

KEY MESSAGES

- Raw Materials are the backbone of manufacturing industry and wealthy society and a need for future oriented technologies also to realise the GREEN DEAL.
- Demand on Primary Raw Materials will remain high, regardless circular economy
- Europe long-lasting history in mining and processing but has shifted some of the responsibilities to other actors
- Europe under exploration
- Data are basis to deliver new prospectively instruments and information for investments
- Responsible sourcing is an ethical and ecological imperative. Social responsibility calls e.g. on transparency in the supply chain
- GeoERA provides FAIR first class knowledge and innovation

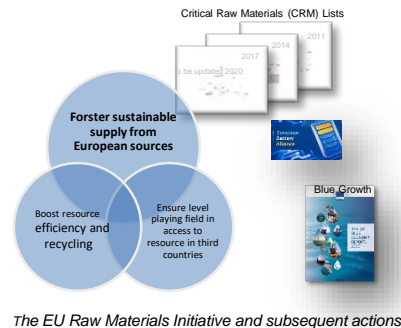
MOTIVATION AND DRIVING FACTORS



- future generation needs
- climate change mitigation
- healthy aging
- industry 4.0 and digitalisation
- responsible economic and societal wealth



All relying upon mineral raw materials that are sustainable produced and subsequently (re-)used at all steps of the value chain.



THE RAW MATERIALS VALUE CHAIN



GeoERA IN A NUTSHELL



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



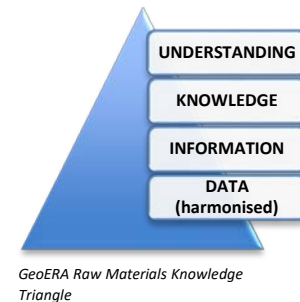
designed to research the Strategic and Critical Raw Materials (SCRM) in Europe to gain new insights into reserves and resources taking into account new technologies and developments.



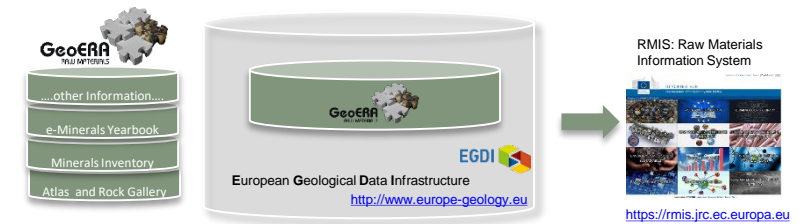
focuses on exploration and investigation of SCRM from seafloor mineral deposits in European waters. Identifying areas for responsible resourcing and information on management and 'Marine Spatial Planning' in European Seas are in its core of action.



improves European data on Raw Material by extending and harmonizing data, and tests the UNFC. Updated electronic Minerals Yearbook and Europe's Minerals Inventory are among the products.



GeoERA DATA INFRASTRUCTURE



- Accessible and interoperable data are at the heart of data-driven innovation.
- This data, combined with digital infrastructure [...] and artificial intelligence solutions, facilitate evidence-based decisions and expand the capacity to understand and tackle environmental challenges.



More at EGU



D722 | EGU2020-20781
[Atlas of European ornamental stone resources](#) | Tom Heldal, et al.



D705 | EGU2020-5950 | Highlight
[FRAME's \(Forecasting and Assessing Europe's Strategic Raw Materials Needs\) contribution to the "European Green Deal"](#) | Daniel P. S. de Oliveira, et al.



D718 | EGU2020-7025
[Lithium, Cobalt and Graphite occurrences in Europe, Results from GeoERA FRAME project WIP-5](#) | Håvard Gautneb, Eric Gloaguen, and Tuomo Törmänen



D720 | EGU2020-10228
[FRAME: towards conflict-free Nb-Ta for the European Union](#) | Helge Reginiussen, et al.

D706 | EGU2020-13271
[Critical minerals in the European seas: The project GeoERA-MINDeSEA](#) | Javier Gonzalez et al.

D723 | EGU2020-22091
[Hydrogenetic Fe-Mn crusts from European seas: source of potentially economic cobalt mining](#) | Egidio Marino, et al.

D702 | EGU2020-17309
[Minerals inventory as a part of Mineral Intelligence for Europe](#) | Špela Kurnelj, et al.

D721 | EGU2020-16935
[Mintel4EU – Mineral Intelligence for Europe – a GeoERA project to improve and sustain the European raw materials knowledge base](#) | David Whitehead, et al.

ACKNOWLEDGEMENT
The GeoERA Raw Materials Team



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





MINERAL RESOURCES

*crucial components of a vital,
healthy and wealthy society*

ANTJE WITTENBERG (BGR), DANIEL DE OLIVEIRA (LNEG), JAVIER GONZÁLEZ SANZ (IGME), TOM HELDAL (NGU) DAVID WHITEHEAD (GEUS) AND LISBETH FLINDT JØRGENSEN (GEUS)
on behalf of the **GEOERA RAW MATERIALS TEAM**

EGU, virtual, 8 May 2020



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Motivation and driving factors

- future generation needs
- climate change mitigation
- healthy aging
- industry 4.0 and digitalisation
- responsible economic and societal wealth

