

GeoERA
RAW MATERIALS



GeoERA - European Geological Surveys joint action to improve Data Management

Antje Wittenberg BGR / GeoERA Raw Materials Theme Coordinator
CRM Data Management Workshop, BAM, Berlin, 26.11.18



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



Geological Survey Organisations

- **Unique task** towards their national governments
 - Data & information gathering, storage and dissemination
 - Applied geoscientific research and services
- Adhere to national policies and regulations
- Different approaches, workflows, datasets and geological framework models
- Since 1971 many GSOs joined forces in EuroGeoSurveys



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GEOENERGY

TNO innovation
for life

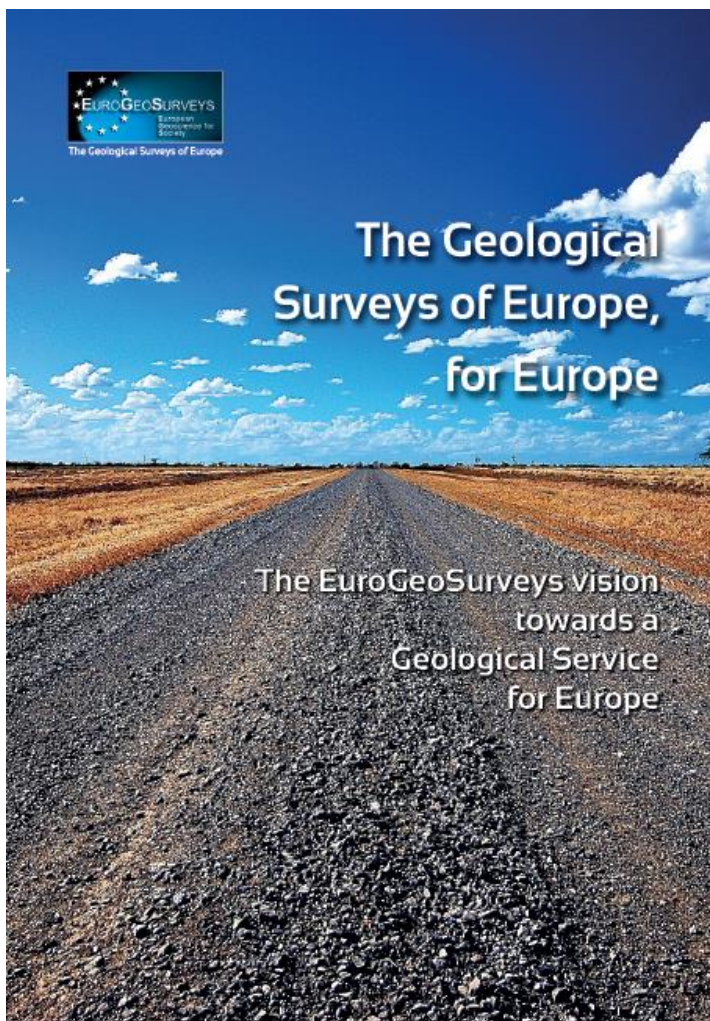
WATER RESOURCES



MINERAL RESOURCES



MARINE GEOLOGY

INTERNATIONAL COOPERATION
AND DEVELOPMENT

COMMUNICATION



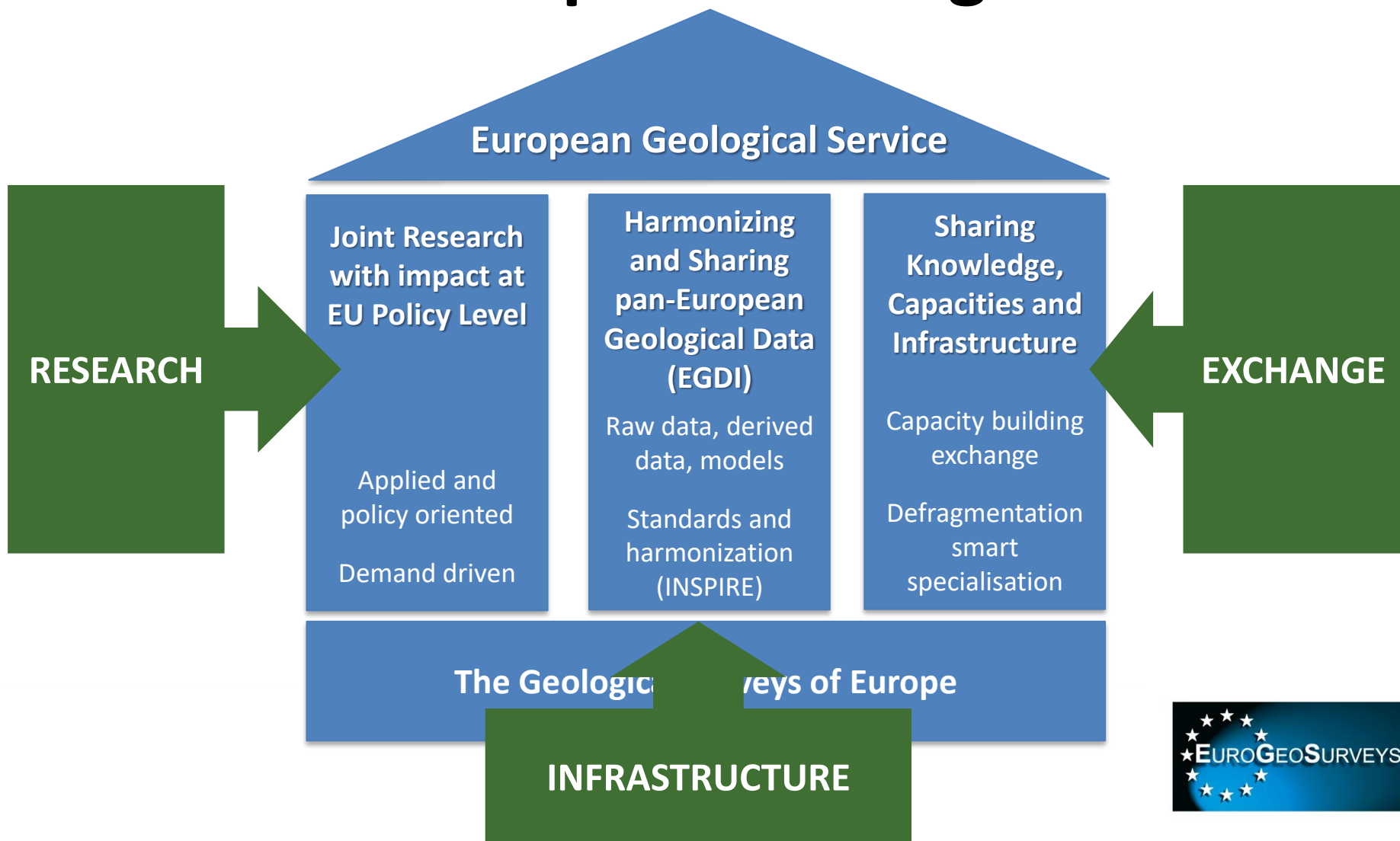
URBAN GEOLOGY



GEOCHEMISTRY

EARTH OBSERVATION
AND GEOHAZARDSSPATIAL INFORMATION
(INSPIRE)

EuroGeoSurveys' Strategic Vision: towards a European Geological Service

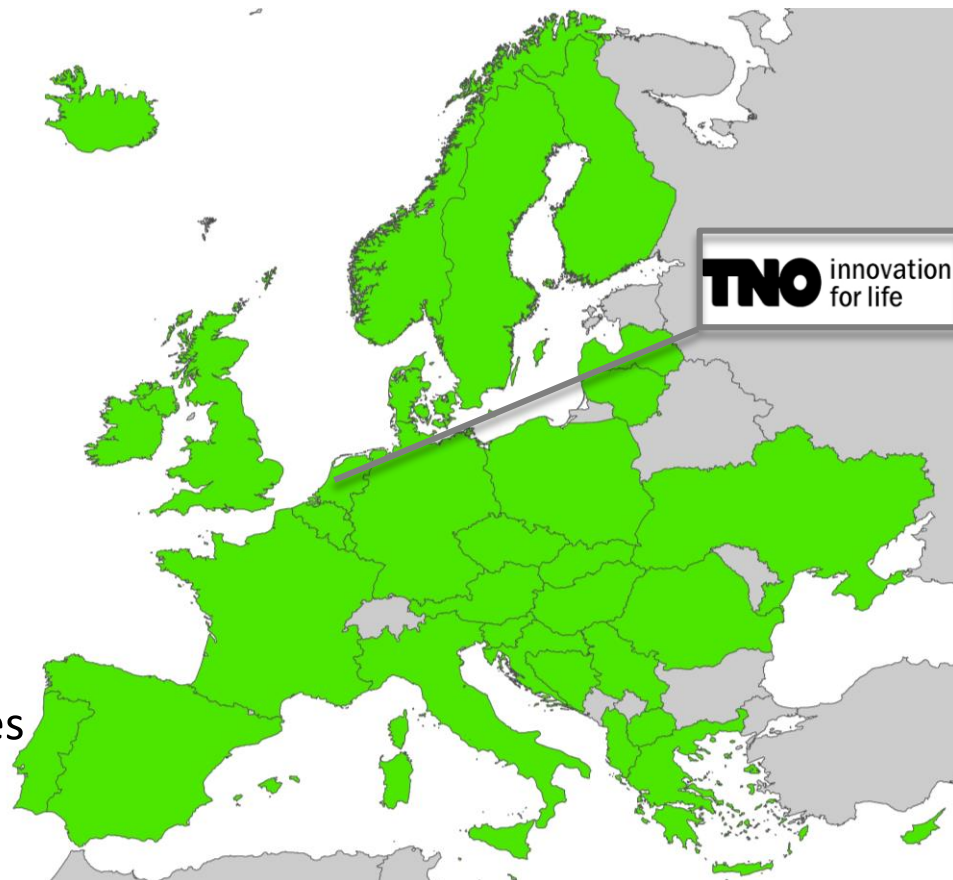


GeoERA Horizon2020 ERA-NET Co-Fund

- 33 Countries - 48 participants



- Total budget 30.3 m€
- 33% EC co-fund + 67% national programmes
- 15 projects in the four GeoERA Themes *Raw Materials, GeoEnergy, Groundwater, and Information Platform*



