

Session IV: Strengthening EU's critical raw materials capacities along all stages of the value chain: a coordinated effort



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COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

Critical Raw Materials Resilience: Charting a Path towards greater Security and Sustainability

Internal Market, Industry, Entrepreneurship and SMEs

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The European innovation partnership (EIP) on raw materials

The European innovation partnership on raw materials is a stakeholder platform that brings together representatives from industry, public services, academia and NGOs. Its mission is to provide high-level guidance to the European Commission, EU countries and private actors on innovative approaches to the challenges related to raw materials.

The EIP plays a central role in the EU's raw materials policy framework

- It reinforces the [raw materials initiative](#) (IMI) by translating the strategic policy framework into concrete actions and by mobilising the stakeholder community to implement them
- It has been instrumental in securing R&I funding: while framework programme 7 (the R&I funding tool for the period 2007-2013) only included approximately €180 million for raw materials R&I, [Horizon 2020](#) (the R&I funding tool for 2014-2020) reserved €600 million for research on the challenges related to raw materials.

The [European innovation partnerships](#) (EIPs) are a new approach to EU research and innovation. By bringing together actors from the entire research and innovation value chain they aim at streamlining efforts and accelerating market take-up of innovations that address key challenges for Europe.



Study on the EU's list of Critical Raw Materials (2020)

Final Report




COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN INVESTMENT BANK AND THE COMMITTEES OF THE REGIONS

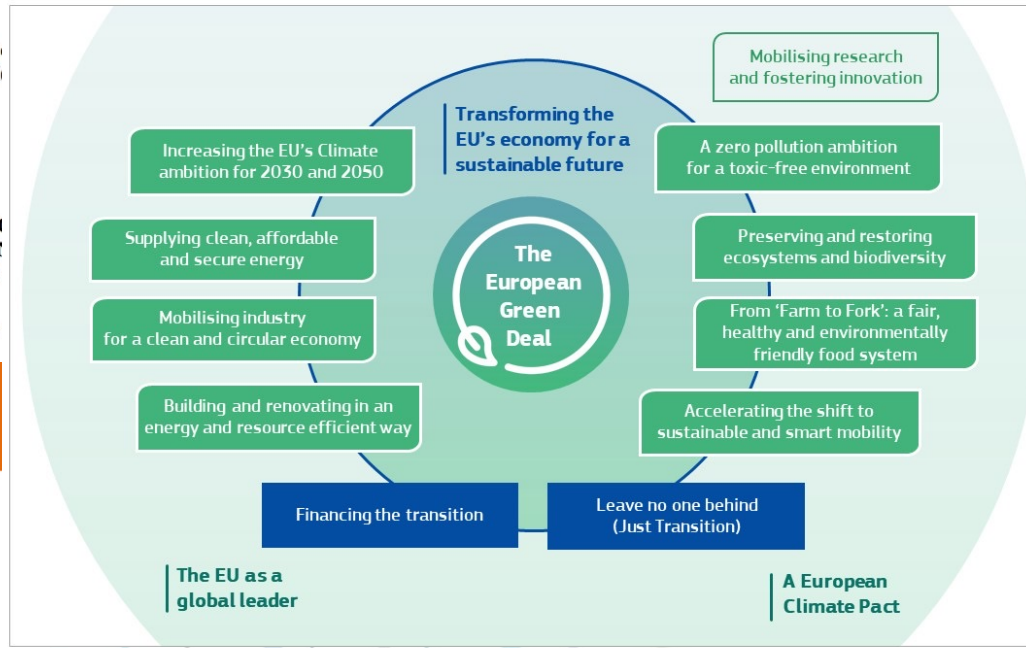
Critical Raw Materials Resilience: Charting a Path to Sustainable Supply



Study on the EU's list of Critical Raw Materials (2020)

Final Report

Brussels, 11 June 2020



Strategic Technologies and Sectors in the EU
A Foresight Study



Partnership and SMEs

Partnership and SMEs | Access to finance | Sectors | Tools and databases

Partnership (EIP) on raw materials

A stakeholder platform that brings together academia and NGOs. Its mission is to support EU countries and private actors in their raw materials strategies.

Policy framework for mobilising the R&I funding

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March 2023

SECURING CRITICAL RAW MATERIALS IN THE EU

The role of trade and external actions

To become a net-zero economy, the EU needs Critical Raw Materials (CRMs). The EU will never be self-sufficient in CRMs and will continue to rely largely on imports. Therefore, in addition to making the most of its own CRM reserves and enhancing circularity, the EU needs to strengthen its global engagement to develop win-win partnerships with reliable partners. Here's how¹.



