EU Raw Materials Policy and Action on Minerals Information

MIN-GUIDE Policy Laboratory 5
“Mining and mineral information in the EU”
23 May, Madrid

Rodrigo CHANES
1. Raw materials policy framework
2. Mineral information in the EU policy
3. Actions on mineral information
1. Raw materials policy framework

Non-energy raw materials
Raw materials are at the beginning of value chains

Figure 1 - Share of world metals mining by world region (1850-2009)
(Source: EU 2016 RM Scoreboard; © ICMM, 2012, ‘Trends in the mining and metals industry — Mining’s contribution to sustainable development’)

Figure 2 - Global flow of steel from iron ore to end-use goods (mio tonnes, 2008) (Source: EU 2016 RM Scoreboard)
Strategic importance of raw materials on economy

Figure 3 - Share of imports in EU-28 compared to Direct Materials Input (2002-2013) (Source: EU 2016 RM Scoreboard)

Figure 4 - Import dependence for selected raw materials (Source: EU 2016 RM Scoreboard)

Raw materials are key for low carbon technologies
Strategic importance of raw materials on economy

Figure 5 - Sankey diagram on material flows in the EU economy (2014)

Figure 6 - 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

EU produces metals and has a strong mineral potential

Figure 7 – Mineral deposits/potential in the EU (Source – BGRM 2016; G. Bertrand, D. Cassard, ProMine project)

Figure 8 – Metal and selected industrial minerals mine production in the EU (Source – EU Raw materials scoreboard 2018 in preparation)
EU Raw Materials Strategy and Juncker priorities

Raw Materials Initiative

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

Commission priorities 2015-19

1. Jobs, Growth and Investment
   - circular economy and green growth

3. Energy Union
   - transition to a low-carbon economy
     (renewables, electricity market, transport...)

4. Internal Market
   - unlock the full potential of the single market
     - a renewed EU Industrial Policy Strategy

6. Trade policy to harness globalisation
   - economic diplomacy
   - raw materials chapters in FTAs

9. A stronger global actor
   - international cooperation and development
Raw Materials Initiative = EU raw materials policy

- **Aim:** securing sustainable supplies of raw materials
- **Non-energy, non-agricultural raw materials**
- **Integrated strategy (3 pillars)**
- **Introduced a list of Critical Raw Materials in 2011 and updated lists in 2014 and 2017**
When: launched in 2013, based on Raw Materials Initiative, Industrial Policy, Innovation Union

Who: Industry, public sector, academia and NGOs in HLSG + Sherpa, Operational Groups
Groups renewed in 2017

123 Raw Materials Commitments: 980 partners, indicative budget ± EUR 2 billion

Why: ...to ensure the sustainable supply of raw materials to the European economy...

What: Strategic Implementation Plan adopted in 2013 Achieving targets

Position paper on future orientations of the High-Level Steering Group of the EIP. 20 December 2017
"Closing the loop. An EU action plan for the Circular Economy"
Commission's Communication COM(2015) 614 final
2. Mineral information in the EU policy
Non-energy raw materials
"The sustainable supply of RM based in the EU requires that the knowledge base of mineral deposits within the EU will be improved."
"Geological availability does not necessarily mean access to these RM.

“limited public awareness of the importance of domestic raw materials for the European economy”

"To boost the reuse or recycling of products and materials at a significant economy of scale a fair and transparent market is essential."

“The work on identifying critical raw materials also revealed the need for better data and knowledge,..”

“The Commission considers particularly important: a commitment to provide an appropriate legal and information framework; a digital geological knowledge base; a transparent methodology for identifying mineral resources; long term estimates for regional and local demand.”

"The Commission intends to promote the work of UNECE in the area of standardisation concerning reporting of reserves and resources at EU-level"
EIP-RM Strategic Implementation Plan

I. Technology Pillar
   o I.A Raw materials research and innovation coordination
   o I.B Technologies for primary and secondary raw materials' production
   o I.C Substitution of raw materials

II. Non-Technology Policy Pillar
   o II.A Improving Europe's raw materials framework conditions
   o II.B Improving Europe's waste management framework conditions and excellence
   o II.C Knowledge, skills and raw materials flows

III. International Cooperation Pillar
   o III.1 Technology
   o III.2 Global Raw Materials Governance and Dialogues
   o III.3 Health, Safety and Environment
   o III.4 Skills, Education and Knowledge
   o III.5 Investment activities
"Strategic Action Plan on Batteries"
Commission's Communication COM(2018) 293 final, 17th of May

**Objective:** Make Europe a global leader in sustainable battery production and use, in the context of the circular economy (annex “Sustainable Mobility for Europe safe, connected, and clean” communication)

**Action Area “Securing the sustainable supply of raw materials”**

- **Map** the current and future **primary RM for batteries.**
- **Assess** the **potential within the EU for sourcing battery RM materials** Cobalt, Lithium, Natural Graphite, and Nickel [Q4 2018]
- **Dialogue with Member States** to determine the **fitness** of their **raw materials policies, mining codes** and **incentives for exploration** to address the strategic needs of materials for batteries. [Q4 2018]

