

Current Projection: Rare Earth Hero Collides with Supply & Demand

October 20th, 2006

By Clint Cox

Source: The Anchor House, Inc.

Like a masked super hero, rare earth elements (REE) perform fantastic feats of innovation in today's world of technology. Super strong magnets, super small hard drives, super accurate missiles, and super powerful medical scans — all because of the mysterious (and mostly unknown) rare earth elements. For all of the technological fanfare that REE can display, it may be brought to its knees by three small words: "supply and demand".

Rare earths are called strategic materials for a reason – a reason that may become abundantly clear during the next five years with a considerable shortfall projected between supply and demand. Each country and each end user will have to strategize in order to secure necessary REE resources. In the past this has caused wild price fluctuations as firms were willing to pay significant premiums for any available rare earth material. It also provided a shift to less costly substitutes when possible within rare earths. With new uses being rapidly discovered and current uses being expanded, there will be an ever-increasing pressure placed on the limited rare earth supply.

Let's get to the numbers...

2005 Supply Numbers:

*2005 global production estimated to be between 103,000-130,000 tonnes

*95-97% produced in China

**49,000 tonnes in Baotou

**25,700 tonnes at Mianning

**20,000 tonnes from Jiangxi Clays

*China exported 55,300 tonnes to 74 countries

*India produces approximately 5000 tonnes per year

There are a number of supply considerations in China that may drastically affect the marketplace in the next few years. First, according to BCC research, the Chinese Ministry of Land and Resources has placed the cap on rare earth production for 2006 at 86,520 tonnes. I'm no math genius, but that's significantly less than 2005. The Jiangxi clays are causing environmental concern and may be capped indefinitely at 7,000 tonnes. It seems that Chinese environmental concerns are mounting — perhaps as the scrutiny and prying eyes of the world press will be focussed on China during its 2008 Olympics. There is a movement among academics to even cease production in some areas. As production declines in China over the next few years, the screaming question is "Where will the world get its rare earths?!"

There are a relatively small number of mining companies currently exploring for rare earths. These companies are looking at projects from Vietnam to Australia to North America. Some of these companies are much closer than others, and some may face any number of insurmountable environmental, feasibility or financing issues. It is also unclear to me (I have read or heard conflicting reports) whether or not Molycorp has been cleared to recommence its mining operations at Mountain Pass, California. I have seen the Federal permit, but I don't know if there are other state or local requirements. Also, the Molycorp website

is relatively lifeless — showing no sign of having been updated since 2002. If rare earth prices go high enough, Molycorp and others will have enough incentive to produce. Regardless, both Molycorp and the smaller mining companies may take years (again — some are much closer than others) to ramp up substantial production to be supplied to the marketplace. It is difficult to predict what the output of these mines might be, but the best case scenarios would have new mines producing significant REE by 2009.

Now for the scary stuff:

Demand numbers for 2005:

*95,000-130,000 tonnes global rare earth demand

Projected Average Annual Growth in Demand 2005-2010 (according to BCC Research):

- *Neo Magnets 12.64%
- *NiMH Batteries 30.55%
- *Phosphors 13.00%
- *Polishing compounds 9.2%
- *Catalysts 3.78%
- *Glass 0.57%
- *Other 8%
- *TOTAL Projected Demand Growth Rate 10.1%

*Projections by Shigeo Nakamura show Japan's demand may increase from an expected 32,000 tonnes in 2006 to 63,000 in 2010

If this projected demand growth is even close to correct, supply will fall woefully short of demand. Demand projections that I have seen for 2010 range from 154,312 to 200,000 tonnes. Depending on which numbers you use, demand could almost double in five years (conservative estimates have demand increasing by at least 50%). Keep in mind that these predictions are based on taking current uses forward into the future — they do not even speak to the possibility of increased demand due to new innovations. Shigeo Nakamura states that the Japanese government has begun a study of whether or not to stockpile rare earths. If stockpiling becomes a trend (the US has no stockpile either), this will place increased demand pressure on an already tight market. Also consider that China is increasing its own consumption of rare earth elements while cutting back on its exports.

The innocuous concept of “demand” may begin to look like a mad scramble for whatever scraps can be had. Interested parties will have to strategize how to get into the scrum and come out with handful of rare earth. To make matters worse, overall supply may actually decrease over the next few years while demand soars. Higher prices may help to provide some equilibrium, but remember that this stuff has become absolutely essential to modern technology and therefore to society. The price will be paid, and the leading supplier knows this.

There's always the chance that there will be a big resource discovery or technological advances in mining that will shift the supply and demand equation in the direction of balance. It is also possible that current rare earth mining projects in the global pipeline are more successful than anticipated. But for now, it looks as if our rare earth hero has a near term rendezvous with reality — big demand, small supply.

References

Hornby, Lucy. “China's Baotou Steel eyes HK Rare Earth IPO.” *Reuters* (7 September 2006).

Nakamura, Shigeo. "Rare Earth Statistics of Japanese Market in 2006". Beijing Conference of Minor Metal 2006. 7 September 2006.

Sinton, Christopher W. "Study of Rare Earth Resources and Markets for the Mt. Weld Complex". http://www.lynascorp.com/page.asp?category_id=9&page_id=13 May 2006.