Chancen und Beiträge des REWIMET e.V. zur Umsetzung des Critical Raw Materials Act der EU

Opportunities and contributions of REWIMET e.V. to the implementation of the EU Critical Raw Materials Act

Prof. Dr.-Ing. Daniel Goldmann
IGMR Institute of Geotechnology and Mineral Resources
REWIMET e.V.

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Challenges and frame conditions

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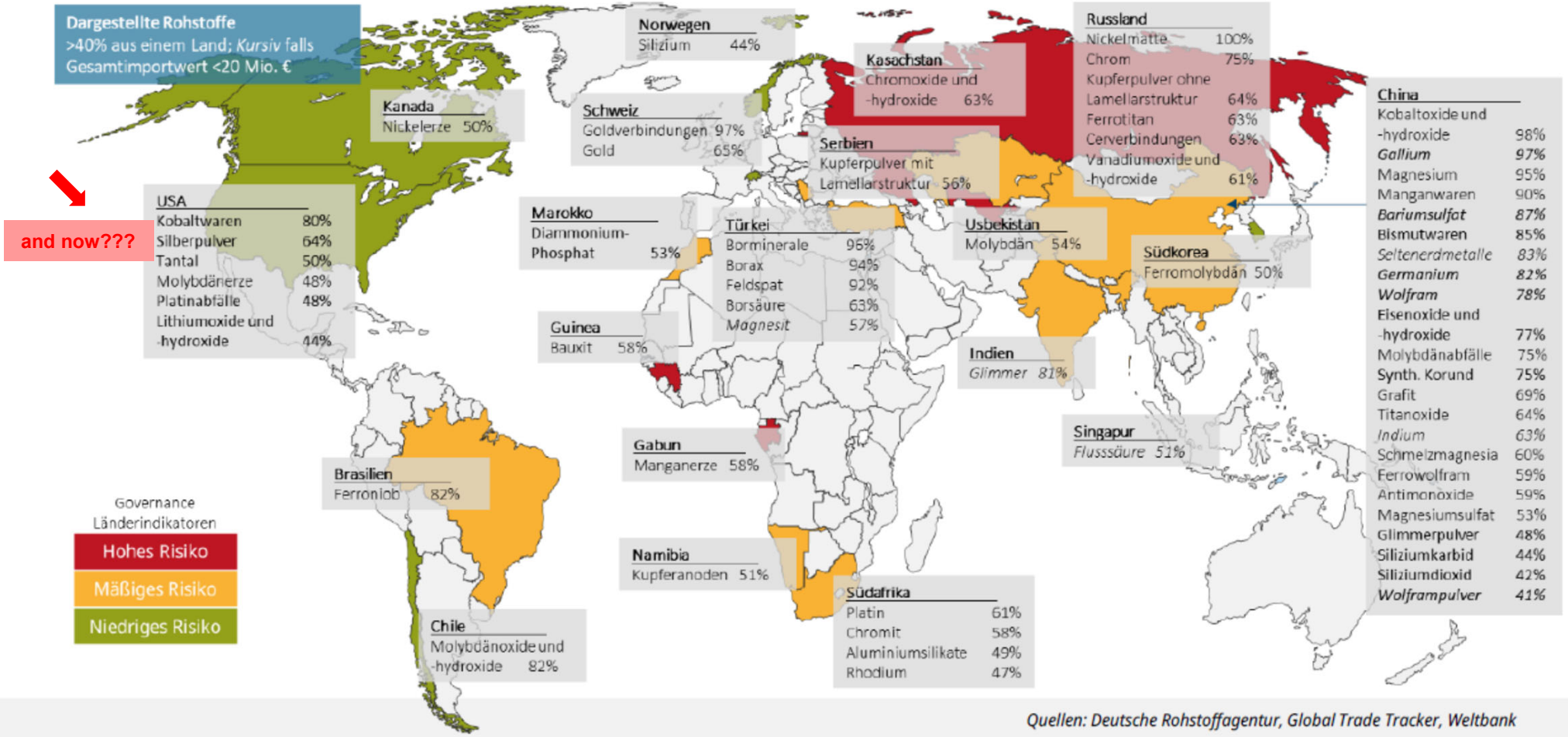
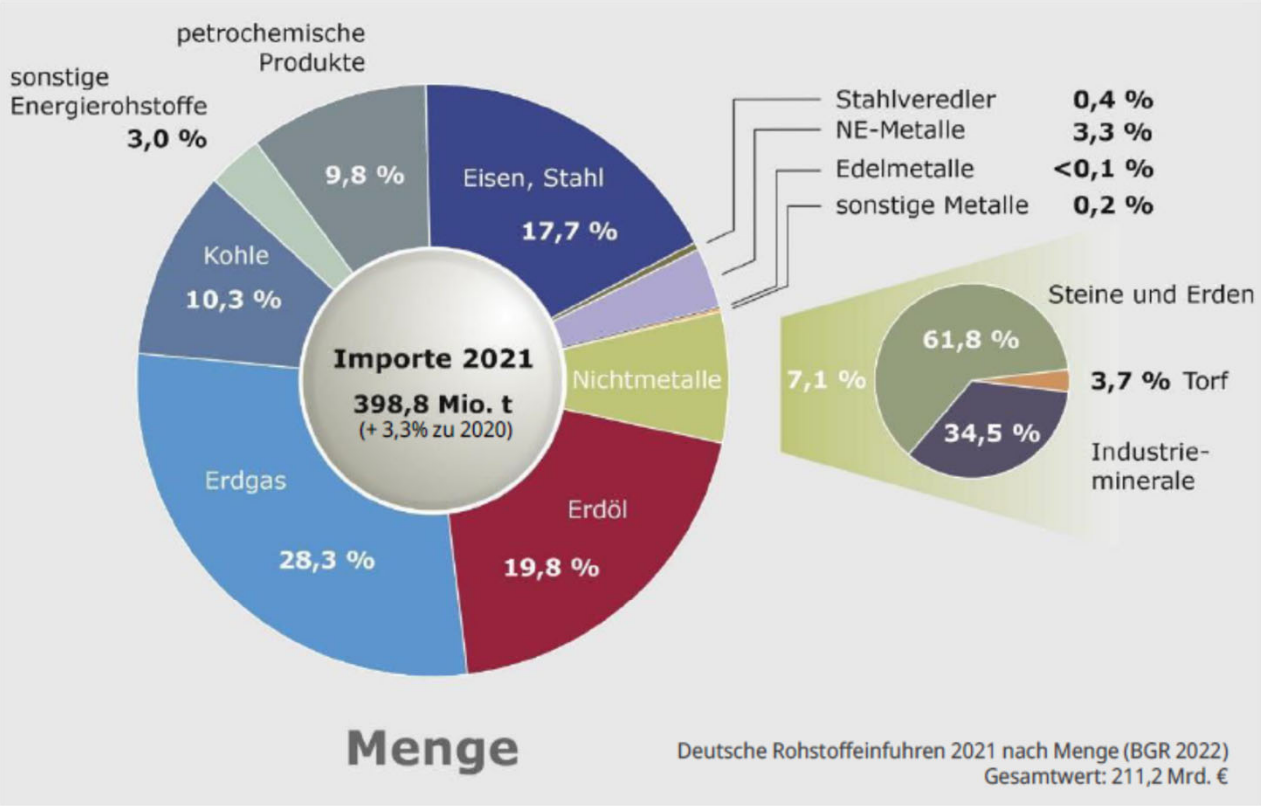
The EU's largest suppliers of potentially critical raw materials
From DERA Raw Materials List 2022



