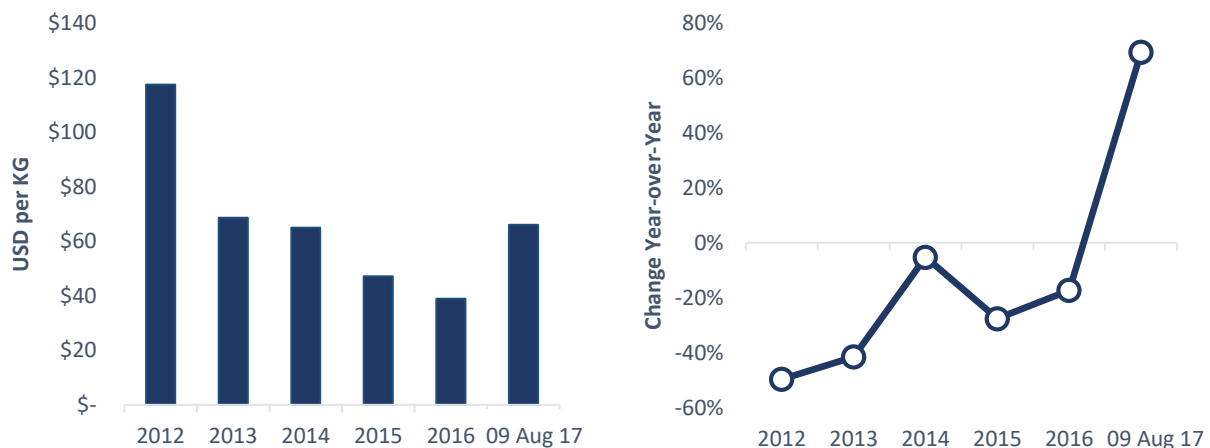


Chinese NdPr oxide price up 50% YTD – Panic or Party?

What you need to know:

- ⦿ *Spot NdPr oxide prices at 3-year highs, up +50% YTD on Chinese domestic market*
- ⦿ *Prices up on rising demand, moderated supply, and a reduction in spot supplies*
- ⦿ *Long-term offtake agreements are thinning availability of NdPr on the spot market*
- ⦿ *Our long-term NdPr oxide price forecast remains unchanged, near-term forecast increased*
- ⦿ *Higher prices sooner will provide a boost for late-stage exploration projects*
- ⦿ *Lynas an obvious winner as NdPr oxide prices strengthen and sales increase*

The price of NdPr oxide in China is up 50% year-to-date and 70% year-over-year



What's driving Chinese NdPr oxide prices higher?

1. Consolidation, environmental inspections, and greater industry oversight

In December 2016 Chinese authorities announced yet another round of domestic rare earth supply chain inspections as part of Beijing's ongoing effort to reduce illegal rare earth production and enforce environmental standards in the nation.

In what has been perhaps the most thorough and comprehensive review to-date, the ongoing inspections have covered more than 400 companies operating in 23 provinces, with an explicit focus on 180 companies involved in mining, processing, and trading of rare earth products.

As noted by industry participants, the inspections have reviewed companies' sources of rare earth oxides, inventory levels, actual output versus permitted, and entailed a thorough audit of past sales, tax payments, and export prices charged to clients abroad.

The ongoing inspections have been labelled a success by China's Ministry of Industry and Information (MIIT) but announcements of any major illegal enterprises uncovered during the audit are few and far between.

Despite the lack of publicized busts, illegal rare earth production in China appears to have declined so far in 2017, suggesting that a substantial share of illegal output in past years may have been the result of over-production by authorized producers, many of which are currently operating under the microscope of central government inspectors.

The ongoing inspections follow the recent consolidation of China's rare earth enterprises into six large groups – a move that has done little to reduce the number of rare earth businesses operating in China – but has been effective in centralizing industry control, increasing government oversight, and strengthening the pricing power of China's major rare earth producers, as evidenced by the 50% rise in NdPr oxide prices in China year-to-date.

2. With reduced illegal production, excess inventories being drawn-down

While 2017 has seen an accelerated crackdown on illegal production in China, authorities have in fact been actively working to remedy the issue since 2011, and in doing so amassed a substantial inventory of illegally produced rare earth concentrates that have been streaming into the supply chain in recent years, contributing to a glut that undermined prices.

Recent conversations with market participants suggest that inventory levels in the nation are trending towards historic norms in 2017, tightening the balance between NdPr oxide supply and demand, and thereby increasing the pricing power of domestic suppliers.

3. Internal demand for NdPr is growing strongly, limited spot supplies resulting in higher spot prices

Internal demand for NdPr oxide is growing strongly (ca. 10% annually) in China on the back of rapidly growing demand for NdFeB permanent magnets for electric vehicle traction motors, wind turbine generators, industrial robots, and an ever-growing list of other end-uses and applications.

With the outlook for electric vehicle demand continuing to surprise on the upside, and with increasingly aggressive targets being put forward by governments and automakers alike, we believe that Chinese and foreign automakers and OEMs are actively pursuing long-term binding supply agreements with China's major producers, reducing the amount of 'unspoken for' material available on the spot market and lending support for higher spot prices.

