Stimulating Substitution within a Circular Economy perspective in the metals sector, a conceptual frame

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Content

- Existing legislation, pressures and other options relevant to the substitution of metals
- Key metal properties
- A proposed frame for assessing / stimulate substitution in a sustainable way

Existing legislation, pressures & other options relevant to the substitution of metal

Existing Legislation, pressures and other options

Existing legislation:

- CMD
- CAD
- EU existing restrictions

Others:

- Voluntary initiatives
  - Pb-stabilisers in PVC
- Use advised against in REACH dossiers

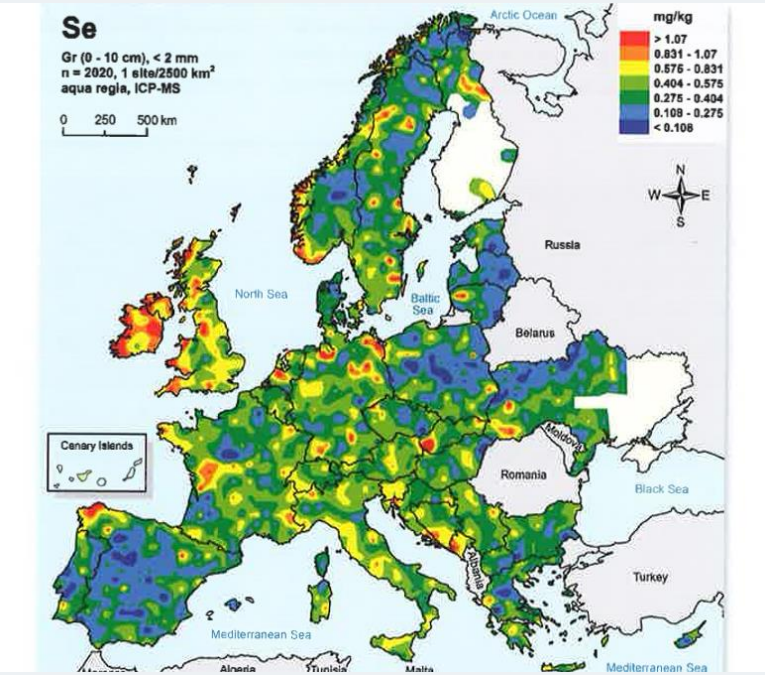
Pressures:

- Lower Technical performance:
  - NiCd batteries
- Material and Technology cost
  - Precious metal catalysts
- Availability of the substance
  - Replacers for Pb
- Tax measures
  - Tetra Ethyl-Lead as anti-knock agent in fuel

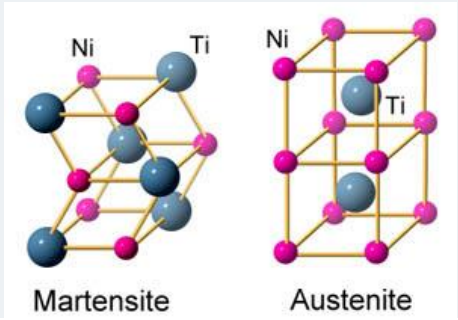
Metal properties relevant to Substitution

