MINE.THE.GAP

Creation and Integration of novel industrial value chains for SMEs in the raw materials & mining sectors through ICT, Circular Economy, Resource Efficiency & Advanced Manufacturing innovation support

This project has received funding from the European Union's EU Framework Programme for Research and Innovation Horizon 2020 under Grant Agreement No 873149

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EU Coordinator

Director General

FUNDACION ICAMCyL: Centro internacional en materiales avanzados y materias primas de Castilla y León

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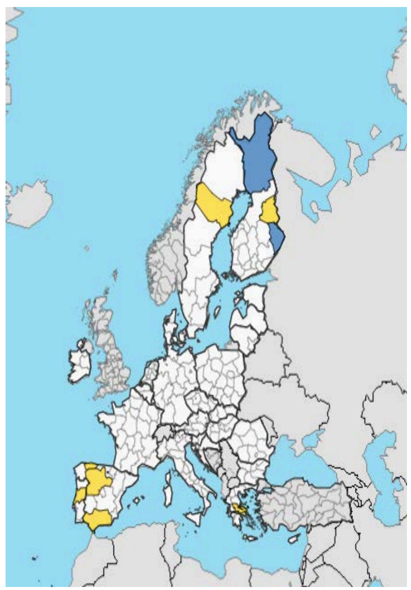
Mining industries and global value chain S3 thematic partnership – industrial modernisation



- Dr. Santiago Cuesta López
- ISMC Cluster & ICAMCYL Foundation
- Director General

https://s3platform.jrc.ec.europa.eu/mining-industry


EUROPEAN COMMISSION

Brussels, 3.9.2020
COM(2020) 474 final

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


European Commission

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

Final Report

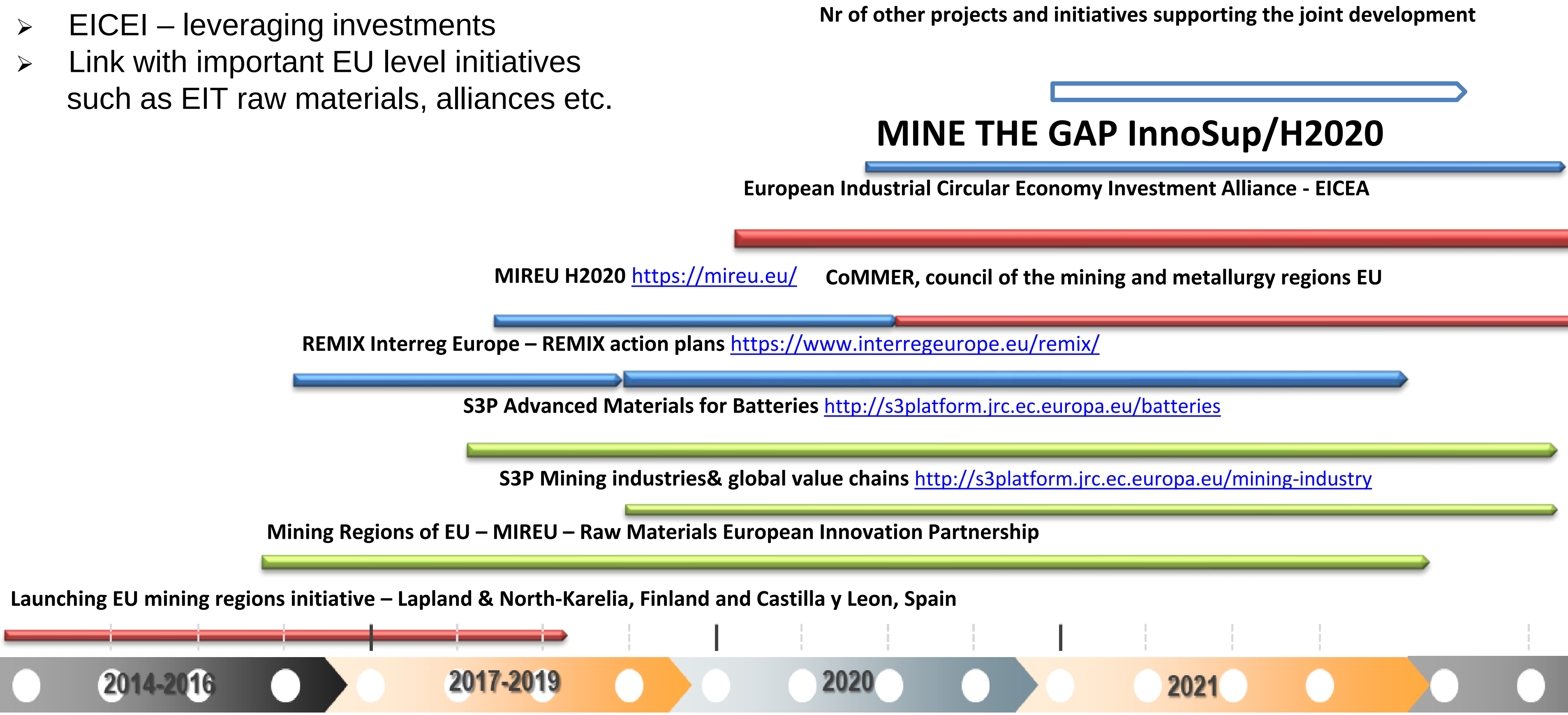

European Commission

Critical Raw Materials for Strategic Technologies and Sectors in the EU

A Foresight Study

How to develop strategic interregional approach?

