

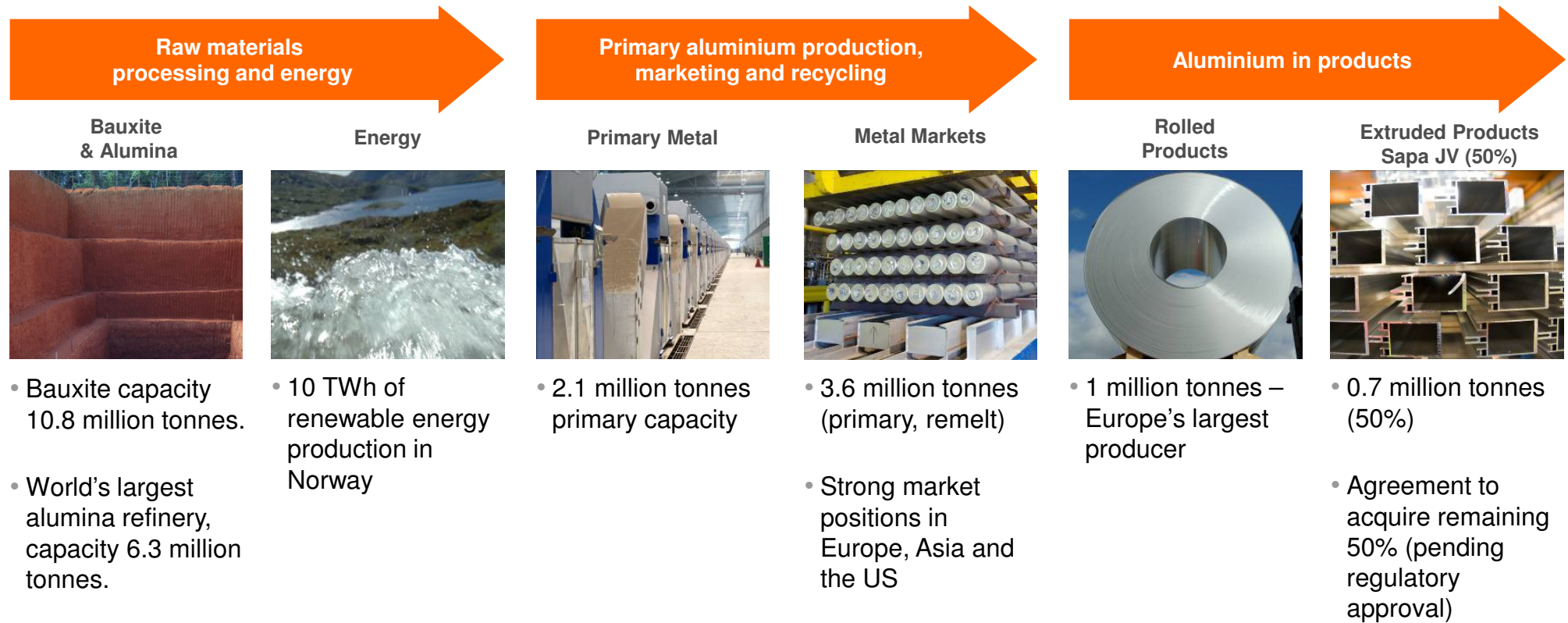


# Environment as competitive advantage

Stig Tjøtta, Head of Technology, Hydro Aluminium Primary Metal Commercial.

