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## Boliden Smelters

Improving climate performance from a competitive cost position

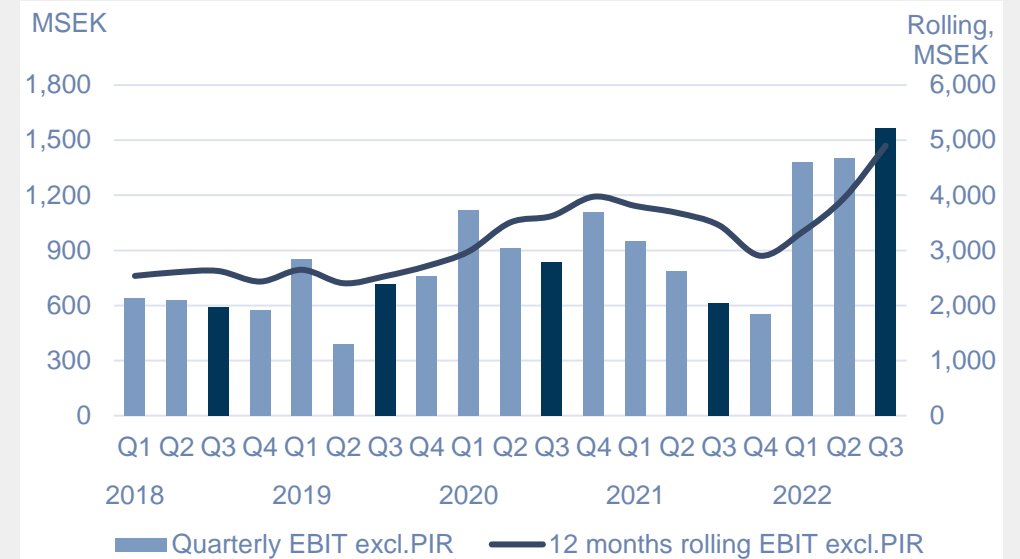
Daniel Peltonen, President Boliden Smelters

**CMD 2022**

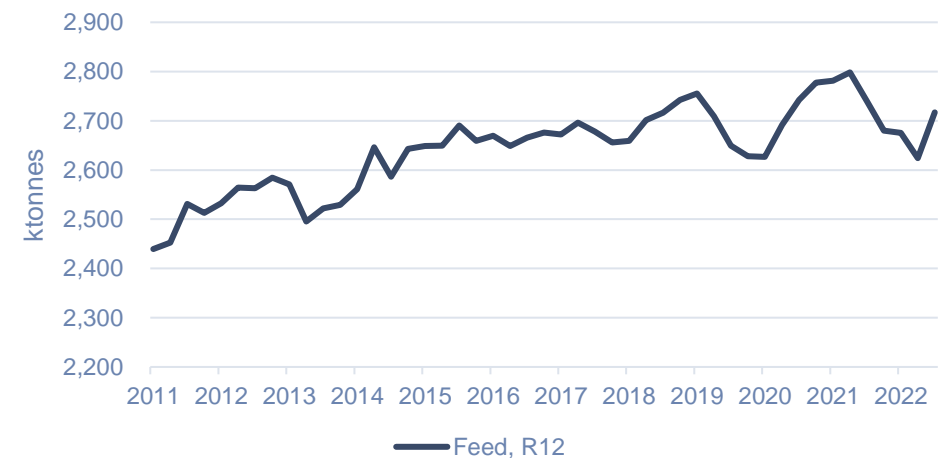
# Key highlights since CMD 2021

- Raw materials market developing towards oversupply
- Beneficial long term energy strategy
- Green Zinc Odda, completion in Q4 2024
- Leaching plant and underground repository in operation at Rönnskär
- Harjavalta nickel line expanded to 370 Ktonnes pa
- Low carbon metals portfolio expanding

## Strong financial performance



## Long term feed increase in Smelters



# New SBTi CO<sub>2</sub> for Smelters

- By 2030 100% Cu and Zn production on average lower than
  - Low-Carbon Copper < 1,5 tonne CO<sub>2</sub>e / tonne Cu
  - Low-Carbon Zinc < 1,0 tonne CO<sub>2</sub>e / tonne Zn
- Includes internal and external concentrates
- Boliden's statement when calculating product CO<sub>2</sub> footprint
  - “Cradle to gate, no credits, no offsets”



Acid plant Harjavalta

# Decarbonization roadmap at Boliden Smelters

- Recycling Zn from Electric arc furnace dust a CO<sub>2</sub> challenge
- Zinc smelting otherwise with low carbon footprint
  - Excellent climate footprint at Odda
  - Improved grid mix and energy savings in steam/heat benefit Kokkola
- Copper and nickel smelting improve further
  - Utilization of waste heat streams replace fuel oil
- Improvements in lead production
  - Desulphurization process in Bergsöe



