



**Canadian Rare Earth Element Network (CREEN)**  
**Submission to the House of Commons Standing Committee on Finance**  
**Pre-Budget Consultations 2014**  
**October 7, 2014**

With its well-known mining and processing expertise, Canada is currently in a strong position to capture and capitalize on the economic opportunities and strategic importance of the country's unique rare earth element (REE or REEs) deposits. This would firmly establish Canada as a significant, secure, and sustainable supplier to the global REE supply chain.

The three main points CREEN wants to share with the Committee are:

1. Canada has the real opportunity of securing a significant position, and its commensurate economic benefits, by establishing and feeding global rare earth supply chains. Canada has unique resources and some of the most advanced projects in the world outside of China.
2. There are technical challenges unique to Canadian projects that can be addressed through research and development (R&D), yet the sector is made up of junior companies without the individual financial resources to ensure Canada wins this 'race to supply'.
3. Government support through R&D funding, coupled with general promotion of the industry, will allow Canada to capitalize on this once in a lifetime opportunity to be a global leader in a developing industry.

With Canada as a world leader in REEs, clearly two key priorities of the Canadian Government, would be supported:

- Increasing the competitiveness of Canadian businesses through research, development, innovation and commercialization
- Maximizing the number and types of jobs for Canadians

CREEN is requesting R&D funding support of \$25 million over 5 years.

### **Economics of Rare Earth Elements**

These unique materials are highly leveraged when measured against the economic value of the end-use products and industries they make possible and support. Domestic production of REEs will give Canada a significant position in downstream manufacturing opportunities that rely on these elements.

The reality is we all use rare earth elements multiple times a day and this is one reason rare earth elements have been designated as a critical resource by the Canadian Government.<sup>1</sup>

Global demand for REEs is expected to rise significantly in support of key emerging industries (e.g. green energy technologies, defence, computing & communications, medical diagnostics and treatments, etc.). The current market for REE compounds is approximately 110,000 tonnes per year of rare earth oxides valued around US\$4 billion annually. Growth over the last 10-15 years has been 8% to 12% per annum, and most experts agree the rate of growth will continue or even accelerate.

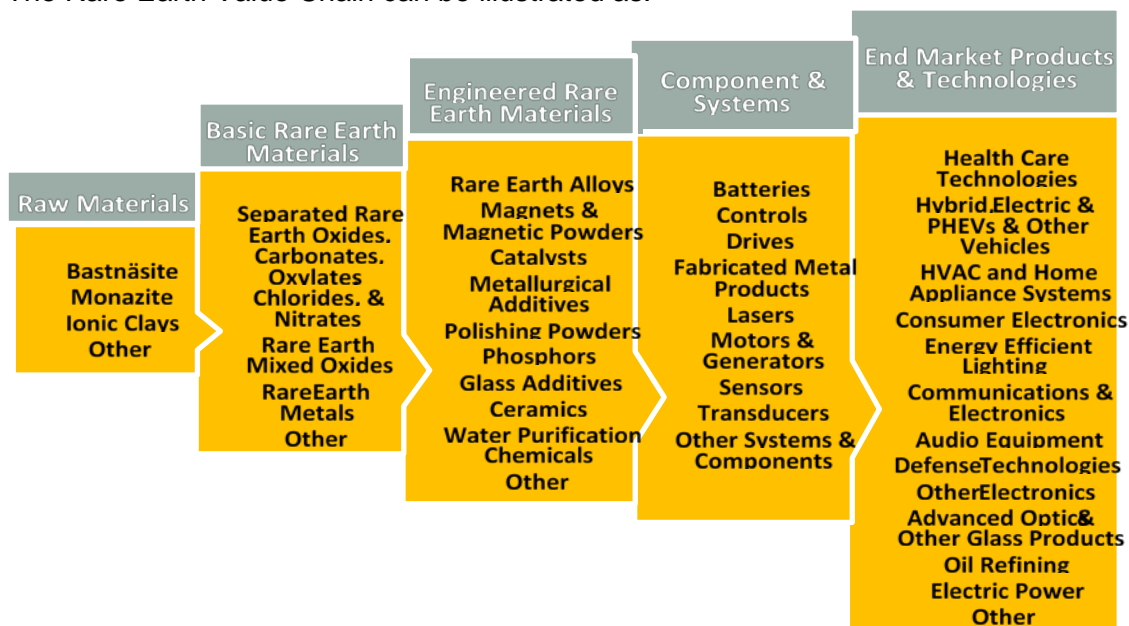
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<sup>1</sup> <http://o.canada.com/news/canada-looking-to-break-into-critical-rare-earth-elements-mining>

A recent report by the Rare Earth Technology Alliance (RETA) titled, "*The Economic Benefits of the North American Rare Earths Industry*", provides an in-depth look at the economic footprint of the rare earth industry.

