

JOINT RESEARCH CENTRE (JRC)
RAW MATERIALS INFORMATION SYSTEM (RMIS)
RMIS Newsletter n.2 (April 2020)

This newsletter is a bi-annual summary of the main developments related to the European Commission's Raw Materials Information System (RMIS). It provides key highlights on raw materials knowledge support to policy.

4th International RMIS Workshop: announcement and themes



The current development state of the RMIS in various thematic contexts will be presented, with a view of discussing with key stakeholders the most important knowledge needs and how the RMIS could facilitate their fulfilment. Ultimately, these discussions will help JRC formulate clear and inclusive development priorities for the RMIS. The 2020 RMIS workshop will include two main thematic sessions focusing on:

- the “sustainable supply of primary and secondary raw materials, with a focus on climate change”;
- selected “strategic raw materials value chains for Europe”.

As an highlight of this forthcoming 4th edition, the RMIS workshop will include a specific session – co-organised with the Executive Agency for Medium and Small-sized Enterprises (EASME) – aiming to present how outputs from European projects (such as Horizon 2020s) can factually help meeting identified knowledge gaps and can be further disseminated through the RMIS.

Building on the success of the previous editions, the 2020 International RMIS workshop will be held again at the JRC-Ispira, Italy. The measures against the Coronavirus (Covid-19) currently enforced in Europe – affecting citizens mobility and impeding all types of gatherings & events – do not allow to continue the organisation of the 2020 RMIS Workshop for the time being. As the situation improves, the official announcement will be made through the RMIS news & event section.

1. Recent policy with key focus on raw materials

The [European Green Deal](#)¹ – the new growth strategy for Europe – published on December 11th 2019 by the new von der Leyen Commission, aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are zero net emissions of greenhouse gases by 2050 and where economic growth is decoupled from resource use.

Raw materials are implicitly embedded into several key pillars of the Green Deal, such as clean energy, smart mobility, climate ambition, fostering innovation. Raw materials are more explicitly dealt with under the pillar “Mobilising industry for a clean and circular economy”, which highlights that only 12% of materials use comes from recycling. This pillar calls for developing a sustainable product policy, actions on resource-intensive industry sectors, further waste reduction, establishing a robust and integrated single market for secondary raw materials and by-products.

The document acknowledges that access to resources is key for Europe’s ambition to deliver the Green Deal’s objectives. Ensuring a sustainable supply of raw materials, in particular of critical raw materials necessary for clean technologies, digital, space and

defence applications, by diversifying supply from both primary and secondary sources, is therefore one of the pre-requisites to make this transition happen. The Green Deal will thus have an impact on future knowledge needs and on the further development of RMIS.

As a prompt follow up, the new [Industrial Strategy](#)² was published on March 10th, 2020. Within its frame, the Commission will e.g.:

- adopt a ‘White Paper’ by mid-2020 to address distortive effects caused by foreign subsidies;
- introduce comprehensive measures to modernise and decarbonise energy-intensive industries, support sustainable and smart mobility industries;
- enhance Europe's industrial and strategic autonomy by securing the supply of critical raw materials through an Action Plan on Critical Raw Materials;
- support Alliances on Low-Carbon Industries and on Industrial Clouds and Platforms and raw materials.

Following the 2015 Circular Economy Action Plan ([2015 CEAP](#)³), and the [2018 CE Package](#)⁴, on March 11th 2020 the EC adopted the

²https://ec.europa.eu/commission/presscorner/detail/en/ip_20_416

³https://eur-lex.europa.eu/resource.html?uri=cellar:8a8ef5e8-99a0-11e5-b3b7-01aa75ed71a1.0012.02/DOC_1&format=PDF

⁴https://ec.europa.eu/commission/publications/documents-strategy-plastics-circular-economy_da

¹<https://ec.europa.eu/info/node/123797>

new, [2020 CEAP⁵](#), ‘for a cleaner and more competitive Europe’. The 2020 CEAP is one of the main building blocks of the European Green Deal. With measures along the entire life cycle of products, the new CEAP aims to make our economy fit for a green future, strengthen our competitiveness while protecting the environment and give new rights to consumers. Special focus is given to key product value chains and to creating a well-functioning market for secondary raw materials in Europe.

