

November 2019

## Raw Materials Week 2019

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The demand for mineral raw materials remains high while the challenges to produce in a social and environmental sound manner increase. This in short are the common findings expressed at the Raw Materials Week (RMW) 2019 that took place in Brussels from November 18 to November 22.

Sustainable and responsible sourcing from domestic and external resources, strategic and critical raw materials, exploration, data reliability, digitalisation as well as handling of big and harmonised data have been among the keywords of the week. These issues are

addressed in the objectives of the GeoERA Raw Materials Projects [EuroLithos](#), [FRAME](#), [MINDeSEA](#) and [MINTELL4EU](#) and recognised by the European Commission (EC). The panellists in ORAMA's final event highlighted that the data need to be continuously updated in order to support fact based decision-making. A focus on data quality is important to reduce the signal to noise ratio.

Consequently, "Digitalisation in the Raw Materials Sector" is the topic of one of the next [EIT Raw Materials](#) Expert Fora.

The RMW 2020 is scheduled for 16 to 20 November 2020.



**Policy officer Milan Grohol (DG GROW) referred to GeoERA Raw Materials as an important step forward to achieve Commissions goals.**

### GeoERA at Raw Materials Week 2019

For the fourth time, the Event was hosted by the EC and supported by several consortia from academia, industry and administration discussing developments and common challenges of the sector, exchanging findings, and seeking for new collaborations. In addition, several satellite events organised by research groups and associations flanked the week. GeoERA Raw Materials was invited to attend [EUMICON](#)'s Dinner Debate on "Future made in Europe" and the closing events of the EU-funded projects [MINLAND](#) and [ORAMA](#). Following the kind offer by ORAMA, GeoERA played an active role at ORAMA's final event. In particular, aspects of the uptake of the ORAMA findings and recommendations on primary raw materials were discussed such as the standardising reporting code UNFC.

The RMW 2019 addressed once more the key objectives of

GeoERA Raw Materials. With its four research projects EuroLITHOS, FRAME, MINDeSEA and MINTELL4EU GeoERA Raw Materials adds to an improved knowledge base ensuring the sustainable management of the subsurface by providing reliable and harmonised information.

On 20 November 2019 the EC launched the „[Due Diligence Ready](#)“ online-portal. This online portal contains information, tools and training materials to guide companies in conducting due diligence and ensuring responsible sourcing of its minerals and metals supply chain focusing on, but not limited to, tin, tantalum, tungsten and gold, again an issue that has been picked up by GeoERA Raw Materials research project FRAME.

The incoming European Union President has already announced in her political guidance that upcoming initia-

tives will be driven by the needs to meet the UN Developments Goals. These include the **European Green Deal**, the **new industrial strategy** and the **New Circular Economy Action Plan**. **Challenges** such as the energy transition, E-mobility and associated infrastructure developments will require sustainably produced raw materials including metals through minerals as well as bio-based materials. In particular, industry calls for supportive instruments for risk investments, as it is the case for exploration and mining also recalled by [Vice-President Šefčovič at the EIB June 2019](#).

The RMW provided an excellent and important network opportunity.

## ORAMA and UNFC

GeoERA Raw Materials was invited to contribute to the final Event of the EU funded project ORAMA with the principle objective to options for sustaining project findings. Recommendations by panellists from the EC, research organisations and industry pointed out once more the need for reliable and harmonised data as basis for further research, innovation and investments. The need for public acceptance as a fundamental prerequisite for any action along the value chain including exploration and mining was mentioned. Difficulties in this area are currently presenting challenges for many European activities required to achieve the Paris Agreement. Panellists call also on the needs

for cross-thematic and internationally agreed standards along the value chain. Therefore, UNFC was recommended as an instrument to synchronise the standards and to improve communication with the public and politicians. A common instrument may help to develop the understanding of the opportunities and risks associated with resource projects. In addition, heritage mines for the education of the public can add to trust and achievement of the social licence to act.

GeoERA Raw Materials take care of those needs and works hand in hand across all GeoERA projects to achieve a common terminology across the national concepts. Those directories together with the existing INSPIRE guidelines are fundamental for the e-Minerals Yearbook



Prof. Soraya Heuss-Aßbichler (LMU, second on the right), Scott Forster (UNECE, first on the right) and Sigurd Heiberg (Petrad, center). With some of the ORAMA and GeoERA Raw Materials Team closing the Raw Materials Week 2019 with the Satellite Event.

and the Inventory, both products of MINTELL4EU. Those products utilise individual products such as the recently published Bulletin Year 2019 on Mineral Resources in Slovenia.

GeoERA was mentioned as an important step forward by the EC to achieve its goals.

**GeoERA** Actions Towards Europe's Raw Materials Sustainability

Future generation needs, responsible economical growth and societal wealth all relying on mineral raw materials that are sustainably produced.

GeoERA Raw Material adds to an improved knowledge base ensuring the sustainable management of the subsurface by providing reliable and harmonised information.