- ESIF to develop the operational environment and build the capacity
- Horizon 2020 to increase RDI capacity in clusters
- Interreg to learn from each others
- S3P, EIP and COMMER creating the collaboration
  platforms and generation joint
- investments
- EICEI – leveraging investments
- Link with important EU level initiatives
  such as EIT raw materials, alliances etc.



H2020-INNOSUP-01-2019 Grant Agreement: 873149

MINE.THE.GAP

The mining sector needs sustainable solutions

MINE.THE.GAP brings together **SMEs from the raw materials and mining sector** with companies that have solutions for a more **digital, greener, and circular** mining value chain. Through open calls and support services, MINE.THE.GAP makes business ideas a reality.

3. WHO MAY APPLY & ELIGIBILITY CRITERIA FOR APPLICANTS

MINE.THE.GAP will fund collaborative activities of consortia consisting of two to three SMEs, according to the following rules:

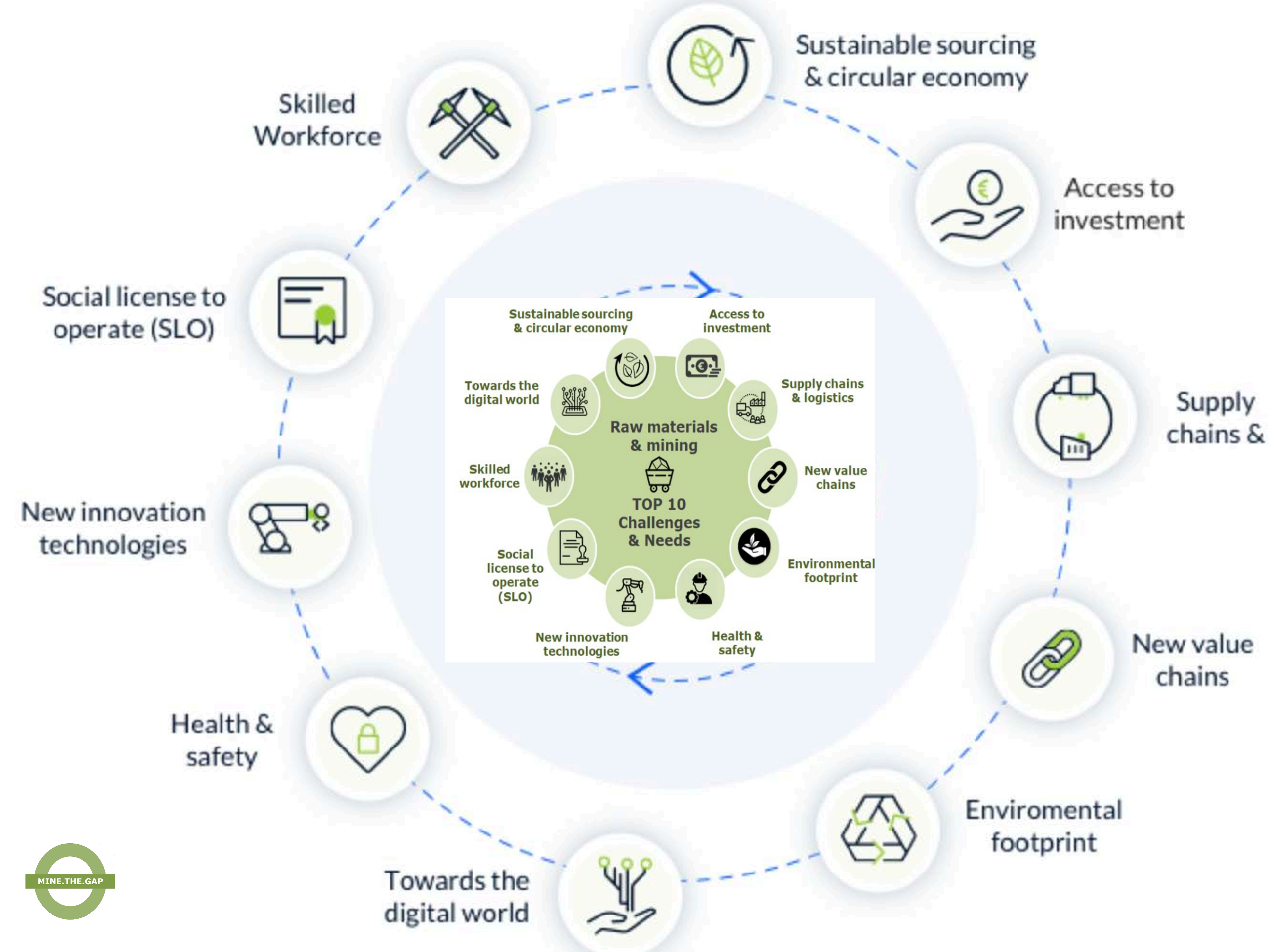
a. Applicants must be a SME (Small and Medium-size Enterprise) according to the EU definition[3] (including Public SMEs and start-ups).
b. Applicants must be established in one of the following nine MINE.THE.GAP target countries: Bulgaria, Finland, France, Germany, Greece, Poland, Portugal, Spain, and Sweden[4].
c. The members of the consortium must be from at least two of the countries named under point b.
d. Applications must be submitted by a consortium consisting of min. 2 SMEs and max. 3 SMEs
e. At least one SME in the consortium must belong to a "provider sector" (ICT, circular economy, resource efficiency and advanced manufacturing), and at least one of the participating SMEs must be an "adopter" of the technology belonging to any step of the raw materials value chain (as the example in Figure 5).
f. A SME is considered eligible for MINE.THE.GAP open calls if it complies with ALL the following rules:

- has not been declared bankrupt or have initiated bankruptcy procedures.
- has no convictions for fraudulent behaviour, other financial irregularities, unethical or illegal business practices.
- is not under liquidation or an enterprise under difficulty accordingly to the Commission Regulation No 651/2014 art. 2.18.