# Hydro Aluminium

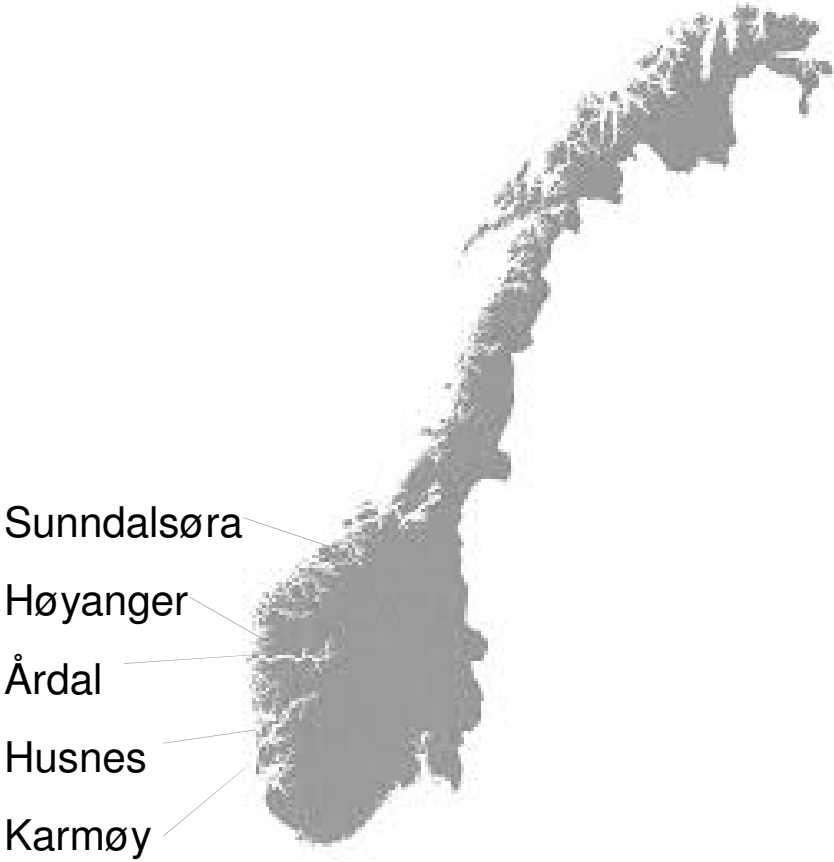
A Global Aluminium Company covering the entire Aluminium Value Chain



~35 000 employees (including SAPA – pending approval)

# Primary Aluminium production in Hydro centered along the Norwegian Coast

Based on Clean Renewable Power (Hydro Power)

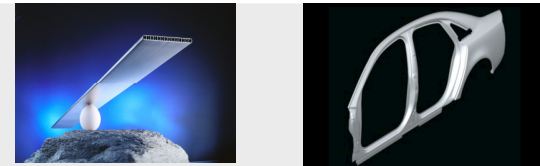


# Environment as a Competitive Advantage

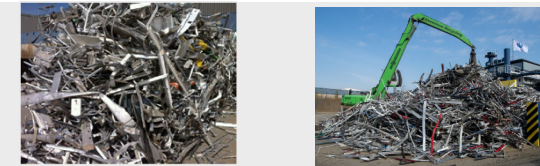
Company Profiling



Competitiveness vs. other Materials



Recycling also to reduce cost

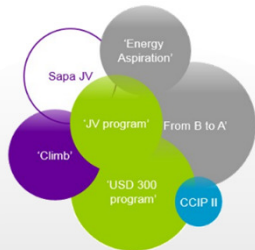


Green Aluminium



# Hydro's aspiration for higher value creation

## Better



### Hydro improvement drive continues at full pace

- Continue improvements drive.
- Capture commercial opportunities
- Extend technology and innovation lead

## Bigger



### A solid platform for building an even stronger Hydro

- Further strengthen relative industry position
- Enhance market positions
- Selective growth projects for when time is right