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energy resources

storage capacities

subsurface potential
use of subsurface space

potential hazards and
environmental impacts

Serge van Gessel / TNO



groundwater resources

understanding of
groundwater systems

interaction with surface
water and ecosystems

protection, manage-
ment and improvement

Klaus Hinsby / GEUS



mineral resources

mineral intelligence,
security and
sustainability of supply

use of surface and
subsurface space

minimizing negative
health and
environment impacts

Antje Wittenberg / BGR



common geoscience
information platform

integrating data,
interpretations and
models

Based on **EGDI** 

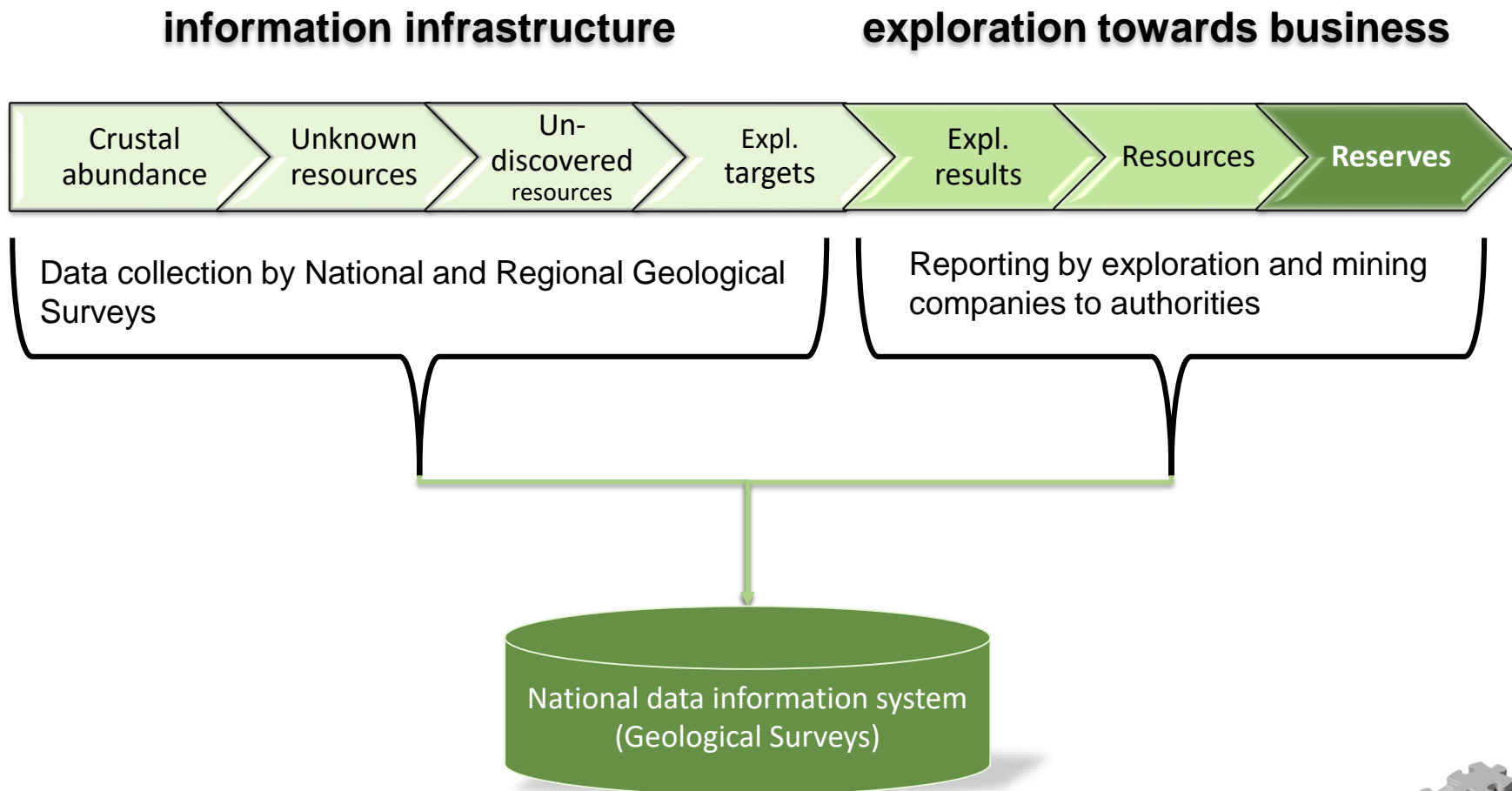
Jørgen Tulstrup / GEUS



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Where do we act



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Regional, National and International Examples

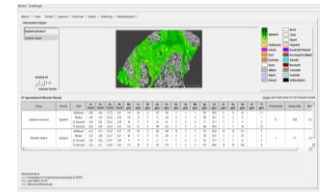
Austria

- Interactiv **R**aw **M**aterial **I**nformation **S**ystem
- GBA MapViewer -> drill core databank



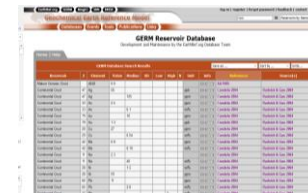
Germany

- **F**ach **I**nformations **S**ystem **R**ohstoffe
- LGRB mapviewer Baden-Württemberg
- r⁴-project HTMET



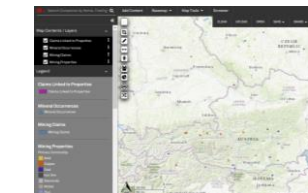
Europe

- ProMINE, Minerals4EU, MICA, ProSum...



Global

- **G**eochemical **E**arth **R**eference **M**odel
- Australian Mining Atlas



Commercial (SNL; Roskill....)

