FRAME

FORECASTING AND ASSESSING EUROPE'S STRATEGIC RAW MATERIALS NEEDS

DELIVERABLE 2.5
Triannual newsletters (Issue 1)

WP2 Communication, Dissemination and Exploitation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731166

GeoERA RAW MATERIALS

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Deliverable D. 2.5

Triannual newsletters (Issue 1)

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Disclaimer

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Purpose

The newsletter of FRAME has been briefly approached in deliverable 2.1.

A e-newsletter will be published regularly according to predetermined intervals with the exception of the last two newsletters that will be at the end of the project. The aim of the newsletters is to keep informed all stakeholders interested in FRAME. It will be delivered by email and uploaded on the website. All the Consortium partners will be asked to distribute it amongst their contacts in order to reach a wider audience.

All the Newsletters will be based on the same color palette, fonts and logo of the templates that have been initially designed by WP2 to ensure that the visual identity of FRAME is consistent throughout the duration of the project and meets all legal requirements as set out by H2020 guidelines.

All the triannual newsletters of FRAME project will be delivered by email and also be available at the project website hosted under www.frame.lneg.pt

This document is the responsibility of Work Package 2 (WP2). Amendments, comments and suggestions should be sent to the WP2 work package leader: Maria João Ferreira. mjoao.ferreira@lneg.pt.

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Executive Summary

The present document is a deliverable of the Forecasting and Assessing Europe's Strategic Raw Materials needs (FRAME) project, which is funded by the European Union's Horizon 2020 Programme under Grant Agreement 731166.

The document presents the 1st Issue of FRAME Newsletter, used to disseminate activities of the project.

The FRAME Newsletter Issue 1 will be delivered by email and also be available at the project website hosted under http://www.frame.lneg.pt/

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Appendix I

FRAME Newsletter Issue 1

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Issue 1, October 2018

Kick off meeting of project FRAME

Officially FRAME is underway from July 1 2018 and will last until 30 June 2021. The meeting itself took place in Brussels from the 3rd to the 5th of July with the following general programme:

- Part 1 - GeoERA Public Session – General Kick-off - Tuesday 3rd of July (Day 1)
- Part 2 - GeoERA Internal Session – Project specific Kick-offs and Synergies - Wednesday 4th of July (Day 2)
- Part 3 - exploitation of the synergies between projects and between themes - Thursday 5th of July (Day 3)

Part 1 – GeoEra Public Session and Part 2 – GeoEra Internal Session (FRAME Project Meeting)

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FRAME Outline

Europe shows a growing and accelerating consumption of mineral commodities. Presently, the question whether supply to meet demand is adequate or not cannot be answered with any certainty because secure supply is a matter of knowing the resources and the ability to exploit them with respect to sustainability.

Non-energy minerals underpin our modern economy and are essential for manufacturing and renewable "green" energy supply technologies. Many critical and strategic minerals and metals may be collected through recycling of mining related waste materials. However, even with the important contribution from recycling, it will still be necessary to extract them from primary mineral deposits, focusing on applying new technologies for deep exploration and mining, turning low-grade ores to exploitable resources and reducing mining waste and large tailings by converting them to exploitable resources.

Project FRAME (Forecasting and Assessing Europe's Strategic Raw Materials Needs) is designed to research the critical and strategic raw materials in Europe, in the scenarios described above, by employing sound strategies and a wide partner base amongst those that have some of these raw materials.

FRAME supports: a) Europe's Raw Materials Policy and Strategy and are in line with the Raw Materials Initiative (RMI) and in particular Pillar 2 "Sustainable supply of raw materials from EU sources"; COM(2008) 699 final; COM(2011) 25 final; b) complements the Strategic Implementation Plan (SIP) of the European Innovation Platform on Raw Materials by supporting the three Priority Areas, in particular Access to Mineral Potential in the EU; c) adds to the Strategic Action Plan for Batteries; COM(2018)293 final, and d) assist the achievement of the UN's Sustainable Development Goals and UNECE's framework classification for resources.

FRAME is made up of eight Work Packages (WP), 6 of which are designed to collect, extract and disseminate strategic and critical mineral data to fill existing knowledge gaps in this field.

WP1 – Project management activities.

WP2 – Communication, Dissemination and Exploitation activities.

WP3 – Development of metallogenic research and models at regional and deposit scales as well as prospectivity maps, with special attention to strategic critical minerals for which the EU is highly dependent.

WP4 - Dedicated to the assessment of economic potential of igneous and sedimentary phosphate deposits in Europe, especially regarding Critical Raw Materials (CRM).

WP5 - Will investigate, generate and compile data on the production of exploration targets for "energy critical elements" to optimise land use management, and to provide high quality mineral intelligence data for European data portals.

