



Bhumibol Bridge, Bangkok. Every building contains vast numbers of electrical installations that make use of the superior properties of copper.

# Primary and secondary raw materials for sustainable value chains

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CEO Boliden

# Dilemma

## **Diesel**

- + Reduce CO2
- Increase NOX

## **EV**

- + Reduce CO2
- Increase CO2
- Reduce tax revenues, increase subsidies

***Balance environmental aspects***

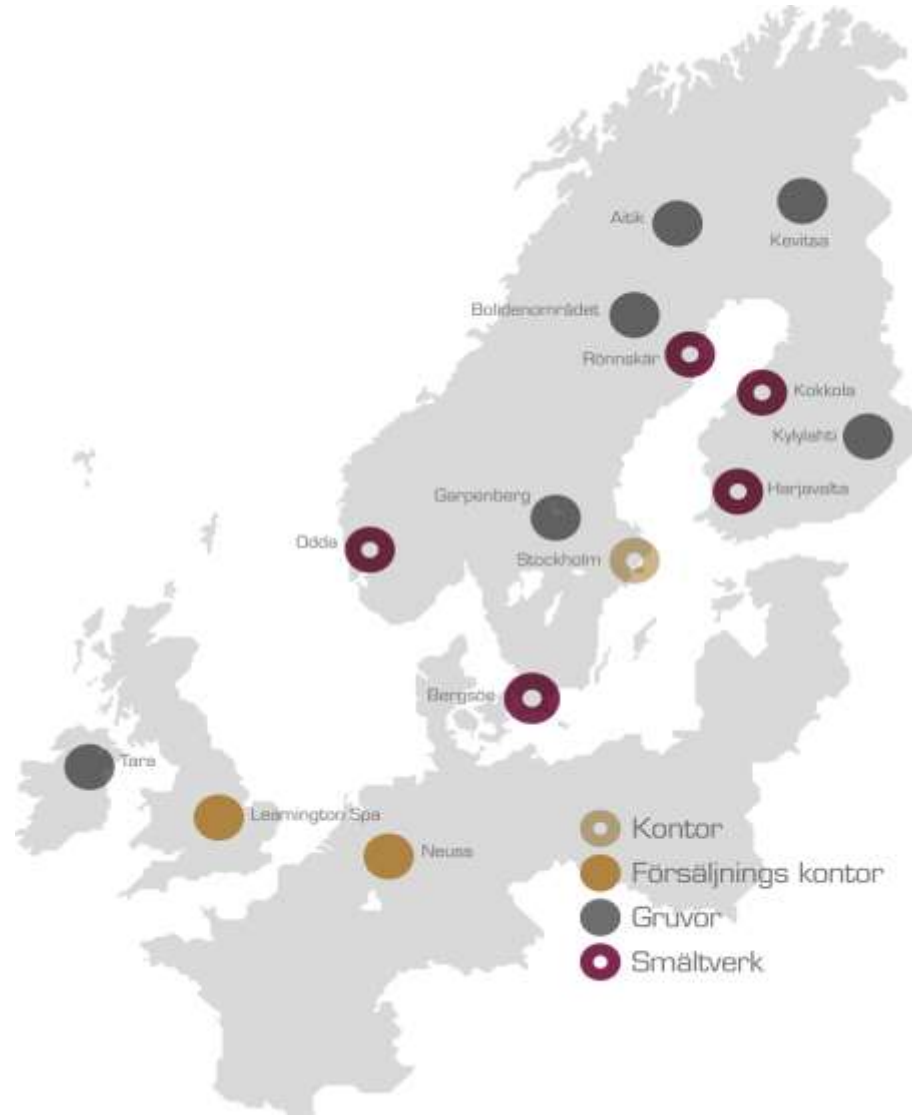
***Balance sustainability aspects***

# Metals fundamental for climate change

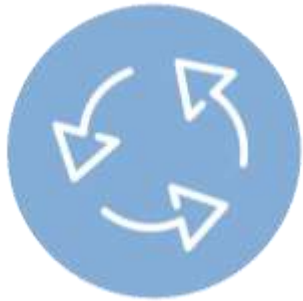
- Half of 2-degree target from energy saving (IEA) - copper
- EV 3x copper
- Copper, cobalt, nickel, lead for batteries
- Tellurium and silver for solar panels



