



JRC CONFERENCE AND WORKSHOP REPORT

Channelling knowledge from European projects into the Raw Materials Information System (RMIS)

*Summary of the JRC-EASME
joint technical workshop,
3rd December 2020*

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Executive summary

The Technical Workshop *Channelling knowledge from European projects into the Raw Materials Information System (RMIS)* was held virtually on December 3rd, 2020. This event, co-organized by the Joint Research Centre (JRC) and the Executive Agency for Small and Medium-sized Enterprises (EASME), represented an important step forward to the already well-established dialogue between the JRC and the EU-funded projects on raw materials. This complements the information services of the CORDIS website and the EASME hub, providing further exploitation and insight in relation to selected project outputs.

The Raw Material Information System (RMIS) provides the core for raw materials knowledge and analyses in support of EU policies, in particular the *European Green Deal* ⁽¹⁾, the new *Circular Economy Action Plan* ⁽²⁾, and the new *Industrial Strategy for Europe* ⁽³⁾.

Supporting the continuous development of the RMIS – the EC’s knowledge platform on non-food, non-energy raw materials –, the workshop contributed to increase the awareness of EU raw materials project outputs, and how these can support the RMIS’ development needs and priorities. The outcome of this workshop directly feeds into the RMIS Roadmap 2021+ (in preparation), and especially the new concept of the Knowledge Gateway which is planned to serve thematic, research topic wise interests besides the promotion of projects and other entities in the raw materials domain.

This report provides an overview of the workshop, including the agenda, the objectives, minutes of the themes discussed, and the results of a brief post-event survey ⁽⁴⁾.

In particular, the workshop focused on 3 main topics:

- The most relevant knowledge needs on raw material value chains (both primary and secondary).
- How to increase awareness of project outputs and how best these can support the RMIS development priorities.
- How to facilitate technical dialogue (both IT and content-wise) for efficient knowledge transfer.

Each invited project presented a summary of key knowledge outputs and linked them to the RMIS development priorities presented at the beginning of the workshop. This highlighted selected opportunities for integration into the RMIS of projects’ outputs that could effectively support raw materials needs identified by EU policy, e.g.: in relation to critical raw materials, responsible and sustainable sourcing, strategic technologies and value chains, emerging technological options.

As workshop follow-ups, projects were also invited to:

- Fill in the workshop satisfaction survey;
- Fill in the template for inclusion into the RMIS’ *Knowledge Gateway* tile, aiming at increasing visibility and attention over projects’ objectives and knowledge outputs, as well as providing direct links to the projects’ web-pages;
- Send key scientific and technical reports to the RMIS Library accompanied by the filled template with the attributes of the reports;
- Start advancing a more elaborated plan for integration of key knowledge outputs into RMIS (inclusion of specific pages, development of specific applications, etc.).

The workshop concluded that events like this, which allow for technical discussions (also in an IT context) among projects consortia and the RMIS team, are needed and welcomed. Such discussions provide a strong basis for more effective and meaningful knowledge exchange, leading to wider visibility of projects’ work and more effective support to the RMIS development needs. The JRC and EASME are committed to repeat these events annually.

⁽¹⁾ COM(2019) 640

⁽²⁾ COM(2020) 98

⁽³⁾ COM(2020) 102

⁽⁴⁾ All the presentations and the video-recordings of the event are available in a dedicated news of the RMIS’ tile *News & Events*.

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The authors wish to express their gratitude to the speakers from selected EU funded projects on raw materials, as well as to all the participants.

Moreover, we wish to express our sincere appreciation to Director Giovanni De Santi (JRC.D), Acting Director Luisa Prista (GROW.EASME.A), Director Gwenole Cozigou (GROW.C), Director Peter Droell (RTD.F), Director Massimo Gasparon (EIT-RM Prosperity), for their valuable contribution and active participation to the meeting.

We also wish to thank all colleagues in EASME (with a particular mention to Marcin Sadowski, Head of the Raw Materials sector of EASME) and JRC who supported the organisation of the event, both at scientific and technical level.

Abstract

European projects, such as Horizon 2020 projects and EIT-KIC projects, are among the most important knowledge providers to the Raw Materials Information System (RMIS). Through the RMIS, the EC DG JRC supports mapping, structuring and making further sense of this knowledge, so that raw materials knowledge needs identified by EU policy, can be met rapidly and systematically; ensuring coordination, coherence, and quality-assurance as well as verification as far as needed and through additional products that build-on, and combine these projects' outputs. In support of this process, in 2018 the EC made it mandatory for certain Horizon 2020 projects ⁽⁵⁾ to contribute to the further development of the RMIS. Knowledge flows from EU funded projects to the RMIS are expected to become increasingly important in the context of the forthcoming Horizon Europe – the next R&I framework programme.

Held virtually on December 3rd and co-organised by DG JRC and EASME, the 2020 RMIS workshop continues the well-established dialogue between the DG JRC with the EU-funded project consortia in relation to the RMIS. The overarching aim of the workshop was to facilitate a technical dialogue that can support efficient knowledge transfers from EU projects (H2020 + EIT RM) into RMIS, and make sure that project's outputs best contribute to RMIS & EU policy objectives.

The workshop gathered nearly 80 participants, including Directors from JRC, EASME, DG GROW, DG RTD and EIT Raw Materials. It saw the active contribution from about 20 EU funded projects on raw materials.

⁽⁵⁾ Within the call Societal Challenge 5, Raw Materials, 2018-2020

1 Introduction & context

The Raw Materials Information System (RMIS) ⁽⁶⁾ is a commitment in the 2015 *Circular Economy Action Plan* ⁽⁷⁾. The RMIS acts as the European Commission's reference knowledge platform on non-energy, non-agricultural raw materials from primary to secondary sources, along the entire raw materials value chains. The RMIS provides the core for raw materials knowledge and analyses in support of EU policies, in particular the *European Green Deal* ⁽⁸⁾, the new *Circular Economy Action Plan* ⁽⁹⁾, and the new *Industrial Strategy for Europe* ⁽¹⁰⁾. It also facilitates knowledge needs related to the triennial list of *Critical Raw Materials (CRM) for Europe* ⁽¹¹⁾, the upcoming *2020 Critical Raw Materials Action Plan*, and the development of the biennial *EU Raw Materials Scoreboard* ⁽¹²⁾.

The RMIS supports European Commission (EC) policy needs through information provision and management, in particular meeting knowledge needs related to environmental and social sustainability, circularity and security-of-supply. Hence, key related considerations include e.g. member states and EU policy and governance, material stocks and flows (reserves, urban stocks, trade, production, and circularity), supply chain risks and bottlenecks, and resilience.

The RMIS addresses a broad range of thematic areas that are relevant in the analysis of raw materials and their supply/value chains. A special focus is devoted to those value chains identified by the EC as fundamental to achieving the low carbon / digital transition and strategic autonomy of Europe. These include batteries and vehicles, ICT and electronics, the Space and Defence, as well as Energy Intensive industry.

European projects, such as Horizon 2020 projects and EIT-KIC projects, are among the most important knowledge providers to the RMIS. Through the RMIS, the JRC supports mapping, structuring, and making further sense of this knowledge, so that raw materials knowledge needs identified by EU policies can be met rapidly and systematically; ensuring coordination, coherence, and quality-assurance as well as verification as far as needed and through additional products that build-on and combine these projects outputs. In support of this process, in 2018 the European Commission made it mandatory for certain *Horizon 2020* (H2020) projects ⁽¹³⁾ to contribute to the further development of the RMIS. Beyond H2020 projects, the knowledge flows from EU projects to the RMIS are expected to become increasingly important in the context of the forthcoming *Horizon Europe* funding scheme.

For this reason, different EU projects were involved in the event, specifically: 12 projects were participating as speakers presenting their projects in the dedicated session, and 11 projects were participating as expert observers.

The workshop had a high attendance, more than 80 participants between representatives of European projects, experts from different departments of the EU, and high level speakers, namely: Giovanni De Santi (Director JRC.D Sustainable Resources), Luisa Prista (Acting Director GROW.EASME.A), Gwenole Cozigou (Director GROW.C, Sustainable Industry & Mobility), Peter Droell (Director RTD.F, Prosperity), Massimo Gasparon (EIT Raw Materials, Director Innovation).

This report contains information related to the workshop's organizers and objectives (see chapter 2), a summary of the event (see chapter 3), the statistics and results of the post-event survey (see chapter 4) and the wrap ups and conclusions of the event (chapter 5):

Finally, additional information and details are available in the dedicated news of the RMIS' tile *News & Events* ⁽¹⁴⁾.

⁽⁶⁾ <https://rmis.jrc.ec.europa.eu/>

⁽⁷⁾ COM(2015) 614

⁽⁸⁾ COM(2019) 640

⁽⁹⁾ COM(2020) 98

⁽¹⁰⁾ COM(2020) 102

⁽¹¹⁾ COM(2017) 490

⁽¹²⁾ <https://rmis.jrc.ec.europa.eu/?page=scoreboard2018#/>

⁽¹³⁾ Within the call Societal Challenge 5, Raw Materials, 2018-2020

⁽¹⁴⁾ <https://rmis.jrc.ec.europa.eu/?page=rmis-news-c4dc3d>

2 Organizers and objectives of the workshop

The 2020 RMIS workshop is the first workshop co-organized by DG JRC and EASME as the two fundamental entities coordinating the interactions between H2020 projects (EASME) and the RMIS (JRC).

Specifically:

- the Joint Research Centre (JRC) is the European Commission's in-house science and knowledge service. It creates, manages and makes sense of knowledge, delivering the best scientific evidence and innovative tools for the policies that matter to citizens, businesses and governments. The Commission Communication on Data, Information & Knowledge Management ⁽¹⁵⁾ allocates duties to the JRC in science and technology evidence-based policy support on the Community level;
- the Executive Agency for Small and Medium-sized Enterprises (EASME) has the role of managing EU programmes in the field of energy, environment, and maritime areas. The Unit B2 *Horizon 2020 Environment and Resources* in EASME implements the H2020 projects funded under *Societal Challenge 5* of H2020, that is the Work Programme related to **Climate Action, Environment, Resource Efficiency and Raw Materials**. The Unit B2 is composed of four sectors: *Eco-innovation, Climate Action, Natural Resources, and Raw Materials*. The *Raw materials* sector (B2.4) contributes to the implementation of the *Raw Materials Initiative* ⁽¹⁶⁾, the *Strategic Implementation Plan of the European Innovation Partnership* (EIP) ⁽¹⁷⁾ and supporting the development of the *EC Raw Materials Information System* (RMIS). Also, through its projects, EASME contributes to the *Sustainable Development Goals* (SDGs), in particular to the SDG 12 "*Ensure sustainable consumption and production patterns*" ⁽¹⁸⁾.

DG JRC and EASME collaboration is essential for "feeding" the RMIS with relevant and always updated results. The overarching aim of the workshop was to facilitate a technical dialogue that can support a more efficient process of knowledge transfers from EU projects (H2020 + EIT RM kick) into RMIS, as well as to ensure that project's outputs contribute best to RMIS & EU policy objectives.

In particular, during the 2020 RMIS workshop the following main topics were discussed:

- the most relevant knowledge needs on raw material value chains (both primary and secondary);
- how to increase awareness of project outputs and how best these can support the RMIS development priorities;
- how to facilitate technical dialogue (both IT and content-wise) for efficient knowledge transfer.

