



International activities for clustering REMIX-MIREU

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ICAMCyL Foundation: *International Center for Advanced Materials and Raw Materials of Castilla y Leon*

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- **Castilla y León owns minerals resources richness that need promotion, and the implementation of new advancing processing and extracting technologies.**
- **Castilla y León owns a strong industry in key sectors like: capital goods & manufacturing, energy production, automotive and aeronautics.**
- **There is a need to valorize the raw materials activity by boosting innovation across the full value chain, from resources to product in a circular economy approach.**

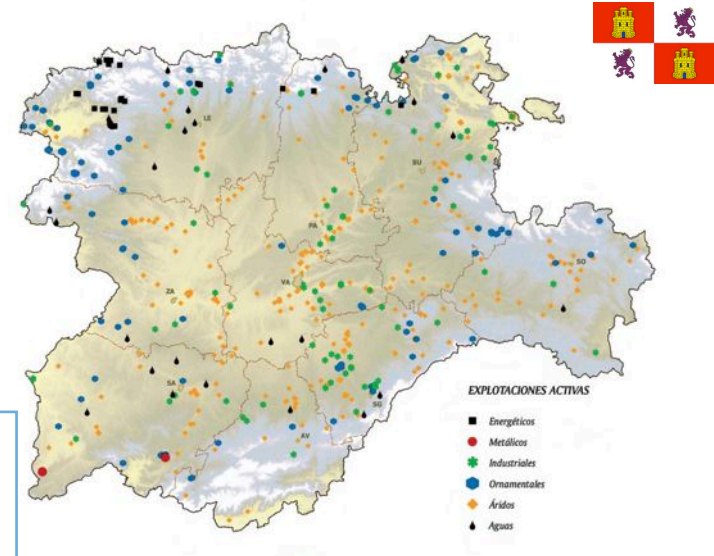
Junta de Castilla y León Estrategia Regional de Investigación e Innovación para una Especialización Inteligente de Castilla y León

Prioridad 1: Agroalimentación y recursos naturales como catalizadores de la extensión de la innovación sobre el territorio.

Prioridad 2: Eficiencia productiva en sectores de transporte como Automoción y Aeronáutico, haciendo de materiales y componentes las claves del liderazgo y sostenibilidad.

Prioridad 4: Patrimonio Natural, Patrimonio Cultural y Lengua Española recursos endógenos base de la sostenibilidad territorial.

- **In line with its RIS3, ICE and DG Industry identify a gap in the RIS3. There is a need of a Technological Center to improve the performance, technology and valorize the endogenous resources of the region, and there is an associated need on a specialized Innovation Tech. Center in advanced materials for the industry**





International alliance



International industrial network

Key international positioning



ICAMCyL co-leads an S3 (under industrial modernization) alliance in materials for energy



JOINT PROGRAMME ON NUCLEAR MATERIALS

For Horizon 2020, a PPP on advanced energy materials is being proposed to EU



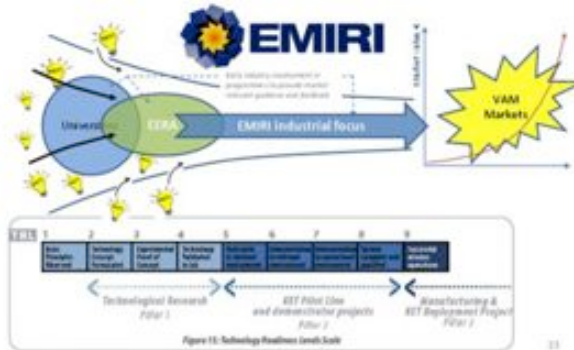
- In order to implement the SET plan (Strategic Energy Technology) materials roadmap, 30 organizations (15 leading materials companies) from 10 different EU countries came together to found EMIRI association
- EMIRI (Energy Materials Industrial Research Initiative) will provide guidance, focus, direction and commitment to **achieve commercially successful development of value added energy materials** for energy applications
- EMIRI will **enable actors** from public & private sectors to **work more effectively** at EU scale with resources beyond critical mass to **reach excellence in research & innovation on energy materials**



Establishing Industrial Leadership of EU in Advanced Materials for low-carbon energy & energy efficiency technologies

EMIRI – Energy Materials Industrial Research Initiative
 Dr Fabrice Stassin - Managing Director
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 www.emiri.eu

EMIRI in a nutshell – Meeting October 31st LEITAT



VAM: Value added materials
 EERA: European Energy Research Alliance
 Industrial Technologies 2012



