EU Raw Materials Policy

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Strategic importance of raw materials on economy

Raw materials are at the beginning of value chains

Figure 1 – Value added and jobs across the production chain (Source: RM Scoreboard 2018)
Strategic importance of raw materials on economy

Raw materials are at the beginning of value chains

Figure 2 – Global material extraction by: a) historical (world, 1990-2015) and b) projected data (world, 2015-2050) (Source: Raw materials Scoreboard 2018, UNEP, World Bank)
Strategic importance of raw materials on economy

Raw materials are at the beginning of value chains

Figure 3 - Import dependence for selected raw materials (Source: RM Scoreboard 2018)
*Critical raw materials (CRM) according to the 2017 list of CRMs for the EU.
Strategic importance of raw materials on economy

End-Of-Life recycling
Input Rate (EOL-RIR)

Figure 4 – Material flows for non-metallic minerals and metal ores (Source: RM Scoreboard 2018)
EU Raw Materials Strategy and Commission priorities

- Jobs, Growth and Investment
  - Circular economy and green growth

- Energy Union
  - Transition to a climate neutral economy (renewables, electricity market, transport...)

- Internal Market
  - Unlock the full potential of the single market
  - A renewed EU Industrial Policy Strategy

- Trade policy to harness globalisation
  - Economic diplomacy
  - Raw materials chapters in FTAs

- A stronger global actor
  - International cooperation and development

Raw Materials Initiative = EU policy
EIP on Raw Materials Strategic Implementation Plan
- CRM list
- H2020 funding

Ensure level playing field in access to resource in third countries
Foster sustainable supply from European sources
Boost resource efficiency and recycling
Raw materials policy

- Circular Economy Action Plan
- Batteries action plan
- Critical Raw Materials 2020
- European Innovation Partnership on Raw Materials
- Research and Innovation
- Trade
- Emissions neutral Europe – vision 2050
- Raw Materials Scoreboard 2020
- Framework conditions for primary raw materials
- Raw Materials
Raw materials indispensable enablers for carbon-neutral solutions across sectors

Primary raw materials will continue to provide large part of the demand

More and better re-use and recycling will improve competitiveness

Recovery and recycling particularly important in sectors/technologies depending on critical materials like cobalt, rare earths and graphite
Study on the review of the list of critical raw materials 2017

Biggest suppliers of CRM to the EU

Raw Materials Initiative
EU Critical Raw Materials

China
- Antimony 90%
- Baryte 44%
- Bismuth 84%
- Cerium 62%
- Dysprosium 40%
- Europium 40%
- Gadolinium 40%
- Gallium 36%
- Germanium 43%
- Holium 40%
- Indium 28%
- Lanthanum 40%
- Lutetium 40%
- Magnesium 94%
- Natural graphite 69%
- Neodymium 40%
- Praseodymium 40%
- Terbium 40%
- Thallium 40%
- Ytterbium 40%
- Yttrium 40%

USA
- Erbium 40%
- Helium 51%
- Samarium 40%

Mexico
- Fluorspar 27%

Brazil
- Niobium 71%

Norway
- Cobalt 65%
- Silicon metal 23%

France
- Hafnium 43%

Morocco
- Phosphate rock 27%

Turkey
- Borate 98%

Kazakhstan
- Phosphorus 77%

Indonesia
- Natural rubber 32%

Finland
- Scandium 67%
- Tungsten 50%
- Vanadium 60%

Russia
- Scandium 67%
- Tungsten 50%
- Vanadium 60%

Nigeria
- Tantalum 43%

Study on the review of the list of critical raw materials 2017
Batteries – example of the strategic EU industrial value chains

The objective is:
- To create a competitive manufacturing value chain in Europe with sustainable battery cells at its core.
- To capture a battery market of up to €250 billion a year from 2025 onwards. Covering the EU demand alone requires at least 10 to 20 ‘gigafactories’ (large-scale battery cell production facilities).

- Raw and processed materials:
  - cobalt, lithium, natural graphite, nickel; but also manganese, silicon metal,
Global and EU production of battery materials

Raw Materials Initiative
EU Critical Raw Materials

Mining production in Europe: cobalt, lithium, natural graphite, nickel; metallic content, tonnes (2016) (Source: Survey on battery raw materials RMSG, 2018)

(tonnes, percent of global supply)

Study on the review of the list of critical raw materials 2017
Time to market? Permitting time costs a lot!

