Norsk Hydro - Carnegie Enviro & Profitability Seminar

Pål Kildemo, CFO, Norsk Hydro

Oslo, Tuesday 26. September

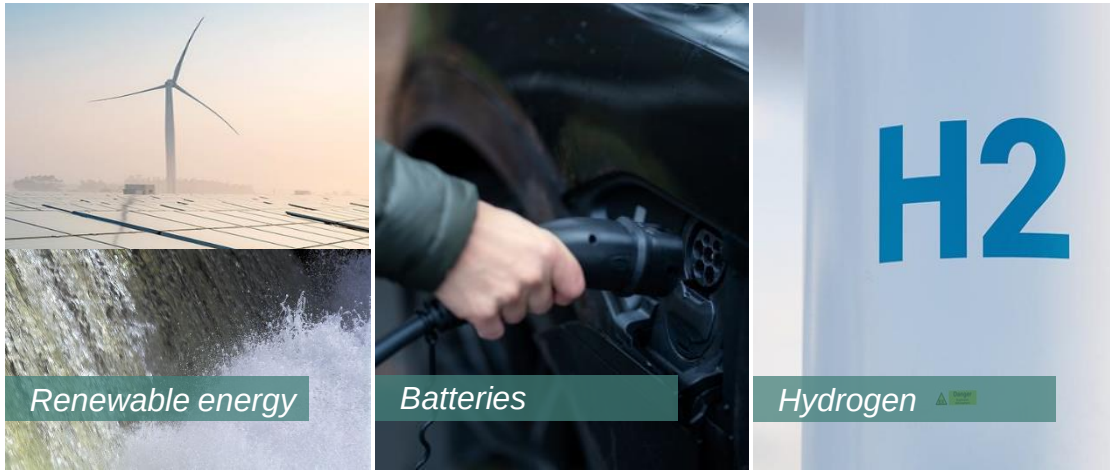
In 2020 we set out a forceful agenda towards Hydro 2025

Seizing opportunities where our capabilities match megatrends

Profitability & Sustainability

1 Strengthen position in low-carbon aluminium

2 Diversify and grow in new energy



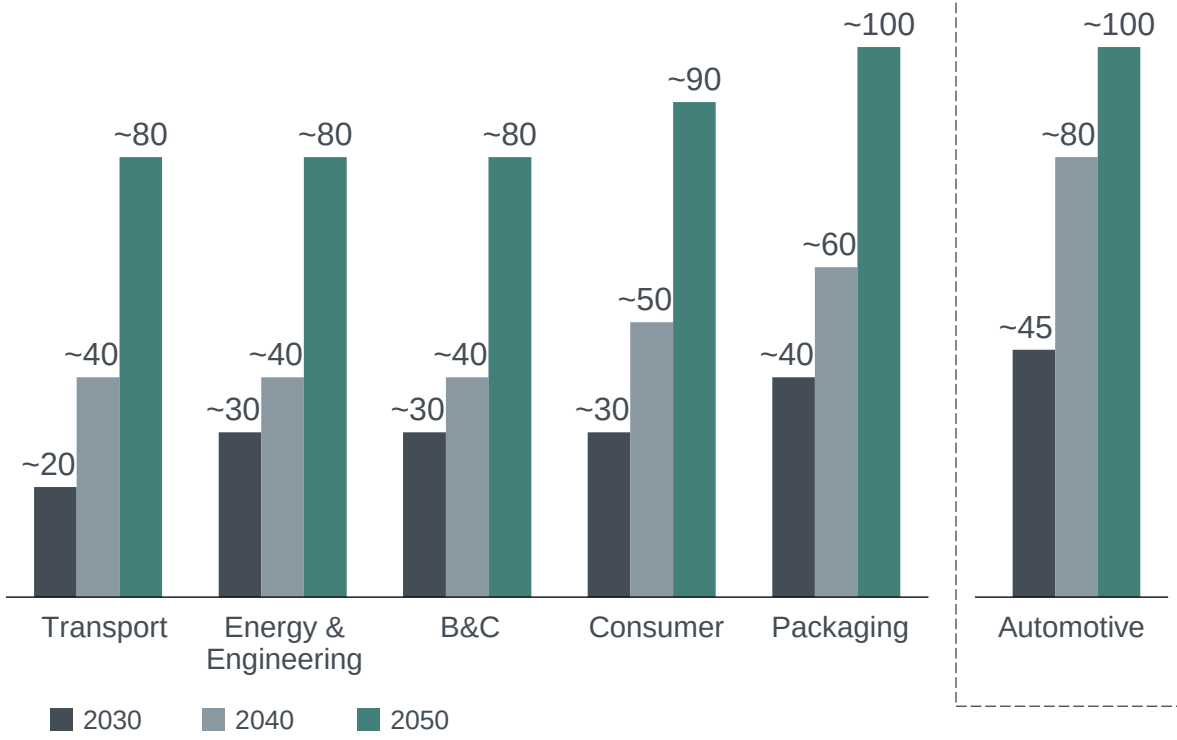
Develop a more robust, higher earnings and more sustainable company

Expecting strong demand for greener aluminium

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

Share of greener [1] aluminium demand per segment

% greener of total aluminium demand



OEMs are pushing for ever more ambitious lifecycle decarbonization targets

	Timeline to achieve target	Decarbonization target: Scope 1 & 2	Decarbonization target: Scope 3 upstream
Porsche	2030	100%[1]	100%[1]
GM	2040	100%[1]	-
Ford	2050[1]	100%[1]	100%[1]
Mercedes-Benz	2039	100%[1]	100%[1]
BMW	2030	80%	22%
Volkswagen	2050[1]	100%[1]	100%[1]
Volvo	2025	40%[1]	25%[1]
Toyota	2050	90%[1]	100%[1]
PSA Groupe	2034	20%	-