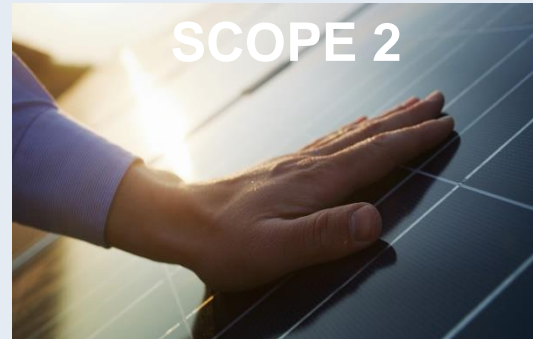
Zinc smelter Odda

# Boliden Smelters CO<sub>2</sub> footprint reduction targets by 2030 from baseline 2021



40% Absolute

Reduction agents and auxiliaries  
Raw material handling  
Fuel and internal transport



Electricity  
Steam  
Heat



30% Absolute

Concentrates and secondaries  
Auxiliaries and others  
Fuel and transport

## Green Zinc Odda expansion

- World class low CO<sub>2</sub> performance
- Project progress according to plan
  - Strong safety performance
  - Groundwork almost complete
  - Civil works ongoing
  - Start of construction early 2023
- Inflation increase capex to 850 MEUR
- 27% spent, 30% still to be procured
- Positive market development, importance of low CO<sub>2</sub> and energy
- Completion during Q4 2024



Odda, November 10, 2022

# Decarbonizing society with Low-Carbon copper

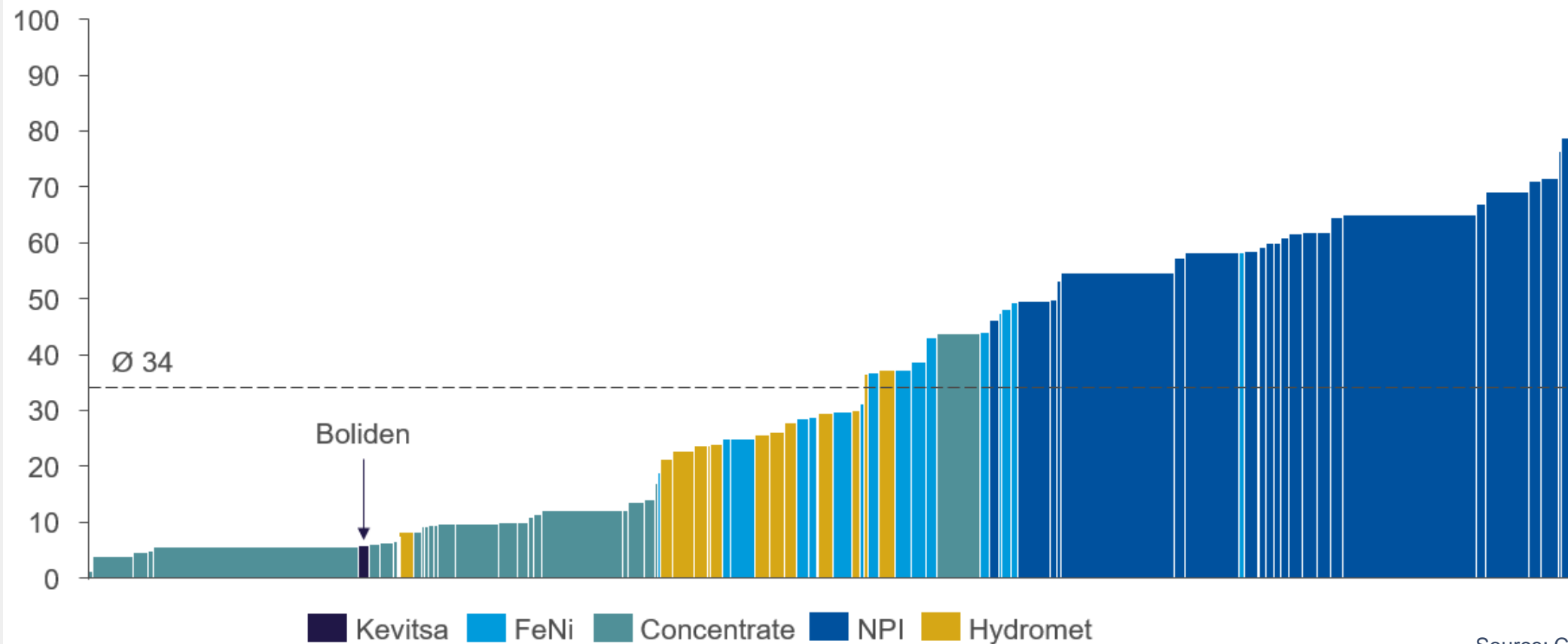
- Boliden's Low-Carbon copper used in one of the world's largest offshore wind farms
- Significant impact on Scope 3, reducing CO<sub>2</sub> footprint with 23,000 tonnes
- In September 2022, Boliden joined the Polestar 0 Project targeting a climate neutral car by 2030