CRM Club

Establish a raw materials alliance with partners to strengthen supply chains and diversify sourcing.



Strategic Partnerships on Raw Materials

Expand our network of strategic raw materials partnerships.



Trade and Investment Agreements

Leverage and expand our trade agreements as regards raw materials extraction, processing and trade.



Global Gateway

Support critical raw material supply projects, including on infrastructure, connectivity and sustainability.



Enforcing Trade Rules

Continue to combat unfair trade practices, especially when they concern trade investment in or access to critical raw materials.

Press release | 16 March 2023 | Brussels

Critical Raw Materials: ensuring secure and sustainable supply chains for EU's green and digital future



European Critical Raw Materials Act

2030 benchmarks for strategic raw materials:



EU EXTRACTION

At least **10%** of the EU's annual consumption for extraction



EU PROCESSING

At least **40%** of the EU's annual consumption for processing



EU RECYCLING

At least **15%** of the EU's annual consumption for recycling



EXTERNAL SOURCES

Not more than **65%** of the EU's annual consumption of **each strategic raw material at any relevant stage of processing** from a single third country



Rare Earths



- Net-zero use includes:
wind turbines
- Projected increase in global demand:
x5.5 by 2050
- Foreseen EU trade action:
 - Strategic raw materials partnerships with countries with important reserves
 - Pursue predictable legal frameworks for trade and investment in rare earths with Australia
 - Support investment in rare earth mining/processing in Ukraine

Nickel



- Net-zero use includes:
batteries
- Projected increase in global demand:
x15 by 2040
- Foreseen EU trade action:
 - Boost trade and investment through trade agreements with Australia and Indonesia
 - Support creation of sustainable processing capacities in Indonesia
 - Support regional environmental infrastructure

EU TRADE ACTIONS FOR CRITICAL RAW MATERIALS SUPPLY*

Lithium



- Net-zero use includes:
electrical vehicles
- Projected increase in global demand:
x57 in 2050
- Foreseen EU trade action:
 - Special focus on raw materials in trade agreements in Latin America
 - Strategic raw materials partnerships with countries with important reserves