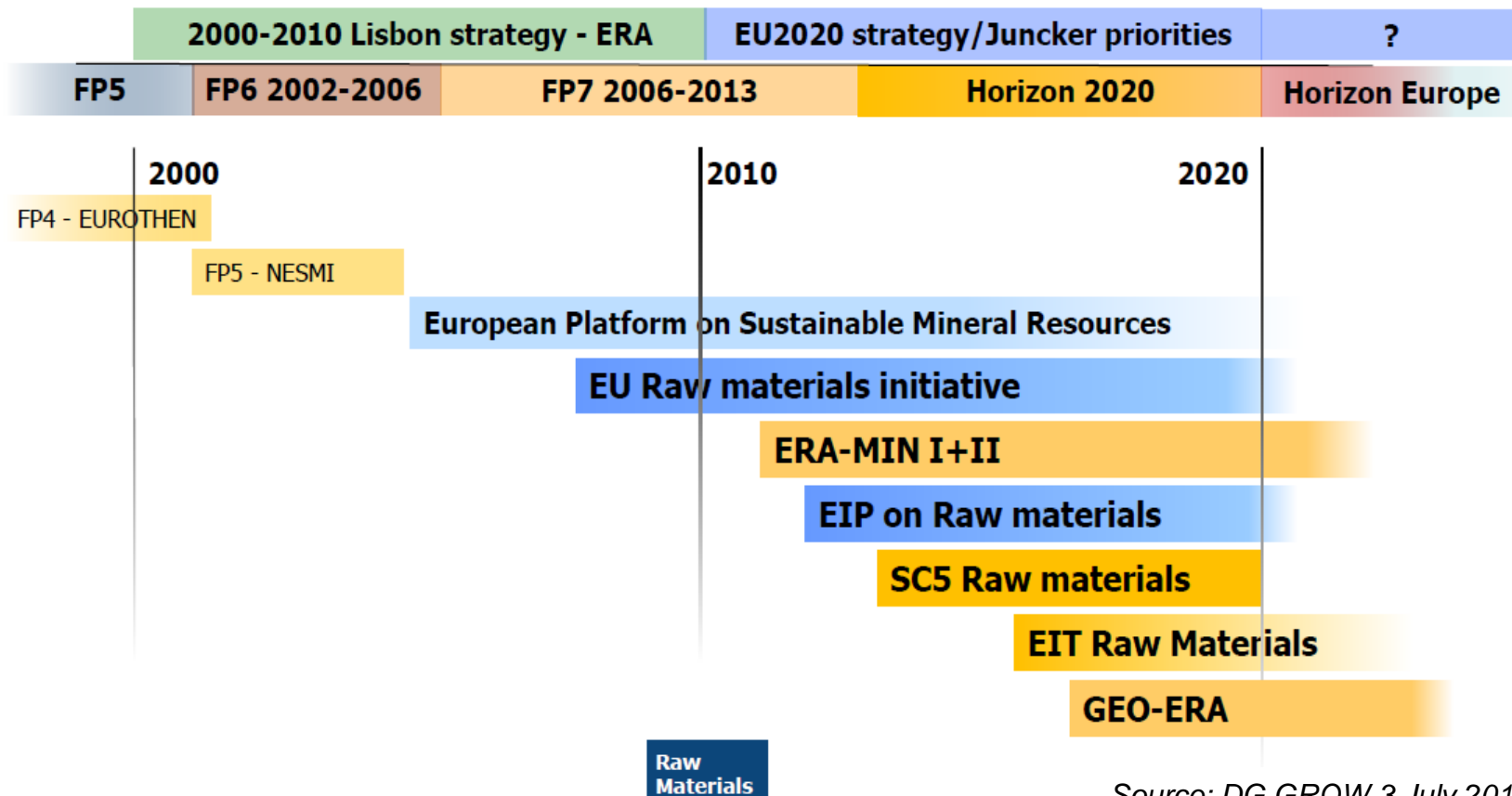


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EU R&I coordination



Raw Materials



Source: DG GROW 3 July 2018



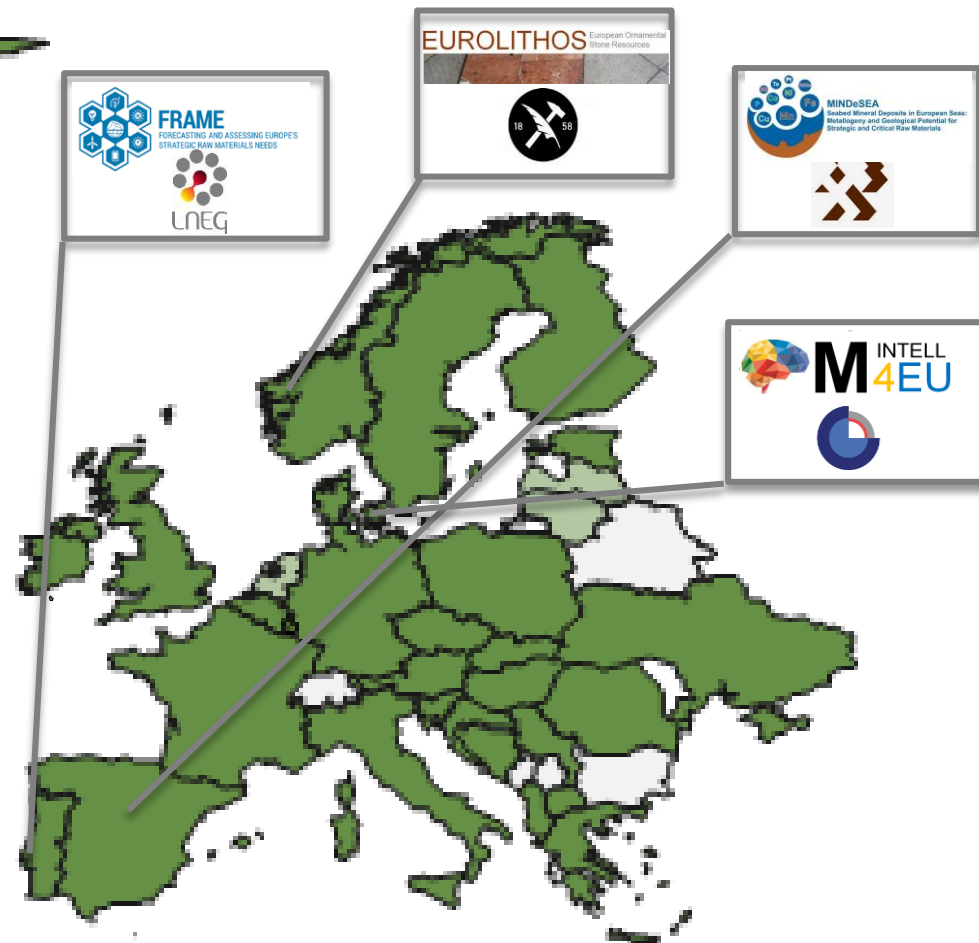
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GeoERA Raw Materials Projects