Companies revealing economic issues due to the pandemic situation will be analysed and considered even if they provide a negative balance for the years 2020 and 2021.

[3] https://ec.europa.eu/growth/smes/sme-definition_en

[4] Eligible countries have been selected paying attention to the importance of the Industrial modernisation partnership S3P "mining and global value chains"

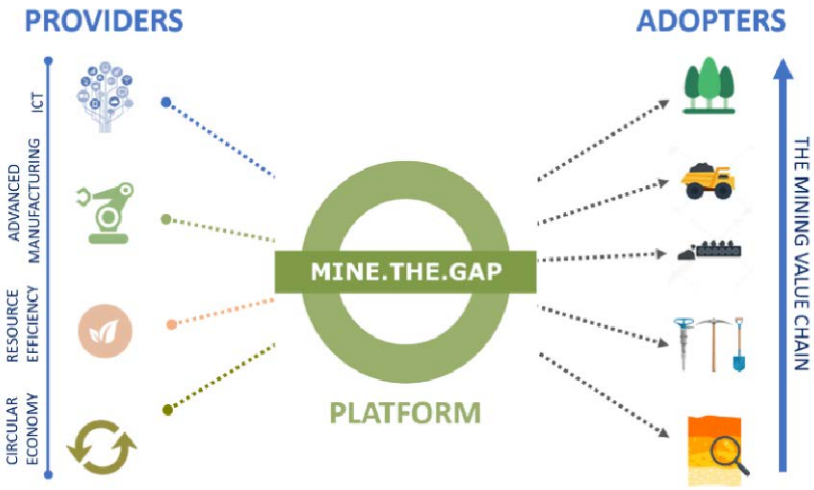


Skilled Workforce
Sustainable sourcing & circular economy
Access to investment
Supply chains &
New value chains
Enviromental footprint
Towards the digital world
Health & safety
New innovation technologies
Social license to operate (SLO)
Sustainable sourcing & circular economy
Access to investment
Towards the digital world
Supply chains & logistics
Raw materials & mining
TOP 10 Challenges & Needs
Skilled workforce
New value chains
Environmental footprint
Social license to operate (SLO)
New innovation technologies
Health & safety
MINE.THE.GAP

MINE.THE.GAP |

SMEs from the following sectors are eligible to apply for MINE.THE.GAP vouchers:

ADOPTERS:	RAW MATERIALS AND MINING SECTORS
	Any SME implementing technology and innovation value across the whole raw materials value-chain, including, but not limited to: mining operation and exploitation companies, exploration, prospection, extraction, processing, design, production, remanufacturing, use, re-use, reparation, recycling.
PROVIDERS:	**ICT, CIRCULAR ECONOMY, RESOURCE EFFICIENCY AND ADVANCED MANUFACTURING**
	Any SME providing technology and innovation value to be applied into the raw materials and mining value chain from the following sectors: ICT, Circular Economy, Resource Efficiency/Sustainability, Green Technology and Advanced Manufacturing. (Please see the Key Technologies in Appendix II)



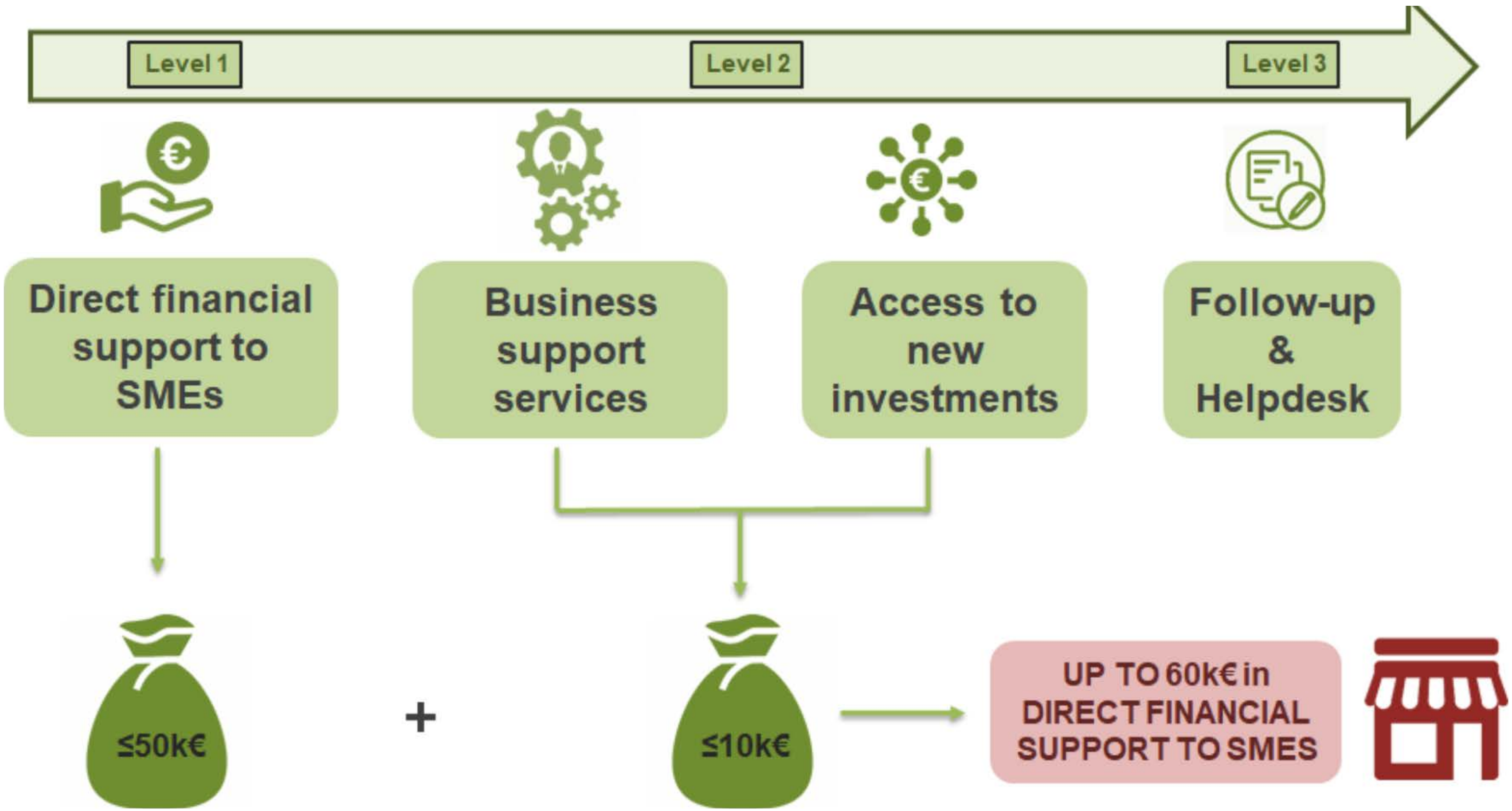
CORE OF MINE.THE.GAP TOPICS & PROJECT IDEAS