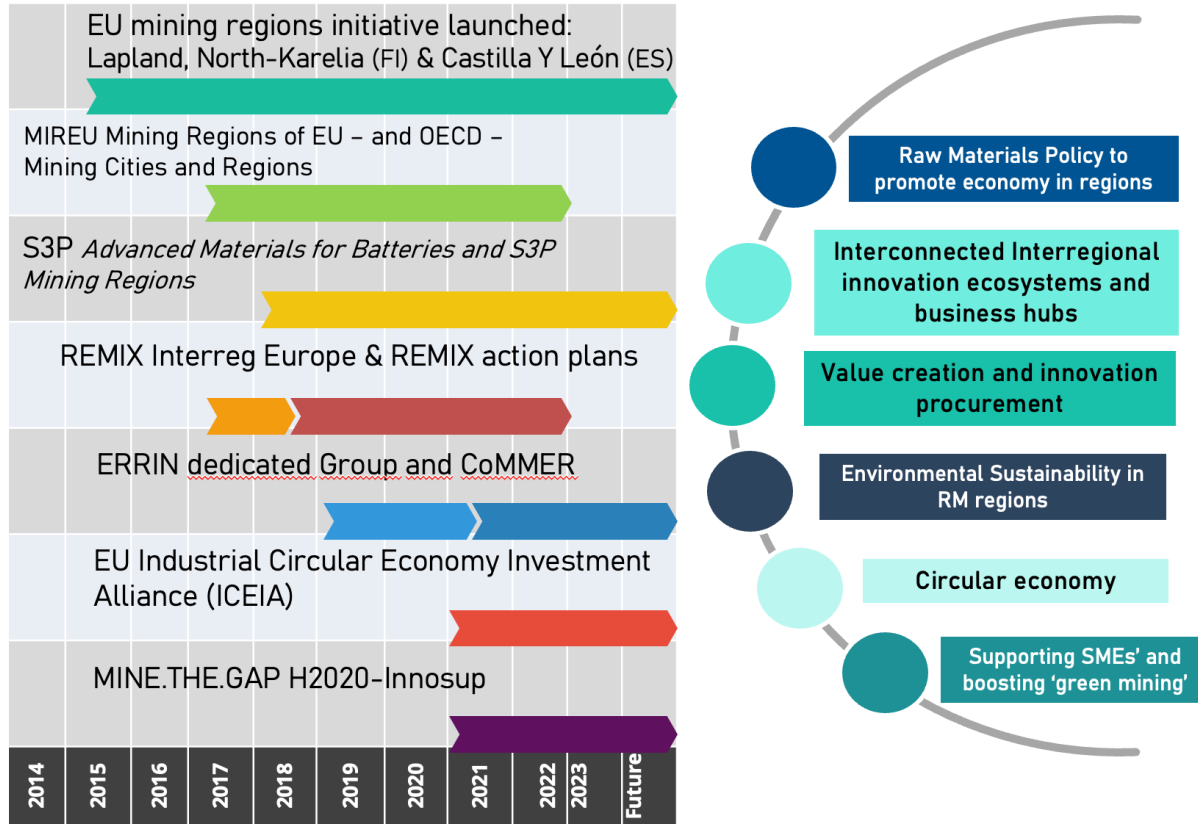
Platinum Group Metals



- Net-zero use includes:
hydrogen fuel cells
- Projected increase in global demand:
x970 in 2050
- Foreseen EU trade action:
 - Work with South Africa for more predictable legal environment for trade and investment
 - Strategic raw materials partnership with countries with important reserves
 - Support investments in South African energy infrastructure

*Source: JRC Science for Policy Report Supply chain analysis and material demand forecast in strategic technologies and sectors in the EU – A foresight study

BACKGROUND OF CONSOLIDATED INITIATIVES, PROGRAMS



European Union
European Regional
Development Fund



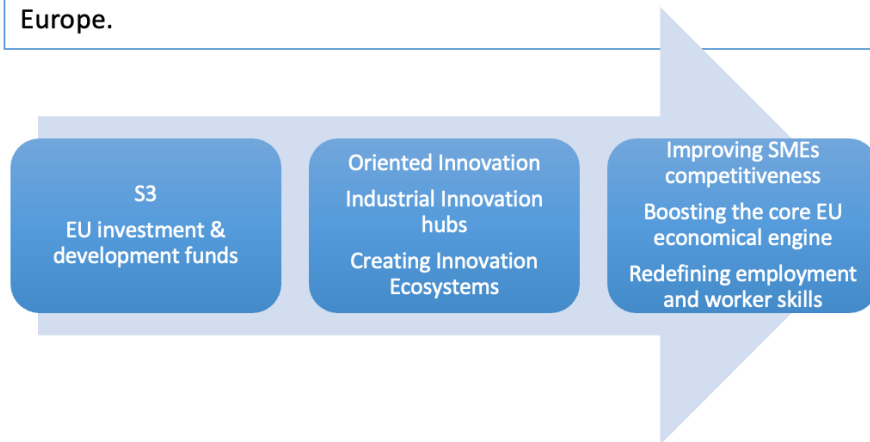
PROMOTING INNOVATION INTO RAW MATERIALS SMEs. CREATION OF INNOVATION ECOSYSTEMS IN REGIONS TO PROMOTE GREEN ECONOMY



As part of its 'Europe 2020' strategy, the EU has been encouraging regions to **develop Smart Specialisation Strategies(S3)** since the beginning of this programming period. The aim is to **direct their investment efforts towards growth-oriented innovation**. As such, it appears as *"a valuable tool to tackle the innovation gap, and boost jobs and growth in Europe."*

Introduced as an ex-ante conditionality in the 2014-2020 programming period of Cohesion Policy, the **development of smart specialisation strategies is currently a prerequisite to receive funding from the European Regional Development Fund (ERDF)**.

Linking the development of S3 to the allocation of ERDF funding has improved the quality of the implementation of these strategies across Europe.

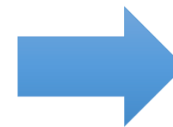


Connecting research and industry "The main goal of a smart specialisation policy is to concentrate resources on the development of those activities that are likely to transform effectively the existing economic structures through R&D and innovation."