WP6 - Survey of the pan-European distribution of the conflict metals (Nb-Ta) and also enhance their exploration interest and potential for conflict-free production.

WP7 - Improving European regional geological and metallogenic knowledge regarding future potential of existing mine sites and contribute to improving pan-European geological information on CRM.

WP8 – Provide a bridging and interlinking platform of data sharing mechanisms closely relating the directives set out by other overarching data architectures already in place.

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FRAME @ the EuroGeoSurveys Directors' Workshop, Bratislava

FRAME Project was represented at the 45th EuroGeoSurveys Directors' Workshop that took place in Bratislava on the 17 October 2018. The project generated much interest amongst the representatives in attendance because it deals with the next set of data that the European Commission needs because it handles aspects of the Circular Economy, the Critical Raw Materials and the Battery Initiative.

45th EuroGeoSurveys Directors' Workshop

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Progress Report of FRAME WP5 Energy Critical Elements

By Håvard Gautneb (NGU, Norway), Eric Gloaguen (BRGM, France) and Tuomo Törmänen (GTK, Finland)

Natural graphite, lithium and cobalt are essential components in modern and mobile energy storage technology, most notably in rechargeable lithium-ion batteries. The current work package will investigate, generate and compile data on the occurrence and production of these "energy critical elements" in order to provide a better and more accurate basis for exploration and exploitation, as well as land use management, and to provide high quality mineral intelligence data to the European data portals. Natural graphite and cobalt are both critical raw materials in the 2017 EU criticality assessment, while lithium is located above the supply risk threshold.

The main application of natural graphite today is for refractories in the manufacture of steel and other metals. However, it is believed that the consumption for batteries will grow significantly over the coming years with increased electrification in the transport sector. Today natural graphite is produced in Norway, Austria and Ukraine, with Norway as the largest European supplier to the EU. In addition to Norway, The Czech Republic, Slovakia, Sweden and Finland are known to have potential for natural graphite.

The main application of Lithium today is for rechargeable batteries. Despite numerous European lithium ore deposits, used for ceramic industry needs, all batteries are made of non-European lithium.

In Europe, lithium resources occur in several forms, including hard rock hosted and geothermal brines. Portugal, Spain, Austria, Finland, France, (Fig. 1) Czech Republic, Germany and Ireland among others, have high potential for Li-rich pegmatites and granites.

Fig. 1 Chèdeville Lepidolite-petalite subtype LCT pegmatite (France). Aplites showing unidirectional solidification textures to the top, made of layers of fine-grained purple lepidolite and quartz alternating with layers of white coarse albite crystals. Avoid mass of lepidolite+quartz are also present on left top (hammer for scale). © E. Gloaguen – BRGM

Fig. 2 Lepidolite from the Gonçalo region in northern Portugal.

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Unknown/unconventional Li deposit types have not been considered, and a review of European Li ore deposit types & models is needed to improve mining, exploration, and ore targeting.

In the global perspective, cobalt is typically produced as byproduct of nickel production; the only significant exception to this rule is the deposits in the southernmost Democratic Republic of Congo (DRC) where cobalt is predominantly associated with copper mineralizations. Finland is currently the only EU country producing cobalt from its mines. In the entire Europe, also Russia has mine production of cobalt, from the Pechenga nickel mines. All countries producing nickel do have potential to also produce cobalt, as these two metals overwhelmingly occur in same ore minerals. Globally significant cobalt refining has been done in Finland for decades. During years 1997–2003, Finland was the largest cobalt refiner in the world.

The work package 5 consists of the following partners: LNEG; BRGM, CGS, SGU, GSI, GTK, NGU GEOinform-GIU, IGR and GeoZS and they started by doing a first screening of occurrences in their respective countries. Per date (16.10.18) all partners except IGMEsp have submitted data.

The data is grouped according to country and commodity as shown in the table 1.

Country/commodity	Number of deposits/occurrences
Czech Republic	**48**
Co	4
Graphite	31
Li	13
Finland	**141**
Co	118
Graphite	9
Li	14
France	**75**
Co	18
Graphite	15
Li	42
Ireland	**2**
Co	1
Li	1
Norway	**279**
Co	190
Graphite	85
Li	4
Portugal	**16**
Graphite	4
Li	12
Romania	**28**
Co	13
Graphite	10
Li	5
Slovenia	**3**
Graphite	2
Li	1
Sweden	**32**
Co	20
Graphite	10
Li	2
Ukraine	**57**
Co	16
Graphite	35
Li	6
Grand Total	**681**

Table 1 - Occurrences of cobalt, graphite and lithium FRAME participating countries

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On a map over Europe the deposits are distributed as shown in Fig. 3