2. Raw materials in battery value chains

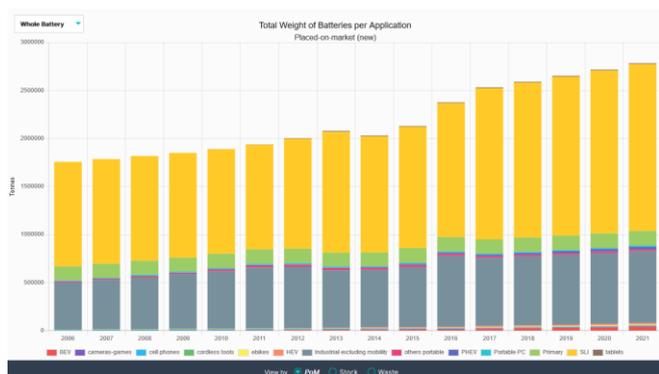
A new application has recently been developed in the RMIS with focus on [raw materials in the battery value chains⁶](#) and their relevance for the sustainable development of battery supply chains for Europe.

The first five sections of this application cover the main trends and some key parameters in supply, demand, stocks & flows, and reuse. The last section, in the form of an interactive [data viewer⁷](#), contains data from research on batteries (all chemistries) and the associated materials that are entering, exiting or in use in the EU territory. These pages focus on the current and future trends related to the introduction of lithium-ion batteries for e-mobility.

The data available in the data browser are aggregated at the EU level and where present, the 10 most relevant materials are highlighted (antimony, cadmium, cobalt, copper, graphite, lithium, manganese, nickel, lead, zinc). All data are represented as totals in tonnes for the EU, for the years 2006 to 2021.⁸

The data viewer provides visualization of quantitative information grouped as:

- weight of batteries per application;
- relevant materials;
- weight of batteries per chemistry ;
- materials per EU Battery Directive;
- materials per sector;
- materials in e-mobility/ traction batteries.



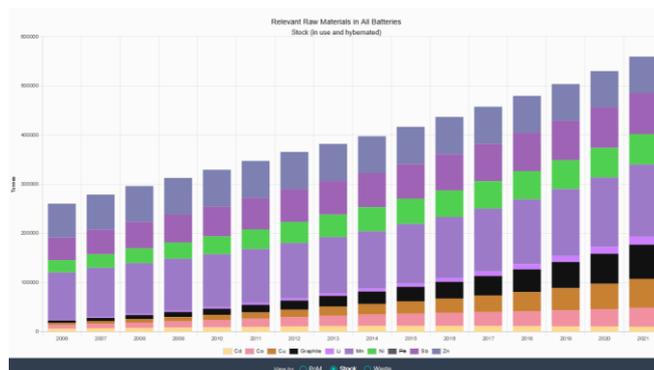
Picture – Example 1: total weight of batteries (tonnes) per application, as placed on the market (2008-2021) (Source: RMIS, Industrial value chains and material flows)

⁵ https://eur-lex.europa.eu/resource.html?uri=cellar:9903b325-6388-11ea-b735-01aa75ed71a1.0017.02/DOC_2&format=PDF

⁶ <https://rmis.jrc.ec.europa.eu/apps/bvc/#/>

⁷ <https://rmis.jrc.ec.europa.eu/apps/bvc/#/p/dataviewer>

⁸ The data for 2018 until 2021 are forecasted from existing observed trends.

