



# Norsk Hydro ASA

## dbAccess Global ESG Conference Fireside

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EVP and CFO  
2 March 2022

# Seizing opportunities where our capabilities match the megatrends



## 1 Strengthen position in low-carbon aluminium



## 2 Diversify and grow in new energy

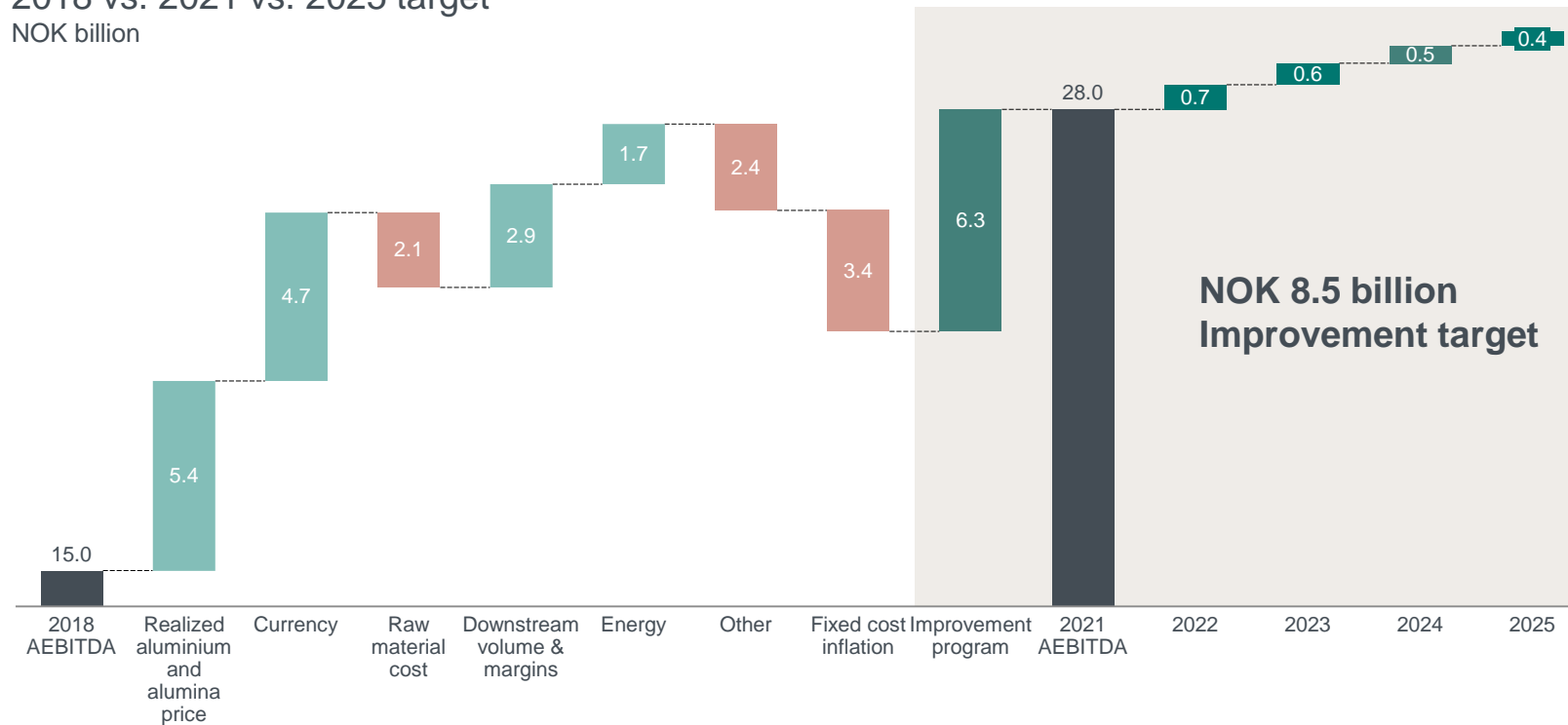


# Delivering 25% above improvement program target

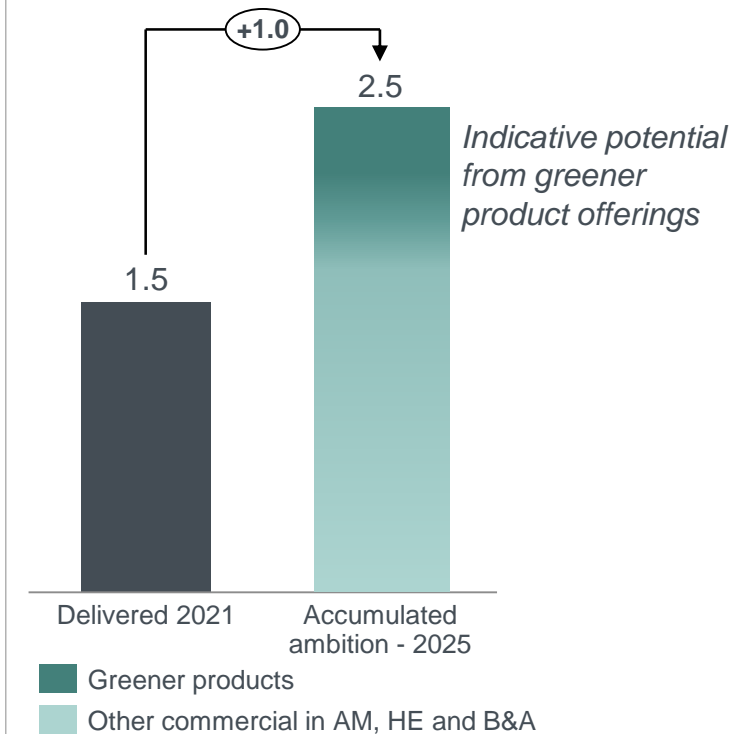


Commercial improvements of NOK 1.5 billion delivered<sup>2)</sup>

Improvement Program  
2018 vs. 2021 vs. 2025 target  
NOK billion



Commercial ambition 2025<sup>2)3)</sup>  
NOK billion



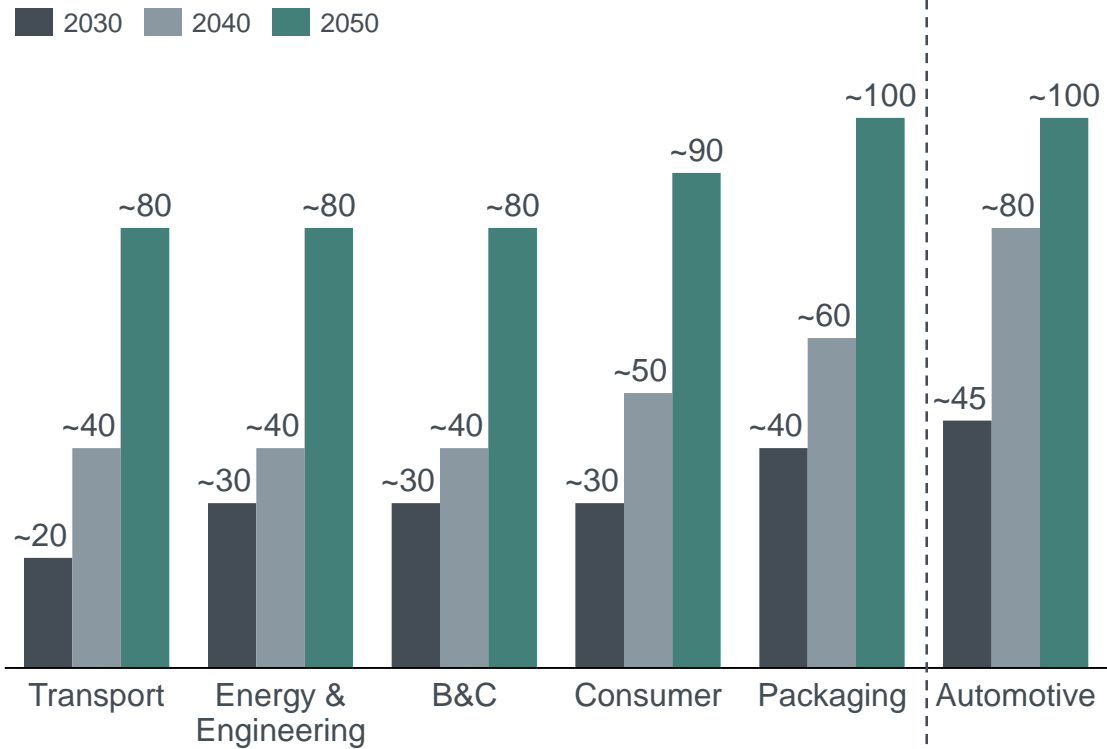
1) Calculated as Hydro Group AEBITDA – RP AEBITDA and compared to 2018 AEBITDA  
 2) Compared to 2018 AEBITDA  
 3) Gross uplift not including effects of inflation