“Report on Raw Materials for Battery Applications”
Staff Working Document Commission SWD(2018) 245 final
3. Actions on mineral information
Study on the review of the list of critical raw materials 2017

Biggest suppliers of CRM to the EU

- China
  - Antimony 50%
  - Beryte 44%
  - Bismuth 84%
  - Cerium 62%
  - Dysprosium 40%
  - Europium 40%
  - Gadolinium 40%
  - Gallium 36%
  - Germanium 43%
  - Holmium 28%
  - Lanthanum 40%
  - Lutetium 40%
  - Magnesium 54%
  - Natural graphite 69%
  - Neodymium 40%
  - Praseodymium 40%
  - Terbium 40%
  - Thulium 40%
  - Ytterbium 40%
  - Yttrium 40%

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

- Norway
  - Cobalt 66%
  - Silicon metal 23%

- France
  - Hafnium 43%

- Morocco
  - Phosphate rock 27%

- Turkey
  - Borate 96%

- Kazakhstan
  - Phosphorus 77%

- Indonesia
  - Natural rubber 32%

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

- Mexico
  - Fluorspar 27%

- Brazil
  - Niobium 71%

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
- Market concentration (HHI)
- Governance performance (WGI)
- Import reliance
- Trade agreements and restrictions
- Substitution (production, criticality, co/by-production)
- End-of-Life Recycling Input Rate
**EU Critical Raw Materials assessment 2017**

- **78 raw materials** evaluated with fact sheets available, revised methodology published – CRM website

### 2017 CRMs (27)

<table>
<thead>
<tr>
<th>Antimony</th>
<th>Fluorspar</th>
<th>*LREEs</th>
<th>Phosphorus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baryte</td>
<td>Gallium</td>
<td>Magnesium</td>
<td>Scandium</td>
</tr>
<tr>
<td>Beryllium</td>
<td>Germanium</td>
<td>Natural graphite</td>
<td>Silicon metal</td>
</tr>
<tr>
<td><strong>Bismuth</strong></td>
<td>Hafnium</td>
<td>Natural Rubber</td>
<td>Tantalum</td>
</tr>
<tr>
<td>Borate</td>
<td><strong>Helium</strong></td>
<td>Niobium</td>
<td>Tungsten</td>
</tr>
<tr>
<td>Cobalt</td>
<td>*HREEs</td>
<td>*PGMs</td>
<td>Vanadium</td>
</tr>
<tr>
<td>Coking coal</td>
<td>Indium</td>
<td>Phosphate rock</td>
<td></td>
</tr>
</tbody>
</table>

*HREEs=heavy rare earth elements, LREEs=light rare earth elements, PGMs=platinum group metals
Objectives:

- **To help Member States** implement the new provisions on **critical raw materials** in the **Waste Framework Directive** – i.e. in relation to waste prevention and waste management.
- To ensure a coherent and effective EU approach to critical raw materials in the transition to a circular and low-carbon economy.
- Provide **information to stakeholders**.
- Provide **key data sources** and identify **best practices** and possible further actions.

Issued in January 2018, taking into account the list of 27 critical raw materials (Sep 2017)
"Measuring progress towards circular economy in the EU Key indicators for a monitoring framework”
Staff Working Document SWD(2018) 17 final, 16th of January

Objective: Building on existing data, set meaningful indicators to cover the different phases of the circular economy

Indicator “EU self-sufficiency for raw materials”

- EU self-sufficiency is different for each raw material
- Self-sufficiency is defined as $(1 - \text{net Import reliance})$

Definition: Self-sufficiency is defined as $(1 - \text{net Import reliance})$. Import reliance is defined in the EU Critical Raw Materials methodology as $\frac{\text{Domestic production + Import - Export}}{\text{Import - Export}}$

Data sources: BGS, World Mining Data (Austrian Federal Ministry of Science, Research and Economy)
Action area II.8: EU Raw Materials Knowledge Base

1) Appropriate conditions to provide a service that will include information infrastructure and intelligence
2) Organize relevant data input from studies and projects. Data base interoperable

- **Minerals4EU** (FP7, 2013-2015)
- **ProSUM** (H2020, 2015-2017)
- **SmartGround** – Data and information on secondary raw materials (H2020, 2015-2018)
- **Materials Systems Analysis (MSA)** (DG GROWTH study, 2014-2015; JRC 2018)
3) Raw materials intelligence
   • MinFuture - Global material flows and demand-supply forecasting for mineral strategies (H2020, 2016-2018)

4) Reporting
   • Minventory (DG GROW study, 2013-2015)
   • MINEA – Mining the European Atmosphere (COST action, ongoing)
5) Collaboration with the rest of the world on raw materials information
   • **INTRAW** - International cooperation on raw materials (H2020, 2015-2018)
   • **STRADE** - Strategic Dialogue on Sustainable Raw Materials for Europe (H2020, 2015-2018)

6) Improvement of data collection at national and regional level
   • **ORAMA** - Optimising data collection for primary and secondary raw materials in MS
Based on a set of accepted indicators, the Raw Materials Scoreboard clearly pictures the current and future challenges related to raw materials, e.g.:

- Future global resource use could double between 2010-2030
- Increasingly distorted international commodity markets
- Under-exploration of the EU's mineral potential
- Relatively low recycling rates for many raw materials

Jobs, growth and investment:
- 11 million jobs in the manufacturing sector depend on the secure supply of metals!!