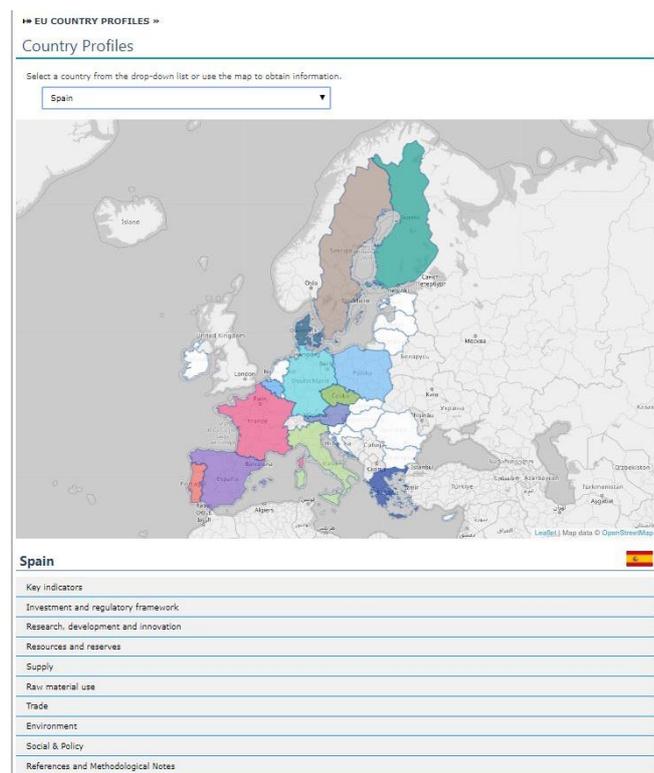


Picture – Example 3: weight (tonnes) of relevant raw materials in batteries (2008-2021) (Source: RMIS, Industrial value chains and material flows)

3. Development of EU country profiles: overview

The ‘[EU Country Profiles⁹](#)’ module in the RMIS provides country-specific knowledge for non-food, non-energy raw materials based on established data sources (e.g., Eurostat, UNIDO, UN Statistics) and statistical methodologies. Profiles for 13 EU countries are currently accessible. For the remaining EU countries, work is ongoing.

These profiles collect and synthesize essential raw materials related knowledge. Each profile presents selected country-level data and indicators, structured into nine thematic sections, as presented hereafter.



Picture – Thematic sections of the EU Country Profile (Source: RMIS, European Country Profiles)

‘Key Indicators’ and ‘Research, development and innovation’ sections focus on the performance of selected industry sectors, in terms of e.g. value added, employment, labour productivity and magnitude of R&I investments. These sections also include several relevant economy-wide indicators.

⁹ <https://rmis.jrc.ec.europa.eu/?page=country-profiles#/>

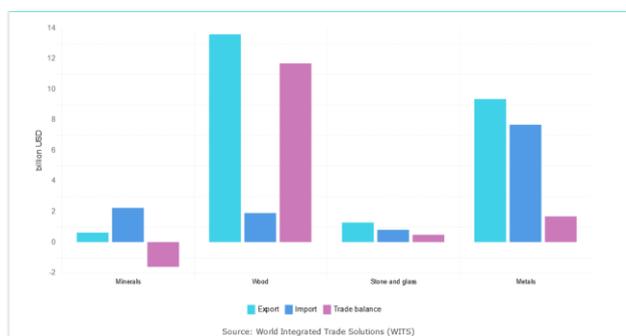
Both country-level and sectorial indicators of investments, as well as the specificities of countries' mining legislative frameworks, are presented in the section 'Investment and regulatory framework'.

The 'Supply' section presents data on domestic material extraction and production of the main mining and manufacturing sectors, while the section 'Use' focuses on consumption.

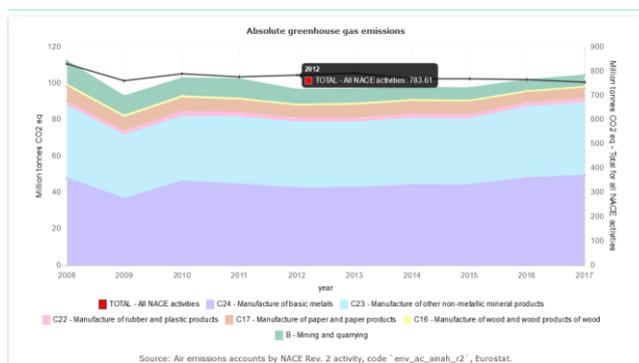
The 'Trade' section allows users to access knowledge relative to the countries' most exported/imported non-food, non-energy raw materials (incl. intermediates) and trade by relevant product cluster.

