whole organization
- The Commercial program highlights the trading book efficiency for alumina and hydrate sales

1) USD 160 million on forward prices 2025 (first year of full effect), USD 190 million on spot as of Q3 2023

# Industry frontrunner with robust operations



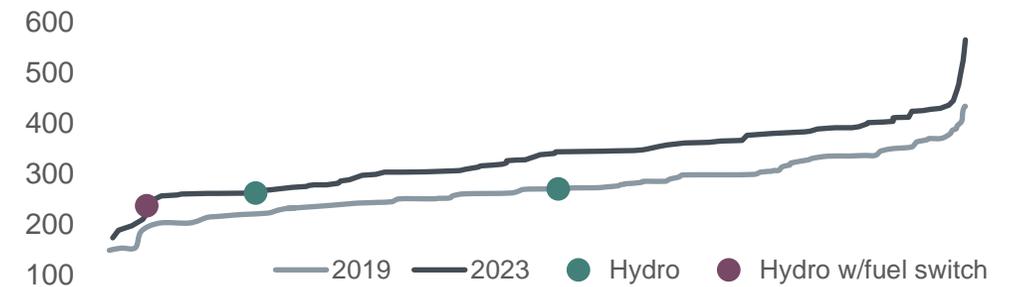
B&A have developed a more robust operation, but current market environment is challenging

## Improved operations

- Nameplate production at Alunorte/Paragominas for the last 3 years
- Greatly improved asset integrity leading to the first award of ISO550001 to a refinery and to a bauxite mine
- Complete rebuild of the water management systems to reflect the changing climate/rainfall levels
- Successful deployment of the press filters
- Development and deployment of tailings dry backfill
- Rebuilt key relationships both in the government and local communities
- Rebalancing alumina portfolio (Glencore deal) to reflect internal Alumina needs, returning cash to Hydro
- All while delivering some of the highest quality alumina in the world

## Competitive cost position

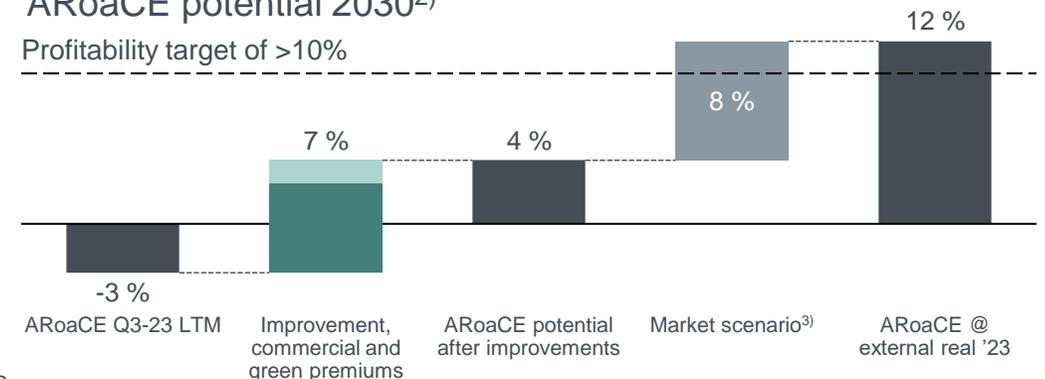
CRU (2023), USD per tonne Alumina<sup>1)</sup>



## Roadmap to profitability in market scenario

ARoaCE potential 2030<sup>2)</sup>

Profitability target of >10%



1) CRU 2023 cost curve. 2) Cash flow calculated as EBITDA + tax + long-term sustaining CAPEX. Assumptions and sources behind the scenarios can be found in Additional information. 3) Sources: External scenario is based on CRU price and premium assumptions and S&P Global FX assumptions, with adjustments as specified in the footnotes



# Energy at the core of green transition

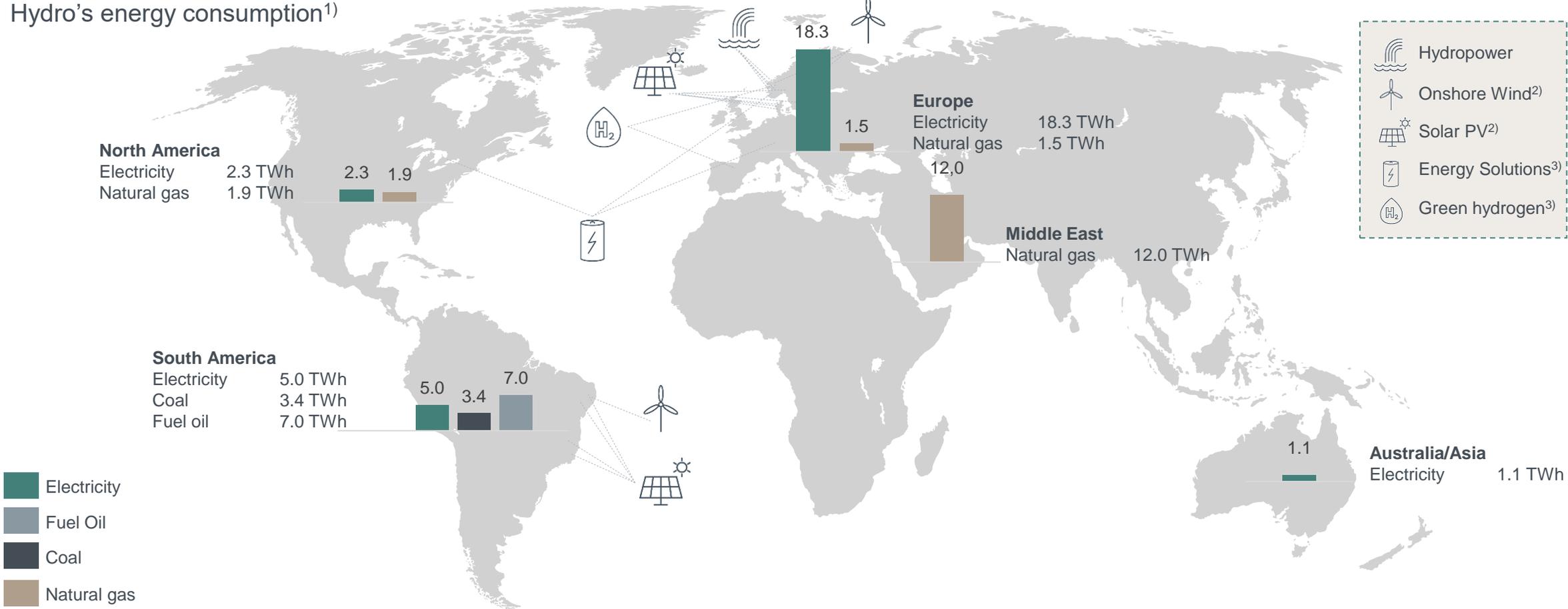
Arvid Moss

Executive Vice President, Hydro Energy

# Pioneering the green aluminium transition, powered by renewable energy



Hydro's energy consumption<sup>1)</sup>



1) Based on equity-adjusted 2022 values for Norsk Hydro's bauxite mines, alumina refineries, smelters, remelters and extrusion plants.  
 2) Only projects in operation and under construction or announced. 3) Only pilot projects

# Geopolitics driving energy transition, green value chains and friendshoring of critical resources



Combined ambitions in Norway, Sweden, Denmark, Germany and UK<sup>1)</sup>

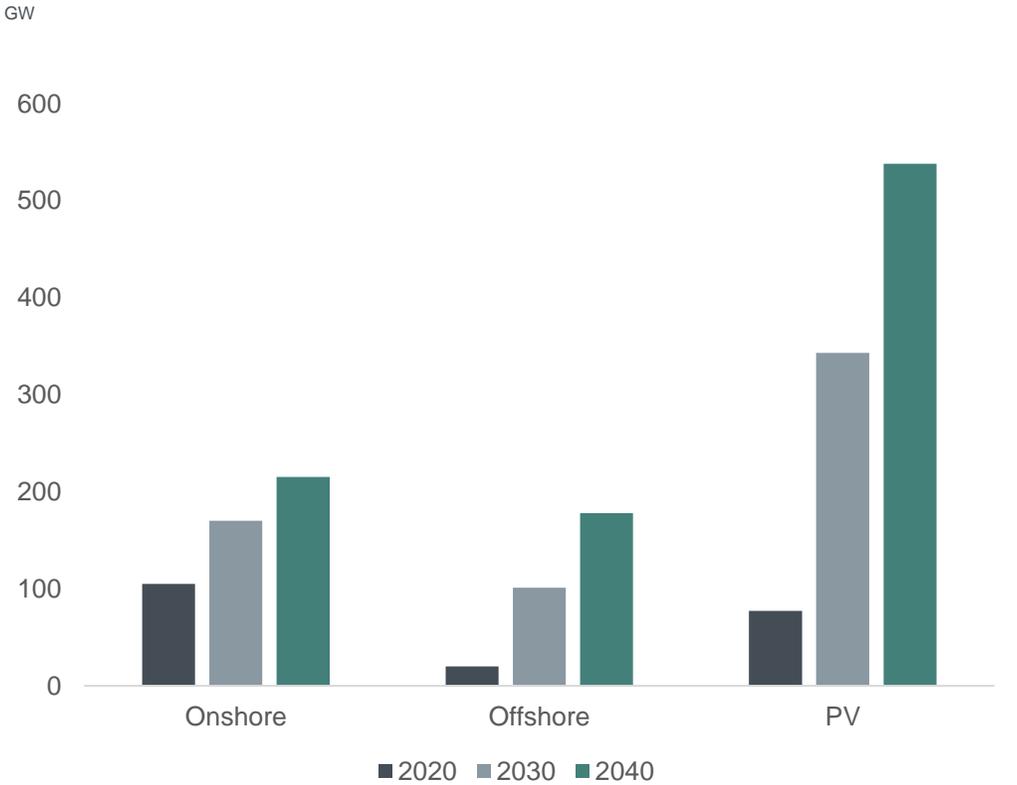


Illustration: picture alliance / Zoonar | gd ae. IEA: World Energy Investments 2023 report.  
1) Installed capacity in 2020

# Norwegian power market surplus in question

Public opposition to onshore wind parks limiting the effect of attractive renewable resources

## Market uncertainty prevails

- Power market balance weakening (short-med term)
- Demand from electrification and new industries outpaces supply in the short end
- Unfavorable resource rent taxation (onshore wind)
- Lack of certainty regarding timing of new offshore wind areas

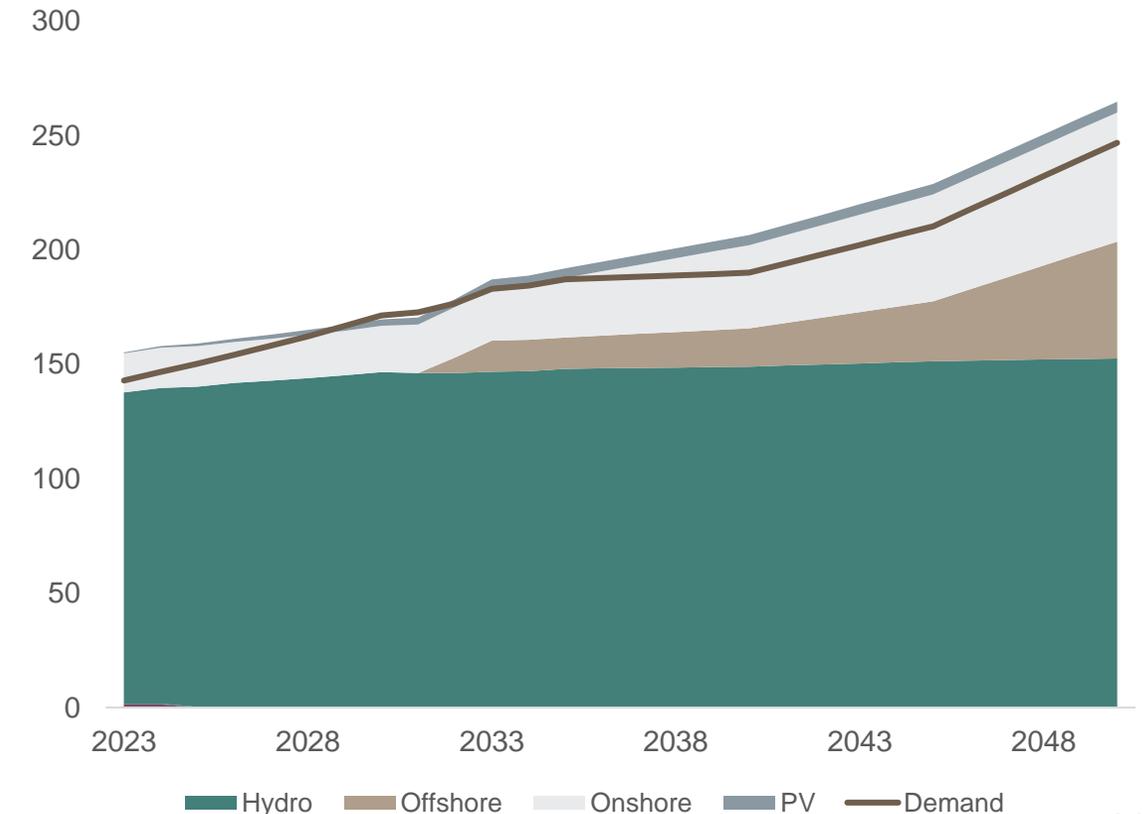


## Solution space

- Attractive renewable resources, especially onshore wind power in Norway and Sweden
- Cheaper firming costs through flexible hydropower in Norway
- Acceptable solutions locally, land use and value creation

## Norwegian Power Balance

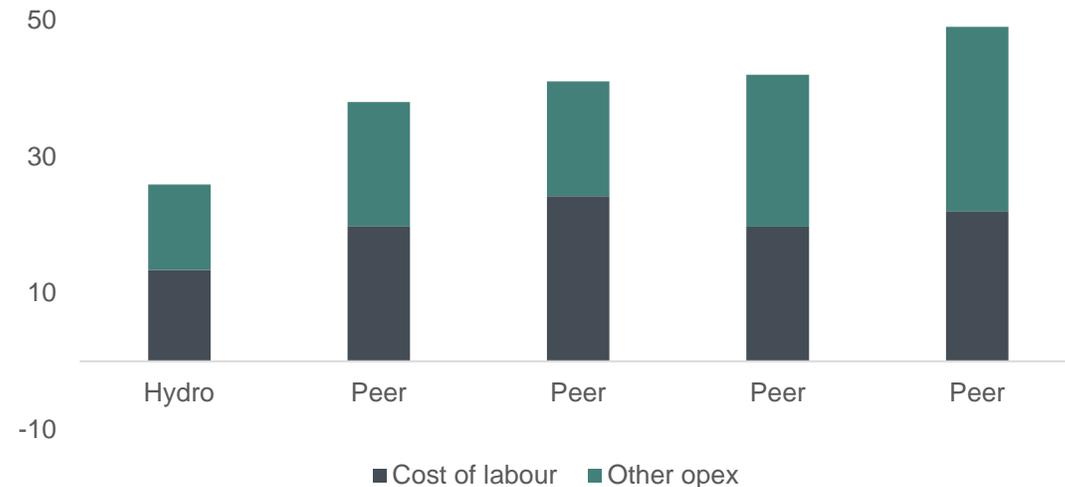
TWh



# Energy: Strong production platform, market performance and growth opportunities

## Resource spend Norwegian hydropower players 2021

NOK per MWh



Industry leader on cost and operational performance

## Strong platform for value creation

- EBITDA “platform” from operations
  - **8 TWh** on long term contracts (predictable prices)  
+ **2 TWh** (average) net long spot volume in merchant market
  - App. **NOK 3.5 billion** LTM adjusted with normal production and no area price gain<sup>1)</sup>
- Commercial contribution of app. **NOK 400 million** (average last years) comes in addition
- Maturing portfolio growth options; emphasis on flexible production and selected geographies

1) Based on a normal production of 9.4 TWh with a 2021 seasonal profile at last 12 months prices of NOK 1.1 / kWh (NO2)

# Hydro Rein's journey: Fast-tracking portfolio development



## CUSTOMERS



## PORTFOLIO



## PEOPLE



## CAPITALIZATION

**5.3 TWh p.a.<sup>1)</sup>**  
signed under long-term  
EUR & USD PPAs

**2.6 GW<sup>1)</sup>**  
gross capacity  
in construction & secured

**39<sup>2)</sup>**  
total # of renewable projects  
in portfolio

**~75<sup>3)</sup>**  
Hydro Rein FTEs

JV with Macquarie  
Asset Management  
signed in October

**4.4bn<sup>1)</sup>**  
USD contracted  
revenues

**7.2 GW<sup>2)</sup>**  
gross capacity  
in portfolio

**30**  
total # of sites in scope for  
Energy Solutions pipeline

**2**  
Main hubs: Oslo and Rio de  
Janeiro

Valuation: USD 333  
million

1) Including Vista Alegre.  
2) Total portfolio within JV scope, including Irupé.  
3) As of August 2023; including new contracted employees not yet started