1) Greener aluminium includes “near zero” tCO2/t, <2 tCO2/t and 50%+ PCS-aluminium
Source: McKinsey market analysis (high level estimate)

Hydro provides products with low emissions

Primary aluminium produced on renewable energy

4-6 times

lower than the world global primary average

Recycled aluminium from Hydro

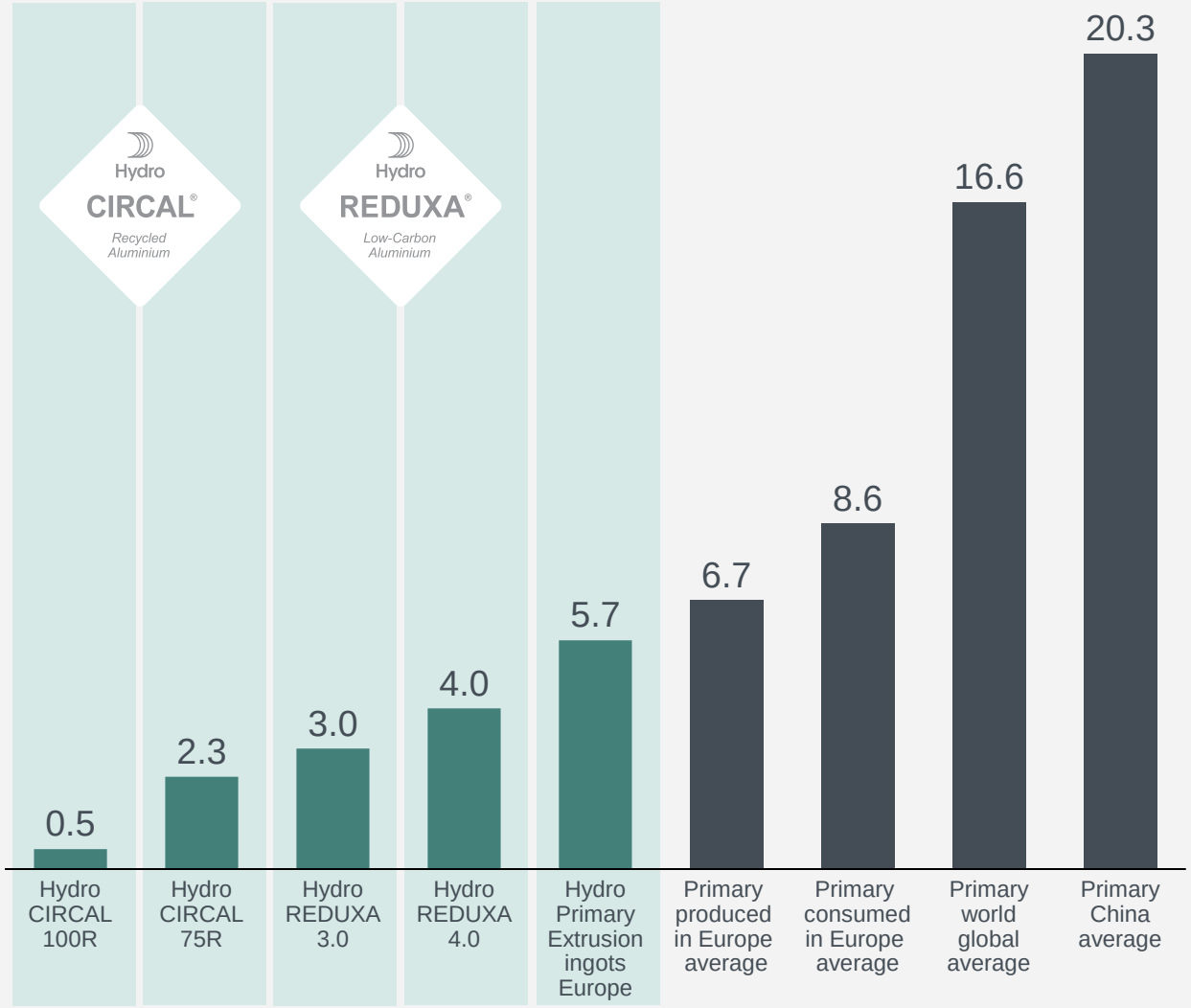
More than

7 times for 75R, and

33 times for 100R

lower than the world global primary average

Kilos of CO_2e emissions per kilo aluminium



Sources: EAA, IAI, Hydro internal analysis

Low-carbon aluminium gaining ground

Hydro

Several new strategic partnerships signed this year across segments

Navarra green hydrogen pilot

LoI with UK bicycle company Brompton

Renovating Place d'Italie with Circal 100R

Enabling | Partnering | Delivering

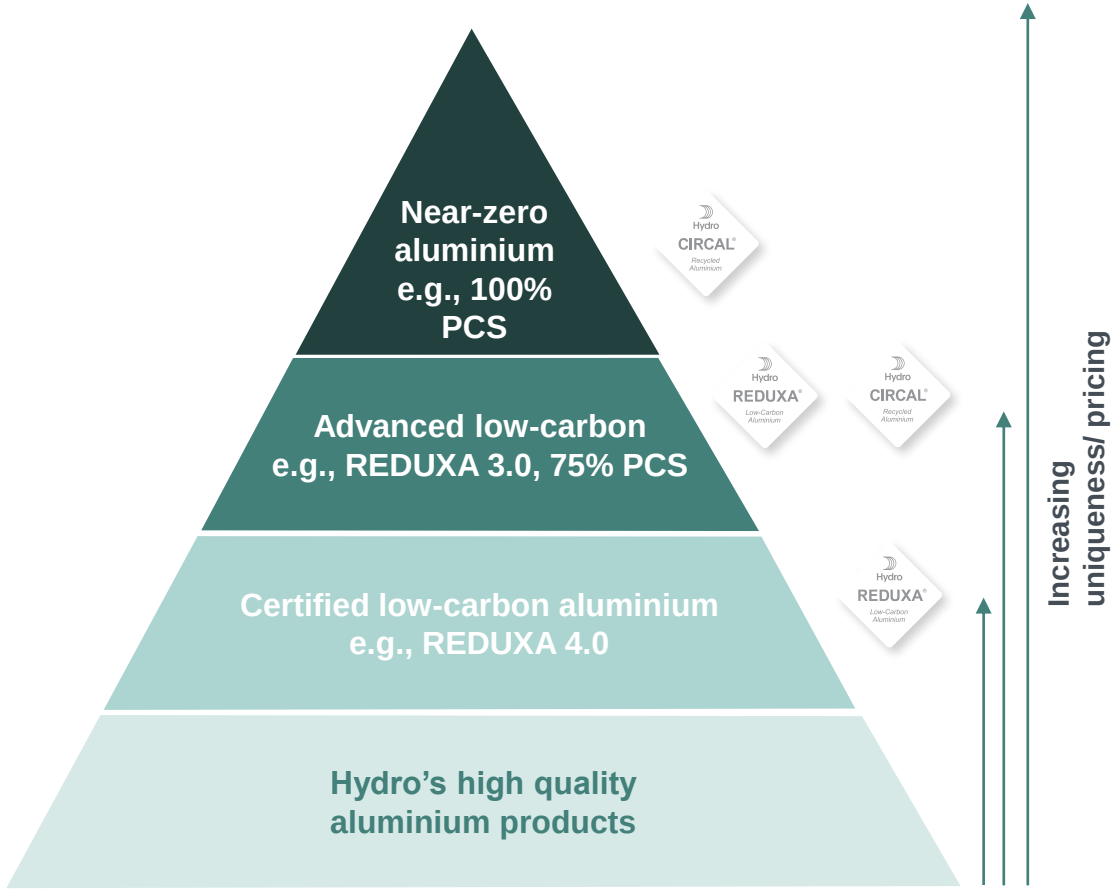
CCS and HalZero R&D

Partnering with Saint-Gobain Glass to decarbonize building facades

Joining forces with CAKE and Vattenfall for "Cleanest Dirt Bike Ever"

Mercedes-Benz sustainability award for Reduxa 3.0

Hydro offers the leading low-carbon product portfolio



Leading low-carbon aluminium offering and capabilities