⁽¹⁵⁾ C(2016) 6626, {SWD(2016) 333 final}

⁽¹⁶⁾ <https://ec.europa.eu/growth/sectors/raw-materials/policy-strategy/>

⁽¹⁷⁾ <https://ec.europa.eu/growth/tools-databases/eip-raw-materials/en/content/strategic-implementation-plan-sip-0>

⁽¹⁸⁾ <https://sdgcompass.org/sdgs/sdg-12/>

3 Summary of the event

3.1 Welcoming and introductory session

Constantin CIUPAGEA, Land Resources Head of Unit (JRC), chaired the first session, named “*Welcoming and introductory session*”. In his briefing he highlighted the importance of the 2020 RMIS workshop, which was co-organized with EASME for the first time, and the importance of maintaining this collaboration in the future.

During his intervention the head of unit also highlighted the 2020 as a cross-road year between previous programmes of the European Commission and the start of new priorities’ implementation, with a new communication dedicated to critical raw materials (CRM) and the launch of the *Raw Materials Alliance*.

Giovanni DE SANTI (Director JRC.D Sustainable Resources) followed emphasizing the main goal of this meeting: exchanging data and information between RMIS and EU funded projects. The speaker underlined the importance of this 1st workshop organized between EASME & JRC and stressed the need of providing clear and robust data, and the sharing of results, analysis and conclusions. The intention of this meeting, between others, is to influence policies, and enhance a coordination for RM and specifically for the CRM. Moreover, the workshop’s discussions should facilitate the inclusion of information on raw materials into the RMIS, leading to the exchange and reinforcement of results.

Afterwards, **Luisa PRISTA** (Acting Director GROW.EASME.A) started her intervention by highlighting that although EASME stands for Executive Agency for Small and Medium-sized Enterprises, it goes beyond the SMEs, by also implementing several other programs on research and innovation and involving a wide range of stakeholders. Projects managed by EASME have a high positive impact in environment, economy, and society as a whole. Furthermore, the unit B2 at EASME is implementing projects on H2020 Cluster No. 5 (“Climate action, resource efficiency and raw materials”). This cluster intends to systematic and innovatively deal with the challenges in order to quickly move towards a sustainable development and circular economy. The Acting Director underlined that EASME manages European programmes for energy, environment, maritime areas, SMEs and entrepreneurship mostly by implementing raw materials’ initiatives, strategic plans for the *European Innovation partnership*, and supporting the RMIS. Moreover, it focuses on projects directed on ensuring sustainable production and sustainable consumption paths, considering the sustainable supply as a key focus to mitigate the energy climate change issues.

Eventually, the Acting Director concluded the presentation by stating that Europe needs the right expertise to satisfy the necessity of policy construction, studies, and the transfer of the information gathered to the system and suggesting that all these objectives can be achieved through the collaboration between the European Commission, the RMIS and EASME through i.e. events, newsletter and sharing.

On top of that, the Director of GROW.C, *Sustainable Industry & Mobility*, **Gwenole COZIGOU**, informed that GROW.C dedicated 600 M€ over the last 7 years to support 70 projects, which cover the whole raw materials value chain (meaning: exploration, extraction, processing, substitution, recycling and policy support), in order to achieve a greener and digital economy. Currently, Europe is heavily dependent on other countries’ supplies since it does not produce enough “in-house” materials to cover the increasing needs. The pressure, which has been felt during the last decades in oil exploitation, is going to switch towards other raw materials. Therefore, it is necessary to bust the European (domestic) capacity for primary and secondary raw materials and to direct the attention towards a responsible value chain: circular economy, carbon footprint and social perspective. Mr. Cozigou highlighted the need for alternative pathways with higher resources efficiency and substitution and to ensure improvement in societal and environmental ethical standards. Therefore, RMIS is the ideal place to collect all this knowledge, providing it to the policy makers and to the public. RMIS has the role of data integration, harmonization and it should provide an overview of the entire information related to the raw materials.

Peter DROELL (Director RTD.F, Prosperity), following speaker, pointed out that critical raw materials are crucial for the economy and the industry (e.g.: construction, mechanical industry, aerospace, IT, renewable energy). The great vision for climate neutrality, green deal and circularity will lead to an increase of their demand (more than doubling until 2050), provoking the need to diversify the raw materials’ sourcing. This is a matter of security of supply and it is directly relevant for the EU industry base. If circularity and recycling are enhanced, Europe can reduce the dependency on extra-EU suppliers and reinforce the European industrial innovation capacity. Therefore, there are needed more insights, research, and innovation to optimise the recycling technologies and to find suitable substitutes (e.g.: reduce or eliminate the use of dangerous raw materials).

At last, EIT Raw Materials Director of Innovation, **Massimo GASPARN** underlined the necessity of data and data integration in an easy and accessible platform, in order to acquire high quality information on the social

and economic impacts. The Director reminded that raw materials are the key enablers of the transition to a green and digital energy. Eight out of the fourteen EU industrial ecosystems (airspace and defence, electronics and mobility, energy intensive, renewable energy, health, digital and construction), are depending on sustainable RM at a competitive cost. There is a high level of uncertainty over the upstream contribution of the raw and advanced materials into these 8 ecosystems. In terms of social impact, mineral raw materials have an important role in support of the UN Sustainable Development Goals and in the objectives of the *European Green Deal*, therefore EIT has mapped its projects considering the SDGs. In summary, there is the need of integration to keep track of the impacts of diverse projects, and to avoid the duplication of resources and streamline.

The Director continued by underlying that the EIT Raw Materials is and will be using the RMIS for its analysis and expects that the action plans of their stakeholders will “feed” the data into the RMIS. In conclusion, it was emphasized the necessity to further enhance the value of RMIS and maximise the impacts of the results of the various EC raw material sectors studies.

3.2 Background and Context ⁽¹⁹⁾

Constantin Ciupagea (The Land Resources Head of Unit, JRC) introduced the following session: “*Background and Context*”.

Overview of Horizon 2020 raw materials calls

Speaker: Marcin SADOWSKI, EASME

Marcin Sadowski explained that EASME manages projects covering all the raw materials’ value chain, underlying that by the end of the H2020 programme, it is expected the investment to be of 584 M€ in 91 RM projects. It covers the whole European Union, associated countries, and participants of third countries. Moreover, the Head of the Raw Materials sector of EASME, expressed his interest in a renovated collaboration with the DG JRC in Horizon Europe as it has been done for H2020.

The Raw Materials Information System (RMIS): goal, scope, overview of content ⁽²⁰⁾

Speaker: Constantin CIUPAGEA and Simone MANFREDI, Land Resources Unit, JRC

Land Resources Unit representatives started their contribution by crediting the collaboration with H2020 and EIT Raw Materials projects as one of the most successful. Currently, the team is looking at the raw materials value chain, supply chain and at the increase of the visibility of other raw materials’ related projects, in order to spread the knowledge in technology and enhance the European competitive capacity.

Furthermore, in the framework of the new *Circular Economy Action Plan*, which intends to achieve a “*Cleaner and more competitive Europe*” ⁽²¹⁾, RMIS supports the work with the European Commission for all the strategic value chains analysis, such as for Space, Industry and special materials sectors.

Moreover, the visibility of the RMIS was underlined, as it ranks among the most visited websites of the JRC.

In particular, the most visited tiles for the public are: *EU country profiles* ⁽²²⁾, *Critical raw materials* ⁽²³⁾, *Raw materials scoreboard & monitoring* ⁽²⁴⁾, *Circular economy and secondary raw materials* ⁽²⁵⁾ and *Raw materials knowledge gateway* ⁽²⁶⁾.

Finally, the presentation was concluded with the 2019&2020 main developments and focus areas:

1. *Critical raw materials*: which includes a list with critical, precious and most important CRM with the inclusion of the 2020 CRM list ⁽²⁷⁾ and the JRC foresight study report: “*Critical Raw Materials for Strategic Technologies and Sectors in the EU A Foresight Study*” ⁽²⁸⁾;

⁽¹⁹⁾ Video recording available here: https://rmis.jrc.ec.europa.eu/uploads/Session_1.mp4
Slides presentation available here: https://rmis.jrc.ec.europa.eu/uploads/RMISWorkshop2020_1.pdf

⁽²⁰⁾ For the complete slide presentation see Annex 4

⁽²¹⁾ https://ec.europa.eu/environment/circular-economy/pdf/new_circular_economy_action_plan.pdf

⁽²²⁾ <https://rmis.jrc.ec.europa.eu/?page=country-profiles#/>

⁽²³⁾ CRM list 2020 available at: <https://rmis.jrc.ec.europa.eu/?page=crm-list-2020-e294f6>

⁽²⁴⁾ <https://rmis.jrc.ec.europa.eu/?page=scoreboard2018#/>

⁽²⁵⁾ <https://rmis.jrc.ec.europa.eu/?page=policies-and-definitions-2d5b5e>

⁽²⁶⁾ <https://rmis.jrc.ec.europa.eu/?page=rmkg>

⁽²⁷⁾ <https://rmis.jrc.ec.europa.eu/?page=crm-list-2020-e294f6>

⁽²⁸⁾ https://rmis.jrc.ec.europa.eu/uploads/CRMs_for_Strategic_Technologies_and_Sectors_in_the_EU_2020.pdf

2. *Environmental & Social sustainability* ⁽²⁹⁾: where it is possible to find information on how RM's value chain can affect the Environment and Social dimensions;
3. *Foresight, strategic value chains & material flows* and its *Supply chain viewer* sub-tile ⁽³⁰⁾ (based on 2017 data);
4. the upcoming *Raw Materials Dashboard*: where will be possible to find information on each specific raw material.

Overview of the JRC Raw Materials project-portfolio

Speaker: David PENNINGTON, Land Resources Unit, JRC

The raw material project leader highlighted the relevance of this workshop meeting to the vision and mandate of the JRC mission, in terms of supporting policies with updated knowledge and acting as the European Commission knowledge service bridging between the policy and the community.

The presentation also mentioned the various policies that are going to be supported, from which two of the top priorities, *climate change* and *responsible sourcing*, are strictly linked. All EU policies are supported through various activities, promoting competitiveness, circularity, fair and single market resilience, digitalization, increase renewable energies, among others.

Mr. Pennington emphasized that in the last 5 or 10 years, EASME and EIT Raw Materials knowledge investment was around 1 billion euros, hence one of the purposes of this meeting is to bring all this knowledge together. Since these policies are strongly interlinked it is necessary to have one central system, a platform, and this should be the role of the RMIS platform. In fact, RMIS has to support and link the EU, EC and their knowledge needs across diverse policy themes and bring together in a coherent and precise way the different organizations' developments.

In conclusion, the speaker underlined that the RMIS further developments cannot be built only on EU/EC and member states policies, but also on the fundamental interaction with the community work.

3.3 Technical guidelines for channelling knowledge into the RMIS, and examples of integration of projects' outputs ⁽³¹⁾

Simone MANFREDI, JRC, chaired the "Technical guidelines for channelling knowledge into the RMIS, and examples of integration of projects' outputs" session.

Examples of integration into the RMIS

Speaker: Tamas HAMOR, JRC

Mr. Hamor started his presentation explaining how the JRC is collecting and filtering information in the RMIS platform and how information is provided to the primary European decision makers and to the public.

The speaker underlined that one of the upcoming RMIS' objectives is the reshaping of the *Raw Materials Knowledge Gateway* tile, to include more projects and to extend the topics; in fact, the RMIS intends to include the projects and their major scientific and technical reports connected to raw materials in its *RMIS Library database* in 2021.