# Expecting strong demand for greener aluminium

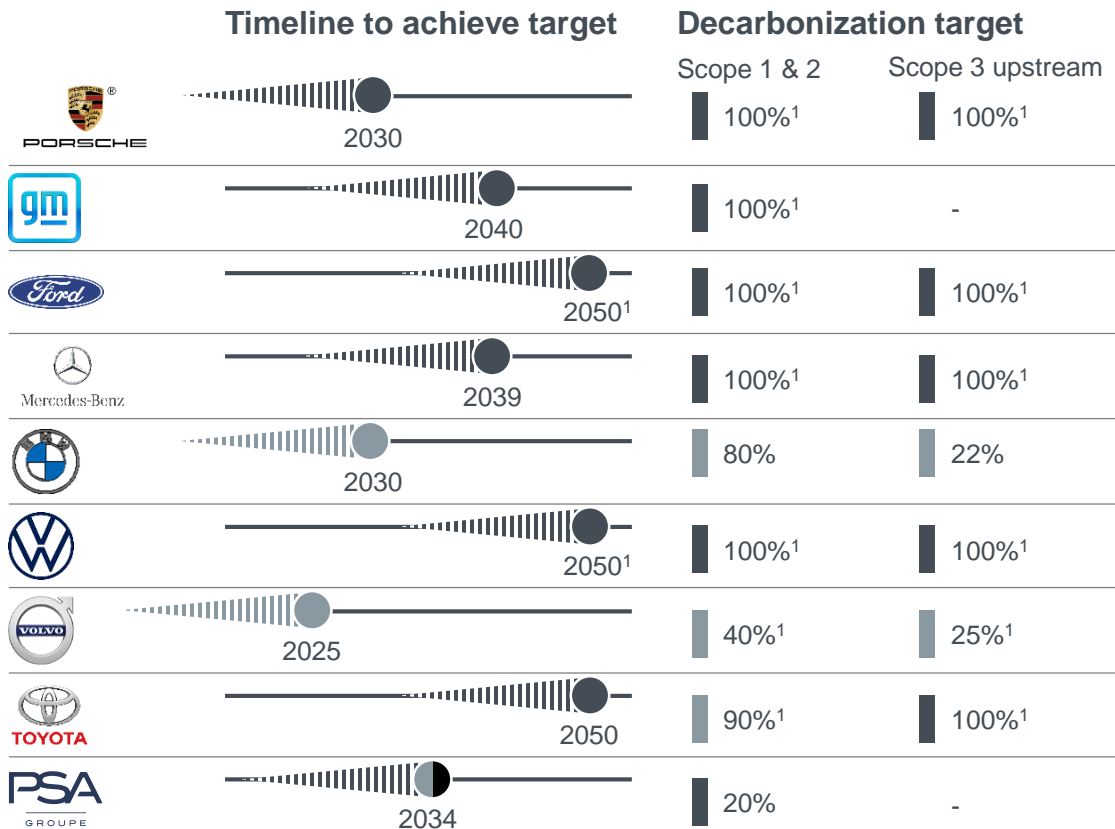


Ambitious abatement targets driving demand in all sectors but especially Automotive OEMs

Share of greener<sup>1)</sup> aluminium demand per segment  
% greener of total aluminium demand



OEMs are pushing for ever more ambitious lifecycle decarbonization targets



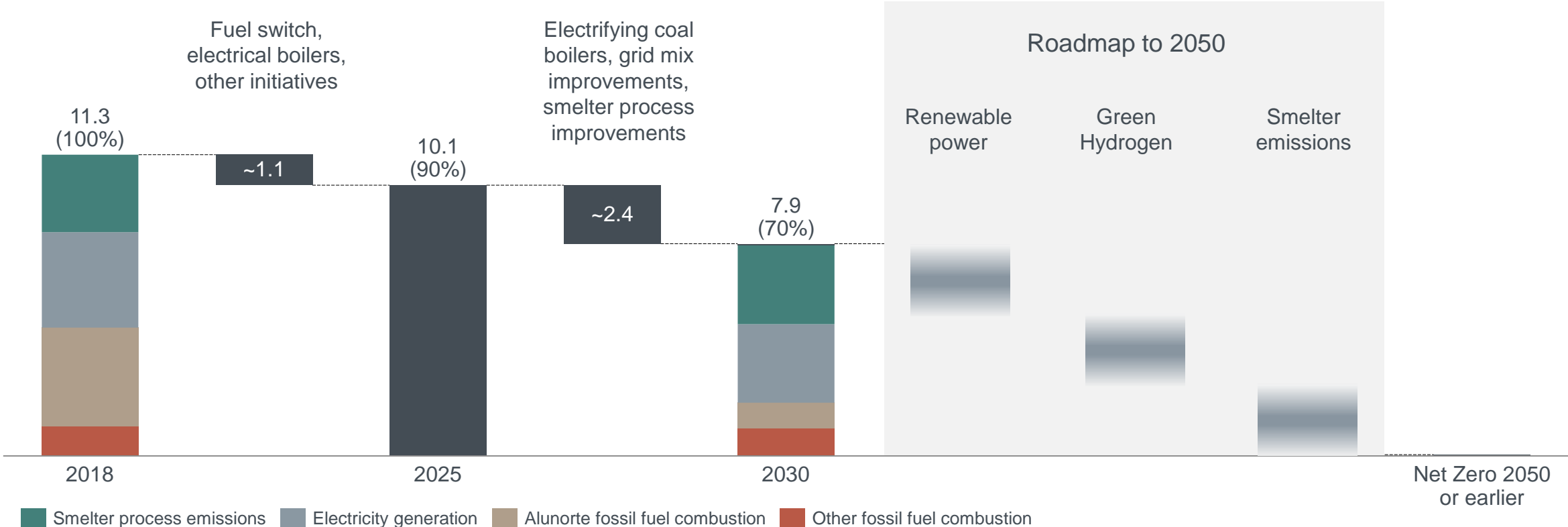
<sup>1)</sup> Greener aluminium includes "near zero" tCO<sub>2</sub>/t, <2 tCO<sub>2</sub>/t and 50%+ PCS-aluminium  
Source: McKinsey market analysis (high level estimate)

# Net zero Hydro: The roadmap



On track to achieve 30% carbon emissions reduction by 2030 and net zero by 2050 or earlier

GHG emissions – ownership equity  
 Million tonnes CO2 (% of 2018 baseline emissions)



# Hydro Energy aims to be the renewable energy leader enabling decarbonization of industry



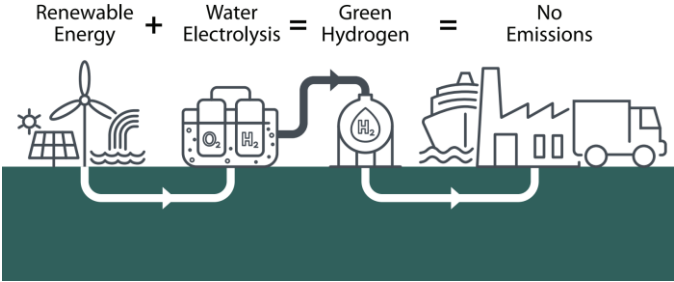
**1** With renewables, energy efficiency and electrification we can tackle 70% of global emissions

**2** Green hydrogen to address 30% from 'hard to abate' sectors

World-class energy competence center



Batteries



The renewable energy leader enabling the decarbonization and energy transition for industries