Succes-rate/ geological risk profile

100%
Mining
80%
Construction ($1-4 billion)
30%
Development ($10-100 million)
5%
Discovery ($2-5 million)
0.1-1%
Green-field exploration ($1 million)

A project can be terminated at all stages

Source: MINLEX study

Note: Germany has a decentralised system, and total number of laws only represents the example of Mecklenburg-Western Pomerania. The UK includes laws for England, Wales and Northern Ireland.
R&D
EU Raw materials initiative
- European Platform on Sustainable Mineral Resources
- EU Raw materials initiative
- ERA-MIN I+II
- EIP on Raw materials
- SC5 Raw materials
- EIT Raw Materials
- GEO-ERA
Raw Materials and EII Research and Innovation

Horizon 2020

- Excellent science (€ 24 billion)
  - SC5. Climate action, environment, resource efficiency and raw materials
    - period 2014-2020
    - ~€600 million for 7 years
    - raw materials value chain
    - link to Circular Economy
    - involving all relevant actors in EU
    - open to international partners

- Industrial leadership (€ 17 billion)

- Societal challenges (€ 31 billion)
  - WP 2020 to be published in June 2019
  - ~ 90 MEUR for Raw materials mostly demonstrations in Innovation Actions (TRL 6-7)
  - Specific attention to CRMs, low carbon and circular industries

SPIRE - Sustainable Process Industries Resource & Energy Efficiency
- Energy intensive industries
- link to Circular Economy

+ ERA-MIN 2
+ EIT Raw Materials
€100 billion* (2021-2027)

* This envelope includes EUR 3.5 billion allocated under the InvestEU Fund.

In current prices:
- Open Science: €25.8 billion
- Global Challenges & Ind. Competitiveness: €52.7 billion
- Open Innovation: €13.5 billion
- Strengthening ERA
- Euratom

* Horizon Europe proposal

Horizon Europe 2021-2027

16
Horizon Europe 2021-2027

Structure

Pillar 1
Open Science
- European Research Council
- Marie Skłodowska-Curie Actions
- Research Infrastructures

Pillar 2
Global Challenges and Industrial competitiveness
- Clusters
  - Health
  - Inclusive and Secure Society
  - Digital and Industry
  - Climate, Energy and Mobility
  - Food and natural resources
  - Joint Research Centre

Pillar 3
Open Innovation
- European Innovation Council
- European innovation ecosystems
- European Institute of Innovation and Technology

Strengthening the European Research Area
- Sharing excellence
- Reforming and Enhancing the European R&I system
Raw Materials Week 2019

18-22 November 2019 in Brussels, Belgium
eurawmaterialsweek.eu

- 7th annual High Level Conference of EIP on raw materials
- Horizon 2020
- Critical Raw Materials
- The EU Raw Materials Knowledge Base
- UN Framework Classification for Resources Management in Europe
- Responsible sourcing and supply of raw materials
- Forests for the future
Thank you!

**Critical raw materials for the EU:**

**Methodology for establishing the EU list of critical raw materials:**

**Report on critical raw materials and the circular economy:**
https://publications.europa.eu/en/publication-detail/-/publication/d1be1b43-e18f-11e8-b690-01aa75ed71a1

**Raw Materials Information System:**
http://rmis.jrc.ec.europa.eu/

**EU Raw materials, metals, minerals and forest-based industries:**

**EIP on Raw Materials:**

**Horizon 2020 - raw materials and calls:**
EIT Raw Materials

>120 partners, 23 countries
€400 million (2015-2021)

- HQ: Berlin, Germany
- Northern CLC: Luleå, Sweden:
- Eastern CLC: Wroclaw, Poland
- Southern CLC: Rome, Italy
- Western CLC: Metz, France
- Central CLC: Leuven, Belgium
- Baltic Sea CLC: Espoo, Finland

Regular calls every year
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Figure 6 – Material flows for non-metallic minerals and metal ores (Source: RM Scoreboard 2018 in preparation)

Figure 7 - End-Of-Life recycling Input Rate (EOL-RIR)
(JRC elaboration. EOL-RIR measures recycling’s contribution to meeting materials demand, i.e. how much of the total material input into the production system comes from recycling)
Strategic importance of raw materials on economy

Figure 2 - Import reliance in the EU-28 for raw materials in the initial stage of supply chain (2015)
(Source: RM Scoreboard 2018 in preparation)

Figure 3 - Import dependence for selected raw materials
(Source: RM Scoreboard 2018 in preparation)