



# Responsible metals recycling

## The case of sustainability



# RESPONSIBLE METAL RECYCLING - THE CASE OF SUSTAINABILITY

Metal is *permanent* – no inherent properties are lost during recycling  
80% of all metal ever produced is still available for use

Across the board, secondary metal recycling:

- requires significantly less energy (lower temperatures, simpler processes)
- produces less waste (and even less cost-intensive treatments of waste)
- reduces demand in primary metal production
- counters depletion of natural resources
- reduces landfill waste
- reduces overall carbon and environmental footprint



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## ALUMINIUM

- 95% less energy requirements for production
- One ton of recycled aluminium saves ~8t of bauxite, ~14MWh and ~7,6 m<sup>3</sup> of land
- One ton can also save up to 3t of solid waste from primary production, mainly red mud, and avoid spent potlining (SPL) deriving from electrolysis

## COPPER

- 85% less energy requirements for production
- Significant savings of borate slag and fumes compared to primary
- Avoidance of mine tailings

## STEEL

- 72% less energy requirements for production, i.e. >4.500kWh/t
- Savings of 1.4 t of iron ore, 0.8 t of coal, 0.3 t of limestone and additives and 1.67t of CO<sub>2</sub> for every t of recycled steel
- Air emissions reduced to 86%, water intensity to 40% and subsequent water pollution by 76%
- Significant decrease of acidification potential



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But also, recycling is not sustainable by default:

- There are still efficiency and waste issues to be solved
- EU Pollution prevention measures increases cost versus third countries.
- Recycling is highly dependent on social factors, regulation, recycling and sorting schemes
- “Recycling rate” is very different than “quality recycling”
- Trace elements from mixed qualities scrap (due to poor sorting) requires further treatment, sometimes extensive slag treatment
- Sustainable metals recycling requires quality recycling, extensive anti pollution measures, advanced thermal metallurgy to utilize wider range of scrap metals

# RESPONSIBLE METAL RECYCLING - THE CASE OF SUSTAINABILITY

## MAIN LEVERS FOR SUSTAINABLE RECYCLING

- **quality of scrap** – Importance of robust recycling schemes in national levels, regulation of recycling under environmental and social criteria
- **Availability of scrap** – Importance of creating environmental criteria for scrap exports (“equivalent conditions”)
- **BAT for recycling** to reduce environmental impact, further enhance energy, emissions and waste savings
- **Enabling product design to promote recyclability** -avoidance of materials that increase complexity and difficulty
- **Promote recycling through regulation incentives**

## FUTURE CHALLENGES

- **Need robust methods for calculation of recycled content in metals in global scale** – properly calculated embedded emissions under CBAM is highly sensitive to recycled content
- **Recycling Rates remain the main lever of reducing overall footprint** – a product with very high RC% in a region with low RR% is not sustainable by default
- **Design of properly run and efficient recycling schemes (DRS)**
- **Primary production is not going to stop** – recycling of a significant portion is not the end of the sustainability journey for metal production



**Any questions?**

Thank you for your attention!