- Four projects
- 27 Countries (+ Russia and USA)
- 34 National and Regional Geological Survey Organizations and Marine Institutes
- Total budget ~ 7m€



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- Europ. Ornamental stone resources; volume ~1.1.m€
- >600 unique resources, >1000 of quarries, worth 8.5 bn€ [2010]
- Strongly linked to Europ. architectural heritage and cultural landscapes
- Small environmental footprints (a large part of the industry) → ecological niches for rare biotopes
- Catastre/directory of Europ. ornamental stone resources



- Forecasting and Assessing Europe's Strategic and Raw Materials Needs; volume ~ 3.1 m€
- Focus on strategic raw materials ([CRM](#))
- Prospection of potential areas and pre-exploration studies
- Data compilation and inventory of CRM (e.g. spatial, status, geochemical)



- Seabed Mineral Deposits in European Seas; volume ~ 0.8 m€
- Focus on strategic raw materials of the [seabed](#)
- Data compilation and inventory of CRM (e.g. spatial, geochemical, status)
- Exploration, Mining, Closure, Post-closure, New exploration technics



- Mineral Intelligence for Europe; volume ~2.8 m€
- Data compilation and inventory of Raw Materials (e.g. spatial, geochemical, status)



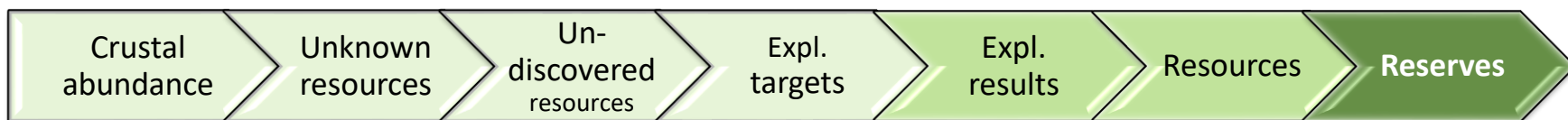
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Where do we act

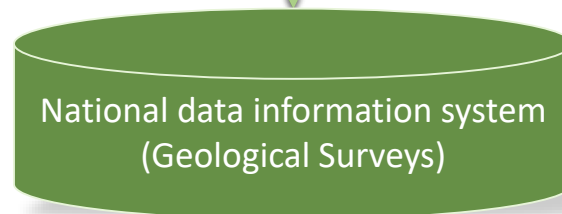
information infrastructure

exploration towards business



Data collection by National and Regional Geological Surveys

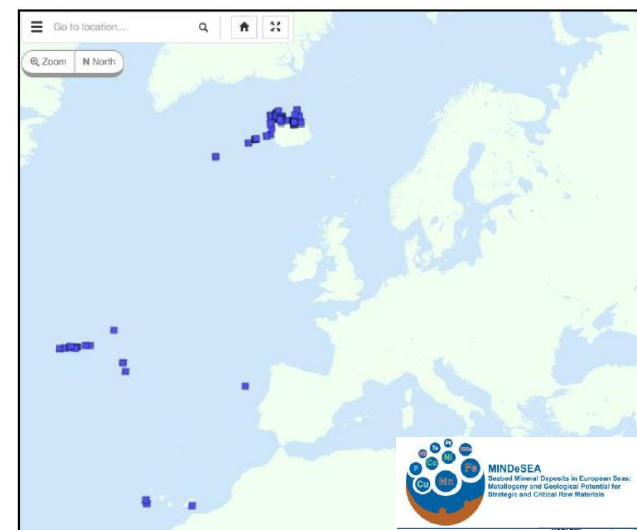
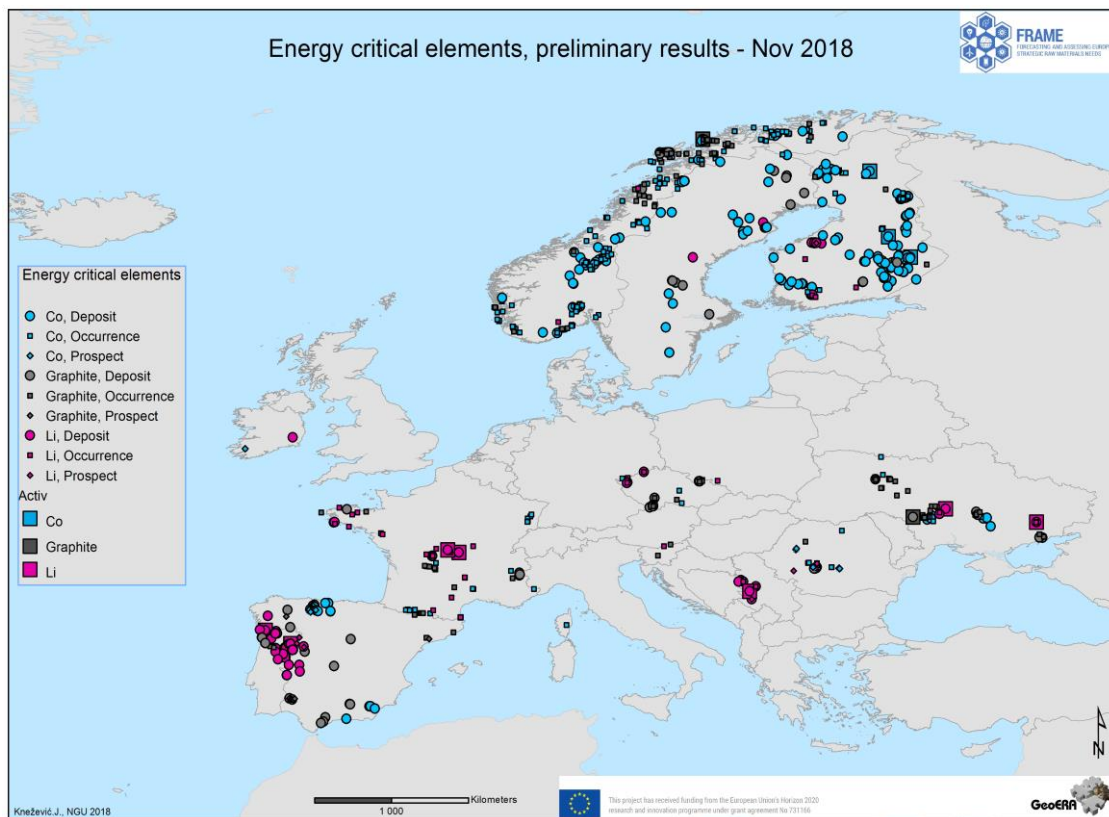
Reporting by exploration and mining companies to authorities