The 'Environment' section includes visualizations of selected indicators of environmental performance of relevant industry sectors, such as emissions of greenhouse gases by the raw materials sector (Figure 3).

Several social and policy indicators are displayed in the section 'Social & Policy', such as governance indicators, natural resource governance index and country risk.



Picture - Example of an indicator of trade: Finland's exports, imports and trade balance by relevant product cluster in 2017 (Source: RMIS, EU Country Profiles)



Picture – Environmental indicator: Greenhouse gas emissions and emissions intensity by major raw materials value chain sectors (Source: RMIS, EU Country Profiles)

4. Responsible sourcing of battery raw materials: evidence from the field

Batteries are a strategic sector for the EU due to their role in the transition to low-carbon economies, a primary objective of the von der Leyen Commission¹⁰. Demand has been growing in recent years and is expected to increase even more in the future¹¹. Hence, demand will increase for the materials used in the different battery technologies and competing applications. Among these materials, cobalt, which is extracted predominantly in the Democratic Republic of the Congo (DRC), has been raising serious concern. For example, NGOs, media, and international organizations have

been reporting cases of human right abuses and child labour at mining sites in the “Copperbelt” region in the DRC. Hence, increasing demand requires also improved knowledge on the social dimension of raw material supply chains and action to ensure related social impacts are positive.

Initiatives for ensuring that cobalt is sourced in a responsible way have been launched in the last months. However, little is known about their capability of improving social conditions on the ground. A JRC study¹² gathered information on the risk associated to battery raw materials using country-based indicators and mining company disclosures. It also reviewed the existing initiatives and conducted a field investigation on two pilot projects in the DRC. A primary data collection was performed in the DRC Artisanal and Small scale Mining (ASM) sector in copper and cobalt mining sites in the Haut-Katanga and Lualaba provinces.



Picture – Work in one of the mining sites under investigation, where a responsible sourcing pilot project has been implemented. Photo credit: @Nicolas A. Eslava, Afai Consulting BV

The study presents the local conditions of the two pilot projects compared to the current situation of ASM in the sector at large. It assessed if the pilots improved local conditions in the risk categories under investigation and it highlighted the challenges and opportunities of implementing responsible sourcing initiatives on artisanal mining. More information are available at the RMIS' [sustainability tile](#)¹³, as well as in the newly developed [application on battery raw materials](#)¹⁴.

5. A one-stop-shop to Member States legislation in the RMIS

Many elements of the management of minerals are out of the scope of the EU Treaty and the Community legislation, and fall under the sovereign jurisdiction of the individual Member States. Nevertheless, an increasing number of EU policies (e.g. competition, raw materials, circular economy, trade, defence, environment, social) cover related aspects, therefore structured information is needed on the national legislation, policies and regulatory solutions that supports Community and MS decision makers, potential investors

¹⁰ COM(2019) 640 final The European Green Deal

¹¹ JRC, 2020. Critical materials for strategic technologies and sectors in the EU – A foresight study. Authors: Bobba S., Carrara S., Huisman J., Mathieux F., Pavel C. Upcoming publication

¹² Mancini, L., Eslava, N., Traverso, M., Mathieux, F. (2020) Responsible and sustainable sourcing of batteries raw materials (forthcoming).

¹³ <https://rmis.jrc.ec.europa.eu/?page=conflict-minerals-and-conflict-diamonds-bcae15>

¹⁴ <https://rmis.jrc.ec.europa.eu/apps/bvc/#/>

and the public who are interested in a country's law on minerals. Equally, having an overarching repository of national legislation facilitates broader international awareness, cross-comparisons and improvements.