# Boliden's nickel has world leading climate performance (Scope 1, 2 and 3)

Estimated emissions intensity to produce finished nickel metal products in 2022 by CRU

tCO<sub>2</sub>e/ t Ni eq



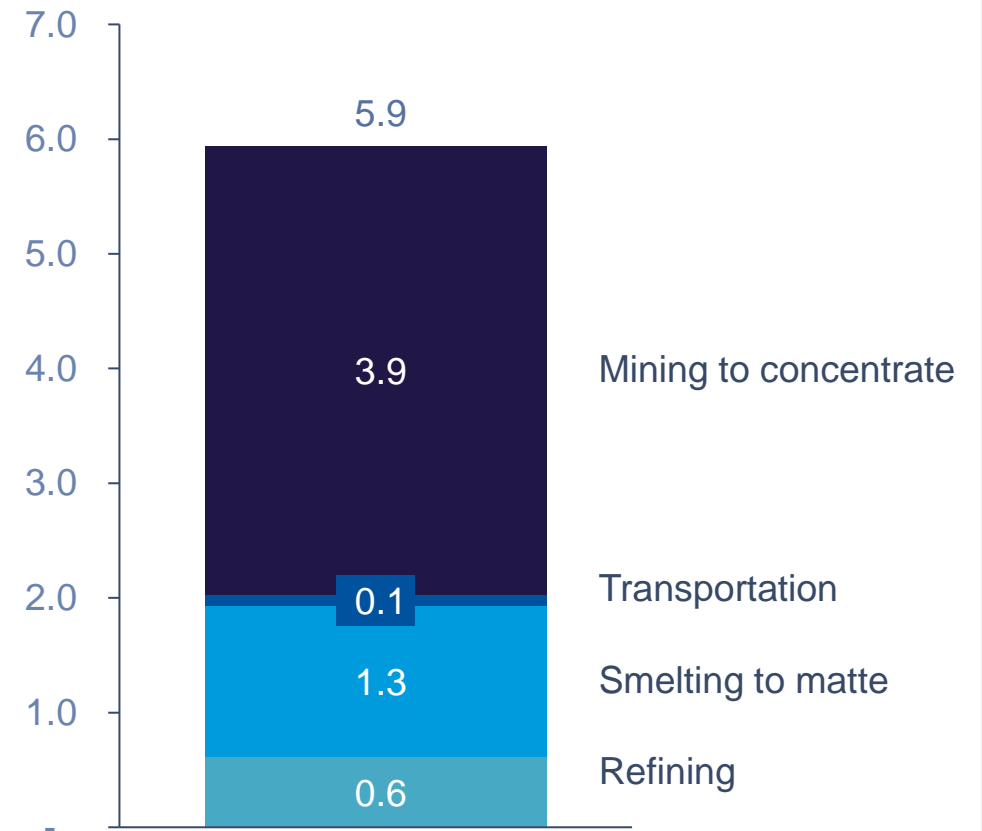
Source: CRU



# Boliden's nickel value chain has low carbon footprint

- Low Scope 1: Concentrate from Kevitsa mine to Harjavalta smelter
  - Kevitsa: Trolley assist, mine to mill fragmentation
  - Harjavalta: Unique smelting technology and recovery of waste heat
- Low Scope 2: Finnish grid mix with low CO<sub>2</sub>
- Low Scope 3: Boliden nickel matte is processed by refineries with low CO<sub>2</sub> footprint

**Boliden 2022 Scope 1, 2 and 3 GHG Emissions**  
tCO<sub>2</sub>e/t Ni eq



Source: CRU

Note: Above is based on mining at Boliden Kevitsa, smelting at Boliden Harjavalta and smelter and refining by external refineries

