



EU raw materials policy, data needs and actions to implement the knowledge base

ProSUM Information Network

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Lie Heymans

European Commission

Directorate-General for Internal Market, Industry, Entrepreneurship and SME's
Unit C2 « Resource Efficiency and Raw Materials »

EU raw materials policy, data needs and actions to implement the knowledge base



1. Raw materials policy and actions to implement the knowledge base

2. Data needs for raw materials policy

The EU is taking action to ensure the security of supply of raw materials

- The **Raw Materials Initiative** is the EU raw materials policy strategy
- The **European Innovation Partnership on Raw Materials** brings together the entire raw materials community
- **Horizon 2020**: EUR 600 million secured for raw materials (2014-2020)



Raw Materials Initiative

1. Fair and sustainable supply of raw materials from global markets

- EU trade strategy for raw materials
- Raw materials diplomacy
- Assistance to developing countries

2. Fostering sustainable supply within the EU

- Exchange of good practice between EU Member States

3. Boosting resource efficiency and promoting recycling

- Better implementation and smarter EU waste legislation promoting resource-efficiency & recycling
- Strengthen the enforcement of the EU Waste Shipment Regulation

Cross-cutting issues

- Sector-specific criticality analyses
- European Rare Earth Competency Network (ERECON)
- Markets and stockpiling
- **Enhancing EU knowledge base**
- Promoting research and skills

Raw Materials Portfolio 2014-2016

Horizon 2020
Societal Challenge 5

	Acronym	Title
CSA	INTRAW	International cooperation on Raw materials
	MINATURA 2020	Developing a concept for a European minerals deposit framework
	STRADE	Strategic Dialogue on Sustainable Raw Materials for Europe
	MIN-GUIDE	Minerals Policy Guidance for Europe
	MICA	Mineral Intelligence Capacity Analysis
	VERAM	Vision and Roadmap for European Raw Materials
	FORAM	Towards a World Forum on Raw Materials (FORAM)
	ERA-MIN 2	Implement a European-wide coordination of research and innovation programs on raw materials to strengthen the industry competitiveness and the shift to a circular economy
	MinFuture	Global material flows and demand-supply forecasting for mineral strategies
Mining	VAMOS	Viable and Alternative Mine Operating System
	Real-Time-Mining	Real-time optimization of extraction and the logistic process in highly complex geological and selective mining settings
	BioMOre	New Mining Concept for Extracting Metals from Deep Ore Deposits using Biotechnology
	Blue Nodules	Breakthrough Solutions for the Sustainable Harvesting and Processing of Deep Sea Polymetallic Nodules
	SOLSA	Sonic Drilling coupled with Automated Mineralogy and chemistry On-Line-On-Mine-Real-Time
	HiTech AlkCarb	New geomodels to explore deeper for High-Technology critical raw materials in Alkaline rocks and Carbonatites
	UNEXMIN	Autonomous Underwater Explorer for Flooded Mines
	ROBUST	Robotic subsea exploration technologies
	SLIM	Sustainable Low Impact Mining solution for exploitation of small mineral deposits based on advanced rock blasting and environmental technologies
Processing	IMPACT	Integrated Modular Plant and Containerised Tools for Selective, Low-impact Mining of Small High-grade Deposits
	FAME	Flexible and Mobile Economic Processing Technologies
	OptimOre	Increasing yield on Tungsten and Tantalum ore production by means of advanced and flexible control on crushing, milling and separation process
	INTMET	Integrated innovative metallurgical system to benefit efficiently polymetallic, complex and low grade ores and concentrates
	METGROW PLUS	Metal Recovery from Low Grade Ores and Wastes Plus
	SCALE	New solutions for sustainable production of raw materials
	CHROMIC	efficient mineral processing and Hydrometallurgical Recovery of by-product Metals from low-grade metal containing secondary raw materials
Recycling	PLATIRUS	PLATinum group metals Recovery Using Secondary raw materials
	HISER	Holistic Innovative Solutions for an Efficient Recycling and Recovery of Valuable Raw Materials from Complex Construction and Demolition Waste
	CloseWEEE	Integrated solutions for pre-processing electronic equipment, closing the loop of post-consumer high-grade plastics, and advanced recovery of critical raw materials antimony and graphite
	ProSUM	Prospecting Secondary raw materials in the Urban mine and Mining waste
	MSP-REFRAM	Multi-Stakeholder Platform for a Secure Supply of Refractory Metals in Europe
	IMPACTPaperRec	Boosting the implementation of participatory strategies on separate paper collection for efficient recycling
Substitution	SMART GROUND	SMART data collection and inteGRation platform to enhance availability and accessibility of data and inFormation in the EU territory on SecoNDary Raw Materials
	INREP	Towards Indium free TCOs
	INFINITY	Indium-Free Transparent Conductive Oxides for Glass and Plastic Substrates
	Flintstone2020	Next generation of superhard non-CRM materials and solutions in tooling
	EQUINOX	A novel process for manufacturing complex shaped Fe-Al intermetallic parts resistant to extreme environments
	SCREEN	Solutions for CRITICAL Raw materials - a European Expert Network

