UK ICE-SRM Circular Economy

# Circular Metals

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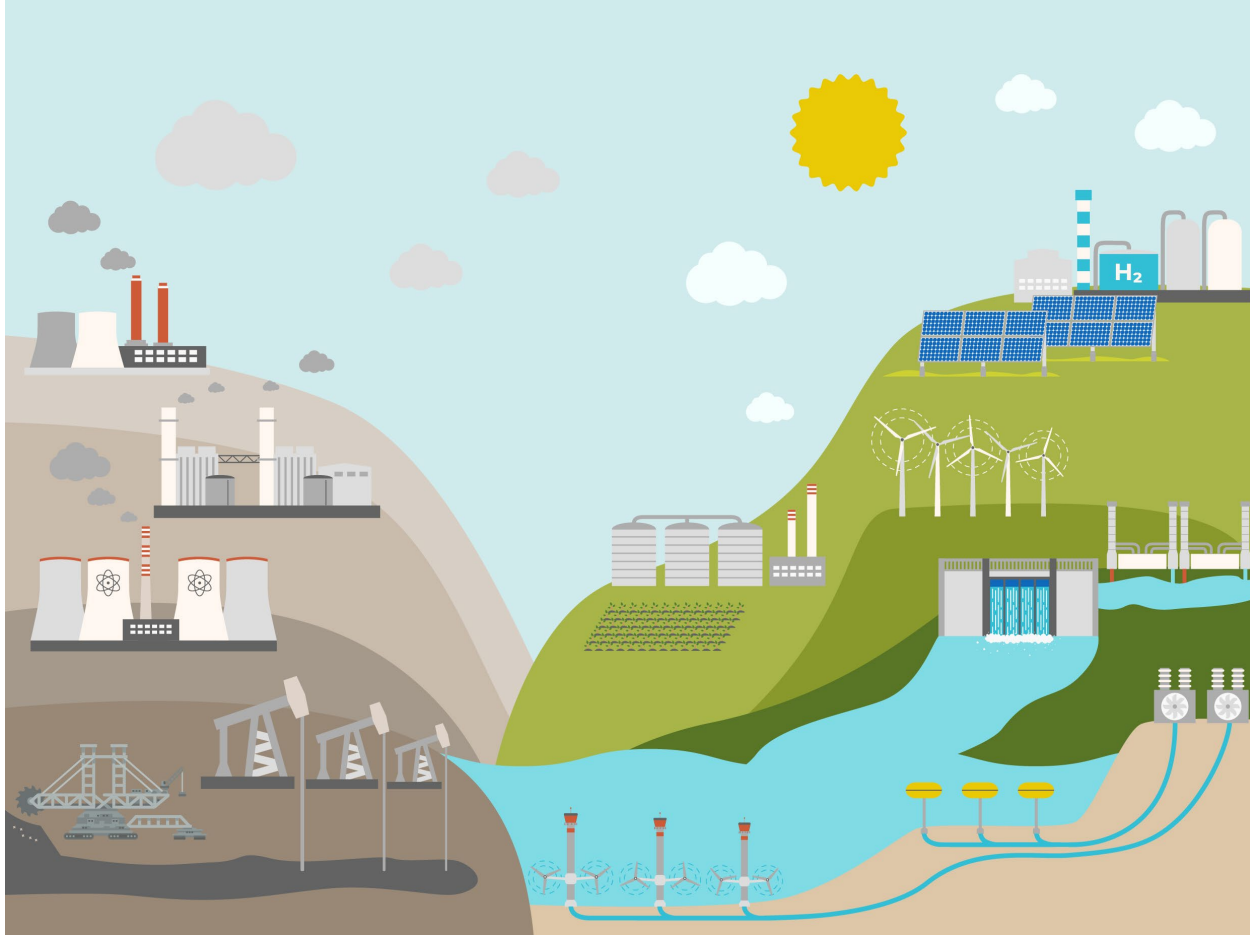