With GeoERA e3D National and Regional Geological Surveys Organisations supported by Marine Institutes serving in concert those societal needs that are a crucial, overlying duty and important caretaking of our cultural heritage.

**Products** [work in progress]

**Data & Information Flow**

More: <http://geoera.eu>

**FRAME** SUSTAINABILITY OF SCRM IN EUROPE

Addressing current EU concerns of reliable and suitable sourcing FRAME is designed to research Strategic and Critical Raw Materials (SCRM) in Europe to gain new insights into reserves and resources by applying, amongst others, predictive mathematical methods and define new mineral potential areas.

Specifically, FRAME addresses:

- Critical and Strategic Raw Materials Map of Europe
- Critical Raw Materials in phosphate deposits
- Energy Critical Elements
- Niobium – Tantalum
- Historic Mining sites

Data gathered and analysed in FRAME is paving the way to further metals recovery and improved sustainability of the European society. FRAME aims to contribute to the EU policies on Critical Raw Materials, the Circular Economy and Green Economy, Conflict Free Minerals and the Decarbonisation of the Economy.

More: <http://www.frame.heag.de/>

**MINDeSEA** SCRM occurrences from sea-floor mineral deposits

Works on exploration and investigation of Strategic and Critical Raw Materials (SCRM) from sea-floor mineral deposits in European waters. Identifying areas for responsible resourcing and information on management and Marine Spatial Planning in European Seas are in its core of action.

Based on detailed studies and compiled data on geology, geochemistry, mineralogy and environmental issues on main deposit types MINDeSEA has produced the first pan-European Map of Submarine Energy critical elements in nodules and crusts in 2018 which will be continuously updated.

More: <http://geoera.eu/projects/mindesea/>

## November Posters

**FRAME** SCRM occurrences Preliminary Map on Co, Li and Graphite

Designed to research the Strategic and Critical Raw Materials (SCRM) in Europe to gain new insights into reserves and resources taking into account also new technologies and developments.

Preliminary results of May 2019 shown in the map of the Energy critical elements Cobalt, Lithium, Graphite in Europe which is one out of a series of maps and data. Together with energy related raw materials, phosphate deposits (nutrients), heaps and dumps of historical mining sites information on SCRM in Europe will pave the way to further recovery, target exploration and improved sustainability of the European society.

More: <http://www.frame.heag.de/>

**EUROLITHOS** European Ornamental Stone Resources

Gives specific attention to ornamental stone resources for which Europe has a long tradition in mining, processing and usage. Increasing need for low-footprint production of construction materials and demand for maintaining European architectural heritage and cultural landscapes indicate the specific attention given.

Over the centuries, such resources have been of significant importance to the economy and the diversity of our built heritage. The transition to a more sustainable society may secure such impact also in the future. Proper and harmonised information about geology, quarries and quality are the main priorities in Euroolithos.

More: <https://www.euroolithos.org>

**MINTELL4EU** Inventory

Focus on harmonizing data, providing spatial data with extension of the current coverage and on thematic maps. MINTELL4EU will provide an updated electronic European Minerals Yearbook and the European Minerals Inventory as a final product.

MINTELL4EU in particular raises the work of former and ongoing EU-projects such as ORAMA (case studies on UNFC) and Minerals4EU (on data), bridges the GeoERA Raw Materials projects and provide the connection to the RMIS.

More: <http://geoera.eu/projects/mintell4eu/>

The six GeoERA Raw Materials Posters triggered attention by Industry, Research Organisations and Individuals during the entire Raw Materials Week 2019.



GeoERA Partners and Project Coordinator Norbert Zajzon discussing the UNEXMIN prototype and its equipment. (From left to right: Norbert Zajzon (University of Miskolc), Daniel Oliveira (LNEG), Eoin MacGrath (GSI), Antje Wittenberg (BGR)).



UNEXMIN developed an autonomous device specially designed for flooded mines and equipped with sonars, digital cameras, scanners and lasers, a water sampler, a sub-bottom profiler and multispectral cameras (with courtesy by UMEXMIN).

## RESEARCH AND INNOVATION

Research and Innovation from exploration to the end-of-life of products remain crucial for the economic and social wealth of the European society. Already at Day Two of the RMW 2019 this statement was made clear by the announcement of new calls by [ERA-MIN2](#) and by [EIT Raw Materials](#) and the promotion of success stories.

MINDeSEA and FRAME are the GeoERA Raw Materials projects, in particular, that used the RMW's opportunity to delve into the collaboration options with innovation projects identified by the EC as success stories. Especially, developments in robotics convincingly provided potential for fruitful collaboration in research, monitoring of environmental issues related to seabed mining operations and even exploration of the shallow water environments (placer deposits, aggregates...).