Therefore, the practical steps for the project inclusion and publications submission into the RMIS platform were explained, specifically:

1. assess the most suitable form(s) of integration: for example, the direct (*one-to-one*) integration, archival, information used in RMIS output (e.g.: Scoreboard), data and information used in RMIS outputs (e.g.: CRM; MSA), stakeholders list, knowledge gateway, embedded references, among others;
2. the "low hanging fruits" (e.g.: Gateway portfolio, project profile and RMIS Library):
 - a. Send reports (pdf) and their searchable attributes (xls)

⁽²⁹⁾ <https://rmis.jrc.ec.europa.eu/?page=environmental-intro-e924a3>

⁽³⁰⁾ <https://rmis.jrc.ec.europa.eu/apps/scv/>

⁽³¹⁾ Video recording available here: https://rmis.jrc.ec.europa.eu/uploads/Session_2.mp4

Slides presentation available here: https://rmis.jrc.ec.europa.eu/uploads/RMISWorkshop2020_2.pdf

- b. Send project profiles for the *Gateway*
3. think about the sophisticated ways (e.g. ready-made application or original datasets);
4. insert rmis@ec.europa.eu in CC.

Mr. Hamor ended his presentation summarizing that RMIS is a sustainable information system with sound legal mandate, stable infrastructure and expert capacity to host data and information free of charge. RMIS contains a great amount of information coming from H2020 projects, which complements the EASME's data hub ⁽³²⁾. In conclusion, in order to develop new ways of information integration, the RMIS needs to cooperate and join efforts with the different consortia.

The ProSUM results in the RMIS

Speaker: Jaco HUISMAN, JRC

This presentation was focused on how to integrate results from H2020 ProSUM and ORAMA projects and ongoing activities, in RMIS, specifically connected to electronics, batteries and vehicles' raw materials' information.

It started with a review of the policy context, followed by the steps to be taken when a H2020 project is closed.

The speaker showed different examples on how the studies and reports in the RMIS can be used to retrieve valuable information; specifically, between the other, he focused on:

1. the *Battery Value Chain* data viewer ⁽³³⁾ on the RMIS ⁽³⁴⁾ (*RMIS battery raw materials*), in the *Foresight, Strategic Value Chains & Material Flows* tile;
2. *CRMs in strategic technologies and sectors – a foresight study*;
3. *Battery supply – demand modelling for DG GROW – 'AA Task 5.2'*.

Huisman's presentation continued with some objectives for 2021:

- *Towards a Global Battery Waste Monitor*: following the UNU/UNITAR global e-waste monitor publication, the JRC will conduct a feasibility study for the development of a *Global Battery Waste Monitor* to inform policy makers, recyclers, the civil society and battery waste management.
- Updating vehicle data in RMIS: using EMPA ⁽³⁵⁾ and Chalmers' data the idea is to update the information for vehicles and identify how RM demand trends are affected/influenced by the e-mobility evolution.

As conclusion, Huisman highlighted that the RMIS is a natural receiver of H2020 projects information, even in a newer cooperation format, underlying that the JRC role is very important in both screening, filtering and filling information gained from external sources (projects' output), but also in creating additional information itself, necessary in supporting different EU policies, as, for example, the battery information has been instrumental for "feeding" the impact assessment for the upcoming battery regulations.

Technical guidelines on integrations of knowledge output to the RMIS

Speaker: Theodor CIUTA, JRC

This presentation, held by the IT responsible and architect of the RMIS, focused on the "behind the scenes" of the RMIS. Theodor Ciuta clarified that how an information is integrated in the RMIS depends on the type of information that the external contributor wishes to provide to the RMIS.

In particular, there are four categories in which it is possible to include the projects' outputs: the *RMIS library* ⁽³⁶⁾, the *Raw Material Knowledge Gateway* ⁽³⁷⁾, the *Raw Data Transfer* and the *Web-Applications*.

Specifically,

⁽³²⁾ <https://sc5.easme-web.eu/?theme=green>

⁽³³⁾ <https://rmis.jrc.ec.europa.eu/apps/bvc/#/>

⁽³⁴⁾ <https://rmis.jrc.ec.europa.eu/>

⁽³⁵⁾ <https://www.empa.ch/>

⁽³⁶⁾ <https://rmis.jrc.ec.europa.eu/?page=library>

⁽³⁷⁾ For the Raw Material Knowledge Gateway guidelines see Annex 5 <https://rmis.jrc.ec.europa.eu/?page=rmkg>

1. the *RMIS Library*: it includes specific documents such as reports, articles and other documents relevant to the field of RM. When received, the RMIS scientific team will analyse the content of each document.
2. the *Raw Material Knowledge Gateway* is a presentation portal, where the external partners may introduce project's descriptions, its summary, overview results, relevant external links, contacts, etc. in the format of text or "html".
3. the *Raw Data Transfer*, "raw data" is an external knowledge output in a computer data interchange format, which may range from simple files to databases or API feeds. Once the raw data is received in the RMIS, it is analysed and assessed by both scientific and IT teams. The projects, which are approved, are later filtered, post-processed, digested in RMIS databases and eventually used by RMIS in diverse applications.
4. *Web applications*: RMIS could integrate external, custom-made web-applications, but within certain technical limits.

Finally, a substantial guide for information integration into the RMIS with relevant IT technical details was facilitated ⁽³⁸⁾.

3.4 Discussion, Questions & Answers

In the end of the morning session the Simone Manfredi moderated the "*Discussion, Questions & Answers*" session.

During this session different topics were considered. The main topic of discussion was to understand why the RMIS does not use directly the CORDIS platform to populate its database. Answers explained that CORDIS covers a wide range of topics, and so it is necessary to determine if a project is relevant to the RMIS, and this should be done case-by-case also because the added value and work burden is not on simply importing reports, but on transforming those into searchable database with different attributes.

For further information see *Annex 2. Morning session*.

⁽³⁸⁾ https://rmis.jrc.ec.europa.eu/uploads/Technical_guidelines_for_knowledge_transfers_into_RMIS.pdf

3.5 Projects' presentation of key outputs and plans of knowledge transfer into the RMIS ⁽³⁹⁾

In the afternoon session, chaired by Laura Petrov (EASME), were presented 12 European raw materials projects: one from EIT-KIT and 11 H2020 from EASME. The speakers of each project were highlighting as following:

1. Relevant outcomes.
2. Future achievements foreseen.
3. Project connection to RMIS and policy support.

PANORAMA: Physical Accounts Of RAW Material stock and flow Information Service

Speaker: Elmer RIETVELD

Box 1. Overview of PANORAMA

The PANORAMA project ⁽⁴⁰⁾ gathers information from a large number of EU funded projects. It links information about materials to standard economic accounting, which in turn helps authorities, investors, and firms to assess how sound materials management will support economic performance and jobs. PANORAMA will help industrial firms and associations to understand supply chain vulnerabilities, as well as further understanding of the *urban mine* – what volumes of secondary materials are where, and what this means for an optimal economy of scale for their exploitation (<https://eitrawmaterials.eu/project/panorama/>).

Figure 1. PANORAMA's logo



Source: PANORAMA

Mr. Rietveld highlighted that PANORAMA analyses raw materials at a macro level and provides explicit representation of critical raw materials (CRMs) in all production, as well as the use and end-of-life stages are given. The target audience is not the industry itself, but the academia, policy makers, life-long learners and consultants.

This project will connect with RMIS to support the *Circular Economy & Secondary Raw Materials, Economics & Trade, Foresight, Strategic Value Chains & Material Flows* in production, use and end-of-life stages.

ORAMA: Optimising quality of information in RAW Materials data collection across Europe

Speaker: Perttu MIKKOLA

Box 2. Overview of ORAMA

The ORAMA project ⁽⁴¹⁾ focuses on optimising data collection for primary and secondary raw materials in the EU Member States. The project addresses specific challenges related to data availability, geographical coverage, accessibility, standardisation, harmonisation, interoperability, quality, and thematic coverage in Member States. ORAMA focuses on WEEE, batteries, ELV, other mixed metal wastes and mining waste datasets (<https://orama-h2020.eu/>).

Figure 2. ORAMA's logo



Source: ORAMA

Mr. Mikkola showed in his presentation that the main challenges regarding primary raw materials are the differences in reporting methods between the different EU Member States; for example, there are known raw materials without a current resource estimate. Moreover, there are issues related to secondary raw materials as in some countries the materials collection and the respective post-process are very well documented, while in other Member States there is no information.

Regarding ORAMA connections with RMIS, the project's outcomes can support the *Circular Economy & Secondary Raw Materials, Economics & Trade, Foresight, Strategic Value Chains & Material Flows, Raw Material's Profiles*.

⁽³⁹⁾ Video recording available here: https://rmis.irc.ec.europa.eu/uploads/Session_3.mp4

Slides presentation available here: https://rmis.irc.ec.europa.eu/uploads/RMISWorkshop2020_3.pdf

⁽⁴⁰⁾ <https://eitrawmaterials.eu/project/panorama/>

⁽⁴¹⁾ <https://orama-h2020.eu/>

MinLand: Mineral resources in sustainable land-use planning

Speaker: Ronald ARVIDSSON

Box 3. Overview of MinLand

The MinLand project ⁽⁴²⁾ addresses the challenge of facilitating access to areas with actual or potentially valuable resources for mineral exploration and exploitation activities within the EU and strengthening a transparent land use practice. One key action of MinLand is to promote a harmonised approach and good practice sharing among EU Member States in order to ensure a more effective access to raw materials (<http://minland.eu>).

Figure 3. MinLand's logo



Source: MinLand

In his presentation, Mr. Arvidsson explained that each Member State plans the land use in their own way. As a result, it is needed to be established a framework in order to improve the knowledge repository, facilitate minerals and land use policy making, as well as to strengthen transparent land use practices and to foster networking.

MINLAND can support RMIS with a clear planning process description based on the national planning system and share this with all interested parties.

COLLECTORS: Waste collection systems assessed and good practices identified

Speaker: Tjerk WARDENAAR

Box 4. Overview of COLLECTORS

The COLLECTORS ⁽⁴³⁾ project focuses on harmonizing and disclosing available information on different waste collection systems; on gaining insight into the overall performance of systems; and on supporting decision-makers in shifting to better-performing systems via capacity-building and establishment of implementation guidelines (www.collectors2020.eu).

Figure 4. COLLECTOR's logo



Source: COLLECTORS

Mr. Wardenaar showed in his presentation that the divergent information related to the environment, raw materials, etc.. is reflected in the stakeholders' diversion. Moreover, he underlined that COLLECTORS could bridge with RMIS and help in the decision making related to raw materials and waste collection, by emphasizing information.

CEWASTE: Voluntary certification scheme for waste treatment

Speaker: Shahrzad MANOCHEHRI

Box 5. Overview of CEWASTE

The CEWASTE project ⁽⁴⁴⁾ contributes to develop a voluntary certification scheme for waste treatment. Specifically, CEWASTE creates, validates and launches the scheme for collection, transport and treatment facilities of key types of waste containing significant amounts of valuable and critical raw materials such as waste electrical and electronic equipment (WEEE) and batteries (<http://minland.eu>).

Figure 5. CEWASTE's logo



Source: CEWASTE

Ms. Manoochhri pointed up that CEWASTE supports recycling system at a global level by creating a common scheme. Also, the project will provide a roadmap (work in progress) for long term sustainability of the scheme.

CEWASTE will contribute to RMIS and support *Circular Economy & Secondary Raw Materials*, namely in *SRMS in the CE Action Plan - From waste to resources, Policy Legislation, Critical Raw Materials*.