Quellen: Deutsche Rohstoffagentur, Global Trade Tracker, Weltbank

The German economy's dependence on imports of primary raw materials



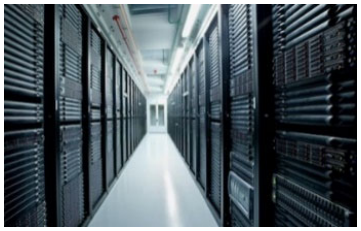
Import dependency for metal ores and concentrates: 100 %

- ca. 50 % der importierten Metalle aus Nicht-EU-Staaten
- Über 90 % der „Nicht-Metalle“ aus Europa
- Anteil sekundärer Rohstoffe an der Raffinade- /Rohstahl-produktion in Deutschland:
  53% (51%) Aluminium,
  45% (45%) Rohstahl,
  38% (44%) Kupfer

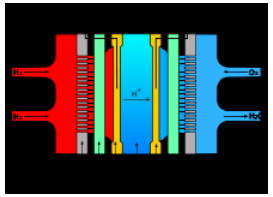
Quelle: BGR – Bundesanstalt für Geowissenschaften und Rohstoffe (2022): Deutschland – Rohstoffsituation 2021

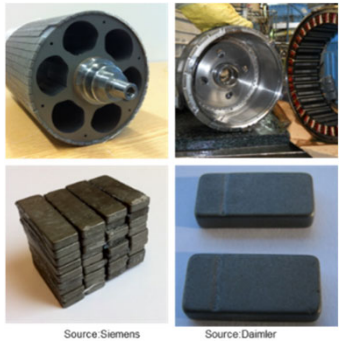
NF-metals as key materials for new technologies

- Commodities like Aluminum, Copper and Zink will be needed in much larger amounts




- An even stronger increase will be seen for special rare and precious metals
  => critical raw materials




Electronics, Automotive, Batteries, Magnets, LED,
Solar technology,…: Sinks and Sources for relevant raw materials

Political and legal frame interacting with developments in circular economy and securing raw materials supply

SDG Sustainable Development Goals

CRMA Critical Raw Materials Act (2023)

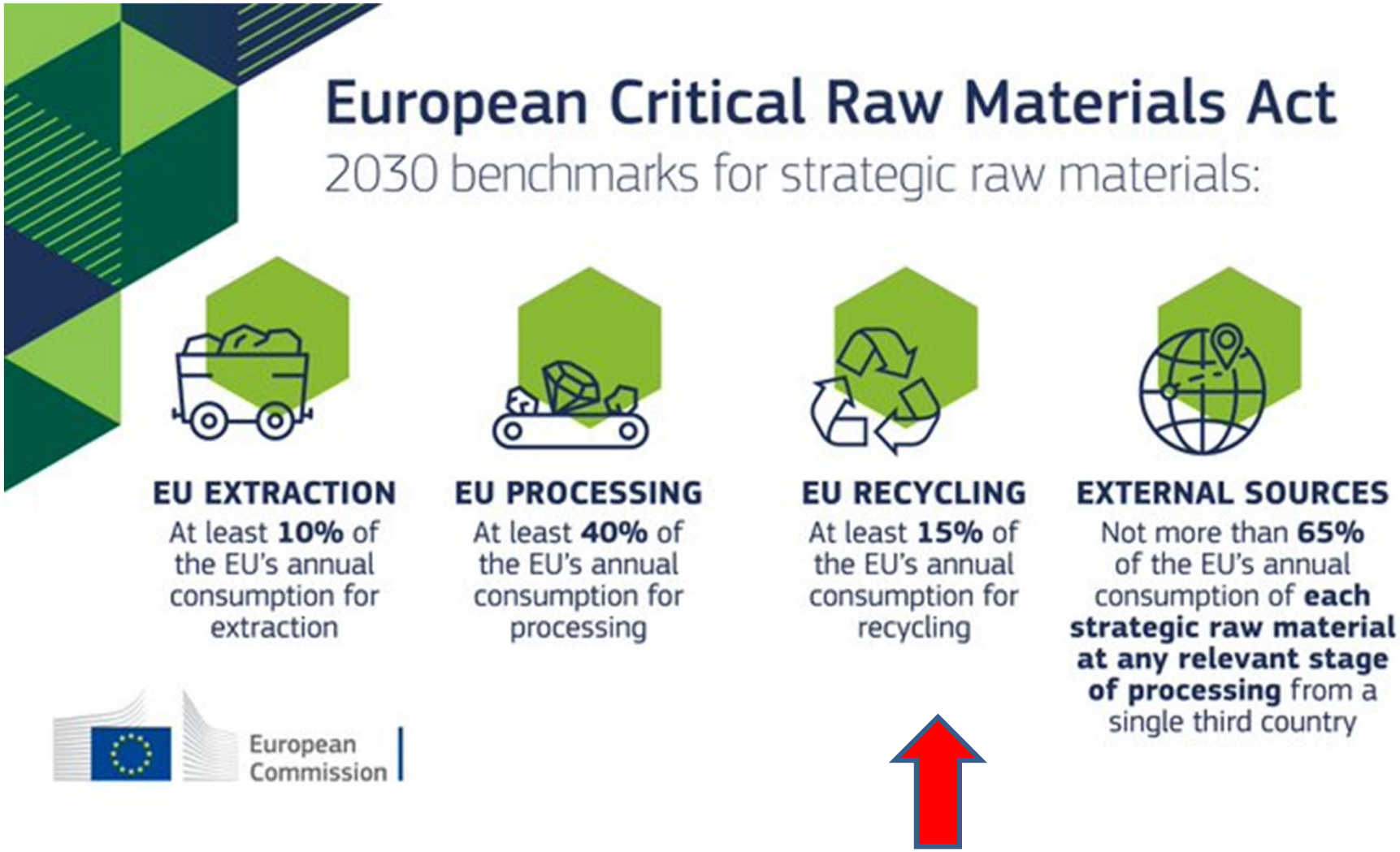
NKWS Nationale Kreislaufwirtschaftsstrategie (2024)

