



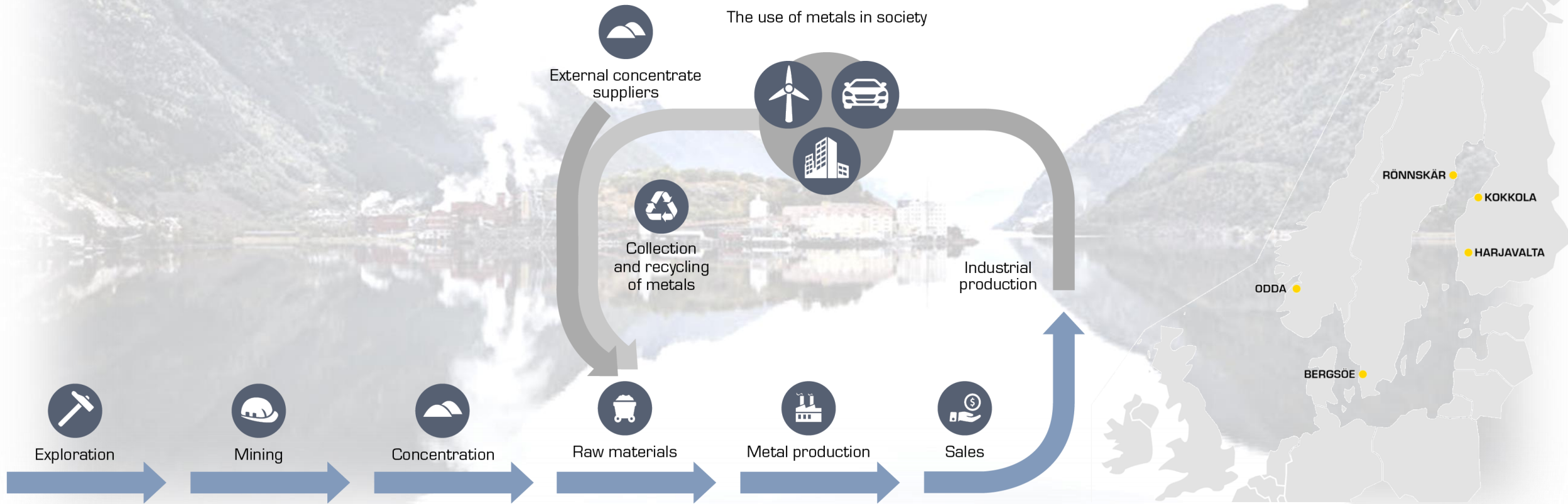
# Boliden Smelters

**The most sustainable metal producer**

President Smelters, Daniel Peltonen  
2019-11-19

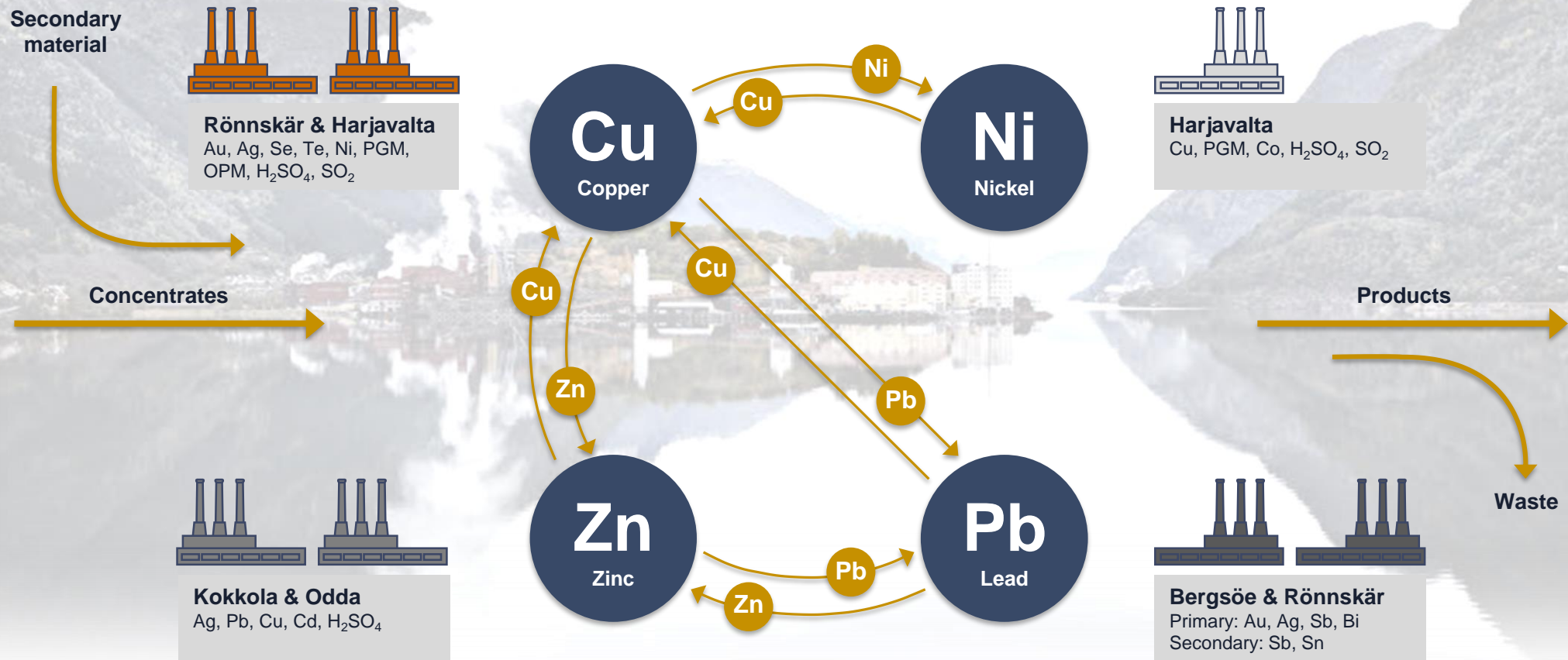
# Part of a Circular Economy

## Recycling and Mining in synergy



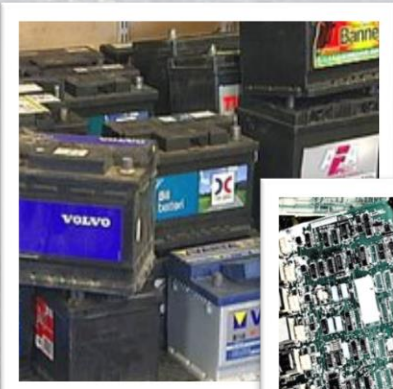
# Sustainable operations

## How Boliden Smelters work

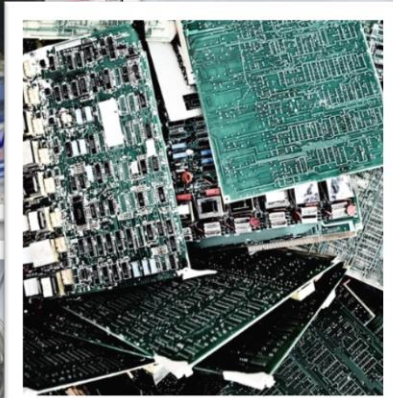


# Front runner in Recycling

Circularity is core in our operations



“Four million car batteries per year”



“Two million mobile phones per day”