The largest vehicle is a 25 ton-

nes robot with the ability to cut rocks and to pump the extracted materials back to the surface. The smallest one, known as **EVA**, moves around the mining site, constantly up-



EVA; IVAMOS smallest Marine device (with courtesy by IVAMOS)

dating a 3D map of the area and transmitting this to the VR control system for operators in order to assist the navigation. The EVA robot was created by researchers of the [Centre for Robotics and Autonomous Systems](#) [CRAS|INESC TEC]; as well as all the sensory systems that allow the navigation and the operation of the robot.

The [STRONGMAR platform](#) (<http://www.strongmar.eu/site/home-1>) provides an overview on the activities of the Laboratory of Robotics, explo-

ring the research area of marine science and technology and providing several robotic systems acting in air, on land and sea.

The autonomous underwater explorer for flooded mines was developed in the Horizon2020-funded [UNEXMIN project](#) and its up-scaling in the project UNEXUP by EIT Raw Materials would allow further exploration on historical mining sites even up to reassess of

CRM where appropriate. Both FRAME and MINTELL4EU are looking into historical mining sites but from different perspectives. While FRAME assesses the CRM potential, MINTELL4EU focusses on the cultural heritage site aspect.

The call to register on the expert list of potential project evaluators by EASME and ERA-MIN2 provide additional opportunities to the GeoERA Raw Materials partners to be further involved in related raw material projects.

## #MadelnEurope,

### A common vision for the next five years?

GeoERA experts took part in vital discussions on the future of European raw material value chains during the **high-level Dinner Debate**. The event was hosted by **Vice-President of the European Parliament Othmar Karas** and organised by EUMICON, the European Mineral Resources Confederation. Together with participants from politics, industry, NGOs and science GeoERA Raw Materials was represented by the geological surveys GBA, BGR, LNEG and NGU. The GeoERA Raw Materials Projects are addressing the issue of responsible sourcing also highlighted at this event (#MadelnEurope). The call for "strategic thinking" with relation to long term access to raw

materials required in particular for the transition to the Green Economy was common ground across the value chain representatives. Covering a larger portion of Europe's raw materials demand from domestic sources would contribute to a lower the GHG-footprint. Conversely, outsourcing exploration, mining and energy intensive industries to other regions outside the EU seems unlikely to have a positive effect on solving global climate challenges. Clearly, this is particularly relevant to meet the goals of the Battery Alliance and Critical Raw Materials.

Another debated challenge was education. The industry's struggle in recruiting enough

skilled people is mirrored by universities having problems in recruiting students who aspire an education in fields relevant to the value chains of raw materials. Moreover, the needs in the industry change rapidly, illuminating the necessity for an intimate collaboration between industry and universities. The difficulties in recruitment may be connected to the overall scepticism in the society towards raw materials and the "sunset industry" reputation once labelled on the mining industry. As stated in the [EUMICON vision document](#), the raw material value chains are in reality "sunrise industries", and this view must be communicated more actively to the society. In this respect, the EIT [RM@schools](#) (<https://rmschools.isof.cnr.it/>) project is a major step forward.

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**European Raw Materials for society needs.**



With GeoERA >30 National and Regional Geological Surveys Organisations supported by Marine Institutes serving in concert those societal needs that are a crucial, everlasting duty and important caretaking of our cultural heritage.

GeoERA Raw Materials acts to achieve **EU policy goals** such as **Sustainable Economic Growth** and **Responsible Sourcing** in-line with the Sustainable Developments Goals.

With the four GeoERA Raw Materials research Projects **EuroLithos**, **FRAME**, **MINDeSEA** and **MINTELL4EU** that are addressing a wide variety of topics GeoERA provide useful information to a huge variety of sectors and interests.

**More: [Geoera.eu](http://Geoera.eu)**

## What it is about

**EuroLithos** gives specific attention to **ornamental** stone resources for which Europe has a long tradition in mining, processing and usage

**FRAME** is designed to research Strategic and Critical Raw Materials (SCRM) including reliable and responsible sourcing

**MINDeSEA** works on exploration and investigation of Strategic and Critical Raw Materials (SCRM) from sea-floor mineral deposits in European waters

**MINTELL4EU** focus on harmonizing data, providing spatial data with extension of the current coverage and on thematic maps.

## Meet the team

**EuroLithos**, 6 Workpackets, 14 Partners lead by *Tom Heldal* [tom.heldal@ngu.no](mailto:tom.heldal@ngu.no)

**FRAME** 8 Workpackets, 19 Partners lead by *Daniel de Oliveira* [Daniel.oliveira@lneg.pt](mailto:Daniel.oliveira@lneg.pt)

**MINDeSEA** 8 Workpackets, 8+4 Partners lead by *F. Javier González Sanz* [fj.gonzalez@igme.es](mailto:fj.gonzalez@igme.es)

**MINTELL4EU** 5 Workpackets, 27 Partners lead by *Jørgen Tulstrup* and *Lisbeth Flindt Jørgensen* [jtu@geus.dk](mailto:jtu@geus.dk); [lfj@geus.dk](mailto:lfj@geus.dk)



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