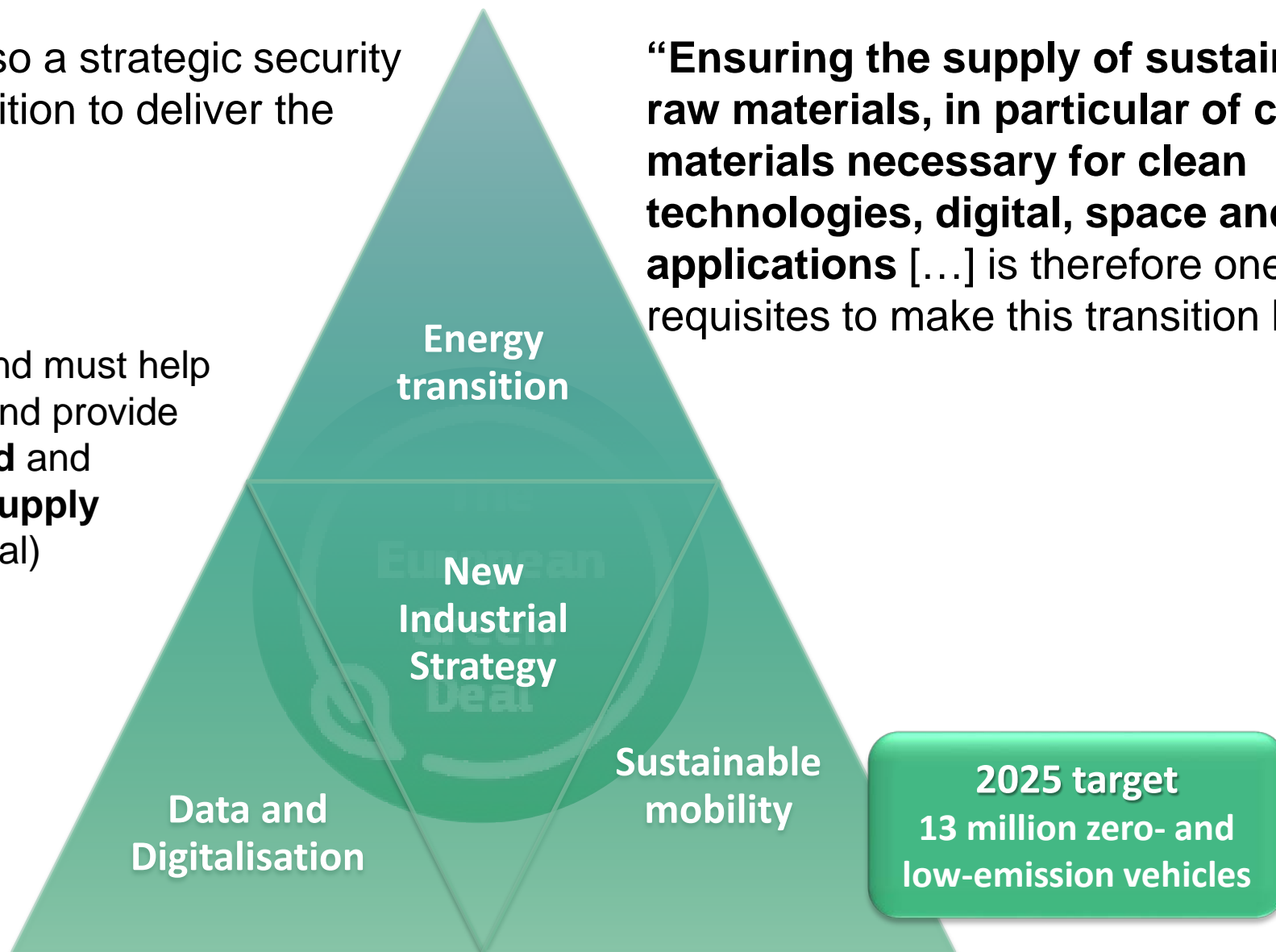
All relying upon mineral raw materials that are sustainable produced and subsequently (re-)used at all steps of the value chain.