Dominique Foray, École Polytechnique Fédérale de Lausanne

Mikel Landabaso of DG Regio, writing in 1993: "..technology cannot be expected to assist in resolving the problems of competitiveness unless it functions as part of a system which is institutionally and organizationally capable of adapting to changing demands on a continuous basis" - (Landabaso, 1993)

Our success



Connecting with the regional system and its associated industrial network. Looking abroad for good lessons learnt. Identifying and connecting opportunities at similar ecosystems of innovation

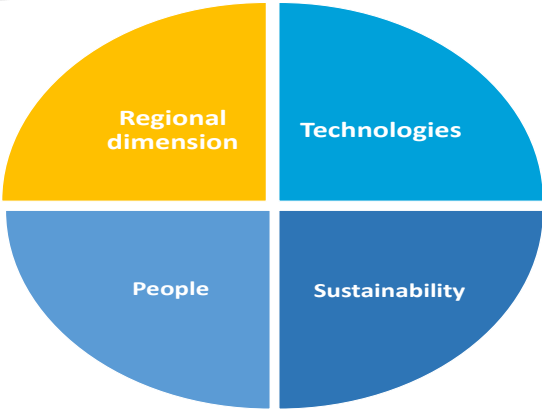


SUCCESS ELEMENTS IN OUR INNOVATION ECOSYSTEM

Ecosystems are dynamic and co-evolving communities of diverse actors who create new value through increasingly productive and sophisticated models of both collaboration and competition



Properly designed business platforms can help create and capture new economic value and scale the potential for learning across entire ecosystems.



Regional Innovation ecosystems as pillars of Industrial development

Reinforce Human Capital, Skills and Cluster policy for Industrial development

Focus on Industrial uptake of Enabling Technologies, invest in pilot plants & demonstrators

Use the "challenge approach" to combine industrial development and sustainability

Interregional investment & innovation ecosystem to ensure sustainable supply or RM



Regional Clusters for Innovation

Regional Clusters consist of co-located and linked

- Regional Authorities
- Academia and RTD Institutes
- Industries
- Financial Organizations
- Institutions for Collaboration
- **Competence Centers**

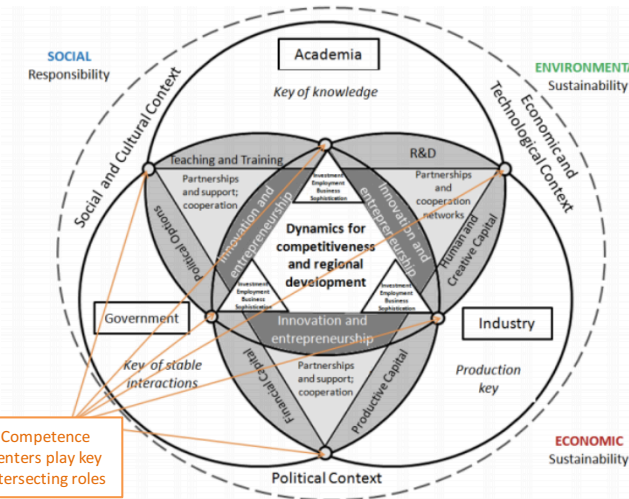


Regional Clusters are sources of innovation and wealth since they

- facilitate the development of *common visions* and thus contribute to achievement of *common goals*
- enhance the *competitiveness* of participating firms through the *rapid diffusion of knowledge and expertise*
- facilitate *innovations* and bring them to *market maturity*
- represent an efficient instrument for the *concentration of resources*
- act as a bridge-head in promoting *interregional collaboration* and *research-industry networking*

the OBJECTIVE: To improve the access of SMEs to technology and expertise providing close-to-market technology services

A well defined "Innovation Space"



Elements	Definition
4 helices	<ul style="list-style-type: none"> o University o Government o Industry o Civil Society
4 components	<ul style="list-style-type: none"> o R&D performers o Non-R&D performers o Hybrid institutions or organisations o Informal groups of users that may interact in exchanging knowledge and creating innovation
2 contextual hypotheses	<ul style="list-style-type: none"> o Democracy and social inclusion o Pervasiveness of ICT in each one of the four helices
2 knowledge types	<ul style="list-style-type: none"> o Science/technology-based knowledge o Creativity-based knowledge
1 innovation objective	Regional development and growth

Consensus (Governance) Space

COMPETENCE CENTER IN SYNERGY WITH REGIONAL CLUSTERS Innovation, Technology Transfer and Knowledge-based Business

- regional hub for the valorization of research results
promotion of innovation and technology transfer
- in-house technical, financial, business and marketing consultancy
management of national and international joint R&D programs
- high level training and education on managerial and entrepreneurial issues
- promotion of investments in technology-oriented business
promotion of technology clusters and of national and international partnerships and business networks
- facilitated access to regional, national and international funds for RTD and innovation development
- Offering key innovation and technical services to local industry
- common image promotion and communication



S3P Mining Industry partnership at a glance:

Mining industries and global value chain thematic partnership

- Securing a sustainable supply and industrial value chains are crucial for the future EU
- Primary production will remain important coming decades - minimisation of the environmental impacts and risks linked to RM production is vital
- Regions are the operational starting point for the industrial value and supply chains
- Regional ecosystems are the focal points and the playgrounds in the development of sustainable raw material production –

Mines are always place-based, **depending on geology** and cannot be moved

Contradictory fact is that when we are trying to reduce the use of the natural resources, we must increase the use of the other natural resources like the mineral ones.