Steel mill dust  
Zinc ashes  
Incinerated waste

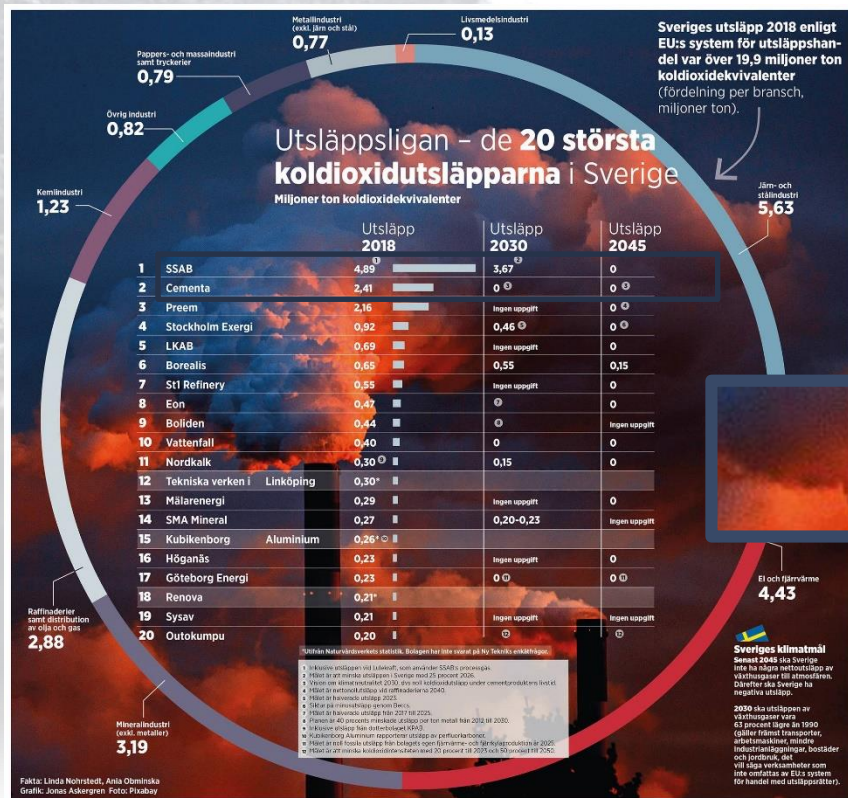


**Bergsöe**  
- one of Europe's biggest recycling facilities for lead batteries

**Rönnskär**  
- a world leading recycler of electronic material



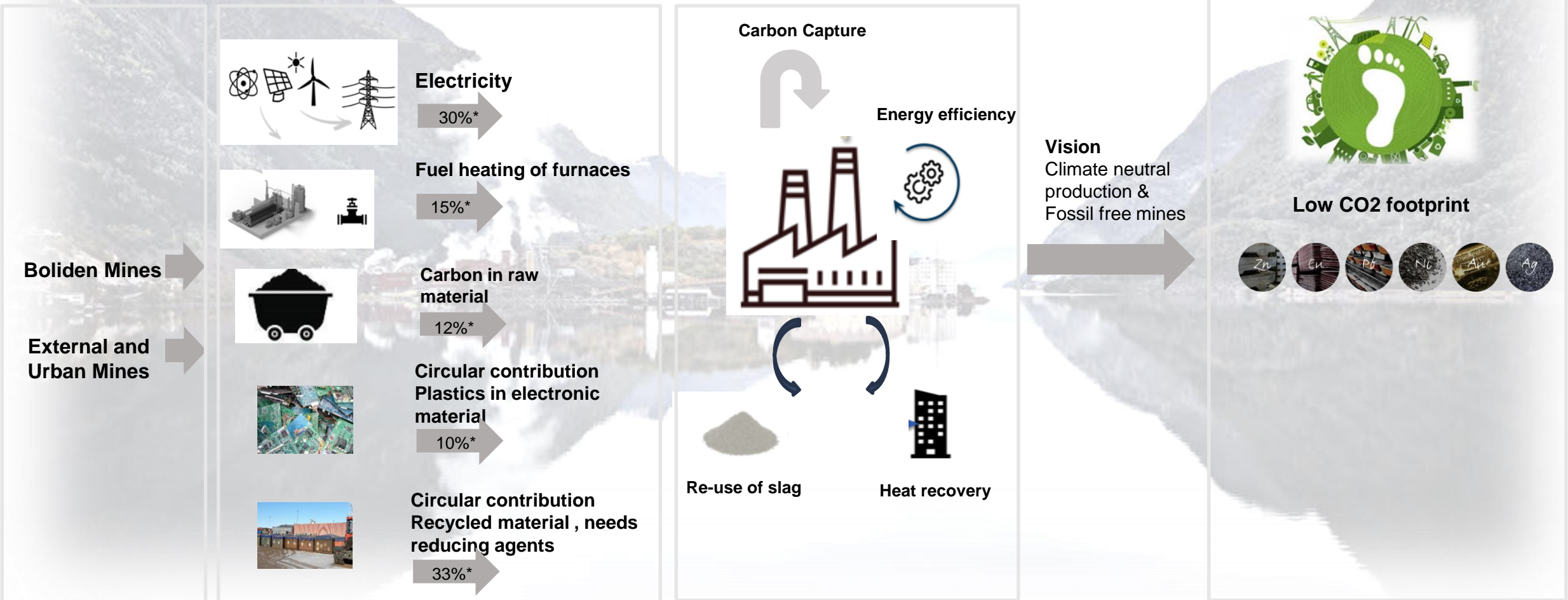
# Sustainable or.. ...not sustainable?