European Innovation Partnership on Raw Materials: targets

- Up to 10 innovative pilot actions e.g. demonstration pilot plants for exploration, mining, processing, collecting and recycling
- Substitutes for at least 3 applications of critical raw materials and scarce raw materials
- Framework conditions for primary raw materials
- Framework conditions for waste management
- **Raw materials knowledge base**
- Raw materials network of Research, Education and Training Centres
- Pro-active international cooperation strategy of EU at bilateral and multilateral level

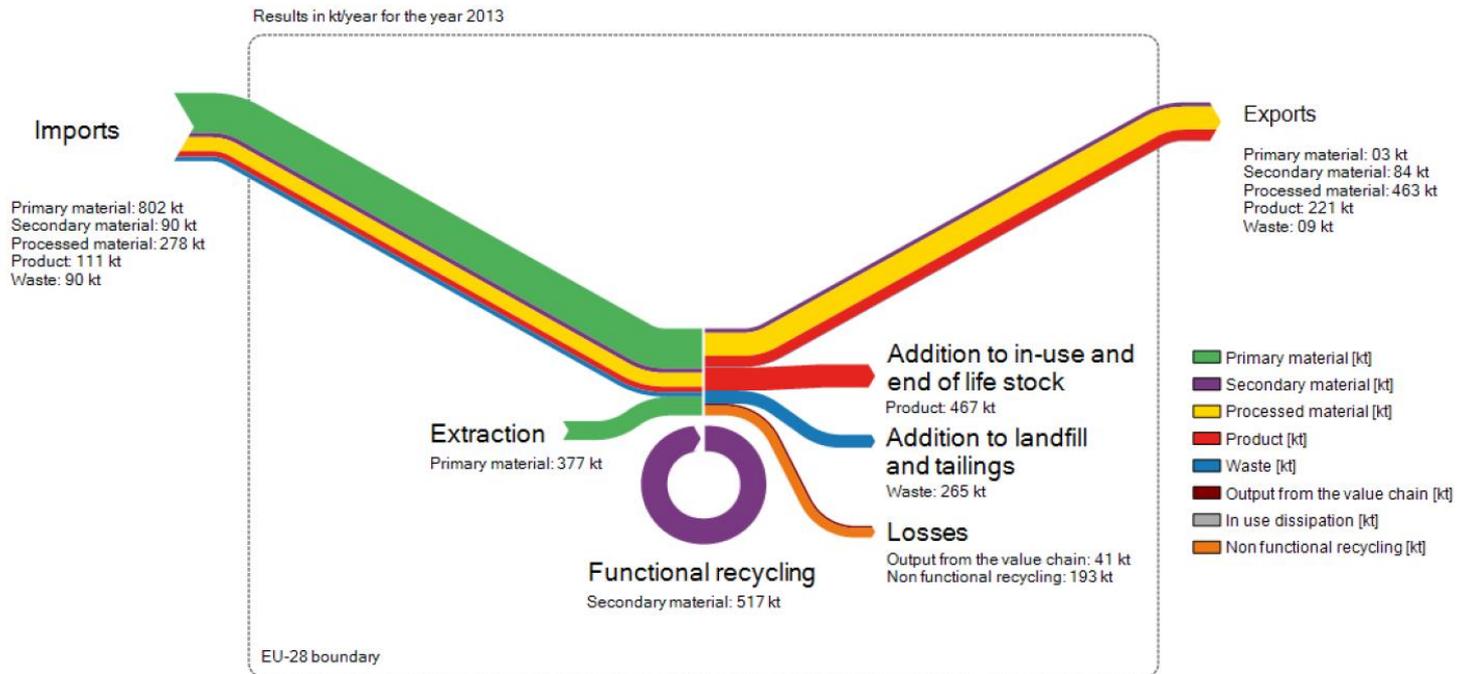


Action area n° II.8: EU Raw Materials Knowledge Base

- 1) **Appropriate conditions to provide a service that will include information infrastructure and intelligence**
 - **MICA - Mineral Intelligence Capacity Analysis** (H2020, 2015-2018)
 - **Raw Materials Information System** (JRC)
- 2) **Organize relevant data input from studies and projects, e.g.:**
 - **Minerals4EU** (FP7, 2013-2015)
 - **ProSUM** (H2020, 2015-2017)
 - **SmartGround – Smart data collection and integration to enhance availability and accessibility of data and information in the EU on secondary raw materials** (H2020, 2015-2018)
 - **Materials Systems Analysis (MSA)** (DG GROWTH study, 2014-2015)
- 3) **Raw materials intelligence**
 - **MinFuture - Global material flows and demand-supply forecasting for mineral strategies** (H2020, 2016-2018)