9. Niedersächsische Regierungskommission „Circular Economy“ (2024)

Not taking into account the tariff discussions and the energy costs

The EU Critical Raw Materials Act (CRMA)

will in the end affect also non critical raw materials



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2025 list of defence-critical (NATO) and industrial-critical (EU) raw materials

NATO defence-critical raw-materials list	EU critical-raw-materials list	Largest global producer, average 2016–20 share of global production	EU import reliance
	Antimony	China, 52%*	47%*
	Arsenic	China, 44%***	39%***
	Baryte	China, 32%***	74%***
Aluminium	Bauxite (alumina/aluminium)	China, 56% (aluminium)*	58% (aluminium)*
Beryllium	Beryllium	US, 50%*	100%*
	Bismuth	China, 69%***	71%***
	Boron – metallurgy grade	Turkiye, 45% (borates)*	72%*
Cobalt	Cobalt	DRC, 63%***	81%**
	Coking coal	China, 69%*	0%*
	Copper	China, 38%*	17%*
	Feldspar	Turkiye, 32%***	54%***
	Fluorspar	China, 56%***	60%***
Gallium	Gallium	China, 94%***	98%***
Germanium	Germanium	China, 83%*	42%*
Graphite	Graphite – battery grade	China, 67% (natural graphite)**	99%**
	Hafnium	France, 49%***	0%***
	Helium	US, 56%***	100%***
Lithium	Lithium – battery grade	China, 56%*	100%*
	Magnesium	China, 91%***	100%***
Manganese	Manganese – battery grade	China, 58%*	66%*
	Nickel – battery grade	China, 33%*	75%*
	Niobium	Brazil, 89%*	100%*
	Phosphorus	China, 78%***	100%***
Platinum	Platinum-group metals	South Africa, 94% (iridium/ruthenium/ osmium)***	100% (iridium, from primary sources)*** 100% (ruthenium, from primary sources)*** n.k. (osmium)
		Russia, 40% (palladium)***	8% (palladium)*
		South Africa, 71% (platinum)***	30% (platinum)*
		South Africa, 81% (rhodium)***	n.k. (rhodium)
REEs	REEs for permanent magnets (Ce, Dy, Gd, Nd, Pr, Sm and Tb);	China, 68% (Ce, Dy, Er, Eu, Gd, Ho, La, Lu, Nd, Pr, Sm, Tb, Tm, Y and Yb)***	100% (Ce, Dy, Er, Eu, Gd, Ho, La, Lu, Nd, Pr, Sm, Tb, Tm, Y and Yb)***
	heavy and light REEs		
	Scandium	China, 67%***	100%***
	Silicon metal	China, 77%***	64%***
	Strontium	Iran, 37%***	0%***
	Tantalum	DRC, 35%**	99%**
Titanium	Titanium metal	China, 43% (titanium metal)***	100% (titanium metal)***
Tungsten	Tungsten	China, 86%*	80%*
	Vanadium	China, 62%*	100%*

Source: Critical Raw Materials and European Defence
Hans Seidel Foundation, March 2025

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EU demand and supply risk for critical raw materials in hightech products

	EU demand in 2030 compared with 2020	EU forecast demand in 2050 compared with 2020
Lithium	x 12	x 21
Graphite	x 14	x 26
Nickel	x 10	x 16
Dysprosium	x 6	x 7
Neodymium	x 5	x 6
Platinum	x 30	x 200
Aluminium	x 4	x 6

Data source: European Commission, Joint Research Centre, 2023.

15 key technologies	Supply chain steps					
	Raw materials	Processed materials	Components	Assemblies	Super assemblies	Systems
Li-ion batteries	2 %	4 %	3 %	6 %		
Fuel cells	3 %	15 %	25 %	12 %		
Wind turbines	2 %	15 %	24 %	18 %	34 %	
Traction motors	2 %	12 %	9 %	19 %		
Solar photovoltaics	4 %	12 %	11 %	2 %		
Drones	4 %	18 %	9 %	11 %	6 %	

Data source: European Commission, Joint research Centre, 2023. Note: % indicates average EU share in global production for the supply chain step. In red: EU is vulnerable. In black: EU is not vulnerable.

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News from EU Commissioner for Industrial Strategy, Mr. Séjourné

EU Commissioner for Industrial Strategy, Stéphane Séjourné, has recently called for the **creation of joint strategic reserves** of rare earth elements across EU member states.

He had already advised his division to prepare the establishment of a such reserve.

Séjourné told within an interview with a German Newspaper on June, 23rd *, that just as Europe maintains strategic reserves for oil and gas, it should do the same for strategic raw materials like rare earths, lithium, and cobalt—essential for electric vehicles, defense, and renewable energy technologies.

He also announced plans to launch new tenders this year to promote alternative sources of raw materials