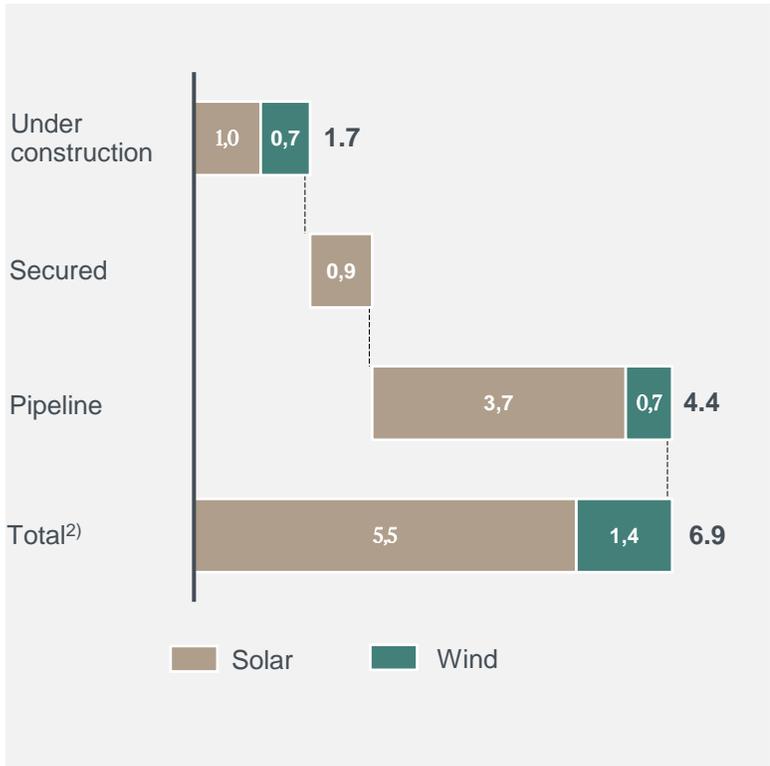
# Current portfolio adds 2.4 TWh to REIN's captive power<sup>1)</sup>



1.7 GW gross, approximately USD1.8 billion gross

## Renewable energy

Gross GW



## Projects under construction

Project Name	Ownership Share	Turbines	Capacity (MW)	Energy (GWh)	COD
Stor-Skälsjön	25%	42	260	802	Q1 2024
Ventos de São Zacarias	49.9% <sup>3)</sup>	80	456	1900	Q4 2024
Mendubim	33.3% <sup>3)</sup>	~1 million modules	530	1200	Q1 2024
Boa Sorte	33.3% <sup>3)</sup>	775,220 modules	438	996	Q2 2024

1) Projects in construction and secured.  
 2) Total portfolio within JV scope, including Irupé.  
 3) Hydro Rein's ownership before farmdown to offtakers

# Hydro Rein on track to becoming preferred supplier of renewable energy solutions to industrials



## 2026 Targets communicated at Hydro’s Capital Markets Day 2022

<p><b>3 GW</b> Gross portfolio in operation and construction</p>	<p><b>&gt;500 MW</b> added gross capacity to pipeline on average annually</p>	<p><b>400-450 MNOK<sup>1)</sup></b> Estimated EBITDA contribution from projects in construction</p>
--	---	---

## Key numbers<sup>1)</sup>: portfolio under construction – as of Q3 2023

<p><b>1.7 GW</b> Gross portfolio in operation and construction</p>	<p><b>~3 BNOK</b> Estimated pro-rata Equity Capex (net of agreed farm-downs)</p>	<p><b>~410 MNOK</b> Estimated pro-rata EBITDA<sup>2)</sup> from projects in construction</p>
<p><b>1.5 GW</b> Gross capacity added to the pipeline in 2023YTD</p>		

## 2030 vision of continued profitable growth

- Sustainable & attractive risk-adjusted returns**  
10-20% platform eIRR
- Balanced portfolio**  
Between geographies and technologies
- Services and capabilities**  
Covering the full value chain, capturing developer margin
- Regional leadership**  
REIN being one of the leading players in core geographies

1) All financial figures in MNOK has been converted by using fixed FX of 9.7 in EUR/NOK and USD/NOK  
2) 10-year run rate EBITDA (nominal average 2026-35)

# Multiple value levers to create attractive returns



Value levers at project and platform level

## Key value levers

## Comments and selected examples

Key value levers	Comments and selected examples
Project equity IRR	Base stand alone project equity IRR
Structuring	Optimize capital structure (including refinancing), extend PPA
Operational excellence	Optimize cost base (capex/opex), improve productivity, extend asset lifetime
Hydro Rein Services	Cross-sale of services such as construction project management, asset and energy management
Farm downs	Crystalize value through partial sell-down
Platform value	Pipeline growth, economies of scale, industrialization & best practice sharing
Platform equity IRR	Total IRR potential at platform level

Hydro Rein with access to several **value creation levers** at **asset level** to boost project returns

Further, material return potential at **Platform Level** that is not captured at individual asset level

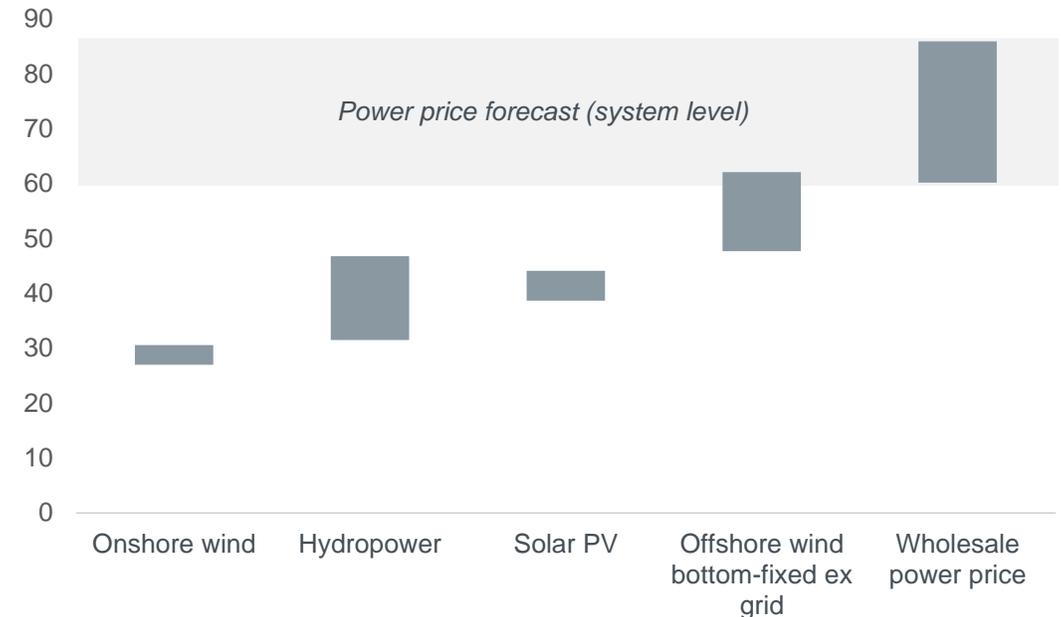
Total return potential REIN JV platform level: **10 - 20% IRR**

# Norwegian power projects remain attractive

Attractive resource base and cost level across technologies prevail

- Cost of selected technologies show that attractive projects can be matured in Norway
- Short/medium term relies on onshore wind and PV, with time to maturity and permitting as key challenges
- Longer term, offshore wind will add significant power volumes to the Norwegian and North Sea system
- Norwegian hydropower adds flexibility at lower cost than alternatives
  - Increasing in value
  - Lower degree of cannibalization
  - Key challenges: Acceptance, timeline and tax uncertainties

Range of LCOE and Nordic system price towards 2030<sup>1)</sup>  
2023 EUR per MWh



1) LCOE = Income necessary from power as produced to reach profitability for the technology. Estimates from four different consulting companies. Offshore wind not relevant in Norway until post 2030.

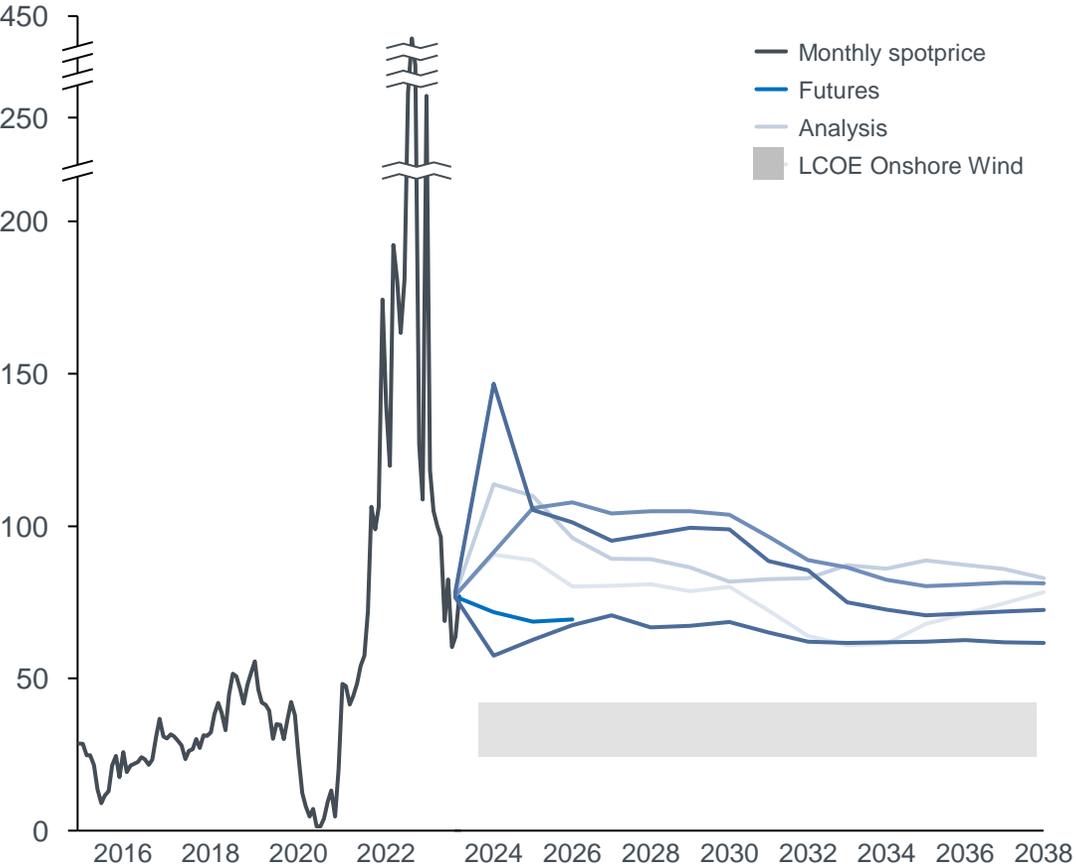
# Project based PPAs still most attractive for sourcing



Hydro Rein a key vehicle

## Monthly spot price and future prices in NO2

Nominal EUR per MWh



Sources: Baringa, Hydro analysis, SKM, THEMA, Volue

### Hydro Rein

- Strong capabilities, responsible partner
- Developer and long term owner
- Profitability through several levers

### Hydro Energy

- Portfolio optimization
- Balancing, nomination, as produced to baseload firming & area management

### Aluminium Metal

- Competitive sourcing expected to be below spot on average
- Firm power delivery, volatility risk mitigated

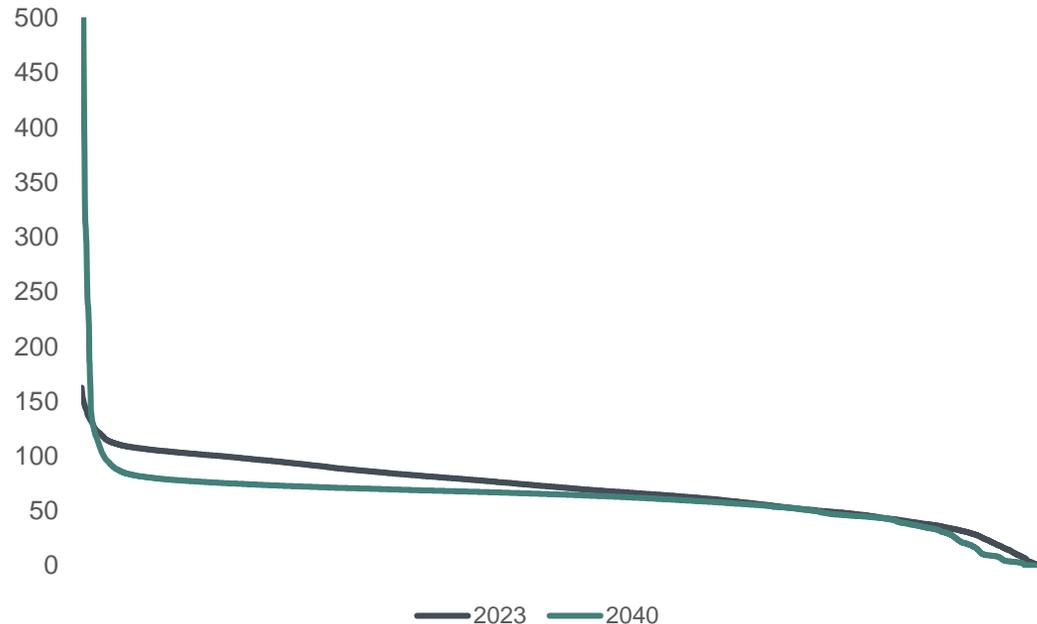
# Increasing value of flexible hydropower



Enabler for renewables at low shaping cost

## Sorted hourly power prices in NO2<sup>1)</sup>

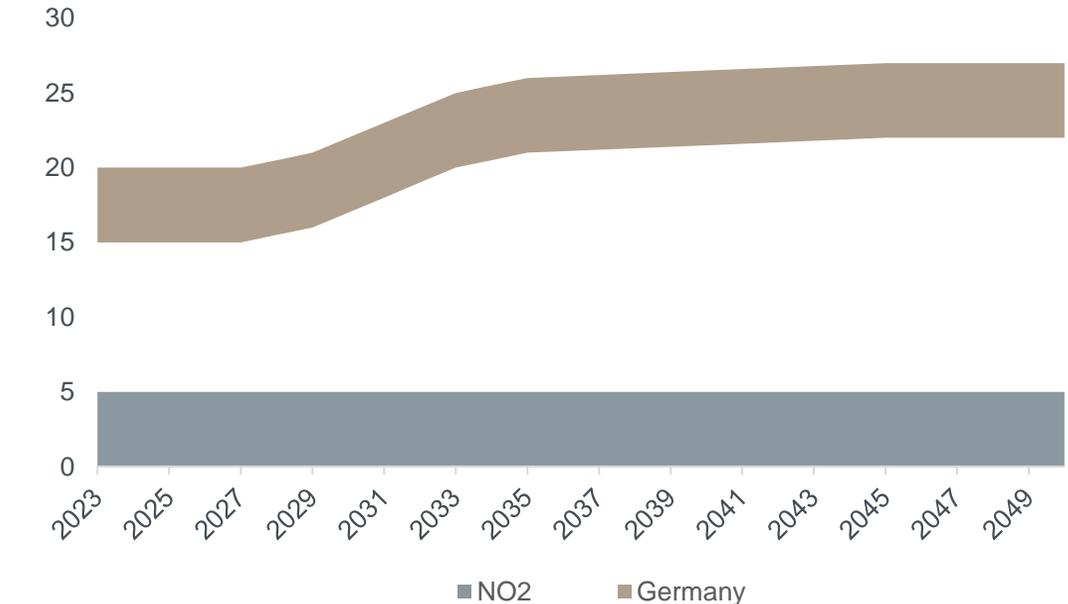
2023 EUR per MWh



Higher value for increasing installed capacity

## Firming cost for onshore wind

2023 EUR per MWh



Makes wind and solar in Norway cheaper to firm up

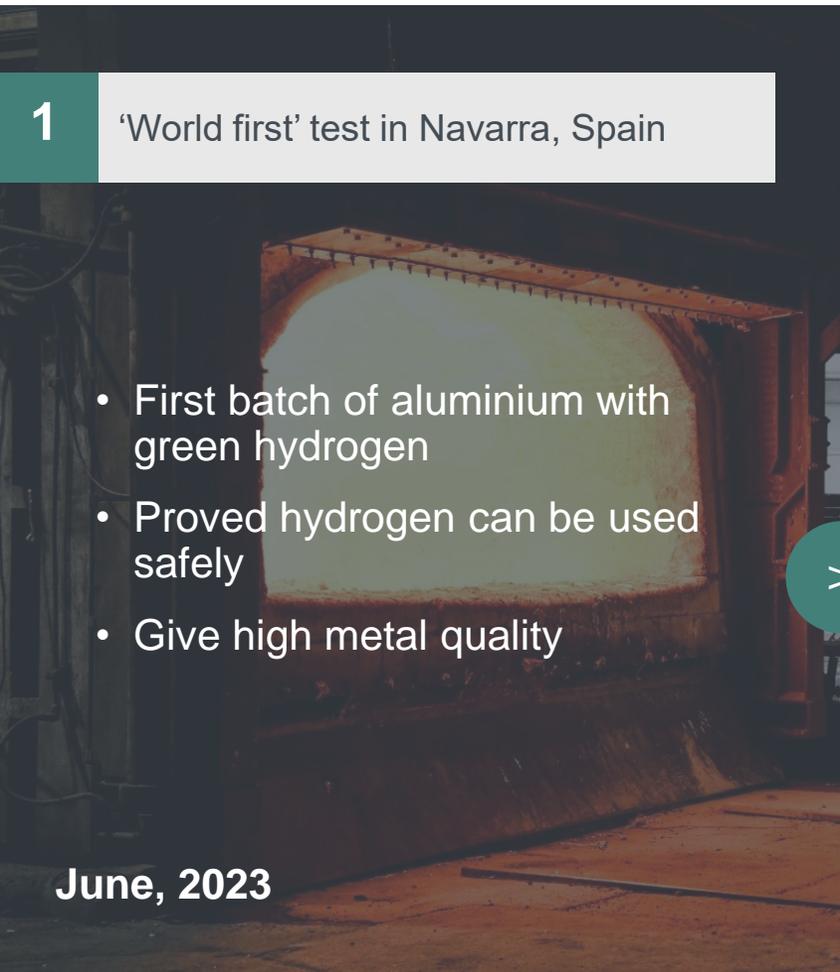
1) All weather years. Source: Statnett

# Hydro Havrand: World's first aluminium made with green hydrogen

**1** 'World first' test in Navarra, Spain

- First batch of aluminium with green hydrogen
- Proved hydrogen can be used safely
- Give high metal quality