International EU vision of highly specialized competence center

TOWARDS A EU (TRANS-REGIONAL) INTERNATIONAL COMPETENCE CENTER FOR THE INDUSTRY WORKING UNDER EXTREME CONDITIONS



Energy production

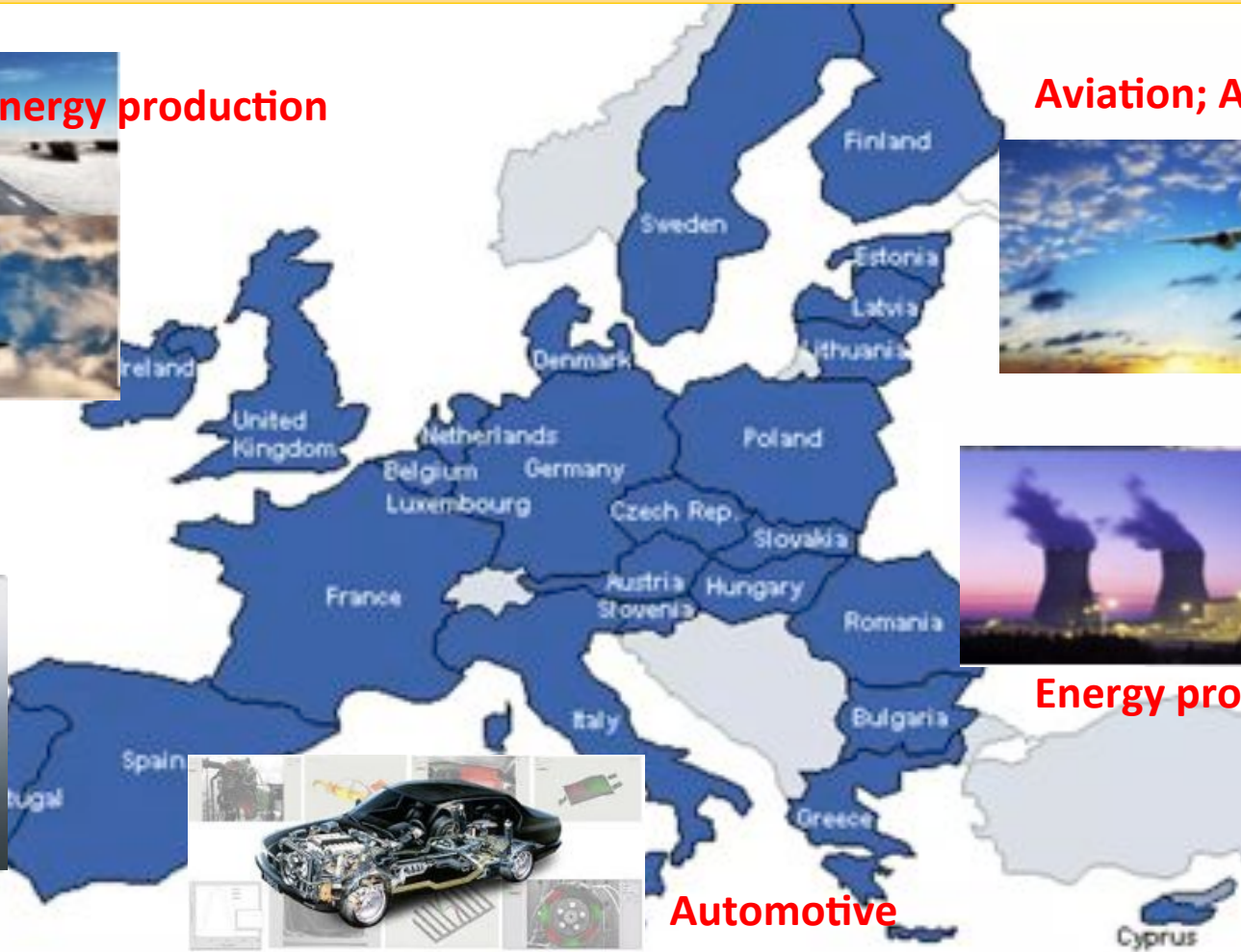


Aviation; Aerospace

Manufacturing



Energy production



Automotive



KEY LINES, SITES & INFRASTRUCTURE

Raw Materials processing pilots

MINING ZONE



Talc sales in polypropylene for cars benefiting from light-weighting trend

- Lighter auto parts**
 - Talc solutions for stronger and lighter plastic parts as a substitute for steel parts
 - Formulations for investment casting
- New energies**
 - Graphite for Li-ion batteries for electric vehicles
 - Bulk storage
- Polymers recycling**
 - Mineral formulation for plastic waste recycling
 - Stragles from industrial waste
- Mineral specialties for the beauty and pharma**
 - Talc for cosmetic powders
 - Perlite for exfoliating body soaps
- Energy efficiency**
 - New generation abrasives
 - Refractory paint for industrial furnaces

As well as the traditional talc for energy efficiency, low weight, and low friction, talc offers a range of other benefits. The unique properties of talc, such as its high thermal stability, make it a perfect choice for the automotive industry. Talc can be used in a variety of ways, from as a filler in plastics to as a lubricant in engines.