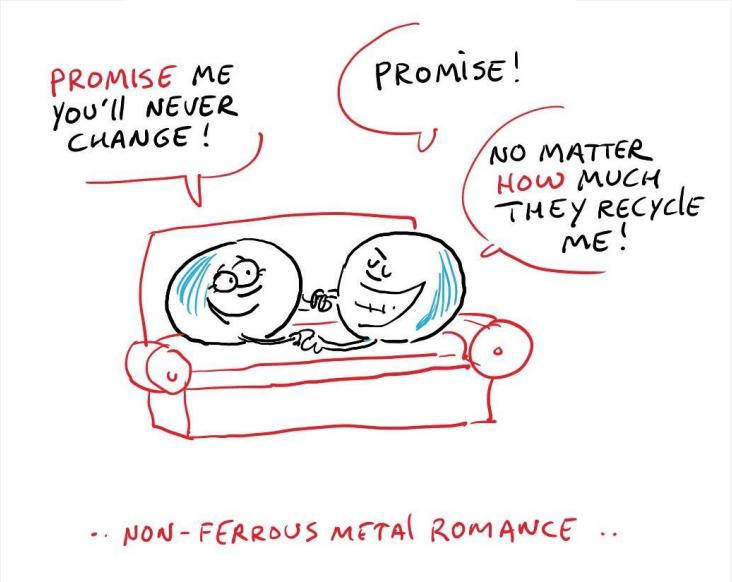
1. Metals key properties

Metals are natural elements often occuring commonly (Zn-Cd, Pb-Ag, Cu-As, …)



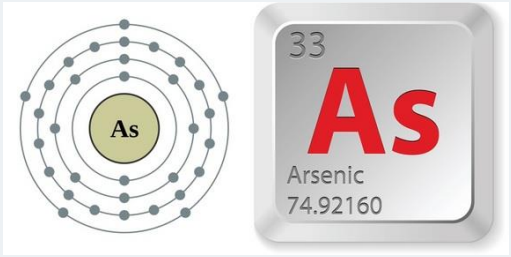
Recycling does not alter the original metal properties





2 Safe use along the supply chain

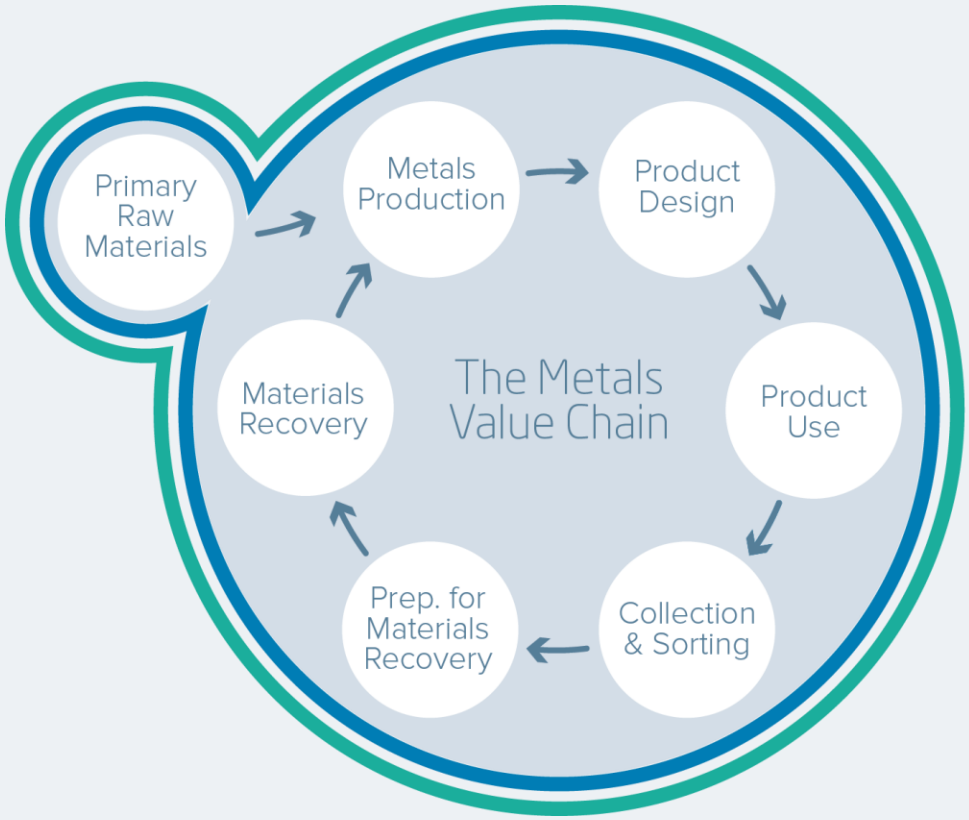
- Effective and efficient chemicals management for metals is more about:
  - ***"preventing exposure than hazard"***
    - Low exposure level workplaces
    - Products that prevent releases and even limit hazard properties