Materials System Analysis

- Sankey diagrams for 28 raw materials
- New analysis for a number of bulk materials foreseen by 2018 (JRC)



EU Material System Analysis for Chromium

Action area n° II.8: EU Raw Materials Knowledge Base

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

- H2020 2017 call (SC5-15-c): Optimising **collection of raw materials data** in Member States

The EU Raw Materials Knowledge Base

Research projects and studies providing input, e.g.:

**Material
System
Analysis**



Raw Material Information System (RMIS)



Launch of RMIS 2.0: Q4 of 2017

rmis.jrc.ec.europa.eu

Contacts:

simone.manfredi@jrc.ec.europa.eu

tamas.hamor@jrc.ec.europa.eu

david.pennington@jrc.ec.europa.eu

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Data needs for raw materials policy

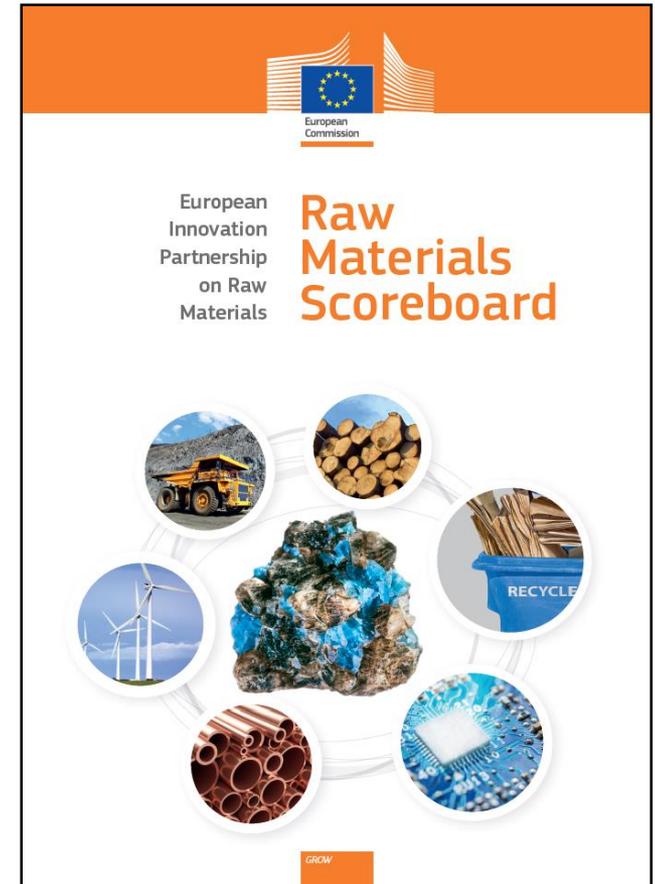
- **Raw Materials Initiative**
 - Critical raw materials (methodology and list)
 - Competitiveness studies
 - Country information
 - Commodity information
- **Raw Materials Scoreboard**
- **Circular Economy**

What could be ProSUM's potential contributions to the EU knowledge base?

- Information and data on flows of secondary raw materials in the EU (waste flows, products, components, materials and elements)
- Harmonisation in the EU of data structure on secondary raw materials
- Enhanced data availability for urban mining:
 - Mining waste
 - WEEE
 - EoL vehicles
 - Waste batteries
- Feed into the EU Raw Materials Information System
- Ensure coherence with SMARTGROUND and other related projects and initiatives
- Provide maps and services to various end-users (self-sustained)

The Raw Materials Scoreboard

- **Purpose**
 - Follow up on the **objectives** of the European Innovation Partnership on Raw Materials
 - Keep an overview on the **competitiveness** of the EU's raw materials sector
 - Provide **relevant and reliable information** for policymaking processes
- **Modalities**
 - 24 generally accepted indicators
 - Logical **narrative**
 - Accessible to **non-experts**
- **Developed with the support of the JRC**



Raw materials are indispensable for the development and large-scale deployment of low-carbon energy technologies

