

PRODUCTION OF RARE EARTH ELEMENTS IN EUROPE: DREAMS, MISBELIEFS MILESTONES, AND REALITIES

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Abstract

A whole decade has passed since the rare earth elements (REE) gained tremendous publicity in the sense that their demand was constantly increasing whereas their supply was in jeopardy, due to the Chinese monopolistic control of production and export restrictions that drove prices up nearly tenfold. The short-lived crisis of 2010 has long passed but much has been said and written about rare earth elements since then, particularly about ways to restart REE production outside of China.

Developed countries from around the world were irritated by the policy of China and started taking actions to fight the Chinese monopoly. The crisis was sufficient to cause a global treasure hunt by way of exploration of rare earth deposits, and thus in just a few years the potential global resources of these strategic metals increased to an extent that could secure global supply for the next few hundreds of years.

Europe in turn initiated its own exploration projects to reduce its reliance on imports of these critical raw materials, but none of these projects has yet translated into an active mine. Similarly, and despite the numerous advanced exploration projects around the world, the production outside of China has been rather limited and is taking place into just a handful of countries.

For the shake of comparisons, it is worth mentioning that it took almost ten years from 1985 to 1995 for China to take the lead in production from the United States and another few years to establish its complete dominance in the rare earth elements industry. Nowadays, China has a fully integrated value adding chain of REE that cannot be duplicated in the short term.

Correspondingly, in these last ten years following the crisis little has changed in the global market of rare earths, needless to say in the European market as well, despite many dreams, expectations and statements. Some milestones have indeed been achieved, however mostly in a laboratory scale, and thus could not be considered

enough to change the ongoing situation. It could be even said that Europe and the rest of the world are still moving towards the wrong direction, applying erroneous policies.

Apparently the biggest challenge facing scientists is how best to extract and process these elements. Another prohibitive factor is the low current level of REE prices. Nevertheless, there are several other impact factors that need to be taken into account as well when it comes to developing meaningful and realistic policies towards a sustainable production of rare earth elements in Europe and worldwide. For instance, the wrong perception that mining of rare earth elements is a dirty and environmentally harmful business needs to be changed, while the authorities and communities need to realise that we cannot choose where mineral and metal deposits are located and that we need to get rid of the not-in-my-back-yard syndrome (NIMBY).

Hence, in this paper a thorough discussion is made about the actions that have been taken all these years. The discussion focuses on the European REE market based on the dreams that have been made and the misbeliefs in which policy makers and stakeholders have steeped in. In addition, the milestones achieved by scientists are highlighted and finally the realities are mentioned that govern the production of rare earth elements in Europe.

In turn, this paper suggests some realistic goals to be set and achieved by the European stakeholders in order to get on the right track, initiate sustainable production in Europe and reduce its dependency on imports from China.