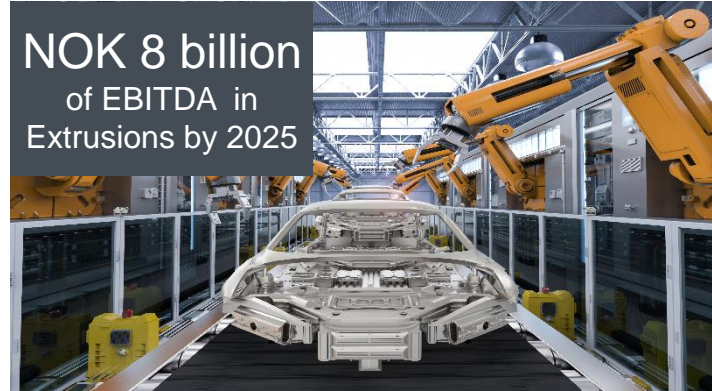
# Why invest in Hydro



## Attractive asset base



## Strong market position



## Leadership in greener aluminium



## Profitable growth journey



## Strong balance sheet and shareholder focus



## Sustainability position



1) Investment grade  
2) In addition to 1:1 rehabilitation available mined areas within 2 years



# Strategy update



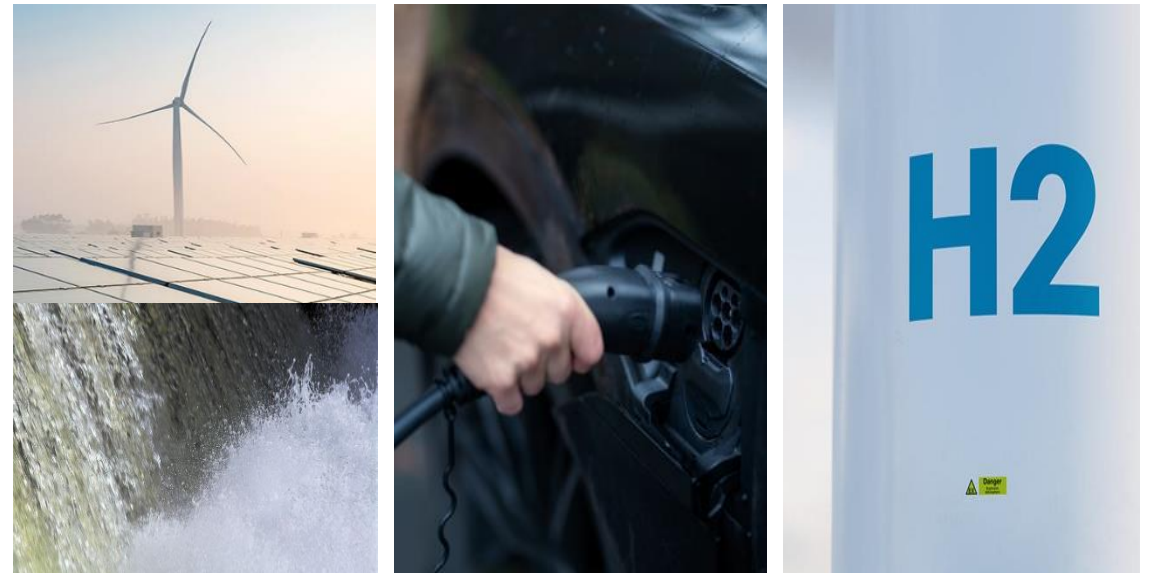
# Progress made on executing the 2025 strategy

Seizing opportunities where our capabilities match the megatrends

## 1 Strengthen position in low-carbon aluminium



## 2 Diversify and grow in new energy



# Strengthen position in low-carbon aluminium



Improvement program, commercial ambition and recycling investments key strategic levers

## Cost-competitive asset base



- Safety and operational excellence
- 1<sup>st</sup> quartile cost positions upstream
- Continuous improvement and optimization of portfolio

## Commercial uplift



- New products, including greener brands
- Market share in attractive segments
- Margin expansion in customer projects
- Substitution potential

## Recycling growth



- Double post-consumer scrap use by 2025
- Develop recycling value chain from sourcing to products and customers
- Strong market position across value chain



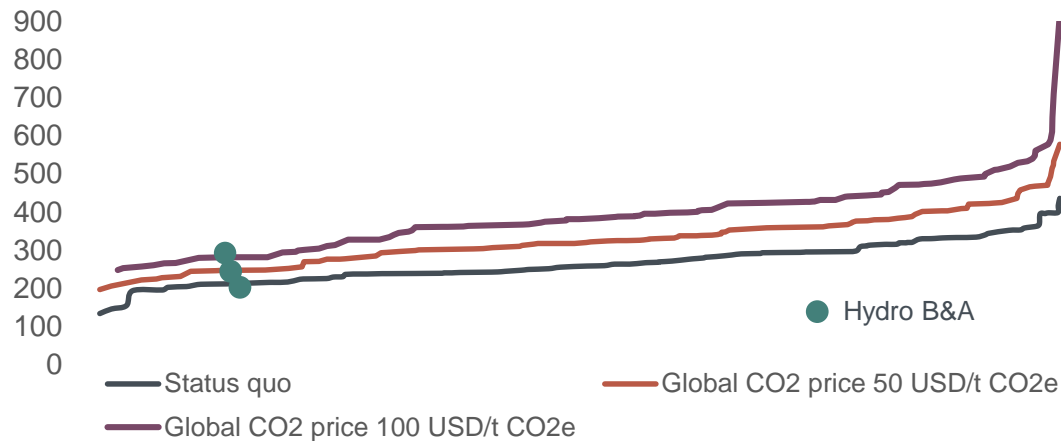
Profitability & Sustainability

# First quartile cost positions upstream



## Bauxite & Alumina

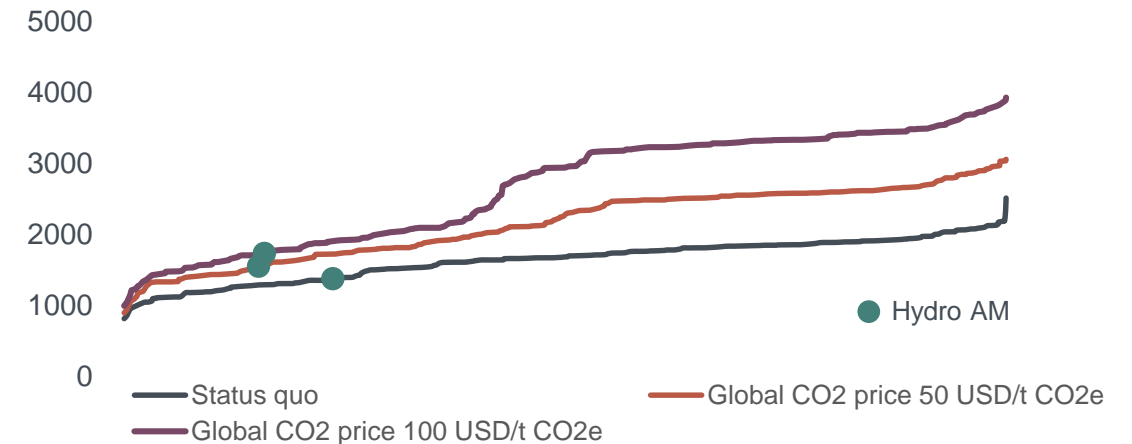
Alumina Business Operating Cost curve (2021)



- Competitively positioned on the global cost curve at the 20<sup>th</sup> percentile
- Increased Alunorte and Paragominas production reaching nameplate capacity

## Aluminium Metal

Smelter Business Operating Cost curve<sup>1)</sup> (2021)



- Competitive relative position on the global cost curve at the 25<sup>th</sup> percentile
- Strong portfolio of low carbon smelters
- Global carbon price would improve relative competitive position in Aluminium Metal

1) Assumptions: LME 3m 2,458 USD/t, Alumina 293 USD/t, SHFE cash 2,909 USD/t, NOK/USD 8.79  
Source: CRU cost model