TYPE OF PROJECT	TRL COVERED	PROJECT DURATION	PROJECT START
MINE-PoC: design and implementation of a prototype/proof-of-concept to demonstrate the viability of the proposed solution	TRL6-7	8-9 Months	By June 1st 2022
MINE-Demo: developing and testing in a production environment of a simple functional demo/pilot with all the major features of the product/service/solution	TRL7-8	9-12 Months	By June 1st 2022

Maximum funding per SME/project	MINE-PoC	25,000.00€
	MINE-Demo	50,000.00€
Maximum funding per project:	MINE-PoC	75,000.00€
	MINE-Demo	150,000.00€
Type of financial support:	Lump sum	
Payments	50% pre-funding	
	25% after intermediate report	
	25% after final report	
MINE.THE.GAP consortium may request evidence/documents to assess SME status, including independence/ownership.		
The total amount of direct financial support for SMEs in this Call is up to 1.5 million EUR.		

MAXIMUM 60.000 € in total per SMEs
Business services included.

AWARDED PROJECTS WILL HAVE ACCESS TO BUSINESS SUPPORT SERVICES !

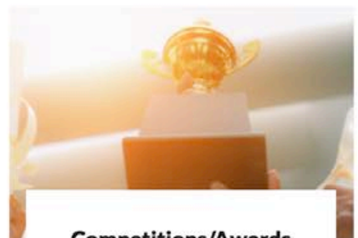


Support Services

MINE.THE.GAP will provide a number of business support related services to the selected projects to enhance their innovation capacities, promote technology transfer and commercialisation, and boost their internationalisation.

Technology survillance

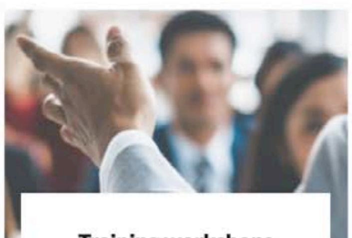
Technology transfer



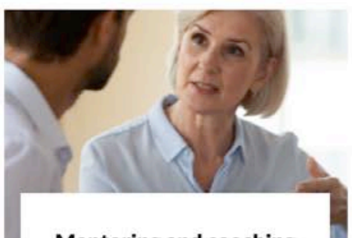
Competitions/Awards

Commercialisation

Brockerage events

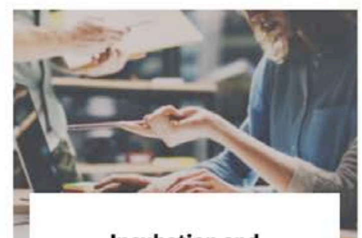


Training workshops



Mentoring and coaching

Matchmaking



Incubation and acceleration support IPR

Mobility and exchange programmes

Innovation "Hub" (BH1)

"Start-up" support package 3K€

Innovation diagnosis Free

"Best Innovation Project" competition 1K€ (2 awards)

2 MOOCs ("MINE-Digital" and "MINE-Circular")

Technology Transfer & Commercialisation Hub (BH2)

"Follow-up" support package 2K€

Invest Day Free

"Best Technology Transfer potential" competition 2K€

1 MOOC ("MINE-Transfer)

Internationalisation "Hub" (BH3)

"Mobility" support package 2K€

"Best Internationalisation potential" competition 5K€ (3 awards)