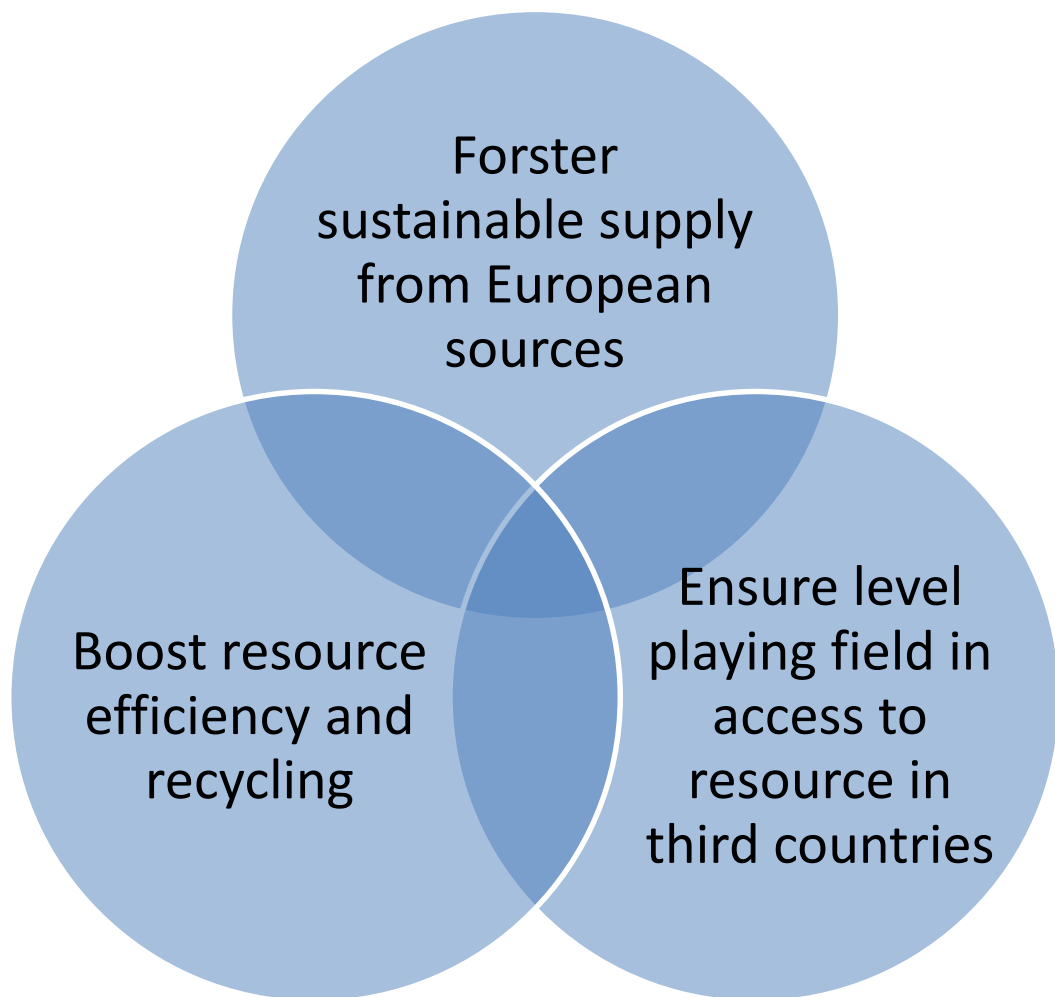


“Access to resources is also a strategic security question for Europe’s ambition to deliver the Green Deal.”

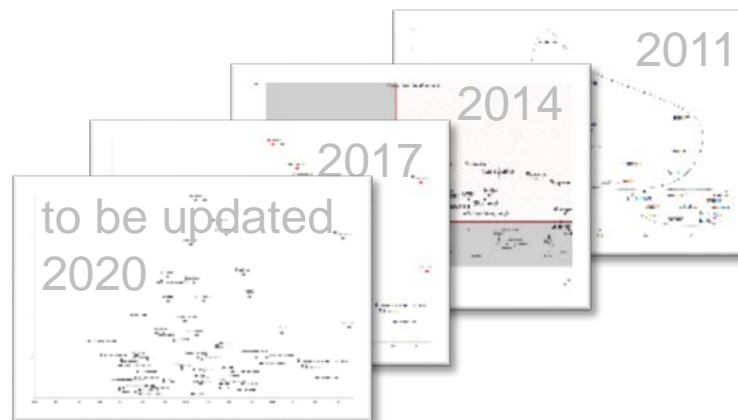
“The [European Defence] Fund must help develop technological skills and provide incentives to **build integrated and competitive cross-border supply chains.**“ (COM(2017) 295 final)

“**Ensuring the supply of sustainable raw materials, in particular of critical raw materials necessary for clean technologies, digital, space and defence applications [...]** is therefore one of the prerequisites to make this transition happen.”





Critical Raw Materials (CRM) Lists



Blue Growth





Redrawn after EIT Raw Materials

The value chain starts earlier.

Understanding the geology and it's mineralisation is the first step to increase efficiency.



Van den Brink
et al, 2019

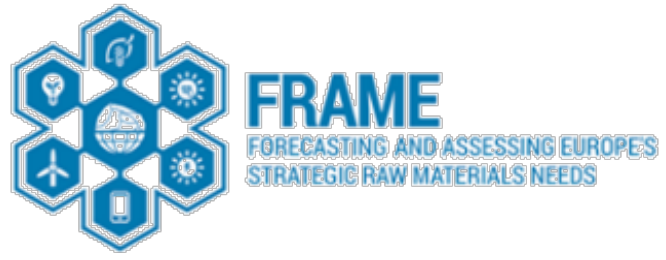
‘responsible sourcing’ e.g. .of minerals, applies particularly to so-called ‘conflict minerals’ (tin, tantalum, tungsten and gold, in short ‘3 TG’)

EU Conflict Mineral Regulation 2017/821 will come into full force on January 1, 2021



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GeoERA

RAW MATERIALS



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EUROLITHOS European Ornamental Stone Resources

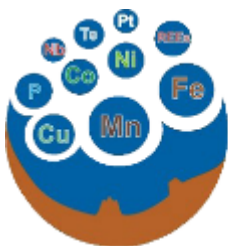


gives specific attention to ornamental stone resources for which Europe has a long tradition in mining, processing and usage.



FRAME
FORECASTING AND ASSESSING EUROPE'S
STRATEGIC RAW MATERIALS NEEDS

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



MINDeSEA
Seabed Mineral Deposits in European Seas:
Metallogeny and Geological Potential for
Strategic and Critical Raw Materials

focuses on exploration and investigation of SCRM from seafloor 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.



improves European data on Raw Material by extending and harmonizing data, and tests the UNFC. Updated electronic Minerals Yearbook and Europe's Minerals Inventory are among the products.

