Towards a European Raw Materials Alliance

August 2020

State of play: The need for a European Raw Materials Alliance (ERMA)

The European Commission has launched a new Industrial Strategy that emphasises the ambition of European leadership in Green and Digital Transitions. The cornerstones for the implementation of this strategy are 1) access to sustainable raw materials and advanced materials and 2) the ability to design and recycle products in a resource-efficient way. Today, most of the raw materials used in Europe are imported from non-European countries. An increasing number of raw materials with particularly high economic importance are exposed to a significant supply risk, which is why they are deemed to be critical. Once considered the backbone of the European economy, metal mining, production and processing have declined in the EU over the last decades. Europe has been losing ground in the industrial ecosystems of steel, copper, and aluminium, just to name a few commodities, all of which are of the highest macroeconomic strategic importance.

Reliable and sustainable sources of the commodities needed to boost Europe's prosperity and world leadership in the green economy can be found within Europe, and European industries have the innovation capacity and infrastructures necessary to maintain their competitive edge. There are, however, substantial bottlenecks (regulatory and financial) in the up- and mid-stream of traditional sectors (e.g., equipment manufacturing and aerospace and defence) as well as in the emerging strategic EU industrial value chains such as microelectronics, batteries, hydrogen technologies and clean vehicles. These hurdles need to be overcome to unlock investment and financing (see below the example of rare earth sector). By 2030, Europe should have a flourishing ferrous and base metal industry and should have made considerable progress towards the reduction of its dependency on critical raw materials (with sector-specific targets).

The first ERMA business case: Rare Earth Magnets and Motors

Rare earth (REE) magnets and motors are a good example of the regulatory hurdles faced by European producers. They are vital components in a myriad of products, ranging from small headphones to drivetrains of EVs and massive wind power turbines. The production of these materials is entirely dominated by China, with a market share of 80-100% (depending on sector and value chain segment). Whilst discovered and initially commercialised by European scientists and engineers, today's European REE industry is not competitive and is in decline. First and foremost, this is because there is a lack of a level playing field for EU producers, as the heavily subsidised mining and metal making industries in China benefit from direct subsidies and tailored tax schemes. For example, Chinese magnet producers can recover Chinese VAT of 13% for their exported products, whereas this is not the case for exported REE oxides and alloys. Thus, magnet producers in the EU that need to import oxides and alloys from China face a 13% cost disadvantage in raw materials procurement compared to their Chinese competitors. Secondly, there has been a lack of awareness by European OEMs of the strategic importance of securing REE and other materials from EU supply chains. Indeed, the monopoly over the REE value chain has led to Chinese control of key downstream products, including electric vehicles (> 60 Chinese brands today, >75 by 2024), powertrains, wind power, electronics, and robotics. Key strategic actions that the European Commission should consider implementing include:

- to create taxation incentives for European OEMs to source an increasing proportion of their raw materials and advanced materials from sustainable sources (e.g., with respect to capital gains tax or corporate tax);
- to diversify the source of raw and advanced materials for European industries through strategic partnerships with resource-rich countries and development of European raw material and processing potential;
- to develop an industrial ecosystem that can reinforce the competitiveness of small- and mid-sized metals and magnets producers that still exist in the EU;

- to build separation and recycling facilities to further diversify sourcing;
- to develop environmentally-friendly and sustainable solutions for primary and secondary sourcing, and to establish an EU sustainability standard and certification scheme.

Alternative sources from the EU and worldwide

We see a number of alternatives for sourcing raw materials and advanced materials, both from within and outside Europe. A multi-sourcing strategy from feasible, sustainable sources (primary and secondary) is needed to ensure resilient supply chains and European strategic autonomy. For REE, there are world-class deposits of Norra Kärr (Sweden) and Tanbreez (Greenland). In addition, REE can be extracted as a by-product of phosphate production as at Yara mine in Finland (this project is currently receiving innovation funding from the H2020 Programme). In addition, there are several investment cases for REE recycling plants. We need to act quickly: other parts of the world are also competing for access to available resources. Potential non-EU sources include Australian producers Lynas and Hastings as well as the Canadian company Torngat, besides other projects.

Ways to enhance resource efficiency

We see possibilities to implement innovation at industry-scale, particularly via an uptake of R&D&I results from specific H2020 and EIT KICs projects. As an example, the EIT RawMaterials project portfolio comprises a number of promising projects in exploration and mining, but also processing and materials design (focussing on increasing resource and energy efficiency), substitution of critical and toxic materials as well as design for recycling. A reduction of REE content required to produce magnets can be achieved via new processing technologies (including 3D printing) as well as new alloy and product design.

Implementing a European Raw Materials Alliance

We are confident that the launch of ERMA in September / October 2020 is timely and meets the demands of the industry and EU society as a whole. We can already now present a strong industry interest in and commitment to ERMA, especially on REE and magnets. EIT RawMaterials is well-placed to facilitate this new alliance – with our network and expertise we can create industry buy-in, but also support by RTOs, universities, associations, NGOs and other public and private stakeholders. First and foremost, we would act as a coordinator and matchmaker for the different stakeholders, to initiate investments and boost innovation in raw materials, advanced materials, and the Circular Economy.

The approach of setting up ERMA would follow the successful implementation of the EBA. The Alliance would include three major workstreams:

- An **Open Stakeholder Consultation Process** in order to secure industry commitment to strategic initiatives, define raw materials challenges for key strategic value chains and identify financial and regulatory bottlenecks
- The development and validation of **Investment Cases** in **Key Strategic Value Chains** as well as the use of an **Investment Platform** to secure access to finance for investable cases in the raw materials and advanced materials sectors as well as in the Circular Economy field
- The implementation of **Regulatory and Financing Mechanisms for the Realisation of Investment Cases**

In phase 1, ERMA will cover REE magnets and motors. In phase 2, it will address other relevant fields to tackle the supply of raw materials as a strategic security and sustainability challenge for the European Union.