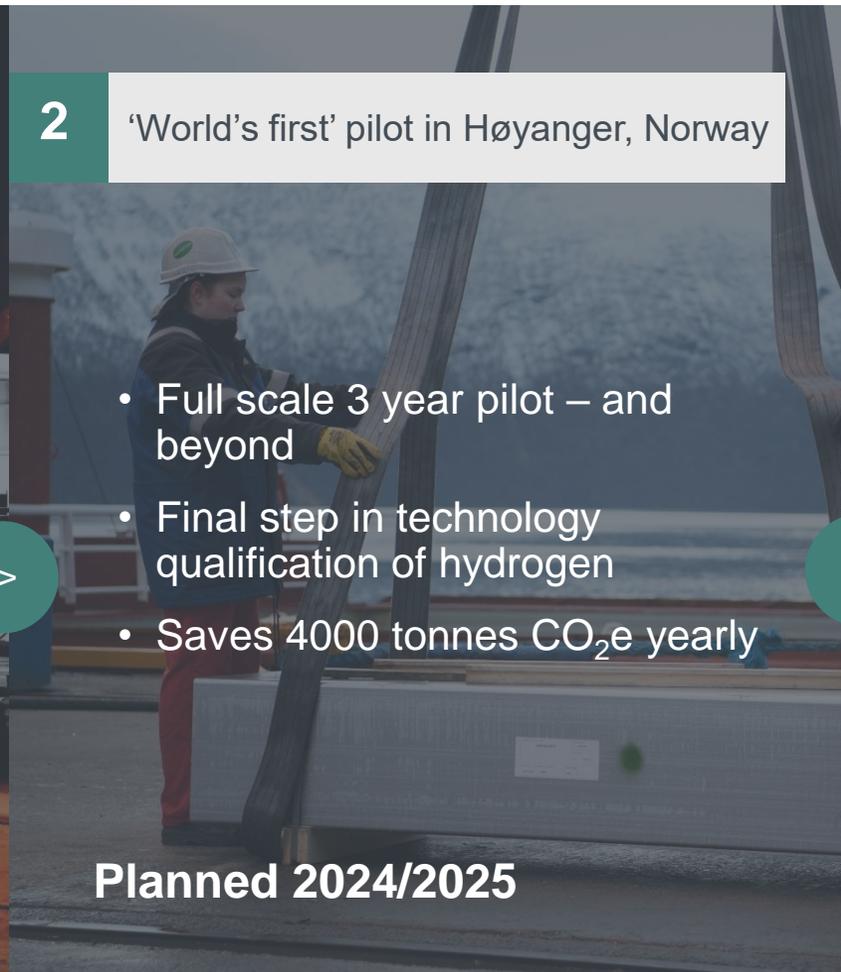
June, 2023



**2** 'World's first' pilot in Høyanger, Norway

- Full scale 3 year pilot – and beyond
- Final step in technology qualification of hydrogen
- Saves 4000 tonnes CO<sub>2</sub>e yearly

Planned 2024/2025



**3** Roadmap to further fuel switch

- Develop roadmap to further fuel switch of Hydro sites
- Aiming for Hydro-sites in Norway, EU, Brazil and the US where hydrogen is most attractive decarbonization option

2023 →



# Empowering the future of green mobility



Progress in the sustainable battery materials portfolio throughout 2023

## STRATEGIC TARGETS

3x

Value uplift in 2030 on equity invested by 2027

## GROWTH ASSETS

hydrovolt

Circular solutions 50% ownership

- Fully operational and reached nameplate capacity during Q3.
- Commenced building industrial pilot for battery pack dismantling and discharge.

Part of Hydro MoU with Porsche on EV-recycling



Vianode

Anode materials 30% ownership

- First plant under construction at Herøya, which will support customer qualification.
- Signed lease agreement for large-scale plant at Frier Vest, Norway.

Awarded 90 MEUR grant from EU Innovation Fund.



E-MAGY

Anode materials

- Ramping up pilot production
- Strengthening organization on strategic positions

Maturing the customer qualification process in the consumer electronics and automotive



Lithium de France  
GEOTHERMAL

Lithium 12% ownership

- Secured 2 exploration permits in Alsace region and target to start drilling operations in 2024.

Signed a 5-year off take agreement with Renault.



## PORTFOLIO HOLDINGS

Corvus   
24 % owner share

northvolt  
0.6% owner share

# Value creation across the energy space going forward

- 1** | High performance and profitability ambitions:  
*Energy Classic ROACE > 15%*  
*Hydro Rein JV platform annual eIRR 10 – 20 %*  
*Batteries 3x invested capital, 20% TSR average annually*
- 2** | Grow value of our Norwegian portfolio through upgrading of existing hydropower plants. Increase commercial ambitions in market operations
- 3** | Develop Hydro Rein to become the preferred supplier of renewable energy solutions to industrial customers in core markets - and a key enabler for decarbonization of Hydro
- 4** | Support Hydro across business areas and geographies with fuel switch solutions including green hydrogen
- 5** | Develop our portfolio of assets delivering more sustainable battery materials, empowering the future of green mobility





# CFO

## Strengthened resilience and greener value creation

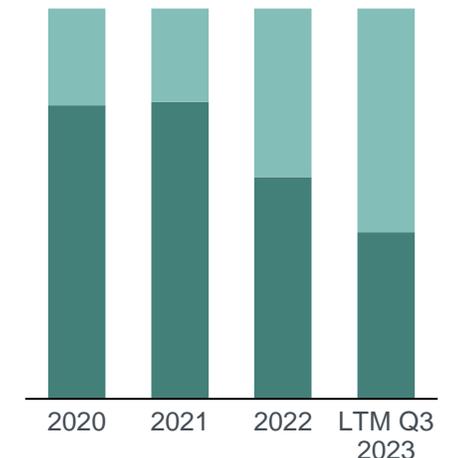
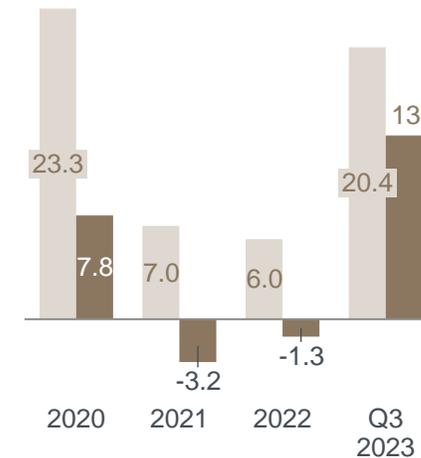
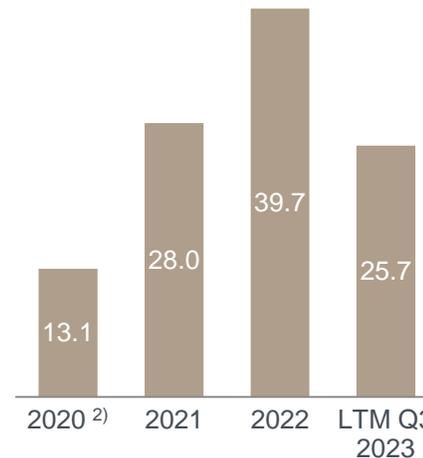
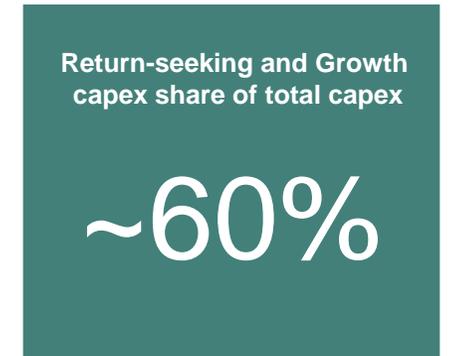
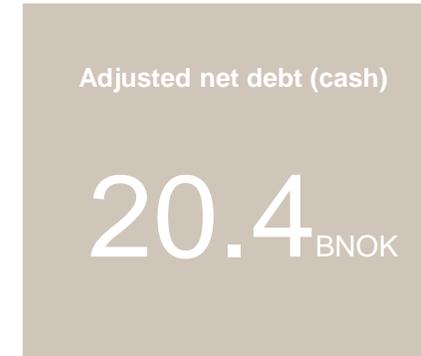
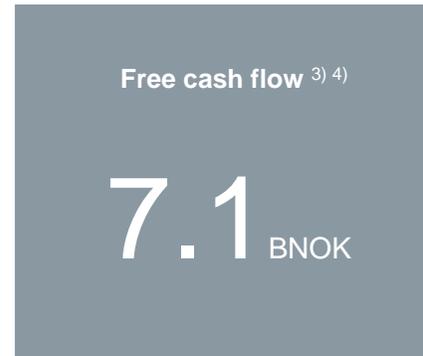
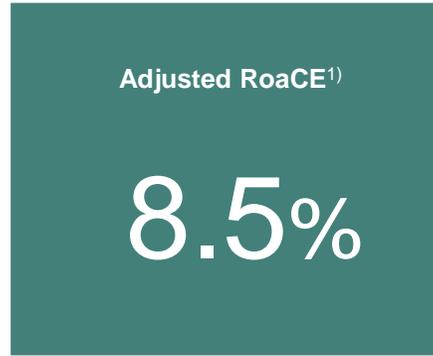
Pål Kildemo

Executive Vice President and Chief Financial Officer

# Earnings driven lower by weaker economic growth



Robust capital structure supporting strategic capital allocation



1) RoaCE figures as reported, where rolling is excluded from 2021.

2) Adjusted EBITDA figures as reported and excludes Rolling

3) Free cash flow defined as net cash provided by operating activities plus net cash used in investing activities less purchases of short-term investments, less process from sales of short-term investments

4) Figures are as reported and excludes Rolling

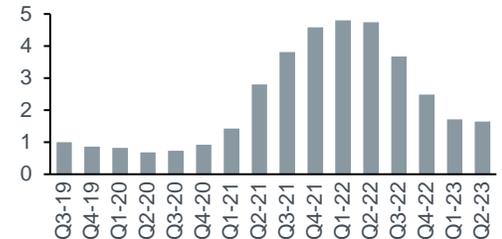
Adjusted net debt (cash)  
Net debt (cash)

Return-seeking and growth  
Sustaining

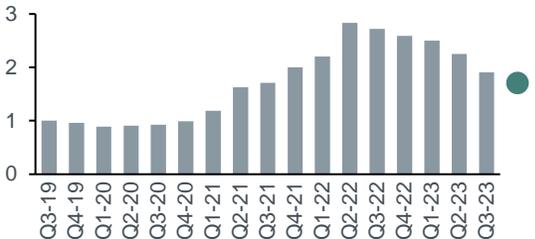
# Market uncertainty continues into 2024

## Revenue and cost drivers (indexed)

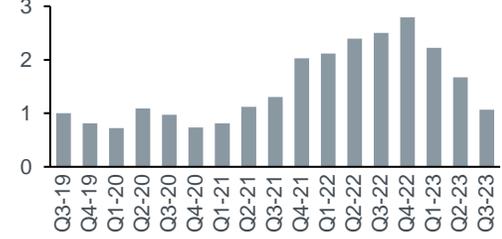
El Billet premium



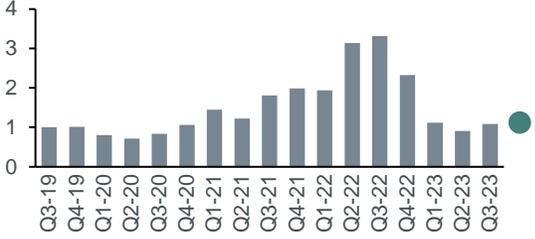
Petroleum coke FOB USG



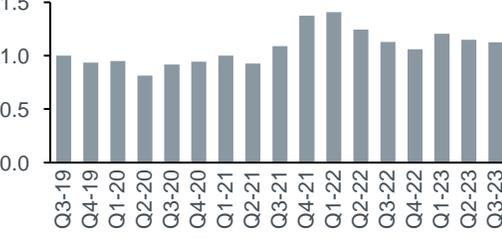
Caustic soda



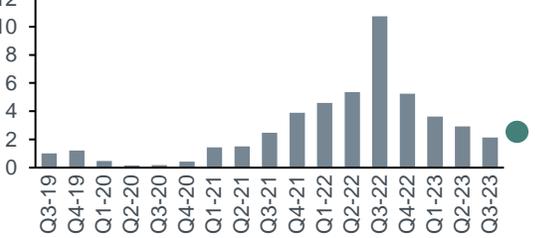
Gas (Henry Hub)



Alumina PAX index



NO2 spot price

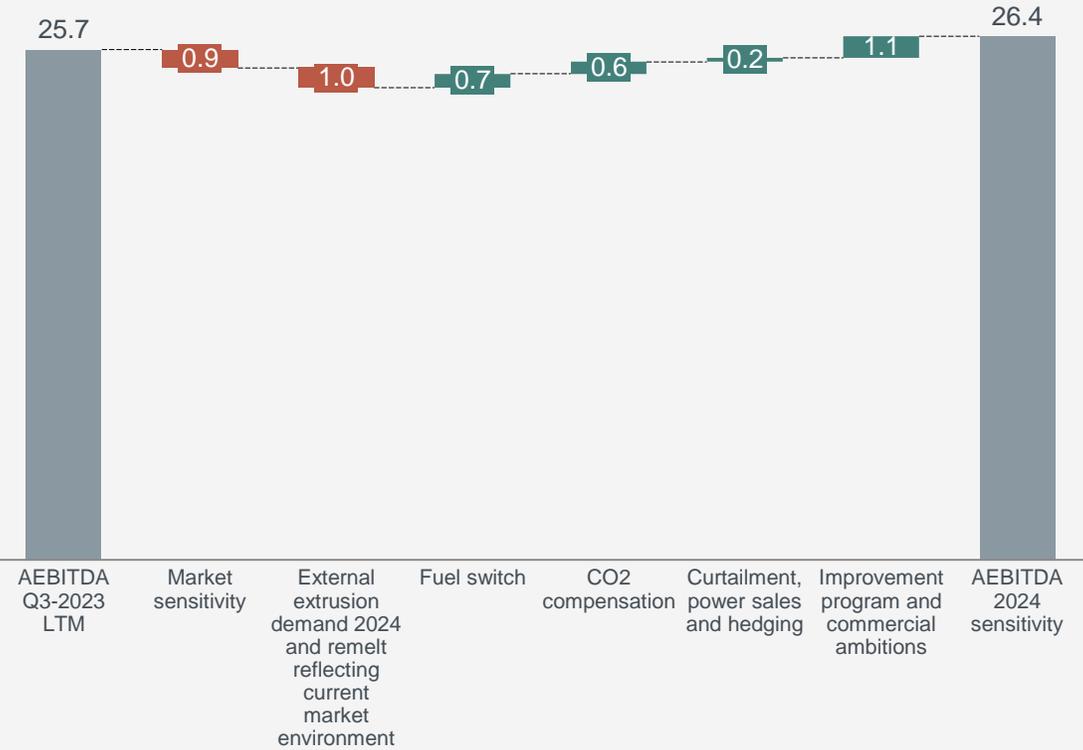


● Indication of current market prices

Source: Thomson Reuters, PACE, IHS Markit, Platts, ANP, CRU, Nord Pool

## AEBITDA sensitivity 2024

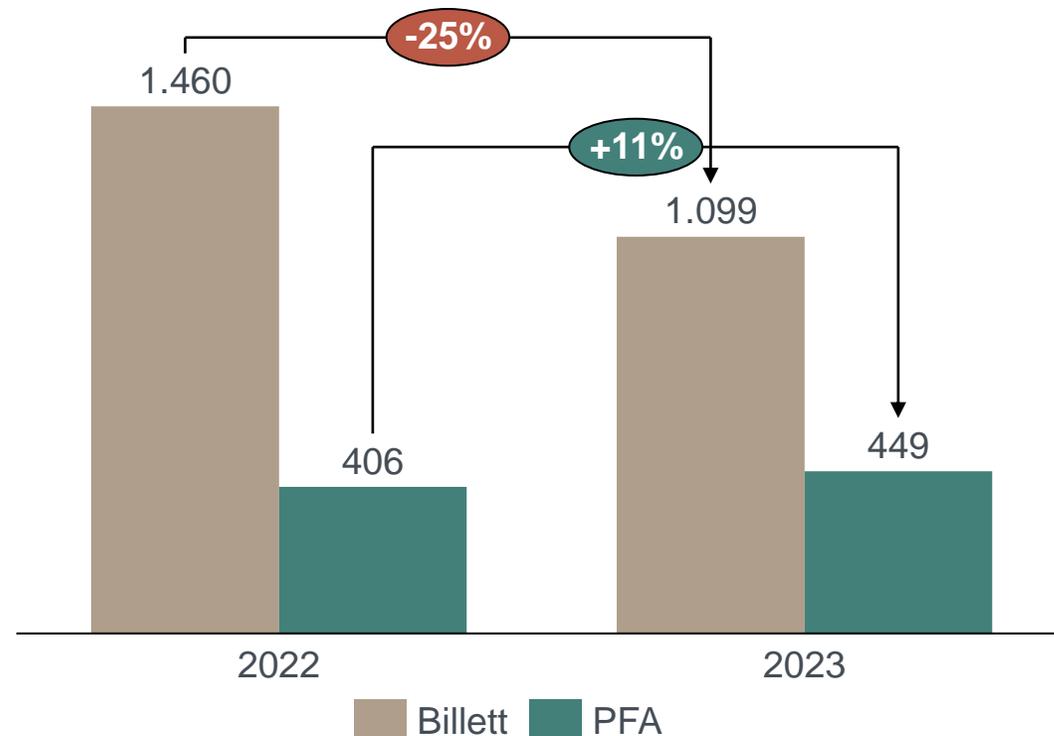
NOK billion



# Handling short-term volatility

Utilizing portfolio flexibility, margin management, freeing up cash, and securing downside