1 MOOC ("MINE-FundMe)

MANDATORY DOCUMENTS FOR THE PROPOSALS TO BE ELIGIBLE

PROPOSAL SUBMISSION DEADLINE	14th March, 2022; 17:00 CET
CONSORTIUM COMPOSITION	• SMEs from the countries of the MINE.THE.GAP target countries (the ones included in Mining Industry Smart Specialisation platform) are eligible to participate. These countries are Bulgaria, Finland, France, Germany, Greece, Poland, Portugal, Spain, and Sweden. The consortium partners need to be from at least two different countries. • 1 SME from target sectors and 2 SMEs from the provider sectors or 2 SMEs from target sectors and 1 from the provider sectors or 1 SME from provider Sector and 1 from Target Sector. • Minimum: 2 countries.
PROJECT DURATION	MINE-PoC: 8-9 Months MINE-Demo: 9-12 Months
MANDATORY DOCUMENTS	Full complete application package consisting of: Application form, and from each SME: commitment declaration, ethics issues declaration, financial declaration and documents, and partner profile. **Applications that doesn't provide <u>ALL</u> the requested documents will not be considered.** All templates are available at https://h2020-minethegap.eu/open-calls/ Appendix III to this Guide explains the online application process.
APPLICANT REQUESTING FUNDING	All applicants requesting funding must provide a statement of commitment duly signed by the legal representative of the organisation or the Lead Researcher.
LANGUAGE	English is the official language for MINE.THE.GAP open calls. Submissions done in any other language will not be evaluated. English is also the only official language during the whole execution of the MINE.THE.GAP project. This means any requested submission of deliverable must be done in English in order to be eligible.

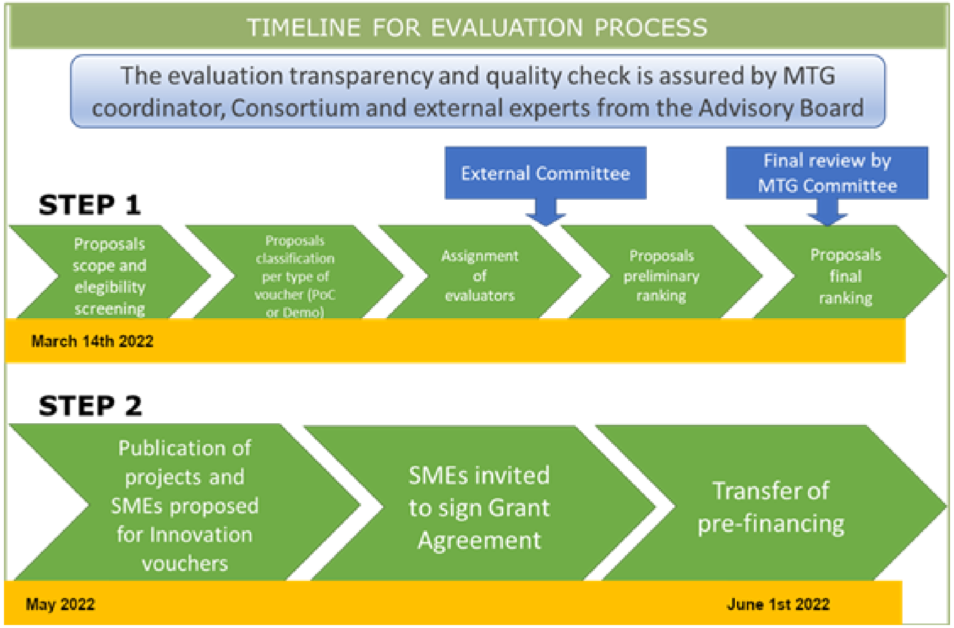
EVALUATION CRITERIA

Proposals will be evaluated based on three main evaluation criteria:

1) Excellence (10 points / 30% Weight).
2) Impact (10 points / 40% Weight).
3) Quality and Efficiency of the Implementation (10 points; 30% Weight).

Evaluation scores will be awarded accordingly to the three main evaluation criteria giving as a result a weighted score over 10 points, with a threshold of **7/10:**

CRITERIA	Weight	Threshold
Excellence • Innovation potential idea that it is aligned with a barrier/challenge related to raw materials and mining sector. • The solution will contribute for the challenge or to overcoming the barriers identified and to meet the top ten challenges identified by MINE.THE.GAP in sustainable raw materials supply. • Innovative solution that goes beyond the state of the art in comparison with existing or competing/ existing solutions.	30%	3/10
Impact • Realistic and relevant description of how the innovation will have impact on the different participating companies. • Alignment of proposal with the MINE.THE.GAP topics (Key areas). • Convincing description of how the innovation will have impact in the field/ thematic of the proposal. • Convincing description of how the proposal will have EU and National impact. • Potential of the proposal for cross-cutting and its contribution for Environmental and Societal impacts. • Real up-scaling potential including a clear exploitation and business plan for the solution. In the case of Demo projects, a commercialisation plan of the product or service, and realising implementation and set up in operation plan is required.	40%	4/10
Quality and efficiency of the implementation • Quality and complementarity of the participants and extent to which the consortium as whole brings together the necessary expertise. • Quality and effectiveness of the work plan. • Balance of the allocation of tasks and resources, ensuring that all participants have a valid role and adequate resources in the project to fulfil that role.	30%	3/10



1. Proposal submitted via the Electronic Submission System (ESS) – March 14th 2022;
2. The submitted proposals will be subject to evaluation by an international group of independent experts;
3. Applicants are notified of the outcome of the overall eligibility check;
4. The MINE.THE.GAP Consortium decides which projects will receive funding based on the ranking list according to available budget for funding;
5. Applicants are notified of the funding decisions in May 2022, and receive feedback on the evaluation of their proposal - all projects must start by June 1st 2022.

Opening Date	10th January 2022
Deadline Date	14th March 2022, 17:00 CET
Evaluation and selection	March and April 2022
Communication of the decision to applicants	May 2022
Start of projects	1st June, 2022

ABOUT US OPEN CALLS BUSINESS HUB SERVICES PROJECTS CONSORTIUM NEWS CONTACT PARTNER SEARCH

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What is your project idea?