INTERMIN: International Network of Raw Materials Training Centres

Speaker: Manuel María REGUEIRO GONZÁLEZ-BARROS

⁽⁴²⁾ <http://minland.eu>

⁽⁴³⁾ www.collectors2020.eu

⁽⁴⁴⁾ <https://cewaste.eu>

Box 6. Overview of INTERMIN

The goal of INTERMIN project ⁽⁴⁵⁾ is to create a feasible, long-lasting international network of technical and vocational training centres for mineral raw materials' professionals. The project involves educational and research institutions (in the EU and the leading counterparts in third countries), mapping skills and knowledge in the EU and the third countries, identifying key knowledge gaps and emerging needs, developing roadmap for improving skills and knowledge, as well as establishing common training programmes in the raw materials sectors (<https://interminproject.org/>).

Figure 6. INTERMIN's logo



Source: INTERMIN

Mr. Regueiro stressed in his presentation that INTERMIN identifies key knowledge gaps and the lack of needed skills in the raw materials sectors. For example, the global idea for the raw materials sector:

1. Skills catalogue for the raw materials sector;
2. International Repository of the existing training courses.
3. Training with industry to get the skills.

INTERMIN proposed to RMIS to include a new section within RMIS with the tile “Education and Training”, where people can find/learn about raw materials trainings through an international network of technical and vocational training centres for raw materials' professionals (provided by INTERMIN). This can contribute to increase the EU competence and expertise in the raw materials sector.

RE-SOURCING: Global Stakeholder Platform for Responsible Sourcing

Speaker: Andreas ENDL

Box 7. Overview of RE-SOURCING

The RE-SOURCING project ⁽⁴⁶⁾ sets up an international platform on responsible sourcing (RS) that: 1. facilitates the development of a globally accepted definition of RS, 2. develops ideas for incentives facilitating responsible business conduct in the EU, supporting RS initiatives, 3. enables exchange of stakeholders for information exchange and promotion, 4. fosters the emergence of RS in international political fora, and 5. supports the European Innovation Partnership on Raw Materials (<https://re-sourcing.eu/>).

Figure 7. RE-SOURCING's logo



Source: RE-SOURCING

Mr. Endl illustrated in his presentation that the RE-SOURCING platform repository intends to involve structure discourse (with good practice manuals and guidelines for business and policy solutions), networking and exchange (with innovative storytelling, conferences and webinars), and roadmaps (with responsible sourcing in 3 key EU industry sectors).

As contribution to RMIS, RE-SOURCING can support on *Environmental & Social Sustainability* namely in *Responsible Sourcing*.

MIN-GUIDE: Minerals Policy Guidance for Europe

Speaker: Andreas ENDL

Box 8. Overview of MIN-GUIDE

The MIN-GUIDE project ⁽⁴⁷⁾ addresses the need for a secure and sustainable supply of minerals in Europe by developing a *Minerals Policy Guide*. In the context of the EU Raw Material Initiative, all MIN-GUIDE's activities were directed towards creating favourable policy framework conditions for sustainable and innovative supply of mineral raw materials from domestic sources (<https://www.min-guide.eu/>).

Figure 8. MIN-GUIDE's logo



Source: MIN-GUIDE

Mr. Endl emphasised in his presentation the need to gather cases as examples that used more sustainable mining (e.g.: remote sensing); to involve more technology innovation into mining and changing knowledge

⁽⁴⁵⁾ <https://interminproject.org/>

⁽⁴⁶⁾ <https://re-sourcing.eu/>

⁽⁴⁷⁾ <https://www.min-guide.eu/>

between sectors. Also he stressed about the strong link and interconnection among “permitting and licencing”, “policy instrument framework” and “Policy Governance”. All these outcomes are relevant for RMIS.

REMOVAL: Removing the waste streams from the primary Aluminium production and other metal sectors in Europe

Speaker: Efthymios BALOMENOS

Box 9. Overview of REMOVAL

The REMOVAL project ⁽⁴⁸⁾ aims to remove waste streams from the primary aluminium production and other metal sectors in Europe. The project combines, optimises and scales-up processing technologies for: extracting base and critical metals from industrial residues and valorising the remaining processing residues in the construction sector.

The different waste streams will be combined to form a network of technological nodes, enabling optimum processing flow sheets for valorising Bauxite Residue (BR) from alumina refineries and other industrial by-products (www.removal-project.com).

Figure 9. REMOVAL's logo



Source: REMOVAL

Mr. Balomenos highlighted that regarding bauxite residue and within the Al industry it is very difficult to track owners across different countries. He accentuated that the *composition, geographical locations, annual production of storage amounts, and owner receiving waste amounts* are the information needed (through a catalogue) to make new sustainable processes of waste management.

REMOVAL connection with RMIS is valuable as the EU wide primary and secondary raw materials database (with information especially in low grade ores, mining tailings and industrial residues) will help to replicate the REMOVAL methodology in future projects and other sectors.

TARANTULA: Recovery of Tungsten, Niobium and Tantalum occurring as by-products in mining and processing waste streams

Speaker: Juan RIAZA

Box 10. Overview of TARANTULA

TARANTULA ⁽⁴⁹⁾ is developing a suite of cost-effective, scalable, eco-friendly, efficient and flexible downstream metallurgical processes. The development will enable the recovery of tungsten (W), tantalum (Ta) and niobium (Nb) with high selectivity and recovery rates from complex, low-grade resources within EU territory (<https://h2020-tarantula.eu>).

Figure 10. TARANTULA's logo



Source: TARANTULA

Mr. Riaza explained that TARANTULA can contribute to RMIS through identification and exploration of European resources of refractory metals being highly related to *Critical Raw Materials, Circular Economy & Secondary Raw Materials, and Raw Materials' profiles*. Also, the sustainability assessment and selection of optimal flowsheet are tightly connected to *Raw Materials Scoreboard & Monitoring, Environmental & Social Sustainability, and EU Country Profiles*. Furthermore, the communication, dissemination, exploitation, and clustering activities can enrich the *Raw Materials Knowledge Gateway*.

Mintell4EU: Mineral Intelligence for Europe

Speaker: Špela KUMELJ

Box 11. Overview of Mintell4EU

The Minerals4EU project ⁽⁵⁰⁾ is designed to meet the recommendations of the Raw Materials Initiative and it will develop an EU Mineral intelligence network structure delivering a web portal, a European Minerals Yearbook and foresight studies. The project is built around an INSPIRE compatible infrastructure that enables EU geological surveys and other partners to share mineral information and knowledge, and stakeholders to find, view and acquire standardized and harmonized geological resources and related data.

Figure 11. Mintell4EU's logo



Source: Mintell4EU

⁽⁴⁸⁾ www.removal-project.com

⁽⁴⁹⁾ <https://h2020-tarantula.eu>

⁽⁵⁰⁾ <http://www.minerals4eu.eu/>

Ms. Kumelj underlined that data availability and responsibility for geological surveys differs from country to country. Therefore, it is necessary to establish relevant information related to United Nations Framework Classification on Natural Resources (UNFC) pilots and to understand how best to harmonize different approaches and methods.

Minerals4EU can contribute to RMIS, between others, with a web portal and connection to European Geological Data Infrastructure (EGDI) platform, a European Minerals Yearbook.

ERA-MIN3: ERA-NET Cofund on Raw Materials

Speaker: Dina CARRILHO

Box 12. Overview of ERA-MIN

The ERA-MIN3 project ⁽⁵¹⁾ is a global, innovative and flexible pan-European network of research funding organisations, supported by EU Horizon 2020, that builds on the experience of the FP7 ERA-NET ERA-MIN (2011 to 2015) and ERA-MIN 2 (2016-2022) (<https://www.era-min.eu/about-era-min-3>).

Figure 12. ERA-MIN's logo



Ms. Carrilho informed that ERA-MIN3 is the follow-up of ERA-MIN2, which aims to further develop the raw materials' sector in Europe and globally, through the transnational research and innovation activities. In ERA-MIN3 Canada, Bulgaria, Czech Republic, Estonia, Slovakia, Belgium and Navarra will join this network for the 1st time. The calls are focused on "Supply" (24 project), "Circular design (3 projects)", "Processing, Production and Re-manufacturing" (13 projects), "Recycling and re-use of End-of-life products" (15 projects), "Cross cutting topics" (2 projects). ERA-MIN3 can be of use for RMIS through the mapping in the *Knowledge Gateway*, contributing to the *Raw Material Knowledge Gateway* with more than 57 transnational R&I projects, etc.

3.6 Discussion, Questions & Answers

Following the projects presentations, there was a moment for exchanging ideas and points of view in order to improve future prospective. This "Discussion, Questions & Answers" session was moderated by David PENNINGTON, JRC.

During this session, emerged the need to think about an updated *Knowledge Gateway* input data template to make the projects clearer and to define a way on how to collect the info in a more compiled manner to be easy-to-use by other users.

For more information see *Annex 2. Afternoon session*.

3.7 Conclusions and closure of workshop

Speaker: Marcin SADOWSKI, EASME

In this conclusive session, Sadowski pointed out that this meeting showed a huge variety of data types, beyond geological resources, emphasizing that RMIS is not only focusing on the geological aspects, but on the entire value chain of a material. Furthermore, he complimented the RMIS team for the good work, noticing that it would be a great asset to continuously improve the RMIS in coordination with the different projects, to better cover all the aspects of the Raw Materials.

Constantin CIUPAGEA, JRC

Constantin Ciupagea closed the event. After recognizing the great progresses of the projects involved, he underlined the importance of the timing for this meeting. In fact, it is now time to approach the 2nd period of H2020 and to practically "harvest" the information and results of these years of work. The HoU concluded stating that this workshop meeting can lead to an increasing collaboration with the projects and to the reinforcement of their visibility through the collaboration with the DG JRC and the inclusion of the projects in the RMIS.

⁽⁵¹⁾ <https://www.era-min.eu/about-era-min-3>

4 Statistics and evaluation of the workshop (post-event survey)

Given one of the objectives of the workshop is to facilitate the dialogue between the RMIS team and the EU founded projects (H2020 + EIT RM kick), the workshop has seen the presentation of a total of 12 projects', and the participation of representatives of 11 projects as observers.

Moreover, of relevance is the highly valuable participation of 6 directors of the most relevant areas of the Raw Materials: Director Giovanni De Santi (JRC.D), Acting Director Luisa Prista (GROW.EASME.A), Director Gwenole Cozigou (GROW.C), Director Peter Droell (RTD.F), Director Massimo Gasparon (EIT-RM Prosperity).

Finally, a total of more than 50 experts from DG GROW, EASME, DG JRC and DG ENVIRONMENT participated at the event, reaching a total of more than 80 participants.

To collect feedbacks and have a better evaluation of the workshop a quick and anonymous survey was sent to the projects' participants (see Annex 3).

28 replies were received, showing the general appreciation of the workshop, in fact to the question: "In a scale from 1 (poor) to 5 (excellent) how interesting did you find this RMIS workshop?" the participants replied with grades from 3 (12%) to 5 (23%), in particular the majority stated their appreciation giving 4 (see the Fig. 13).

To detail their replies some stated the interest they found in knowing better the RMIS and how it handles projects' outputs: for example: "As the EC is stressing very much in each call topic that H2020 should provide info to the RMIS, this workshop was the first tentative on this scale to inform the H2020 participants on how this info shall be organized, and I found it a good initiative from the JRC and EASME to connect with H2020 and guide them as many were wondering what inputs and how this shall be done."; other stressed the importance of the afternoon session as "Interesting to hear other projects' results and approaches".