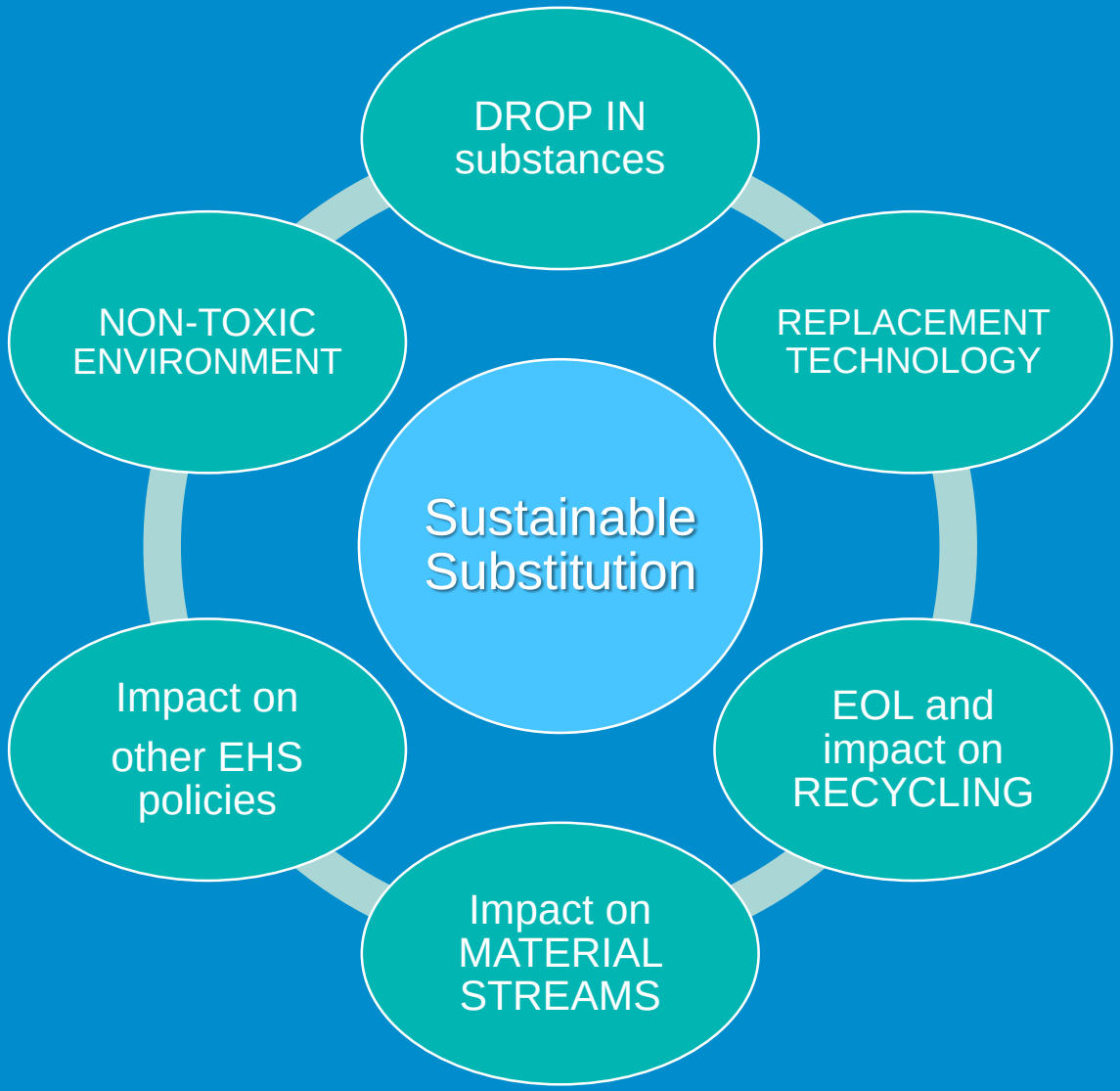


- Effective & safe recycling & reuse

3. The substance/materials loop can effectively be closed for metals

- Closing the loop through safe ***reuse or materials recycling*** improves the performance of substances exponentially !