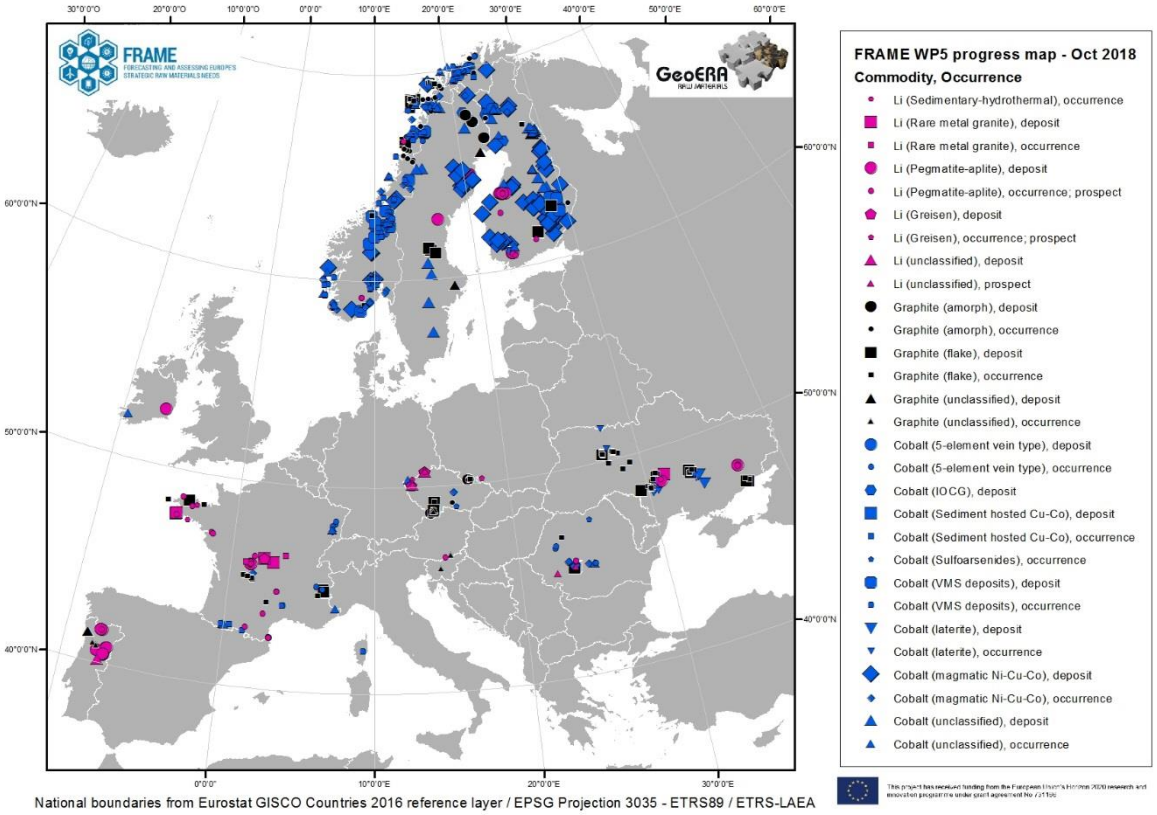

Fig. 3 distribution of occurrences of Co, Li and graphite in FRAME WP5 countries, status per 16.10.

Future work and challenges

Future work will have two major challenges:

a) Only a minority of the EU35 countries are partners in this project a complete overview of the energy critical elements in Europe is not possible without data a as large part of EU 35 countries as possible.
b) It will be important to integrate the data that has been collected in to a common information platform for GeoEra.

Apart from this, our start with WP5 seems promising and we hope that all partner will contribute to the project's success. The WP leads look forward to co-operate with everybody both internal and external people and institutions.

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FRAME project in September's issue of magazine "Mineral"

By Klemen Teran, Geological Survey of Slovenia

Aims and activities of FRAME project were presented to Slovenian professional public in September's issue of magazine "Mineral". Article titled "Geological Service for Europe (GeoERA)" describes role and goals of GeoERA financial mechanism with focus on projects from the Raw Materials theme where Geological Survey of Slovenia (GeoZS) participates as a partner. Critical raw materials are not important only on European but also on national scale. Despite several important historical mining sites in Slovenia, there is not much data about trace elements which accompanying main ore minerals, which can be today of economic importance. FRAME addresses re-evaluation of historical mining sites as well as consistent collection of data dispersed in several databases or reports. This will contribute to the better knowledge about potential of specific ore deposits or will outline regions with the highest potential for mineral exploration. Results of FRAME project can form solid professional foundation for future re-development of metal mining activities in Slovenia.

Article (in Slovenian language) is accessible on:

https://www.mineral-revija.si/1875/Geoloska-sluzba-za-Evropo-(GeoERA)?cctest&src=XNASLZAD

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