# Boliden



# 1. Develop own operations



**Residues**



**Climate**



**Emissions**



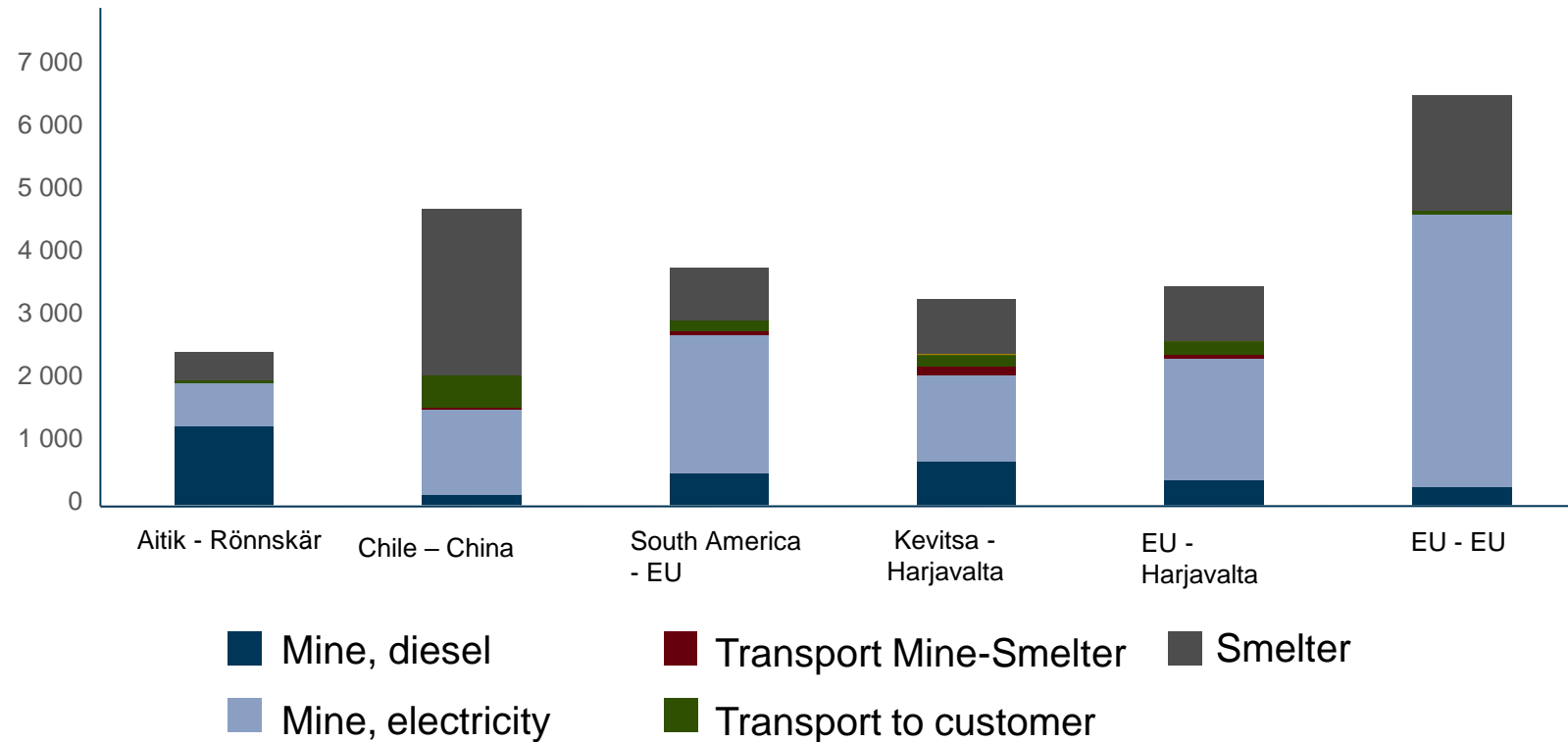
**Discharge**



**Use of land  
Biodiversity**

## 2. Expansion – Boliden’s best contribution

CO<sub>2</sub> per kt Cu from typical sources



# 3. Share environmental technology

## Recent visitors Boliden

- Glencore
- Jinchuan
- Aurubis
- Anglo American
- Codelco
- Norilsk Nickel
- Sumitomo
- Teck
- Trafigura
- Nyrstar
- Vale
- Almina