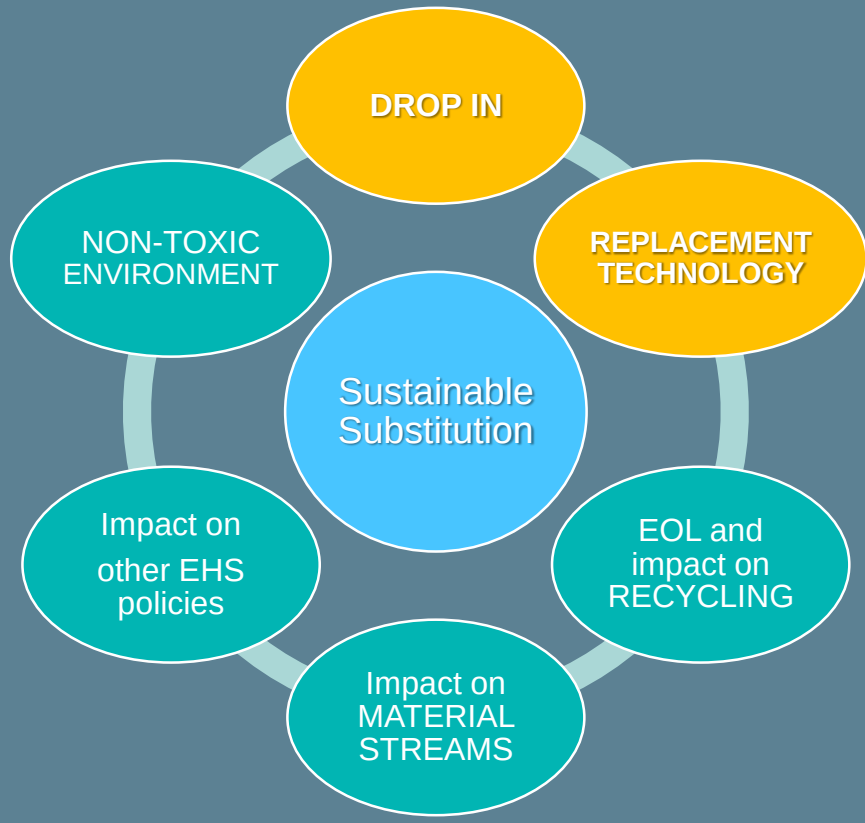




A Conceptual Frame for assessing/stimulating substitution for metals

Proposal for Frame for Sustainable Substitution assessment/promotion of metals

Promote Sustainable substitution by assessing in a **stepwise approach** if the replacement of a **Substance of Very High Concern** is **technically and economically feasible** from a **combined perspective** of Chemicals Management, Circular Economy, and other EU-Environmental and Health policy objectives; recognising **Societal Value and Impact.**



Check for DROP-in or REPLACEMENT Technology

Drop-In and Replacement Technology

Seems the easiest…. BUT:

