EU Policies and Programs Supporting the Development of the European Mining and Metals Industry

Joint Study Groups' Seminar
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Structure of presentation

1. Raw Materials Initiative
   • State-of-play
     Focus on:
     • Critical raw materials
     • Second Pillar of the RMI

2. European Innovation Partnership on Raw Materials
   Focus on:
     • Strategic Implementation Plan

3. Raw Materials in Horizon 2020

4. Knowledge & Innovation Community for Raw Materials

5. Raw Materials Diplomacy

6. The Review of EU policies
1. Raw Materials Initiative

**Background, aim and structure**

**EU “Raw Materials Initiative”**

- **Aim:** securing sustainable supplies of raw materials
- **Launched in 2008, consolidated in 2011**
- **Non-energy, non-agricultural raw materials**
- **Connecting EU external and internal policies**
- **Integrated strategy (3 pillars)**
- **Introduced list of Critical Raw Materials (CRM) in 2010**

**State of play - overview**

Annual report on the implementation of the Raw Materials Initiative – 24.06.2013

**Fair and sustainable supply of raw materials from global markets (1st Pillar)**

- EU trade strategy for raw materials
- Raw materials diplomacy (4 events in 2014)
- Assistance to developing countries

**Fostering sustainable supply within the EU (2nd Pillar)**

- Exchange of good practice between EU Member States
- Enhancing EU knowledge base
- Promoting research and skills

**Boosting resource efficiency and promoting recycling (3rd Pillar)**

- Better implementation and smarter EU waste legislation promoting resource-efficiency & recycling
- Strengthen the enforcement of the EU waste Shipment Regulation
Critical raw materials list as a policy tool:
- Monitor issues of critical raw materials to identify priority actions
- Policy actions not limited to critical raw materials exclusively

Relative concept of criticality:
«Critical» when risks of supply shortage and their impacts on the economy are higher compared with most of the other raw materials

Assessment components:
- Economic importance
- Supply risk (and environmental country risk)

Features:
- Pragmatic approach
- Indicators-based
- Dynamic concept
- Primary and secondary

Update list of critical raw materials at least every 3 years:
- Expanded scope
- Fine-tuning methodology
- Expert group

Outcome 2010
### By-production metal 2011

<table>
<thead>
<tr>
<th>Principal Metal</th>
<th>Mine Production (tonnes)</th>
<th>By-product Metal</th>
<th>Production (tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td>4,500,000</td>
<td>Bismuth</td>
<td>8,500</td>
</tr>
<tr>
<td>Zinc</td>
<td>12,400,000</td>
<td>Germanium*</td>
<td>118</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Indium*</td>
<td>640</td>
</tr>
<tr>
<td>Nickel</td>
<td>1,800,000</td>
<td>Cobalt</td>
<td>98,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Platinum Group</td>
<td>472</td>
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<tr>
<td></td>
<td></td>
<td>Metals</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scandium*</td>
<td>10&quot;</td>
</tr>
<tr>
<td>Copper</td>
<td>16,100,000</td>
<td>Cobalt</td>
<td>98,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Molybdenum</td>
<td>250,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rhenium</td>
<td>46&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Selenium*</td>
<td>2,600&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tellurium*</td>
<td>450&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rare Earth Elements</td>
<td>130,000</td>
</tr>
</tbody>
</table>

*Main Source: USGS (2012), Mineral Commodity Summaries 2012; * Refinery Production; # Industry Estimates

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### By-products and EU Critical Raw Materials

<table>
<thead>
<tr>
<th>Covered in both studies</th>
<th>Other by-products</th>
<th>Other EU critical RM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germanium</td>
<td>Bismuth</td>
<td>Antimony</td>
</tr>
<tr>
<td>Indium</td>
<td>Molybdenum</td>
<td>Beryllium</td>
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<tr>
<td>Cobalt</td>
<td>Scandium</td>
<td>Fluorospar</td>
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<tr>
<td>PGMs</td>
<td>Rhenium</td>
<td>Gallium</td>
</tr>
<tr>
<td>Rare Earth Elements (partly)</td>
<td>Selenium</td>
<td>Graphite</td>
</tr>
<tr>
<td></td>
<td>Tellurium</td>
<td>Magnesium</td>
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<td></td>
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<td>Niobium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tantalum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tungsten</td>
</tr>
</tbody>
</table>
2013 review of critical raw materials list