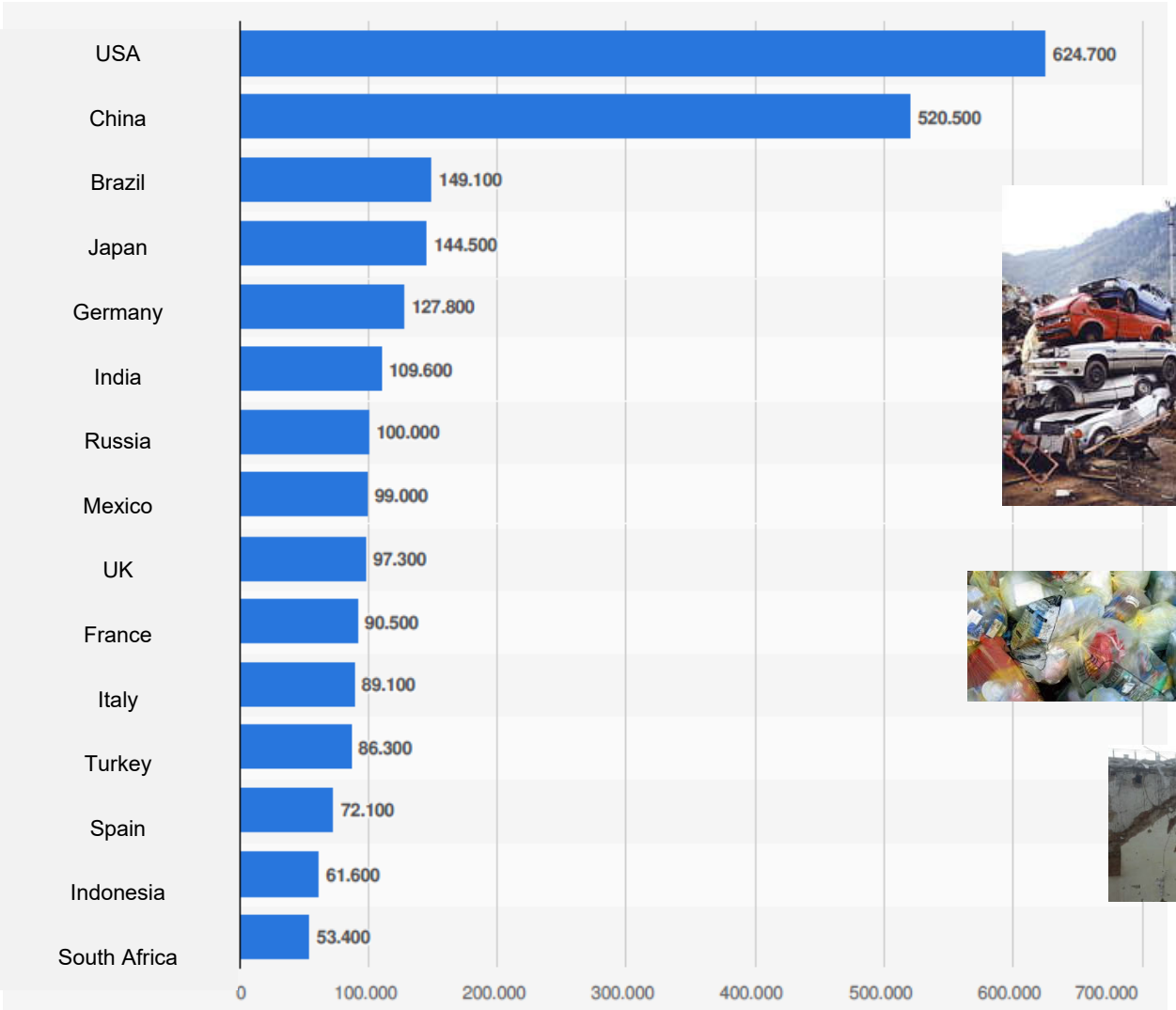
Source: Handelsblatt/GTAI

And what´s going on in Germany now?

- **Security/ Military Equipment: Investment beyond 500 Billion € (+)**
  - Reducing bureaucracy
  - Personnel
  - Raw materials and materials for the production of weapons systems, etc.

- **Boosting the economy/Infrastructure-Investment of around 500 Billion €**
  - Reducing bureaucracy
  - Personnel
  - Raw materials and materials for the construction of bridges, rails, buildings, ...

On the other side: World wide Overall Waste Generation in t/day



source: World Bank Waste Atlas 2014

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What can a network achieve ?

What can REWIMET do?

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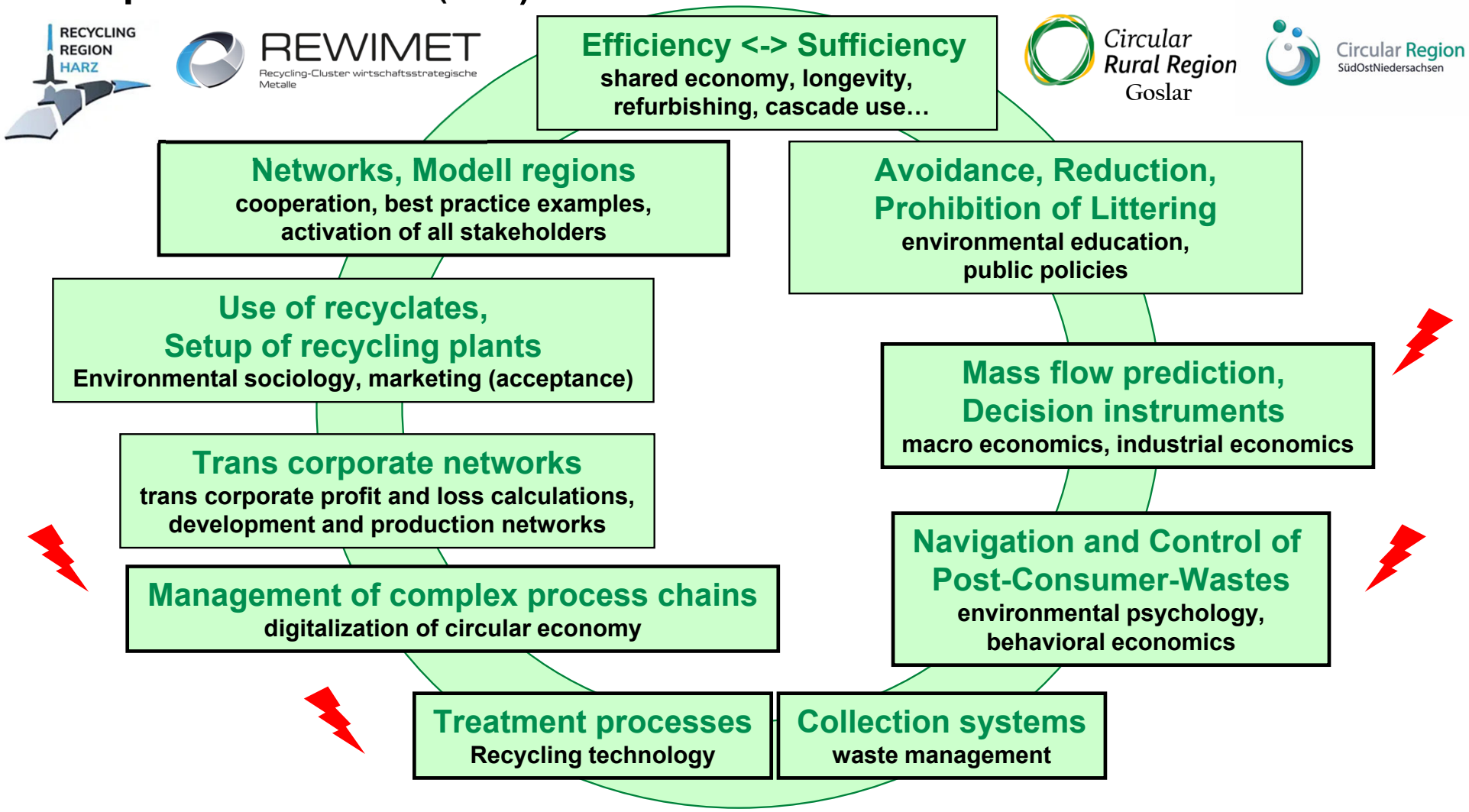
That´s what we can do !