9	Boliden	0,44	8
10	Vattenfall	0,40	0

# Climate impact and strategy

## Innovation, research and strategic choices



\*estimated distribution to illustrate source of CO2 in the equation

# Responsible Business

Partnership for the goals



THE GLOBAL GOALS  
For Sustainable Development

Business Partner  
Code of Conduct

**BOLIDEN**



LBMA  
GOOD DELIVERY  
REFINER



17 PARTNERSHIPS  
FOR THE GOALS

# We continue to invest in and expand our copper operations



Harjavalta acid plant



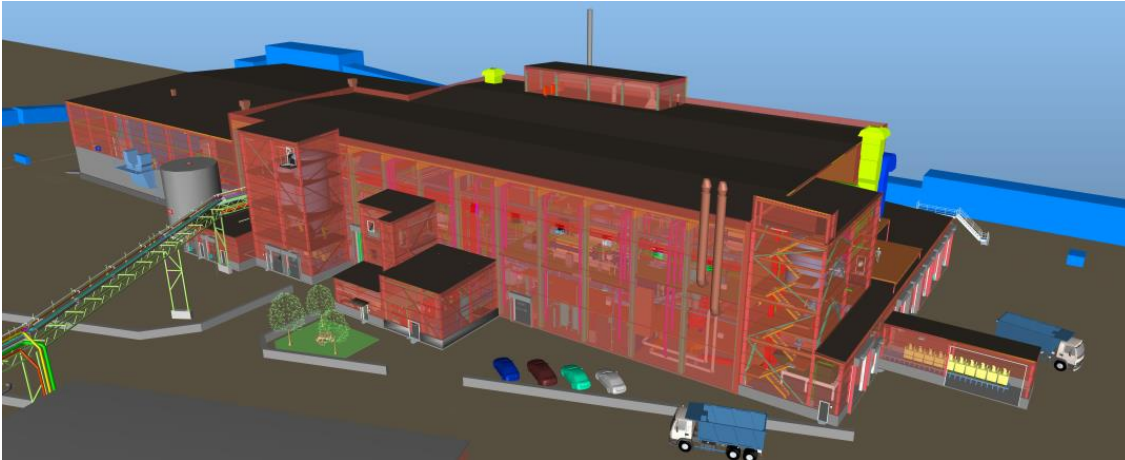
Copper cathodes

- The new acid plant in Harjavalta
  - Inaugurated in September
  - Enables an expansion in both copper and nickel lines

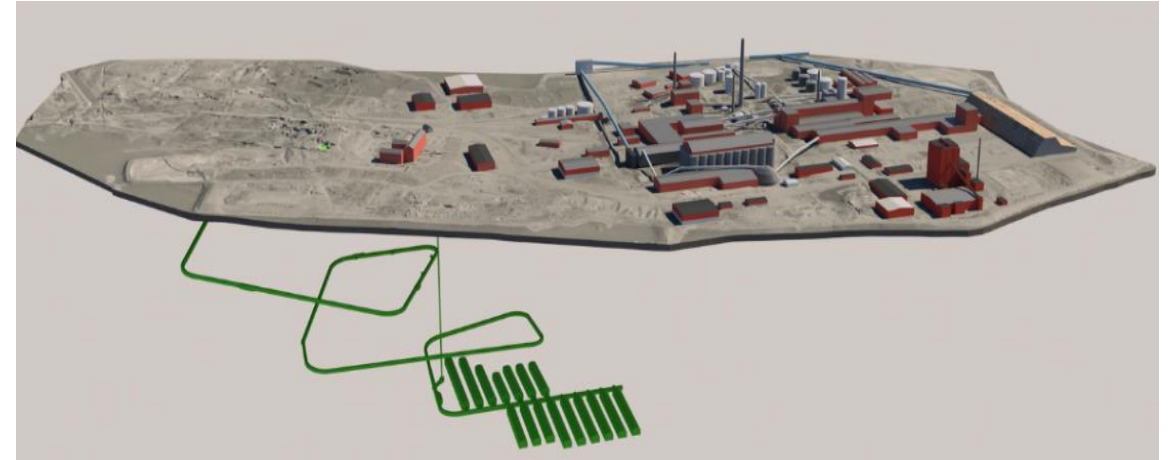
- Expansions
  - Harjavalta from 560 to 620 kton feed
  - Pori from 153 to 170 kton cathodes
  - Rönnskär from 650 to 725 kton feed