Update list of critical raw materials at least every 3 years
- Expanded scope
- Fine-tuning methodology
- Expert group

Expand scope to other materials
- Selected additional materials (e.g. hafnium, selenium, tin – JRC study on critical metals in energy technologies)
- Blast furnace coking coal,
- Gold
- Potash, phosphate rock
- Progress regarding statistics
  - General data & information on minerals and metals (input geological surveys)
  - Statistics on value-added manufacturing chain
  - Analytical progress in the area of land-use planning

Technical work started in September 2012, the reviewed list will be published as an annex of the RMI Annual Activity Report which is foreseen for first half of 2014.

II. Pillar – Supply from the EU

MINERAL POLICY FRAMEWORK
- Exchange of best practises – recommendations based on:
  - Report on National Mineral Policy Indicators
  - Evaluation and Exchange of Good Practices for the Sustainable Supply of Raw Materials within the EU

EU KNOWLEDGE BASE
- On-going studies to support it:
  - Research on the Competitiveness of the EU Mineral Raw Material Sector (non-energy extractive industries and recycling industries)
  - Study on Data Inventory for a Raw Material System Analysis
II. Pillar – Supply from the EU

1. Raw Materials Initiative

**National Mineral Policy Indicators Report**
- Based on questionnaires to MSs, and Flanders region /BE specifics
- The main areas covered are:
  - Legal framework
  - Information framework
  - Land use planning
  - Authorisation and permitting
- Early stages; but it emerges that it is possible to recognize the present state and identify trends
- This is a significant step towards
  - Monitoring MSs performance
  - Informing and inspiring policy making

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**Exchange of Good Practice Project**

The themes are close to the ones of the indicators report: Policy and Legislative Framework; Information and the Knowledge Base; Governance; Land Use Planning; and Permits and Authorisation.

Good practice identification:
- 25 cases were recognized as good practice in 5 areas
- Based on an assessment of performance
- Opportunity should be taken to up-date and extend them to cover other issues and themes
II. Pillar – Supply from the EU

EU KNOWLEDGE BASE

Study: "The Competitiveness of the EU Mineral Raw Material Sector":

- Aims to provide a complete, up-to-date and concise overview of the competitiveness of the European mineral raw materials sector
- Includes both the non-energy extractive industries and recycling industries
- Will consider metals, industrial minerals and construction minerals, and compare with competing countries outside of the EU
- Focuses on a number of key tasks: Review of Policy and Legislation; Economic and Market Data; Research and Innovation; Availability of Material Supply; SWOT and Suggestive Initiatives
- Study will involve industry throughout interviews & workshops

II. Pillar – Supply from the EU

EU KNOWLEDGE BASE

Study "Data Inventory for a Raw Material System Analysis":

- Aims to assist DG ENTR to develop a full Raw Material System Analysis for 22 Raw Materials used in the EU-28 economy
- Indicators will fall in the following groups:
  - Group 1: Indicators relating to current/past material flows and stocks;
  - Group 2: Other relevant current and past indicators relating to policy objectives (such as industry structure);
  - Group 3: Indicators relating to future supply and demand changes.
- This includes their associated flows over the entire life cycle: exploration, extraction, processing, manufacturing, use, and end of life disposal and treatment.
II. Pillar – Supply from the EU

Raw Materials High Level Conference - EU Greek Presidency
Athens, 20 June 2014

Main topics:

✓ Critical Raw Materials (The new list of CRM will be presented)
✓ Conclusions of the ongoing 2nd Pillar studies on National Minerals Policy Indicators, Evaluation and exchange of good practices, and Statistical information on resources and reserves
✓ Maximizing the value of extractive industry for regional development

1. Raw Materials Initiative

European Innovation Partnership on Raw Materials

Overall objective:
Contribute to the 2020 objectives of the EU Industrial Policy (to increase the share of industry in GDP to 20%), the Innovation Union and the Resource Efficiency ‘flagships’