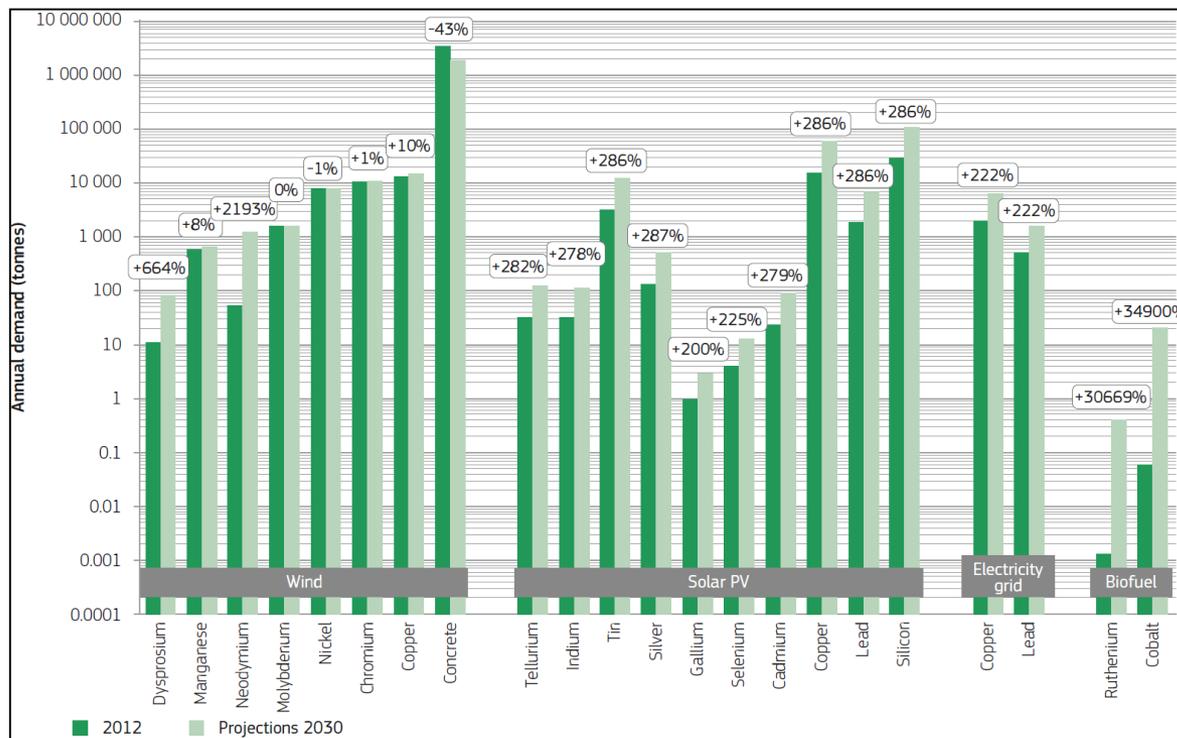


Figure 5: Current (2012) and projected (2030) annual demand of raw materials used for selected low-carbon energy technologies

3. Share of imports

The EU economy requires a wide variety of raw materials and not all of them can be produced domestically