- Intensifying the linking of different branches, dealing with raw materials and waste streams
- Improving collection structures specifically for waste streams, containing critical raw materials
- Improving processing and valorization technologies

- **Setting up strategic partnerships with partner countries**
  in the fields of primary raw materials production, processing and recycling of waste/residues

Steps towards a Circular Economy/Society - a holistic approach
With specific focus on (CR-) resources



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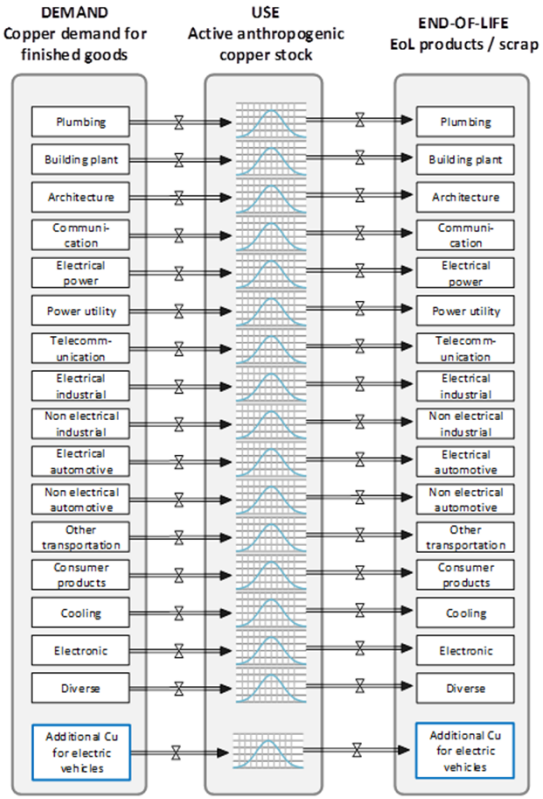
Mass Flow Prediction and Decision Instruments for investments

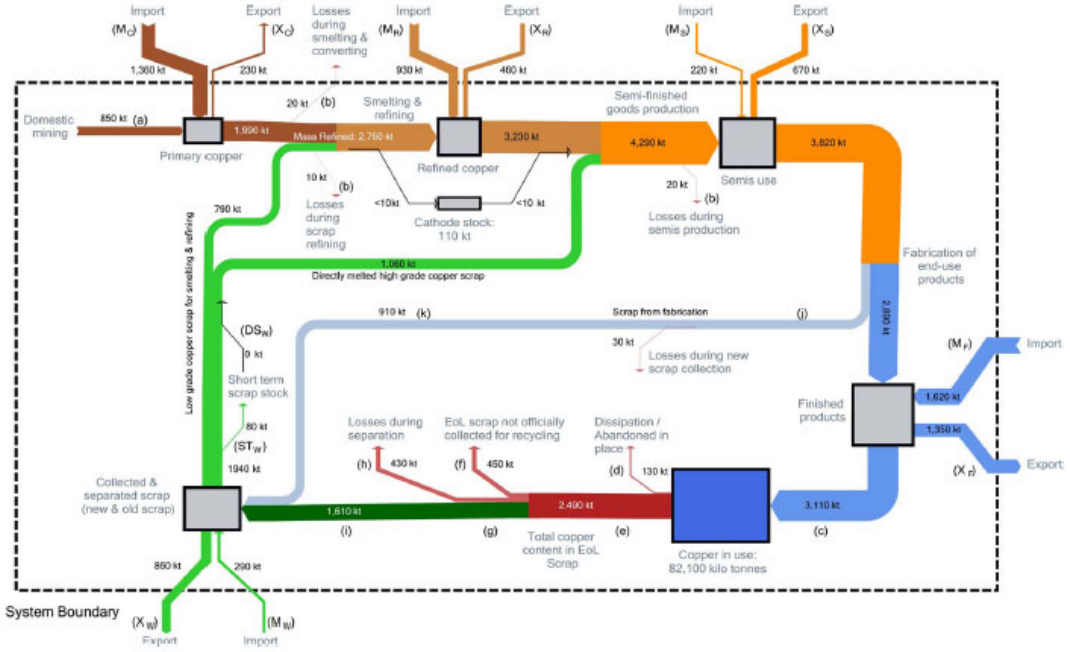
The System Dynamics approach, e.g. for the copper circle

Decision support for investments

- ❑ Input/Sources
- ❑ Stock
- ❑ Output
- ❑ Competition



EU28 copper cycle
2014



source: Soulier, 2018

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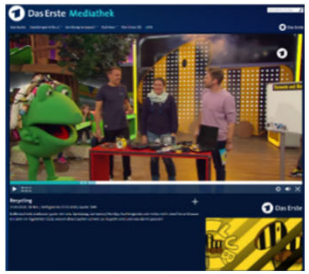
Navigation and Control of Post-Consumer-Wastes

Intrinsic motivation und behavioral costs as social controlling tools



raising intrinsic motivation

high

Decreasing behavioral costs
Example for German situation

Donation for environmental projects

Delivering WEEE for recycling

Using Bike instead of car

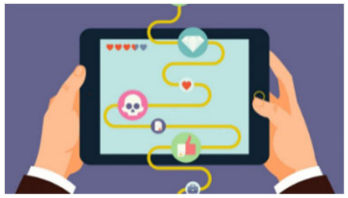
Delivering waste glass for recycling

Delivering waste paper for recycling

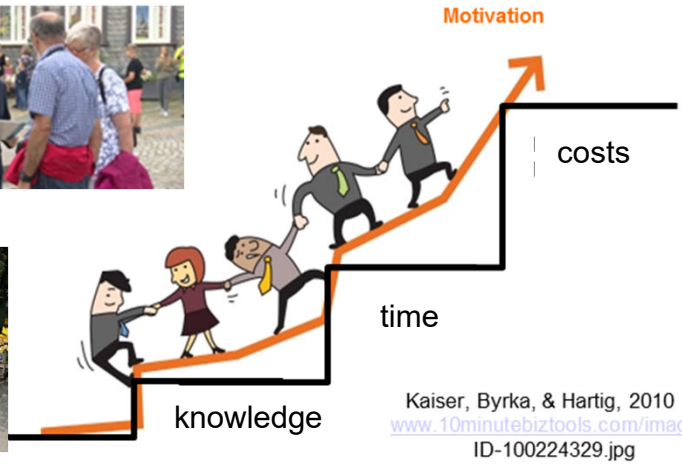
low

source: A. Kibbe – Recycling 2.0

U 20 -> Gamification



age group specific approaches



Kaiser, Byrka, & Hartig, 2010
www.10minutebiztools.com/images/ID-100224329.jpg

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Secondary Raw Material Sources and development of collection and treatment systems