Specific objectives:
Reduce import dependency
Improve supply conditions from European and other sources
Push Europe to the forefront in raw materials sectors
Provide alternatives in supply
Mitigate negative environmental and social impacts
Strategic Implementation Plan

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

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

III. International Cooperation Pillar
- III.1 Technology
- III.2 Global Raw Materials Governance and Dialogues
- III.3 Health, Safety and Environment
- III.4 Skills, Education and Knowledge
- III.5 Investment activities

EIP Scheme

Objectives

- To reduce dependency on imports
- To promote the production and exports
- To improve supply conditions from EU
- To diversify raw materials sourcing
- To improve resource efficiency including recycling
- To find alternative raw materials

To put Europe at the forefront in RM sectors
- To make Europe a leader in the RM capabilities
- To mitigate environmental, social and health impacts

EIP targets

- Up to 10 innovative pilot actions
- Substitutes for 3 applications of CRMs
- Framework conditions for primary RMs
- Framework for enhanced efficiency in material use
- EU Raw Materials Knowledge base
- KIC Raw Materials

Strategic Implementation Plan (adopted on 25 September 2013)

Call for Commitments (closed on 7 February 2014)

Implementation

- Horizon 2020
- Structural Funds
- EU policies
- Stakeholders Community
Call for Commitments

Call for Commitments
launched on 31 October (closed on 31 January 2014)
next calls in 2015, 2017 and 2019

Guidelines - purpose
(1) To explain the basis for recognition of commitments by High-Level Steering Group
(2) To promote quality commitments

Guidelines - content
(1) Introduction
(2) Purpose of the call
(3) Conditions for recognition
(4) Procedure for recognition
(5) Implementation

Horizon 2020
Context and overview

Excellent science
(€ 24 billion)

Industrial leadership
(€ 17 billion)

Societal challenges
(€ 31 billion)

SC5: Climate Action, resource efficiency and raw materials
(€ 3081 billion)

* the numbers are based on European Council conclusions, 8 February 2013 and are subject to the approval of the Multiannual Financial Framework Regulation by the European Parliament and the Council
### Programming - Overall approach

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<td>Work Programme 2 (plus tentative information for 2018)</td>
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<tr>
<td>Work Programme 4</td>
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### How to join?

- **The first H2020 Call for Proposals - 11 Dec 2013**

- **Call for experts for H2020**
  (OJ of the EU, C 342, Volume 56, 22 November 2013)

- **National NCP SC5 support and events**
Objective of Societal Challenge 5: "to achieve a resource – and water – efficient and climate change resilient economy and society, the protection and sustainable management of natural resources and ecosystems, and a sustainable supply and use of raw materials, in order to meet the needs of a growing global population within the sustainable limits of the planet’s natural resources and eco-systems."

1. Fighting and adapting to climate change
2. Sustainably managing natural resources and ecosystems
3. Sustainable supply of non-energy and non-agricultural raw materials
4. Transition towards a green economy through eco-innovation
5. Global environmental observation and information systems
6. Cultural heritage

++ Focus Area "Waste" during 2014-2016

SC5 call 2014-2015
Raw materials

"Ensuring The Sustainable Supply Of Non-energy And Non-agricultural Raw Materials"
- New solutions for sustainable production of raw materials
- Innovative and sustainable solutions leading to substitution of raw materials
- Coordinating and supporting raw materials research and innovation
- Cross-challenge topics

"Waste: A resource to recycle, reuse and recover raw materials"
- Recycling of raw materials from products and buildings
- Towards near-zero waste at European and global level
5.3 Raw materials

- **New solutions for sustainable production of raw materials**
  - Mining of small deposits and alternative mining (2014)
  - Flexible processing technologies (2014)
  - New exploration technologies and geomodels (2015)
  - Deep mining on continent and in sea-bed (2015)
  - New metallurgical systems (2015)

- **Innovative and sustainable solutions leading to substitution of raw materials**
  - Materials for electronic devices (2014)
  - Materials under extreme conditions (2015)