- Gold Fields
- Agnico Eagle
- Lundin Mining
- Teck
- Hecla Mining
- Aguas Tenidas
- LKAB
- BHP
- Gold Fields
- Terrafame
- Barrick
- Eramet

# Economical sustainability

## Fundamental for sustainable development

Robust in cycles

Corporate tax

Other tax

Dividends and interest

“Multiplier”

Metals and Mining Cluster

Net export

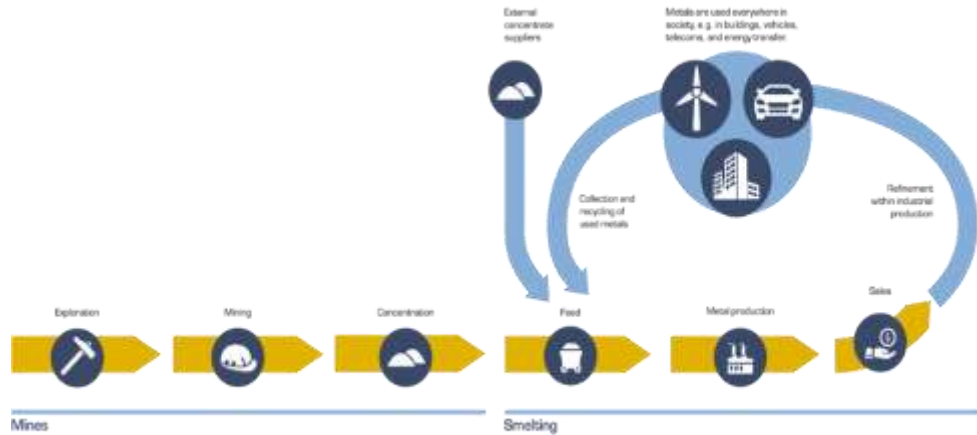


# Social sustainability, no compromise

- Society value
- Employees
- Tourists
- "Good citizen"

