The EU Critical Raw Materials

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Raw Materials

EU criticality assessment

Critical raw materials (europa.eu)

- Communication - Critical raw materials resilience (EU CRM list 2020 + Action Plan)
- Final report: Study on the EU's list of critical raw materials
- Critical raw materials factsheets
- Non-critical raw materials factsheets
- Foresight report: Critical raw materials for strategic technologies and sectors

10 actions to ensure Europe's access to raw materials

1. European Raw Materials Alliance
2. Develop sustainable financing criteria for mining
3. Research and innovation on waste processing, advanced materials and substitution
4. Map the potential supply of secondary CRM from EU stocks and wastes
5. Investment needs for mining projects that can be operational in 2025
6. Develop expertise and skills
7. Deploy Earth observation programmes for exploration, operation and post-closure environmental management
8. Develop research and innovation projects on exploitation and processing of CRMs
9. Develop strategic international partnerships to secure CRMs supply
10. Promote responsible mining practices for CRMs

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Horizon Europe
Call 2022- A DIGITISED, RESOURCE-EFFICIENT AND RESILIENT INDUSTRY

Raw materials for EU open strategic autonomy and successful transition to a climate-neutral and circular economy
Deadline 30 March 2022, single-stage

- HORIZON-CL4-2022-RESILIENCE-01-02 - **Monitoring and supervising system for exploration and future exploitation activities in the deep sea**
- HORIZON-CL4-2022-RESILIENCE-01-03 - **Streamlining cross-sectoral policy framework throughout the extractive life-cycle in environmentally protected areas**
- HORIZON-CL4-2022-RESILIENCE-01-04 - **Developing digital platforms for the small scale extractive industry**
- HORIZON-CL4-2022-RESILIENCE-01-05 - **Technological solutions for tracking raw materials flows in complex supply chains**
- HORIZON-CL4-2022-RESILIENCE-01-06 - **Sustainable and innovative mine of the future**
- HORIZON-CL4-2022-RESILIENCE-01-07 **Innovative solutions for efficient use and enhanced recovery of mineral and metal by-products from processing of raw materials**
- HORIZON-CL4-2022-RESILIENCE-01-08 **Earth observation technologies for the mining life cycle in suport of EU autonomy and transition to a climate neutral economy**

HORIZON-CL4-2022-RESILIENCE-01-07 Innovative solutions for efficient use and enhanced recovery of mineral and metal by-products from processing of raw materials

Projects are expected to contribute to the following outcomes:

- Increase process selectivity, broader range and higher recovery rates of valuable raw materials, particularly critical raw materials;
- Unlocking substantial reserves of new or currently unexploited/underexploited resources within the EU;
- Significantly increase economic performance in terms of higher material-, water-, energy- and cost-efficiency and flexibility in minerals processing, metallurgical or recycling processes;
- Significantly improve the health, safety and environmental performance of the operations throughout the whole life cycle which is considered, including a reduction in waste, wastewater and emissions generation and a better recovery of resources from generated waste.

EU contribution per project: EUR 12.00 million
Indicative budget of the call: EUR 36.00 million
Type of Action: Innovation Action
TRL: Achieve TRL 6-7 at the end of the project
Eligible countries: EU Member States, associated countries, OECD countries, African Union Countries, and MERCOSUR, CARIFORUM, and Andean Community