- The rare earth industry directly contributes to the North American economy with \$795 million in shipments, employing nearly 1,050 workers with a payroll of \$116 million.
- Adding other upstream impacts (indirect and induced) to its direct impact, the rare earth industry generates a total of \$1.9 billion in economic output in North America.
- The rare earth industry is supportive of \$329.6 billion in economic output in "downstream" end-market products and technologies that employ 618,800 workers (with a combined payroll of \$37.6 billion) in the United States and Canada. Canada's portions of these estimates are 84,000 and \$4.2 billion.




The Rare Earth Value Chain can be illustrated as:



### Canada's Competitive Advantage

China has had a monopoly position over REE production and processing since the mid-1990s. Of the 28 Advanced Projects outside of China, 9 are located in Canada, and they tend to be deposits with high percentages of the critical (primarily heavy) REEs.

Manufacturers and new technology innovators outside China and even within China are looking for secure, sustainable, alternative supply of REEs, thus providing Canada with the logical and ideal opportunity of transforming these important resources into downstream economic returns.

	Advanced Projects	Resource - Exploration	Overall Advanced Index
	9	10	19
	6	3	9
	4	1	5
Other Countries	9	14	23
Total	28	28	56

## Government's Role in Rare Earth Industry

Government support for this emerging industry would build on the recent House of Commons Standing Committee on Natural Resources report titled, "*The Rare Earth Elements Industry in Canada – Summary of Evidence*" (June 2014). The Report outlines some of the basics of the rare earth element industry (e.g. applications, global market related to supply and demand, and the role of China) and discusses the potential economic and strategic opportunity for Canada and the key challenges faced in the industry. It also speaks to initiatives that support Canada's REE industry, including CREEN, in its concluding section titled, "*The Role of the Federal Government in Advancing Canada's Rare Earth Industry*".

This document suggests the Canadian government publicly support the development of this important emerging sector as a serious global player in the industry. "Canada's opportunity is now", the document notes, while also alluding to the fact that, "Canada has not invested in rare earth industry development to the same extent as other countries."

It should be noted that the companies leading the development of Canadian projects are junior mining companies, and do not have the financial resources of the traditional large and multi-national base metal mining companies. These companies and their shareholders have invested over \$200 million in Canadian projects to date, however, current capital markets and lack of revenue generation at this time have hindered R&D abilities and project advancement. This funding request is not for the benefit of any particular company, but for the industry, and regardless of individual companies' success, the expertise and methods developed will be available to any Canadian project developer and CREEN member while creating and improving REE expertise in Canada.

## CREEN's Goal and Multi-Staged Priorities

As an industry-led, multi-stakeholder network, CREEN provides the platform for industry, academia, commercial and national labs, and experts to deliver collaborative solutions that will advance Canada's REE sector to produce and secure 20 percent of the global supply market for separated critical rare earth products by 2018. CREEN is focused on addressing pre-competitive economic and technical issues needed to establish further downstream material processing and applications.

## International Efforts

National and international industry-academic-government championed rare earth initiatives have been launched over the past two years. Some examples include:

- The US Critical Materials Institute (CMI)
- The European Rare Earth Competency Network (ERECON)
- The Korean Institute for Rare Metals (KIRAM)
- UK Natural Environment Research Council's (NERC) Security of Supply of Mineral Resources

Canada and CREEN have been approached by all of these international organizations to participate in and help foster collaboration efforts.

## Ask

Canada has the real opportunity of securing a significant position, and the commensurate economic benefits, by establishing and feeding global rare earth supply chains. The time for Canada to become a global leader and a sustainable supplier of rare earth elements is now.

This is why CREEN is requesting R&D funding support of \$25 million over 5 years.

Without this funding, other competing nations' projects will be allowed to beat Canada in the race to supply and acquire a larger portion of the developing downstream industry that will inevitably follow.

## CREEN Members