**Hydro**

*Industries that matter*

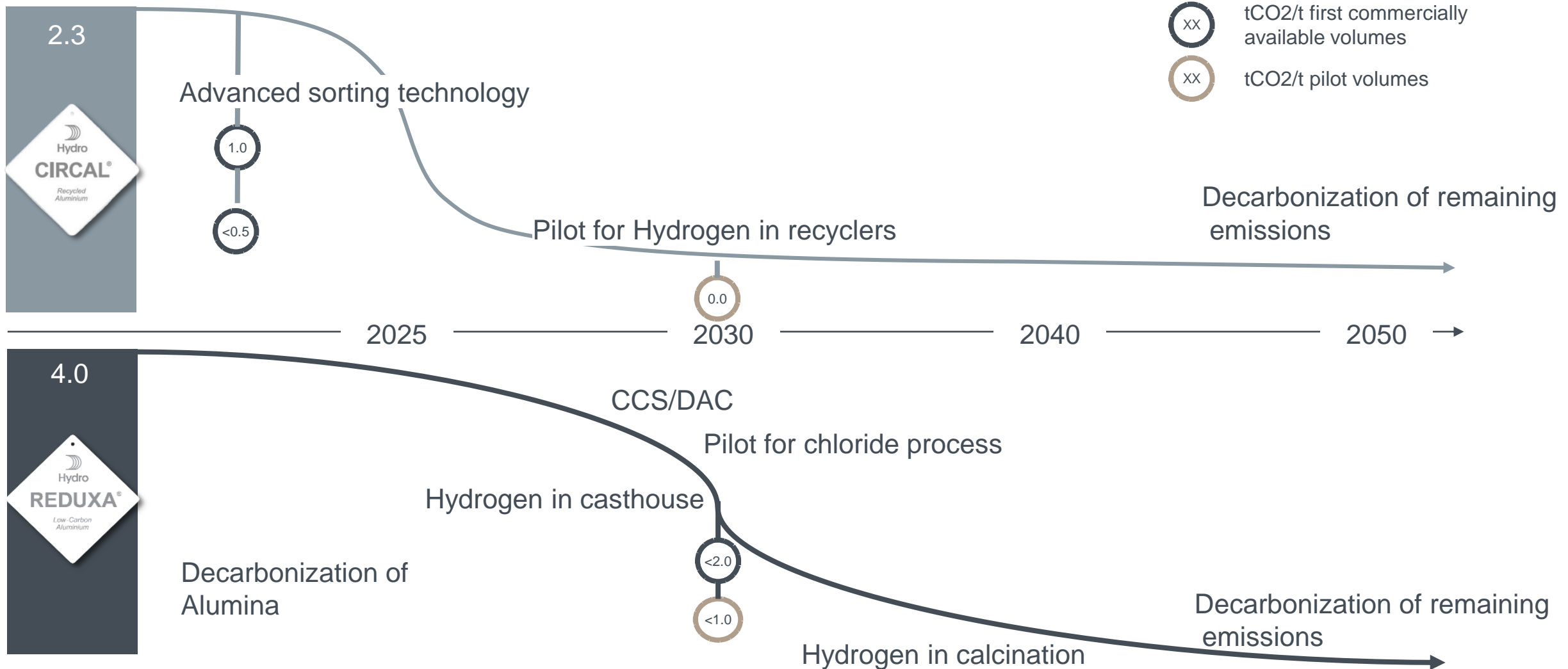


# Path to Net-Zero

# Net zero products: Market-paced approach



Capitalize on market demand through circularity while decarbonizing primary value chain

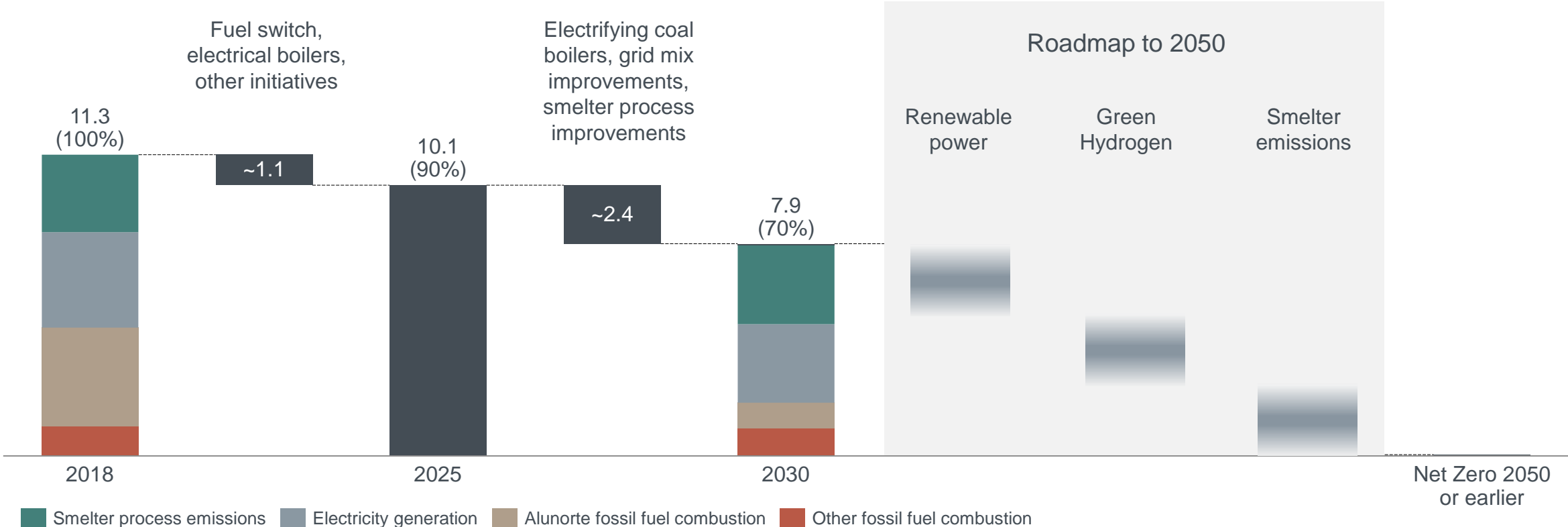


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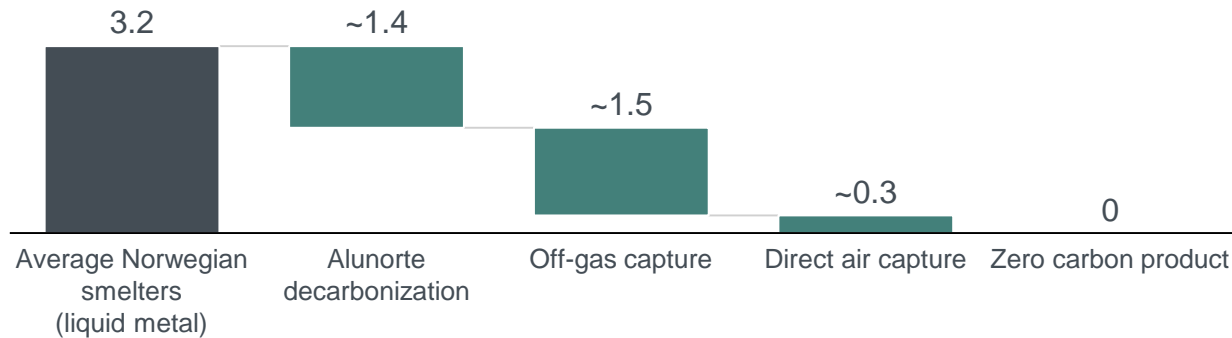
# Primary path: HalZero and CCS



Technologies ready for pilot phase

## Carbon capture and storage decarbonizing existing smelters

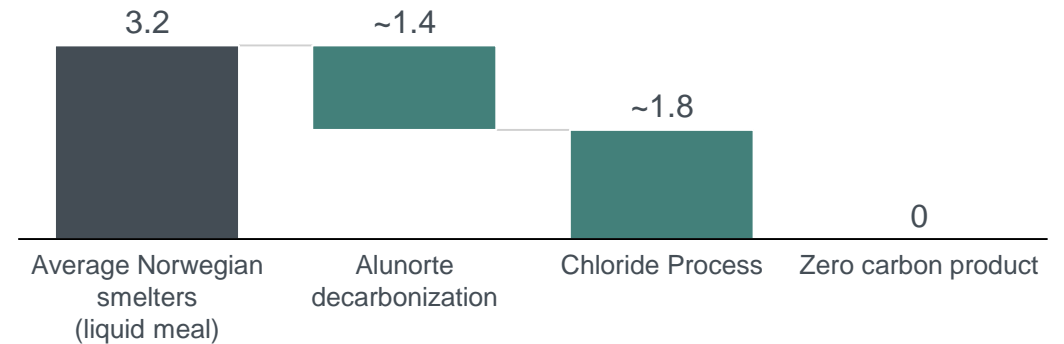
Tonnes CO<sub>2</sub>e / tonne aluminium, scope 1 and 2 emissions, liquid metal