- **D2B: „Deposit to Business“**

  example: mine tailings and slag dumps

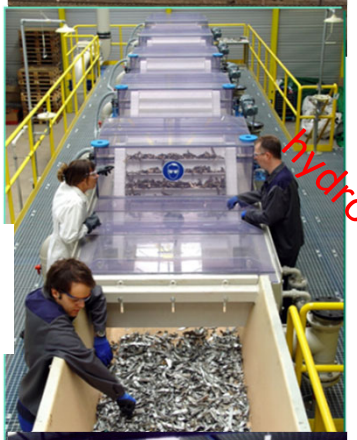
- **B2B: „Business to Business“**

  example: scrap from automotive production

- **C2B: „Consumer to Business“**

  example: Li-Ion Batteries

pyro metallurgical



hydro metallurgical

mechanical

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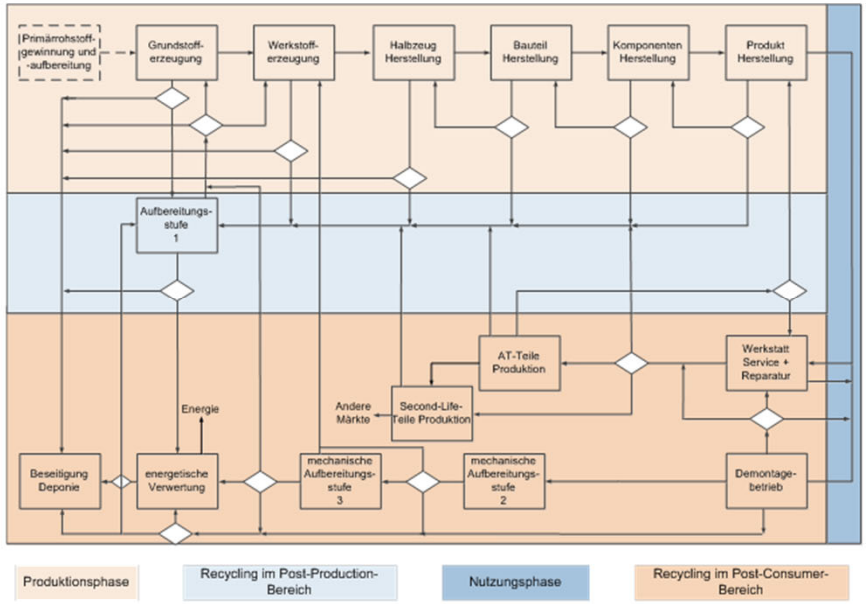
Management of Complex Process Chains
digitalization of circular economy



Management of material and parts flow
Information exchange
Business models

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REWIMET regional highlights

But activities also beyond !

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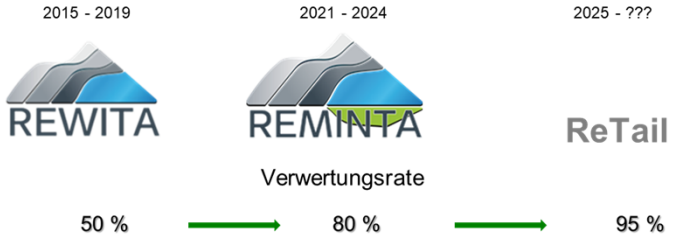
Mine tailings

the Rammelsberg tailing ponds and its resources



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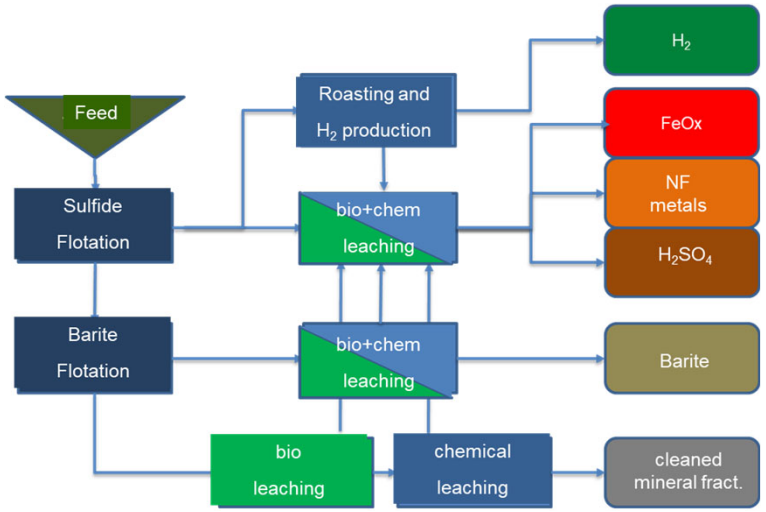
Hochschule Harz

7 Mio. t

Gold	1,5	t
Indium	44	t
Gallium	170	t
Cobalt	1220	t
Silver	234	t
Copper	10.650	t
Lead	85.200	t
Zink	120.700	t
Barite	1.356.000	t
Pyrite	1,330.000	t
Silicates a.o.	3.920.000	t

* critical raw materials

Valorization rate



geiger

SALZGITTER AG
Mensch, Stahl und Technologie

PPM High Purity Metals

META<L>LOGIE

STÖBICH Group

geocycle

Holcim

BGR

DLR

H_2-SPHERE GmbH

IBU | tec

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Circular Steel and Circular Aluminum