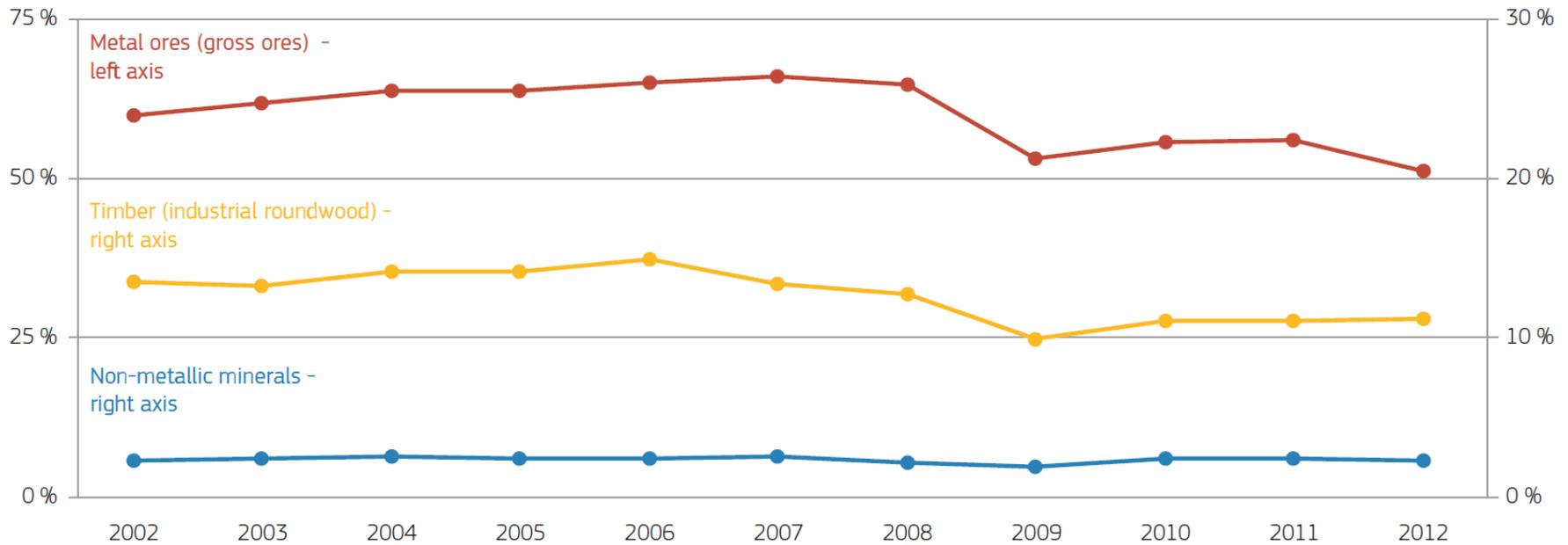


Figure 11: Share of imports in EU-28 compared to Direct Materials Input (2002-2013)

4. Geographical concentration and governance

The supply of critical and some non-critical raw materials to the EU is highly concentrated in a few non-EU countries that often show low levels of governance

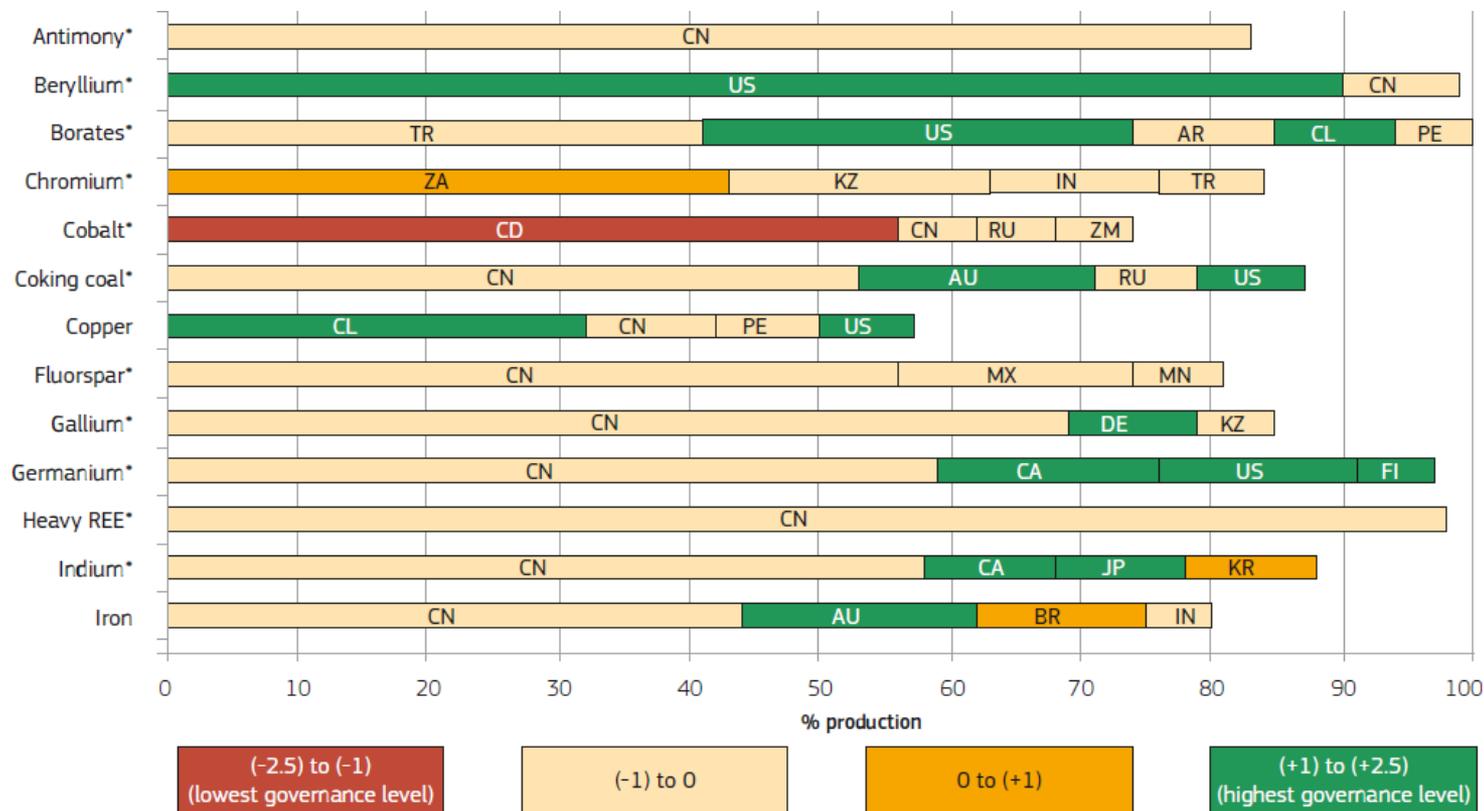


Figure 13: Geographical concentration of raw material production and producer countries' governance levels