- Can reduce electrolysis emissions by 100% through a combination of off-gas capture and direct air capture
- Suited for decarbonization and securing value of existing smelters
- Access to infrastructure (transport and storage)
- Public/private partnership for industrialization

## HalZero chloride process technology for decarbonizing greenfield developments

Tonnes CO<sub>2</sub>e / tonne aluminium, scope 1 and 2 emissions, liquid metal



- Full decarbonization of smelting process
- Eliminating emissions for both electrolysis and anode baking
- Relevant application for new capacity post 2030
- Public/private partnership for industrialization

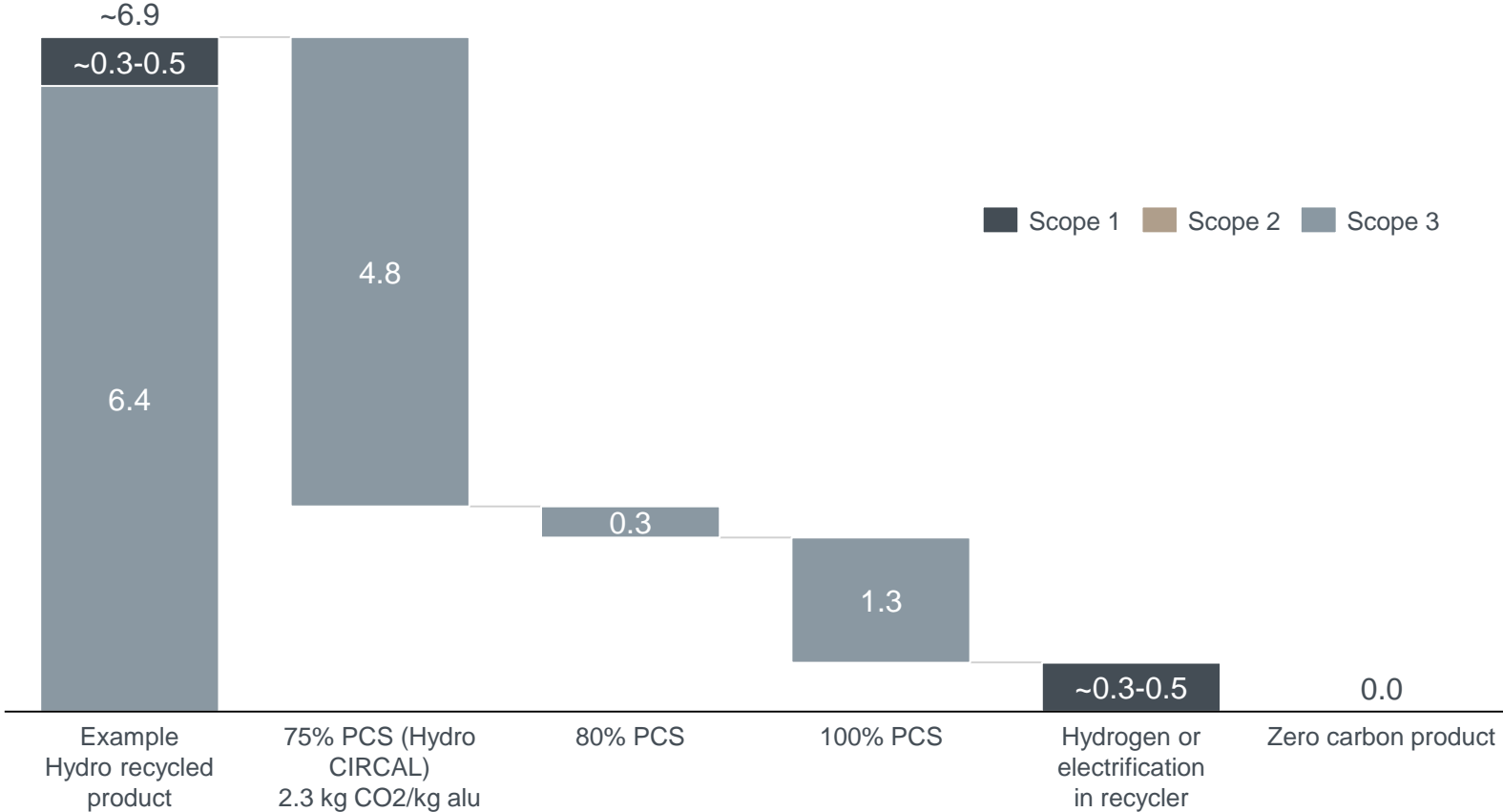


# Circular path producing near zero volumes by 2022



Post Consumer Scrap (PCS): scaling up volumes in line with market demand

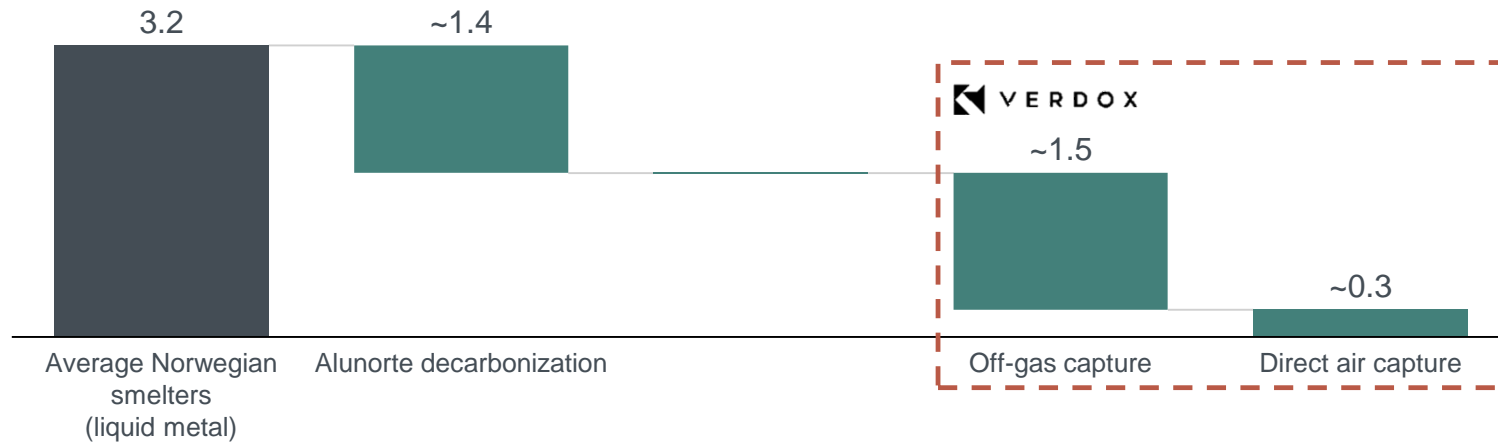
PCS Decarbonization  
Tonnes CO2e / tonne aluminium



- Going deeper in the scrap pile to lift profitability
  - Laser-based sorting (LIBS)
  - Screw extruder
- Recycling friendly alloys
- Renewable fuel for scrap melting
- Scrap sourcing
- Customer collaboration

# Progress on our roadmap to Net-Zero

Strengthen position in low-carbon aluminium



## First of three eI-boilers started at Alunorte

- World's largest refinery electrification initiative
- Will be powered by renewable energy through long term PPA's in partnership with Hydro REIN
- Financially positive business case that will reduce CO2 emissions by 400k tons annually

## Hydro invests in Verdox CCS company

- Aims to deliver cost-efficient Aluminium Carbon Capture Technology and Direct Air Capture technology for piloting starting from 2025
- Hydro has invested USD 20 million and will have a minority ownership position