With the support of JRC
MINLEX - Study
Legal framework for mineral extraction and permitting procedures for exploration and exploitation in the EU

Scope
- Legislation at national and regional level in EU MS
- EU legislation impacting the permitting procedures
- Court cases

EU level conclusions
- TFEU, conventions, Directives, and RMI; appropriate FM
- Implementation issues in some MS: EIA, Natura Directives

MS level conclusions
- All MSs have a principal mining act (permitting, mineral ownership)
- Nine jurisdictions have one-stop shop
- Delays of permitting procedures (conflict of interests, resources, timeframes)
Evaluation and Exchange of Good Practices for the Sustainable Supply of Raw Materials

Provide examples of good practices in the EU:

- Policy and legislative framework (5)
- Information and Knowledge Base (5)
- Governance (6)
- Land Use Planning (4)
- Permits and authorization (5)

Published in 2014
Overview

- Common standards on spatial data
- 34 spatial data themes
- Geology, energy, **mineral resources**

**Data Specification on Mineral Resources Technical guidelines**
(D2.8.III.21)

**No particular reporting standard.**

**Allowed values for 'MineralResources'**
JORC, NI43-101, CIMstandards, SAMRE, IMM, SME, IIMCh, peruvianCode, CRIRSCO, **UNFC**, SEC, PERC, russianCode)
Societal Challenge 5 call - "Greening the economy in line with the Sustainable Development Goals (SDGs)"

- €240 million available under SC5 (plus FTI, SME Instrument)
- 2/3 of the budget for Innovation Actions (TRL 6-7)
- Specific attention to CRMs, Circular economy, Production...
- Feed into EU Raw Materials Information System – RMIS
- "Bridge" to Post-2020 "FP9".
Next events

3rd Raw Materials Week
(Brussels, 12 - 16 November 2018)

Presentations of RM Week 2017 available on:
Thank you!!

**EU raw materials:**

**EIP on Raw materials:**

**Horizon 2020 - Raw materials webpage:**

**H2020 Participant portal**

**Horizon 2020 – EXPERTS:**

**EIT Raw materials:** www.eitrawmaterials.eu
Back-up slides
Primary raw materials

Possible harmonization pipeline

- State report according to State-specified Code of practice
- Voluntary State-level alignment of data to EU-level system of reporting (UNFC system, or CRIRSCO template)
- EU-level data harmonisation and redaction
- EU level data publication
Some reporting requirements in Mining Waste Directive (2006/21/EC) may provide information on resource availability.

Inventories focused on identifying hazards.

MWD requires facilities to report on the waste being treated or stored in terms of the EU List of Wastes (2000/532/EC). Useful materials inventory knowledge may be lost.

Closed and abandoned mine sites have interest in respect of mining waste associated.

Data available on mining waste are not reported using international standards.

UNFC system could be useful.
On-going actions at EU level

ORAMA

Scope: Optimising data collection for primary and secondary raw materials in MS
Duration: 2018-2020

ORAMA and UNFC

• This improving and harmonisation require a system allowing classification of data of different quality and origin (such as UNFC)
• ORAMA will evaluate the potential the UNFC holds for improving and harmonising the European raw material statistics
• Incorporation of social and environmental considerations into UNFC classification is also interesting
On-going actions at EU level

**MINEA**

Min-ing the European Anthrophosphere

**Overview**

- **Initiating the reporting** of materials resources/reserves in the anthroposphere
- **Assessing the availability of secondary raw materials** through investigating, evaluation and classifying anthropogenic resources

**Outputs relevant for EGRC**

- **Draft Specification** for the application of UNFC for Resources to Anthropogenic resources (ECE/ENERGY/GE.3/2018/5)
- **Reports** on recovery technologies for construction and demolition waste, landfills and waste incineration residues

**Members:**

COST Countries, 46 (28 countries); COST Near Neighbour Countries, 3 (Russia, Georgia)

COST International Partner Countries: 3 (ROC, ROC-Taiwan)

Specific organisations: ISWA, CEWEP, UNECE-EGRC, Eurogypsum

COST is supported by the EU Framework Programme Horizon 2020
GeoERA

Scope: Contribute to optimal subsurface management while minimizing impacts for geo-energy, raw materials and groundwater challenges
Duration: 2018-2020

GeoERA and UNFC
On the 1st July 2018, start 15 transnational projects with a duration of 3 years. 33 countries

Mineral Intelligence for Europe
The applicability of the UNFC classification system for obtaining more accurate Pan-European mineral inventories will be tested

EuroLithos
Natural stone will be addressed as a case study in the UNFC. It will provide an assessment of codes and propose a G-axis coding for UNFC

Hotlimes
Will address fractured carbonate reservoirs for geothermal energy and will report using UNFC (update/use of UNFC-2009 for Geothermal Energy Resources)