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5.3 Raw materials

- **Coordinating and supporting raw materials research and innovation**
  - Mineral deposits of public importance (2014)
  - Strategic international dialogues and co-operation on raw materials with technologically advanced countries (2014)
  - Raw materials intelligence capacity (2015)
  - Innovation friendly minerals policy framework (2015)
  - Raw materials research and innovation coordination (2015)
  - Strategic international dialogues and cooperation with raw materials producing countries and industry (2015)

- **Cross-challenge topics**
  - Boosting the potential of small businesses for eco-innovation and a sustainable supply of raw materials (SME Instrument)
Coordinating and supporting raw materials R&I 3. Raw Materials in Horizon 2020

Strategic international dialogues and cooperation on raw materials with technologically advanced countries [2014]

Challenge/Scope

- promoting the cooperation with technologically advanced countries to facilitate discussion in multilateral fora (such as OECD, UNEP, G20, G8) and strategic international dialogues and cooperation with technologically advanced countries
- Mapping and addressing the cooperation opportunities in terms of the synergies in research and innovation, joint educational and skills programmes, raw materials trade aspects, and exchange of best practices in exploration, extraction, processing and recycling of raw materials essential for industry, and in management and substitution of Critical Raw Materials.

Coordinating and supporting raw materials R&I 3. Raw Materials in Horizon 2020

Strategic international dialogues and cooperation on raw materials with technologically advanced countries [2015]

Challenge/Scope

- to promote the activity of European companies active in the mining and raw materials sectors in non-EU countries,
- inward mining investment to Europe and
- co-operation with raw materials producing countries, including exchange of best practices in raw materials policy and social licence, resulting in strong and sustainable relationships with these countries.
- In line with the Union’s strategy the cooperation with international partners is encouraged, in particular with Australia, US, Canada, European Neighbourhood Policy countries, African Union and Latin America.
KIC for Raw Materials

European Institute of Innovation and Technology (EIT): body of the European Union based in Budapest

**KIC:** is the independent but operational part of the EIT

KIC partners: key actors from the three sides of the knowledge triangle

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KIC for Raw Materials

Two new KICs to be launched on the 14th of February:

1. Raw materials: sustainable exploration, extraction, processing, recycling and substitution
2. Innovation for healthy living and active ageing

As set in the EIT Regulation, the **EIT funding** on average may not exceed **25%** of a KIC’s overall funding.
The Raw Materials Diplomacy is based on:

- dialogues where EU and partner countries collaborate with higher mutual benefit

- dialogues established by Letters of Intent

5 events foreseen to take place in 2013 and 2014

Letters of intent signed by VP Tajani with: Argentina, Uruguay, Colombia, Mexico, Chile, Peru, Greenland, Morocco, Tunisia, Myanmar.


Part of the Raw Materials Work Plan agreed by Transatlantic Economic Council

Purpose:
- Feed in the review of critical raw materials list
- Exchange of information
- Compare analysis and data
- Discuss progress on joint data inventory
EU - Latin American dialogue on Raw Materials, Lima, Peru, 10-11 March 2014

Including: Peru, Colombia, Brazil, Chile, Uruguay, Mexico, Argentina

It was discussed:
- How to enhance cooperation at regional and bilateral levels
- Exchange of best practices

Workshop: best practices on mining policies

Timing: June 2014
Will include technologies
Participants: EU, Canada, Australia, Chile, South Africa, US, (now extended to Peru, Mexico and Brazil)

Exchange of best practices in areas of joint expertise:
- mining technologies and techniques
- permitting process
- land-use planning
- treatment of mining waste + other environmentally friendly solutions in mining
**EU - Greenland workshop**

Timing: 3rd week of September 2014
Follow up on dialogue established on EU-Greenland cooperation on Raw Materials

3 meetings foreseen:
- A meeting between Government of Greenland and Commission
- A workshop also open to mining companies, EU end-users and suppliers, and Greenlandic providers of mining support services.
- A meeting with Gov. of Greenland and Bureau of Minerals and Petroleum responsible for licencing of mining operations

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**EU - African Union workshop**

Timing: late October 2014
Part of Joint Africa-EU strategy foreseeing actions on Raw Materials
Focus on infrastructure development

Areas:
- governance
- Investment and infrastructure
- Geological knowledge and skills
The Review and the CCAs

The Commission is committed to both consider ex ante the effects and costs of its policies (impact assessment) and to review them ex post.