- Strong **scale position** within recycling and low carbon aluminium
- Ambitious, yet concrete, **decarbonization roadmap** across entire value chain
- Delivering pilot volumes of **ultra low carbon and 100% PCS** to frontrunner partners
- Differentiated suite of low-carbon products enables **adaptable pathway** to net-zero - unique to Hydro

Scale with high ambition players

Unique pilot volumes for front runners

Driving sustainability: Future-proofing our company

Climate

- On track to meet 30 percent reduction in scope 1 and 2 CO_2e by 2030
- Net-zero by 2050 or earlier
- Reduce specific scope 3 emissions by 30% by 2030

Environment

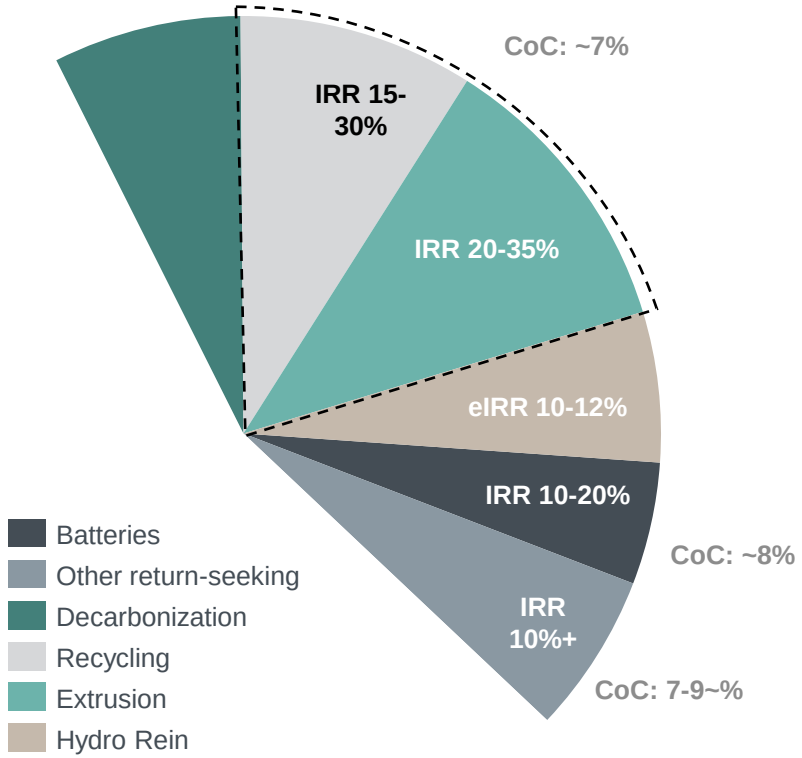
- 1:1 reforestation on track
- No net-loss biodiversity ambition for new projects
- Tailings dry backfill technology reducing the need for permanent landfilling
- Continued focus on waste elimination, including new project on recycling bauxite residue

Society

- On track to deliver on target of empowering 500,000 people with skills and education by 2030
- Significant social projects completed in Brazil
- Transparency and traceability of key product sustainability data by 2025 or earlier

