Ongoing EU actions on raw materials

UNECE Expert Group on Resource Management, 10th Session
29 April - 3 May 2019, Geneve

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EU Raw Materials Strategy and Commission priorities

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

3. Energy Union
   - transition to a climate neutral 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 policy
EIP on Raw Materials Strategic Implementation Plan

- CRM list
- H2020 funding
Different reporting codes for primary resources and reserves across the EU

Lack of harmonised reporting system for secondary raw materials

UNFC

The mining legal framework in the EU Member States is heterogeneous (and in 24 languages)
Building EU knowledge base

Collaboration with key knowledge providers

- UNFC
- OECD
- Eurostat/National data providers
- EuroGeoSurveys
- Inspire
- Copernicus

Studies and projects

- ORAMA (H2020, 2017-2019)
- SCRREEN expert network (H2020, 2016-2019)
- Minerals4EU (FP7, 2015) + GEO-ERA (H2020, 2022)
- CRM assessments (2011, 2013, 2017 and 2020)
- Minfuture (H2020, 2016-2018)
- MICA (H2020, 2015-2018)
- MINEA (COST action, ongoing)
- ProSUM (H2020, 2015-2017)
- SmartGround (H2020, 2015-2018)
- Minventory (GROW, 2015)
• Battery raw materials
• Exploration in the EU
• Critical raw materials
• INSPIRE Directive
• UNFC for Europe
Battery raw materials

Scope

- **Battery raw materials**: cobalt, lithium, nickel, natural graphite
- **Processing and refining** of BRM: source (PRM/SRM); battery grade/other uses
- **Mining production** of battery raw materials (BRM) in Europe
- **Resources** and **reserves** of BRM in **active mine sites** in Europe
- **Exploration projects** relevant for BRM in Europe
- **Potentially commercial projects**

Methodology

- **First survey in 2018, updated in 2019**
- **Data sent for validation to MS**
Global and EU production of battery materials

European Union
Cobalt: 7,529 t; 6% of global supply
Lithium: 322 t; 1% 
Natural graphite: 12,650 t; 1% 
Nickel: 274,956 t; 14%

Action Plan on Batteries 
Battery survey

Study on the review of the list of critical raw materials 2017
### Exploration activities

<table>
<thead>
<tr>
<th></th>
<th>Commercial projects (E1;F1; G1,2,3)</th>
<th>Potentially commercial projects (E2;F2;G1,2,3)</th>
<th>Non-Commercial projects (E3;F2;G1,2,3)</th>
<th>Exploration projects (E3;F3;G4)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cobalt</strong></td>
<td>--</td>
<td>3 SE(3)</td>
<td>10 ES(1), FI(5), SE(4)</td>
<td>25 AT(2), CY(3), CZ(1), ES(7), FI(1), IE(1), NO(1), PL(1), SE(5), SK(2), UK(1)</td>
</tr>
<tr>
<td><strong>Lithium</strong></td>
<td>3 FI(1), PT(2)</td>
<td>7 AT(1), CZ(1), DE(1), ES(1), FI(1), PT(2)</td>
<td>3 AT(1), ES(1), UK(1)</td>
<td>16 (40) AT(1), DE(2), ES(2), FI(1), FR(2), GR(1), IE(3), NO(1), SE(3), PT(40)</td>
</tr>
<tr>
<td><strong>Natural graphite</strong></td>
<td>1 SE(1)</td>
<td>2 SE(1), SK(1)</td>
<td>3 SE(2), FI(1)</td>
<td>28 CZ(3), DE(1), FI(10), ES(4), SE(2), NO(8)</td>
</tr>
<tr>
<td><strong>Nickel</strong></td>
<td>--</td>
<td>3 SE(3)</td>
<td>6 FI(3), SE(1), UK(2)</td>
<td>21 AT(2), CY(3), DE(1), ES(5), FI(4), LV(1), SK(2), SE(3)</td>
</tr>
</tbody>
</table>

Note 2 – Nine blocks have been defined for lithium exploration in the Centre and North of Portugal. Public tenders are going to be launched in 2019.
Scope

• On-going exploration activities
• Annual expenditure
• Incentives for mineral exploration
• Incentives for extraction projects
• Permitting regime exploration activities
• Submission of exploration results
• How data is made public

