

# China's Rare Earths Game Plan: Part 1 - The Effects Of Reduced Export Quotas

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*Gareth Hatch*

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## Introduction

In the first week of July 2010, the authorities in China announced a number of changes that affect the rare earths sector in China. These changes included:

- a reduction in the total amount of rare earths that may be exported from China in the latter half of 2010;
- the announcement that rare earth prices would be set and published by the central government on a monthly basis, through a unified pricing structure covering the main provinces responsible for rare earth production;
- the beginnings of a plan to eventually consolidate the disparate rare earth production companies into 3-5 large conglomerates over time.
- A resource tax to funnel funds from the richer provinces to the poorer ones.

So, taking the first of these changes, how will the reduction in export quotas, announced by China's Ministry of Commerce [MOFCOM] affect buyers of rare earth oxides (REOs)?

## Reduction In Export Quotas

"The export quotas for 2010 have been reduced by 40% compared with 2009." said **Dudley Kingsnorth, Executive Director of IMCOA**. "This is a far greater reduction than forecast - along with others I had forecast that the reductions would be of the order of 6-7% in the coming years." The impact of the change will have far reaching consequences, particularly outside of China. "Chinese rare earth export quotas for 2010 are now significantly less than rest of the world (ROW) consumption." said Mr. Kingsnorth. "The quotas for 2010 total 30,250 t REO compared with ROW forecast demand of 50-55,000 t. Total ROW production capacity is currently 10-12,000 t at best, which indicates a shortfall this year 10-15,000 t at least."

Mr. Kingsnorth believes that the reduction in export quotas has caused two crossover points. "First, the

quotas are less than ROW demand this year, which I did not believe would occur until 2011 and to a lesser extent." he said. "Second, if this trend continues, ROW supply will not be able to meet the shortfall for several years. In the near future, the shortfall will be met by a drawdown of stocks." There is also one other consequence of significance. "I also believe that the resultant high prices it will make elimination of illegal mining in China more difficult." said Mr Kingsnorth.

The level of existing stocks may be a key factor in how the news plays out. "In the short term, the end-users' supply of rare earth metals and alloys from China will not be affected," said **Jack Lifton, my colleague and co-founder of Technology Metals Research, LLC**, "because they have been building inventory in Japan, the majority direct user of rare earths outside of China, for several years. This 'stockpiling' by Japanese companies by every means possible, since perhaps 2005, has been in response to the reduction of exports that has been underway by China in this sector for the last decade."

The reduction in export quotas directly affects the amount of rare earth elements exported from China, but not necessarily the components and downstream products produced from such materials in China, before being exported. "The quotas are designed to regulate the exports of rare earth materials," said **Constantine Karayannopoulos, President and CEO of Neo Material Technologies**. "The processing of rare earths at facilities in China to produce precursor materials, downstream products and finished components for export, such as our Neo powders produced by our Magnequench Division and a good deal of our value-added rare earth materials produced by our Performance Materials Division, will not be directly affected by the changes to the quotas." he said. "If anything, after a short-term period of volatility, as the industry is trying to find balance, the quotas could lead to an oversupply of certain rare earths domestically, potentially leading to price reductions inside China of metals such as cerium, lanthanum and neodymium." Neo has facilities in Tianjin, southeast of Beijing, where

its Magnequench division produces neodymium-based magnetic powders.

**Jon Hykawy, a clean technologies and materials analyst with Byron Capital Markets**, concurs with this analysis. "China is not imposing export quotas or contemplating banning ALL export of rare earth-containing products. Companies in Japan, Korea or the US may not be able to get pure neodymium metal from China to make magnets in their home nations, but they will still be able to export rare earth magnets, or the products containing them, from China. We had to get used to effectively all rare earths produced coming from China, and we may well have to get used to the idea, for at least a period of time, of all our rare earth-containing products coming from China."

**Industry lobbyist Jeff Green, of J A Green and Company**, has a more dire view. "This is exactly the situation we've been warning the US Government about for several years," he said. "As worldwide availability of material decreases, more downstream, value-added processing migrates to China. This continues the erosion of the U.S. industrial base, which threatens our economic and national security, and will likely lead to a strong political response from the US over the next 12-24 months."