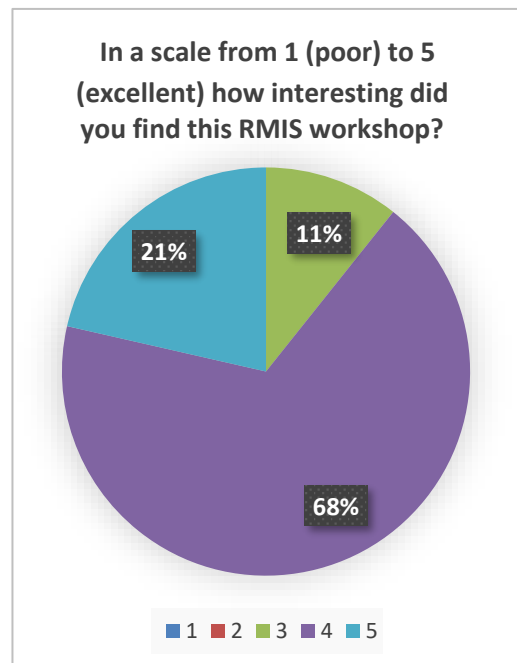
It is also important to underline that some participants would have welcomed some more technical details (even recognizing that it could fit best in an ad hoc workshop).

23 participants stated that they were provided with sufficient information about the knowledge transfer, and the remaining 5 would suggest sharing a more structured way to include data in the RMIS.

When asked if and what kind of topics they would suggest for next year's workshop the replies can be grouped in two areas: one is more specifically connected on how to improve the RMIS (i.e., including an Education&Training tile, or enforcing the Communication&Dissemination area making the RMIS more visible). The second group's comments are more connected to the workshop itself: it is considered relevant to better explain how the RMIS relates to policies and business models and how the RMIS classifies unstructured data, giving more practical examples, and facilitating a better interaction between projects. Finally, it is suggested that a one-day workshop could be not enough, hence would be interesting to organize a longer workshop, dedicating more time to the projects, and to the technical specifics.

As a final comment it was stressed the importance of the RMIS, and the necessity to have a more practical guidance on how to retrieve valuable information from the website.

Figure 13. Question n.2 of the post-event survey



Source: JRC elaboration based on post-event survey data

5 Wrap up

Since its 2015 launch, European projects such as *Horizon 2020* and EIT-KIC projects are among the most important knowledge providers to the RMIS. Through the RMIS, the JRC supports mapping, structuring and making further sense of this knowledge, so that raw materials knowledge needs identified by EU policy can be met rapidly and systematically. In support of this process, in 2018 the EC made it mandatory for certain Horizon 2020 projects to contribute to the further development of the RMIS. Beyond H2020 projects, knowledge flows from EU projects to the RMIS are expected to become increasingly important in the context of the forthcoming *Horizon Europe* funding scheme.

Held virtually on December 3rd and co-organised by the JRC and EASME, the 2020 RMIS workshop continues the well-established dialogue between the JRC with the EU-funded project consortia in relation to the RMIS needs and development priorities. The overarching aim of the workshop was to facilitate a technical dialogue that can support efficient knowledge transfers from EU projects into the RMIS, and make sure that project's outputs best contribute to RMIS & EU policy objectives. The workshop gathered nearly 80 participants, including Directors from JRC, EASME, DG GROW, DG RTD and EIT Raw Materials. It saw the active contribution from about 20 EU funded projects on raw materials.

Each invited project presented a summary of key knowledge outputs and linked them to the RMIS development priorities presented at the beginning of the workshop. This showed a handful of concrete opportunities for integration into the RMIS of projects' outputs that could effectively support raw materials needs identified by EU policy, e.g.: in relation to critical raw materials, responsible and sustainable sourcing, strategic technologies and value chains, emerging technological options.

As workshop follow-ups, projects were invited to:

- Fill in the workshop satisfaction survey.
- Fill in the template for inclusion into the RMIS' *Knowledge Gateway* tile, aiming at increasing visibility and attention over projects' objectives and knowledge outputs, as well as providing direct links to the projects' web-pages.
- Send major scientific and technical reports to the RMIS Library accompanied by the filled .xls template with the attributes of the reports.
- Start advancing a more elaborated plan for integration of key knowledge outputs into RMIS (inclusion of specific pages, development of specific applications, etc.). Projects are then invited to approach the RMIS team to discuss their proposals. Each project is asked to think of ways their knowledge outputs could support identified RMIS knowledge needs, along the different RMIS thematic sections (as thoroughly debated during the workshop).

Finally, the workshop organisers find it clear that events like this, which allow for technical discussions (also in IT context) among projects consortia and the RMIS team, are very much needed and welcomed by the projects themselves. In fact, such discussions, provide a strong basis for more effective and meaningful knowledge exchanges, leading to wider visibility of projects' work and more effective support to the RMIS and this way EC needs. The JRC and EASME feel committed to repeat this type of events annually.

List of abbreviations and definitions

BR	Bauxite Residue
CRM	Critical Raw Material(s)
DG	Directorate-General
DG RTD	European Commission Directorate-General for Research and Innovation
EASME	Executive Agency for Small and Medium-sized Enterprises
EC	European Commission
EGDI	European Geological Data Infrastructure
EIT KIC	European Institute of Innovation and Technology - Knowledge and Innovation Community
H2020	Horizon 2020
HoU	Head of Unit
IT	Information Technology
JRC	Joint Research Centre
R&I	Research & Innovation
RM	Raw Material(s)
RMIS	Raw Material Information System
RS	Responsible Sourcing
SDG	Sustainable Development Goal
UNFC	United Nations Framework Classification on Natural Resources
UNITAR	United Nations Institute for Training and Research
UNU	United Nations University

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Annexes

Annex 1. Agenda



EUROPEAN COMMISSION
JOINT RESEARCH CENTRE
Sustainable Resources Directorate
Unit D3 – Land Resources

The EC DG-JRC / EASME Technical Workshop

“Channelling knowledge from European projects into the Raw Materials Information System (RMIS)”

Online event, 3rd December 2020

Context

The Raw Materials Information System (RMIS)¹ is a commitment in the 2015 Circular Economy Action Plan (COM(2015) 614). The RMIS acts as the EC’s reference knowledge platform on non-energy, non-agricultural raw materials from primary to secondary sources, along the entire raw materials value chains. The RMIS provides the core for raw materials knowledge and analyses in support of EU policies, in particular the European Green Deal (COM(2019) 640), the new Circular Economy Action Plan (COM(2020) 98), the new ‘Industrial Strategy for Europe’ (COM(2020) 102). It also facilitates knowledge needs related to the triennial list of Critical Raw Materials (CRMs) for Europe (COM(2017) 490), the upcoming 2020 Critical Raw Materials Action Plan, and the development of the biennial EU Raw Materials Scoreboard².

The RMIS supports EC policy needs through information provision and management, in particular meeting knowledge needs related to environmental and social sustainability, circularity and security-of-supply. Key related considerations, hence, include e.g. member states and EU policy/governance, material stocks and flows (reserves, urban stocks, trade, production, and circularity), supply chain risks/bottlenecks, and resilience.

The RMIS addresses a broad range of thematic areas that are relevant in the analysis of raw materials and their supply/value chains. Special focus is devoted to those value chains identified by the EC as fundamental to achieving the low carbon / digital transition and strategic autonomy of Europe. These include batteries and vehicles, ICT and electronics, space and defence, as well as energy intensive industry.

European projects, such as Horizon 2020 projects and EIT-KIC projects, are among the most important knowledge providers to the RMIS. Through the RMIS, the JRC supports mapping, structuring and making further sense of this knowledge, so that raw materials knowledge needs identified by EU policy can be met rapidly and systematically; ensuring coordination, coherence, and quality-assurance as well as verification as far as needed and through additional products that build-on/combine these project outputs. In support of this process, in 2018 the EC made it mandatory for certain Horizon 2020 projects³ to contribute to the further development of the RMIS. Knowledge flows from EU funded projects to the RMIS are expected to become increasingly important in the context of the forthcoming Horizon Europe – the next R&I framework programme.

¹ <https://rmis.jrc.ec.europa.eu>
² <https://rmis.jrc.ec.europa.eu/03a-gems-coreboard2018/>
³ within the call Societal Challenge 5, Raw Materials, 2018-2020

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Goal & scope

This workshop continues the well-established dialogue between the JRC with EU-funded project consortia in relation to the Raw Materials Information System (RMIS). Participants will discuss:

- The most relevant knowledge needs on raw material value chains (both primary and secondary);
- How to increase awareness of project outputs and how best these can support the RMIS developments;
- How to facilitate technical dialogue (both IT and content-wise) for efficient knowledge transfer.

AGENDA

3 rd December 2020, Thursday							
09.30 - 10.00	<p>Welcoming and introductory session <i>(Chaired by Constantin CIUPAGEA, HoU ‘Land Resources’, JRC)</i></p> <ul style="list-style-type: none"> • Giovanni DE SANTI, Director JRC.D Sustainable Resources • Luisa PRISTA, Acting Director GROW.EASME.A • Gwenole COZIGOU, Director GROW.C, Sustainable Industry & Mobility • Peter DROELL, Director RTD.F, Prosperity • Massimo GASPARON, EIT Raw Materials – Director Innovation 						
10.00 – 10.30	<p>Background and Context <i>(Chaired by Constantin CIUPAGEA, HoU ‘Land Resources’, JRC)</i></p> <table border="1"> <tr> <td>Overview of Horizon 2020 raw materials calls</td> <td><i>Marcin SADOWSKI, “H2020 Environment & Resources” Unit, EASME</i></td> </tr> <tr> <td>The Raw Materials Information System (RMIS): goal, scope, overview of content</td> <td><i>Constantin CIUPAGEA and Simone MANFREDI, “Land Resources” Unit, JRC</i></td> </tr> <tr> <td>Overview of the JRC Raw Materials project-portfolio</td> <td><i>David PENNINGTON, “Land Resources” Unit, JRC</i></td> </tr> </table>	Overview of Horizon 2020 raw materials calls	<i>Marcin SADOWSKI, “H2020 Environment & Resources” Unit, EASME</i>	The Raw Materials Information System (RMIS): goal, scope, overview of content	<i>Constantin CIUPAGEA and Simone MANFREDI, “Land Resources” Unit, JRC</i>	Overview of the JRC Raw Materials project-portfolio	<i>David PENNINGTON, “Land Resources” Unit, JRC</i>
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The Raw Materials Information System (RMIS): goal, scope, overview of content	<i>Constantin CIUPAGEA and Simone MANFREDI, “Land Resources” Unit, JRC</i>						
Overview of the JRC Raw Materials project-portfolio	<i>David PENNINGTON, “Land Resources” Unit, JRC</i>						
10:30 – 11:30	<p>Technical guidelines for channelling knowledge into the RMIS, and examples of integration of projects’ outputs <i>(Chaired by Simone MANFREDI, JRC)</i></p> <table border="1"> <tr> <td>Examples of integration into the RMIS</td> <td><i>Tamas HAMOR, JRC</i></td> </tr> <tr> <td>The ProSUM results in the RMIS</td> <td><i>Jaco HUISMAN, JRC</i></td> </tr> <tr> <td>Technical guidelines on integrations of knowledge output to the RMIS</td> <td><i>Theodor CIUTA, JRC</i></td> </tr> </table>	Examples of integration into the RMIS	<i>Tamas HAMOR, JRC</i>	The ProSUM results in the RMIS	<i>Jaco HUISMAN, JRC</i>	Technical guidelines on integrations of knowledge output to the RMIS	<i>Theodor CIUTA, JRC</i>
Examples of integration into the RMIS	<i>Tamas HAMOR, JRC</i>						
The ProSUM results in the RMIS	<i>Jaco HUISMAN, JRC</i>						
Technical guidelines on integrations of knowledge output to the RMIS	<i>Theodor CIUTA, JRC</i>						