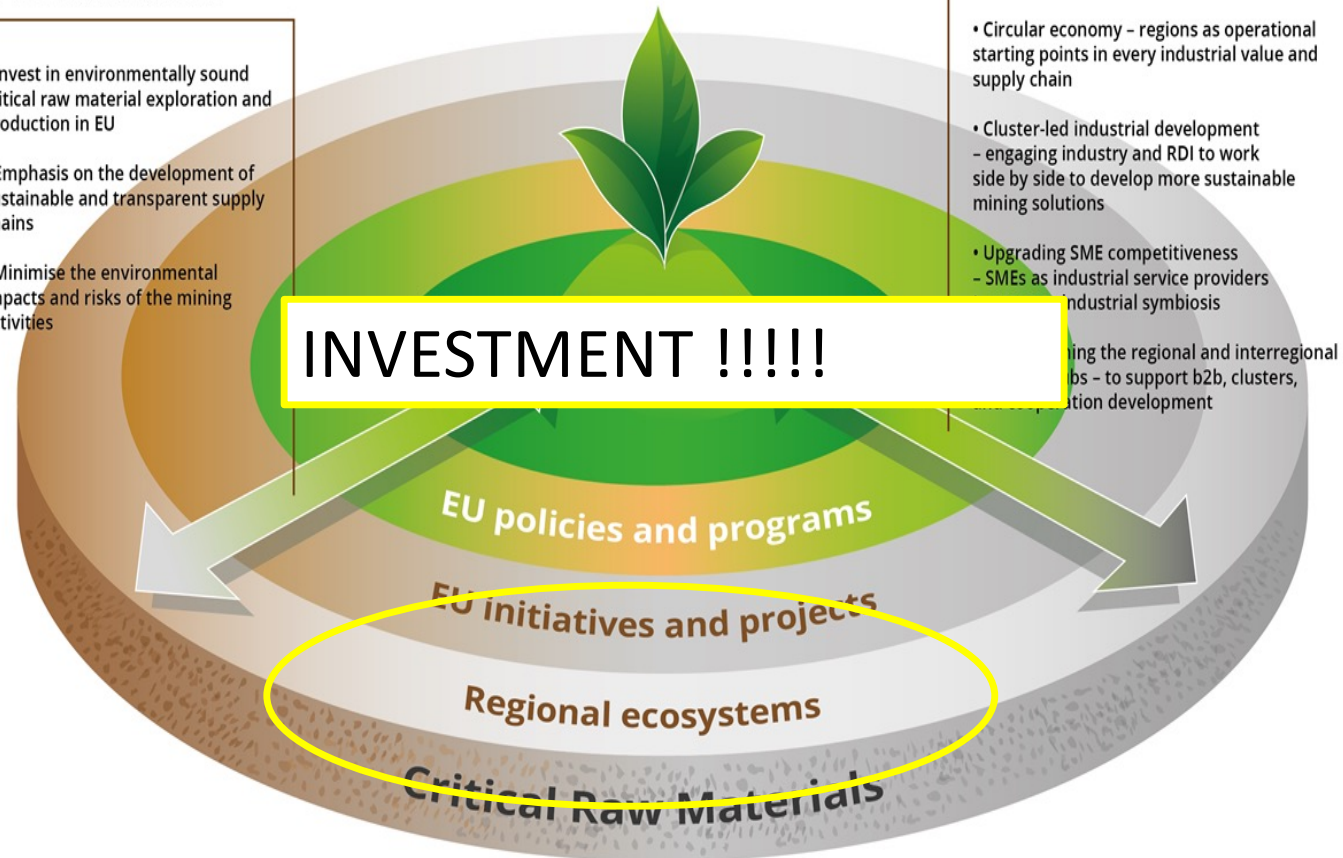
Sustainable availability of the raw materials

- Invest in environmentally sound critical raw material exploration and production in EU
- Emphasis on the development of sustainable and transparent supply chains
- Minimise the environmental impacts and risks of the mining activities