## VAP demand development in Europe, YoY



Source: CRU

## Short-term and medium-term mitigation

### Aluminium Metal

- Electrolysis production curtailed by ~130kt (Norwegian smelters)
- Volumes shifted between product segments
- Utilizing short-term flexibility in recyclers

### Extrusions

- Strong margin management
- Shifting volumes between product segments
- Continuous adaption of extrusion capacity to demand through reduced number of shifts
- Manning reductions in Europe to manage cost in challenging market
- Utilizing short-term flexibility in recyclers

### Continued efforts to reduce working capital

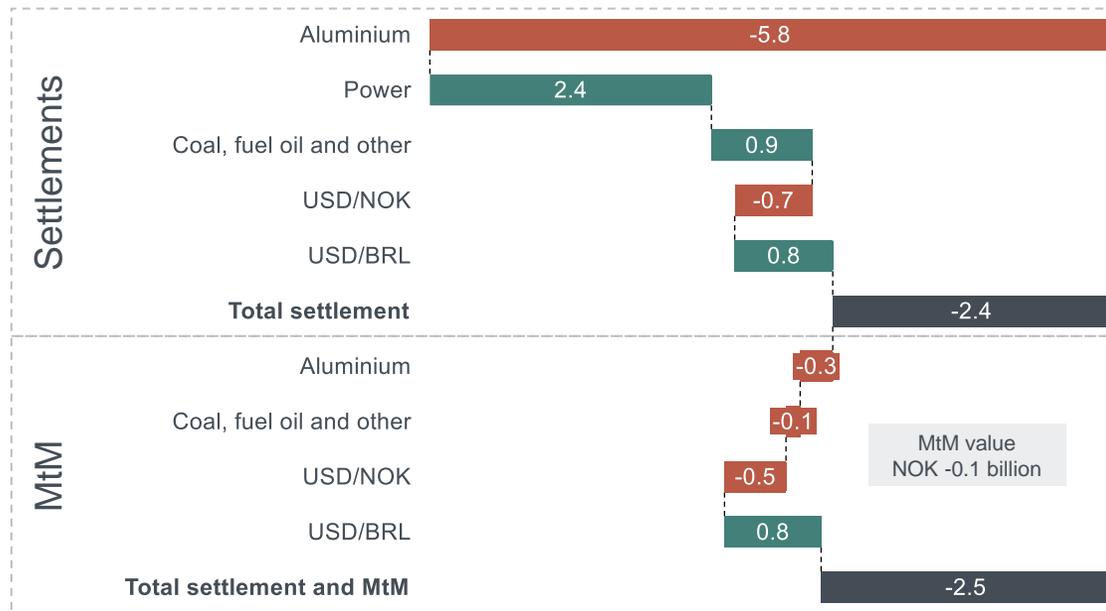
- Year to date cash release of more than NOK 4 billion

### Hedging program securing margins in challenging market

- Implemented hedges for most of the exposure to coal, electricity and gas for 2024 in B&A.
- 2024 gas and power hedges in place for 50% of exposure in both Metal Markets and Extrusions
- Integrated margin hedge in place for 2024 and 2025
- USD/BRL hedges in place for Alunorte and Albras

# Integrated margin hedging strengthens low-cycle earnings

Strategic hedging status<sup>1)</sup>  
NOK Billion



1) Mark to Market as of October 31, 2023  
The hedges are entered in the following FX: NOK (51% of total hedged volume), USD (37%) and EUR (12%)  
USD/NOK locked FX rate: 2023: 8.5; 2024:9.49; 2025: 10.18

- Derivative positions locked in at historical strong margins
- Negative realised values through a strong market, and positive market value going into a softer market
- Hedged raw materials offset part of cost increase

Hedged volumes and Integrated Margin<sup>2)</sup>

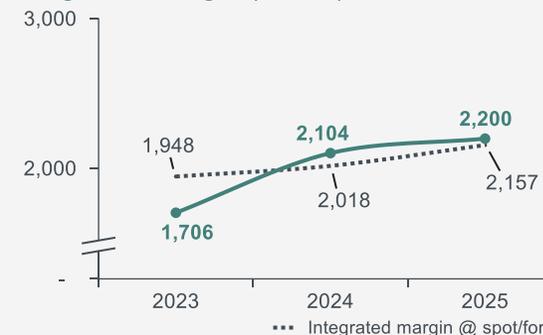
Hedged aluminium volumes



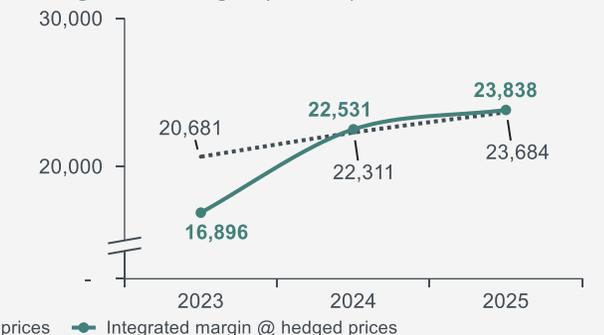
Hedged USDNOK volumes and prices



Integrated margin (USD/t)



Integrated margin (NOK/t)

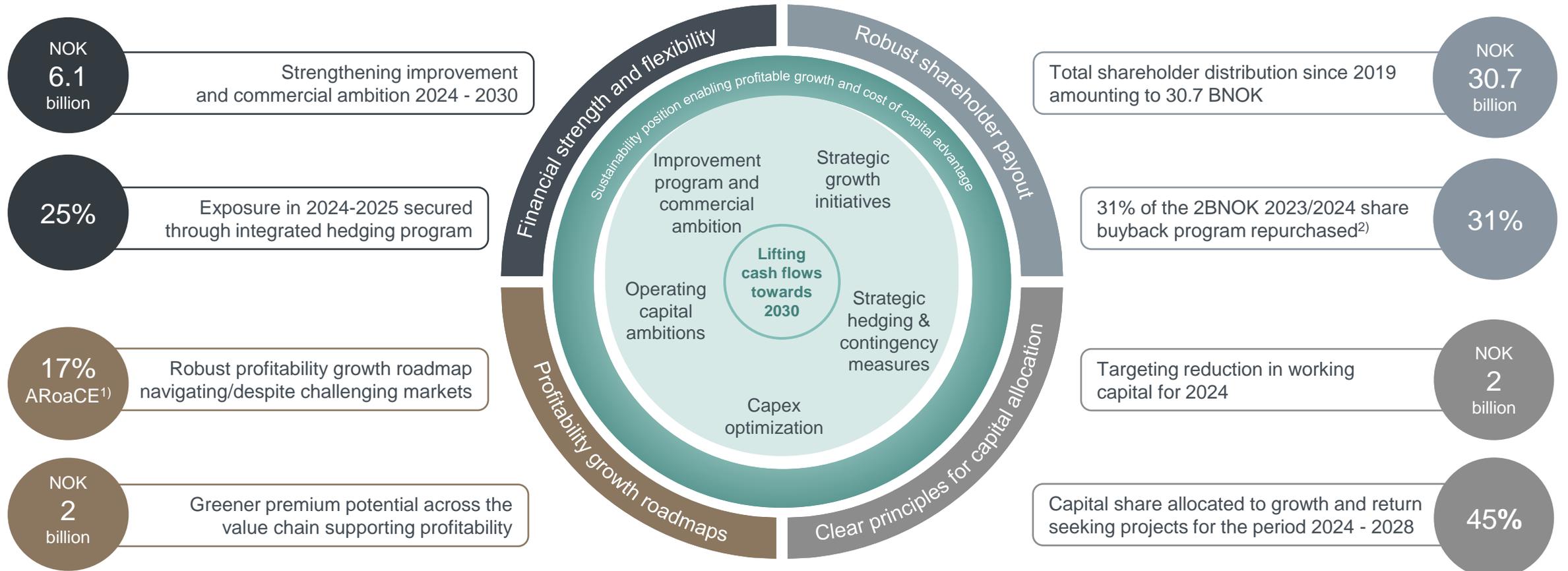


2) Forward prices as of November 10, 2023. Spot prices per October 31, 2023

# Our financial framework guides the short and long-term



Solid framework for lifting returns and cash flow and managing uncertainty



1) Hydro group external scenario 2030 ARoaCE based on CRU price and premium assumptions and S&P Global FX assumptions, with adjustments as specified in the footnotes

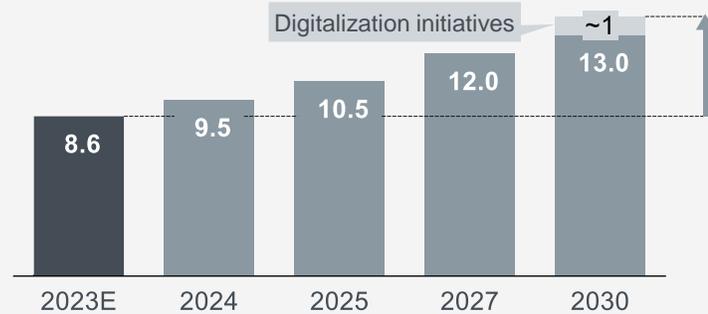
2) 31% repurchased as of 24<sup>th</sup> of November

# Extended improvement ambitions

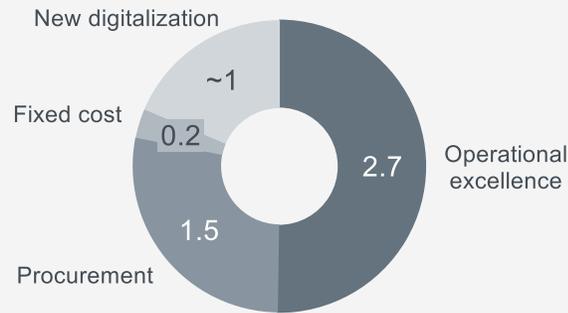
Strengthening future competitiveness and positioning with additional potential from digitalization, greener premiums and commercial improvements in Energy

## Improvement program

Ambitions extended with additional NOK 1 billion until 2030

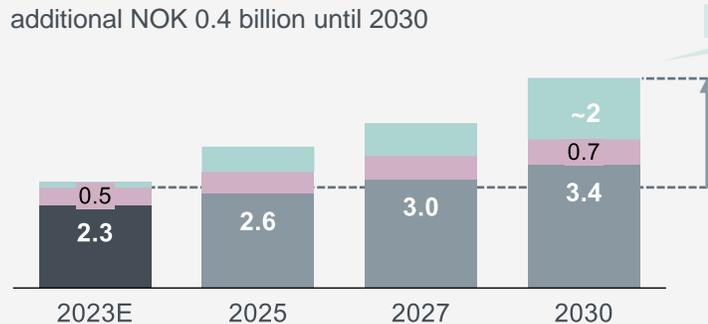


5.4<sub>BNOK</sub> →

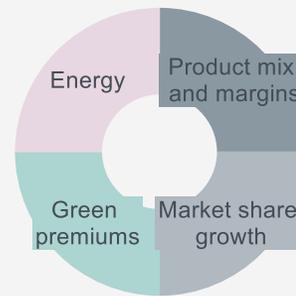


## Commercial initiatives

Ambition increased in 2025 and 2027, and extended with additional NOK 0.4 billion until 2030



3.3<sub>BNOK</sub> →



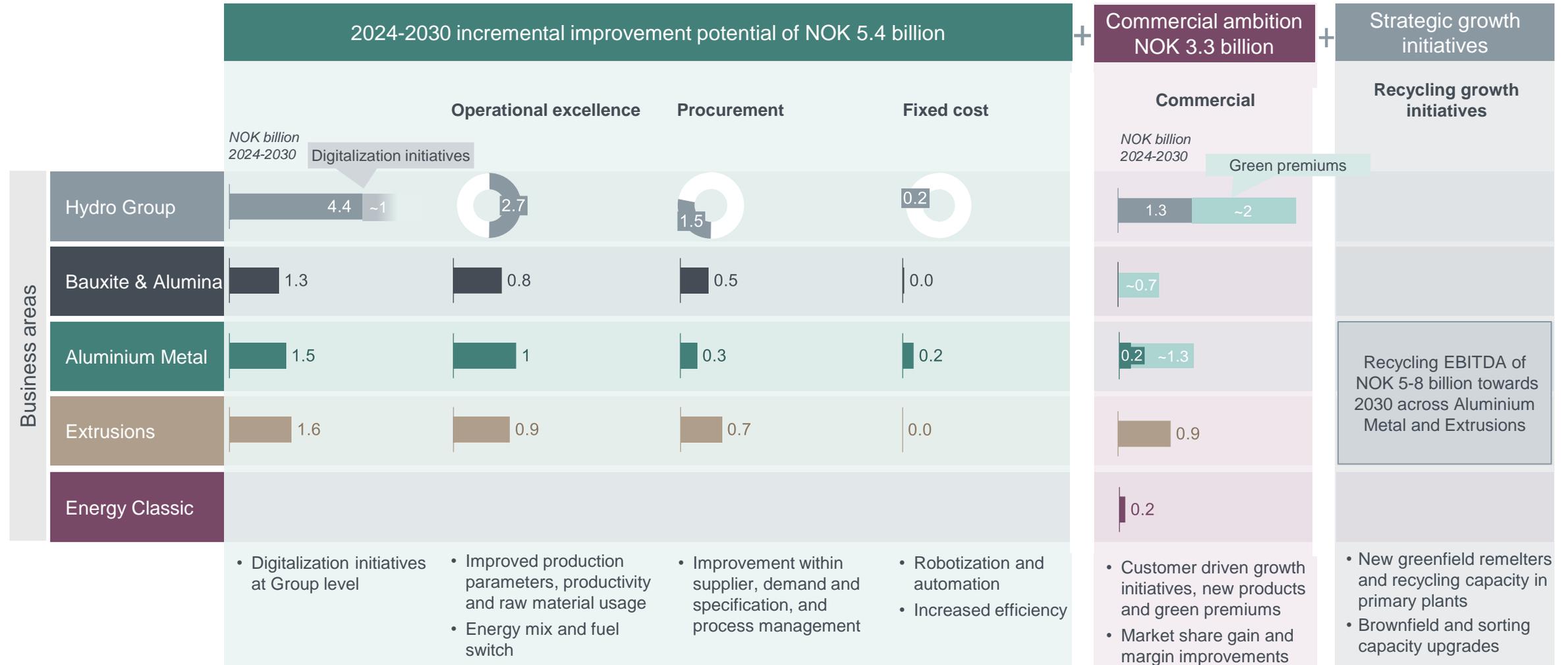
Note: NOK 1.5 billion in annual average CAPEX to meet remaining improvement and commercial ambitions.