Page 2 of 3

11:30 – 12:00	<p>Discussion, Questions & Answers <i>(All participants, moderated by Simone MANFREDI, JRC)</i></p>
12:00 – 13:00	<p>Lunch break</p>
13:00 – 14:30	<p>Projects’ presentation of key outputs and plans of knowledge transfer into the RMIS (ca. 6-7 min. per project) <i>(Chaired by Laura PETROV, EASME)</i></p> <p>Presentations:</p> <ul style="list-style-type: none"> • PANORAMA (EIT RM, 2019-2021), knowledge base • ORAMA (CSA, 2016-2019), Knowledge base • MINLAND (CSA, 2017-19), Framework conditions • COLLECTORS (CSA, 2017-20), Reuse, recycling and recovery • CEWASTE (CSA, 2018-2021), Reuse, recycling and recovery • INTERMIN (CSA, 2017-2021), International cooperation • RE-SOURCING (CSA, 2019-23), Responsible sourcing • MIN-GUIDE (CSA, 2016-2019), Framework conditions • REMOVAL (IA, 2018-22), Processing • TARANTULA (RIA, 2019-23), Processing • Mintell4EU (Geo-ERA), knowledge base • ERA-MIN3, international cooperation / knowledge base
14:30 – 15:00	<p>Discussion, Question & Answers <i>(All participants, moderated by David PENNINGTON, JRC)</i></p>
15:00 - 15.15	<p>Conclusions and closure of workshop</p> <ul style="list-style-type: none"> • Marcin SADOWSKI, EASME • Constantin CIUPAGEA, JRC

Annex 2. Questions & Answers

Morning session: Discussion, Questions & Answers

Moderated by Simone MANFREDI, JRC

Question: Robert TOMAS	<i>Regarding the struggle to populate results and keeping it up to date from EU RM funded programmes FP7 - H2020 (future HE) have you thought about utilising directly the already existing EU CORDIS system (developed by EU Publication Office)? For instance, possibility to download all the database, in order to better classify the documents.</i>
Reply: Simone MANFREDI	<i>RMIS was never intended to become an archive of results&outputs from EU funded projects. For that, official platforms already exist, such as CORDIS. The RMIS team monitors outputs from such projects, and in a very selected way integrates into RMIS those outputs that better support the RMIS development priorities, which are identified by EU policy on raw materials.</i>
Reply: Tamas HAMOR	<i>RMIS Library includes some of the most important deliverables from EU funded projects, as well as documents&reports specifically related to RMIS, developed by JRC/RMIS team.</i>
Question: Konstantin STADLER	<i>Zenodo (https://zenodo.org) is the recommended repository for research outcomes for EU projects. Is there an integration from Zenodo to RMIS or are there any efforts in that direction?</i>
Reply: Tamas HAMOR	<i>The added value and work burden is not on importing reports labelled project-wise, but on transforming those into searchable database with different thematic attributes.</i>
Reply: Simone MANFREDI	<i>RMIS is not directly repository with CORDIS but we are in close contact to not miss any information.</i>
Reply: Constantin CIUPAGEA	<i>Any communication coming to us to know other exercises done in the same guideline is helpful, because we want to build the portal. We do not claim having all the projects, but indeed this type of information is vital for us. So my team is going to contact to build and to organize specific data for RM with Horizon 2020.</i>
Question: Andreas Endl	<i>We see a lot of information and raw data integrated into the RMIS (e.g. MIN-GUIDE Descriptive information on mineral policy instruments in EU MS). Tamas HAMOR briefly mentioned the idea of a Community of Practitioners, experts and information more directly informing decision-making on the level of operations/solutions for business & policy. For the RMIS more concretely: Are there any plans to provide more information on "actionable", "reproducible" and "operations-informing" on practice / solutions for practitioners in a centralised and easy to find system.</i>
Reply: Tamas HAMOR	<i>I think this is to be answered in 2021 in frame of preparing RMIS Roadmap 2021+ in co-creation with most of you.</i>
Reply: Simone MANFREDI	<i>We do not have the capacity to be always in the front line, but yes to go further in the future.</i>
Question: Manuel Regueiro	<i>Why the deliverables of MINGUIDE have not been included?</i>
Reply: Tamas HAMOR	<i>Lots of MIN-GUIDE outputs were integrated as shown in my presentation. Due to IT restrictions, the only failure was the one-to-one migration of the MIN-GUIDE web application to RMIS.</i>
Question: Ronald ARVIDSSON	<i>How should information and deliverables be chosen for RMIS - this is an important issue - if we are asked to say 3-4 deliverables but there are a few more that are necessary in order to fill up the full picture of the results - I see this as important that we get a full picture from a project - why not use the final report from projects as a guideline?</i>
Reply: Simone MANFREDI	<i>We decide which deliverables fit well, we are not accepting all RM projects, but the ones we think better support RMIS development needs and priorities.</i>
Reply: Jaco HUISMAN	<i>We avoid the details from other data platforms because it is practically impossible to use all.</i>
Reply: Simone MANFREDI	<i>It does not just contain reports, but it also involves other projects. Please come to us in 6 months, with a plan already pre-digested from you.</i>
Question: Nader AKIL	<i>In some of our deliverables we identify industrial players along the value chain of certain metals. Are you planning in the next version of RMIS to provide opportunities for industries who for instance having resources containing critical materials or on the need of critical metals, or have technologies to produce or recycle metals to describe their business and what they need? A kind of "raw materials Facebook"?</i>
Reply: Simone MANFREDI	<i>At the moment this goes beyond the RMIS' scope, but it is indeed a valuable suggestion, and we take note of it.</i>

Afternoon session: Discussion, Questions & Answers

Moderated by David PENNINGTON, JRC

David PENNINGTON:

It is clear that all the projects have a good understanding of the RMIS, in any case if someone has suggestions on how to improve the RMIS they are welcome.

Raised awareness of how some of these databases may be doubled.

A template will be delivered to include the information projects are developing and how to conjugate it with the RMIS.

Suggested an annual regular meeting between RMIS, EASME & EIT to update in regard to the projects.

Videos of 2 up to 3 minutes of each project, which should be in the RMIS Raw Material Knowledge Gateway.

Clarification on how to insert platforms connected with RM and MFA into RMIS.

Issues and follow-up of the projects may help for the continuation.

Suggested that the roadmap needs to be useful for different stakeholders in an interactive way.

Simone MANFREDI: Suggested to plan how the projects knowledge can be best included in the RMIS. Let's continue to work for this synergy in 2021.

<i>Question:</i> Dina CARRILHO	<i>Can the research projects provide data directly to the Knowledge Gateway through a template? ERA-MIN3 will discuss internally a plan on how to contribute to RMIS.</i>
<i>Reply 1:</i> Simone MANFREDI	<i>Knowledge gateway is to make visible what the RMIS can't present. For data exchange we need to talk about it.</i>
<i>Reply 2:</i> Tamas HAMOR	<i>Public might be interested in topics rather than projects, it should serve for users of diverse thematic interest.</i>
<i>Reply 3:</i> David PENNINGTON	<i>How to collect the info and make it in a more compiled manner to be more easily useful for other users. We need to think about a template to make the projects clear.</i>

Annex 3. Post-event survey

Link:

https://forms.office.com/Pages/ResponsePage.aspx?id=BotMsixS_kaQgHCSb43dsQsj2ORjwVNGIH3jfEpT7KJUNUdTVkIRWVg5OUpHMTRSOVFLU0dKOVmXTC4u

Questions:

Quick survey on the 2020 RMIS EC DG-JRC / EASME Technical Workshop

Anonymous survey on the RMIS workshop attended on December 3rd: "Channelling knowledge from European projects into the Raw Materials Information System (RMIS)" (2 minutes maximum)

1. Was this the first time you attended the RMIS workshop? *

Yes

No

2. From a scale from 1 (poor) to 5 (excellent) how interesting did you find this RMIS workshop? *

1 2 3 4 5

3. Detail your answer (optional)

Inserisci la risposta

4. In your opinion, has the workshop provided sufficient information for knowledge transfer? *

Yes

No

5. If you answered "no" to the previous question, please help us understand what is not clear and how we can do better (optional)

Inserisci la risposta

6. Are there other topic(s) or changes you would like to propose for next year's workshop? *

Yes

No

7. Detail your answer (optional)

Inserisci la risposta

8. Further comments (optional)

Inserisci la risposta

Full replies reported as given:

Question 3: Detail your answer (From a scale from 1 (poor) to 5 (excellent) how interesting did you find this RMIS workshop?)

The afternoon session was very appreciated.

It was interesting the follow up on the evolution of RMIS and to participate directly in its future evolution

I found it very interesting to find out more about RMIS, and the information available. Also nice to see how some projects insert data into it - e.g. the battery information sheets are very relevant for us

I would like to have some more concrete examples on what we should report to the RIMS. This is something we would like to discuss specifically with you when we have more results to report. Our project SisAl Pilot started in 2020.

I would have welcomed more technical information. However, perhaps that would better fit a designated workshop many aspects, in depth knowledge

Useful to know the RMIS future

Very good program, virtual format creates a challenges

Interesting to hear other projects' results and approaches

As the EC is stressing very much in each call topic that H2020 should provide info to the RMIS, this workshop was the first tentative on this scale to inform the H2020 participants on how this info shall be organized, and i found it a good initiative from the JRC and EASME to connect with H2020 and guide them as many were wondering what inputs and how this shall be done.

The information provided on the possibilities of the RMIS was exhaustive.

It was an informative and well-organized workshop.

Question 5: If you answered "no" to the previous question (In your opinion, has the workshop provided sufficient information for knowledge transfer?), please help us understand what is not clear and how we can do better (optional)

The content division and technical background of RMIS were presented. What I missed was a concrete example of how a graph or image visible on RMIS is created from a very defined result of a project (for example from spatial layer with descriptive attributes). The case shown on ProSum data was exhaustive but very technical, missing the part where the data conversion process would be explained in terms of their correct interpretation. When transferring data from one format to another, information can be (unintentionally) distorted due to misrepresentation.

The workshop did give valuable insights and possibilities, but ultimately the conclusion was that input for individual projects needs to be discussed directly with JRC. Maybe some general guidelines in function of type of project could be useful.

Although I answered yes on question 4, I still want to make a comment. As this is the first tentative at this scale to connect with H2020 project participants, it's obvious that the workshop provided interesting info on what info relevant to the RMIS are being developed in each project. However, it's still unclear how the different unstructured data generated by the projects will be implemented in the RMIS. For instance, there are reports for instance on characterization of feedstock or waste, or market analysis for a certain CRM etc, which are done by different projects using different approaches. How those valuable unstructured data will be classified and made easily searchable to stakeholders.

The allocated time for each project is too short for substantial sharing of results

Question 7: Detail your answer (Are there other topic(s) or changes you would like to propose for next year's workshop?)

Education and training are missing in RMIS

The introduction could be shortened - it is a shame that the "content" presentations had to speed up because the introductory session went overtime. A topic for next workshop could be on communication and dissemination - I fear that RMIS is not yet sufficiently known among project partners and coordinators, and it is not always clear what input they should give. This was also a conclusion from the workshop itself.

More specific information on what you expect us to report to the RIMS.