## Solar park to power new press in Poland

- Polish electricity grid mix is dominated by coal
- Will reduce carbon footprint of extrusion process by 80%
- Expected to be in operation Q3 2022



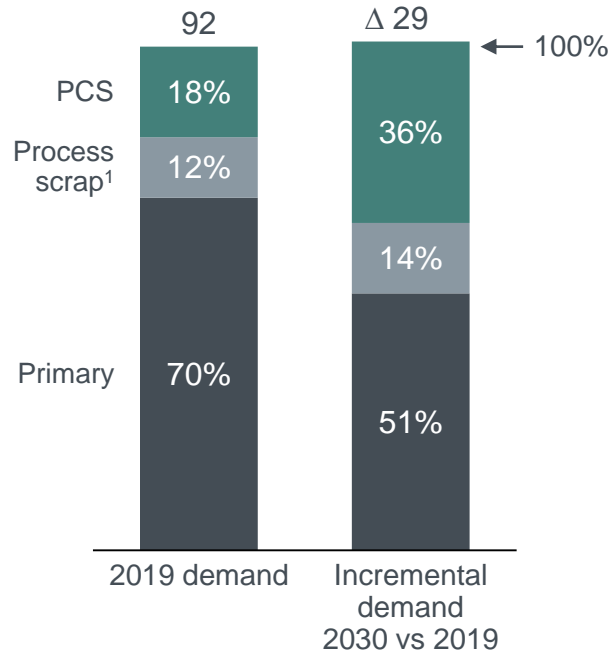
# Recycling

# Recycling becoming an increasingly important source of metal

Increasing customer awareness and regulatory push driving circular economy

**Market:** Post-consumer scrap to take larger share of future metal demand

Global semis demand (Mt)

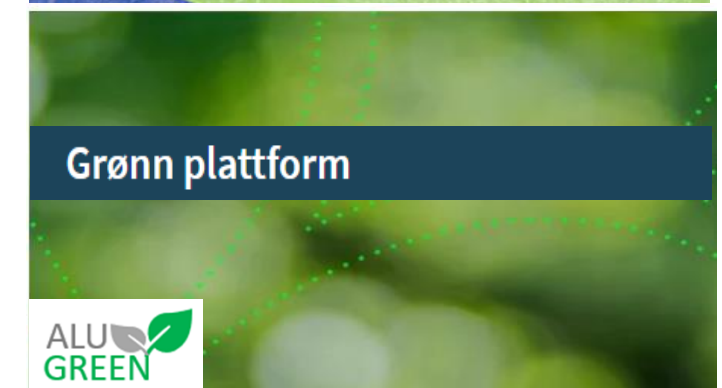


1) Traded process scrap, not including run-around scrap at plants  
Source: CRU, IAI

**Customers:** Increased awareness and desire to use recycled aluminium



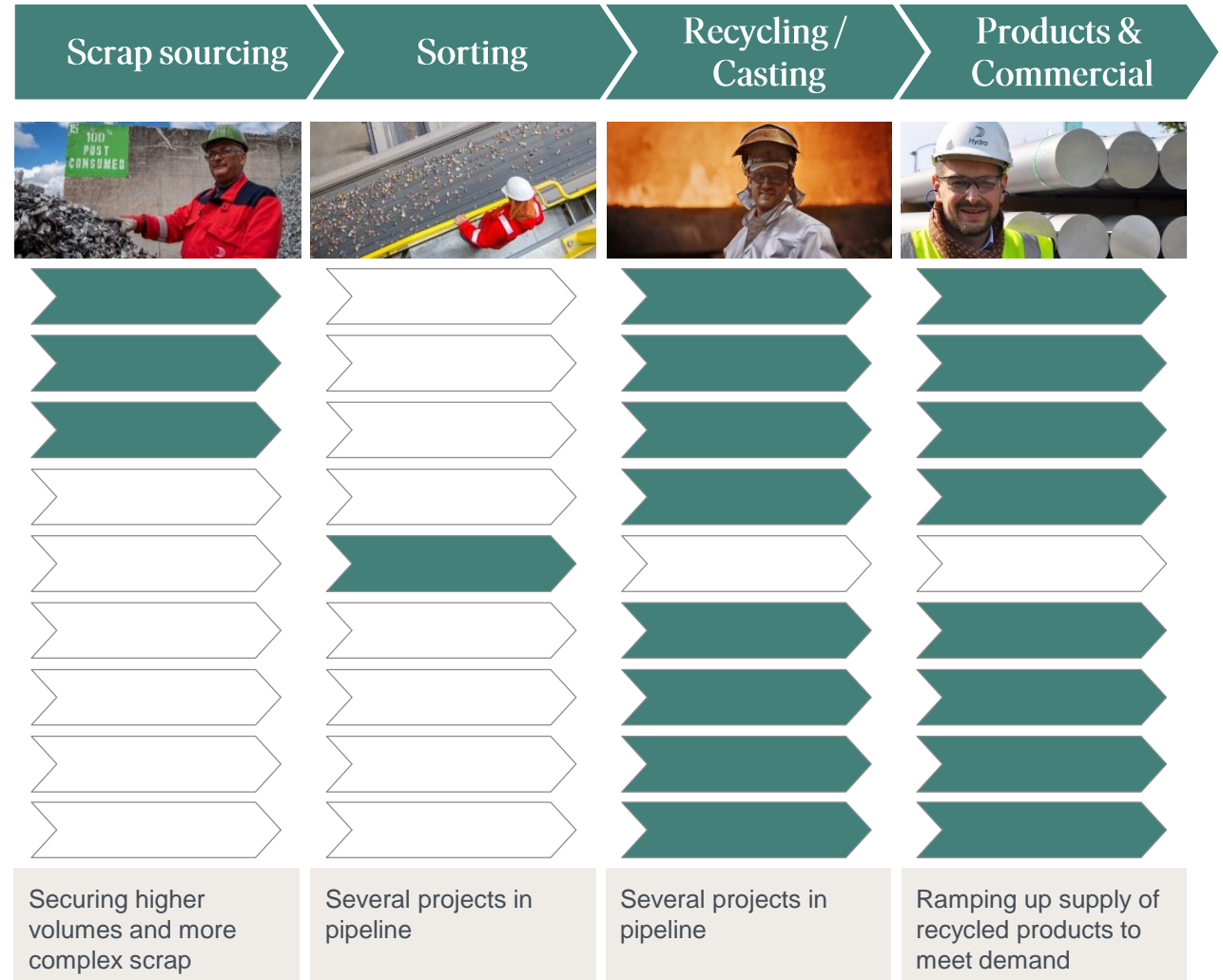
**Regulatory:** Green deal, Grønn Plattform; reduce waste & CO<sub>2</sub> footprint, promoting circularity



# Several projects supporting the Recycling strategy in 2021

Announced projects	Capacity increase
Greenfield recycler Cassopolis, Michigan	+120 kt
Høyanger Recycling, Norway	+36 kt <sup>1)</sup>
Expansion project Rackwitz, Germany	+25 kt
Expansion project Deeside, UK	+7 kt
LIBS sorting pilot	N/A
Greenfield recycler Székesfehérvár, HUN	+90 kt
Expansion project Sjunnen, Sweden	+20 kt
Expansion project Navarra, Spain	+23 kt
Expansion project The Dalles, Oregon	+27 kt

Project pipeline



1) New RSI production capacity, will not increase smelter output as it replace primary ingot



# Hydro Energy

# Sustainability trends creating strategic opportunities



Containing global warming only possible through massive electrification and decarbonization of industries