RESOURCE MANAGEMENT WEEK
2024

UNECE

# Circular Metals

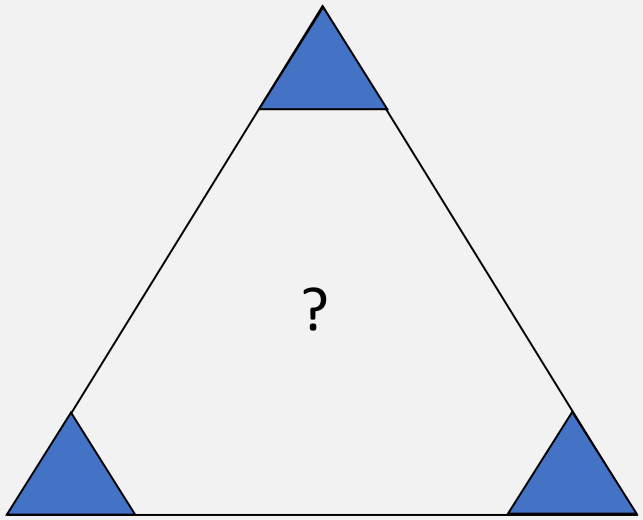
- 10–20% pollution, energy use, GGE from manufacture of metals and metal products
- 90% steel and aluminium alloys; 90% construction, transportation and packaging industries
- Current world production approx. 2B tonnes, increasing to 2.5B tonnes by 2050
- Cannot remove or replace: must recycle, reuse, extend life

# BCAST CM Centre

- New generic materials: “multicomponent alloys”
- Extended lifetime: ”metal health service”
- Better recycling
- Re-use of vehicles, buildings etc.
- New business models: “Metals as a service”

# Multicomponent alloys

- 5,000 alloy grades, each finely tuned for each specific component
- Multicomponent alloys for multiple functionality, multiple use, resilience

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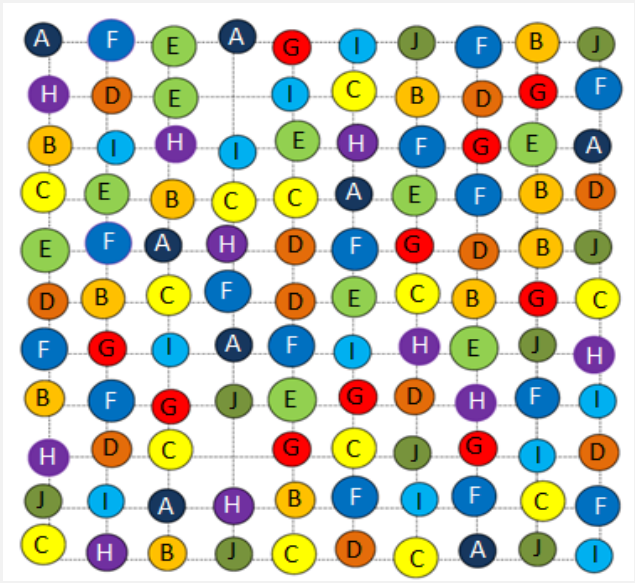
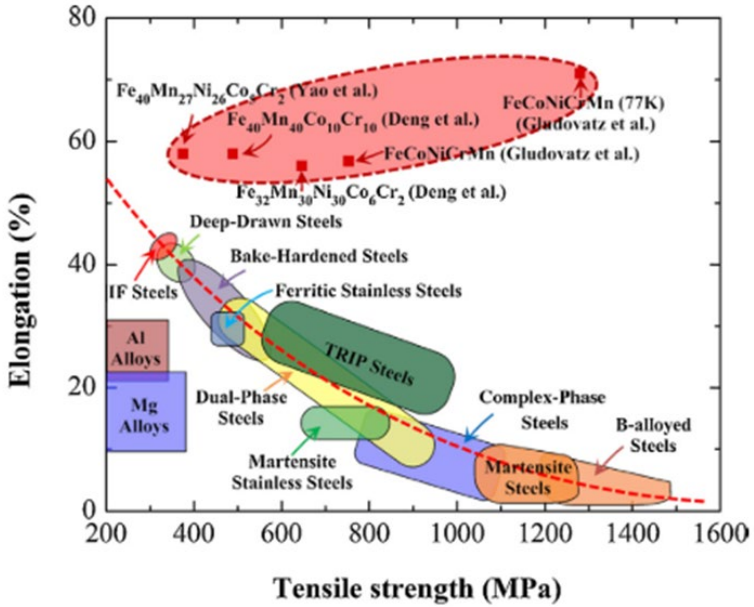
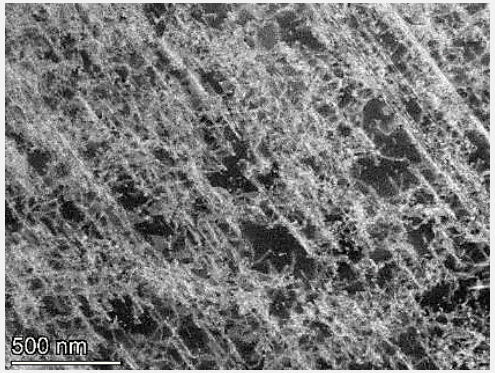


