European Commission

European Commission's research activities in support to EU raw materials policies

EU-Latin America Dialogue on Raw Materials

25-26 April 2016
Santiago de Chile

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DG Joint Research Centre
European Commission

Joint Research Centre
the European Commission's
in-house science service

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The EC Joint Research Centre
2016 responses to global challenges

- **Economy, finance and markets**
- **Energy and transport**
- **Education, skills and employment**
- **Food, nutrition and health**
- **Resource (incl. raw materials) scarcity, climate change and sustainability**
- **People, governance in a multicultural and networked society**
- **Civil security**
- **Migration and territorial development**
- **Data & digital transformations**
- **Innovation systems and processes**

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Raw Materials – EU Key Policy Background

2008: EU Raw Materials Initiative (RMI)

2010-1: Europe 2020 Flagship Initiatives

Sustainable growth - for a resource efficient, greener and more competitive economy;

Resource Efficient Europe

An industrial policy for the globalisation era

2012: European Innovation Partnership on Raw Materials (EIP-RM)

2013: Strategic Implementation Plan (SIP) of the EIP-RM

2014: For a European Industrial Renaissance COM

2015: Circular Economy (CE) COM

Raw Materials in the EU - Lessons learned

The **demand for raw materials** is dependent on new technologies and innovations; supply is dependent – in addition - on volatility of prices

The **concentration** of initial supply is high, whereas consumption is less concentrated, but elsewhere than the supply

The **EU is a "top" consumer with a "low" own-endowment**, hence the need for having a proper policy to secure resources

The "good" policy for raw materials presumes **permanent and consistent monitoring and measures for efficient use/ consumption + sustainable supply**

DG JRC 2016-2017 Activities on Raw Materials
(Circular Economy Action Plan)

From waste to resources: boosting the market for secondary raw materials and water re-use

- **Raw Materials Information System**
- Contribution to "minimum EU quality requirements to encourage water reuse"
  "Assessment of interactions between waste, products and chemicals legislations"
- **Secondary materials from fertilisers**
- …

Waste Management

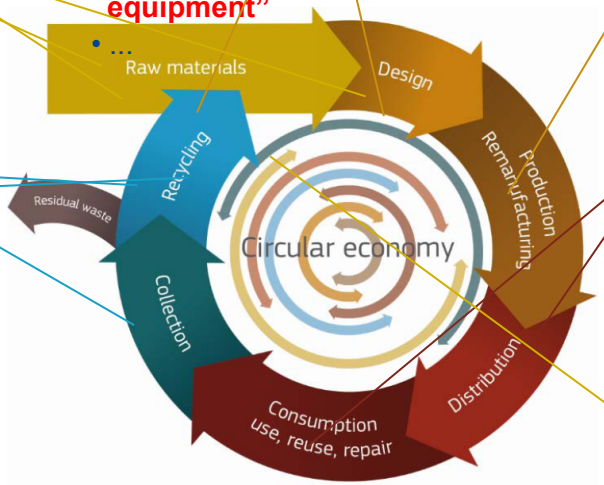
- LCA to verify "waste hierarchy" (e.g. Food waste)
- How to prevent food losses
- Environmentally conscious "targets"
- Align waste and product policies (requirements, "extended producer responsbity")
- "end-of-waste" criteria

...A life-cycle perspective

- Life Cycle Assessment activities
- Life Cycle Data (EPLCA Platform)
- "SDGs"

Production / Product design 5.3 CRMs

- **REAPRo JRC Method: "Recyclability / dismantlability in Ecodesign Directive"**
- **"Targets CRMs in electr(on)ic equipment"**
- …



Monitoring Progress towards a circular economy

- **"Raw materials scoreboard", as starting point and part of RMIS**
- Resource Efficiency Scoreboard

Production / processes (also related to 5.4 Construction and demolition; 6 Innovation)