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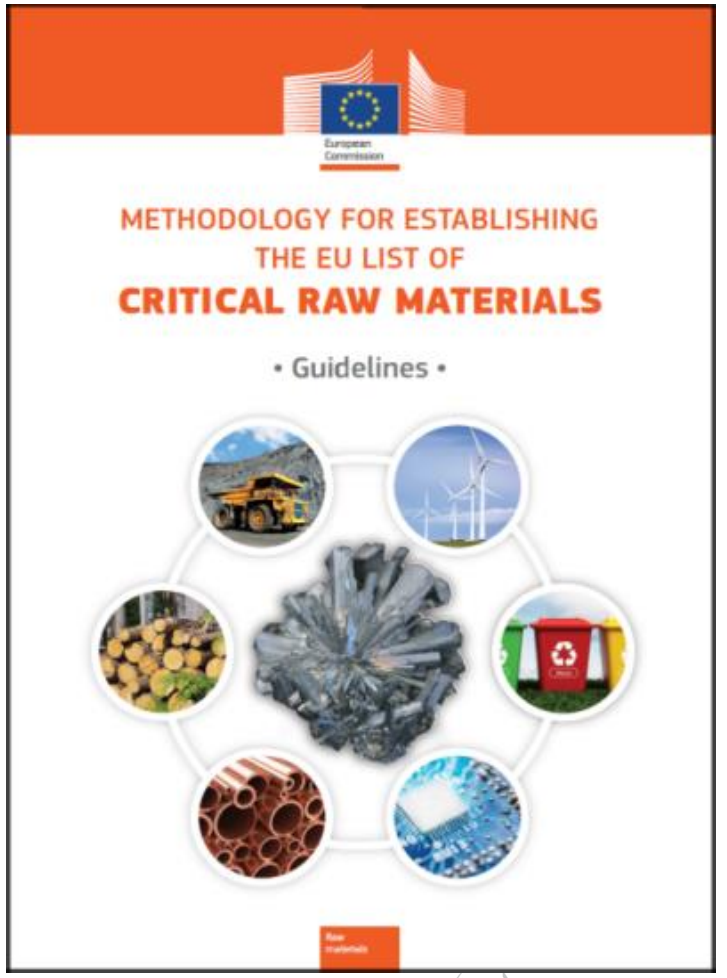
EU CRM assessment 2020

2020 Critical Raw Materials (new as compared to 2017 in bold)		
Antimony	Hafnium	Phosphorus
Baryte	Heavy Rare Earth Elements	Scandium
Beryllium	Light Rare Earth Elements	Silicon metal
Bismuth	Indium	Tantalum
Borate	Magnesium	Tungsten
Cobalt	Natural Graphite	Vanadium
Coking Coal	Natural Rubber	**Bauxite**
Fluorspar	Niobium	**Lithium**
Gallium	Platinum Group Metals	**Titanium**
Germanium	Phosphate rock	**Strontium**



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Materials assessed in 2020

Industrial and construction minerals	Aggregates, Baryte, Bentonite, Borates, Diatomite, Feldspar, Fluorspar, Gypsum, Kaolin clay, Limestone, Magnesite, Natural graphite, Perlite, Phosphate rock, Phosphorus, Potash, Silica sand, Sulphur, Talc
Iron and ferro-alloy metals	Chromium, Cobalt, Iron, Manganese, Molybdenum, Nickel, Niobium, Tantalum, Titanium, Tungsten, Vanadium
Precious metals	Gold, Silver and Platinum Group Metals (Iridium, Palladium, Platinum, Rhodium, Ruthenium)
Rare earths	Cerium, Dysprosium, Erbium, Europium, Gadolinium, Holmium, Lanthanum, Lutetium, Neodymium, Praseodymium, Samarium, Terbium, Thulium, Ytterbium, Yttrium + Scandium
Other non-ferrous metals	Aluminium, Antimony, Arsenic, Beryllium, Bismuth, Cadmium, Copper, Gallium, Germanium, Hafnium, Indium, Lead, Lithium, Magnesium, Rhenium, Selenium, Silicon metal, Strontium, Tellurium, Tin, Zinc, Zirconium
Bio and other materials	Natural cork, Natural Rubber, Natural Teak wood, Sapele wood, Coking coal, Hydrogen and Helium

Foresight on CRMs in technologies and sectors

Technologies in 2020
Drones
Robotics
Wind
Traction motors
Batteries
Fuel cells
Solar PV
3D printing
ICT

Additional Technologies
Electrolysers
Smartphones/tablets/laptops
Data storage & servers
Heat pumps
Data transmission networks
Rocket launchers & satellites
H_2-Direct Reduction of Iron