There is also a growing school of thought that China is not actually able, at present, to use all of the materials allocated for domestic use only. "Out of a production level of perhaps 100,000 tonnes of total rare earth oxides in past years," said Dr. Hykawy, "the bulk of that material has ended up being purchased by end-users in first-world nations." **Patrick Wong, chief investment officer at Dacha Capital**, has also been tracking Chinese domestic usage of rare earths. "While the cut in export quotas is not a surprise," said Mr. Wong, "the size and timing should be questioned. In 2009, industry experts noted that all of the export quotas issued in that year were not used and therefore left an opportunity for China to reconsider its quota policy and make adjustments. During the first half of 2010," he said, "they left the quotas unchanged as compared to the 2nd half of 2009, and in my opinion conducted a very thorough analysis of the industry culminating in the drastic change recently announced."

All of this puts additional pressure and demand on 'value-add' companies in China. Can they handle it? "In my view there is no certainty that the Chinese downstream industry has the physical capacity to take up the opportunity created by the potential ROW lack of output created by the reduction in quotas," said Mr. Kingsnorth. "However, I believe that the ROW will rise to the task by drawing down on their stocks of rare earths, a greater part of which were built up over the past 18 months during the global financial crisis, when production exceeded demand and illegal mining and processing in China was not under attack as it is today."

Still, the change in the quota appears not to have been a surprise to everyone. "With the benefit of hindsight," said Mr. Kingsnorth, "looking at prices (e.g. at Metal Pages) over the past 6 weeks, it appears that many people recognised that the quotas would be reduced significantly, as prices have risen by 10-20%." Mr. Wong concurs. "Our sources were indicating potentially large cuts in export quotas some time ago," he said, "and so we believe that some within the industry have had some time to prepare, and that a period of overstocking may have occurred in the past few months which may impact volume statistics."

A review of the specific allocations of export quotas given the various rare exporters in China shows that it is the foreign-invested companies that have been subject to the largest cuts, and indications are that this was not expected. Still, the restrictions affect the domestic-originated companies too. "The industry is up in arms about the allocations," said Mr. Karayannopoulos. "Exporters such as China Minmetals have committed very significant sums of money to developing their rare earth businesses, with the export markets no doubt being a large part of their business models. To have the amount of rare earths that they can export reduced to such a degree, is going to be problematic for them."

**Bill Rigney, Sales Manager for China Minmetals' US-based subsidiary**, isn't quite so pessimistic. "It's too soon at this stage to know how the quota changes will affect the industry. Things will start to firm up on the next few weeks," he said, "at which point we'll know more. We're confident that we will be able to continue to satisfy the needs of our customers. We also have access to potential additional quota, through our relationships with other rare earth companies in China, as needed."

At first glance, there does not appear to be any granularity to the quotas that have been imposed, in terms of differentiation between the various individual rare earth elements. This further complicates the situation due to the varying availabilities and pricing for specific, separated oxides. "The Chinese producers will focus on the export of the higher value rare earths to get the maximum value from their quotas." said Mr. Kingsnorth. "So, this should help Molycorp, Lynas etc. sell their light rare earths. Naturally it will also help the aspiring rare earths producers sell their output." There may therefore be a disproportionate effect on non-Chinese purchasers of lower value rare earths such as lanthanum and cerium, and the products in which these rare earths are used.

Other factors may be at play though, some of which may not have been accounted for in the new quota. "There are several variables that will affect the elements that will mostly likely be affected most by the scarce quotas," said Mr. Wong. "The factors they will not have been able to forecast are new sources of demand (for example, Dacha Capital) or the possibility of quota 'abuse'. This policy can lead to a 'run on quotas'," he said, "where any opportunistic trader may decide to export a large tonnage of low value product to induce a shortage of quotas that will create large differences in FOB markets for virtually all rare earth elements. The effect that volume can have on one element can affect pricing for ALL rare earth elements."

Since the announcement of the reduced export quotas last week, there have already been moves to try to reverse the announced changes. Japan's Ministry of Economy, Trade and Industry was reportedly preparing to ask the Chinese government this week to review the new export quotas, during bilateral economic talks in China. "MOFCOM and China will come under pressure on this, as well as other international trade and investment areas," said Mr. Karayannopoulos. "At a time when China is aggressively acquiring resource companies around the world, this decision by MOFCOM will likely make that process more difficult for China. It remains to be seen how the dust will settle".