- **"BREFs", including Extractive Waste**
- "ETV"
- **EMAS revisions to include EoL criiteria**
- Development of eco-innovative construction materials

Consumption

- "Product Environmental Footprint"
- **"Criteria in EU Ecolabel, GPP"**
- **"Durability / repairability" criteria**
- **"Lifetime" of products / components (e.g. Batteries for e-vehicles)**
- …

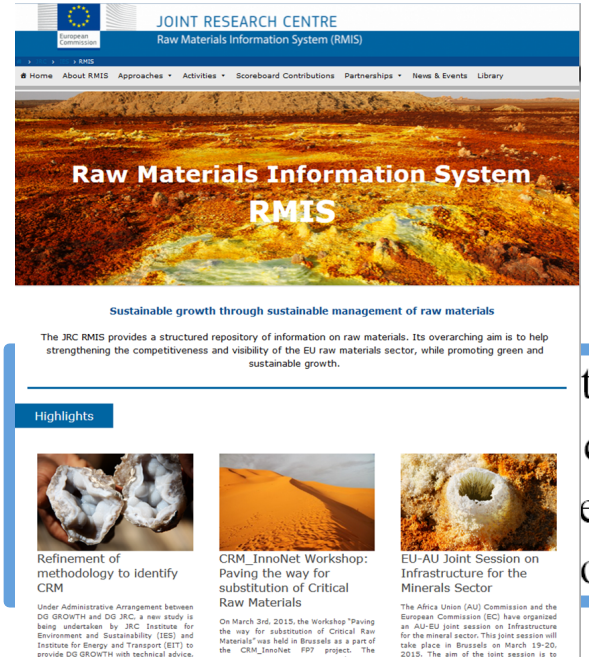
Priority areas

- 5.1. Plastics
- 5.2. Food Waste
- **5.3 Critical Raw Materials**
  - **Assessment methodology for list of CRMs**
- 5.4. Construction and demolition
- 5.5. Biomass and bio-products

Coloured block a chapter of the C.E. Package

- In blue/**red**: a JRC activity ("cited in C.E. Package")

JRC Raw Materials Information System



- **Scope of RMIS**:
  Non-energy non-food RM from primary+secondary sources, entire value-chain
  Focus on EU but considering that supply chains are global

ther barriers to the smooth circulation of waste in the EU. To
data on secondary raw materials the Commission will further
ed Raw Materials Information System and support EU-wide
ows. It will also support the improvement of data reporting on
indicators, etc.

- **Towards RMIS 2.0**:
  RMIS 2.0 as key EC's response to developing **EU Knowledge Base (EU-KB)** on RM
  "One-stop" platform with links to info/knowledge/data on RM
  Enhanced user-friendliness through, e.g., user-defined "dynamic fiches"
  Increased stakeholder interaction and greater focus on key stakeholder needs
  Enhanced linkages to key data needs for EU policies
  Monitoring: EU Raw Materials Scoreboard