Alloying elements partly critical raw materials

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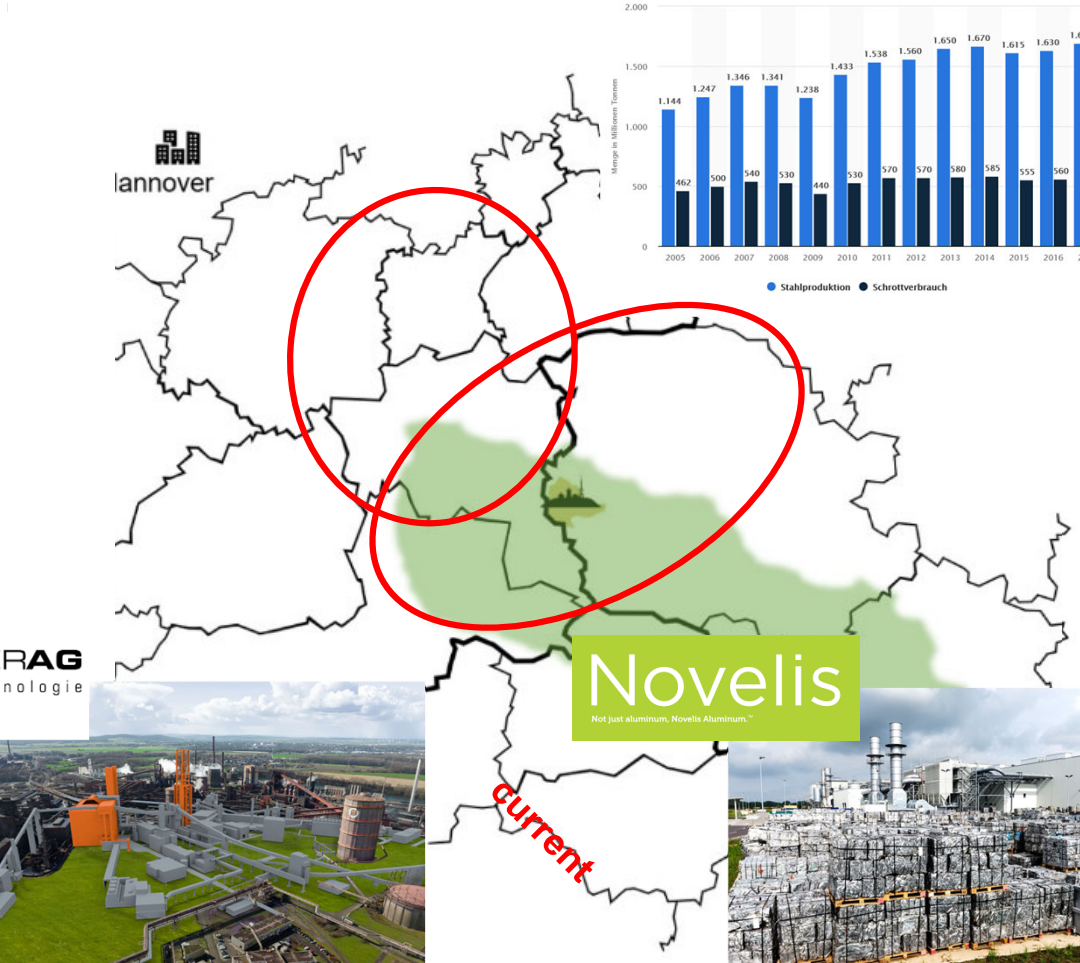
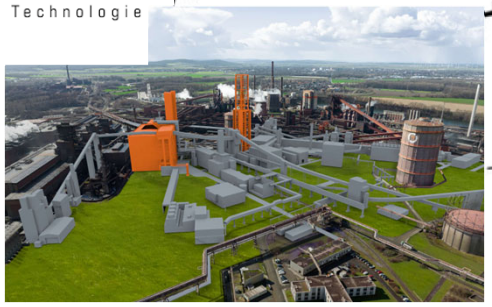
Fraunhofer IST

SALZGITTERAG Stahl und Technologie



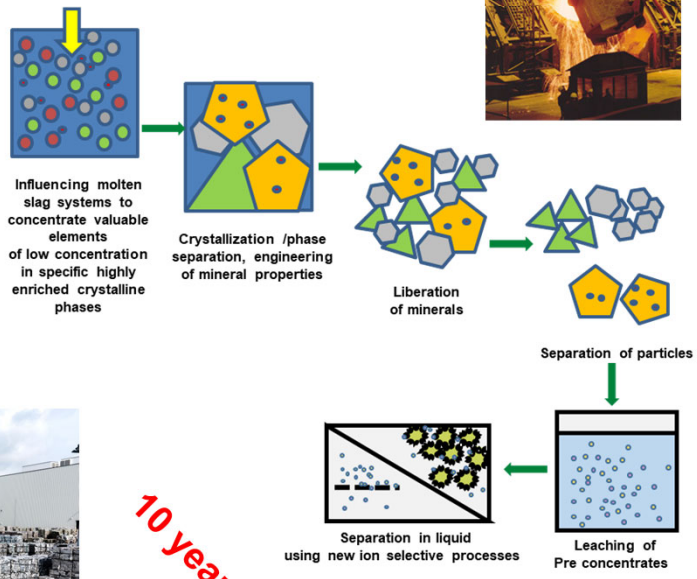


SALCOS Steelmaking. Reinvented.