## Greener



### Hydro aims to be climate neutral by 2020

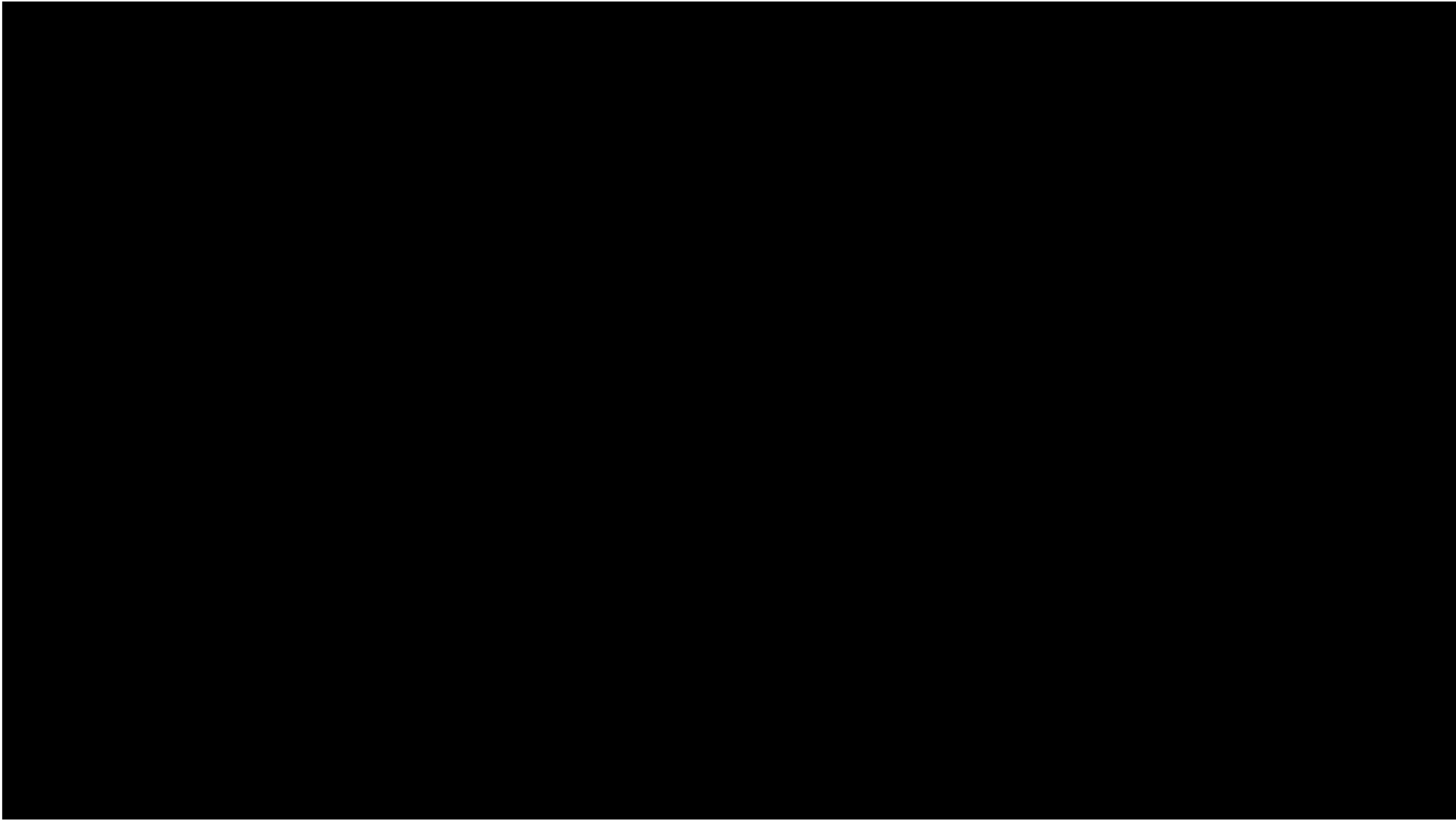
- Energy efficiency and emissions in production
- Recycling - including use of end of life scrap.
- End users benefits