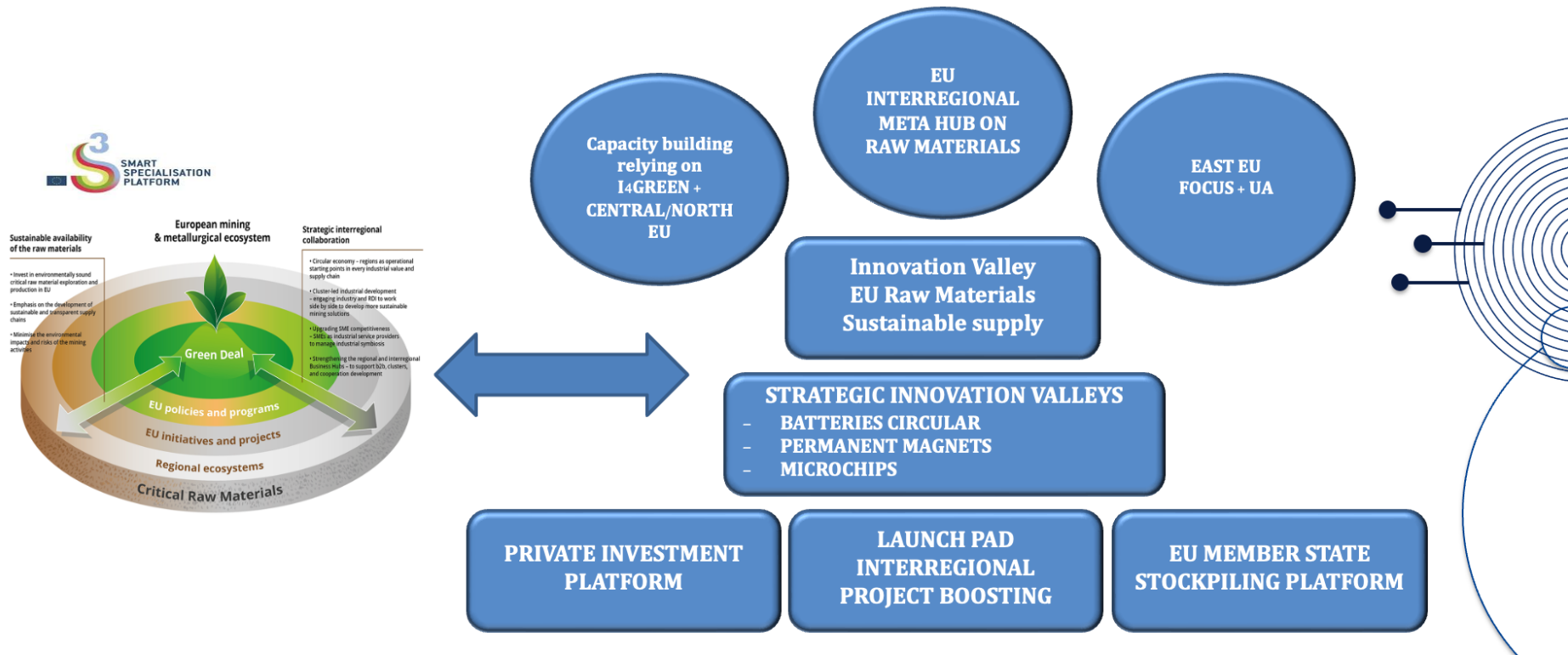
European mining & metallurgical ecosystem

Strategic interregional collaboration

- Circular economy – regions as operational starting points in every industrial value and supply chain
- Cluster-led industrial development – engaging industry and RDI to work side by side to develop more sustainable mining solutions
- Upgrading SME competitiveness – SMEs as industrial service providers
- Industrial symbiosis
- Strengthening the regional and interregional links – to support b2b, clusters, innovation development



Innovation and interregional view beyond



Investments and global plan

Interregional investment meta_HUB & global innovation valley ecosystem to ensure sustainable supply of RM to EU Industry

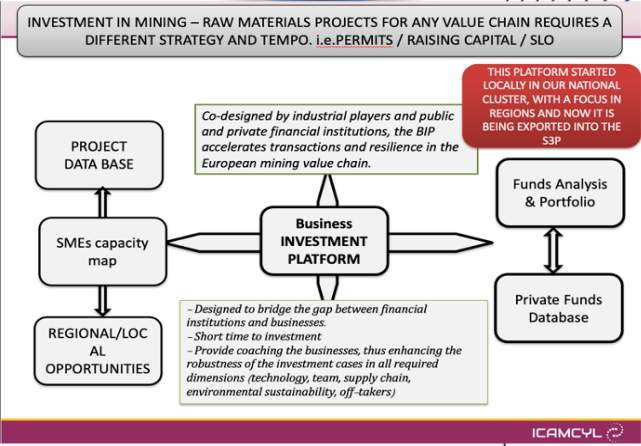
13/Innovation valleys INVESTMENT PLATFORM STRATEGY