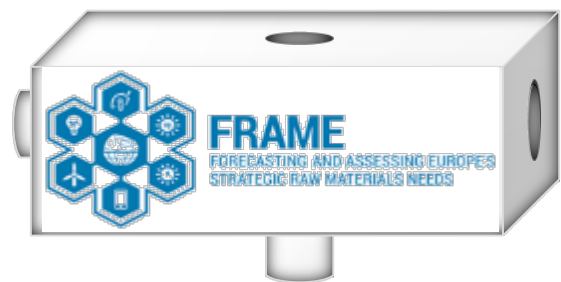


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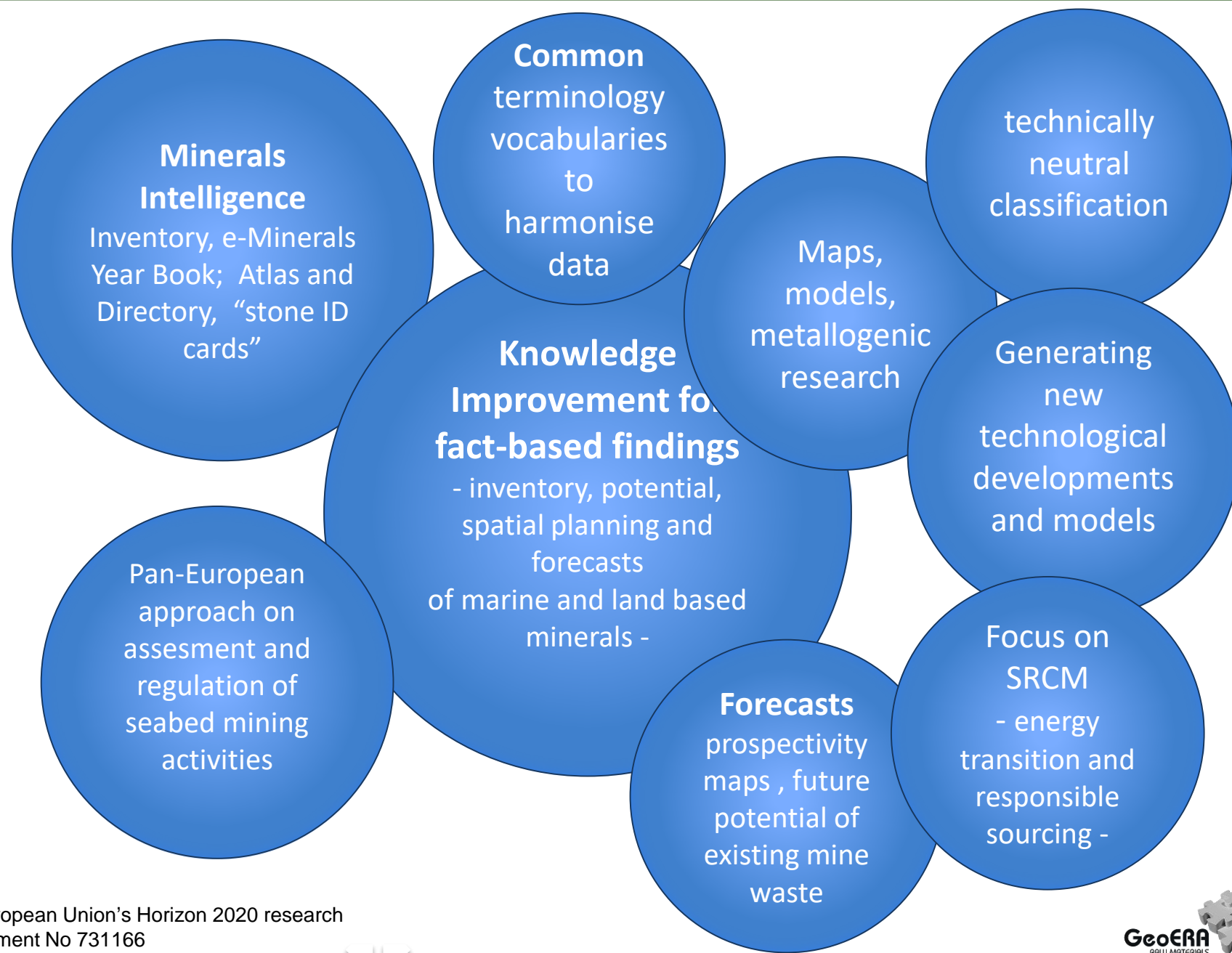
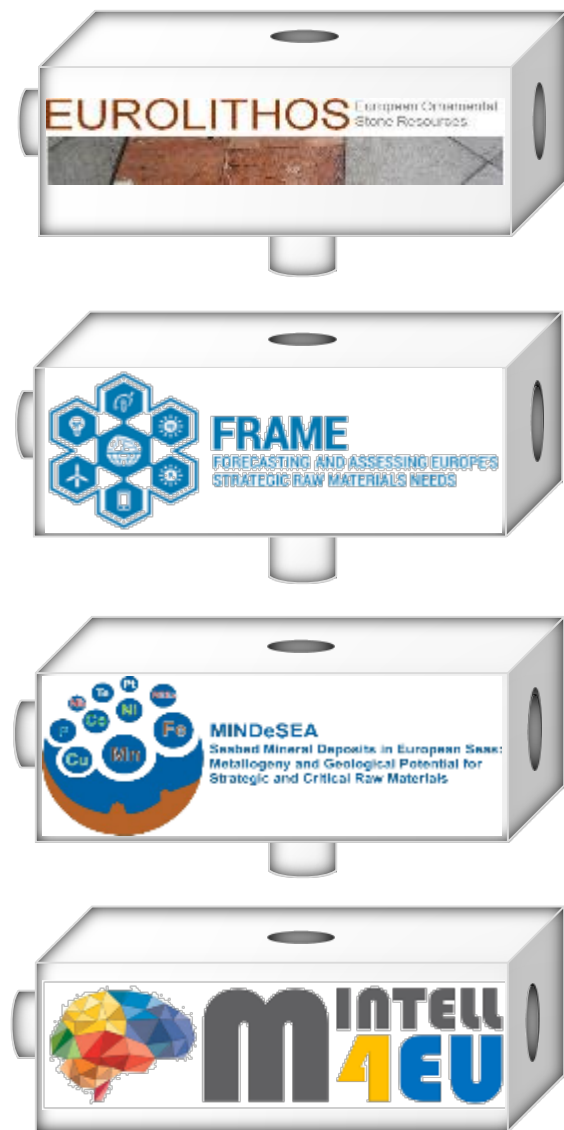