2.3 Bil..€ invest for first stage Salzgitter

Novelis Aluminum Recyclingcenter Nachterstedt

Slag as anthropogenic ore and source of byproducts



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The WEEE-Harz Cluster

From E-waste to (WEE)E-conomy

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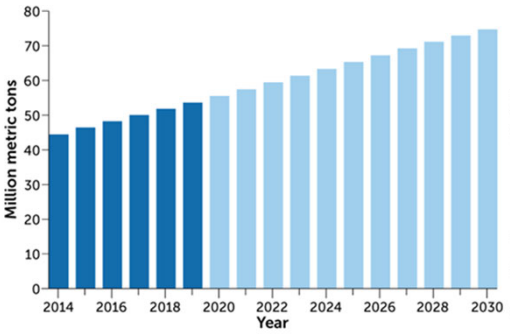
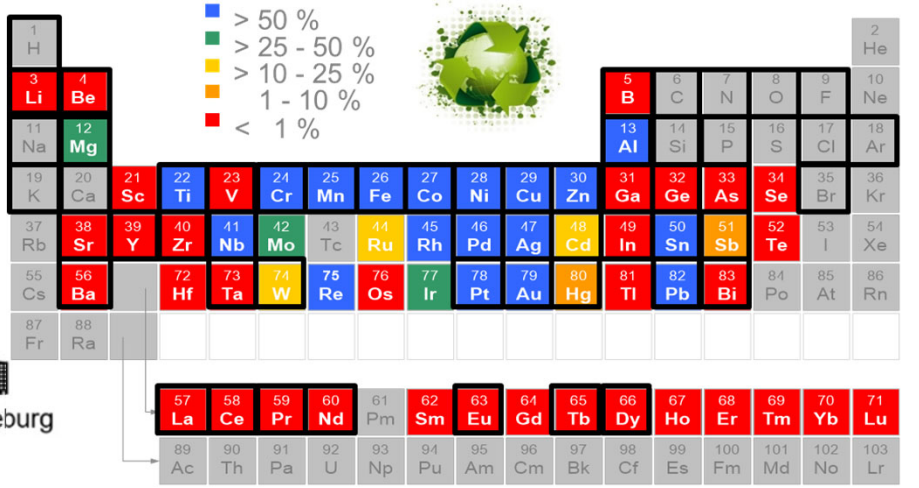
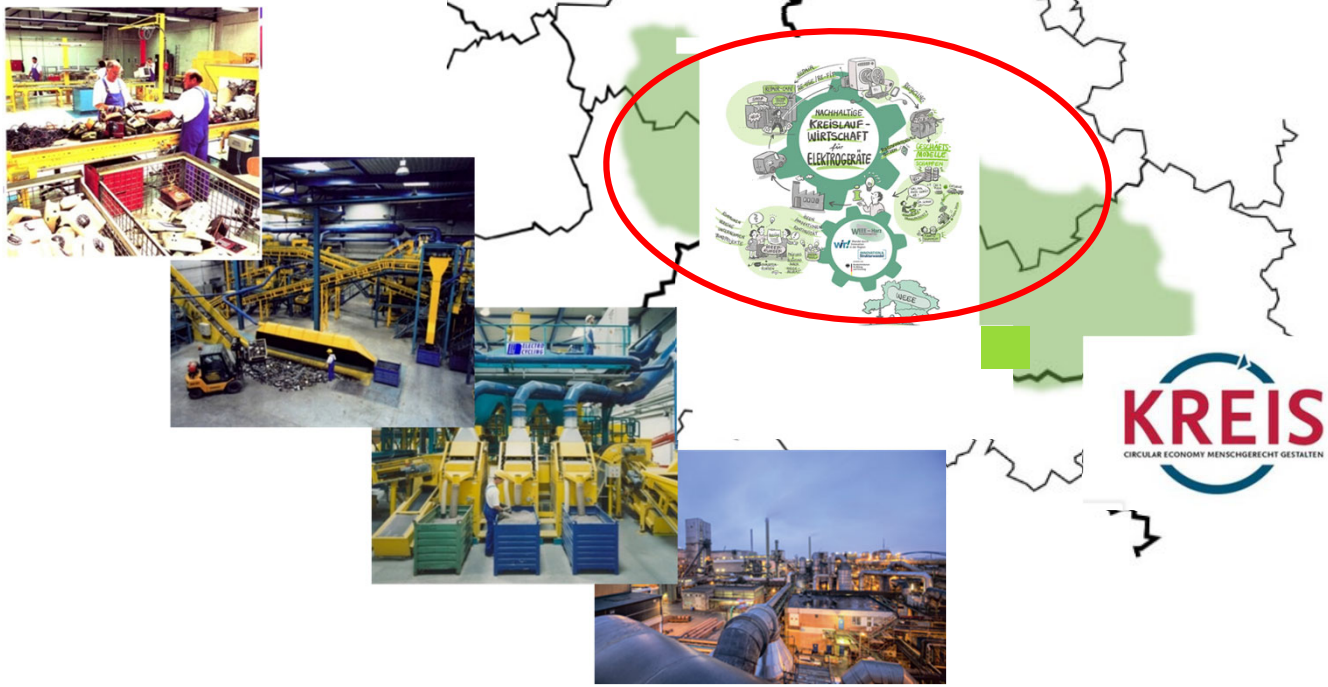
FACHHOCHSCHULE NORDHAUSEN
University of Applied Sciences

HOCHSCHULE harz







ELECTRO CYCLING

MPM
ENVIRONMENT INTELLIGENCE GMBH

KWB KREISWIRTSCHAFTSBETRIEBE GOSLAR
Eigenbetrieb des Landkreises Goslar

KREIS
CIRCULAR ECONOMY MENSCHGERECHT GESTALTEN

META<L>LOGIE

DfACE
Strategy Systems

BATTERY DAMAGE SERVICE

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The cluster circular battery production

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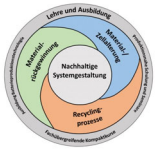
Technische Universität Braunschweig

Ostfalia Hochschule für angewandte Wissenschaften

Fraunhofer IST



greenBatt Kompetenzcluster Recycling & Grüne Batterie

BLB BATTERY LABFACTORY BRAUNSCHWEIG

H.C. Starck TUNGSTEN POWDERS A Group Company of MITSUBISHI MATERIALS

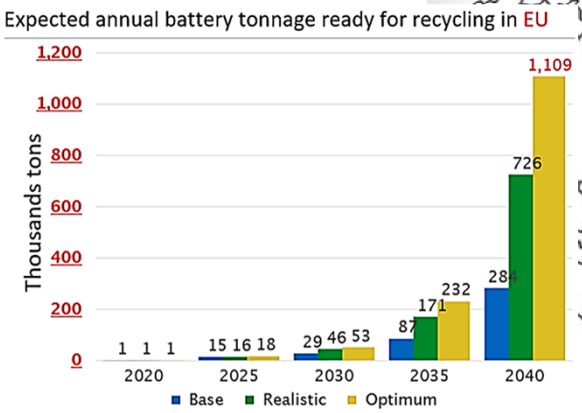
BATTERY DAMAGE SERVICE

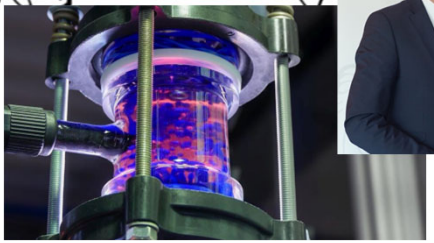
ALBEMARLE

ELECTRO CYCLING

STÖBICH Active Safety

META<L>LOGIE





340 Mio. € Invest
by H.C.Starck Tungsten
in black mass processing

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Thank you very much

for your attention!

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REWIMET
Recycling-Cluster wirtschaftsstrategische Metalle

Circular Region
SüdOstNiedersachsen

RECYCLING REGION HARZ

GERRI
German Resource Research Institute

Circular Cities & Regions Initiative