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Serving energy transition needs



Polymetallic sulphides recorded by the EMODnet database as of September 2018
(http://www.emodnet-geology.eu/map-viewer/?p=mineral_occurrences).



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geoera.eu/projects/mintell4eu/

Through this viewer the results of the Mintell4EU project will be made accessible when they will be available through the project. The current view is not showing results of the project but is only here to give an idea about and where the results will appear and on which technology (the EGD)

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



<http://www.europe-geology.eu/map-viewer/>



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Deposits & Resources

On-shore / Off-shore
Geology
Cross-boarder
Transdisciplinary

Data

Solid
Reliable
Traceable
Available
Accessible
Supportive
Integrative

Transnational

Cooperation
Harmonisation
Optimisation
Consolidation



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Key Messages



- National and Regional Geological Surveys are key player providing data on primary raw materials.
- GeoERA build on projects from regional, national and European programs.
- Actions towards the needs of the society in large and to the raw materials community in particular by ensuring cross thematic, cross-disciplinary Knowledge Transfer.
- Synergies with regional and local authorities and data provider and key actors such as EIT Raw Materials and ERA-MIN2 is essential.



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Fit for purpose?

- Geoscientific information on raw materials resources has proven positive impact on the economy
- Data collections addressing a specific questions
- Databases are designed to respond to specific challenges
- Level of detail is a matter of purpose
- Information is a dynamic and valuable good



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



Home

Projects

Themes

FAQ

GeoERA material

About GeoERA

Contact

Search

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Raw materials

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THANK YOU FOR THE INTEREST



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BACKGROUND INFORMATION

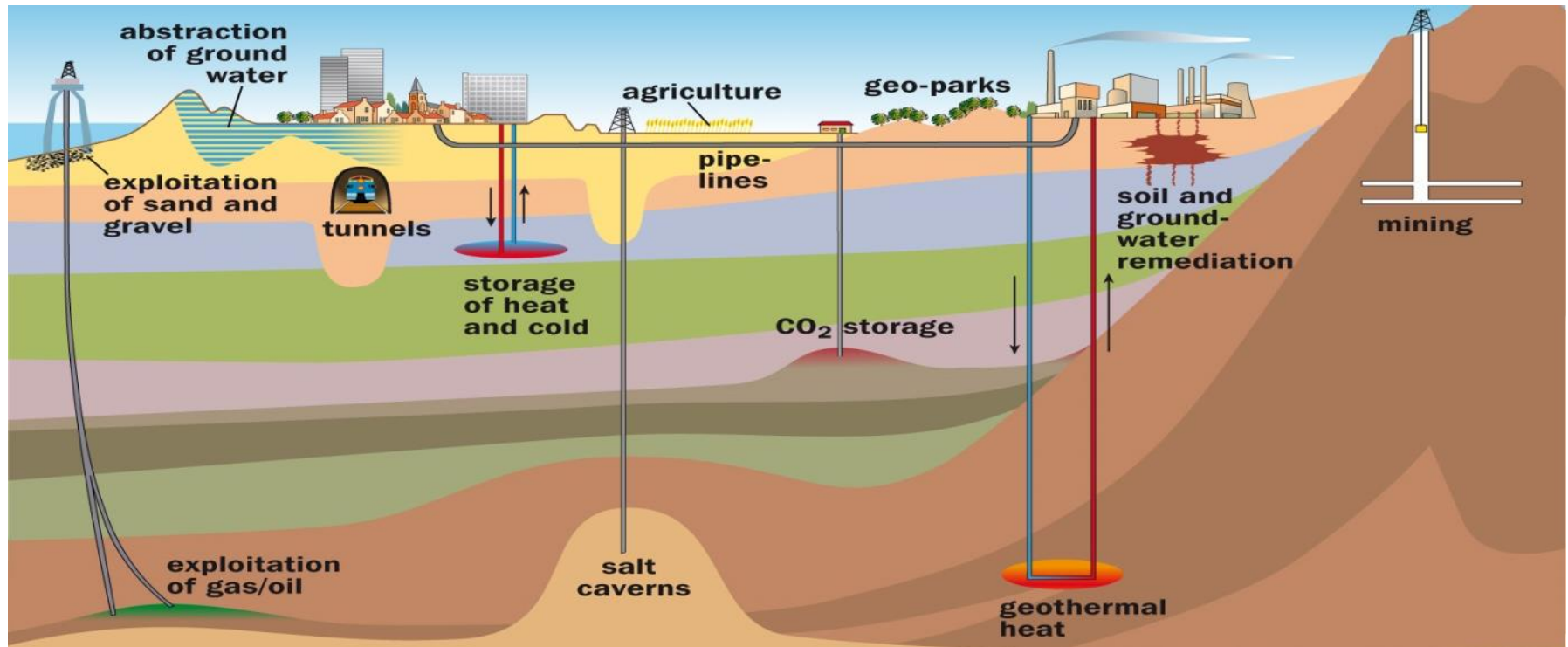


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GeoERA Aim

Provide access to transnational, objective, interoperable data, information and expertise to contribute to **sustainable use and management of the subsurface**