# Extending the improvement ambitions to 2030



Targeting NOK 14.0 billion in accumulated improvements and NOK 6.1 billion in commercial ambitions by 2030



Note: ~1.5-2 BNOK in annual average CAPEX to meet remaining improvements and commercial ambitions

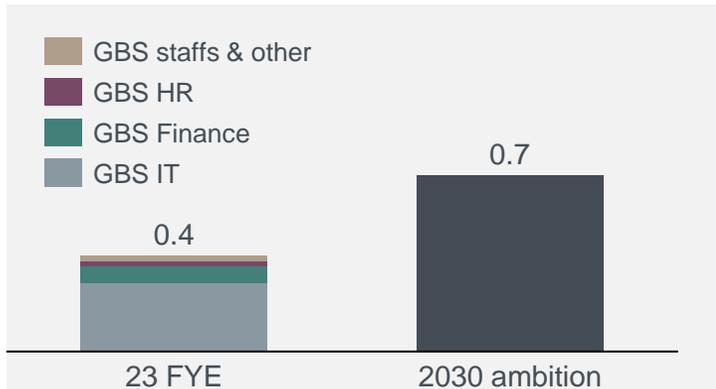
# Significant thematic improvements across organization



NOK 6.8 billion improvements through global business services, procurement and digitalization

## Global Business Services

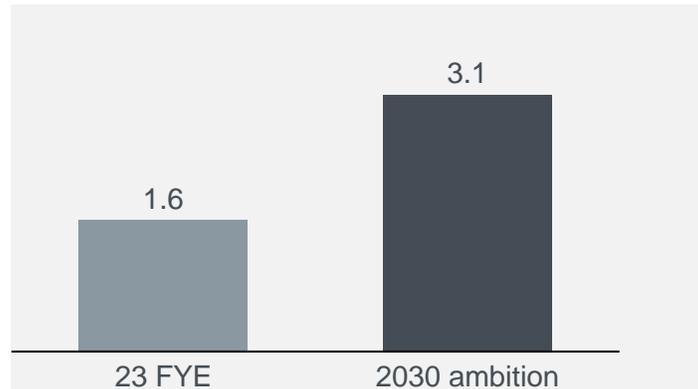
NOK billion



- NOK 360 million delivered since 2019, NOK 300 million targeted until 2030
- World class staff costs levels, driven by geographic footprint, scale, analytics and automation

## Procurement

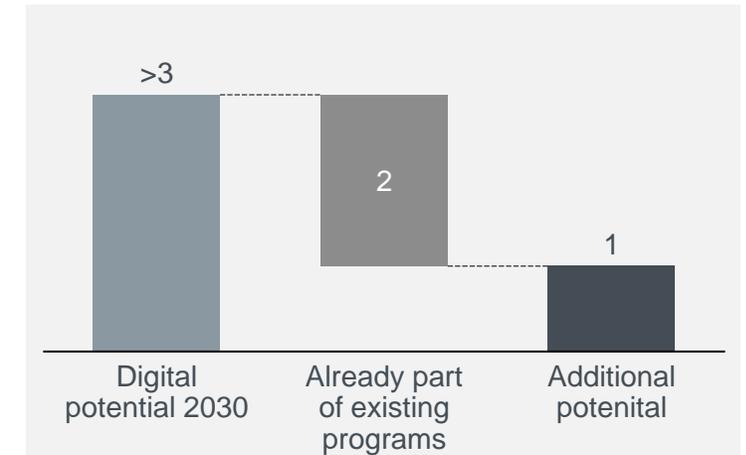
NOK billion



- NOK 400 million group procurement program launched in 2019
- Delivered NOK 1.6 billion, and targeting additional potential of NOK 1.5 billion

## Digitalization

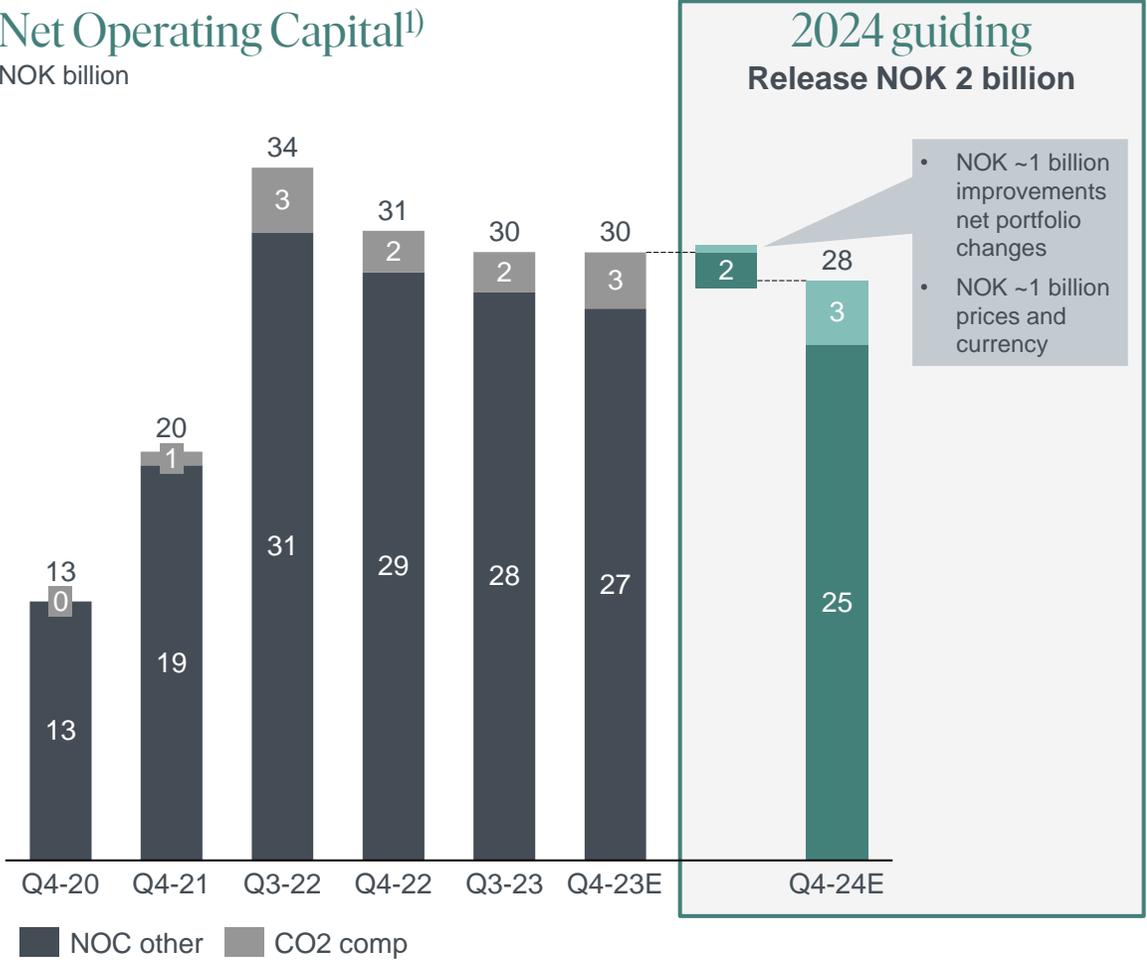
NOK billion



- Overall digital potential of > NOK 3 billion, where 60-70% is covered by existing improvement program
- Ambition to deliver NOK 1 billion in digital improvements on top of existing improvement program by 2030

# Targeting NOK 2 billion Net Operating Capital release 2024

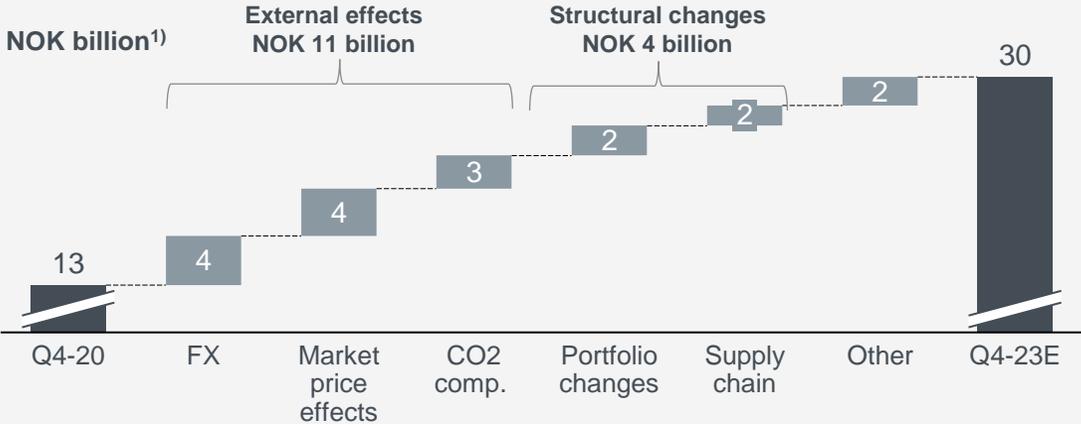
Net Operating Capital<sup>1)</sup>  
NOK billion



1) Net Operating Capital end of period.

## Structural changes and market effects driving Net Operating Capital increase historically NOK 17 billion NOC increase since Q4-20

- Weakening reporting currency (NOK) (all BAs)
- Higher sales- and raw material prices (all BAs)
- Introduction of CO2 compensation scheme (AM)
- Portfolio changes (AM, HE)
- Strategic supply chain changes (AM)
- M&A and growth
- Transitional inefficiencies due to restructuring and market volatility (AM, HE)



# Capital allocated according to strategic modes



Strategic modes reflect global megatrends and high-return opportunities

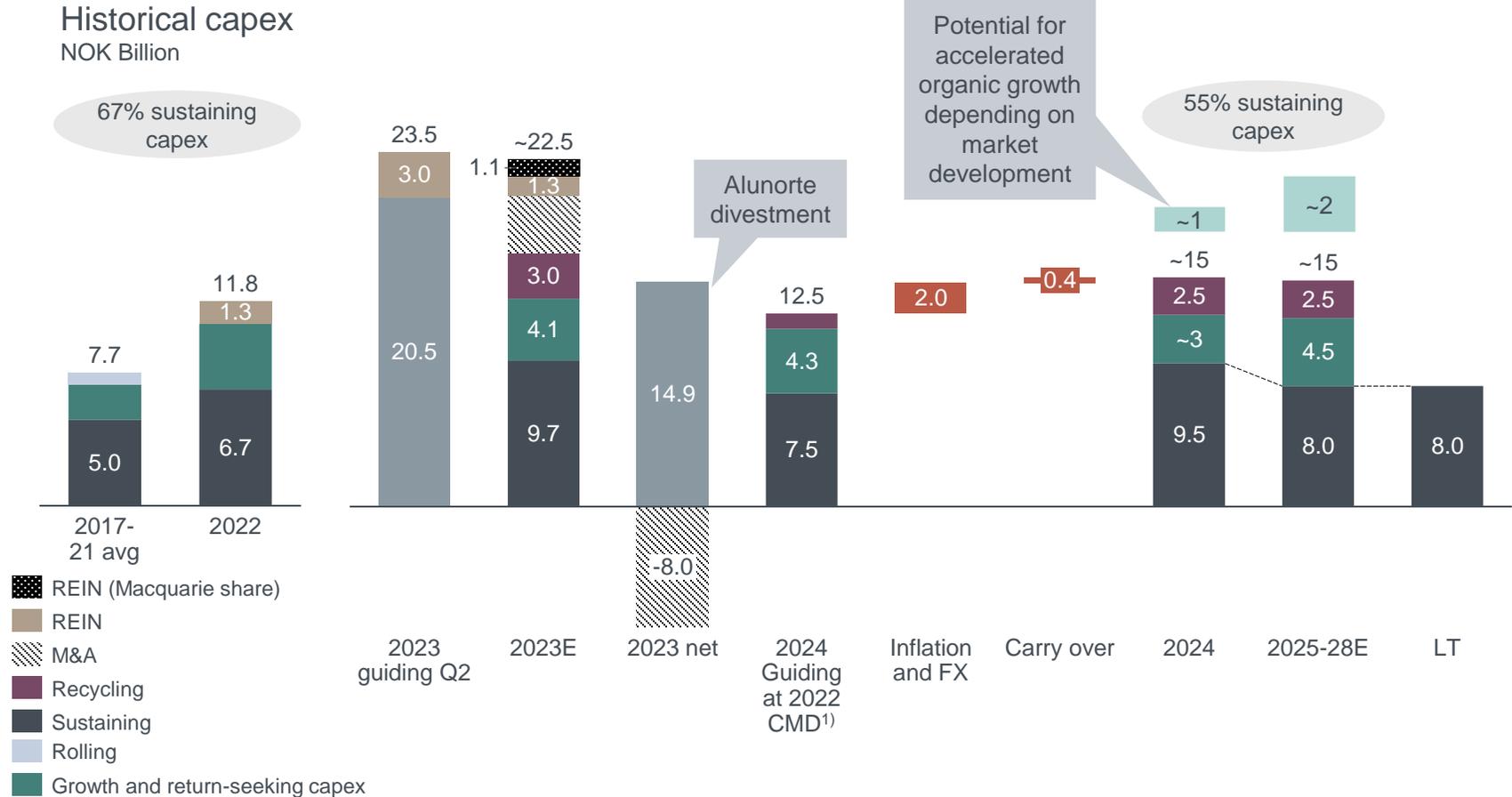
Safe, compliant and efficient operations  
The Hydro Way



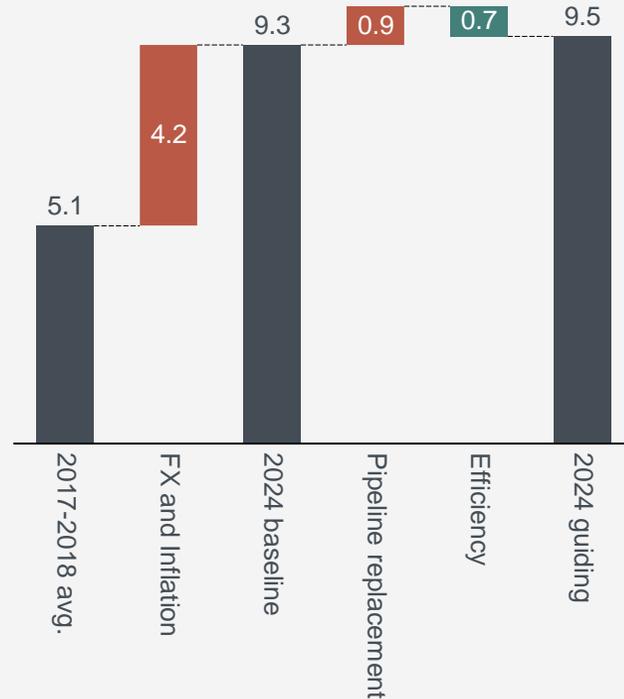
<p><b>Businesses</b></p>	 <p><b>Bauxite &amp; Alumina</b></p>	 <p><b>Aluminium Metal</b></p>	 <p><b>Recycling</b></p>	 <p><b>Energy</b></p>	 <p><b>Extrusions</b></p>
<p><b>Strategic mode</b></p>	<p>Sustain and improve</p>	<p>Sustain and improve</p>	<p>Growth</p>	<p>Selective growth</p>	<p>Growth</p>
<p><b>Towards 2030</b></p>	<p>Reduce risk, improve sustainability footprint, improve cost position</p>	<p>Robustness and greener, increase product flexibility, improve cost position</p>	<p>Substantial shift in conversion of post-consumer scrap</p>	<p>Growth in renewables and batteries</p>	<p>Growth with new capacity and capabilities</p>

# Underlying 2024 capex in line with last year's guidance

Added flexibility depending market development



### Sustaining capex development NOK Billion



1) 24-26 average guiding

# Greener investments drive value creation



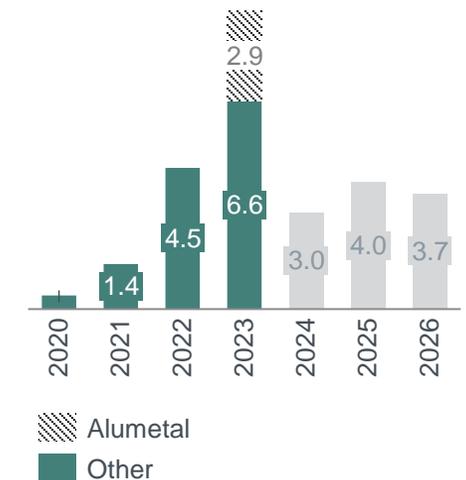
Hydro's largest prioritized investment areas combine sustainability and profitability

Recycling (PCS)	B&A (EI-Boilers)	Electrolysis abatement	Other
<p>Several large recycling projects completed or near execution:</p> <ul style="list-style-type: none"> <li>• <b>Cassopolis</b> ✓</li> <li>• <b>Alumetal</b> ✓</li> <li>• <b>Rackwitz</b> ✓</li> <li>• <b>Hungary</b> ✓</li> <li>• <b>Cressona</b> ✓</li> </ul>	<p>Substantial decarbonization investments in B&amp;A with positive business cases:</p> <ul style="list-style-type: none"> <li>• <b>Elboiler pilot</b> ✓</li> <li>• <b>Elboiler expansion</b>: In execution</li> <li>• <b>Alunorte Fuel Switch</b>: Near completion</li> </ul>	<p>Technology roadmaps in Aluminium Metal to produce zero carbon primary metal</p> <p><b>HalZero</b>: Investment decision taken on Stage 2 facility (1kg Al/hr) ✓</p> <p><b>Verdorex</b>: Progressing towards first carbon capture</p>	<ul style="list-style-type: none"> <li>• Energy savings initiatives with short payback time</li> <li>• Fully electric presses in Extrusion Europe:</li> <li>• <b>Nenzing</b></li> <li>• <b>Tønder</b></li> <li>• <b>Trzcianka Green Press</b></li> </ul>
IRR 15-30%	IRR: ~20% <sup>1)</sup>	R&D	IRR 20-35%
Targeting 850 -1200 ktons PCS consumption uplift by 2030	Bauxite and Alumina CO2 reductions under execution: 1 million tons	Creating a pathway to zero carbon primary aluminium	Combining profitability with sustainability improvement

