New solutions for the sustainable production of raw materials

All actions should develop sustainable and resource-efficient solutions through industrially- and user-driven multidisciplinary consortia covering the relevant value chain of non-energy non-agricultural raw materials.

Actions should develop technological solutions finishing at the level of Technology Readiness Levels (TRL) 3-5.

All actions should contribute to achieving the objectives of the EIP on Raw Materials and to building the EU knowledge base of primary and secondary raw materials by feeding into the EC Raw Materials Information System – RMIS[[https://ec.europa.eu/jrc/en/scientific-tool/raw-materials-information-system]]. Actions should also contribute to improving the awareness of relevant external stakeholders and the general public across the EU about the importance of raw materials for society, the challenges related to their supply within the EU and about proposed solutions which could help to improve society's acceptance of and trust in sustainable raw materials production in the EU.

In support of the EIP on Raw Materials actions should envisage clustering activities with other relevant selected projects for cross-projects co-operation, consultations and joint activities on cross-cutting issues and share of results as well as participating in joint meetings and communication events. To this end proposals should foresee a dedicated work package and/or task, and earmark the appropriate resources accordingly.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged.

Actions should address only one of the following sub-topics:

a) Breakthrough concepts and solutions for sustainable exploration, mining and/or processing (2018): Actions should develop ground-breaking concepts and

solutions for exploration, mining and/or raw materials processing to secure the sustainable access to abiotic raw materials for the EU in the long term and to gain the trust of society in clean and safe production of raw materials. Recycling of end-of-life products is excluded from this topic. Solutions for marine mineral resources are also excluded from this sub-topic.

b) Digital mine (2019): Actions should develop an Industrial Internet of Things (IIoT) platform to significantly enhance the efficiency of mining operations by connecting cyber and physical systems and devices to extract valuable insights from their data, in order to improve the decision-making process, better address customer requirements, and to address health and safety aspects, environmental performance, increased automation, predictive maintenance, resource efficiency and real-time coordination of operations. Usage scenarios for mining operations should be presented to demonstrate the viability of the proposed IIoT approach. Actions should promote the adoption of IIoT platforms in the mining sector at EU level.

c) Recovery of metals and minerals from sea resources (2019): Actions should develop new technological solutions for the processing of minerals and metals from sea resources, including seawater brines, and/or the seabed in a sustainable way addressing the challenges of industrial viability of the whole process and accessibility, and responsibly addressing the environmental impacts. In the case of minerals and metals dissolved in sea water, actions should demonstrate the technological feasibility and cost-effectiveness of highly efficient and effective recovery processes.

The Commission considers that proposals requesting a contribution from the EU of between EUR 3 million and EUR 7 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Securing sustainable access to raw materials, including metals, industrial minerals and construction raw materials, and particularly Critical Raw Materials (CRM), is of high importance for the EU economy. However, the EU is confronted with a number of technological and environmental challenges along the entire production value chain of primary and secondary raw materials. There is also a need for very innovative and sustainable raw materials production solutions at lower TRLs to bring the next 'digital generation' to the raw materials field.

This specific challenge is identified in the Priority Area 'Technologies for primary and secondary raw materials production' of the European Innovation Partnership (EIP) on Raw Materials.

The project results are expected to contribute to:

- pushing the EU to the forefront in the relevant areas through generated know how (planned patents, publications in high impact journals and joint public-private publications etc.);
- safeguarding environmental sustainability (including better energy and water efficiency and a reduction in waste, wastewater and emissions) and improving significantly the health and safety performance of the solutions provided throughout the whole life cycle considered;
- creating a lower TRL technology base for radical innovations within the next decades in the sectors concerned that would help unlock substantial reserves of new or currently unexploited resources within the EU;
- in the longer term, improving the economic viability of operations and enhancing the competitiveness of, and creating added value and new jobs in raw materials producing, equipment manufacturing, information and communication technologies and/or downstream industries.

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