Strong profitability in return-seeking and growth capex portfolio

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

Hydro Rein

- USD 2.7 billion contracted revenues, 3.6 TWh signed under long-term EUR & USD PPAs
- 1.7 GW gross capacity in operation or construction
- Focus on early phase projects opportunities and strategic partnerships

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)

Decarbonization

- Alunorte Fuel switch project (IRR 10-20%)
- 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

Sustainable financing initiatives increase access to capital and provide cost of capital advantage

Green and Sustainability Linked Financing Framework

- Framework published to facilitate issuance of green and sustainability linked bonds
- Linked to Hydro's sustainability ambitions
- CICERO Shades of Green provided Second Party Opinion allocating medium green shading and governance assessment at excellent

Updated capital structure policy and EMTN Program

- Revised capital structure targets over the cycle
- EMTN program established to streamline bond issuance in line with capital structure policy

Sustainability linked bonds (SLBs)

- NOK 3 billion SLBs (2022-2028) issued under framework and EMTN programme
- First SLB issue in the Norwegian corporate investment grade market
- SLB feature increased access to capital in challenging market conditions

Linked to Hydro sustainability ambitions

10% carbon emission reduction by 2025

670 kt PCS by 2025

Revised capital structure in 2022

Adj. net debt/adj. EBITDA < **2x**

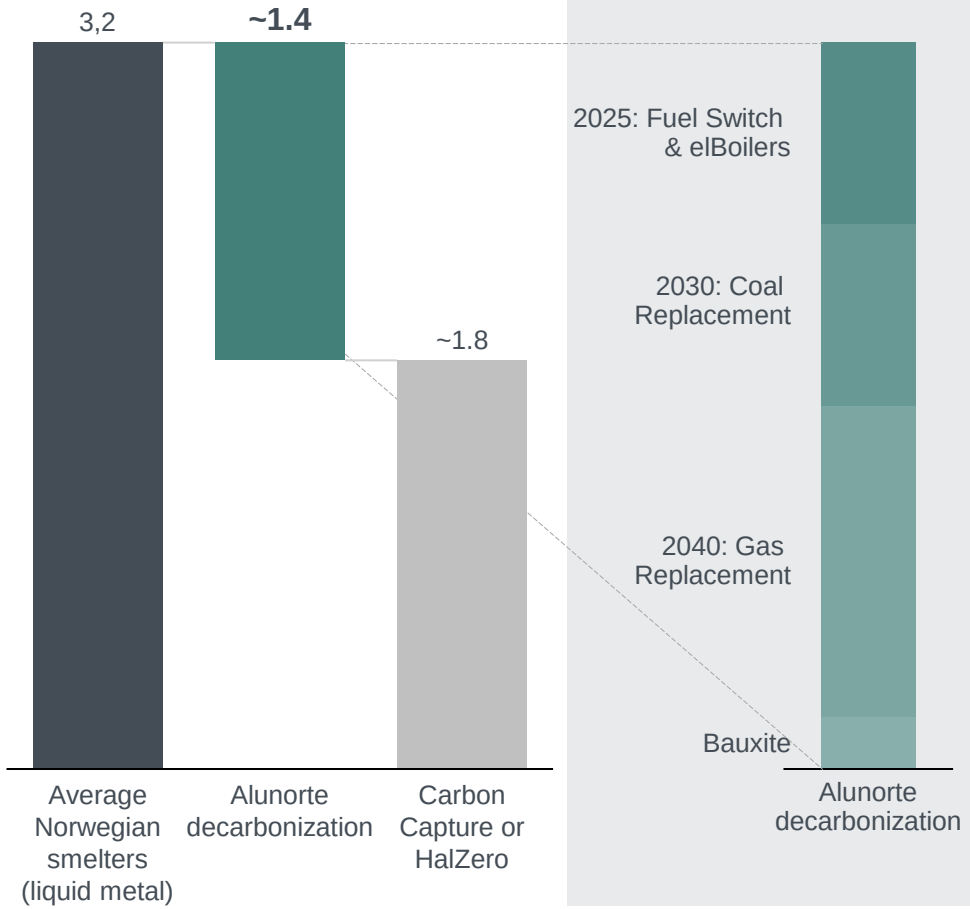
Adj. net debt around **NOK 25 billion**

NOK 3 billion SLBs

1st corp IG SLB in Norway

Project deep dives
B&A

Decarbonization ambition: Significant progress on decarbonization of Alunorte alumina



Towards lowest CO_2e per tonne alumina relative to peers by 2025

Fuel switch project

- Replacing heavy fuel oil with natural gas
- Reducing annual CO_2e emissions by 700,000 tonnes
- Cost BRL ~1.3 billion (NOK ~2 billion)
- First gas consumption in Q2 2023 and all oil assets converted to gas by 1H 2024

Electrical boiler – Hydro Rein supports decarbonization

- First electrical boilers in operation in first half 2022
- Two more electrical boilers in operation by 2024
- 2 times 20-year PPA's were signed with Hydro Rein (255 MW) to power boilers, from the Mendubim and Feijao projects and providing competitive terms for Alunorte

Coal replacement by 2030

- Coal only as a secondary energy source for security of supply by 2025
- Multiple paths to replace coal and targeting stand-alone business cases
- Ambition to fully replace coal by 2030