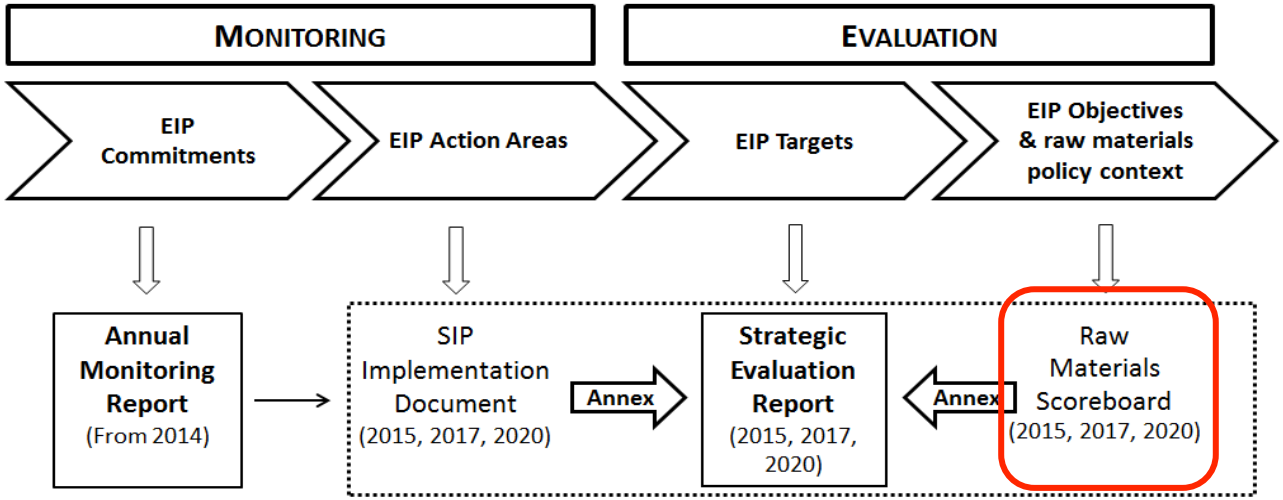
Towards RMIS 2.0: **The way forward**

RMIS Roadmap (by 12/2016): define joint vision and concept, detailed scope, development options, milestones, partners, knowledge needs & providers, quality assurrance frame.

RMIS Networking & Cooperation (throughout 2016-2017): JRC RMIS team will expand & strengthen interactions with competent networks, initiatives, activities (e.g. EuroGeoSurveys, EIT-RM (RawMatTERS and SSIC), ERECON, USGS, Latin America…) – towards more efficient sharing of knowledge with European and International stakeholders.

The EU Raw Materials Scoreboard

- Included in the RMIS 2.0 -



Purpose of the Scoreboard:	**30 Indicators (Thematic Clusters):**
• Provides quantitative data on the issues referred to in the EIP's objectives • Increase the visibility about the challenges related to raw materials • Relevant indicators to be used to monitor the Circular Economy	• Raw materials in the global context • Circular economy and recycling • Competitiveness and innovation • Social and environmental sustainability • Framework conditions for mining

Support to Critical Raw Materials Assessments

- Revision of methodology for identification of critical raw materials for the EU, and support to the development of the updated 2017 CRM list (new JRC methodology)

- Updating of CRM assessment for energy sector

- Support in trilateral US-EU-Japan diplomacy dialogue

- Interaction with key CRM projects and networks

- Facilitate data/knowledge (material flows in supply chains, secondary, uses, governance, economic importance, ….)

