



Key Findings and Observations from the 7th International Rare Earths Conference

Executive Summary:

- **Rare Earth Elements (REE) are playing an increasing role in technologies and attracting mounting interest from investors worldwide.** The 7th International Rare Earths Conference held on November 15-17 in Hong Kong, a global event for the rare earths industry, represented an opportunity to meet the established and emerging leaders together with understanding the end-use markets for rare earths, consumption trends and supply-side developments.
- Dr. Thomas Kenny, Cedrus Investments' Chief Emerging Technology Advisor and a Stanford University professor, attended the meeting. This report presents the **key findings and observations from the event as well as advice for investors** in rare earth materials.
- **REE materials are becoming critical elements** in many newly-emerging and rapidly-growing industries and their **limited supply and geographical distribution have caused concerns on sufficient supply and huge price swings of some of these materials.** The quotas introduced in 2009 by China, the current overwhelmingly dominant supplier, have triggered a surge in the prices of certain REE materials for fears of supply shortage. Actually, the prices of some of them skyrocketed 10x in the past two years before plummeting by as much as 4x in the last three months as fears subsided. The constrained supply also threatened the continued growth of high-strength magnets, rechargeable batteries, light emitting diodes (LEDs), and polishing materials that depends on REE materials. In response to these developments, the following phenomenon related to REE materials are occurring:
 - **Supply increases** are achieved through such as smuggling, increased efforts to extract REE materials from expensive sources or new mining operations, improving materials processing yields and recycling e-waste.
 - **Demand reductions** are attained via consumption of REE material reserves already in the industrial supply chain and reduction in rare earth content like new Cerium-based polishing compounds developed by the industry. Another example is magnet manufacturers have developed high-strength magnets with REE materials content reduced to less than 3% from about 10%.
 - **Alternatives to using REE materials are sought and developed**, including the migration from Nickel-Metal Hydride (NiMH) batteries towards Lithium-Ion (Li-ion) batteries and the switch to magnet-free induction motors from permanent magnet-based electric motors containing REE content.
 - There are **emerging nanotechnology approaches that can displace REE materials or undercut the dependence on them** (please refer to our *Nanotechnology's Impact on the Rare Earth Marketplace; The Investment Opportunity* report published on April 26, 2011).
- **Lynas Corporation Limited (LYC.AX) and Molycorp Inc. (MCP) are targeting large-scale REE material production in 2012**, providing the much needed new supply outside of China. There are several newer operations coming online in addition to those expected from Lynas and Molycorp.
- **The following is advice for REE materials investors:**
 - **The REE market is dominated by artificial factors** such as government manipulation. Hence, predictions based on these market factors alone will probably be inaccurate.
 - **Fluctuations in REE commodity prices should be expected.** 10x ups and downs are possible. As a result, fortunes can be made or lost in REE commodities trading in this market.
 - **Special opportunities with inherent value do exist for new resources** that are rich in heavy REE and located in areas where political manipulation and local factors will be manageable.