Methodology

• Survey launched: 20 February 2019
## Preliminary results

### EU Survey on exploration activities

<table>
<thead>
<tr>
<th>11 Member States replies</th>
<th>Metallic minerals</th>
<th>Industrial minerals</th>
<th>Natural stone Aggregates</th>
<th>Battery raw materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grassroots [E3;F3.3;G4]*</td>
<td><strong>1,741</strong> (AT: 1,597)</td>
<td><strong>553</strong> (AT:553)</td>
<td>0</td>
<td><strong>264</strong> (AT:166)</td>
</tr>
<tr>
<td>Exploration [E3;F3.2;G4]*</td>
<td><strong>1,712</strong> (AT: 739; IE:606)</td>
<td><strong>421</strong> (AT: 402)</td>
<td>21</td>
<td><strong>247</strong></td>
</tr>
<tr>
<td>Target outline [E3;F3.1;G4]*</td>
<td><strong>145</strong> (AT: 844)</td>
<td><strong>851</strong> (AT: 844)</td>
<td>0</td>
<td><strong>30</strong></td>
</tr>
<tr>
<td>Advanced exploration [E3.2,3.3;F2.2;G1,2,3]*</td>
<td><strong>139</strong> (AT: 257)</td>
<td><strong>271</strong> (AT: 257)</td>
<td><strong>158</strong> (EE: 103)</td>
<td><strong>89</strong></td>
</tr>
<tr>
<td>Resources definition [E3.2,3.3;F2.3;G1,2,3]*</td>
<td><strong>82</strong> (SE: 68)</td>
<td><strong>18</strong></td>
<td>0</td>
<td><strong>10</strong> (FI: 10)</td>
</tr>
</tbody>
</table>

### Grassroots
Indicates claims have been staked on prospects.

### Exploration
Indicates preliminary testing is underway, which may include mapping and sampling, geophysical and geochemical work and reconnaissance drilling.

### Target outline
Indicates targets have been identified and more detailed surface and/or underground exploration and drilling is underway.

### Advanced exploration
Involves drilling activities to add additional quantities/resources.

### Resources definition
Indicates that initial reserve/resource has been calculated.

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**Preliminary results. Exploration stage (UNFC-2009)**
Map of CRM ore deposits in Europe

Critical Raw Material Deposits of Europe

(based on the 2017 CRM list of the European Commission)

G. Bertrand*, D. Cassant* and the Mineral Resources Expert Group**

* BRGM, Orléans, France
** EuroGeoSurvey, Brussels, Belgium

Legend

Commodity

- Beryllium (BeO)
- Barium (BaO)
- Borates (SiO3)
- Beryllium (BeO)
- Cobalt (metal)
- Coltan (metal)
- Coltan (metal)
- Fluorite (CaF2)
- Gallium (metal)
- Germanium (metal)
- Graphite
- Hafnium (metal)
- Indium (metal)
- Magnesium (MgO)
- Magnesium (MgO)
- Niobium - columbite (Nb2O5)
- Phosphate (P2O5)
- Rare earth elements (RE2O3)
- Platinum, platinum group metals
- Antimony (metal)
- Scandium (metal)
- Tantalum (Ta2O5)
- Vanadium (metal)
- Wolfram (WO3)

Deposit size

- Class A (super-large)
- Class B (large)
- Class C (medium)
### EU 2017 CRMs (27)

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

### Next CRM assessment

- European Commission should lead and perform the next assessment (mostly in 2019)
- Engaging major public EU data providers (Eurostat, EuroGeoSurveys, WMD…) and external experts
- We will use the same methodology as in 2017
- Similar scope – over 80 raw materials
- Main products expected in 2020: the EU list of CRMs and factsheets/profiles
- UNFC applied in factsheets
Overview

- Common standards on spatial data
- Themes on geology, energy, mineral resources, etc.
- 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)

Mine status:

Operating continuously:
E1.1; F1.1; G1,2
Commercial projects. On production

Operating intermittently:
E1.1; F1.1; G1,2
Commercial projects. On production

Closed:
E2; F2.2; G1,2,3
Potentially Commercial Project
E3.3; F2.3; G1,2,3
Non-Commercial Project

Abandoned:
E3.3; F2.3; G1,2,3
Non-Commercial Project
E3.3; F4; G1,2,3
Additional quantities in place
We have few examples showing usefulness of UNFC

We can see advantages:

- UNFC can be applied at regional, national and EU level
- It allows to classify primary and secondary raw materials
- UNFC/UNMRS is crucial for resource management and land use planning

We can see a reason to move to the next level

- Guidance at EU level
18-22 November 2019 in Brussels, Belgium
eurawmaterialsweek.eu

- 7th annual High Level Conference of EIP on raw materials “
- Critical Raw Materials and EU-US-JP Trilateral meeting
- The EU Raw Materials Knowledge Base including UNFC for Resources Management in Europe
- Innovation and skills
- Responsible sourcing and supply of raw materials
- Forests for the future
Thank you!

**European Battery Alliance**
https://ec.europa.eu/growth/industry/policy/european-battery-alliance_en

**Critical raw materials for the EU:**

**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:**