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 **Raw Materials Initiative (RMI)** – Specifically **Pillar 2 *Sustainable supply of raw materials from EU sources***; COM(2008) 699 final; COM(2011) 25 final and assists in unlock the full potential of the single market -> EU Industrial Policy Strategy for the Internal Market

 Explores, monitors and forecasts strategic raw materials (***Critical Raw Materials 2020, Raw Materials Scoreboard 2020***)

 Complement 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***.

 Will lease with Earth observation data as provided by Copernicus.




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Benefits gained by GeoERA



- GeoERA provides comprehensive data on subsurface information
- Combined information on raw materials and on other subsurface information creates valuable (e.g. Copernicus), accessible public data and information for policy-makers and end-users of geological data and minerals information in Europe.
- Those knowledge assist in unlocking the unexploited European mineral resources at depth of 500m to 1000m (worth 100 b€ estimated by VAMOS)
- All data will be made publicly available through  in line the EU Science hub on Raw Materials of the European Commission (RMIS).



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See you at the Posters

Forecasting and Assessing Europe's Strategic Raw Material Needs - FRAME

FRAME (FORECASTING AND ASSESSING EUROPE'S STRATEGIC RAW MATERIAL NEEDS)

Background: Europe shows a growing and accelerating consumption of mineral commodities. Critically, most minerals that cannot be sourced with any certainty. Non-energy mineral extraction is modest, economies are essential for manufacturing and renewable energy supply technologies. Critical and strategic minerals and metals may be obtained through recycling of mining related waste materials. Critical and strategic minerals and metals may be obtained through recycling of mining related waste materials. Critical and strategic minerals and metals may be obtained through recycling of mining related waste materials.

Aims and objectives: A SOLID, EXPERT CONSENSUS. WP1 - Project Coordination. WP2 - Communication, Dissemination and Exploitation. WP3 - Critical and Strategic Raw Materials Map of Europe. WP4 - Critical Raw Materials in phosphate deposits, and associated black shales. WP5 - Energy Critical Elements - Lithium, Graphite, Cobalt. WP6 - Conflict free Nb-Ta for the EU. WP7 - Historical mining sites revisited. WP8 - Link to Information Platform. WP9 - Synergies with other GeoERA projects.

Eurooliths - Ornamental Stone Resources in Europe

Eurooliths challenges: Increasing replacement of traditional stone materials with cheaper on the market, decreasing competitiveness of SMEs, reduction of cultural heritage values, increasing environmental footprints.

Eurooliths concept: raising awareness and knowledge of the diversity of European ornamental stone resources, their importance to our landscapes and architecture, their quality and the environmental benefit of short-travelled resources.

Eurooliths impact: improving cross-European knowledge sharing, improving tools for making good and sustainable choice of stone to construction projects, better competitive regime for European SMEs.

WP4 Atlas of European Ornamental Stones

WP4 Directory of Ornamental Stone Properties

WP5 Ornamental Stone Heritage

WP6 Ornamental stone Information Platform

WP2 Dissemination, communication, stakeholders

Mineral Intelligence for Europe - Mintell4EU

Background: The European Union has identified security of supply, improved environmental management and resource efficiency as key challenges for the sustainable sector. Mintell4EU is a project that aims to improve the sustainability of the mineral sector by providing the scientific and spatial distribution of mineral and non-metallic resources. Mintell4EU is a project that aims to improve the sustainability of the mineral sector by providing the scientific and spatial distribution of mineral and non-metallic resources.

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Relationship with Copernicus: The Mintell4EU project is to improve the sustainability of the mineral sector by providing the scientific and spatial distribution of mineral and non-metallic resources. The Mintell4EU project is to improve the sustainability of the mineral sector by providing the scientific and spatial distribution of mineral and non-metallic resources.

Information system and marine minerals and MIND4ER Link

Background: MIND4ER - Seabed Mineral Deposits in European Seas. MIND4ER - Seabed Mineral Deposits in European Seas. MIND4ER - Seabed Mineral Deposits in European Seas.

Objectives: 1. Characterisation of the seabed. 2. Assessment of the potential of the seabed. 3. Assessment of the potential of the seabed. 4. Assessment of the potential of the seabed. 5. Assessment of the potential of the seabed. 6. Assessment of the potential of the seabed. 7. Assessment of the potential of the seabed. 8. Assessment of the potential of the seabed. 9. Assessment of the potential of the seabed. 10. Assessment of the potential of the seabed.

Geographical Scope: Atlantic Ocean, Black Sea, Mediterranean Sea.

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Material

Background: Material - Raw Materials in European Seas. Material - Raw Materials in European Seas. Material - Raw Materials in European Seas.

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Geographical Scope: Atlantic Ocean, Black Sea, Mediterranean Sea.

GEOERA Information Platform

Background: The platform will be based on a coherent architecture which will take into account experiences gained in previous EU funded data harmonisation projects and be built as an extension to the European Geological Data Infrastructure (EGDI). The platform will be based on a coherent architecture which will take into account experiences gained in previous EU funded data harmonisation projects and be built as an extension to the European Geological Data Infrastructure (EGDI).