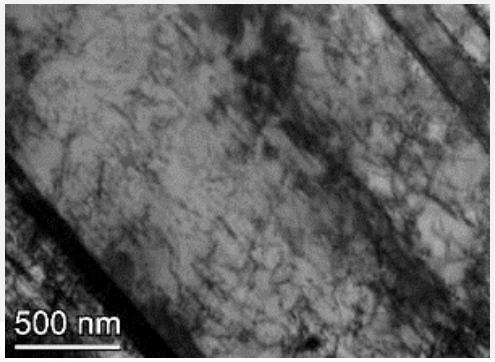


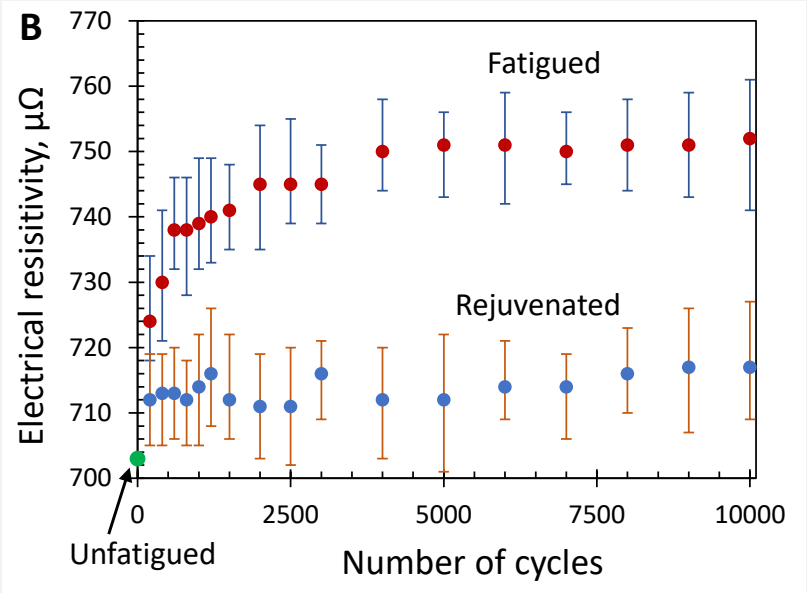

Cantor 2020

# Metal health service

- Regular treatment to prevent and (later) remove initial damage
- Extends lifetimes by between 2–4 times




| Alloy | Damage | Improvement |
|---|---|---|
| Stainless steel | LCF fatigue | 2 X |
| Stainless steel | HCF fatigue | 3.4 X |
| Cast aluminium alloy | HCF fatigue | 2 X |

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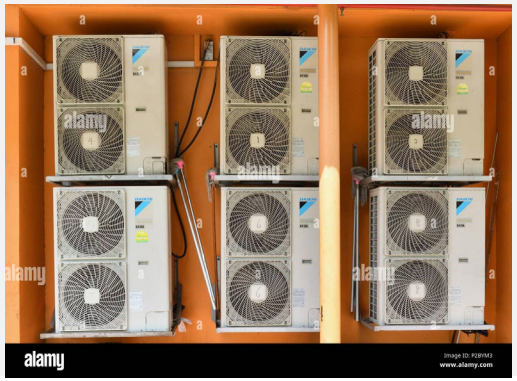
# Metals as a service