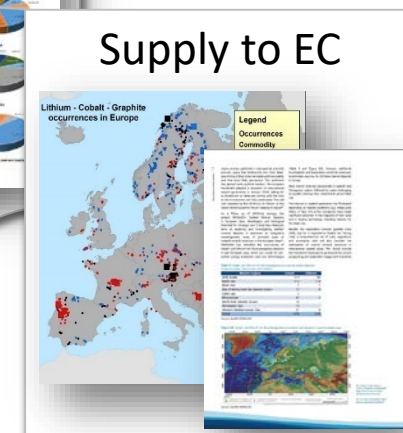
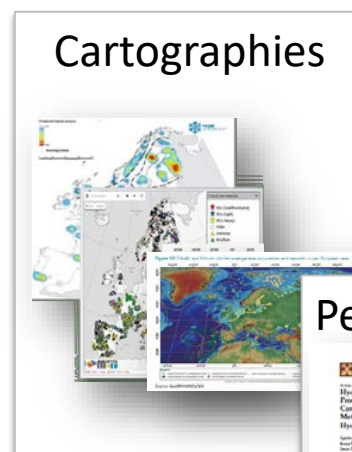
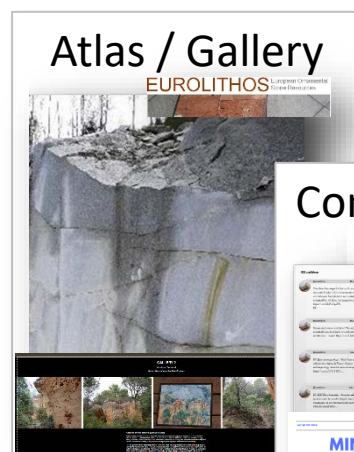
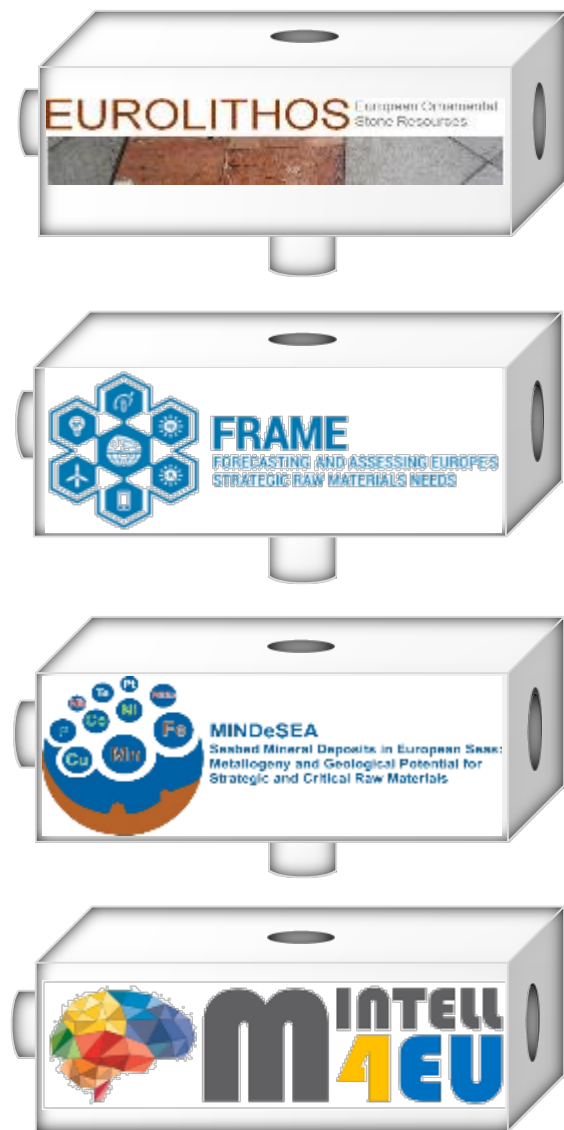
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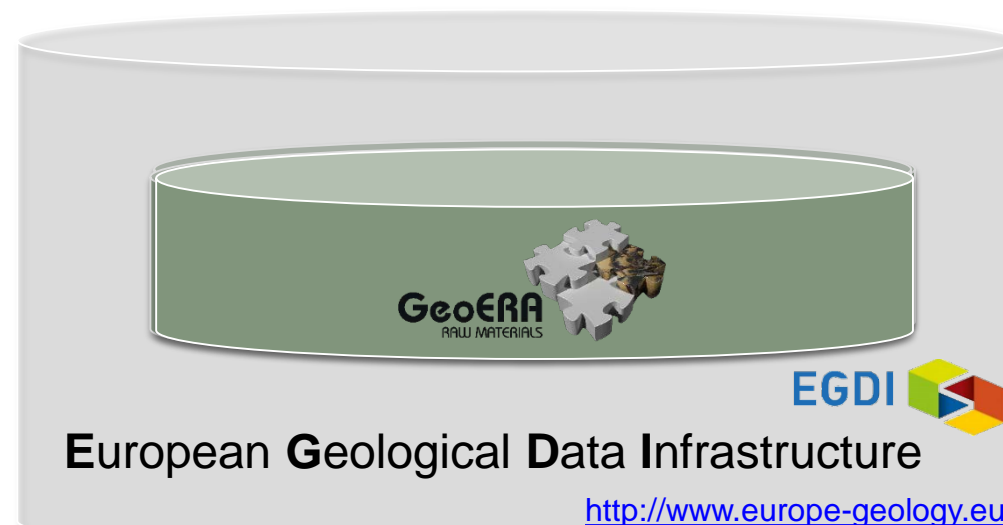