11. Mining activity in the EU

Even though the EU has the potential to increase the current production or start new production units, domestic extraction of metals is largely insufficient to meet the EU's raw materials demand

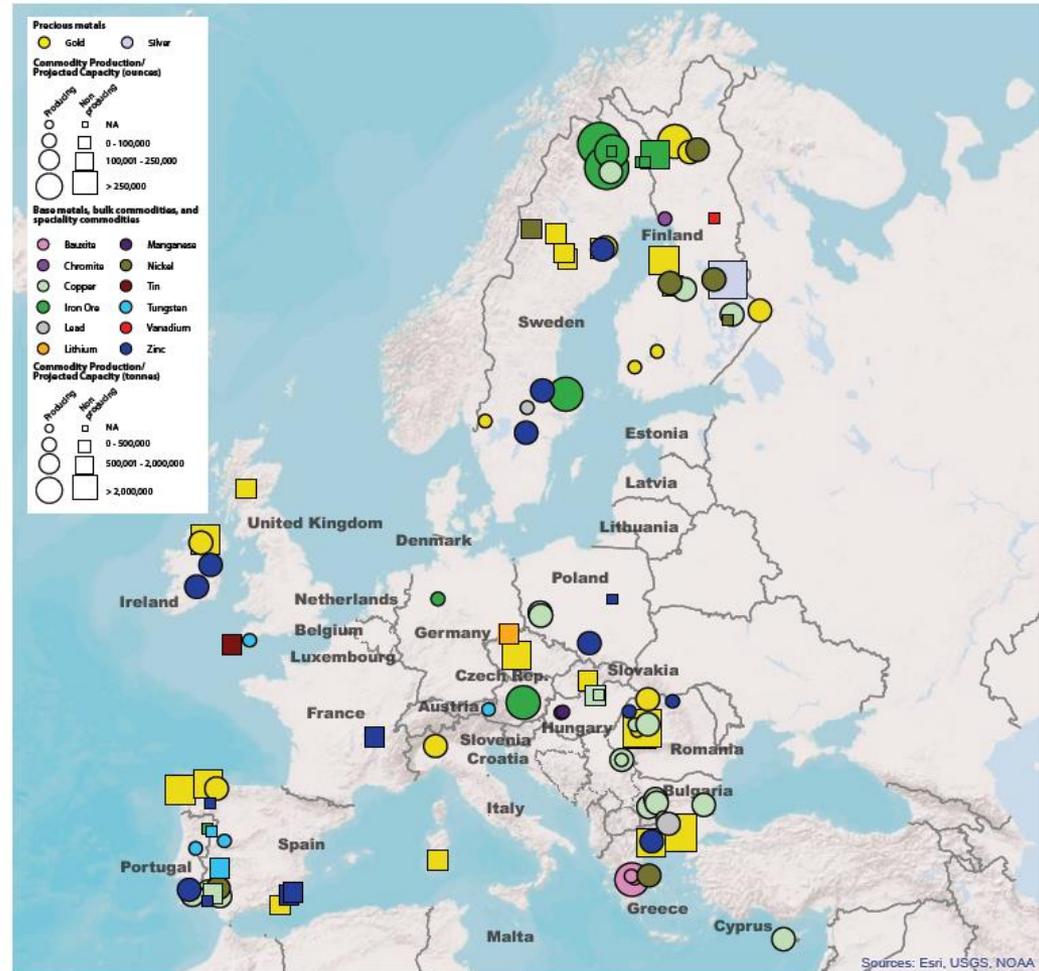


Figure 25: Metal mine production in the EU (2014)

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15. Material flows in the circular economy

The circular use of raw materials in the economy is relatively low, mostly due to technical limitations to recycling and because demand for raw materials to build infrastructure is higher than what can be met through recycling