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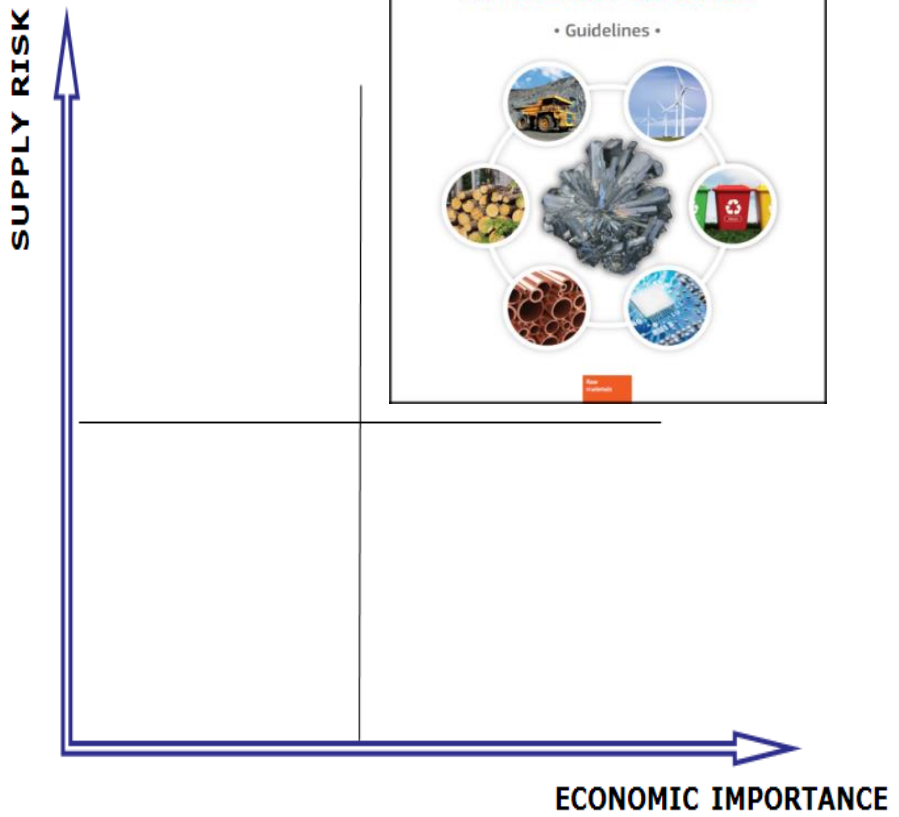
EU CRM methodology

Economic importance

- Importance of a raw material per economic sector & importance of the sector in the EU economy (value added)
- Substitution (technical and cost performance)

Supply risk

Global supply and EU sourcing (ores/refined materials)
Market concentration (HHI)
Governance performance (WGI)
Import reliance
Trade agreements and restrictions
End-of-Life Recycling Input Rate
Substitution (production, criticality, co/by-production)



https://op.europa.eu/en/publication-detail/-/publication/2d43b7e2-66ac-11e7-b2f2-01aa75ed71a1

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Factsheets

Qualitative and quantitative information on each screened raw material, including experts' advise (+ latest available data)

- Executive summary
- Market analysis, trade and prices
  - Global market analysis and outlook
  - EU trade
  - Prices and price volatility
- EU demand
  - EU demand and consumption
  - Uses and end-uses in the EU
  - Substitution
- Supply
  - EU supply chain
  - Supply from primary materials
  - Supply from secondary materials/recycling
  - Refining
- Other considerations
  - Environmental and health and safety issues
  - Socio-economic issues
  - R&D
  - Standards
- Comparison with previous EU assessments
- Data sources

CRM 2023

- Assessment by DG GROW with external experts and AhWG on Criticality
  - EU Expert database: https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/work-as-an-expert
  - Expert Workshops by SCRREN2
- Factsheets by DG GROW with SCRREEN2 and EC AhWG on Criticality
- Foresight study by DG GROW with DG JRC and SCRREEN2
- Materials System Analysis by DG GROW and external contractor

Thank you!

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