**Greener investments / Total Investments**

~47%

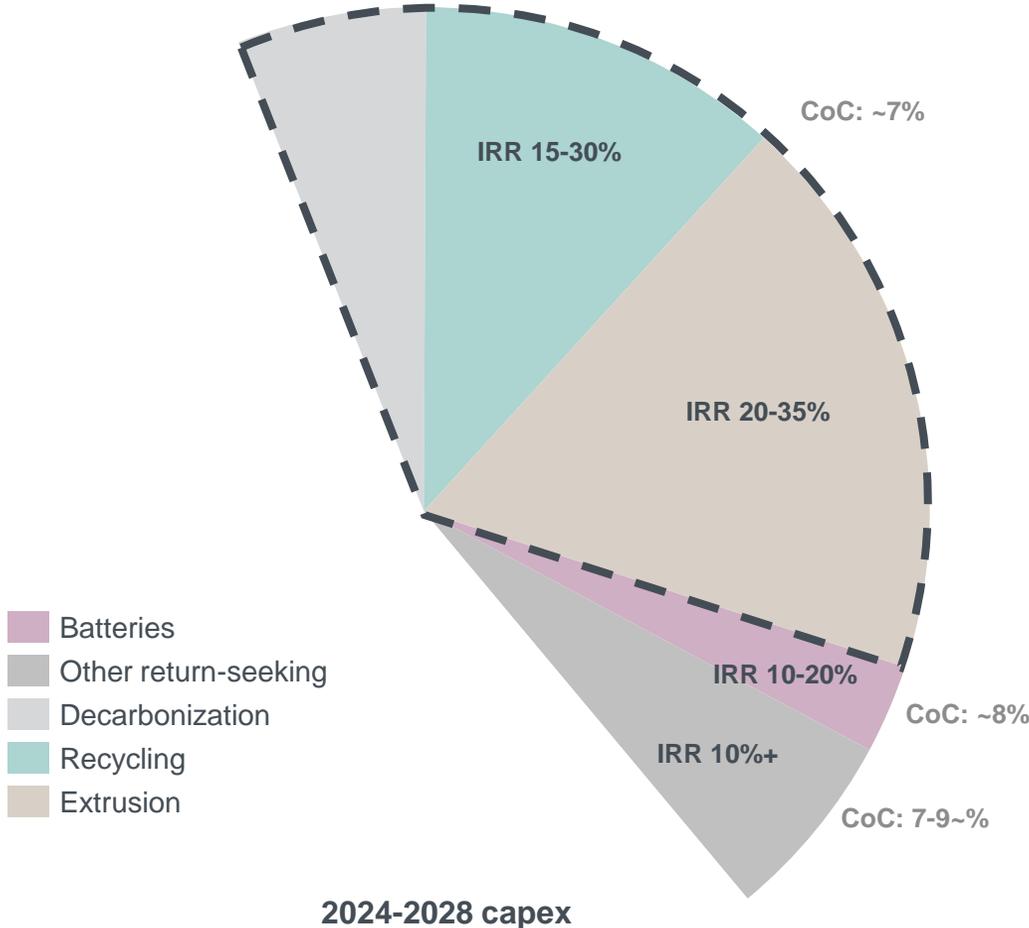
LTM Q3 2023



1) Before any green alumina premium is assumed

# Strong profitability in strategic growth areas

Indicative profitability in current return-seeking and growth portfolio



## Recycling

- Increase proportion of post consumer scrap (PCS), lowering metal cost
- Improved economies of scale in brownfield expansions
- Sorting technology and equipment standardization

## Extrusions

- New presses with improved capabilities and commercial value, capturing market share
- Press replacements with significant cost reductions and increased productivity
- Focus on high growth segments including automotive, systems business and commercial transportation

## Decarbonization

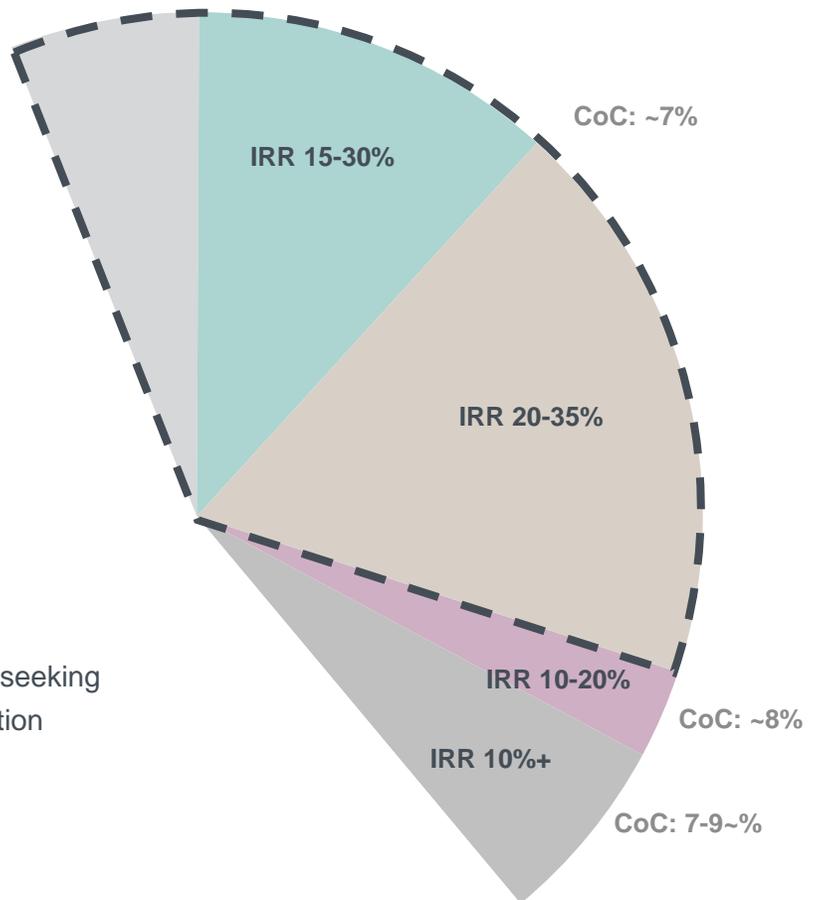
- Alunorte Fuel switch project (IRR 20+%) and electrical boilers
- Carbon capture technology pilots in mid-term, industrial scale pilot volumes by 2030
- HalZero as technology pilots in mid-term, industrial scale pilot volumes by 2030

## Batteries

- Focused strategy within sustainable battery materials, leveraging Hydro capabilities
- Establish positions in attractive growth segments in core markets
- Core investments: Hydrovolt (recycling) and Vianode (anode material)

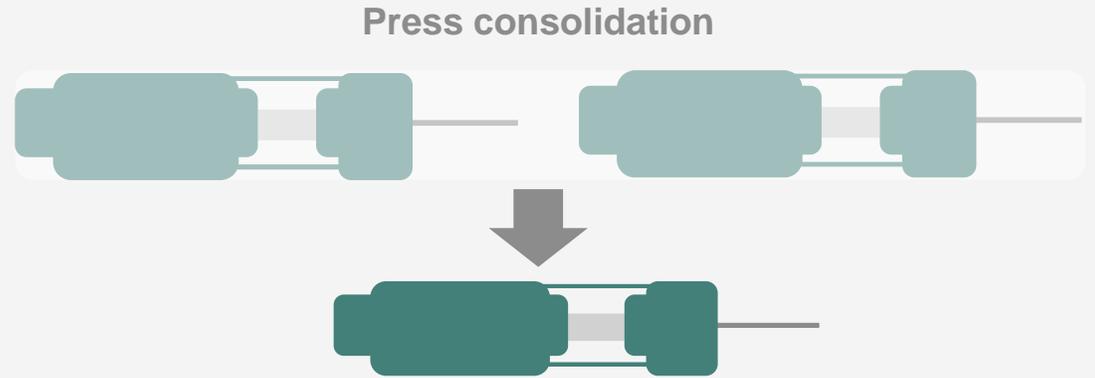
# Press replacements giving new capabilities and cost savings

Indicative profitability in current return-seeking and growth portfolio



2024-2028 capex

- Batteries
- Other return-seeking
- Decarbonization
- Recycling
- Extrusion



	Two old presses	One new press
Manning	2 x 8 FTEs per shift	4-5 FTEs per shift
Maintenance cost p.a.	EUR 1,500K	EUR 350-450K
Downtime	15-20%	5-10%
Scrap rate	33-35%	25-28%
Annual production	2x9K tonnes	16K tonnes

Based on cost savings alone **IRR: 30%+**

**Benefits**

- Higher levels of automation and better ergonomics, state-of-the-art technology .
- New and improved technical capabilities to serve new segments at higher prices
- High energy efficiency, lower cost per kilo & higher EBITDA per ton

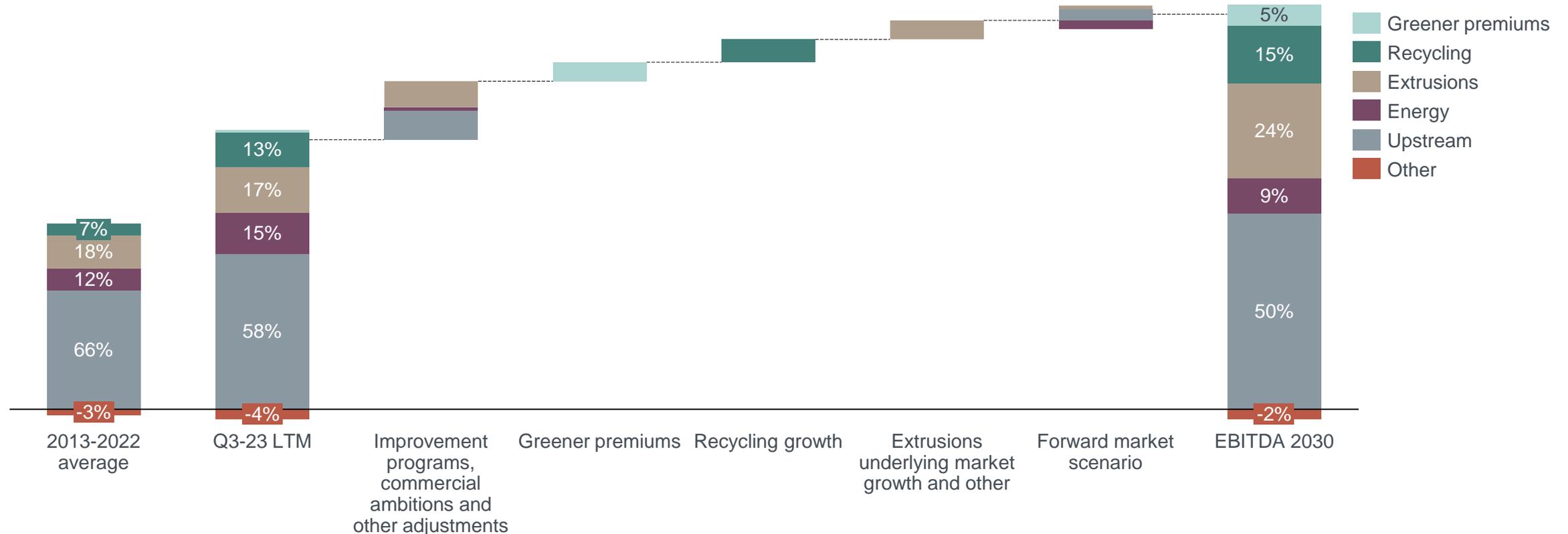
# Capital allocation increases earnings resilience



Extrusion and recycling margins, greener premiums growing as share of total earnings

## EBITDA

NOK billion



Note: 2013-2022 average and Q3-23 LTM EBITDA as reported

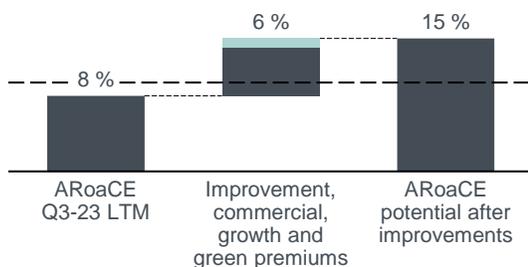
# Hydro profitability growth roadmap



Main drivers – improvement efforts, growth and market development

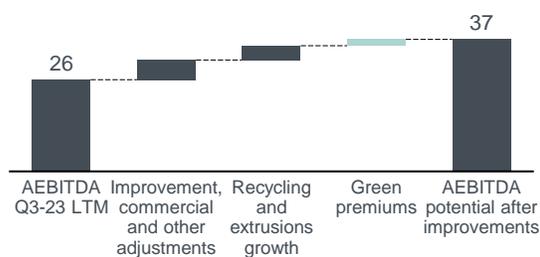
## ARoaCE potential 2030

Profitability target of >10%



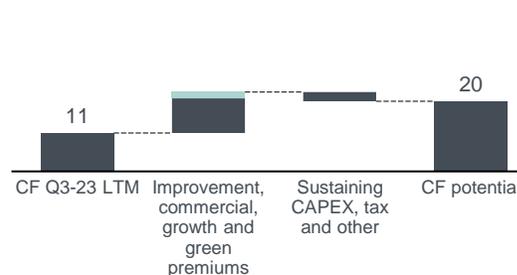
## AEBITDA potential 2030

NOK billion

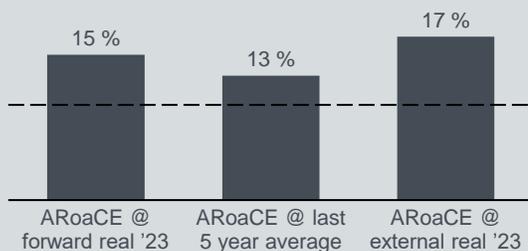


## Cash flow potential after sustaining CAPEX<sup>1)</sup> 2030

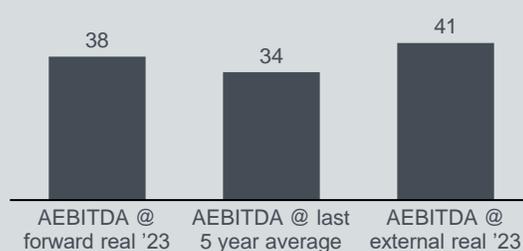
NOK billion



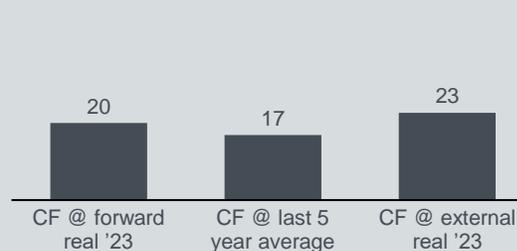
## Market scenarios 2030



## Market scenarios 2030



## Market scenarios 2030



## Main further upside drivers

- Sustainability differentiation and ability to produce net-zero aluminium
- Positive market and macro developments
- High-return growth projects
- Technology and digitization
- Portfolio optimization

## Main downside risks

- Negative market and macro developments, incl. trade restrictions
- Operational disruptions
- Inflation pressure
- Project execution and performance
- Deteriorating relative positions
- Regulatory frameworks, CSR and compliance

1) Cash flow calculated as EBITDA + tax + long-term sustaining CAPEX + other (lease payments, interest expenses)

Assumptions and sources behind the scenarios can be found in Additional information

Sources: External scenario is based on CRU price and premium assumptions and S&P Global FX assumptions, with adjustments as specified in the footnotes

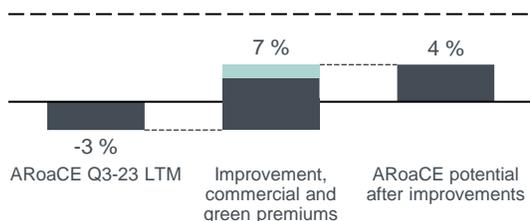
# Bauxite & Alumina profitability growth roadmap



Main drivers – fuel switch, commercial differentiation and market development

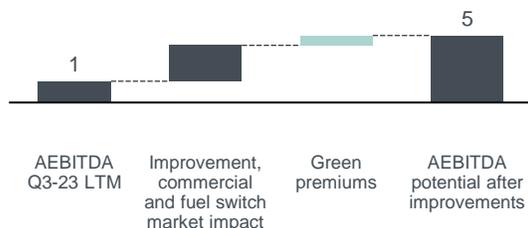
## ARoaCE potential 2030

Profitability target of >10%



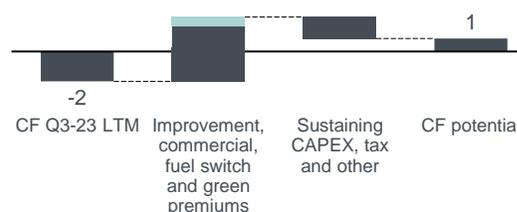
## AEBITDA potential 2030

NOK billion



## Cash flow potential after sustaining CAPEX<sup>1)</sup> 2030

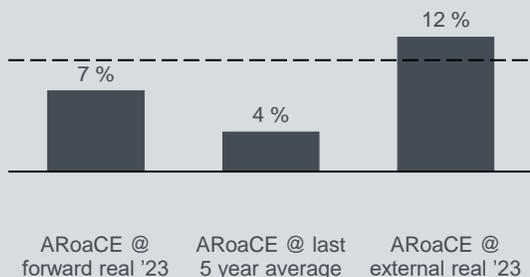
NOK billion



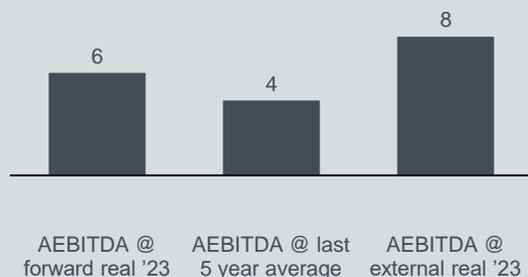
## Main further upside drivers

- Positive market and macro developments
- Further commercial differentiation, incl. greener alumina
- Fleet optimization at the mine
- Sustaining CAPEX optimization