# Competitiveness vs other Materials

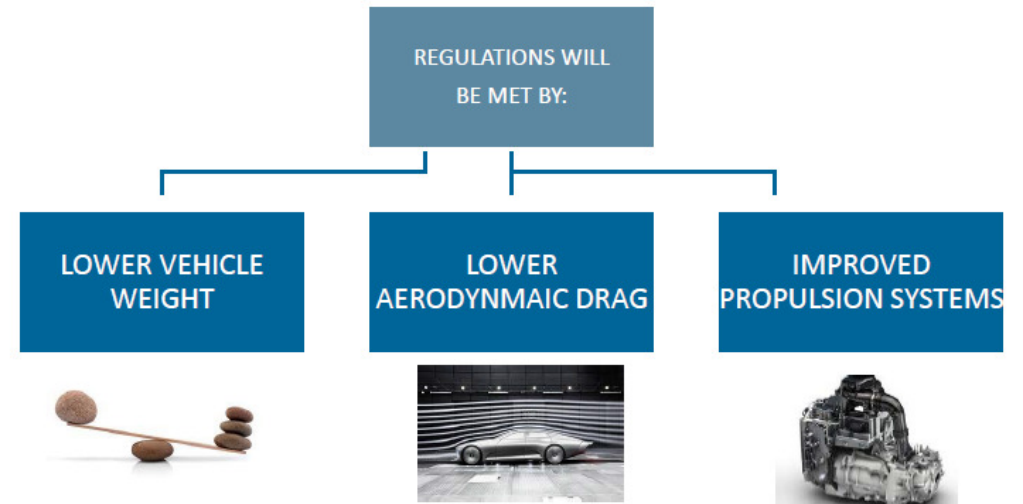
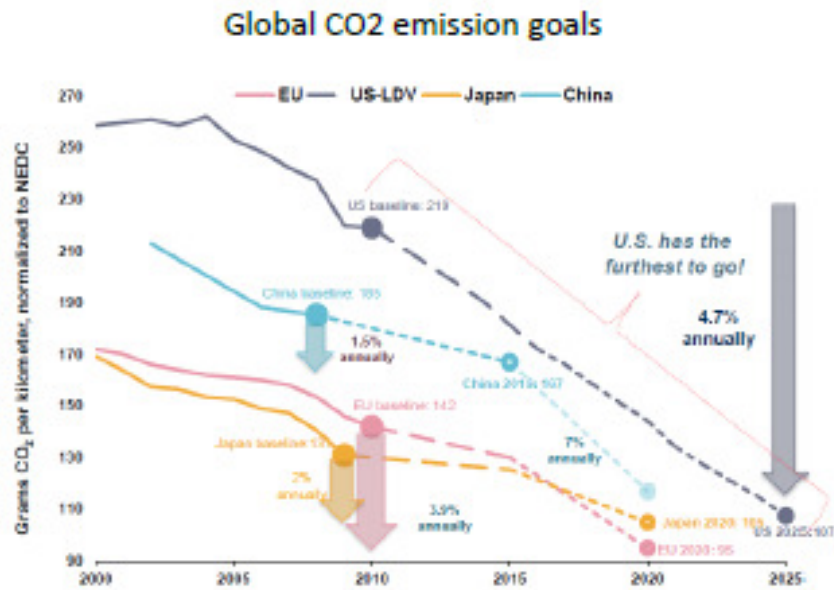
Aluminium – the energy storage bank