Learn about the open call

LATEST News

January 24, 2022 | Announcements

International Info Day: Second Open Call

2 February 2022, 11:00 – 12:30 CET The MINE.THE.GAP project consortium invites all interested SMEs to an information day on the second open call. We will present the funding scheme, the requirements for SMEs to participate, and the collaboration and...

More ⟶

January 13, 2022 | Events

Invitation to Spanish Info Day on Second Open Call

20 January 2022, 12:00 – 13:15 CET The Spanish project

More ⟶

January 10, 2022 | Announcements

Second Call is now open for application!

The MINE.THE.GAP team is pleased to invite SMEs to submit pr

More ⟶

Connect and collaborate

Log in to the MINE.THE.GAP collaboration platform

MINE.THE.GAP wants to establish new collaborations between SMEs from the mining and raw materials sector and the fields of ICT, advanced manufacturing, resource efficiency, and circular economy. That´s why MINE.THE.GAP offers SMEs a collaboration platform to find partners for new project proposals. By creating a MINE.THE.GAP profile, SMEs can access this internal space, present themselves, and search for companies interested in participating in the MINE.THE.GAP open calls.

Create an account

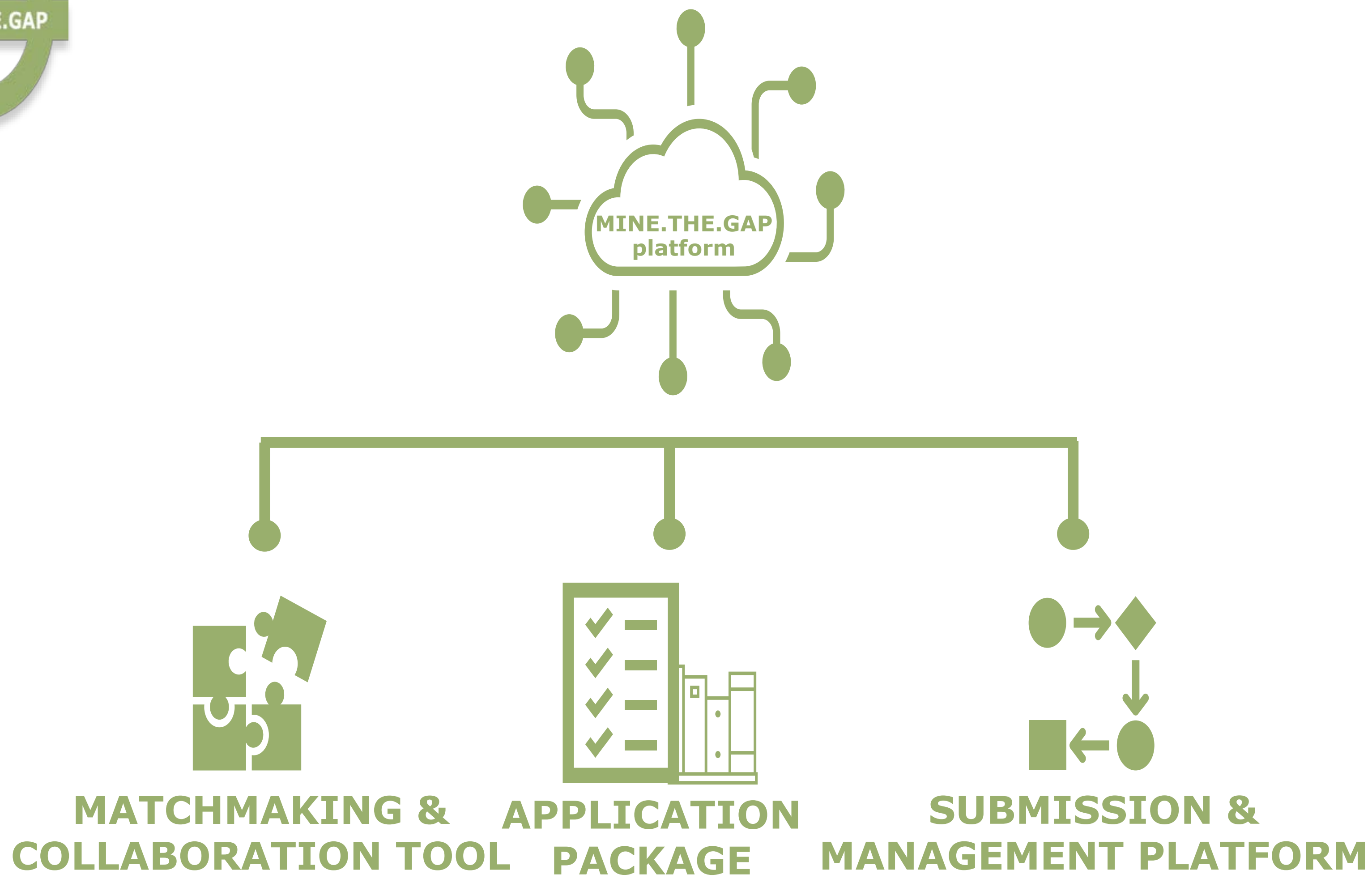
Username or Email

Password

☐ Remember Me

LOG IN

Lost Password


MINE.THE.GAP
platform
MATCHMAKING &
COLLABORATION TOOL
APPLICATION
PACKAGE
SUBMISSION &
MANAGEMENT PLATFORM

KA1- Adoption and implementation of innovative technologies oriented to improve the sustainable supply of raw materials from mineral resources and anthropogenic deposits, including innovative exploration technologies or technologies that will boost competitiveness in mining life cycle.