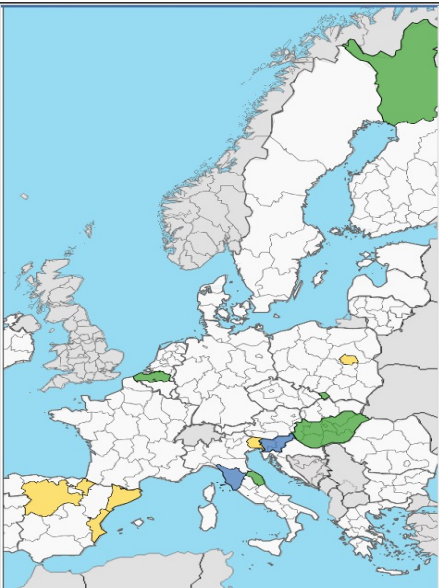
- DEFINE PROJECTS AND LOCATIONS
- TECHNOLOGY TRANSFER DEFINITIONS
- ANALYSIS OF CANDIDATE LOCATIONS IN CONNECTION TO INVESTMENT OPTIONS (PUBLIC AND/OR PRIVATE)
- EVALUATE AND SELECT
- START NEGOTIATIONS (REGIONAL GOVERNMENTS / PRIVATE INVESTORS)

PRIVATE INVESTMENT & MANAGEMENT MEMBER STATE STOCKPILING PLATFORM

- DISTRIBUTED PLATFORM
- LOCATIONS DEFINED BY DEPOSITS AND STRATEGIC HARBORS
- MEMBER STATE ANALYSIS & REQUEST OF ORDERS
- FLUX & TRADING
- DUMPING CONTROL
- PUBLIC-PRIVATE PARTNERSHIP
- LINKED TO INVESTMENT STRATEGY AND NEW PROJECTS DISCOVERY

Properly designed business platforms can help create and capture new economic value and scale the potential for learning across entire ecosystems.





SME integration to Industry 4.0

Leading regions

- Slovenia (SI)
- Tuscany, Italy (IT)

Participating regions

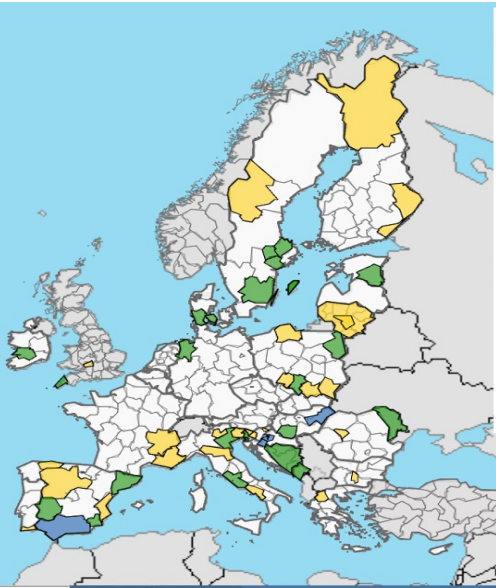
- Castile and Leon, Spain (ES)
- Catalonia, Spain (ES)
- Friuli-Venezia Giulia, Italy (IT)
- Mazowieckie, Poland (PL)
- Navarra, Spain (ES)
- Valencia, Spain (ES)

Interested regions

- Bielsko-Biala, Poland (PL)
- Flanders, Belgium (BE)
- Hungary (HU)
- Lapland, Finland (FI)
- Marche, Italy (IT)

JRC SCIENCE FOR POLICY REPORT
Smart Specialisation Strategies and Regional Productivity
A preliminary assessment in Portugal

JRC SCIENCE FOR POLICY REPORT
DIGITAL INNOVATION HUBS AS POLICY INSTRUMENTS TO BOOST DIGITALISATION OF SMEs
A PRACTICAL HANDBOOK & GOOD PRACTICES FOR REGIONAL/NATIONAL POLICY MAKERS AND DIH MANAGERS



