EIP OG1 – Technologies for Raw Materials Production

This document provides a summary of the discussion in Operational Group 1, held on *Thursday 12th February 2015* in support of the EIP on Raw Materials. Approximately 40 delegates attended this meeting, which was moderated by Milan Grohol (DG GROW). The objectives of the meeting were to:

- Map the EIP Strategic Implementation Plan (SIP) actions, including achievements, coverage, gaps and specific contacts to contribute to the SIP Implementation Document.
- Propose missing actions, first recommendations to fill the gaps, or possibilities for the next Call for Commitments.

Priority Area I.A, *Raw Materials Research and Innovation Coordination*

Mapping: There are several ongoing EU wide initiatives, such as European Technology Platforms, particularly ETP on Sustainable Mineral Resources (SMR), and the specific ERANET called ERAMIN, or RMCs like PROMETIA, MetNet or the European Hydrometallurgical Institute. Recently, the new Knowledge and Innovation Community on Raw Materials (KIC on RMs) started and is finalising its business plan. The KIC covers most of the technology areas of the SIP, targeting higher technology readiness levels (TRL). The KIC has no formal collaboration with ERAMIN yet, but has shared partners. ERAMIN had launched its third call for proposals, also with third countries: Argentina, South Africa and Turkey. There are several relevant national initiatives, such as R4 in Germany, and raw materials related National Technology Platforms in several Member States. DG GROW has launched a Horizon 2020 call for raw materials research and innovation coordination actions linked to the EIP in the 2015 Horizon 2020 work programme.

Recommendations: It was highly stressed that EC funding for the KIC on RMs should be retained, as innovation has been proven to effectively support growth, competitiveness and jobs. Further co-ordination with other parts of the Horizon 2020 programme is needed.

Action 1.1.3, *Collaboration between Raw Materials Community and Society*

Mapping: Examples were given of how EU Minerals Days had been used within companies and countries to raise awareness of society's need for raw materials. The Commission regularly organises Raw Materials University Days in different Member States (in 2015, these days will take place in Slovakia, Poland and Finland). The European Enhanced Landfill Mining RMC is engaging with society, in order to change the image of landfill mining. The link to successful practises in obtaining a social licence to operate in Nordic countries was mentioned. Further outreach activity, such as an RM sector graduate jobs website and visits to local schools, was also noted.

Recommendations: Collaboration between health and safety initiatives and trade unions was a possible new Raw Material Commitment (RMC) for the next Call for Commitments. Regarding the problem of public acceptance, a trans-disciplinary approach to increase outreach is needed. It was also suggested that co-operation between OG1 and OG3 on mining wastes processing should be further promoted.

Action Area 1.2, *Exploration*

Mapping: Global reporting standards often define exploration techniques as requiring large amounts of drilling. However, it was noted that other techniques were available that can give similar information, but these were not yet accepted under reporting standards.

The need for greater entrepreneurial skills in the sector was also identified, as was the need for high-risk funding. With regard to geo-modelling, information on national projects in Sweden and Finland would be provided.

International co-operation is also very important to exploration. There is a lack of EU nationals involved in the leadership of junior mining companies.

Recommendations: This action area requires greater international collaboration. Europe has much to learn from Canada and Australia. South America is also a natural focus point for new exploration. The EC should develop clearer rules on how to co-operate with organisations from South America (particularly in relation to Horizon 2020).

Lack of investment on exploration within the EU was of concern. There was support for a pilot action on EU exploration, in order to discover potential new EU mineral deposits existing at depth. The integration of drilling with new analytical techniques was also required. EU SMEs should be encouraged to carry out more exploration. There is a parallel need for the improvement of the legal framework and the acceptance of new exploration technologies.

Action Area 1.3, *Innovative Extraction of Raw Materials*

Mapping: A new PPP SPARC has established a working group on robotics in mining, including marine robotics, as this was a gap in research. A new SPIRE PPP project on integrated process control in mining transport and processing was described. Further details on a large number of Swedish and Finnish national raw materials research projects would be provided.

Recommendations: The integration of extraction with other processes, in order to take a systemic approach, was recommended. Geo-metallurgy approaches should be considered. The importance of addressing mining waste, industrial mono-fills and low grade, unprocessed materials in mines was emphasised by several delegates, as were technically demanding requirements, such as fine material processing. Waste mining may however be better addressed under the processing part, and links with the waste legal framework need to be ensured. Promoting co-operation between mining regions was recommended.

Deep sea mining

Mapping: 3 out of 4 deep-sea mining RMCs were discussing clustering. Processing was of critical importance, particularly for Critical Raw Materials, including rare earths. The Processing Centre (Aachen University, Germany) is preparing a workshop to be held in May 2015 to discuss the potential for a nationally-funded project on the processing of deep-sea poly-metallic nodules and crusts.

Recommendations: Co-operation with the International Seabed Authority on deep-sea mining should be systematic. There are possible synergies with hydrocarbon exploration and exploitation technologies, mainly in the riser design and operation, although diameters and operating depths are much greater for metals and minerals. It is necessary to address the whole value chain – exploration, mining, processing and environmental monitoring – as the industry does not yet exist at any stage of the chain. Horizon 2020 has the different stages of the value chain as separate Calls, but they should be together.

Action Area 1.4, *Processing and Refining of Raw Materials*

Mapping: This is an area with a high number of RMCs. An industrial collaboration of pilot facilities across Europe is being established under an existing RMC (MetNet), working at a high TRL. An existing Flemish programme on processing metallurgical wastes emphasised the importance of a comprehensive, zero waste solution that also valorised low-value mineral products, as well as the metallic ones. Existing and possible further international links, particularly a potential collaborative programme between the EU and South Africa, were mentioned.

Recommendations: Delegates put forward the wide range of possible and complementary actions in this area, in order to avoid overlaps. There is a need for new (physical) processing

technologies for ultra-fine particles. There is also a need to find ways to disseminate information without compromising intellectual property.

Action Area 1.5, *Recycling of Raw Materials from Products, Buildings and Infrastructure*

Mapping: There is a dedicated Focus Area under the 2015 Horizon 2020 Call addressing Waste. DG RTD launched a Call for Ideas for Horizon 2020 - Societal Challenge 5. There are possible gaps in the sorting of scrap, in order to improve the quality of metal recyclates.

Recommendations: The potential of using Green Public Procurement (GPP), or other innovations in public procurement, to increase demand for products with recycled content could be an important aspect of projects involving construction and demolition waste. It was also important to look at new technologies along the entire value-chain and to look at legislation and standardisation. Links to the circular economy need to be established.

Pillar III, *International Cooperation* (Operational Group 5)

Mapping: The Commission reported on the existing collaboration and Letters of Intent signed with several countries around the World, on the raw materials diplomacy events with the US and Japan on criticality, with the African Union, and with Latin America. The link to the EU's Foreign Partnership Instrument was mentioned. Further details would be provided of a joint project between the European Space Agency and Canada.

Recommendations: There are opportunities for enlarging international cooperation in joint programming of national research and innovation agencies linked to ERA-MIN Era-net, as well as opportunities to develop closer collaboration in the areas of exploration, mining and processing with Australia, Canada, Latin America, South Africa and the US.