Gas replacement by 2040

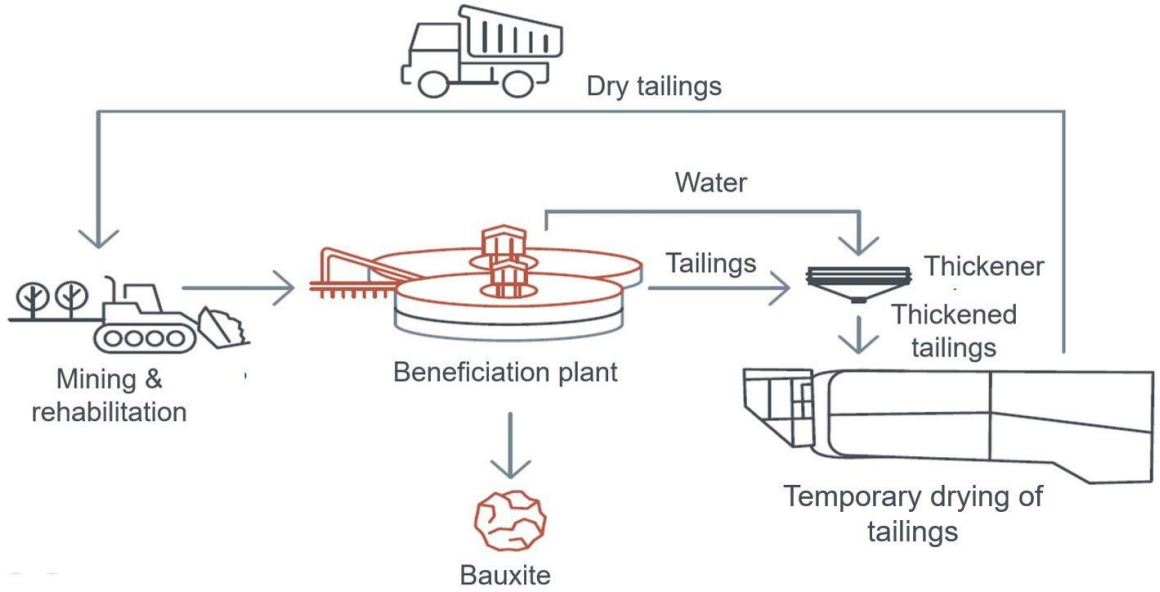
- Gas will be replaced in Calcination by either Hydrogen or Renewable energy

Bauxite

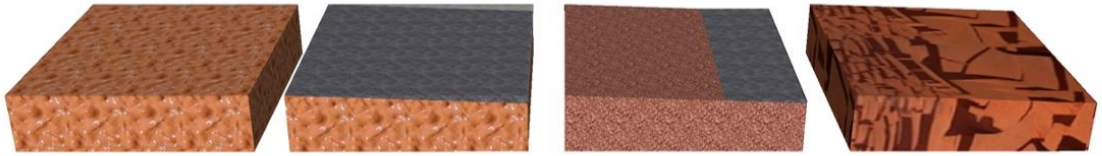
- Replacement of diesel with biofuel and electric equipment

Tailings Dry Backfill - MPSA

Temporary drying of tailings and backfill in mined-out areas



Hydro Thickened Tailings Desiccation Process

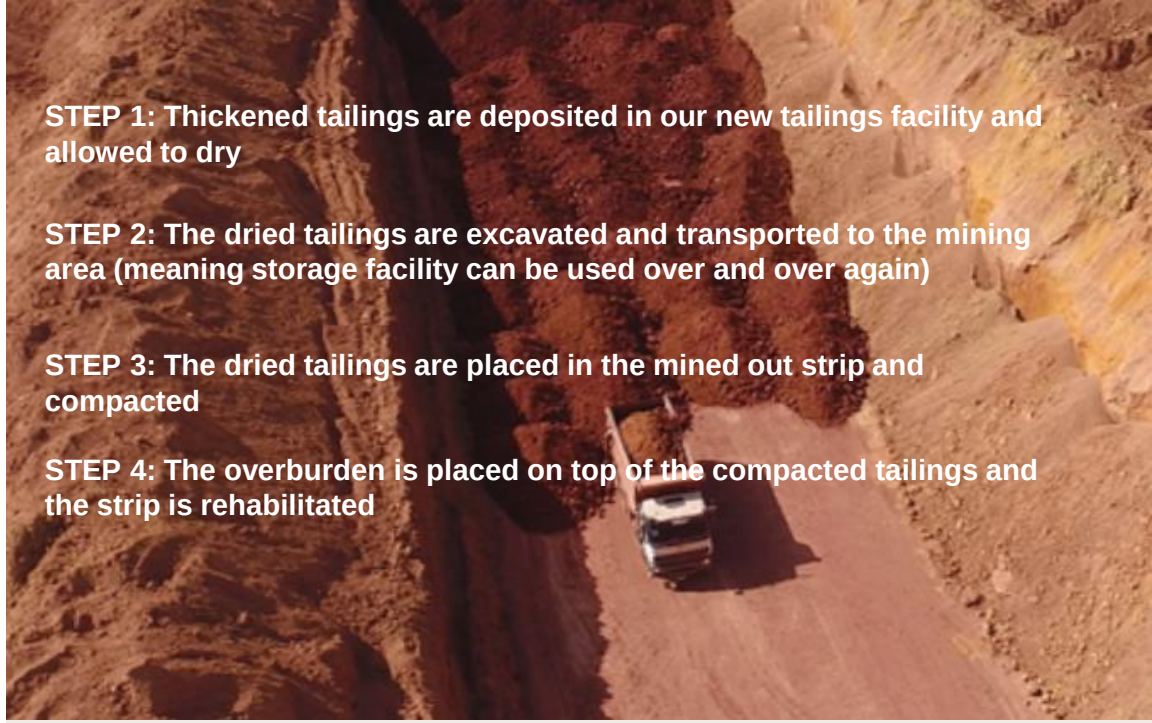


1ª Stage:
- Disposal
- % of solids= 33% to 35%

2ª Stage:
- Sedimentation and segregation of water and solids
- Supernatant water flows to spillway
- Beginning of drying