# Automotive; Strong drive for lightweighting

Increased willingness to pay for light weight solutions



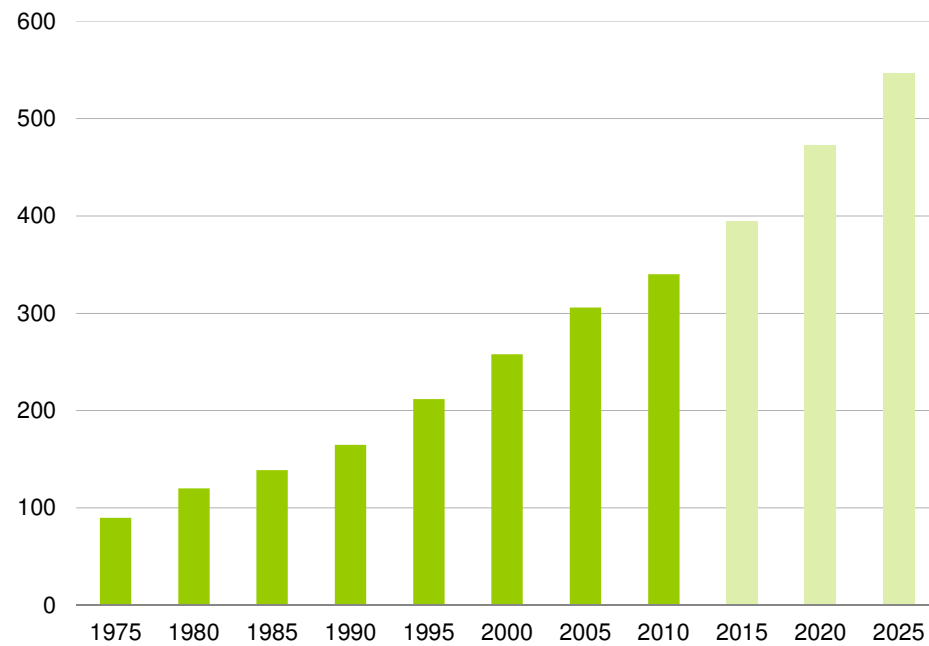


# Automotive demand growth

## Lightweight Design Driven by Emission Legislation

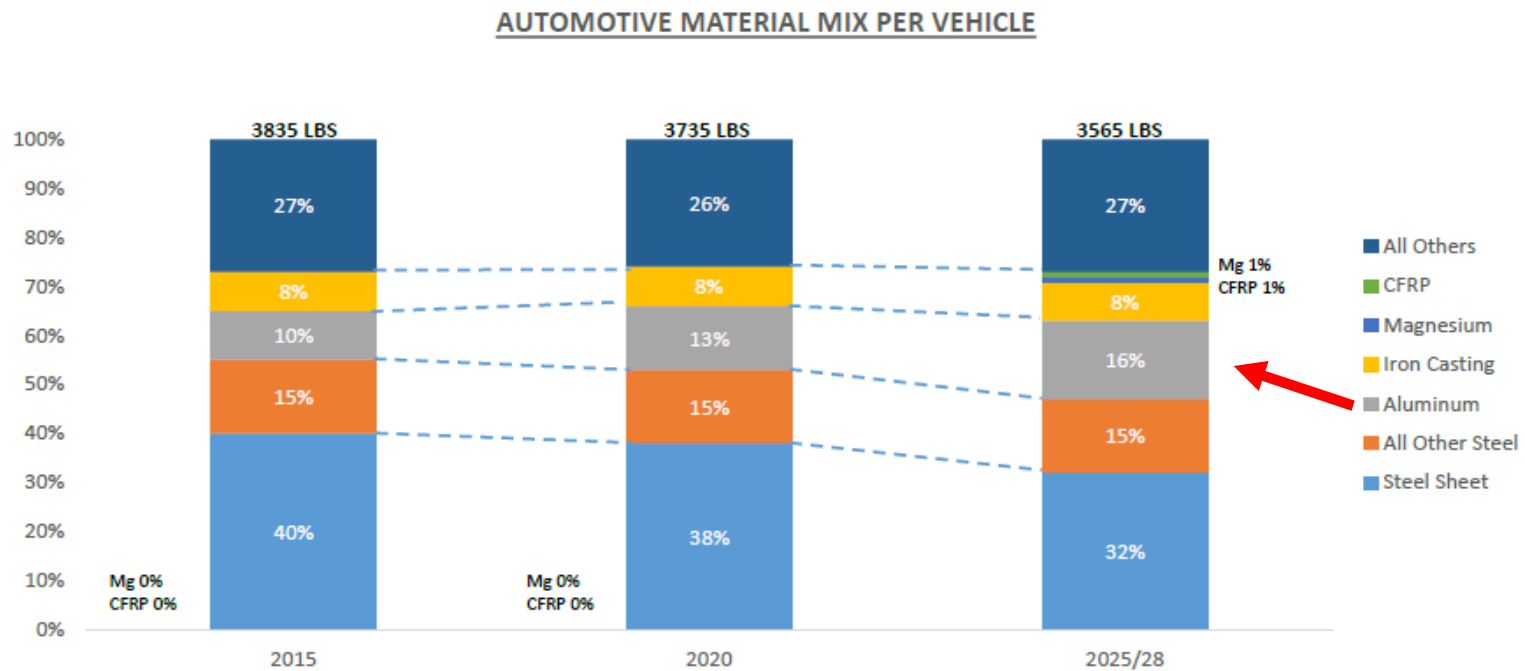
### Aluminium in vehicle consumption, North America