The ex-post evaluation ("fitness check") usually targets a single legislative act (a directive or regulation) and checks if it reaches its goals, and at what price (efficiency and effectiveness).

However, some sectors are impacted by many legislative acts. In this case, the burden imposed by each is not significant; their sum is. Appropriate policy-making needs a deeper and more comprehensive level of analysis.

The sector-specific Cumulative Costs Assessments (CCAs) of DG ENTR make this possible.

The CCAs

Cumulative Costs Assessments should be seen within the wider effort by the EU Commission to assess the regulatory burden.

They differ from full regulatory "fitness checks" and evaluations as they focus narrowly on the costs generated for the industry by the relevant legislation, i.e. not considering benefits on it or society.

DG ENTR has focused on the CCAs of EEIs, basing them on solid data collected at plant level:

CCA for Steel published (2013)*
CCA for Aluminium published (2013)*
CCA for Chemicals to be published (2014)
CCA for Forest-Based Industries to be published (2014)
CCA for Ceramic and Glass to be published (2015)

* See http://ec.europa.eu/enterprise/sectors/metals-minerals/documents/index_en.htm
Conclusions:

Regulatory costs are substantial: 131€/tonne against a market price of 1300€.

They mostly happen via electricity prices, directly (Transmission and RES, renewable energy support) or indirectly (ETS).

Many plants in Subsample 2, those buying electricity on the market, are at risk of closure (11 out of 26 open in 2003 closed already).

Cumulative Cost Assessment for the aluminium sector

<table>
<thead>
<tr>
<th>Policy area</th>
<th>Cost typology</th>
<th>Sample</th>
<th>Subsample 1</th>
<th>Subsample 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETS (pass-on rate = 0.8)</td>
<td>Indirect</td>
<td>29.99</td>
<td>0.00</td>
<td>90.90</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>29.99</td>
<td>0.00</td>
<td>90.90</td>
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<tr>
<td>Energy</td>
<td>Transmission</td>
<td>26.24</td>
<td>0.00</td>
<td>48.67</td>
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<tr>
<td></td>
<td>RES</td>
<td>27.29</td>
<td>5.20</td>
<td>43.09</td>
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<td></td>
<td>Sub-Total</td>
<td>53.53</td>
<td>5.20</td>
<td>94.76</td>
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<tr>
<td>Environment (average)</td>
<td>Investment</td>
<td>3.70</td>
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<td>Direct Financial</td>
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<td></td>
<td>Operating</td>
<td>11.10</td>
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<td></td>
<td>Administrative</td>
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<td>Product</td>
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<tr>
<td></td>
<td>Sub-Total</td>
<td>1.34</td>
<td>1.34</td>
<td>1.34</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>139.73</td>
<td>23.32</td>
<td>203.47</td>
</tr>
</tbody>
</table>

Cumulative regulatory costs for EU primary aluminium production (€/tonne)

High regulatory costs, combined with structurally high energy prices, clearly put EU primary producers at a disadvantage.

However, it is possible to be competitive in the EU: producers in Subsample 1 (Those enjoying long-term energy contracts or self-generating it) are among the most competitive in the world.
Conclusions:
Regulatory costs are substantially higher for EAF.
In normal times they are not the main drivers of the cost competitive gap.
In times of crisis a reduction of regulatory costs can certainly alleviate the pain (e.g. in 2009 the impact of cumulative regulatory costs was 120.7% of EBITDA).
Given that competition is international, any intervention is only sensible at the EU level.
Cumulative Cost Assessment for the steel sector

6. The Review of EU policies

Figure 22 Typical cumulative regulatory cost vs. steel EBITDA (2002-2011)

EBITDA

Regulatory costs

2002 2003 2004 2005 2006 2007 2008 2009 2010 2011

Thank you