3ª Stage:
- Densification and evaporation
- Beginning of cracks

4ª Stage:
- Cracks development
- Completely dry
- Achieve >60% of solids



STEP 1: Thickened tailings are deposited in our new tailings facility and allowed to dry

STEP 2: The dried tailings are excavated and transported to the mining area (meaning storage facility can be used over and over again)

STEP 3: The dried tailings are placed in the mined out strip and compacted

STEP 4: The overburden is placed on top of the compacted tailings and the strip is rehabilitated

The best tailings facility is the one that is not built

- Most sustainable method in the world
- Significant cash flow saving in not building and operating new dams
- Cash flow saving in avoiding dam rehabilitation and remediation costs
- Reduced environmental footprint and operational risk

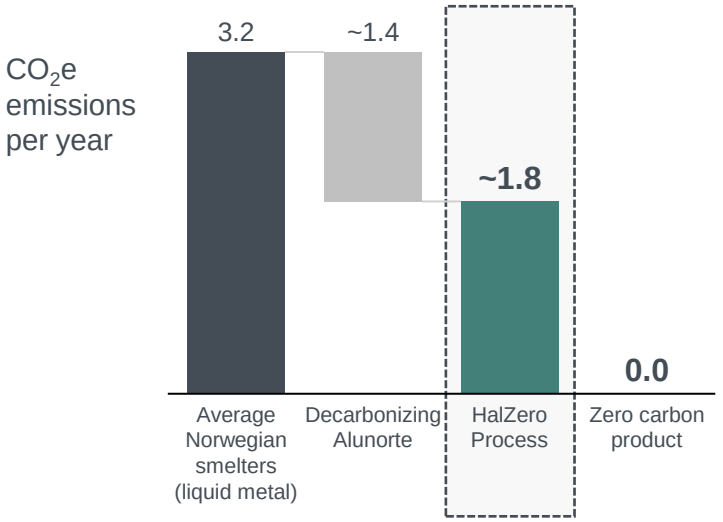
Project deep dives
Aluminum metal

Decarbonization ambition: Three paths to zero

Clear technology roadmap to deliver industrial volumes of zero carbon aluminium by 2030

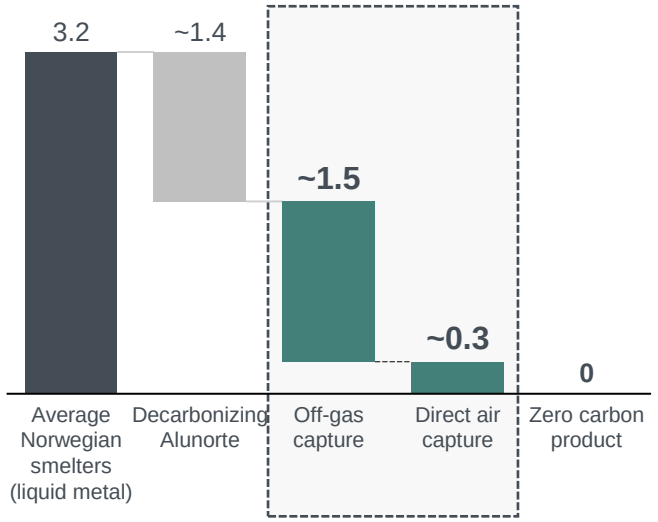
HalZero process

New process technology for decarbonizing new capacity



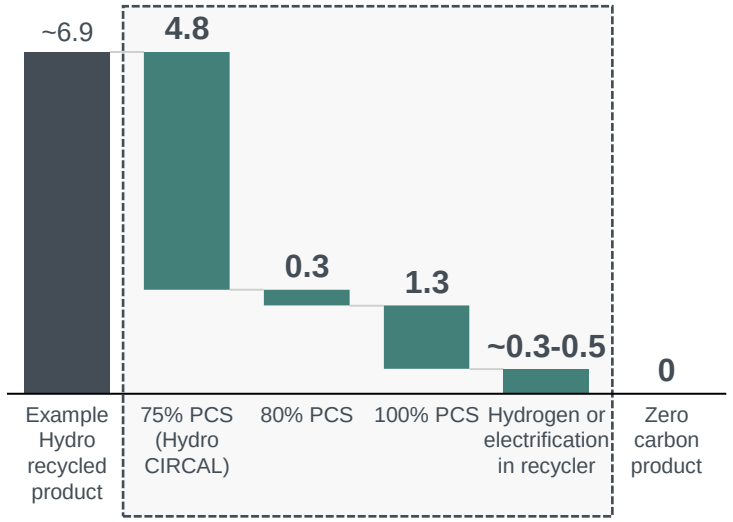
Carbon capture and storage

Technologies for decarbonizing existing smelters



Recycling and Casting

Technologies for more PCS-use and casthouse decarbonization



Investing in upgrades and technology to make our aluminium more sustainable

Upgrades at Årdal plant

- **Upgrade of electrolysis cells** to improve working environment, reduce energy consumption and increased profitability
- **Upgrade of primary foundry alloy Cast house** to increase recycling capacity of PCS
- **Upgrade of casthouse** to lower energy consumption and CO2 footprint
- **New production technology HAL5000** pot control system – help increase production, reduce electricity consumption

Upgrade of primary aluminium plant in Karmøy

- The project will **upgrade the power supply system** and anode rodding facility at the Karmøy plant,
- Strengthening its position as a producer of low-carbon Hydro REDUXA.
- Completion by end of 2024.