How the RMIS system helps different user groups to find policy-relevant information. How do we best guide decision-making by communicating information on good practices of policy and business models

how can researcher's get a better understanding of the policy-relevant responsibilities of the RMIS

I think there is a need to include education and training un RMIS

It was well structured

It would be interesting if dissemination issues were discussed. RMIS is a platform that can be very useful for students and researchers

Circularity and role of forest based biomass in EU Green Deal target achievement

How to classify unstructured data such as reports, market analysis, material flow analysis etc. and make the key messages and info easily findable and accessible to RMIS users. It would be nice in the next workshop to show concrete examples, in a similar way on how the structured data was presented in the workshop on 3rd December 2020.

Maybe less project reports would be better.

More interactive sessions where different projects can interact and explore synergies for future collaborations

how to better guide decision makers in public policy and business in their tasks given the data and information specificity on the RMIS

To some of us not familiar with the many entrance points and systems overlapping, it was challenging to understand the whole structure. An approach "from basic to total" and more practical examples would be of help in upcoming gatherings.

In order to understand impact of raw materials projects it is important to understand the full value chain - therefore add impact upon value chain wither as a subject for each RM project or have this as a special session - important with some input/feedback from the industry - i.e. active mining/exploration companies

Question 8: Further comments

Congrats for the successful workshop.

See also previous comment - The RMIS gives very valuable data, I was impressed by the available information - but I'm not sure that it is already widely known and used (at least not at our institute) - maybe a demonstration would be nice as a specific session in e.g. Raw Materials Week or other events.

Webinars could be organized to explain how the page works and what are the ways of entering information on the platform


One of the idea that could be interesting to implement in the RMIS, is to have a sort of facebook/twitter for the CRM stakeholders that have really important short messages (tweet) to share: waste containing valuable CRM, breakthrough recovery technologies, company on the need of particular CRM, best practices found etc.. As the RMIS is the main knowledge platform on RM in Europe, it should include a knowledge sharing/exchange portal.

The workshop raised my attention for the RMIS, and increased my motivation to advertize it in H2020 projects of our institute.

The initiative is very necessary, specially for project teams with limited knowledge on these type of data bases. A "how to do" practical session, or a time slot dedicated to it, would be of great help in next rounds :)

It is an important venue and of course COVID years makes for restrictions but to be back 2021 with 2-3 days would be a great improvement. Nevertheless it was very valuable with a web conference!

Annex 4. Slides presentation: RMIS goal, scope, knowledge needs




2020 JRC-EASME technical workshop
“Channeling knowledge from EU projects into the Raw Materials Information System (RMIS)”

Context, objectives and RMIS overview

C. Ciupagea (JRC D3 'Land Resources', HoU) & S. Manfredi (RMIS wp leader)

December 3rd, 2020



Why a joint JRC-EASME workshop on raw materials?

- European projects, such as Horizon 2020 and EIT-KIC, are among the most important knowledge providers to the RMIS;
- Through the RMIS, the JRC supports mapping, structuring and making further sense of this knowledge in order to meet knowledge needs identified by the EC;
- In support of this process, in 2018 the EC made it mandatory for certain H 2020 projects to contribute to the RMIS development objectives;
- EASME (as the managing agency of the vast majority of raw materials related calls) facilitates the promotion of the initial steps of collaboration between the H2020 projects and the JRC.



Workshop specific objectives

- To facilitate technical dialogue (both IT and content wise) for efficient knowledge transfer into RMIS;
- To increase awareness of most relevant RM projects' outputs;
- To provide an overview of the RMIS current status and foreseen development milestones;
- To discuss how most relevant outputs can best support RMIS development priorities.



The policy context



A Green Deal for Europe

- Transition to a carbon-neutral society
- Pillar dedicated to sustainable production and consumption
- A new Circular Economy Action Plan
- Mobilising research and fostering innovation

A stronger Europe in the World

- Secure and sustainable value chains
- Fair trade and responsible sourcing



A Europe fit for the Digital Age

- Competitive industry
- Industrial Strategy Package



RMIS: overview & scope



Since 2015, the RMIS is the EC's knowledge platform on non-energy, non-agricultural raw materials from primary (extraction/harvesting) to secondary (recycled/recovered) sources, along their entire value chains.

RMIS acts as the reference access point to the EU Raw Materials Knowledge Base and facilitates the availability, coherence, and quality of knowledge required by specific EU raw materials policies and EC services.



RMIS homepage overview

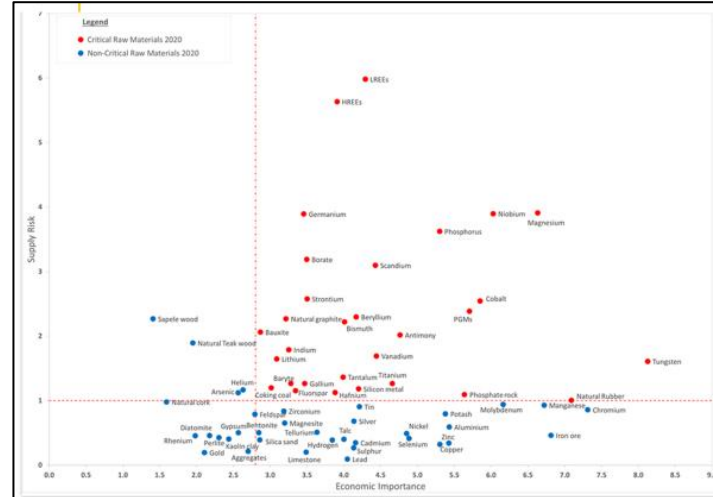


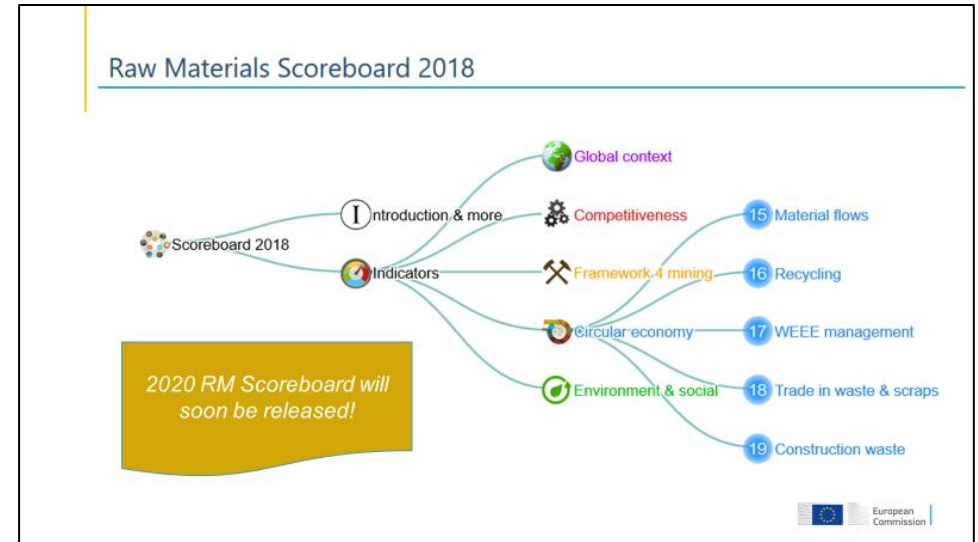
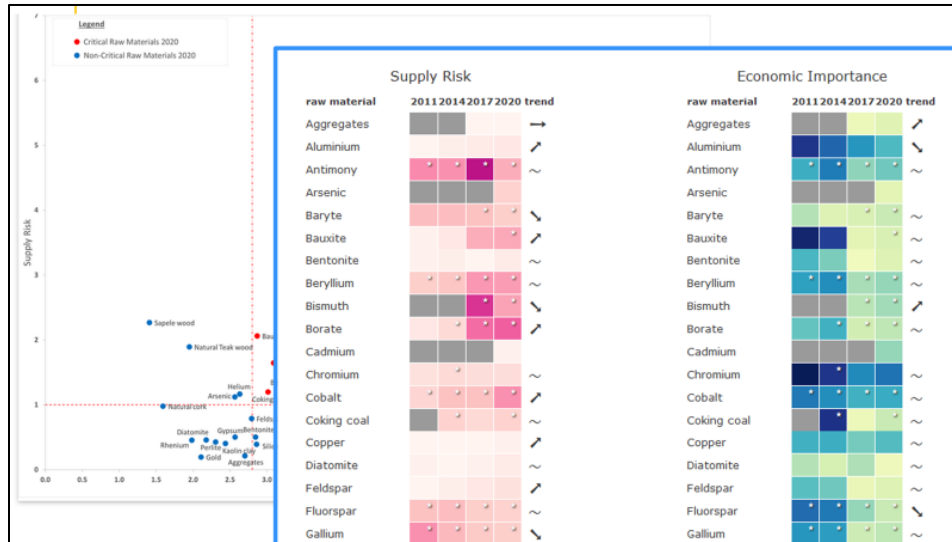
RMIS: overview of selected thematic tiles (1/3)



- JRC was in the frontline of the 2020 CRM exercise for the EU;
- 2020 CRM list + CRM factsheets available here (as well as previous CRM assessments);
- This tile also includes a brand-new CRM dashboard, providing visual understanding of CRM analysis results since 2011.

- Includes all editions of the EU RM Scoreboard (2016 / 2018), as well as additional info.
- 2020 RM Scoreboard will be released anytime soon!
- Sub-section is specifically focused on CE monitoring
- Info on the EIP Monitoring & Evaluation Scheme





RMIS: overview of selected thematic tiles (2/3)

ENVIRONMENTAL & SOCIAL SUSTAINABILITY

- Environmental dimension includes info on e.g. climate change / air pollution, water pollution, land use & soil
- Social dimension includes info on e.g. ASM, employment, SLO, occupational safety, good governance
- Specific section focused on SDG
- Specific section focused on Responsible Sourcing

FORESIGHT, STRATEGIC VALUE CHAINS & MATERIAL FLOWS

- New section on Foresight Analysis for CRMs in strategic sectors & technologies
- MFA & MSA
- Supply Chain Viewer**: dedicated application that allows for visual understanding of 80+ RM supply chains networks
- RM analysis in the battery value chain! (dedicated application)

2020 Strategic Foresight Report

CHARTING THE COURSE TOWARD A MORE RESILIENT EUROPE

The EC has recently adopted its first-ever **Strategic Foresight Report**, aiming to identify emerging challenges and opportunities to better steer the European Union's strategic choices.

The EC 2020 **Strategic Foresight Report** builds on insights and examples from the EC Report "Critical Raw Materials for Strategic Technologies and Sectors in the EU - A Foresight Study", which development was supported by the JRC.