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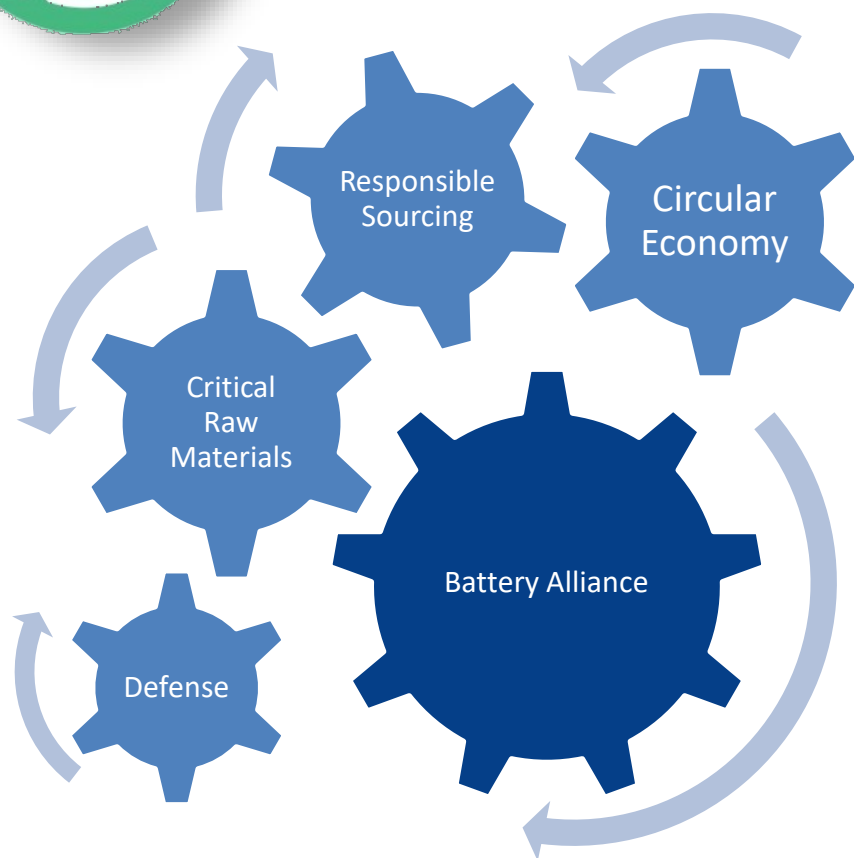
RMIS: Raw Materials Information System



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

- **Accessible and interoperable data are at the heart of data-driven innovation.**
- This data, combined with digital infrastructure [...] and artificial intelligence solutions, facilitate evidence-based decisions and expand the capacity to understand and tackle environmental challenges.





- Promoting new forms of collaboration with industry and investments in strategic value chains are essential.
- Strategic Action Plan on Batteries and support of the European Battery Alliance will be continued.

➤ GeoERA contributes in particular throughout



FRAME

FORECASTING AND ASSESSING EUROPE'S
STRATEGIC RAW MATERIALS NEEDS



MINDeSEA

Seabed Mineral Deposits in European Seas:
Metallogeny and Geological Potential for
Strategic and Critical Raw Materials



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D705 | EGU2020-5950 | Highlight

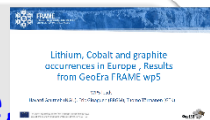
[FRAME's \(Forecasting and Assessing Europe's Strategic Raw Materials Needs\) contribution to the "European Green Deal"](#)

Daniel P. S. de Oliveira, et al.

D718 | EGU2020-7025

[Lithium, Cobalt and Graphite occurrences in Europe; Results from GeoERA FRAME project WP 5](#)

Håvard Gautneb, Eric Gloaguen, and Tuomo Törmänen



D719 | EGU2020-7931

[Prospectivity mapping of niobium and tantalum in Europe; a part of the GEOERA- FRAME project](#)

Martiya Sadeghi, et al.

D720 | EGU2020-10228

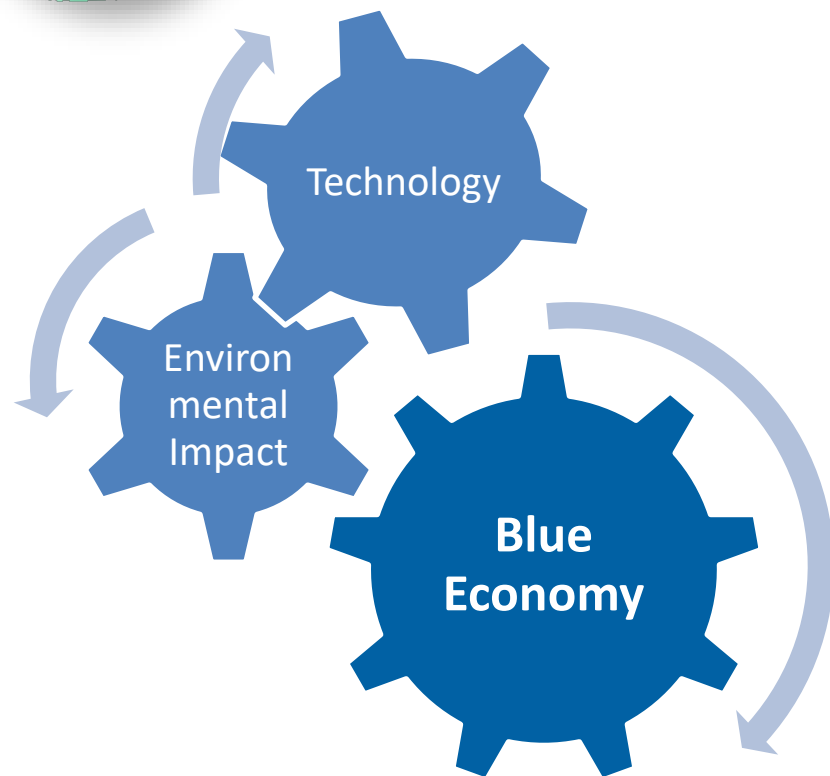
[FRAME: towards conflict-free Nb-Ta for the European Union](#)