# We are developing our technical capabilities and environmental performance at Rönnskär...



Rönnskär leaching plant



Rönnskär underground repository

- New leaching plant to recover free metals from intermediates and reduce waste volumes

- A unique underground repository for sustainable storage of waste classified as hazardous

# We invest in new capabilities to recover more metals and to recycle plastics



Rönnskär silver separation



Bergsöe plastic separation

- De-bottlenecking silver capacity at Rönnskär
  - 60 MSEK, Start-up Q4 2019
  - 60 ton silver

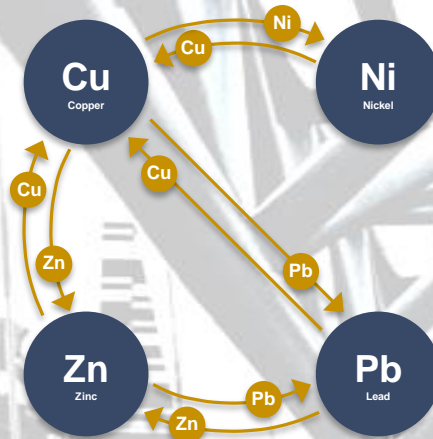
- The plastic separation plant in Bergsöe
  - Recycling plastics increases lead production
  - 105 MSEK
  - 3500 ton plastics, 2500 ton lead, -25% CO<sub>2</sub>

# We are well positioned for future growth within the circular and sustainable economy...

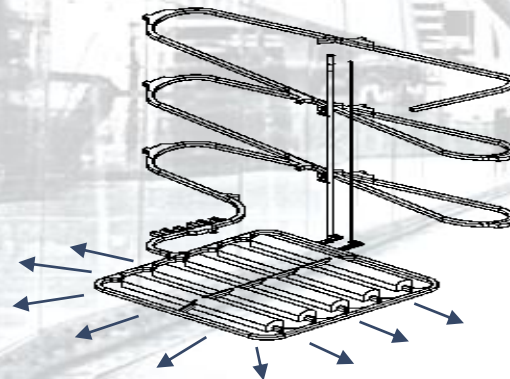
High capabilities to treat complex primary and secondary raw materials



Production built on operational excellence, expansions and technology development



Building sustainable waste deposits



A broad product portfolio focusing on minimizing waste



# ...and we will play an increasing role as this economy develops



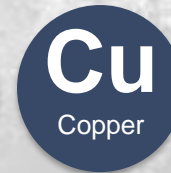
## GALVANISED STEEL

Protecting zinc coatings increase car lifetime allowing manufacturers to offer 10-year corrosion warranties for weight-reduced new steel types.



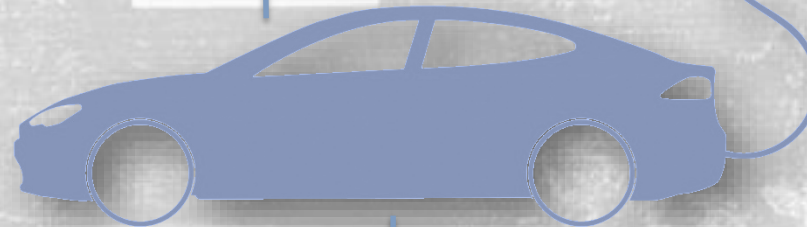
## WIRING, BATTERY AND MOTORS

Battery electric vehicles uses 80 kg of copper: 4 times more than a conventional vehicle.



## CIRCUIT BOARDS

Every car built today includes several computers, which all require a circuit board. Circuit boards have a significant amount of copper, gold and silver. Also palladium is used in circuit boards. Boliden with its operations in Rönnskär and Harjavalta is a world leading recycler of circuit boards, and a producer of the necessary metals.



## LITHIUM-ION BATTERIES

The Li-Ion batteries contains large amounts of Cu, Ni and Co sulphates. All elements are mined and sold by Boliden.



## CATALYTIC CONVERTER

Pd and Pt are used in a vehicle's catalytic converter to reduce harmful emissions, including hybrid vehicles. Zero-emission fuel cell vehicles make use of a Pt catalyst.



## LEAD-ACID CAR BATTERIES

Boliden Bergsöe is one of Europe's largest recycler of lead-acid car batteries.

**BOLIDEN**



# NEW BOLIDEN

Daniel Peltonen  
President Smelters