Energy efficiency projects in Norwegian smelters

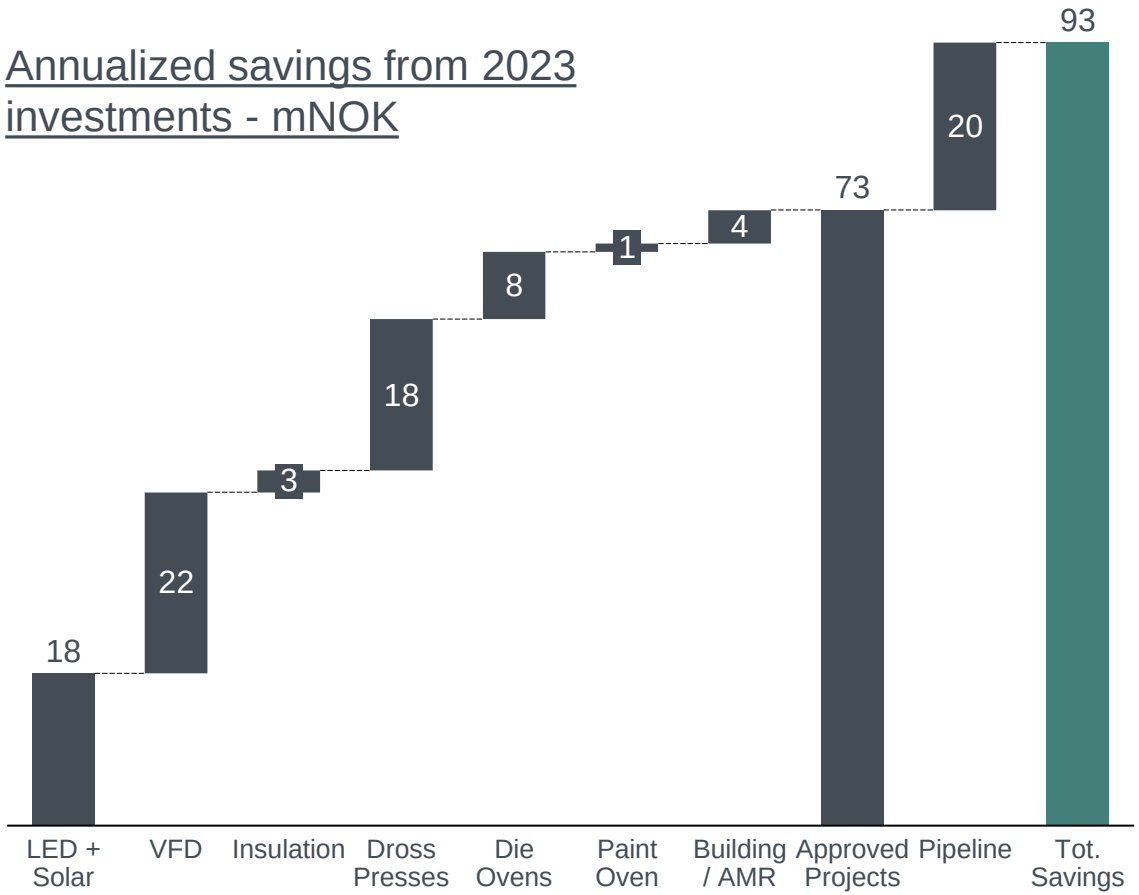
- The smelters will be **replacing older lighting with LED lights**
  - Reduced energy consumption and better light quality
  - Save more than 100 GWh
- Implementing a **system that regulates lighting** based on needs and movement
  - Provides up to 90 percent energy savings compared to traditional lighting.

Project deep dives
Extrusion

Energy saving initiatives gives significant impact through direct investments

Energy savings projects	Capex (MNOK)	Saving (MNOK)
LED installations (5 plants)*	21	15
Solar generation – 1.7 GWH / year	9 (incl. grants)	3
17 x Press Hydraulics - variable frequency drives (VFD)	33	22
5 x dross presses EE	19	18
Infra-Red Die Ovens, 9 plants, ovens use 30% less energy	18	8
Anodizing tank insulation & chiller	3	3
Paint oven modernization – HBS	1	1
AMR, Building improvements, solar shades, burners	10	4

- *) After defined projects are completed – 90%+ of major buildings in Hydro Extrusion have LED / Smart-LED installed



Project deep dives
Recycling

Recycling: The fastest route to full decarbonization

Advanced sorting technology ready. Progress on casthouse decarbonization technology

Advanced sorting technology for more PCS use

HySort technology ready for industrialization

Enabling further growth in Hydro CIRCAL and scaling production of 100R

Casthouse decarbonization technology to reach net-zero

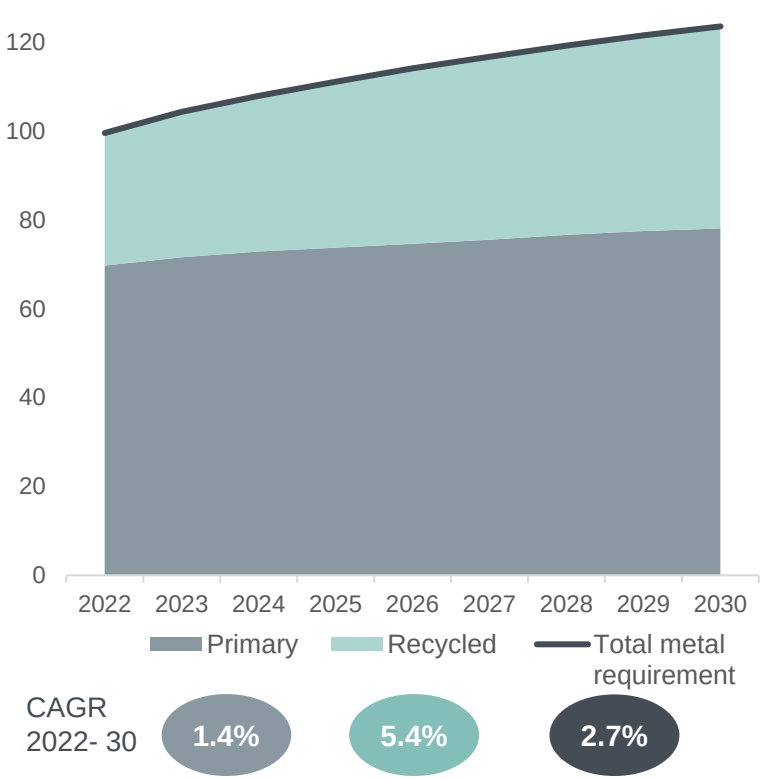
Program to test viable technologies in progress