This Key Action will fund project ideas under the following topics:

- Exploration technologies, including forefront geophysical or geochemical methods, advanced modelling of resources, innovative technology aided approaches such as satellite information, advanced sensoring, or drone prototypes for resource mapping, identification, or discovery.
- Innovative tools and methods for resource pre-/characterisation.
- Concepts and methodologies for assessing mineral resources supply risks
- Long-term monitoring systems of mining operations.
- Generation of databases and inventories of raw materials, from geology (mineral deposits) to tailings.
- Classification methods of interest for the supply and recovery of critical raw materials. Map and 3D inventories.
- Advanced methods for detection and identification of resources (i.e., sensoring technologies, analytics, geomagnetism).

KA2- Eco-friendly technologies and environmental actions to achieve a sustainable mining approach, technologies to mitigate the impact of mining or to reclaim post-operation mining land and/or revitalise the economy of the region.

This Key Action will fund project ideas under the following topics:

- Water treatment and water purification technologies.
- Advanced design methodologies, methods to ensure sustainable and circular operation in a mine, a processing plant, or a smelter.
- Recovery of raw materials from contaminated soil and water.
- Innovative remediation methods, applying advanced research from nanotechnologies or biotechnology. Innovative solutions for soil recovery based on technosole approaches.
- Cost efficient concepts and methodologies for remediation after mine closure with field demonstration.
- Restauration ideas, plans, pre-projects, methods and technologies for recovery or reuse of abandoned mines, including (but not restricted to) the revitalization of a mining site, i.e., by construction of bio parks, actions for preserving palaeontologic heritage, the installation of innovative production mechanisms for renewable energies (solar energy, hydrogen, geothermal energy), use of infrastructures for the installation of systems oriented to generate renewable energy.

KA3- Circular economy plans, technologies, methods, analysis and business model (i.e., industrial symbiosis) to be applied at any stage of the operation cycle of raw materials value chain, ensuring an eco-efficient operation of a mining exploitation or related to the circular supply of raw materials.

This Key Action will fund project ideas under the following topics:

- Any innovative smart and eco-efficient technologies for mining, processing, or smelting reducing the environmental impact at any stage of the operation value chain.
- Any technology applied at any stage of the operations in a mine, a processing plant or a smelter oriented to reduce emissions, water, and energy consumption.
- Advanced methods to be implanted to ensure the efficient use of resources (i.e., water use, energy use, better use or recovery of raw materials) such us the adoption of digital technologies (i.e., digital twins) and new workflows.
- Advanced recovery or separation methods, reducing the generated waste, processes or products giving a new fate to waste, or recovering raw materials from mining tailings or scraps.
- Efficient characterization and separation of products and components for re-use or recycling.
- Ideas to recover metals and rare earth elements from urban mines via innovative, clean, and environmental-friendly processes. The low environmental impact must be demonstrated (i.e., by environmental impact assessment methods).
- Modelling circular economy, methods for assessing the circular operation.

KA4- Process technologies, advanced manufacturing technologies, robotics, oriented to improve productivity and the efficient use of resources, recovery of raw materials (including co and by-product), recycling technologies or other approaches increasing eco-efficiency in the sector of raw materials.

This Key Action will fund project ideas under the following topics:

- Advanced processing methods leading to more efficient operation, automating stages of the production (i.e., new advanced manufacturing processes, methods, mechanisms, or robotics) or contributing to a more efficient separation and classification of the mineral (i.e., integrating ore-sorting technologies for waste minimization).
- Advanced recovery methods, reducing the generated waste, or recovering raw materials from mining water, mining waste, tailings, or scraps
- Innovative methods, pilots, field studies, processing approaches (i.e., ionic liquids, hydro/pyro-metallurgy), to recover valuable critical raw materials (i.e., rare earths, PGMs and other by-products) from the smelt and from mining tailings, in mining processing stages (i.e., recovering PGMs at ppms from mining waste and demonstrate the efficient reuse in catalyst) or secondary raw materials processing stages.
- Innovation and benchmarking of environmental-friendly processes, separation, and recovery techniques.
- Any process proven efficient and sustainable oriented to open a valorisation of any mining and processing waste or waste from smelting processes into a valuable raw material, industrial symbiotic value chain or a product (i.e., recovering specific raw materials from mining tailings and reuse them to manufacture advanced geopolymers applicable to construction).
- Ideas implementing industry 4.0 solutions at the level of processing plants, or manufacturing or smelting stages, including automated systems/robotics for hand-free operations (i.e., automated drilling systems, remoted explosive operations, gunite robots).

KA5- Towards the digitalisation of the raw materials sector. Innovative technologies to be applied into mining, processing, smelting operations that improve SMEs competitiveness, contribute to an efficient use of resources, reduction of emissions, or ensure safe operations.

This Key Action will fund project ideas under the following topics:

- Integration of methods, tools, software, IoT (Internet of Things) solutions in automation and robotics in mining environments and processes across mine operations or smelting processes.
- Enhanced connected mobility for the digital mine, like augmented reality and virtual reality tools and systems for the workers
- Analytics and decision support tools for prediction and planning operations leading to an OPEX reduction or environmental footprint reduction (i.e., Artificial Intelligence, Machine Learning, simulation tools).
- Improving communication protocols, interoperability, cybersecurity, block chain at any stage of the mining operation and raw materials value chain.
- Tracking and wearable devices for enhanced safe operations in mining.
- Drones or any kind of unmanned vehicles linked to a digital platform allowing mapping, maintenance, or risky operations.
- Sensoring technologies, digital twins oriented to improve sustainability, design, safety, operation costs of a raw materials exploitation.