Helge Reginiussen, et al.



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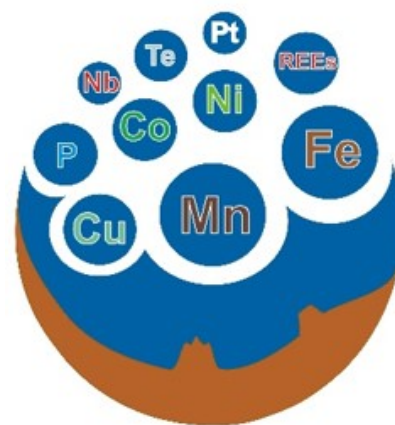




- The role of oceans in mitigating and adapting to climate change is increasingly recognised. The sector can contribute by improving the use of aquatic and marine resources [...].
- The 2020 United Nations Ocean Conference in Portugal will be an opportunity for the EU to highlight the importance of action on ocean issues.

➤ GeoERA contributes in particular throughout





MINDeSEA

Seabed Mineral Deposits in European Seas:
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D706 | EGU2020-13271

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D723 | EGU2020-22091

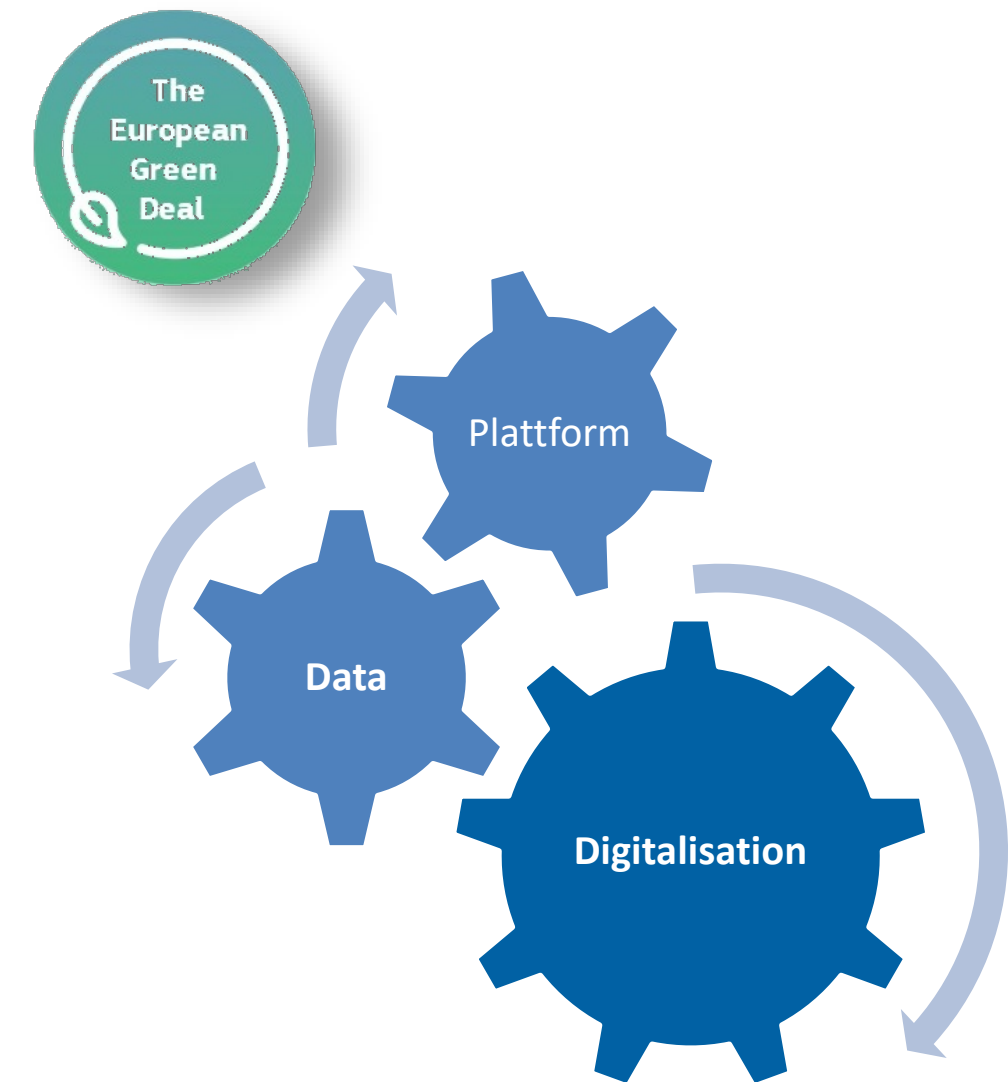
[Hydrogenetic Fe-Mn crusts from European seas: source of potentially economic cobalt mining.](#)

Egidio Marino, et al.