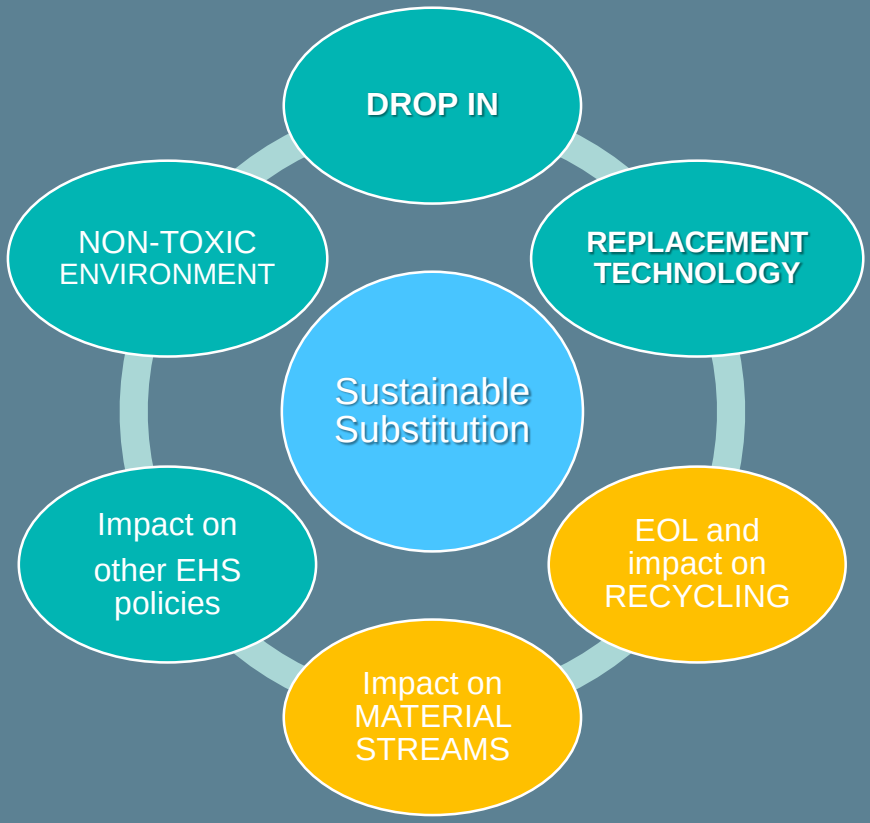
- Very often metals or compounds uses are linked to very precise and specific technical requirements
- Some metals or compounds are not replaceable despite the continuous pressure (social, reglaotry and economic) to substitute

=> drop-in substitutes are hardly existing as such in the metals sector

If occurring …then the driver for substitution was rather technology innovation and/or market pressure:

- E.g. different battery types, Pb replaced as anti-knock agent, different coatings for different technical specs (e.g. wearing resistance)…
- Although some historical uses in articles seem resistent to change (eg. Pb shot)…

First set of examples discuss cases and challenges on Drop-ins



EOL, impact on Recycling and Material Streams

Impact on Recycling and Material streams

Societal and economic need for closing the loop !

Closing the loop is **MORE THAN RECYCLING** alone !

- **Recycling +**
- Providing the recycled materials a **SAFE USE** preferably by **separating all constituents** and using them again in a safe and equal way as primary materials