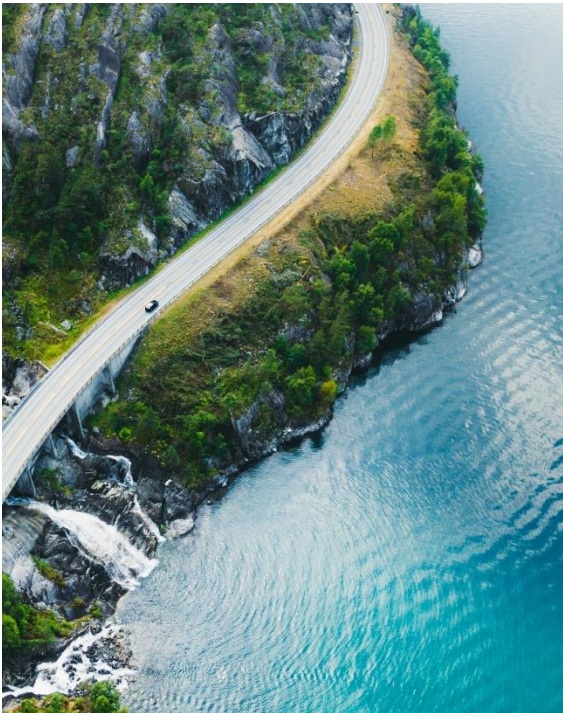
**COP 26 concluded with nation state pledges towards contain global warming**



**Will require massive amounts of affordable renewable clean energy**



**Confirms the need for sustainable and smart mobility**



**Urgent need for industrial solutions to reduce emissions from operations**

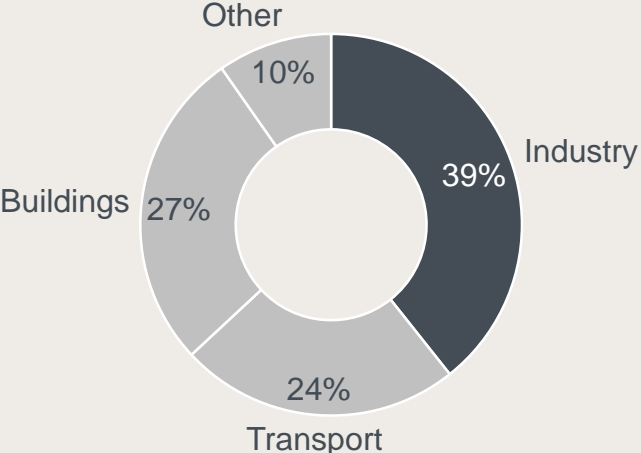


# Industrial sector will require new solutions



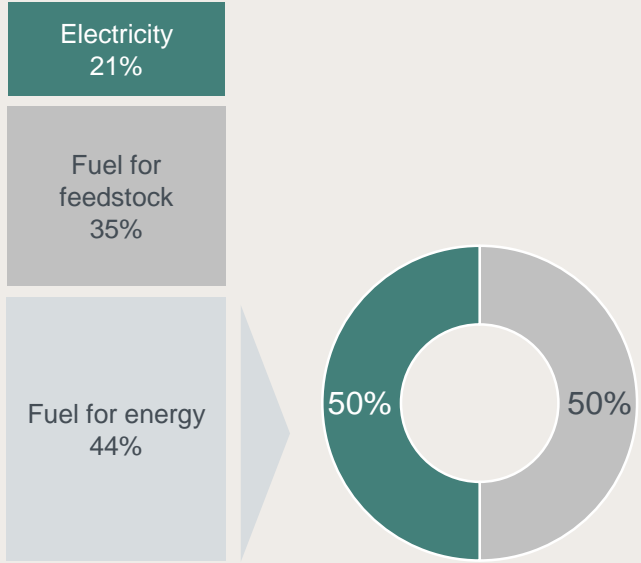
## Industrials represent ~40% of global emissions

Scope 1 and 2



## ~50% of fuel used for energy by industrials can be electrified using existing technology

Breakdown of global industrial energy consumption



## Eliminating industry carbon footprint requires a combination of solutions and technologies



Renewable energy



Industrial solutions to replace fossil fuel



Energy storage and improved efficiency

Source: BloombergNEF, McKinsey & Company – “Plugging in: What electrification can do for industry”



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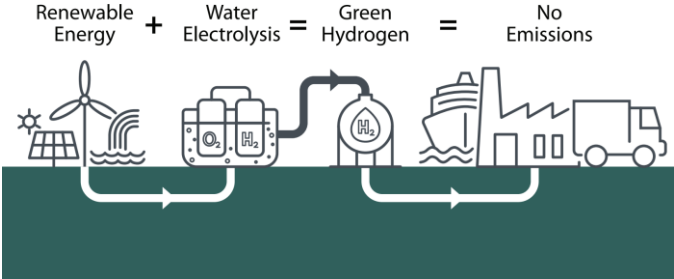
**1** With renewables, energy efficiency and electrification we can tackle 70% of global emissions

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World-class energy competence center










Batteries



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# Building a substantial portfolio of renewables assets and services in attractive growth markets



	<b>Solar</b>	<b>Wind</b>	<b>Energy solutions</b>	<b>Portfolio ambitions</b>
<b>REIN</b>	 	 	 Storage systems  Energy efficiency  Onsite generation	<ol style="list-style-type: none"> <li>1. Early entry</li> <li>2. Developer / operator position</li> <li>3. Long-term ownership strategy</li> <li>4. Value enhancing services to projects and customers</li> </ol>
<b>Brazil</b>	<div style="background-color: #c0e0d0; width: 60px; height: 40px; margin-bottom: 5px;"></div> <div style="background-color: #c0e0d0; width: 60px; height: 40px;"></div>	<div style="background-color: #c0e0d0; width: 60px; height: 40px; margin-bottom: 5px;"></div>		
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<b>Market potential</b>	<p>10 TWh repowering need in Hydro by 2025 and large potential for serving clients outside Hydro</p>		<p>100+ sites identified in Hydro's portfolio</p>	

# Building new energy growth areas

Diversify and grow in new energy



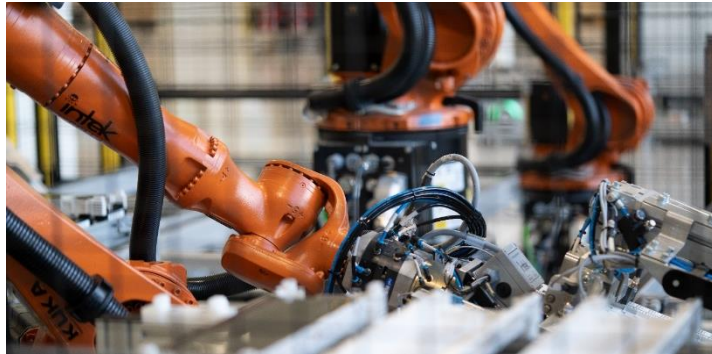
## Hydro Rein



Developing onshore wind projects in Sweden with Eolus

- Stor-Skälsjön project in construction, 260MW onshore wind in SE2 backed by PPA with Hydro Energy
- New deal with Eolus to jointly develop 672 MW onshore wind projects in SE3/SE4, 9 projects in total

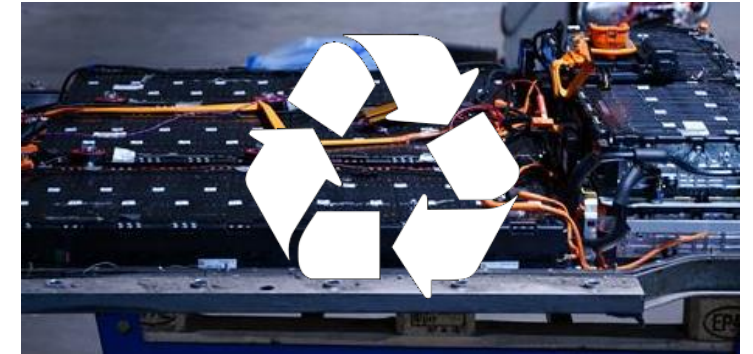
## Corvus Energy



Hydro becomes largest shareholder through private placement

- Hydro participated in private placement with NOK 172 million
- New ownership 22.7%
- Strong growth in order intake during Q4 and well positioned for continued global uptake of marine battery systems

## Hydrovolt



Europe's largest battery recycling plant to start commercial production early Q2

- Hot commissioning started January 2022
- Building order book into 2023/24
- Well positioned for vertical integration and scaling in Europe

# Helping our customers decarbonize

Strengthen position in low-carbon aluminium



## Hydro aluminium to play key part in creating a carbon-neutral car by 2030

- We will soon announce an R&D collaboration with a leading car manufacturer
- Signed Letter of Intent
- Hydro aims to contribute with aluminium expertise and supply with zero-carbon Hydro aluminium