Objectives: Geo-energy, groundwater and raw materials themes share the objective to provide and disseminate spatial information and underlying geological data. Establish a common platform for organizing, disseminating and sustaining the digital results of those projects. Integrate information and knowledge to support sustainable use of the subsurface during the green geological transition.

Work Packages: Coordination, User requirements, Standards and interoperability issues, Semantic and harmonisation issues, Architecture, Developments (user oriented), Developments (central), Data provider support, Sustainability issues, Communication and dissemination, IPR and data policy issues.

Raw Materials in European Seas

Background: Raw Materials in European Seas. Raw Materials in European Seas. Raw Materials in European Seas.

Objectives: 1. Characterisation of the seabed. 2. Assessment of the potential of the seabed. 3. Assessment of the potential of the seabed. 4. Assessment of the potential of the seabed. 5. Assessment of the potential of the seabed. 6. Assessment of the potential of the seabed. 7. Assessment of the potential of the seabed. 8. Assessment of the potential of the seabed. 9. Assessment of the potential of the seabed. 10. Assessment of the potential of the seabed.

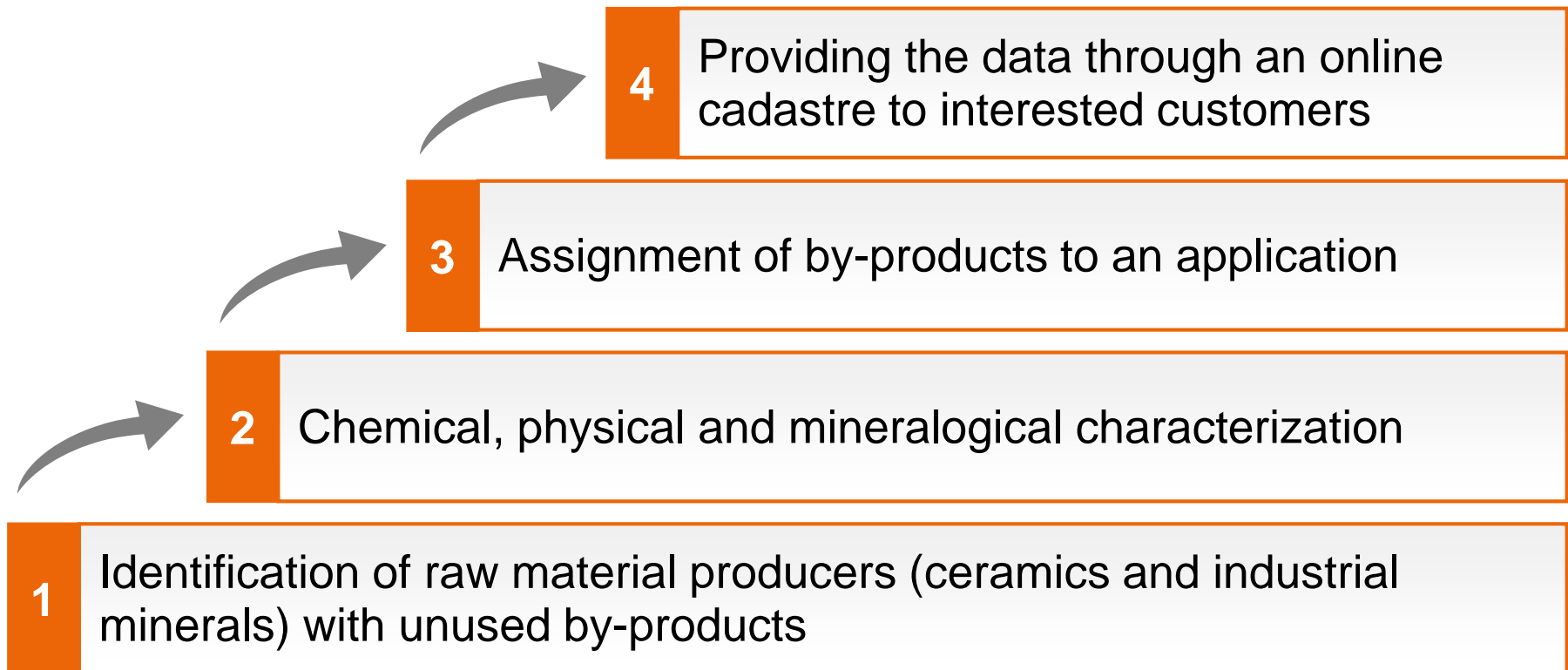
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Stakeholder demand - by-products cadaster

Potential analysis of by-products from the industrial mineral production as well as the ceramic industry



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Knowledge sources Raw Materials Initiative EU raw materials knowledge base



Collaboration with key providers

- UNFC
- Eurostat/National data providers
- **EuroGeoSurveys**
- Inspire
- Copernicus



Studies and projects

- **ORAMA** (H2020, 2017-2019)
- **SCRREEN expert network** (H2020, 2016-2019)
- **Minerals4EU** (FP7, 2015) + **GEO-ERA** (H2020, 2022)
- **CRM study** (DG GROW, 2017)
- **Materials Systems Analysis** (GROW, 2015) + JRC
- **Minfuture** (H2020, 2016-2018)
- **MICA** (H2020, 2015-2018)
- **MINEA** (COST action, ongoing)
- **ProSUM** (H2020, 2015-2017)
- **SmartGround** (H2020, 2015-2018)
- **Minventory** (GROW, 2015)

Raw Materials

RMIS

Source: DG GROW 3 July 2018



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Rational

- Mineral Raw Materials are essential for societal development and Europe's ambition for economic growth and well-being.
- The mining and quarrying sector is considered one of the major sectors by the European Union (Horizon 2020 investments 2014-2020 of 600m€)
- Exploration, maintaining and rehabilitation is getting more and more challenging also caused by the intensive land-used and use of the subsurface.



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