Pounds per light vehicle



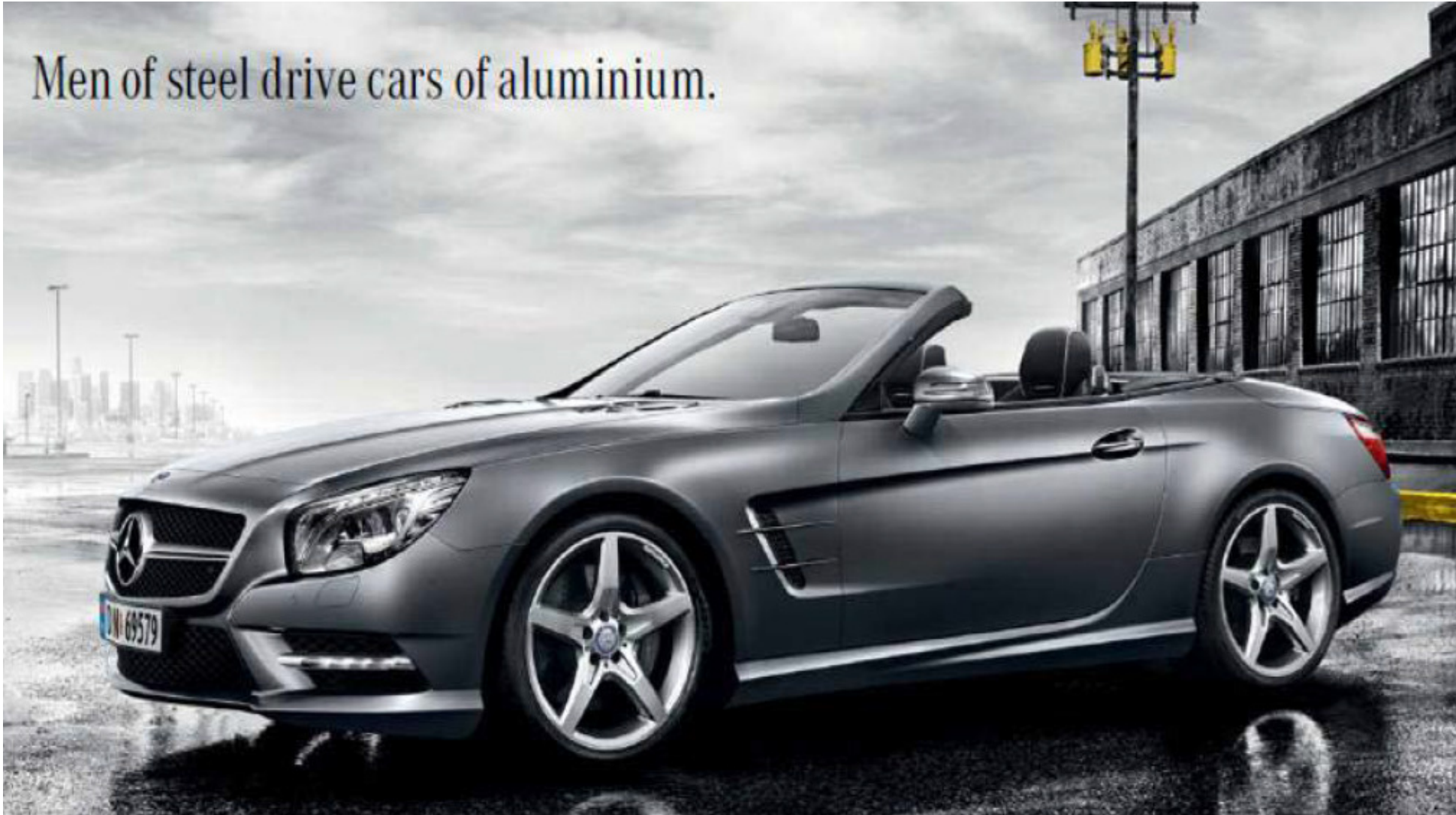
Source: Ducker Worldwide, '2015 North American Light Vehicle Aluminum Content Study, Hydro  
\*) Compound Annual Growth Rate (CAGR)

# Automotive; Increasing share of Aluminium in Cars



## How other promote our metal

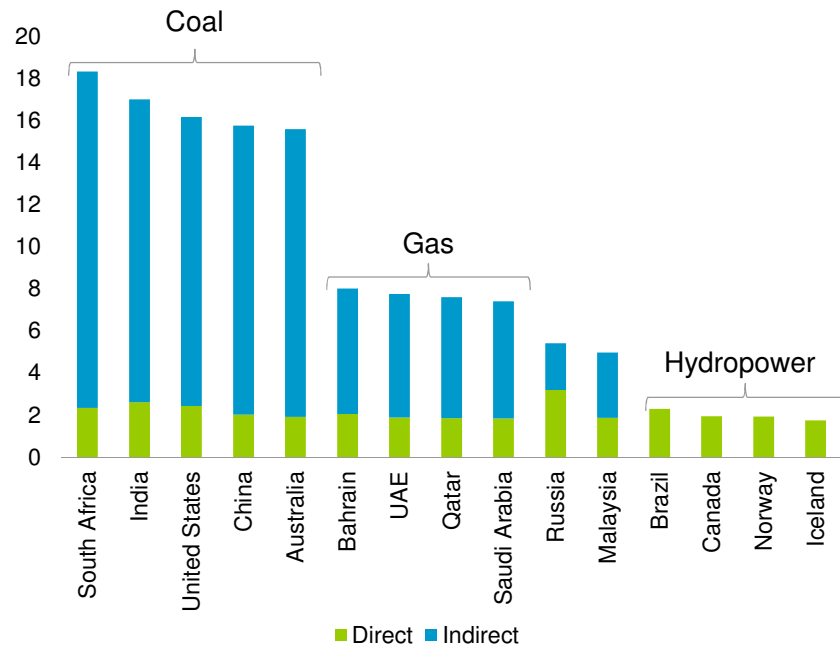
Men of steel drive cars of aluminium.