## Electrifying the best-selling vehicle in the United States

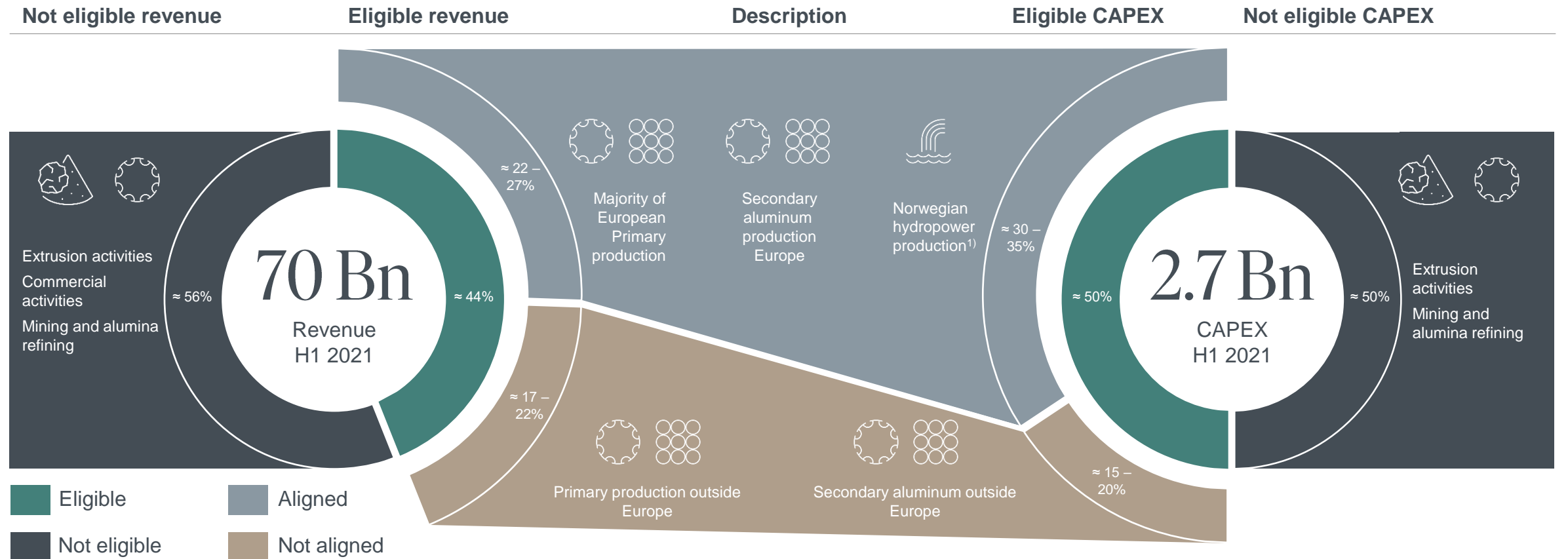
- Hydro supplying complex aluminium components for new all-electric Ford-150 Lightning, launching this spring
- Aluminium is natural choice for EVs to reduce weight and maintain excellent crash-worthiness
- The seamless aluminium tubing used in the frame of the cab is a result of close collaboration, from development to launch
- Customer demand for F-150 Lightning has been high with nearly 200,000 reservations



# Taxonomy

# Hydro expects strong taxonomy position among peers

Aligned share estimated to be 22 – 27% of revenue and 30 – 35% of CAPEX



1) Uncertainties remain regarding share of hydropower that is aligned

# ~40% of capex expected to align with the EU taxonomy

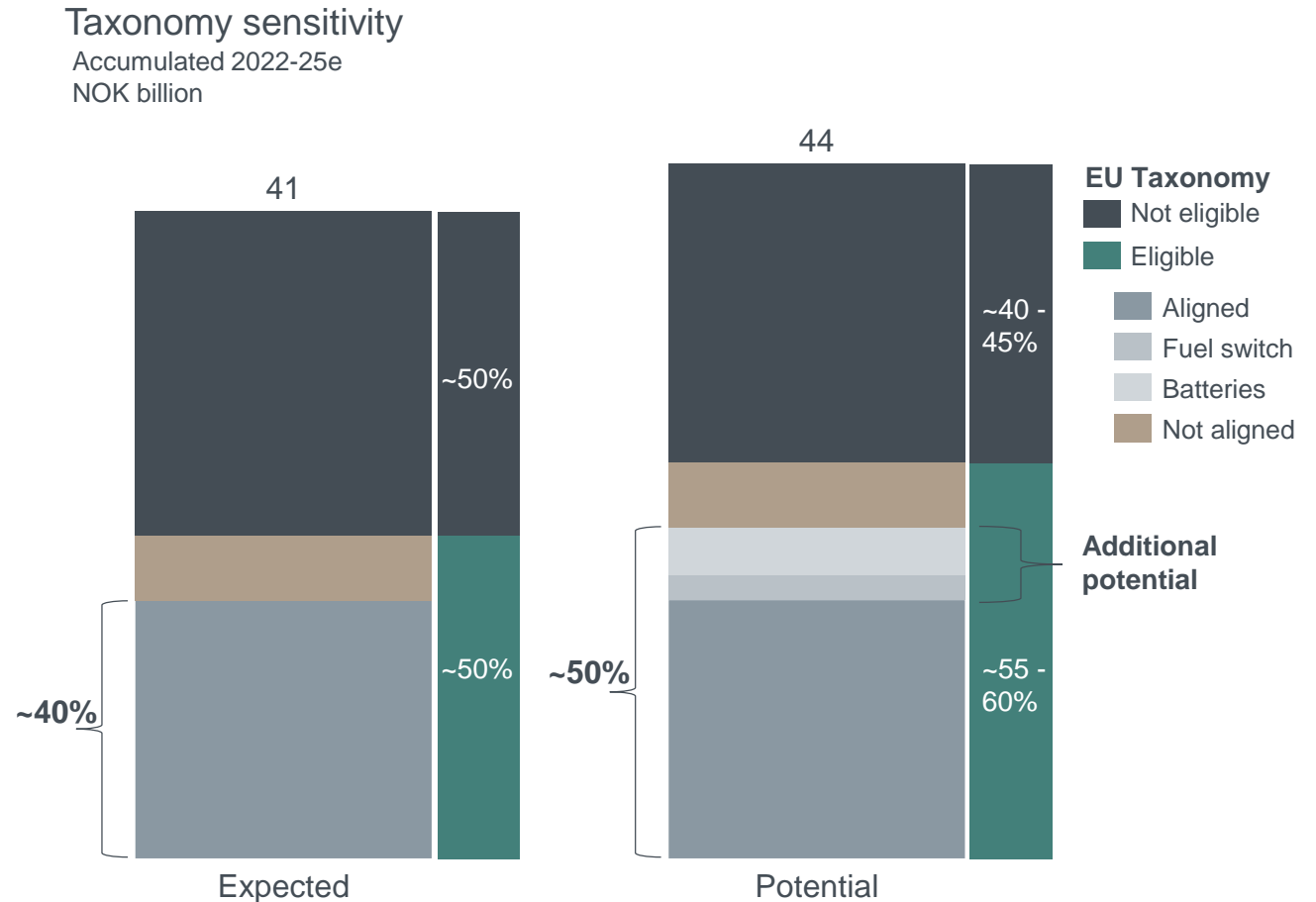
An additional ten percentage points may align with the EU Taxonomy

## The EU Taxonomy aims to incentivise

- Switching to low carbon electricity
- Reducing production emissions

## 2022-25 CAPEX

- Expected to align
  - Smelter investments, excluding anode plants
  - CO<sub>2</sub> technology investments
  - Recycling adhering to EU emissions standards
  - Hydropower in Norway<sup>1)</sup>
- Investments not reflected in the taxonomy
  - Activities not defined: Alunorte fuel switch
  - Capex definition differences<sup>2)</sup>: Investments into minority-owned assets
- REIN and Havrand are not included in this assessment



1) Uncertainties remain regarding share of hydropower that is aligned

2) EU taxonomy definition does not include capital injections to equity accounted investments



**Hydro**

*Industries that matter*