The advantages of talc for automotive applications include:

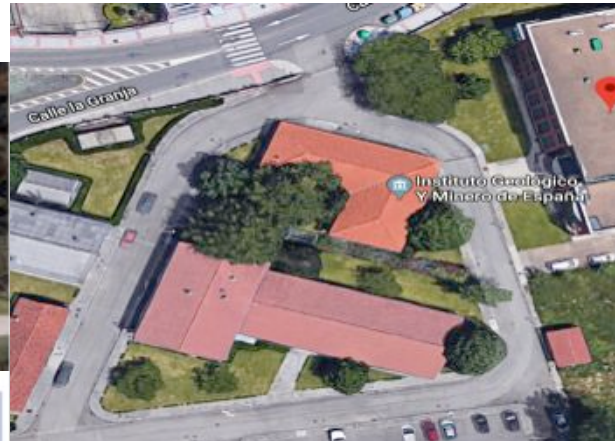
- Talc improves stiffness, impact resistance and dimensional stability of thermoplastic automotive parts
- Dolomite, Kainin, Mica and GCC are used in automotive applications such as sound dampener and adhesives.

Implanting hydrometallurgy small scale pilot plant for raw materials recovery and processing from mining activity



Advanced Materials synthesis laboratory (nano-alloys/ODS, ceramics, composites)

LEON – city



Additive manufacturing, 3D metal printing. Standardization Materials service

MINING ZONE



aerospace

rail vehicles

energy

medical

automotive

Machinery
Construction
Domestic appl.
Electronics
Welding
Die & moulds
Defense
Optical industry

Advanced & additive manufacturing + 3D metal printing for components

Metal 3D Printing: The Applications



Hydrometallurgy Pilot Plant for Processing Services / Metal Rapid Prototyping

Services offered:

- 3D printing of metal parts
- 3D printing of plastic parts
- 3D printing of ceramic parts
- 3D printing of composite parts
- 3D printing of metal parts
- 3D printing of plastic parts
- 3D printing of ceramic parts
- 3D printing of composite parts

Uses of PM HIP technology: a world of possibilities

Energy / Oil and Gas Industry

Process Industry

Transportation

Science

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*

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



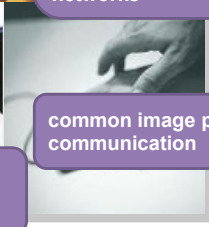
promotion of investments in technology-oriented business
promotion of technology clusters and of national and international partnerships and business networks

facilitated access to regional, national and international funds for RTD and innovation development

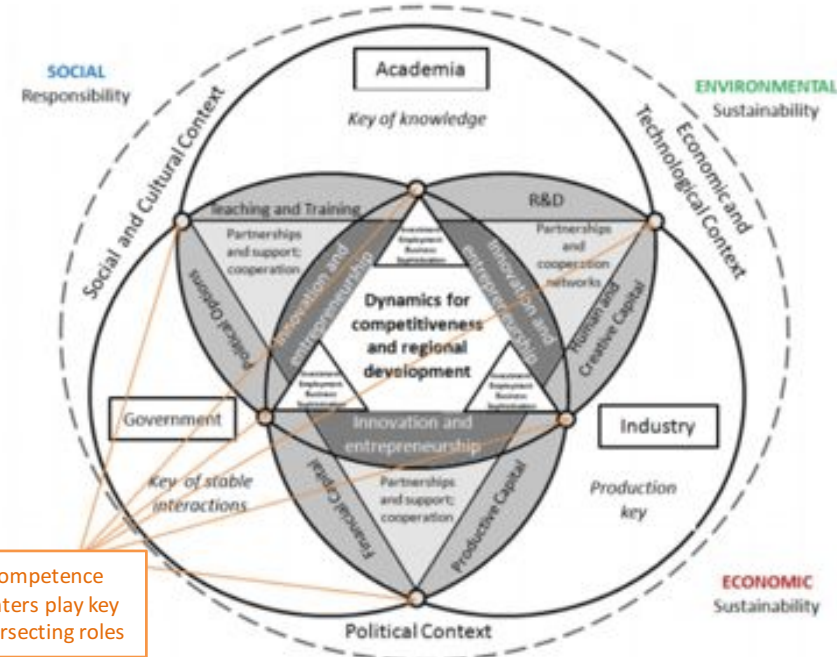


Offering key innovation and technical services to local industry

common image promotion and communication



Unique model as COMPETENCE CENTER in synchrony with Castilla y Leon regional competitiveness environment