» POLICY & LEGISLATION »

Member States Legislation



Picture – The new MS legislation section in the RMIS

Towards this end, under the „Policy & Legislation” tile, the RMIS provides in-depth [Member State profiles](#)¹⁵, developed in co-operation with Member State representatives and relevant EU projects. These profiles include info on e.g. „minerals permitting” (from the MINLEX project), „minerals policy” (from the MINGUIDE project), non-sworn English translations of the most relevant national laws and policy documents, as well as a list of references to the original national sources. As a result, ca. 130-150 documents are made directly accessible, and many more referenced on-line.

6. RMIS news & development outlook

- The measures against the Coronavirus (Covid-19) currently enforced in Europe – affecting citizens mobility and impeding all types of gatherings/events – do not allow to continue the organisation of the 2020 RMIS Workshop for the time being. As the situation improves, the official announcement will be made through the [RMIS news & event section](#).
- Revision of existing [“raw materials’ profiles’](#) and inclusion of new materials.
- Development of additional [‘EU country profiles’](#).
- Inclusion of a brand-new tile focused on Africa and linked to the forthcoming EU-Africa Platform developed by the JRC.
- Update of the [“supply chain viewer”](#) application with data and information coming from the 2020 assessment of critical raw materials.
- Materials for [dual-use applications](#) in the defense and civil sectors, including knowledge related to supply chains for fuel cells, drones, robotics, and 3D printing (additive manufacturing).

This is the newsletter of the Raw Materials Information System (RMIS) of the European Commission. It is hosted by the Land Resources Unit of the Sustainable Resources Directorate (JRC-D) of the Joint Research Centre (JRC) in Ispra, Italy. This newsletter is circulated to a broad selection of scientists and stakeholders. Please click [here](#) should you wish to be removed from the newsletter mailing list. The JRC manages e-mail addresses as personal data.

Feedback: ec-rmis@ec.europa.eu. Follow the JRC and our activities on Twitter through [@EU_ScienceHub](#); [@EU_H2020](#).

For more information, check out the [News page in the RMIS](#).

¹⁵ <https://rmis.jrc.ec.europa.eu/?page=member-states-legislation-08b84e>

EASME corner

The Raw Materials sector of EASME – prototypes & pilot demonstrations

Through our projects, the Raw Materials sector Executive Agency for Small and Medium-sized Enterprises (EASME) ensures the implementation of the [Raw Materials Initiative](#), the [Strategic Implementation Plan of the European Innovation Partnership \(EIP\)](#) and supports the development of the Raw Materials Information System (RMIS).

Also through our projects, we contribute to the Sustainable Development Goals (SDGs), in particular to the [SDG 12 'Ensure sustainable consumption and production patterns'](#).

The figure below shows the distribution of the demonstration sites for selected prototypes and pilots in the Raw Materials projects portfolio, in Europe. Thirty-seven projects have been selected in the portfolio, and over 90 sites are located on the map (some of them correspond to more than one demonstrator).



Distribution of the demonstration sites for the highest potential prototypes and pilots in Europe

The dynamic version of this map is available online through the EASME [Horizon 2020 Environment and Resources data hub](#), with the filters 'Demo site' and 'Raw Materials' applied. The data hub gives information on the projects and beneficiaries funded under Horizon 2020 Societal Challenge 'Climate action, environment, resource efficiency & raw materials'.

A success story

Within the Exploration and Extraction thematic field, [UNEXMIN](#) (Autonomous Underwater Explorer for Flooded Mines) has developed a robotic system to explore and map flooded mines in Europe. UX-1 is a 3D mine mapping device that dives into mines and uses non-invasive methods to gather valuable geological, mineralogical and spatial information. UX-1 is the first of its kind. It is autonomous and can spend much more time underwater than human divers, and at greater depths, in places human divers cannot safely access. A robotic explorer can be of an immense value to the mining industry as well as to emergency services. Pilot testing is performed on four sites across Europe.