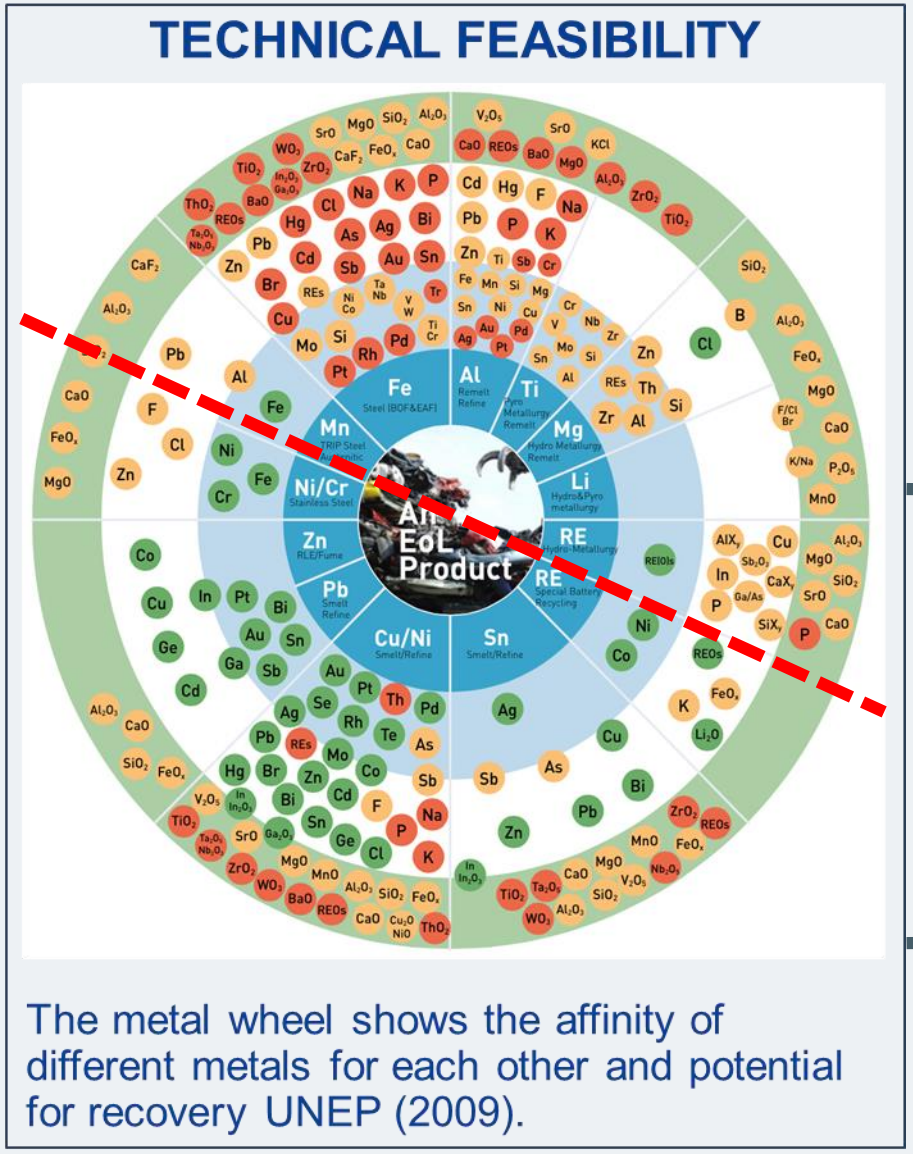
So SUBSTITUTION should FAVOR and not PREVENT recycling to:

- Ensure a sustainable substitute and
- Prevent regrettable substitution

from a Circular Economy perspective

Second set of examples discuss cases and challenges on Recycling

Impact on Recycling and Material streams



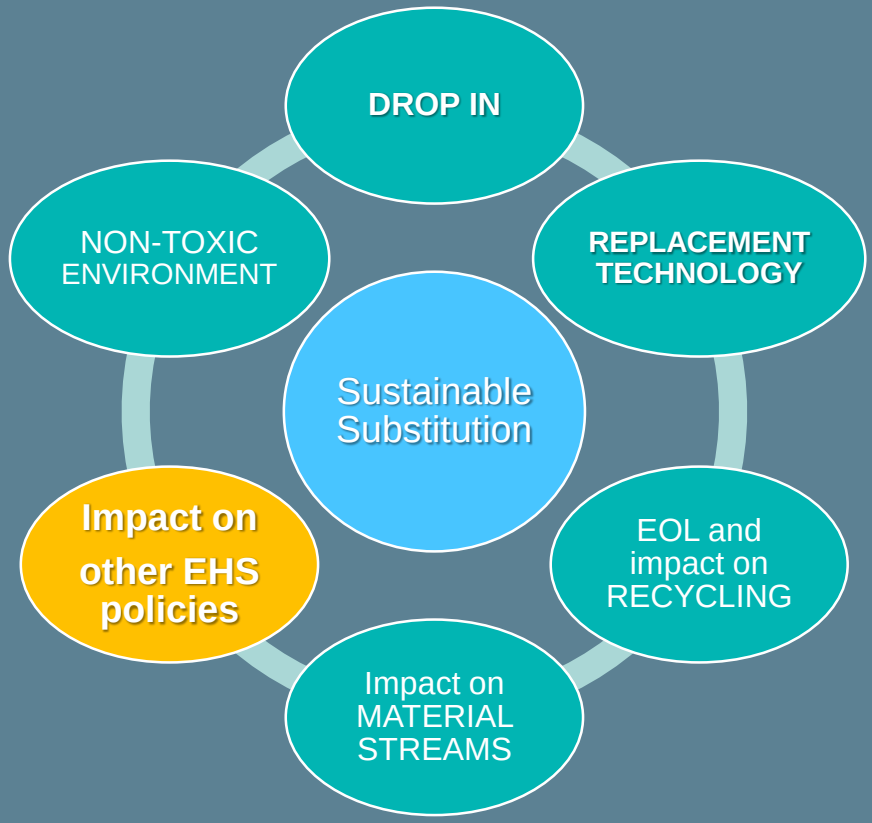
RECYCLING of METALS

Materials recycling by volume

(demonstrate safe use of impurity)