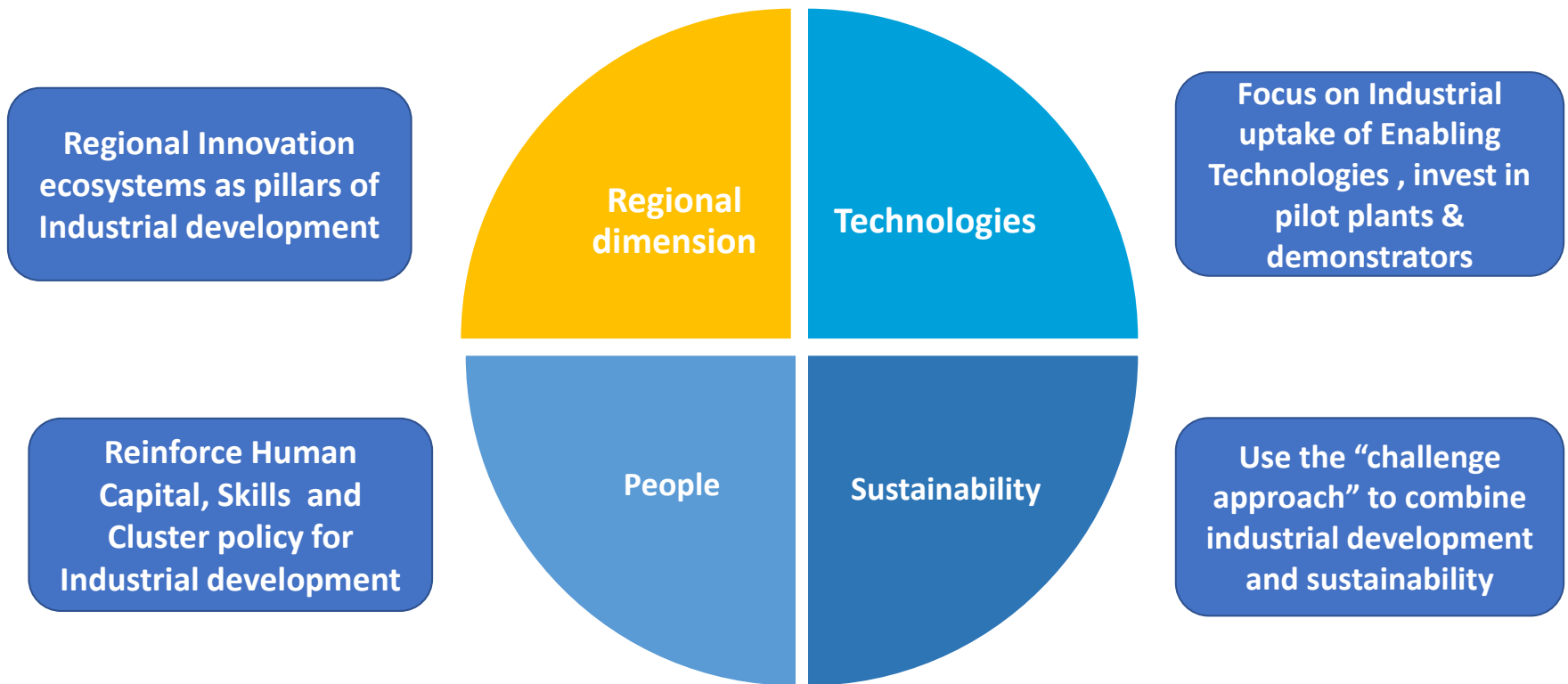


ICAMCYL

Centro internacional de materiales avanzados y materias primas



ELEMENTS TO PROGRESS AND FOSTER INNOVATION IN MINING SECTOR AS A REGIONAL APPROACH



Actions and vehicles to promote mining & processing under a regional strategy

- Plan structural investment funds accordingly. Develop an ad-hoc strategy well associated to a reliable policy.
- Invest in R+D+I infrastructures for excellence and singular capacities. Promote competence centers.
- Promotion of Companies' that invest seriously on R&i. Create and promote industrial clusters in the thematic.
- Development of links and synergies between companies, technological centers and Universities, especially relating to the investment on new products and services development.
- Open innovation through smart specialization and support to mining and processing pilot lines
- Valorization: from mining raw materials towards advanced manufacturing and components.
- *Impulse and promotion of R&I activities by enterprises and support the creation and consolidation of innovative enterprises:* Grants for companies to develop R&D projects for the improvement or creation of new processes or products.
- Catalysis of ad-hoc + smart technologies (applied to the needs of the mining sites within the territory)
- Certification strategy, linked to environmental plan -> sustainability -> Social License to Operate.
- Work for social acceptance:
 - Development of infrastructure projects and restoration projects of degraded zones.
 - Training for unemployed people formerly mining workers to prepare them for new jobs.
 - Entrepreneurial Dynamization. Looking for entrepreneurial alternatives for formerly mining lands.

OBJECTIVES IN MIREU TO BE CLUSTERED WITH REMIX

- To **review RIS3 Smart Specialization Strategies of the MIREU regions concerning their assets in economic aid programmes**, measures that foster market uptake and replication of innovative solutions, and strategies focusing on economic transition.
- To identify challenges in demographic change and geographic location
- To define a roadmap of actions targeting the creation of new business opportunities and economic growth and linking this with the EU's Strategy on Raw Materials
- To identify compatible partner Regions by matching regional and national economic development programmes