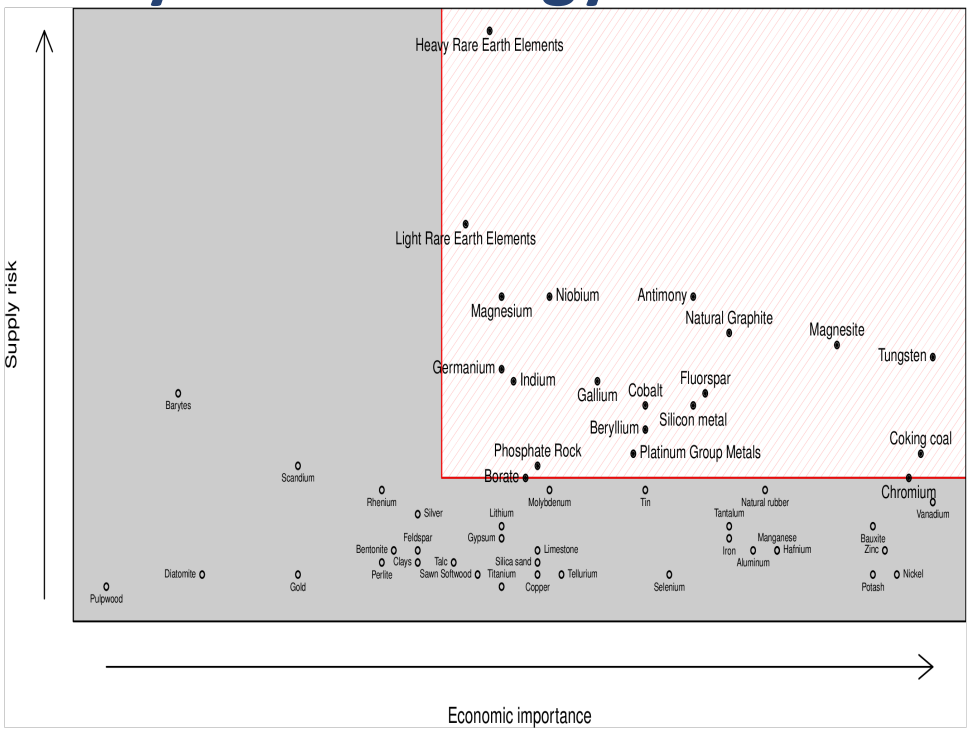
Revision of Criticality Methodology

Economic importance

- Importance of a raw material per economic sector & importance of the sector in the EU economy

Supply risk

- Political and economic stability
- Level of production concentration
- Potential for substitution
- Recycling rate



- Critical Raw Materials (**CRMs**) combine a **high economic importance** to the EU with a **high supply risk**
- The EC has created in **2010** a list of **14 CRMs**
- The list was updated in **2014** to **20 CRMs**
- List to be updated in 2017 - **new methodology proposed by DG JRC**

Critical Raw Materials for Energy Sector

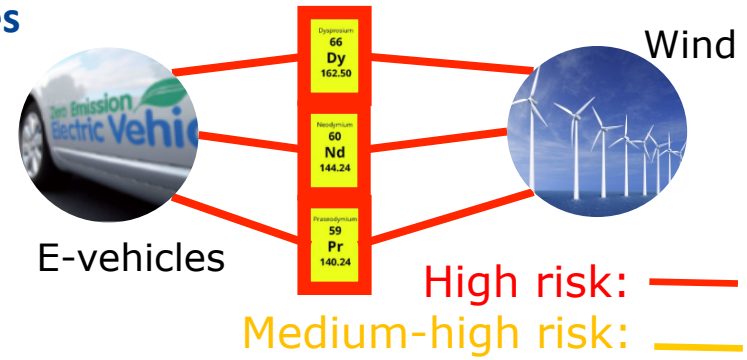
(and other low-carbon technologies)

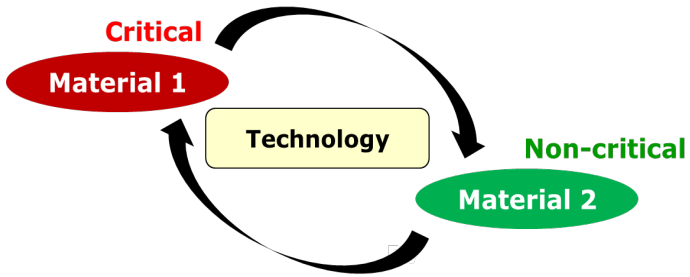
Assessing CRITICALITY of RMs for low carbon technologies with emphasis on energy (JRC methodology).

Looking into different scenarios for supply of materials critical for the low-carbon energy technologies deployment in the EU.

Evaluation of substitution (replacement) possibilities for some critical materials, particularly for materials 100% imported to EU.