*"Shareholder value"*

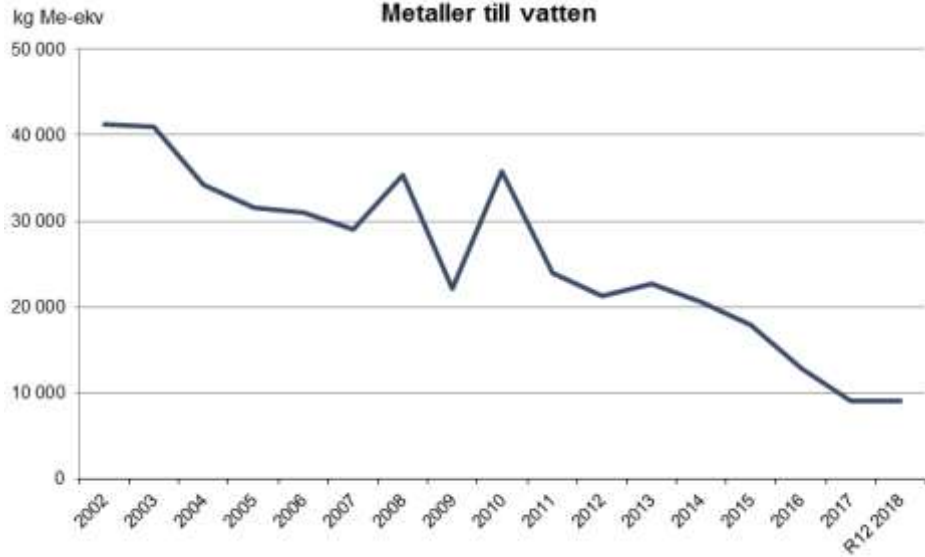
# Sustainability development



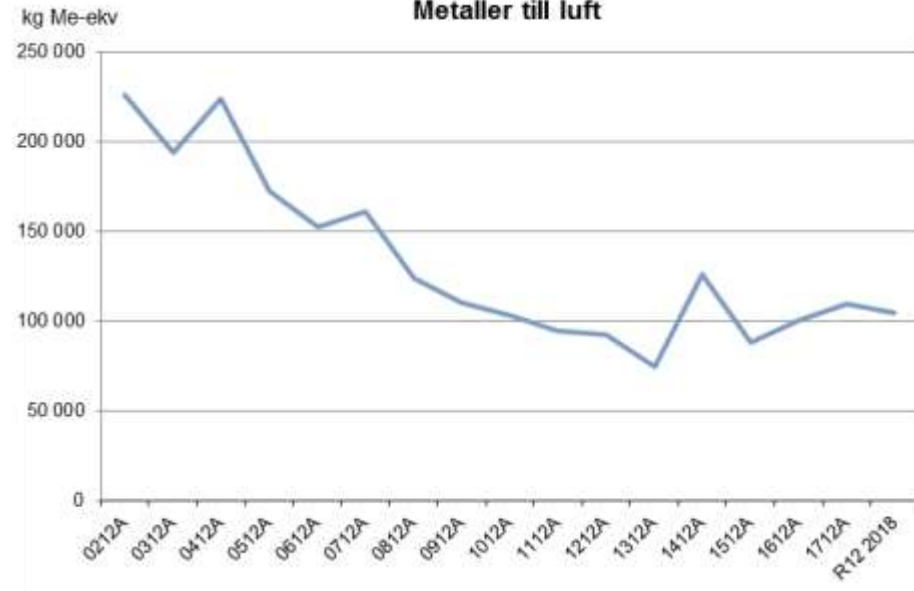
Olycksfallsfrekvens anställda



Metaller till vatten



Metaller till luft

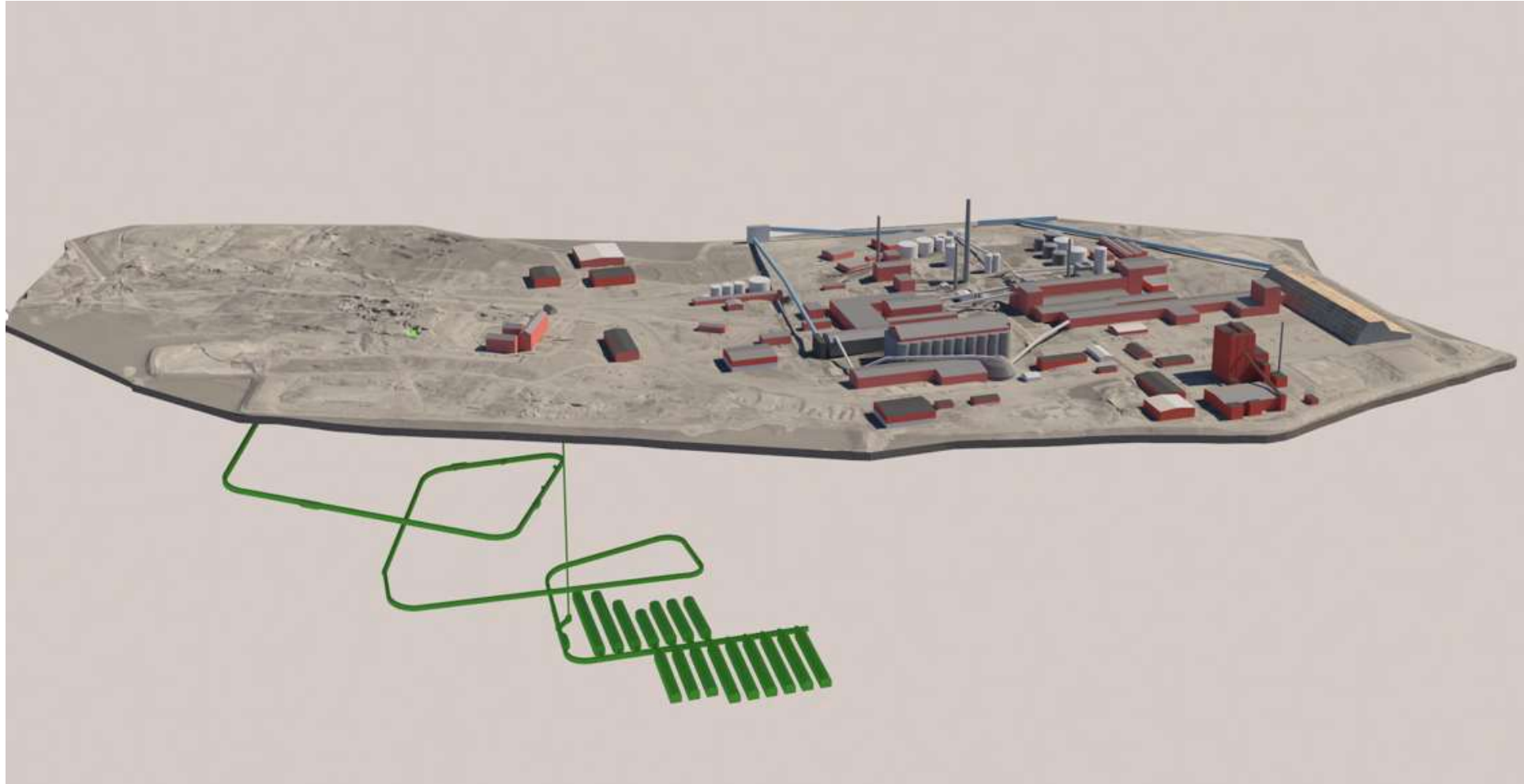




## Rönnskär smelter

- 630 000 ton concentrate
- 180 000 ton recycling materials
- Leader in electronics recycling
- 220 000 ton copper
- 14 ton gold

# Rönnskär underground deposit





## Primary material also in the future

- Global copper demand is 25 million ton/y
  - 25 years ago, 8 million ton/y
  - Copper in use on average 25 years
- With 100% recycling it is 1/3 of demand
  - Recycling will be 30-40% of demand

# Sustainable value chains - primary and secondary

## Milestone

<b>Aitik 36</b>	2010
<b>Kankberg</b>	2012
<b>Rönnskär BoRe</b>	2012
<b>Kokkola Silver</b>	2014
<b>Kylylahti Acquisition - Cobolt</b>	2014
<b>Harjavalta Nickel</b>	2015
<b>Garpenberg Expansion</b>	2015
<b>Kevitsa Acquisition Nickel</b>	2016
<b>Odda P200 Expansion</b>	2017
<b>Tara Deep</b>	2017
<b>Aitik45</b>	2019
<b>Rönnskär Underground deposit</b>	2020
<b>Total</b>	~50 BSEK

## Recognitions

<b>"Guldnappen"</b> equal opportunity	2012
<b>Global no 1 Annual Report</b>	2013
<b>Industry Equal Opportunity price</b>	2013
<b>Best annual report Sweden</b>	2016
<b>"Guldklubban"</b>	2016
<b>Safety price, SveMin</b>	2016
<b>New York Times</b> delegated organization	2017

# Conclusion Boliden contribution

- Expansion – replaces poor performance production
- Recycling
- Impact other – open for visitors - cluster
- Develop environmental performance – with priorities
- Sweden, Finland, EU, World (and Norrland!)

***Metals fundamental for sustainable world***

***Sweden better than most alternatives***



# What is needed

- Trust in our industry
- Permitting – efficient processes, clear rules, responsible authorities
- New legislation considering *three dimensions of sustainability*
- Recycling prioritized
- Take advantage of fossil free energy – not export cables

(Battery metals from Sweden not possible)



# NEW BOLIDEN

Metals for modern life

Cu

Zn

Zn

Au

Ag

Au

Pb