There has been much speculation in recent years on the reasons for the continued reduction in export quotas for Chinese rare earths. **John Ebert is US business manager for Yunsheng Hi-Tech Magnetics**, a Chinese rare earth permanent magnet material producer. "China needs to protect a vast,

but limited national resource," he said. "This notion runs parallel with the attitude in the USA towards protecting its oil reserves - ensuring future supplies for its own burgeoning consumption." The environment, too, is a factor. "China knows that it needs to provide stewardship of the environment in the Baotou mining regions." said Mr. Ebert. "Tailings from mining are transforming Baotou into a toxic quagmire that will haunt future generations of Inner Mongolians. Beijing already has plans to introduce less detrimental methods of extraction, recycle existing tailings and help recover the damaged environment."

Dr. Hykawy is concerned that through this and other recent announcements, the Chinese are signaling reductions in fundamental supply. "The stated rationale is environmental protection, that illegal mining and certain smaller firms are disproportionately damaging the local environment." said Dr. Hykawy. "It could be that the relevant ministries in China wish to preserve their resources and extract more money from Western end-users by reducing supply and watching prices rise. Either way, having less of the relevant rare earths available to us will make certain high technology products more expensive and less ubiquitous, and this may include hybrid or electric vehicles. Rare earth mines outside of Chinese governmental control would obviously help alleviate this concern."

**Mark Smith, CEO of Molycorp, Inc.**, would no doubt agree with the latter observation. "China is doing what it feels it must in order to maximize the value of their resources, improve product prices, improve their environmental practices and continue to create jobs in downstream manufacturing businesses in China, which have all been key policy goals of that nation." said Mr. Smith. "They are clearly trying to leverage their > 97% supply position in rare earths to achieve that. Frankly, we hope the US will begin to emulate similar efforts as we get back to producing American rare earths in sufficient quantities to meet our own domestic demand."

Clearly, if Molycorp and other companies with advanced mining and processing projects, such as Lynas, are up and running in two years, then the equation changes for end users of exported Chinese rare earths - at least as far as the light rare earth elements are concerned. But in the meantime? "These additional and very significant decreases in export quotas are clearly troubling," said Mr. Smith,

"given that it appears that rest of world demand will now exceed what China is willing to export. We are very concerned that the rest of the world could face actual near-term shortages of rare earths. This shines an even brighter spotlight on the absolute necessity for the US to get to full-scale rare earth production sufficient to meet our own demand and to deploy a complete mining-to-magnets manufacturing supply chain as soon as possible. Molycorp is on track to deliver both of these by mid-2012."

**Keith Delaney, Executive Director of the Rare Earth Industry and Technology Association (REITA)**, notes that these changes don't just affect

the USA. "The implication to the developed countries of the world is that global stakeholders need to act in concert with one another," he said, "to plan for and create the technical and commercial infrastructures necessary to meet the demand for clean energy and conventional rare earth applications."

In Part 2 of this series on "China's Rare Earth Game Plan", we'll look at the impact of the other recent announcements from China, on the rare earths sector, relating to fixed prices, consolidation and a proposed resource tax.

## About the Author

Gareth Hatch is a Founding Principal of Technology Metals Research, LLC. He is interested in helping people to understand the challenges associated with the growing demand for rare earth elements [REEs] and other critical and strategic materials, and how those challenges affect market sectors throughout the entire technology supply chain. He is based in the suburbs of Chicago, Illinois, USA.

For several years Gareth was Director of Technology at Dexter Magnetic Technologies, where he focused on the design & application of innovative magnetic materials, devices and systems, in order to solve real engineering problems. He led a stellar team of engineers who helped customers and clients in the aerospace, defense, medical, data storage, oil & gas, renewables and industrial sectors. He holds five US patents on a variety of magnetic devices.

A two-time graduate of the University of Birmingham in the UK, Gareth has a B.Eng. (Hons) in Materials Science & Technology and a Ph.D. in Metallurgy & Materials, focused on rare earth permanent magnet materials. He is a Fellow of the Institute of Materials, Minerals & Mining, a Chartered Engineer and a Senior Member of the IEEE. Gareth is also a Chartered Scientist and a Chartered Physicist through the Institute of Physics.

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