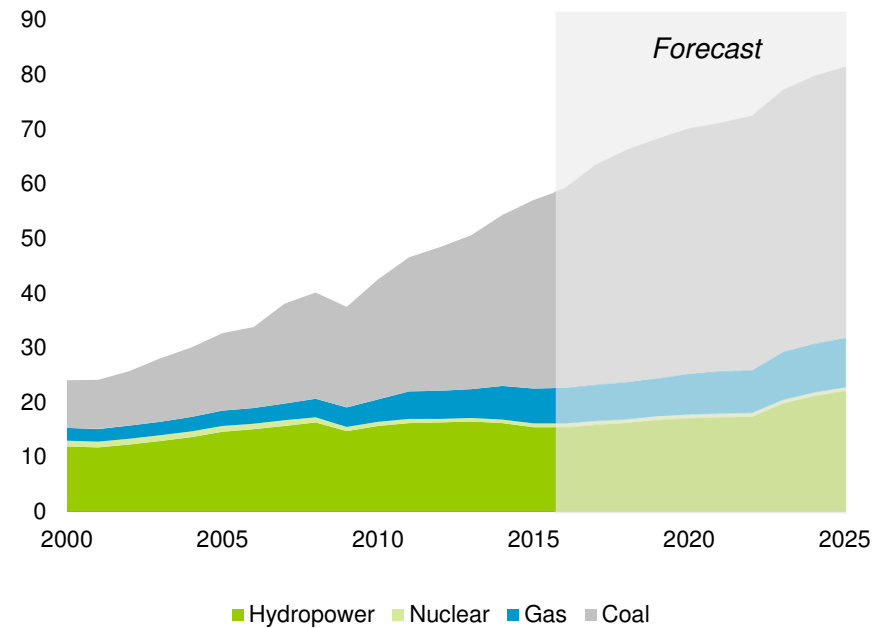
# The climate gas emission challenge for the aluminium industry

Aluminium production is increasingly based on coal due to Chinese capacity growth

CO2-emissions and power generation source by country  
Tonne CO2 / tonne aluminium