Green hydrogen test pilot by Hydro Havrand to be built at Høyanger recycling plant

Ambitious recycling strategy delivering on future consumption growth

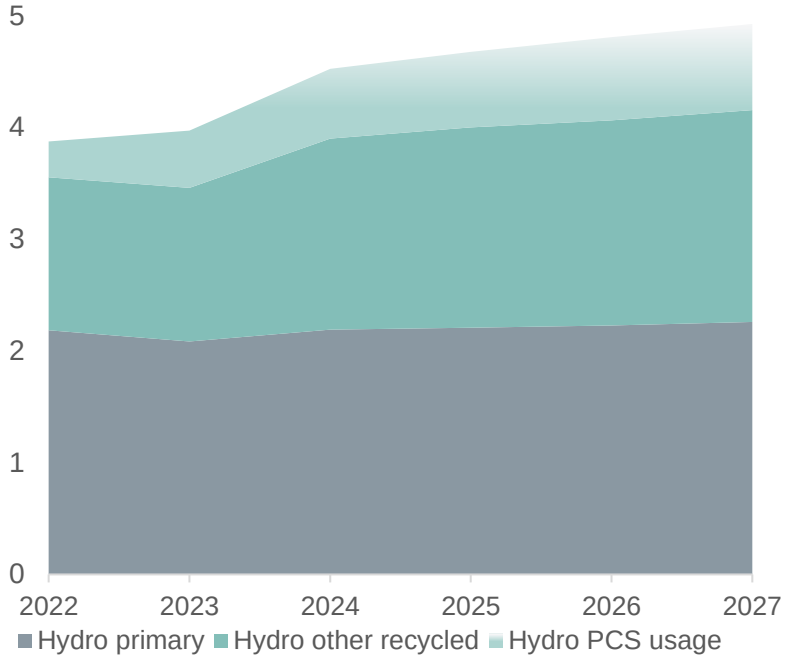
Global aluminium consumption

In million tonnes



Hydro aluminium production

In million tonnes[1)]



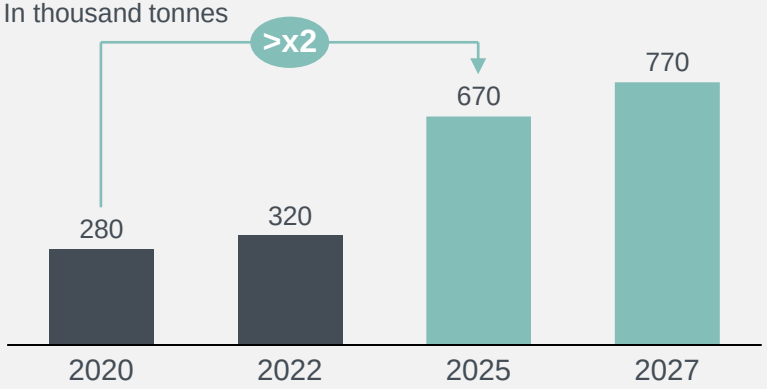
Ambition to add ~**1 million tonnes** recycled capacity until 2027, whereof **40-50% from PCS**

Recycling 2025 and 2027 targets

All approved project pipeline

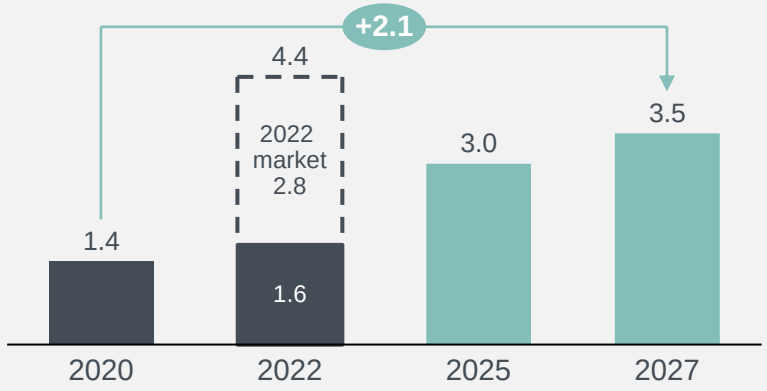
PCS usage and ambition

In thousand tonnes



EBITDA

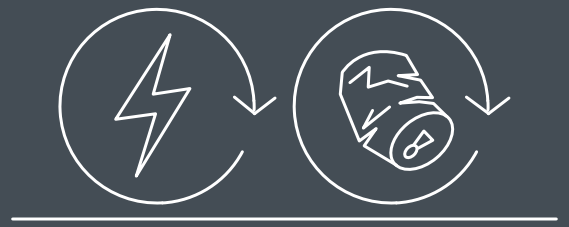
In NOK billions



Source: CRU, Hydro analysis

Sustainability ambitions:
The basis for future position and profitability

Climate



Net zero products, net zero company, net zero society

Environment

Protect biodiversity and reduce our environmental footprint

Society

Improve the lives and livelihoods wherever we operate

Hydro

Industries that matter