Materials recycling by separation

(provide same safe use as primary material)



Impact on other EU policies

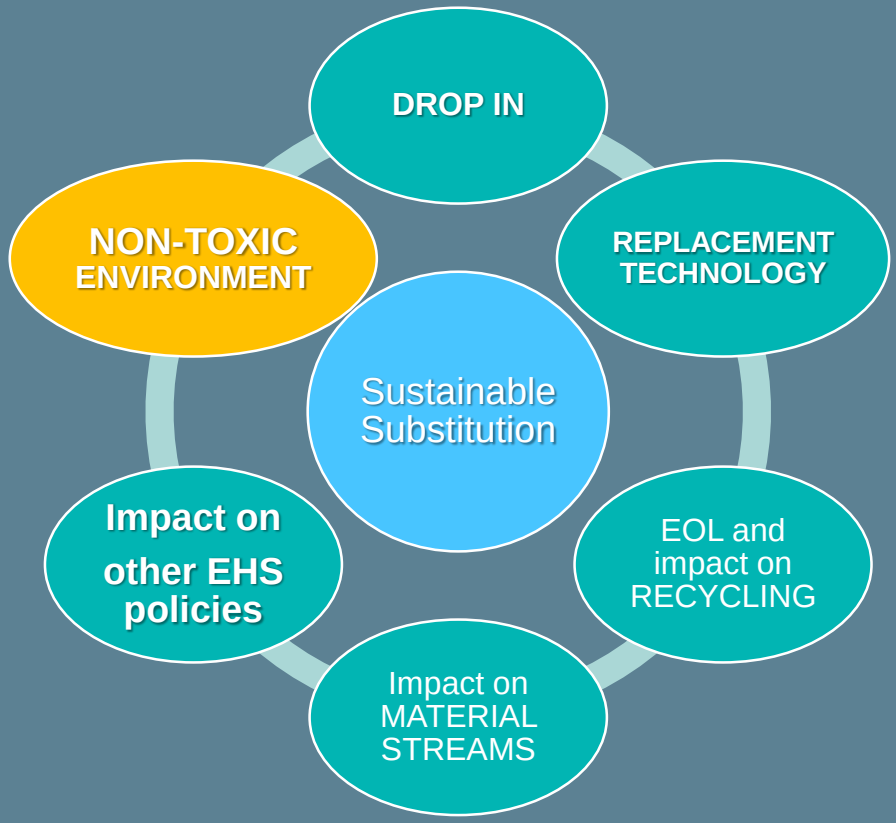
Impact on other EU Environmental and Health policies

Important EU policies for metals:

- Chemicals policy

SUBSTITUTION should include impact assessment of these to!

- Circular Economy
- Clean air
  - desulfurisation, autocatalysts, electrification of mobility, …
- Ensure Energy efficiency
- Reducing/minimizing footprint:
  - Longivity of materials use (e.g. recyclable building products),
  - Materials intensity (recyclable light steel and Al) …



A Non-Toxic Environment…
or for metals & inorganics a *risk controlled Environment*

A Non-Toxic Environment for metals…
Risk Controlled along all steps of the supply chain

NEW technologies critical for economic development will use SVHCs:

- Solar and Windmill technology, Electric mobility, Autonomous driving, Digitalisation, Remote, …

SUBSTITUTION should not hamper, rather help **promoting sustainable conditions** for these breakthrough technologies.