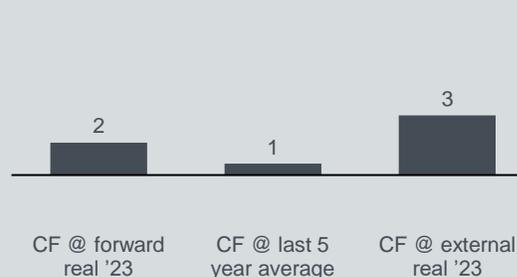
## Market scenarios 2030



## Market scenarios 2030



## Market scenarios 2030



## Main downside risks

- Operational disruptions
- Negative market and macro developments
- Regulatory, CSR and country risk
- Supply chain disruptions
- Value chain concentration in Brazil

1) Cash flow calculated as EBITDA + tax + long-term sustaining CAPEX

Assumptions and sources behind the scenarios can be found in Additional information

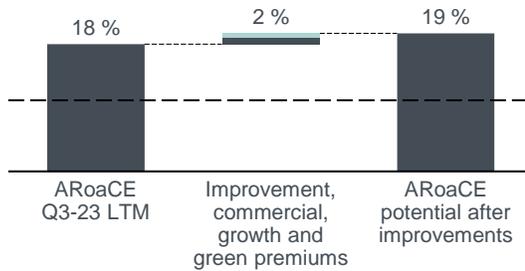
Sources: External scenario is based on CRU price and premium assumptions and S&P Global FX assumptions, with adjustments as specified in the footnotes

# Aluminium Metal and Metal Markets profitability growth roadmap

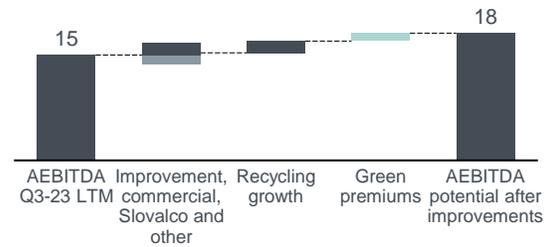


Main drivers – improvement efforts, commercial differentiation and market development

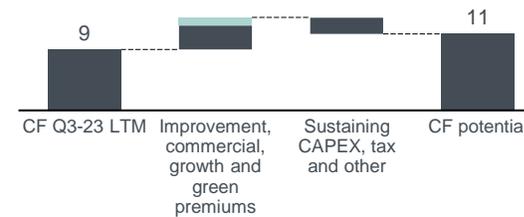
**ARoaCE potential 2030**  
Profitability target of >10% (>8%)



**AEBITDA potential 2030**  
NOK billion



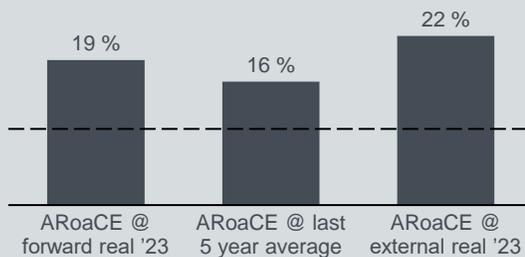
**Cash flow potential after sustaining CAPEX<sup>1)</sup> 2030**  
NOK billion



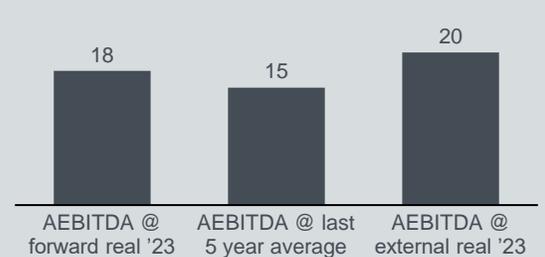
## Main further upside drivers

- Positive market and macro developments
- Commercial differentiation, incl. greener brands
- Further recycling growth opportunities
- Portfolio optimization
- Further potential in automation, process control and efficiency, operational excellence

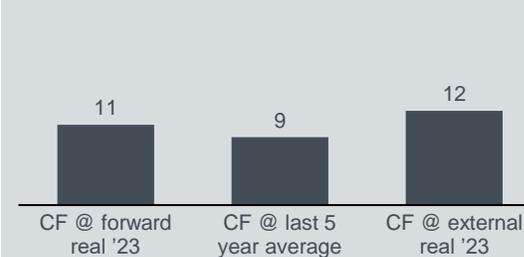
**Market scenarios 2030**



**Market scenarios 2030**



**Market scenarios 2030**



## Main downside risks

- Negative market and macro developments, incl. trade restrictions
- Deteriorating relative cost and market positions
- Operational disruptions
- Supply chain disruptions
- Regulatory and country risks, incl. tax

1) Cash flow calculated as EBITDA + tax + long-term sustaining CAPEX

Assumptions and sources behind the scenarios can be found in Additional information

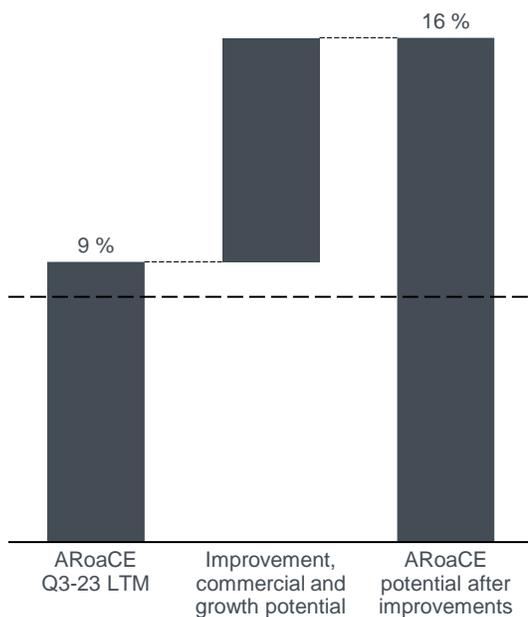
Sources: External scenario is based on CRU price and premium assumptions and S&P Global FX assumptions, with adjustments as specified in the footnotes

# Extrusions profitability growth roadmap

Main drivers – improvement program and commercial ambition

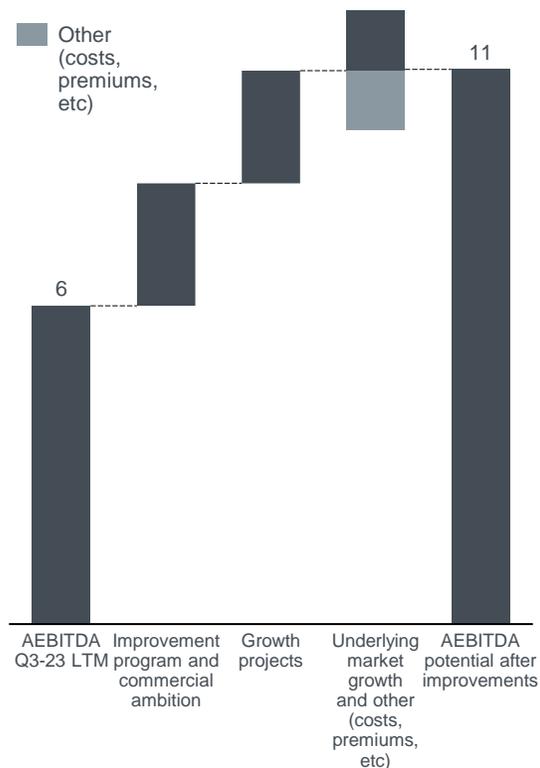
## ARoaCE potential 2030

Profitability target of >8%



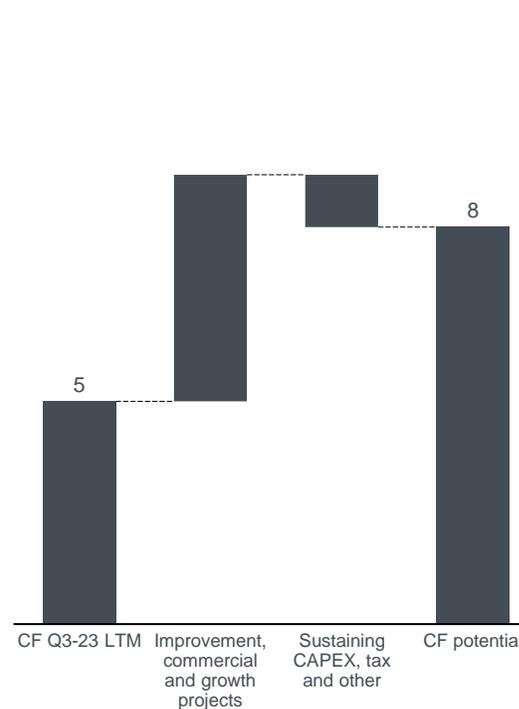
## AEBITDA potential 2030

NOK billion



## Cash flow potential after sustaining CAPEX<sup>1)</sup> 2030

NOK billion



## Main further upside drivers

- Selective profitable growth including larger projects
- Continuous portfolio review and optimization
- Operating and fixed cost optimization
- Positive market and macro developments

## Main downside risks

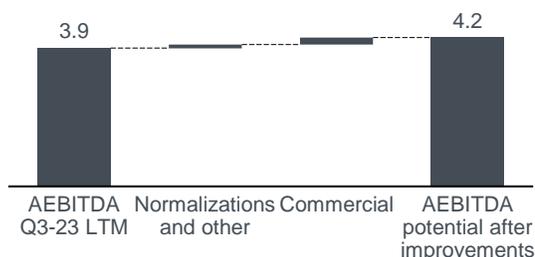
- Negative market and macro developments, incl. trade restrictions
- Inflation pressure
- Loss of large customer contracts
- Supply chain disruptions
- Regulatory and country risks

1) Cash flow calculated as EBITDA + tax + long-term sustaining CAPEX  
Assumptions and sources behind the scenarios can be found in Additional information

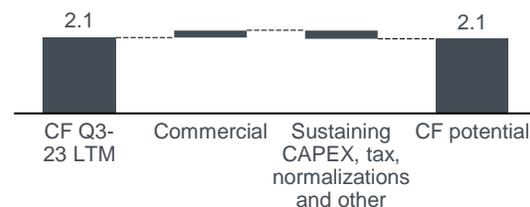
# Energy profitability growth roadmap

Main drivers – Net spot sales volume and market development

Classic - AEBITDA potential 2030  
NOK billion



Classic - Cash flow potential after sustaining CAPEX<sup>1)</sup> 2030  
NOK billion



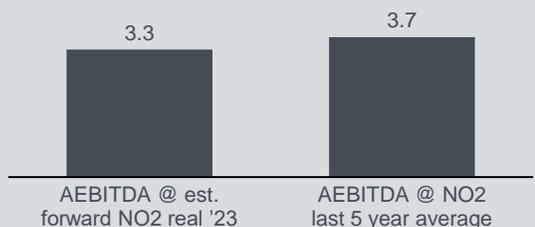
REIN JV – pro-rata AEBITDA potential (Hydro's share)<sup>2)</sup> 2030  
NOK billion



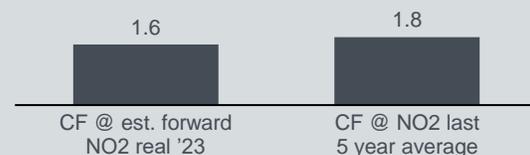
## Main further upside drivers

- Additional growth opportunities
- Further commercial and operational improvements
- Positive market and macro developments
- Batteries not included – return target of 3x invested capital

Classic - Market scenarios 2030



Classic - Market scenarios 2030



REIN JV – Accounting treatment

- REIN JV will be booked as an equity accounted investment after transaction
- This means the Hydro share of net income will be included as part of the Energy AEBITDA

## Main downside risks

- Negative market and macro developments
- Regulatory and framework conditions, incl. tax
- New project execution

Note: Classic excluding growth from new energy areas

1) Cash flow calculated as EBITDA + tax + long-term sustaining CAPEX

2) EBITDA from assets. S&GA at JV-level not included

Assumptions and sources behind the scenarios can be found in Additional information

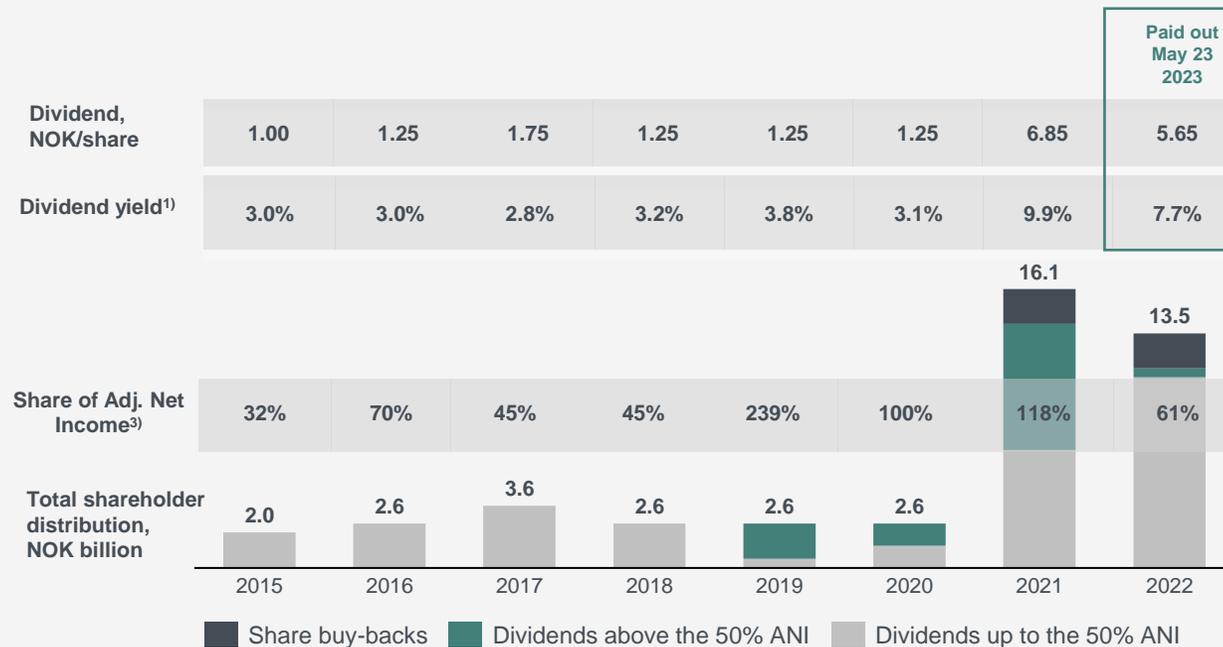
# Ambition for shareholder distribution

- Final proposal for distribution at Q4 reporting in February 2024
- Pay out depending on year-end financials
- Aiming at 50-60% of adjusted net income for 2023
- A combination of ordinary dividends and share buy-back if supportive financials
- Proposal conditional upon Annual General Meeting approval
- Capital structure policy and targets stating an adjusted net debt target over the cycle around NOK 25 billion, with proposed shareholder cash distribution added to cash position at year-end
- Share buybacks ongoing, approximately 31% of the program repurchased as of 24<sup>th</sup> of November 2023

1) Based on share price at year end

2) Peer group includes (in alphabetical order): Upstream: Alcoa, Century, Chalco, Hindalco, Rusal Downstream: Amag, Arconic, Constellium, Kaiser

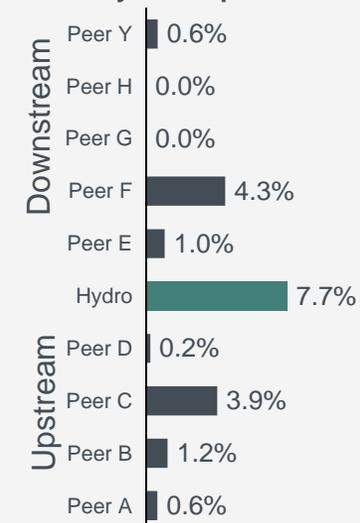
3) Distributed share of underlying net income including share buy-backs



## Hydro's Dividend Policy

- Pay out minimum 50 percent of adjusted net income as ordinary dividend over the cycle
- The dividend policy has a floor of NOK 1.25 per share
- Share buybacks or extraordinary dividends will supplement dividends during periods of strong financials, due consideration being given to the commodity cycle and capital requirements for future growth
- The pay out should reflect Hydro's aim to give its shareholders competitive returns, benchmarked against alternative investments in comparable companies

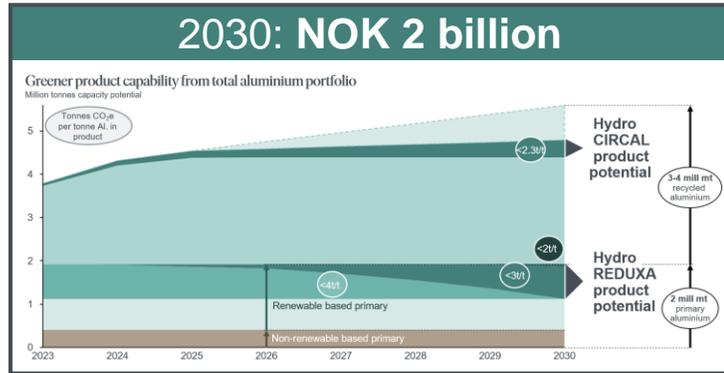
## Dividend yield vs peers<sup>2)</sup>



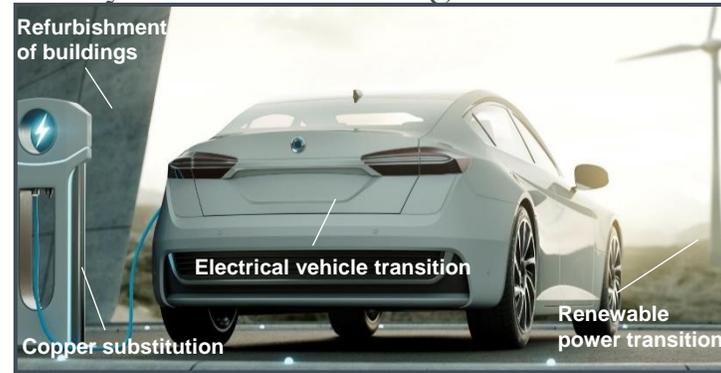
# Why invest in Hydro: key takeaways from today