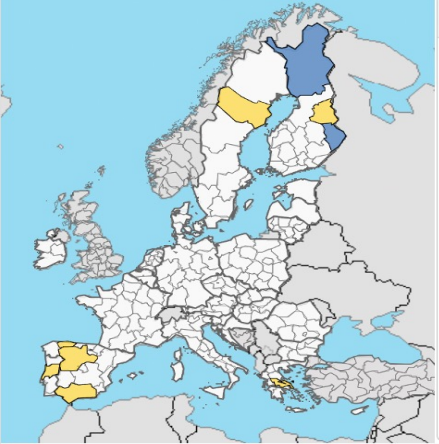
Sustainable Buildings

Leading regions

- Andalusia, Spain (ES)
- North Great Plain (Észak-Alföld), Hungary (HU)
- North West Croatia, Croatia (four NUTS 3: HR041, HR042, HR04D, HR043) (HR)
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Participating regions

- Alba County (Centru), Romania (RO)
- Algarve, Portugal (PT)
- Asturias, Spain (ES)
- Autonomous Province of Trento, Italy (IT)
- Campania, Italy (IT)
- Castile and Leon, Spain (ES)
- Central Slovenia, Slovenia (SI)
- Drava (Podravska), Slovenia (SI)
- Emilia Romagna, Italy (IT)
- Friuli-Venezia Giulia, Italy (IT)
- Gloucestershire, UK (UK)
- Jämtland, Sweden (SE)
- Kaunas County, Lithuania (LT)
- Lapland, Finland (FI)
- Lithuania (LT)
- Malopolska, Poland (PL)
- North Karelia, Finland (FI)
- Opolskie, Poland (PL)
- Plovdiv, Bulgaria (BG)
- Podkarpackie, Poland (PL)
- Pomorskie, Poland (PL)
- Rhône-Alpes, France (FR)
- South Karelia, Finland (FI)
- South Region (Provence-Alpes-Côte d'Azur) France (FR)
- Upper Carniola (Gorenjska), Slovenia



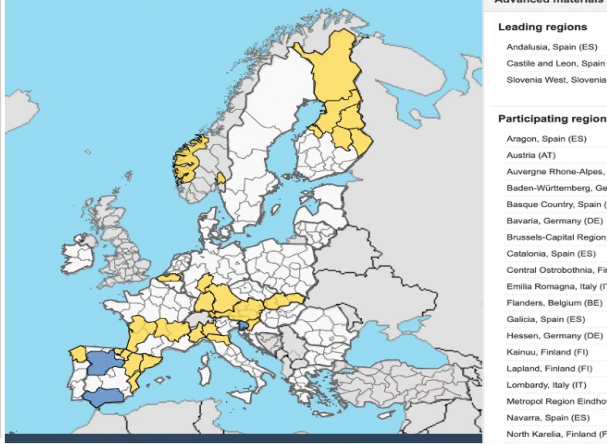
Mining industry

Leading regions

- Lapland, Finland (FI)
- North Karelia, Finland (FI)

Participating regions

- Andalusia, Spain (ES)
- Asturias, Spain (ES)
- Castile and Leon, Spain (ES)
- Centro, Portugal (PT)
- Kainuu, Finland (FI)
- Sterea Ellada (Central Greece) (EL)
- Västerbotten, Sweden (SE)



Advanced materials on batteries

Leading regions

- Andalusia, Spain (ES)
- Castile and Leon, Spain (ES)
- Slovenia West, Slovenia (SI)

Participating regions

- Aragon, Spain (ES)
- Austria (AT)
- Auvergne Rhone-Alpes, France (FR)
- Baden-Württemberg, Germany (DE)
- Basque Country, Spain (ES)
- Bavaria, Germany (DE)
- Brussels-Capital Region, Belgium (BE)
- Catalonia, Spain (ES)
- Central Ostrobothnia, Finland (FI)
- Emilia Romagna, Italy (IT)
- Flanders, Belgium (BE)
- Galicia, Spain (ES)
- Hessen, Germany (DE)
- Kainuu, Finland (FI)
- Lapland, Finland (FI)
- Lombardy, Italy (IT)
- Metropool Region Eindhoven (NL)
- Navarra, Spain (ES)
- North Karelia, Finland (FI)

- North Karelia, Finland (FI)
- Northern Ostrobothnia (Pohjois-Pohjanmaa, Oulu subregion (city of Oulu)), Finland (FI)
- Northern Savonia (Pohjois-Savo), Finland (FI)
- Nouvelle Aquitaine, France (FR)
- Piedmont, Italy (IT)
- Slovakia (SK)
- Slovenia East, Slovenia (SI)
- Valencia, Spain (ES)
- Viken, Norway (NO)
- Western Norway (Vestlandet), Norway (NO)



Education and Skills for S3





Thank you !

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