KA6- Advanced training skills, methods, technologies and occupational safety innovative measures for the workers oriented to improve the operations and attract or recover jobs in a new transformed sector essential for the Just Transition.

This Key Action will fund project ideas under the following topics:

- Integration of methods, tools, software, virtual platforms, and devices (i.e., simulators) to train the workers to safely operate.
- Innovative learning and teaching methods oriented to educate the workers to operate forefront production technologies, to adapt to new safety certifications or sustainable mining, to work under an industry 4.0 environment or to operate with digital platforms.
- Solutions for improving mining, processing, or smelting operation safety, including the reduction of labour risk exposure to hazardous elements, products, or dust.
- Interactive education methods or systems (i.e., by means of virtual learning, augmented reality training) oriented to train or improve the skills of the workers, with particular focus on risky operations (i.e., explosives) or complex use of machinery or heavy vehicles.
- Innovative gadgets or wearables bringing a safety advantage in risky operations to the workers.

KA7- Cross-cutting topics, highlighting the importance of new business models, new financial and investment methodologies for the raw materials sector, forefront methods or exploration data bases for low environmental impact exploration, and methods to improve public perception of mining and processing/metallurgy in addition to legislative obligations in order to better gain the social acceptance (Social License to operate – SLO.)

This Key Action will fund project ideas under the following topics:

- Ideas oriented to improve the social acceptance and trust/public perception of raw materials sector (i.e., international transparency portal of the mining industry).
- New business models (implementing circular economy aspects) (i.e., new business models for resource recovery, remanufactured products, product life extension, sharing platforms).
- Tools, applications, and services that enable circular economy business models with a particular focus on raw materials mining.
- Development of digital tools for enabling new collaborations within the product life cycle.
- Measures to raise the public perception for activities associated with the sustainable supply of raw materials.
- Standardized social science methodologies for gathering/analysing data in different countries on improving raw materials awareness and public acceptance.
- Improvement of methods or data for increasing the efficiency of an environmental impact assessment or a LCA – life-cycle analysis. Studies on flows of mineral resources (i.e., MFA – material-flow analysis)
- Valuable data bases with information on social perception, environmental protection, responsible actions, social projects, and best lessons learnt related to sustainable mining.

SOME EXAMPLES

Case study 1: Linking ICT and mining – A reinforced value chain

A junior mining company in Spain incorporates cutting-edge remote sensing and satellite technology from a German SME, replacing traditional, ground-based exploration methods on the field in a new Tungsten mine.

01

The problem

The mine is in an area of difficult access, where ground-based exploration is challenging. This exploration phase is taking longer than expected, hindering access to finance and jeopardising the whole project.

02

The technology

Satellite imagery and remote sensoring previously used in agriculture can highlight ore bodies, their mineralisation or alteration, variability through the mine site and associated structural features.

03

The project

A Spanish mining company and a German ICT company receive funding through MINE.THE.GAP, resulting in a cross-regional, cross-sectoral project for adapting satellite technology to the mining industry needs.

THE IMPACT

The mining company

- Accelerate exploration phase
- Improve access to finance
- Reduce operational costs
- Can use the technolgy in subsequent phases

The ICT company

- Access a new market
- Gain new knowledge
- Offer a new service
- Strenghten international presence

THE BIG PICTURE

- SHORTER, REINFORCED VALUE CHAIN
- ECONOMY THRIVES AT LOCAL MINE SITE
- INTERREGIONAL LINKS STRENGTHEN
- SOCIAL ACCEPTANCE IMPROVES

Case study 2: Linking advanced minerals processing and circular economy – A new value chain

A WEEE management company in Poland incorporates advanced, tailored-made hydrometallurgical processes from a Finnish company for recovery and reuse of high added value rare earth elements (REE) and other critical raw materials (CRM).

01

The missed opportunity

Metal scrap is recovered from electronic waste and sold to metallurgical companies as a mixed alloy for lower value applications. However, it contains significant amounts of highly valuable elements (REE & other CRM).

02

The advanced technology

Recently developed hydrometallurgical technologies allow tailored-made solutions for the recovery of REE and other CRM in a cost-effective, environmentally-friendly and sustainable process.

03

MINE.THE.GAP

The project

MINE.THE.GAP Open Calls provide a hub where a Finnish company specialised in advanced processing technologies joins a Polish WEEE company for the recovery of products of higher added value.

THE IMPACT

The recycling company

- Add new value to its products
- Contribute to the circular economy
- Extend its customer base
- Improve its knowledge on materials recovery

The AM company

- Access a new market
- Gain new knowledge
- Offer a new service
- Strenghten international presence

THE BIG PICTURE

- A NEW VALUE CHAIN IS CREATED
- THE CIRCULAR ECONOMY IS REINFORCED
- INTERREGIONAL LINKS STRENGTHEN
- DEPENDENCE ON IMPORTS LESSENS

BEHIND THE PROJECT

Our partners

MINE.THE.GAP is managed by a strong consortium of European partners that help SMEs to innovate and grow.

This project has received funding from the European Union's EU Framework Programme for Research and Innovation Horizon 2020 under Grant Agreement No 873149

Thank you for your attention!

Dr. Santiago Cuesta-López

ISMC Cluster & ICAMCYL Foundation

Director General