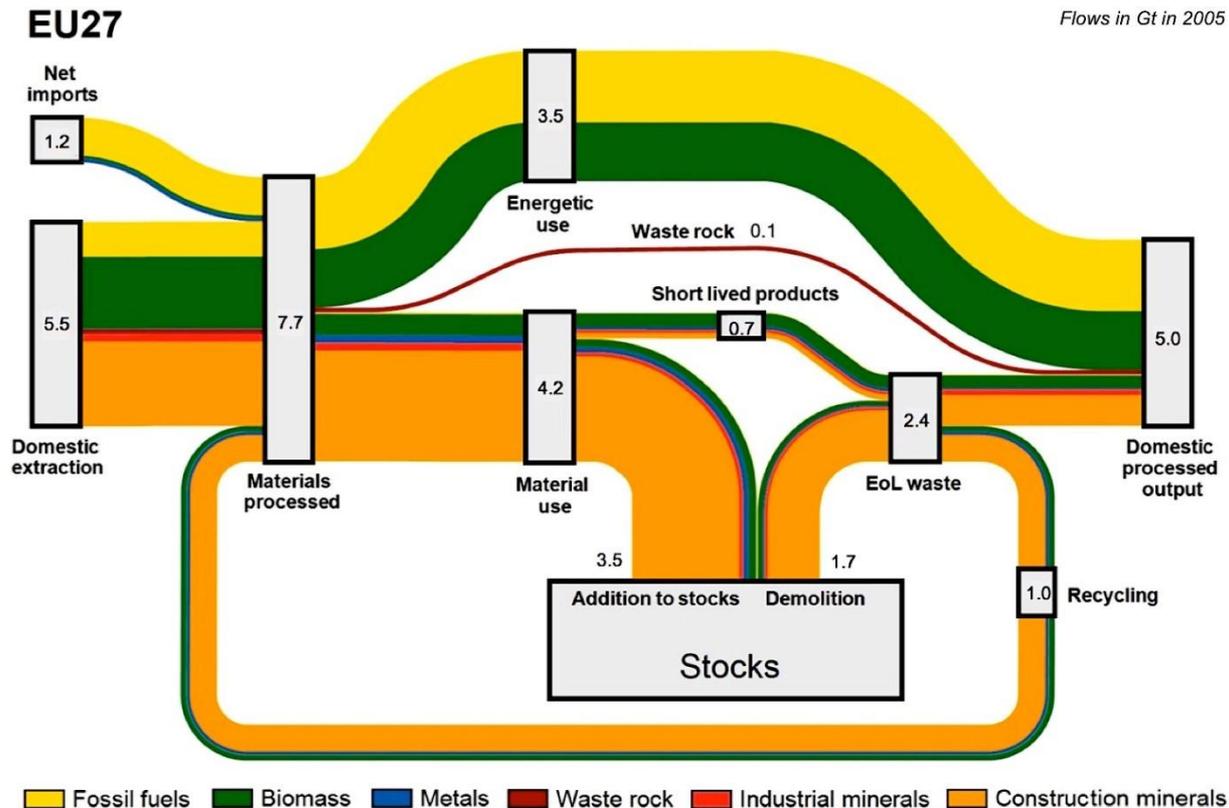


Figure 32: Material flows in the EU-27 economy (2005)

16. Recycling's contribution to meeting materials demand

For most materials, recycling's contribution to meeting materials demand is relatively low, because demand is higher than what can be met by recycling or because high-quality recycling is not technically or economically feasible



Figure 34: End-of-life recycling input rates (EOL-RIR) for a selection of raw materials

19. Air emissions

Emissions of greenhouse gases and other air pollutant emissions from the production of raw materials in the EU decreased by 10-40 % between 1995 and 2009