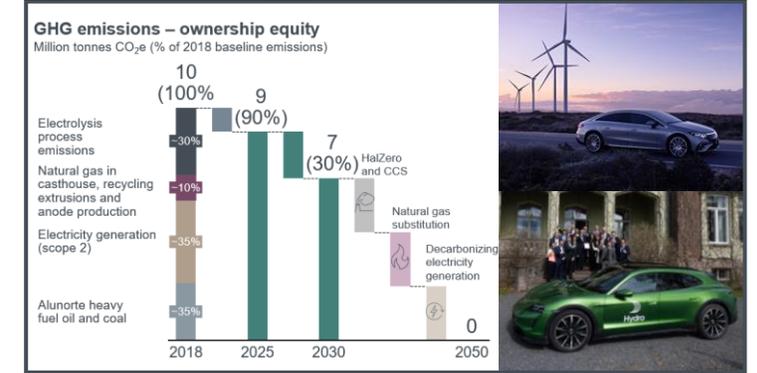
## Greener earnings uplift potential 2030



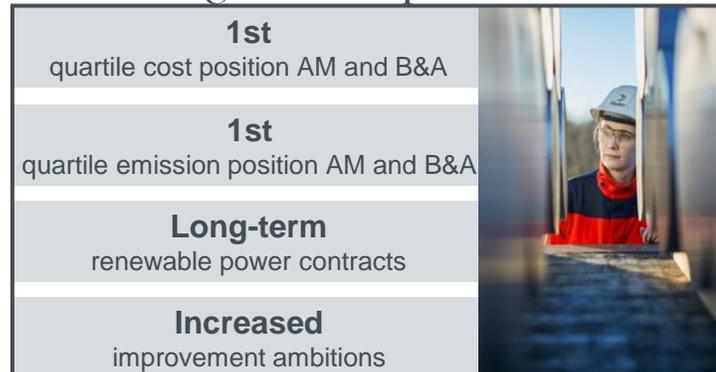
## Portfolio of profitable growth projects as key enablers for the green transition



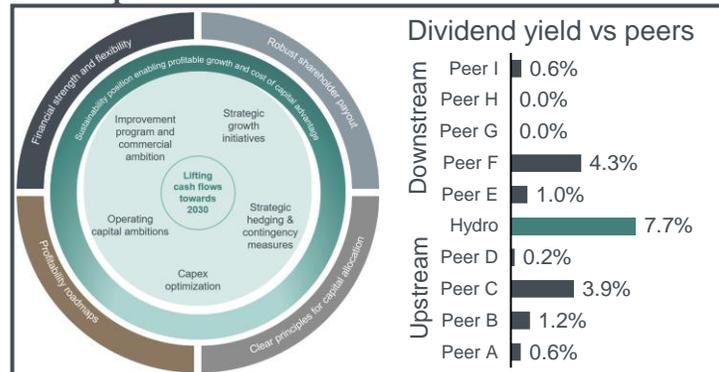
## Pathway to net-zero aluminium products supported by partnerships



## Robust positioning with ambition to strengthen competitiveness



## Resilient financial framework and competitive shareholder distribution



## Good track record on relative shareholder value creation



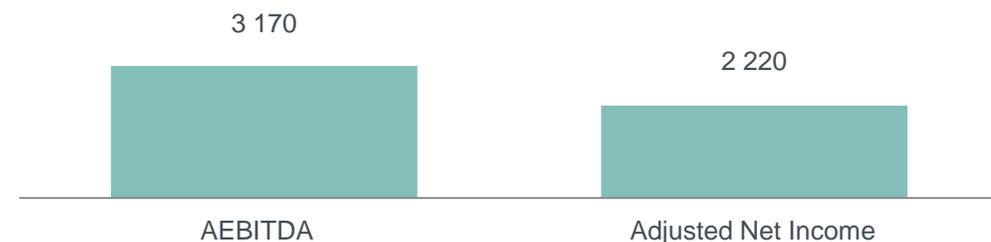


# Appendix

# Significant exposure to commodity and currency fluctuations

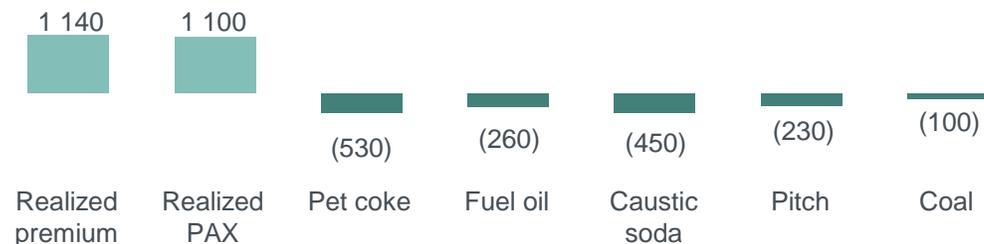
## Aluminium price sensitivity +10%

NOK million



## Other commodity prices, sensitivity +10%

NOK million



## Currency sensitivities +10%

Sustainable effect:

NOK million	USD	BRL	EUR
AEBITDA	3,840	(890)	10

One-off reevaluation effect:

Financial items	(1,040)	1,220	(3,730)
-----------------	---------	-------	---------

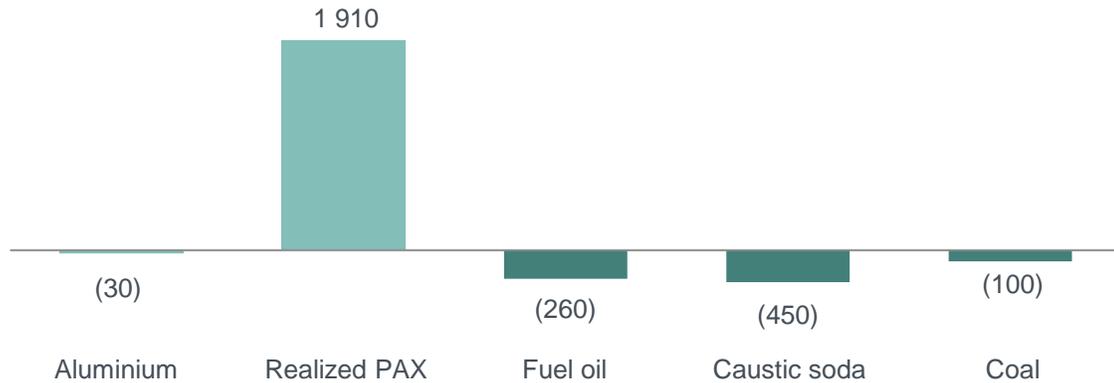
- Annual adjusted sensitivities based on normal annual business volumes. LME 2,240 USD/mt, realized premium 490 USD/mt, PAX 350 USD/mt, fuel oil 820 USD/mt, petroleum coke 610 USD/mt, pitch 1,260 EUR/mt, caustic soda 650 USD/mt, coal 150 USD/mt, USDNOK 10.41, BRLNOK 2.06, EURNOK 11.11
- Aluminium price 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
- 2023 Platts alumina index (PAX) exposure used
- Adjusted Net Income sensitivity calculated as AEBITDA sensitivity after 30% tax
- Sensitivities include strategic hedges for 2023 (remaining volumes for 2023, annualized)

# Bauxite & Alumina sensitivities



## Annual sensitivities on adjusted EBITDA if +10% in price

NOK million



## Currency sensitivities +10%

NOK million	USD	BRL	EUR
AEBITDA	870	(650)	-

## Revenue impact

- Realized alumina price lags PAX by one month

## Cost impact

### *Bauxite*

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

### *Caustic soda*

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

### *Energy*

- ~0.12 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)

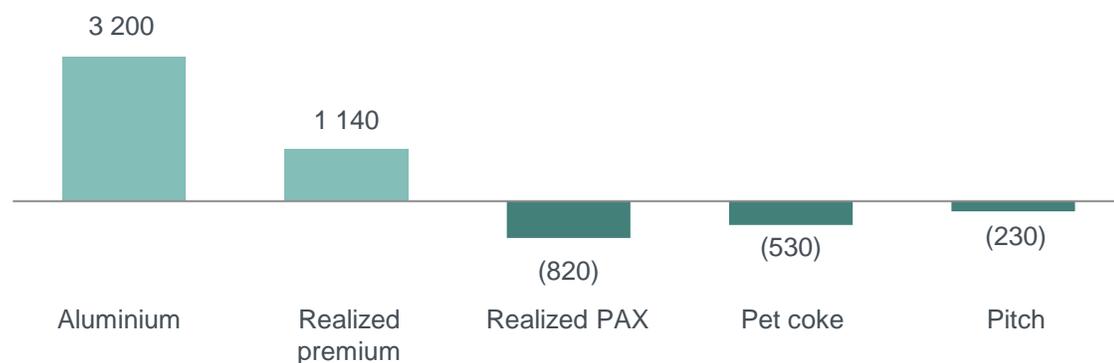
Annual adjusted sensitivities based on normal annual business volumes. LME 2,240 USD/mt, realized premium 490 USD/mt, PAX 350 USD/mt, fuel oil 820 USD/mt, petroleum coke 610 USD/mt, pitch 1,260 EUR/mt, caustic soda 650 USD/mt, coal 150 USD/mt, USDNOK 10.41, BRLNOK 2.06, EURNOK 11.11  
 BRL sensitivity calculated on a long-term basis with fuel oil assumed in USD. In the short-term, fuel oil is BRL-denominated. 2023 Platts alumina index (PAX) exposure used

# Aluminium Metal sensitivities



## Annual sensitivities on adjusted EBITDA if +10% in price

NOK million



## Currency sensitivities +10%

NOK million	USD	BRL	EUR
AEBITDA	2,940	(250)	(360)

## Revenue impact

- Realized price lags LME spot by ~1-2 months
- Realized premium lags market premium by ~2-3 months

## Cost impact

### Alumina

- ~1.9 tonnes per tonne aluminium
- ~ 2-3 months lag
- Mainly priced on Platts index

### Carbon

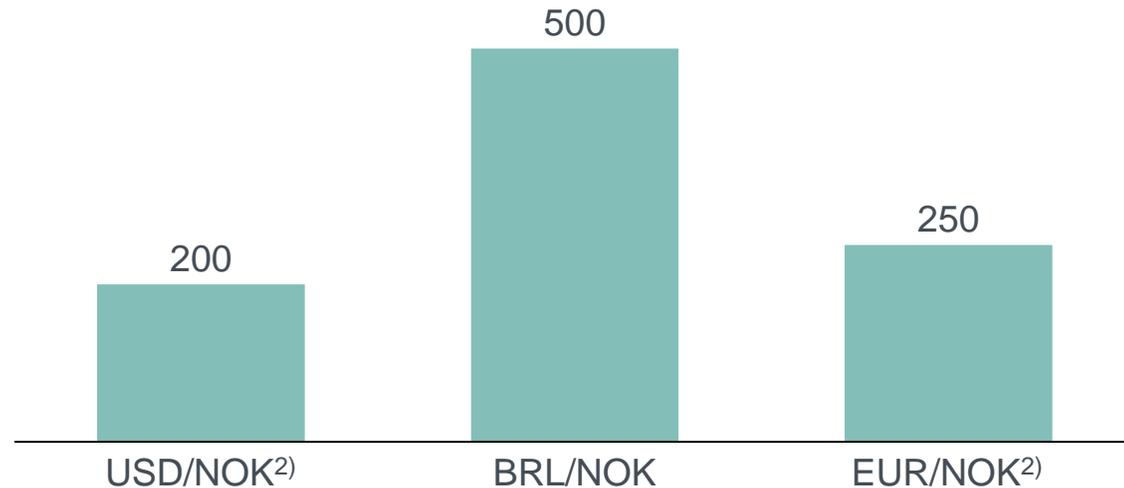
- ~0.40 tonnes petroleum coke per tonne aluminium, Pace Jacobs Consultancy, 2-3 year volume contracts, quarterly or half yearly pricing
- ~0.08 tonnes pitch per tonne aluminium, CRU, 2-3 year volume contracts, quarterly pricing

### Power

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

# CAPEX sensitivity to FX

Annual sensitivities on CAPEX if +10% in currency<sup>1)</sup>  
NOK million



Capex currency exposure<sup>3)</sup>

- BRL ~40%
- USD ~15%
- EUR ~20%
- NOK and other ~25%

The estimates for the different currencies exposures for capex are based on the 2024-2026 allocation guidance.

The annual sensitivity estimates are based on the 2024 allocation guidance of 15 BNOK

There is possible underlying FX exposure in the Norwegian smelters for the EUR and for the USD

1) Based on the 15 BNOK 2024 capex guidance

2) Possible underlying FX exposure in Norwegian capex

3) Based on 24-26 allocation

# Assumptions behind scenarios



Scenarios are not forecasts, but illustrative earnings, cash flow and return potential based on sensitivities

- Starting point – AEBITDA Q3-23 LTM
- Cash flow calculated as AEBITDA less EBIT tax and long-term sustaining capex, less lease payments and interest expenses for the Hydro Group
  - Tax rates: 25% for business areas, 40% for Energy, 28% (LTM) for Hydro Group
- ARoaCE calculated as AEBIT after tax divided by average capital employed
  - Average capital employed assumed to increase with growth capex and return-seeking capex above LT sustaining CAPEX 2024-2026
- The actual earnings, cash flows and returns will be affected by other factors not included in the scenarios, including, but not limited to:
  - Production volumes, raw material prices, downstream margin developments, premiums, inflation, currency, depreciation, taxes, investments, interest expense, competitors' cost positions, and others
- External scenario is based on CRU price and premium assumptions and S&P Global FX assumptions, with adjustments as specified in the footnotes

## Price and FX assumptions

Assumptions used in scenarios	Q3 2023 LTM	2024 forward real	2030		
			Forward real 2023	Last 5 year average	CRU / S&P Global real 2023
LME, USD/mt	2,240	2,240 (deflated by 2.5%)	2,300 (deflated by 2.5%)	2,180	2,560 (deflated by 2.5%)
Realized premium, USD/mt	490	380 <sup>1)</sup>	380 <sup>1)</sup>	430	570 <sup>4)</sup> (deflated by 2.5%)
PAX, USD/mt	350	320 (deflated by 2.5%)	340 <sup>2)</sup> (deflated by 2.5%)	330	380 (deflated by 2.5%)
Caustic soda, USD/mt	650	320 <sup>1)</sup>	320 <sup>1)</sup>	430	410 (deflated by 2.5%)
Coal, USD/mt	150	110 (deflated by 2.5%)	100 <sup>3)</sup> (deflated by 2.5%)	130	100 <sup>7)</sup> (deflated by 2.5%)
Pitch, EUR/mt	1,260	970 <sup>1)</sup>	970 <sup>1)</sup>	840	920 <sup>5)</sup> (deflated by 2.5%)
Pet coke, USD/mt	610	470 <sup>1)</sup>	470 <sup>1)</sup>	450	500 <sup>5)</sup> (deflated by 2.5%)
NO2, NOK/MWh	1,150	770 <sup>6)</sup>	650 <sup>6)</sup>	840	650 <sup>7)</sup>
Nordic system, NOK/MWh	850	480 (deflated by 2.5%)	400 (deflated by 2.5%)	620	400 <sup>7)</sup> (deflated by 2.5%)
USDNOK	10.41	10.68	10.38	9.28	8.15 <sup>8)</sup>
EURNOK	11.11	11.77	12.25	10.35	9.58 <sup>8)</sup>
BRLNOK	2.06	2.19	2.15	1.93	1.47 <sup>8)</sup>

1) Spot price. 2) % of LME forward price deflated by 2.5%. 3) 2026 nominal forward price deflated by 2.5% 4) Realized premium based on CRU product premiums 2023 5) Historic average % of LME, using CRU LME price deflated by 2.5% 6) Based on Nordic system forward price and constant NO2-Nordic system area price 7) Based on price from forward case 8) Based on S&P Global  
Source: Republished under license from CRU International Ltd. and S&P Global

Next event

## Fourth quarter results and 2023 Annual Report February 14, 2024

For more information see  
[www.hydro.com/ir](http://www.hydro.com/ir)

# Investor Relations in Hydro

---



**Martine Rambøl Hagen**

t: +47 91708918

e: [martine.rambol.hagen@hydro.com](mailto:martine.rambol.hagen@hydro.com)

---



**Elitsa Boyadzhieva**

t: +47 91775472

e: [elitsa.boyadzhieva@hydro.com](mailto:elitsa.boyadzhieva@hydro.com)

---



**Frida Rongved Jacobsen**

t: +47 47860460

e: [frida.jacobsen@hydro.com](mailto:frida.jacobsen@hydro.com)

---



**Camilla Gihle**

t: +47 92637820

e: [camilla.gihle@hydro.com](mailto:camilla.gihle@hydro.com)

---



**Hydro**