Aluminium production by energy source  
Mill tonnes

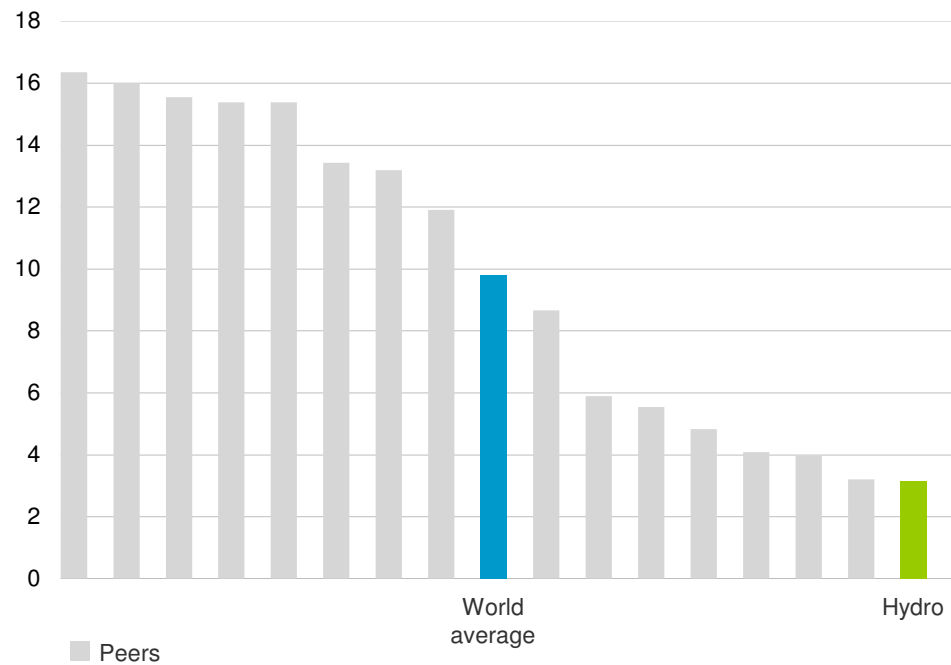


Source: CRU, Excluding Alumina



# Green energy base gives Hydro low carbon footprint

Indirect emissions, in tonne CO<sub>2</sub>/t al



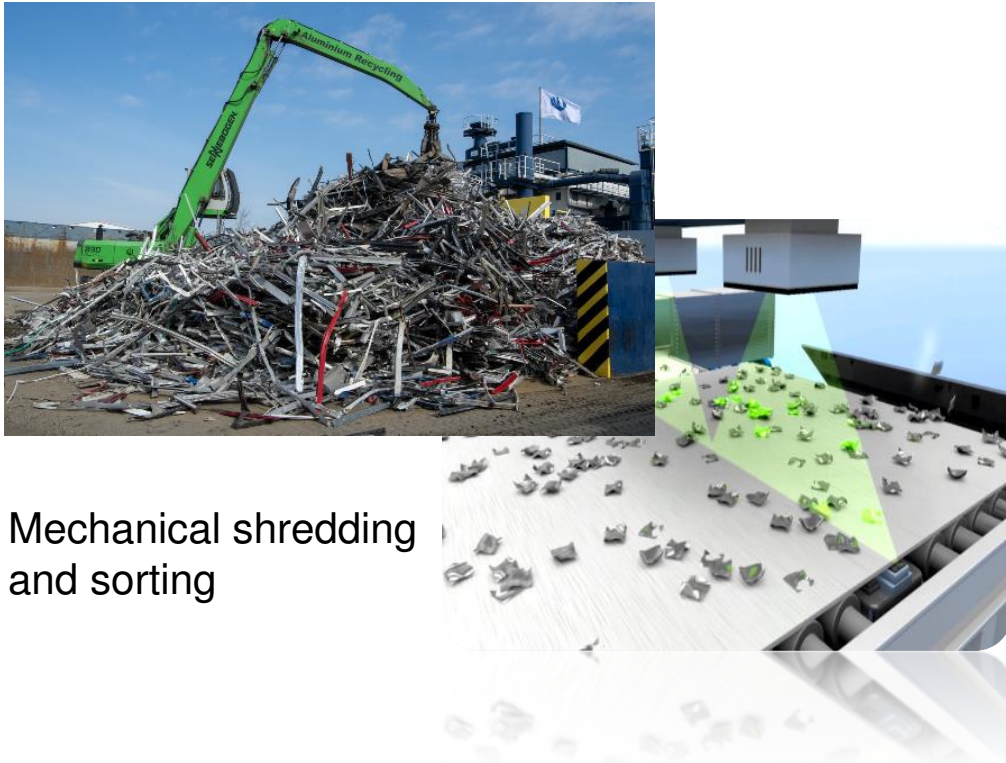
- Hydro has a leading footprint position in the industry. Due to its hydro electric power base.

Source: CRU 2012, Excludes Alumina



# Upgrading Post Consumer Scrap

To reduce raw material cost



Mechanical shredding and sorting

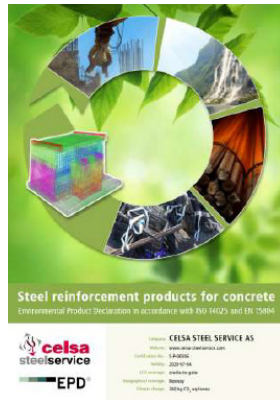


End Product



# Discussion: «Green Aluminium»

Standards:



- Scrap Classification
- EoL vs Recycled content

Pull: Public Procurement/Legislation

End Users



Sheer  
Driving Pleasure



# Summing up

- The environment is used actively to:
  - Profile the company
  - Profile aluminium vs other materials
  - Value of green aluminium possibly eroded by non-standardized methodology;  
EOL vs recycled content, misclassification of process scrap in the value chain etc

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