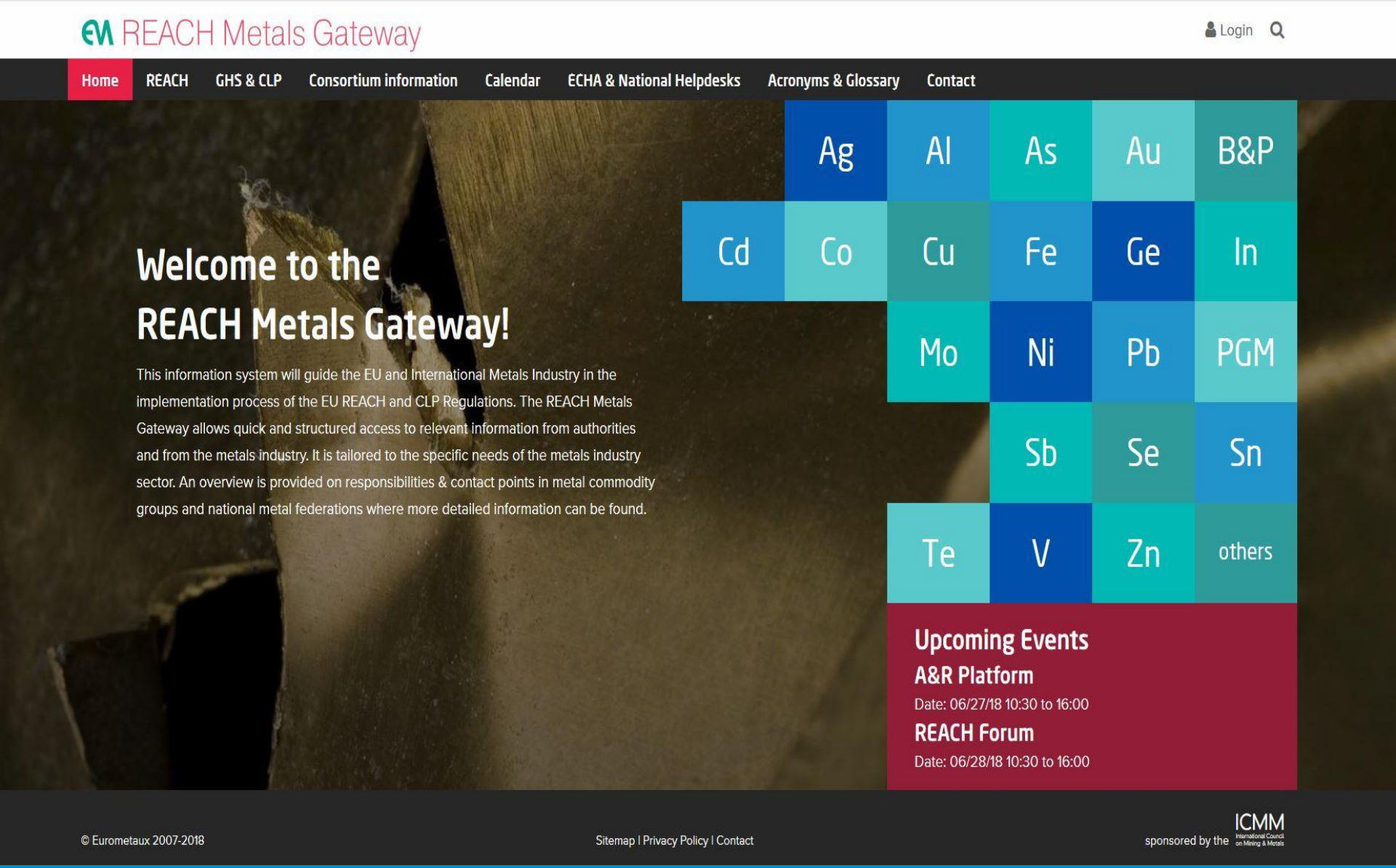
BUT HOW ?

BY a RISK CONTROLLED application of the NON-TOXIC ENVIRONMENT concept

Last example provides such a case of a new and sustainable technology: *mobile energy storage.*

Demonstrate a risk-controlled environment

Reach Metals Gateway – Provides concepts on metals



THANK YOU

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