# Harjavalta nickel expansion

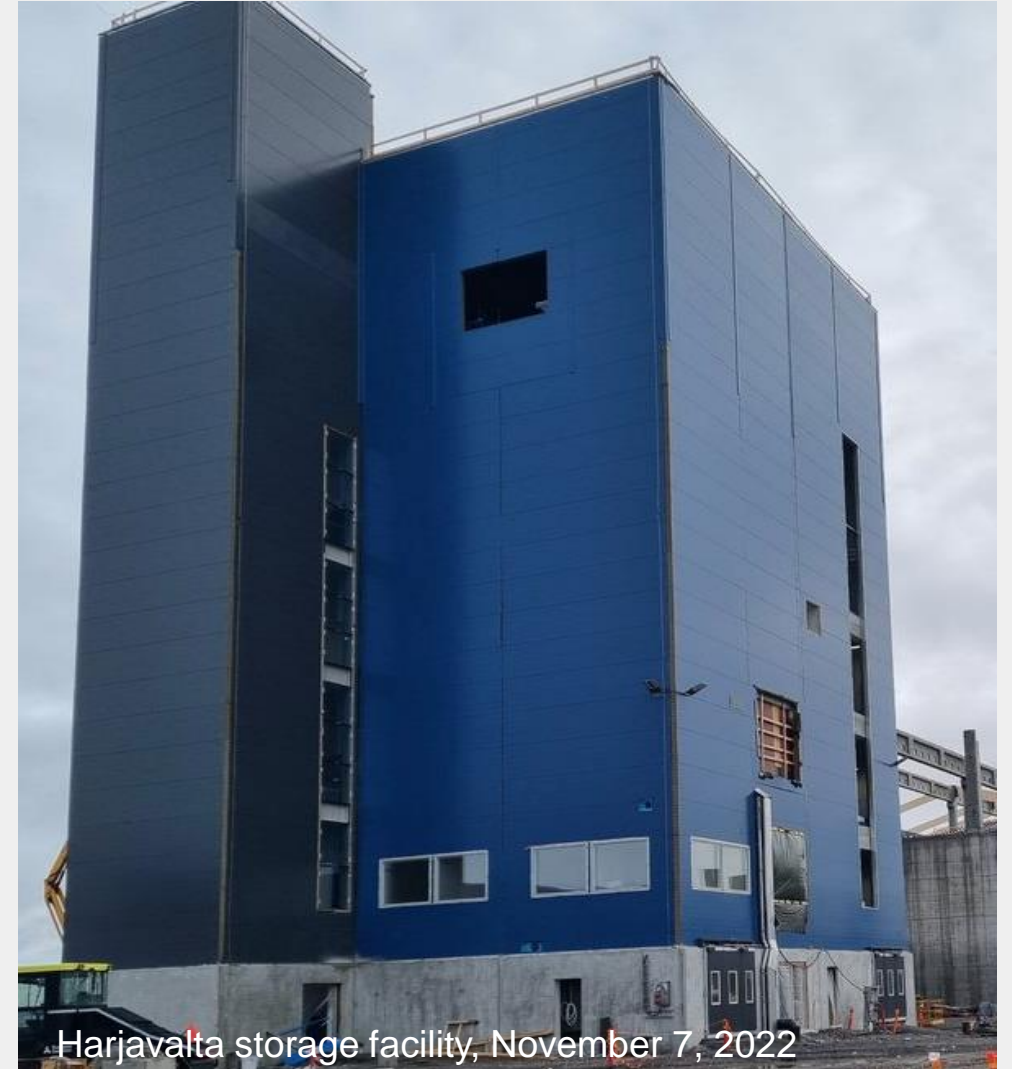
- New drying technology utilizing process heat
- New electric furnace equipped with automated matte tapping
- Continued progress to improve throughput



Granulated nickel slag in Harjavalta

# Implementing state of the art concentrate handling

- A storage capacity of 150 ktonnes where environmental impacts are minimized
- Automated concentrate value determination directly at port
- Streamlined concentrate handling enabling shortened lead times significantly
- Project ongoing, start up in 2023



# The most climate friendly and respected metal provider in the world

Responsibly sourced raw material



Efficient production



Sustainable operations



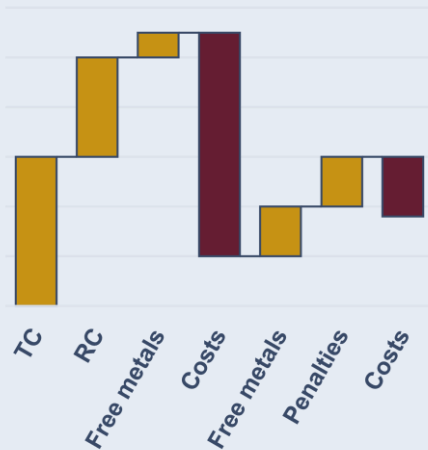
Metals with low CO<sub>2</sub> intensity



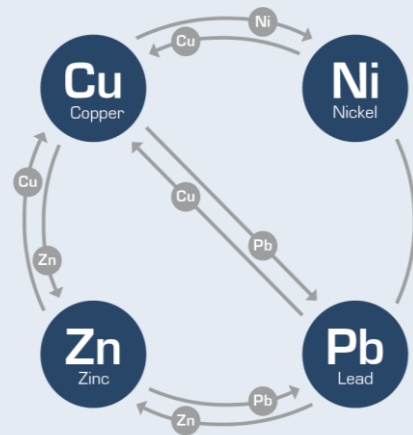
Decreased CO<sub>2</sub> in our value chains

Improved raw material margin

Additional value of complex raw materials



Improved recoveries



Low CO<sub>2</sub> footprint



Sustainable waste solutions