- Many sectors components are replaced automatically on a rota
- Develop business model for sevice companies to supply functionality

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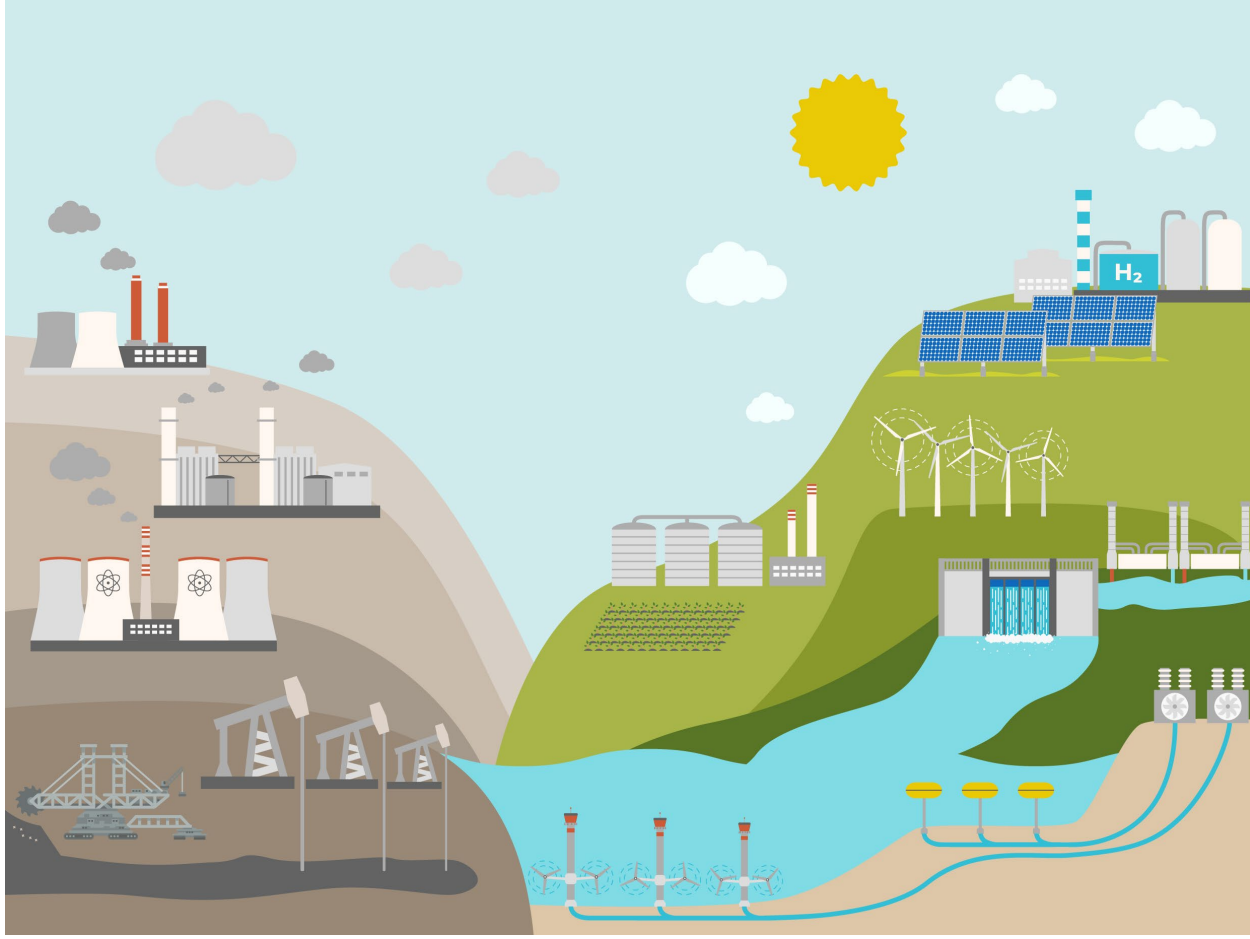
**Enough metal is in circulation**
**We aim to remove mining and EOL**

# Thank you!



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