Existing MSAs and under development

(full MSA data inventory only available to selected EC servants, through ECAS account)

MSAs developed in 2015 and 2017

Aggregates	Aluminium	Antimony	Beryllium	Borate	Chromium
Cobalt	Coking Coal	Copper	Dysprosium	Erbium	Europium
Fluorspar	Gallium	Germanium	Indium	Iron	Lithium
Magnesite	Magnesium	Natural Graphite	Neodymium	Niobium	Palladium
Phosphate Rock	Platinum	Rhodium	Silicon	Terbium	Tungsten
Yttrium	Baryte	Bismuth	Cobalt	Hafnium	Helium
Lithium	Manganese	Natural Graphite	Natural Rubber	Nickel	Phosphorous
Tantalum	Scandium	Vanadium			

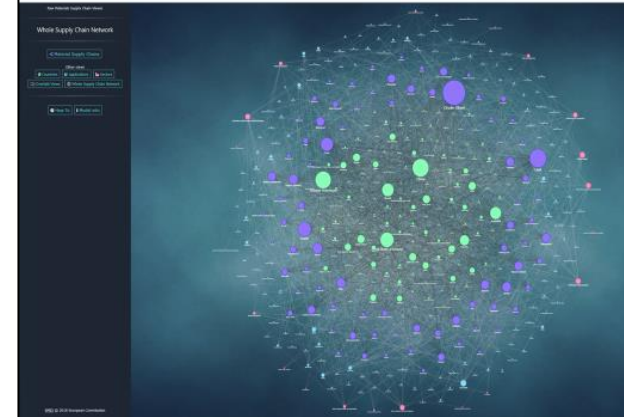
NEW MSAs in 2020/2021

2020 Outputs:

- Technical report: Review of the specifications for the MSAs;
- Report on MSAs for the selected materials relevant for the production of batteries and for decarbonising technologies (**recently published!**)

European Commission

RMIS - Supply Chain Viewer



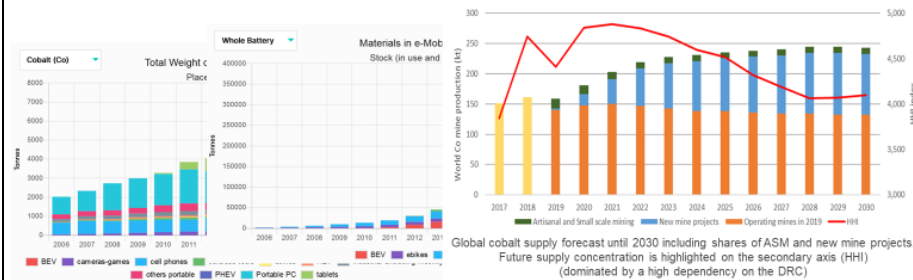
The **supply chain viewer** in RMIS provides an interactive overview of the raw materials' supply chain network consisting of *countries, materials, applications, and sectors* (underlying data come from the **2017 EC criticality assessment**)

Ongoing update of SCV based on 2020 EU analysis of CRM!

European Commission

Strategic Industrial Value chains - Example of Batteries

- Analyses of CRMs in batteries value chains
- Security of supply, recycling features, technology dependence
- Foresight and trends via supply – demand balances per material:



RMIS: overview of selected thematic tiles (3/3)



- Includes 17 EU country-specific profiles
- Each html-profile in RMIS is linked to a pdf-report that users can download (coming soon!)
- Profiles include info related to e.g. resources& reserves, supply, use, trade, environment, social...



- Now includes 15 EU material-specific profiles, based on peer-reviewed / official data sources
- Structure & content of RM Profiles are being completely revised
- New structure: a **dashboard**-like summary (covering aspects of e.g. criticality, resilience, circularity, foresight, trade / value chain considerations) + a **pdf report**

European Commission

RMIS - Raw Materials' Profiles

Raw material supply chain - Cobalt

Cobalt

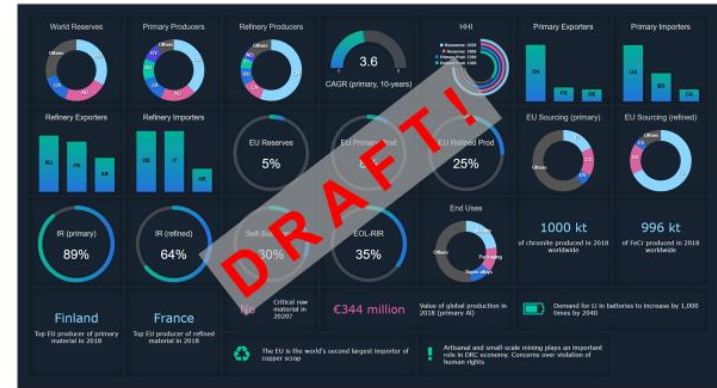
- Key facts and figures
- Overview
- Resources and reserves
- Supply
- Demand
- Raw Material Supply Chain
- Market
- Research & Development
- Environmental and Social sustainability aspects
- References and Methodological Notes

RAW MATERIALS' PROFILES

Raw Materials' Profiles

Alphabetically				By groups			
Aggregates	Aluminum	Antimony	Cobalt	Bentonite	Beryllium	Bismuth	
Borates	Cadmium	Chromium		Coking coal	Copper	Diatomite	
Dysprosium	Erbium	Europium		Fluorspar	Gadolinium	Gallium	
Germanium	Gold	Gypsum		Hafnium	Holmium	Indium	
Indium	Iron	Kaolin clay		Lanthanum	Lead	Limestone	Lithium
Lubrium	Magnesium	Magnesium		Manganese	Molybdenum	Natural cork	Natural graphite
Natural Rubber	Natural Teak wood	Neodymium		Nickel	Niobium	Palladium	Perlite
Phosphate rock	Phosphorus	Platinum		Potash	Praseodymium	Rhenium	Rhodium
Ruthenium	Samarium	Sapine wood		Scandium	Selenium	Silica sand	Silicon metal
Silver	Sulphur	Talc		Tantalum	Tellurium	Terbium	Thulium
Tin	Titanium	Tungsten		Vanadium	Ytterbium	Yttrium	Zinc

RM Profiles: upcoming Dashboard / overview



RMIS Newsletter

JOINT RESEARCH CENTRE (JRC) RAW MATERIALS INFORMATION SYSTEM (RMIS) RMIS Newsletter n.1 (November 2018)

JOINT RESEARCH CENTRE (JRC) RAW MATERIALS INFORMATION SYSTEM (RMIS) RMIS Newsletter n.2 (April 2019)

JOINT RESEARCH CENTRE (JRC) RAW MATERIALS INFORMATION SYSTEM (RMIS) RMIS Newsletter n.3 (September 2020)

Thank you



Website: rmis.jrc.ec.europa.eu
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constantin.ciupagea@ec.europa.eu

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Annex 5. European Raw Materials Knowledge Gateway Guidelines

European Raw Materials Knowledge Gateway Guidelines

Background: The Raw Materials Information System (RMIS) aims to be a central European Union gateway of knowledge on primary and secondary raw materials. RMIS 2.0 will be officially launched in November 2017, its structure supports the collection, organisation, storage and communication of information on raw materials and, to a certain degree, on products derived from them.

RMIS 2.0 will be organised in thematic sections, one of which being the “Raw Materials Knowledge Gateway” (RMKG). The RMKG constitutes a key part of the RMIS because it will provide a unified access point to knowledge on raw materials from different providers, including you, at national, European and international level. Through the RMKG, we intend to engage a broad range of knowledge providers into the development of the RMIS. In turn, this gateway will allow knowledge providers to promote and increase the visibility of their data, information and knowledge on raw materials, among various stakeholders. The RMIS 2.0 will also facilitate knowledge coordination & harmonisation, as well as other joint activities. In this way, you will be able to actively contribute to consolidate and expand EU knowledge on raw materials.

The concept and structure of the RMKG will be elaborated in a cooperative way between the involved knowledge providers and the JRC RMIS team.

Please follow the guidelines provided hereafter to help preparing a first input to the RMKG. In the RMIS you will have a dedicated webpage space to show the type of raw materials’ related knowledge that your entity has available and that, in your opinion, should be included into the RMKG. You can freely structure that content and propose the way of presenting it¹. The further development will then be coordinated together with us.

Next steps of the cooperation:

1. Please send back to the JRC RMIS team the template provided hereafter filled with the content you would like to present via the RMKG of RMIS, in the way you would like to present it, including supporting link(s) to your knowledge website / data repository. This is not a binding template, but it can help you to understand the type of knowledge that is relevant for the RMIS and facilitates coherence with other providers. Some of the following sections may overlap, feel free to duplicate information in those cases. Please also refer to the “Guide for drafting Word documents for website upload”. A more advanced template and/or example may also be shared by the JRC later on, if necessary.
2. Based on the content received, the JRC RMIS team will start advancing the structure and presentation of your knowledge gateway in RMIS, interacting closely with you and taking also into account the style and structure of the RMIS.

¹ within the limits of an EC official web-service.

Below there is a picture of the entry page of the RMIS with the RMKG (marked in red). Knowledge will be divided in “National level”, “European level” and “Global level”. From here a 3rd level menu will guide the user to your dedicated webpage.



Your dedicated webpage should start with a visual identifier of your entity (e.g. logo, picture) and a short description. After the identifier, within your webpage, different thematic sections can be opened by the user showing the content you provide. Please consider to configure your RMKG webpage according to your needs and interests, and those of others, in the broad European and global sense. With a focus on no-fuel and non-agricultural materials.

Please find below simple guidelines that you are encouraged to use and further compile. It contains a list of potential sections that could be relevant for the RMIS. You are also welcome to include additional sections or change the existing ones, if those listed hereafter are not fully relevant to your entity.

Name of the knowledge provider

|

Flag, Picture, logo

(preferable in SVG format, if image is provided please send it as large as possible)

Include also the link to your homepage

Overview

Short description of your entity or project (4 to 6 lines).

Activities on raw materials

Include here a description and/or list of activities on raw materials. Please include hyperlink(s) to the correspondent website and/or database.

Raw materials of interest

List or description of the raw materials and of the related sectors under consideration (directly and/or indirectly) in your activities.

Statutory, IPR Issues

Legal and statutory basis of your service, rules of procedures of data access and use, waivers, contacts etc.

Raw materials knowledge

This section can include data, figures, GIS maps or information on raw materials that you have available, or simply a hyperlink to the corresponding information, independent of the geographical scope.

Raw materials value Chain

This should be an indication of your knowledge coverage of the raw materials value chain. For instance, aspects of interest include:

Resources and reserves

Production

Consumption

Waste flows

Secondary raw materials

Materials flows and Stocks

Environmental and Social sustainability

Here you can highlight, for instance, any assessments made by your entity on impacts associated with raw materials sectors, you can also make reference to data/information on [e.g.](#) air emissions, water pollution, water use associated with the sectors.

Regarding social sustainability, this may include data/information on employment, occupational safety, gender balance, accidents associated with the raw materials sectors.

Economics and trade

Here you can include your knowledge on raw materials trade flows. This may for instance include a small description on the trade flows coverage you have available ([e.g.](#) regional, national, European and global) and a hyperlink to your website / data repository. It may also include data on investments on raw materials sectors.

Secondary Raw Materials & Circular Economy

Here you can include, for instance, any initiative related to the reuse, the [recycling](#) or the recovery of materials from products and waste. Data on recycling flows. Indicate whether specific sectors are interested to your entity ([e.g.](#) electric and electronic equipment, transports, etc.) and the level of detail, recovery efficiency statistics and future trends, and whether specific substances are targeted.

Critical raw materials

Indicate here or [make reference](#) to any assessment made to by your entity to identify critical raw materials.

Monitoring raw materials sectors

Please indicate monitoring activities or indicators used to assess the situation of raw materials within the EU or worldwide. This may also include information on technology progress or substantial investments foreseen in the raw materials sectors.

For each of the topics covered please include time coverage, the [name](#) and the link of the [organisation](#) responsible for data collection, if it is not your entity. Additionally, please specify what classifications are applied for the individual data sets, for example if the data collected complies with any [recognised](#) standard code.

Data accessibility

Rules on procedures related to data access and use. Please specify if data are available to the public and who are the holders/owners of the data.

Research and Innovation

Description of existing activities of research and innovation on raw materials sectors developed by and/or funded by your entity. Co-operation partners, contacts, etc.

Links and contacts

Please include here links and contacts of your entity and of any other relevant raw materials knowledge providers, connected with your entity ([e.g.](#) [organisations](#) collecting, [analysing](#) raw materials data/information).

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