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- The value of data lies in its use and re-use.
- Data interoperability and quality, as well as their structure, authenticity and integrity are key for the exploitation of the data value, especially in the context of AI deployment.
- Common European data spaces in strategic sectors and domains of public interest (Pillar 4 - EU Digital Strategy), COM(2020) 66 final)

➤ GeoERA contributes in particular throughout





D721 | EGU2020-16935

[Mintell4EU – Mineral Intelligence for Europe – a GeoERA project to improve and sustain the European raw materials knowledge base.](#)

David Whitehead, et al.



D702 | EGU2020-17309

[Minerals Inventory as a part of Mineral Intelligence for Europe](#)

Špela Kumelj, et al.



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- Heritage is made up of local stories that together make the history of Europe. COM(2014) 477 final
- BUT - Its economical, ecological and societal impact is poorly understood.

➤ GeoERA contributes in particular throughout



EUROLITHOS

European Ornamental
Stone Resources



D722 | EGU2020-20781

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GeoERA turns data and information in to knowledge as

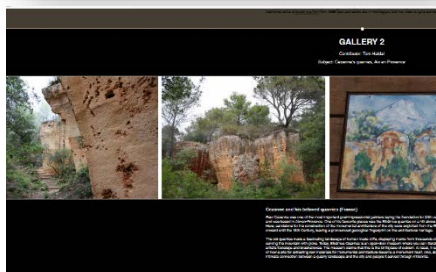
- Comprehensive scientific results are available to governmental decision makers, business and society.
- Transparent and easy access beyond the community is realized through EGDI and RMIS.
- GeoERA thus ensures a broad knowledge transfer to Platforms that follow FAIR data principles.



**First class knowledge on
Europe's Raw Material Potential**

- forecast, prospection, exploration, harmonized mineral maps and datasets -





Key Messages

- Backbone of manufacturing industry and wealthy society and a need for future oriented technologies also to realise the *GREEN DEAL*.
- Demand on Primary Raw Materials will remain high, regardless circular economy
- Europe long-lasting history in mining and processing but has shifted some of the responsibilities to other actors
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- Data are basis to deliver new prospectively instruments and information for investments
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Thank you
for your
interest

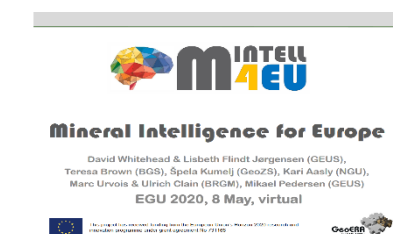
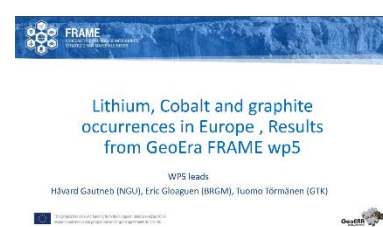
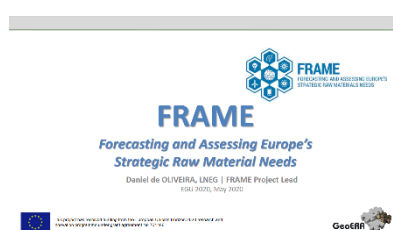
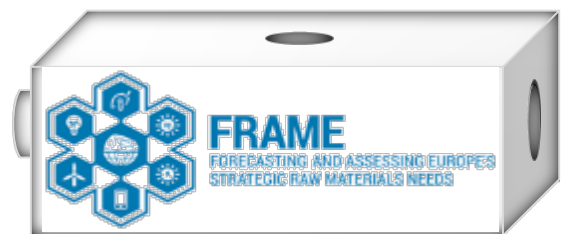


Acknowledgment
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...find out more under
<https://geoera.eu>

Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe

GeoERA

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FRAME

45 national and regional Geological Survey Organisations (GSOs) from 32 European countries have joined forces to develop an ERA-NET Co-Fund Action:

Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe (GeoERA)

The main objective of GeoERA is to contribute to the optimal use and management of the subsurface. GeoERA will fund **16 research projects** that will aim to support 1) a more integrated and efficient management and 2) more responsible and publicly accepted, exploitation and use of the subsurface. The projects will cover the applied geosciences, addressing the following four themes:

GeoERA GEO-ENERGY

Secure, clean and efficient energy are at the heart of the H2020's Societal Challenge 3. As Europe progresses to make its transition to a reliable, sustainable and competitive energy.

GeoERA GROUNDWATER

The objective of the groundwater theme is to provide data, information and decision-support tools for the protection, sustainable management and improvement of groundwater resources.

GeoERA RAW MATERIALS

Mineral Raw Materials underpin societal development and Europe's ambition for economic growth and well-being. The European Commission recognises the importance of Raw Materials.

GeoERA INFORMATION PLATFORM

The geo-energy, groundwater and raw materials themes share the common objective to provide and disseminate spatial information on their respective resources.

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GeoERA topic
☐ General information about GeoERA
☐ GeoEnergy
☐ Groundwater
☒ Raw Materials
☐ Information Platform

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Event List

View as calendar

09-09 European Geosciences Union (EGU)
 May
 2020 General Assembly 2020
 European Geosciences Union (EGU)
 General Assembly 2020
[Find out more...](#)

21-28 2020 Goldschmidt Conference
 Jun
 2020 Goldschmidt Conference
[Find out more...](#)

16-20 Raw Materials Week 2020
 Nov
 2020 Annual Raw Materials Week
[Find out more...](#)



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