Supporting Energy Materials Information System (SETIS)and its data needs: refining, processing, … (Dy, Nd, Pr, Eu, Tb, Y, In, Ga, Te, Ge, Hf, Graphite, Pt)

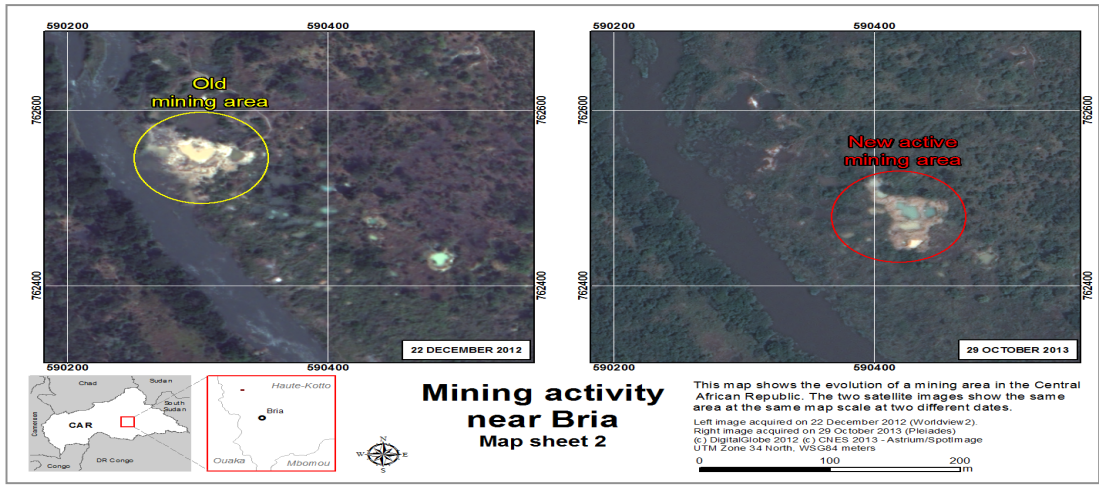




Conflict Minerals

- Support to International Kimberley Process -

Supporting the International Pillar of the RM-EIP; Global Raw Materials Governance and Dialogue



The Kimberley Process on flows of rough diamonds – JRC + USGS joint methodology and tools for monitoring

Support to Crisis Mapping of KP - Statistics, Remote Sensing & Information Technologies for Monitoring Trade & Production of Diamonds

Analysis of situations and emerging crisis using web-based information systems and mapping products (Cameroun, Cote d'Ivoire, Rep. Centrafricaine)

Development of quality criteria for recovered materials used in fertilising products (2015-2018)

What?

The Fertilisers Regulation (EC 2003/2003), currently under revision, will open the single market to fertilising materials from biological and waste materials, as well as from by-products.

Strict quality criteria are required to guarantee clear fertilising benefits and protection of the environment and human health.

Struvite
(Source: phosphorusplatform.eu)

Why?

The initiative is **part of the Circular Economy package**. It will:

- help reduce dependence on primary raw materials, especially CRM phosphorus;
- create the conditions for investment in the EU-located production of sustainable fertilisers.

Biochar
(Source: biochar.info)

Which fertilisers?

- **Struvite** (N, P, Mg based fertiliser from wastewater)
- **Biochar** (P and other nutrients from vegetal and animal waste)
- **Ash-based products** (P and other nutrients from incinerated waste such as sewage sludge)

Interactions with other Actors: Knowledge Share

EU decision makers, customer DGs

International fora (UNEP, USGS, trilateral, etc.)

Member States' competent entities

Industry associations, investors

Academic sector

Interested public

Synthesis Remarks

- Critical mass of support for RMs via several projects included in JRC's 2016-2017 Work-Programme

- JRC in-house support of key, high profile RM policy dossiers, both for primary and secondary RMs

- Coordinated JRC support for Commission's needs for an EU RM Knowledge Base via the RMIS

- Close, coordinated interactions/involvement with stakeholders essential, including international partners (the raw material market is global)

Thank you for your attention!

European Commission – Joint Research Centre

Further links and contact:

JRC ScienceHub
https://ec.europa.eu/jrc/en/research-topic/green-and-resource-efficient-europe

European Platform for Life Cycle Assessments
http://eplca.jrc.ec.europa.eu

RMIS
http://rmis.jrc.ec.europa.eu/

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