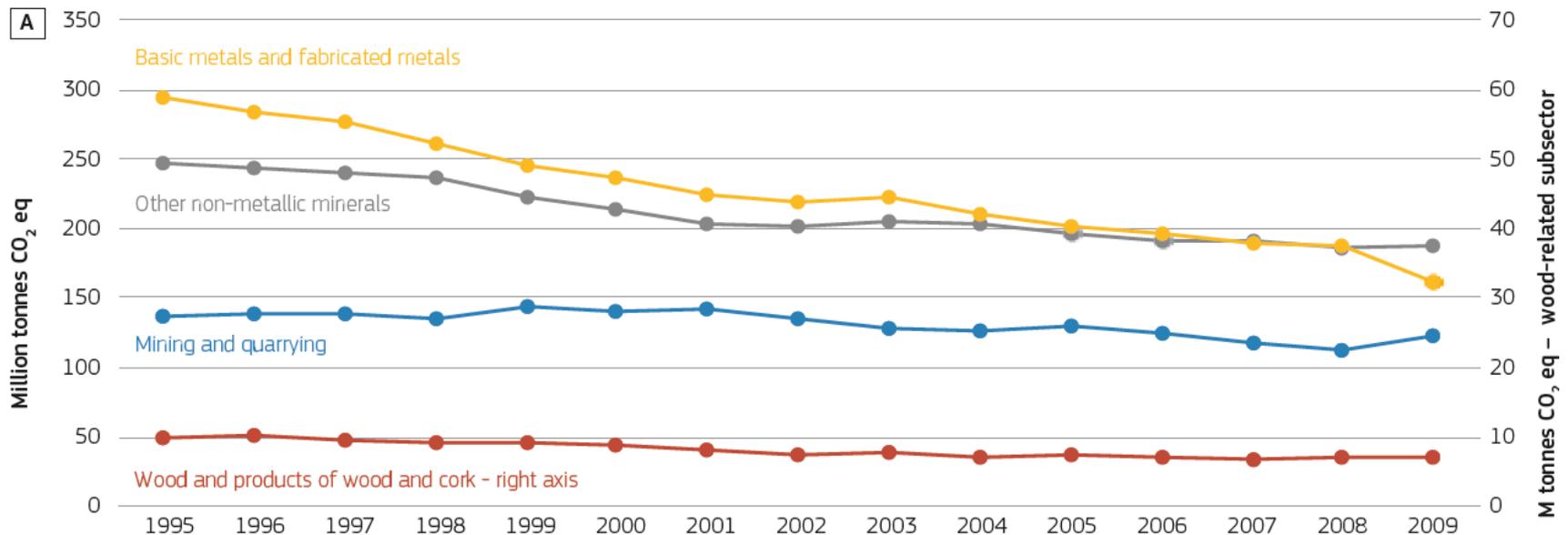


Figure 39A: Emissions of greenhouse gas emissions (EU-27, 1995-2009)

Points of possible interest

- **28 November – 2 December 2016:** Raw Materials Week
- **December 2016:** Renewal of the membership of the European Innovation Partnership on Raw Materials
- **2017:** Publication of the reviewed list of Critical Raw Materials + report on Critical Raw Materials in the Circular Economy



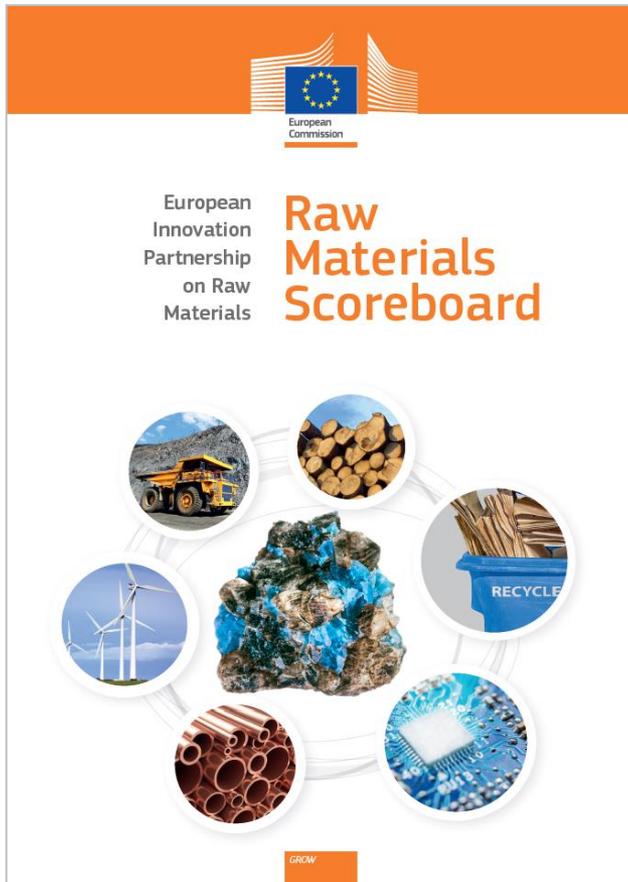
Thank you for your attention!

Find the Scoreboard at:

<http://bookshop.europa.eu/en/raw-materials-scoreboard-pbET0215541/>

Contact:

lie.heyman@ec.europa.eu



Interesting links

EU Raw Materials policy

http://ec.europa.eu/growth/sectors/raw-materials/index_en.htm

European Innovation Partnership on Raw Materials

<https://ec.europa.eu/growth/tools-databases/eip-raw-materials/en/meetings-listing>

Horizon 2020 - Raw materials

<http://ec.europa.eu/programmes/horizon2020/en/area/raw-materials>

JRC Raw Material Information System (RMIS 1.0)

<http://rmis.jrc.ec.europa.eu/>