- **Carry out a “regional mirroring” strategy across MIREU regions with the aim of informing public authority decision makers and regional strategic plans.**
- To encourage regions without RIS3 and/or similar strategies to use best practices from MIREU in future policy making.

INTERREGIONAL ACTIONS:

Review of MIREU-(REMIX) Regions' RIS3 strategies related to their assets in economic aid programmes and measures that foster market uptake and encourage replication of innovative solutions

Conduct a SWOT analysis on Smart Specialization Strategies and benchmarking of the regions involved

Identify complementarities between the different RIS3 strategies, in order to group them and with the final goal of creating a SWOT model tailored to each region. This model will highlight both strengths and gaps, not only for RIS3 strategies but also with respect to circular economy and resource efficiency policies.

Identification of societal challenges such as demographic change and geographic location

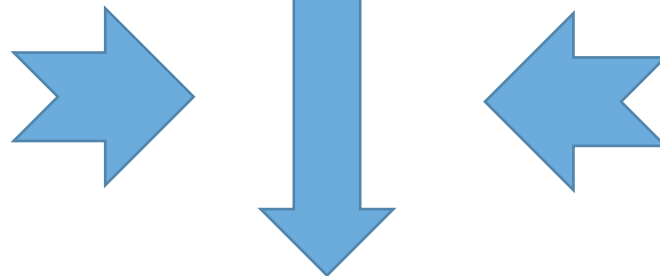
Specific guidance documents for the involved regions will be suggested in order to improve their RIS3 in accordance with MIREU's findings.

(1) COMPEDIA & DATABASE OF REGIONS AND THEIR S3 PLANS FOR THE SPECIFIC TARGETS OF MIREU

(2) LIST OF REGIONS WITH SIMILARITIES AND OPPORTUNITIES

(3) MODEL TEMPLATE OF IDEAL RIS3 including lessons learnt and existing frameworks, roadmaps and activities, that can potentially be transferred between regions, while simultaneously promoting the use of other vehicles to further opportunities and economic growth in the context of raw materials.

Inputs from regions
- stakeholders



Identification of
stakeholders and key
actors

Basis for a MIRRORING ACTION



SUGGESTED MIRRORING ACTION

Vehicles:

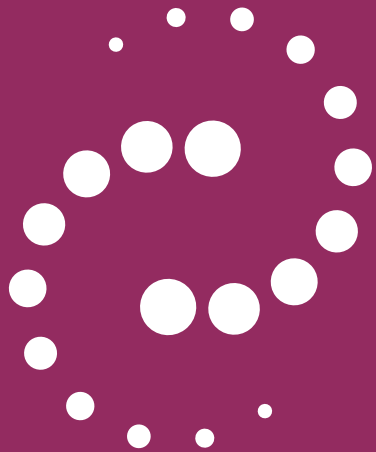
- Constitution of High-level group
- Group of stakeholders/actors
- S3 platform sustainable mining
 - ERRIN, EURADA

A pilot plan of actions, implemented in a mirror-core group of regions

This will constitute the proof-of-concept for a possible future large-scale demonstrator and the creation of a common EU roadmap for EU mining and metallurgy regions.

THANKS FOR YOUR ATTENTION

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