4. Offtake agreements are thinning availability of NdPr oxide on the spot market

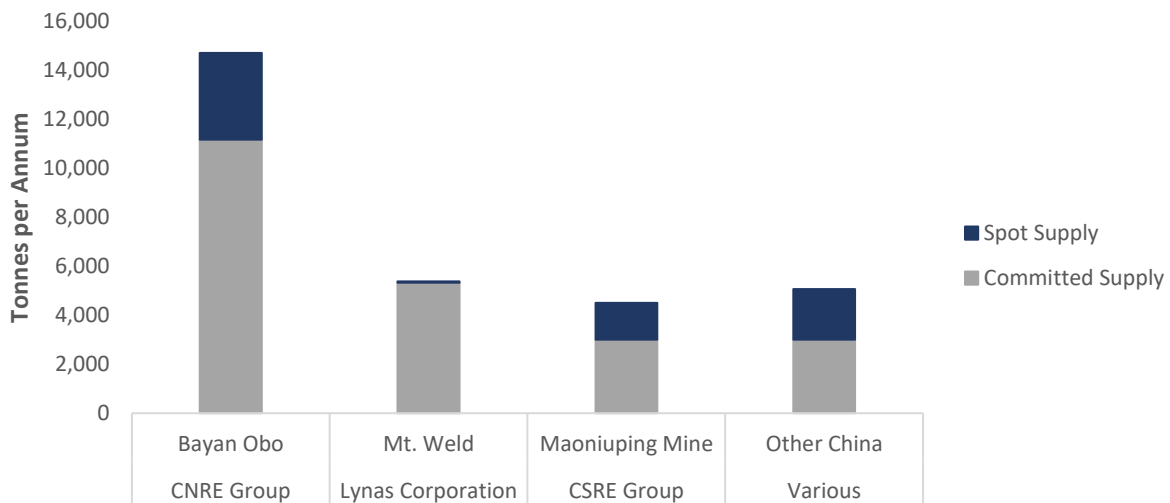
Consolidation of mining and processing companies into large groups over the past two years has reduced the number of major NdPr oxide suppliers in China to just a handful, and these suppliers are increasingly entering into long-term off-take agreements with companies of the same group, limiting the quantity of material available to the spot market.

For example, the nation’s largest producer of NdPr oxide, China Northern Rare Earth Group (CNRE), is the committed supplier (via Bayan Obo) to Inner Mongolia Baotou Rare Earth Magnetic Material, which now has capacity to produce 30,000 tonnes of NdFeB annually following consolidation.

Outside of China, Lynas Corporation, the world’s second largest producer of NdPr oxide, is a contracted supplier to virtually all of Japan’s major rare earth trading houses and magnets manufacturers – namely Sojitz, Daido Steel, and Showa Denko – and is also a supplier to Shin-Etsu in Vietnam, leaving little-to-no capacity available for the spot market.

As confidence around electric vehicle demand continues to mount, and long-term offtake agreements continue thinning availability of NdPr oxide on the spot market, we expect continued strength behind NdPr oxide prices given that the dominant suppliers to the spot market are large vertically integrated enterprises that reap compound benefits by pushing cost (and price) increases down the supply chain.

Share of NdPr oxide production committed to off-takers and share available to the spot market



What do we expect in the near-term?

1. Spot NdPr oxide prices will remain strong

With company inspections ongoing in China, and no production quota increases allotted to the industry for 2017, we expect NdPr oxide prices to remain strong through year-end, with potential for a downward correction in early-2018 on account of the Chinese holiday season. We expect that any downward corrections in the near-term will be followed by a return to strength on account of a tightening supply-demand balance.

2. Size of Chinese spot market will continue to shrink as more end-users lock up long-term offtake

Historically, few industries are as conservative, cost-concerned, and risk adverse as the auto industry. As more and more automakers and OEMs in China (and out) firm up near-term strategies for ramping up electric vehicle production, they will be looking to establish secure long-term supplies of the critical materials their vehicles need, fueling an accelerated reduction in spot supplies, and ongoing support for strong spot prices.

In anticipation of this demand growth – several of China’s leading NdFeB manufacturers have announced capacity expansion plans in the past 12 months that, when realized, will lock-up NdPr oxide supplies that would otherwise be available on the spot market. JL Mag Rare-Earth, for example, is planning to increase NdFeB production from 6,000 to 10,000 tonnes in the near-term, thereby increasing its allocation of NdPr output from the Maoniuping mine by over 60%.

3. Lynas will see increased NdPr oxide demand from China

If not already, we expect Lynas will see increasing demand for NdPr oxide from end-users in China in the near-term for three reasons.

First, we believe that reduced supply on the Chinese spot market will make Lynas an attractive alternative – and one that, for traceability sake, will be increasingly tapped by Chinese alloy and magnet manufacturers at the behest of foreign automakers, OEMs, and technology companies via ‘three-party contracts’.

Second, we believe that higher spot prices in China will make the prospect of spot supply from Lynas economically attractive, as buyers in China can avoid paying a 17% value-added tax (VAT) imposed on China-derived supplies.

Third, we believe that Chinese alloy and magnet manufacturers will be keen on absorbing any new NdPr oxide production capacity that Lynas brings online in the near-term for fear that availability of any ‘unspoken for’ capacity will spur Japanese magnet manufacturers to expand domestically (as Shin-Etsu is planning) or re-shore their Chinese production capacity (as we’ve seen recently with Showa Denko and Daido Steel) as electric vehicle demand ramps up.

4. Smaller magnet makers in China will be shaken off, increasing 'Big 6' control over the supply chain

After enjoying years of low input costs and healthy profit margins, China's permanent magnet industry has experienced a reversal of fortunes in 2017 as NdPr prices have soared and profit margins evaporated.

The fact that NdPr oxide prices have increased +50% in such a short period of time is a significant problem for smaller manufacturers of NdFeB in the nation (< 1 ktpa) that source explicitly from the spot market, as opposed to larger manufacturers like Beijing Zhong Ke San Huan, JL Mag Rare-Earth, and others, that source from parents, subsidiaries, affiliates, or other contracted sources.

As such, we expect a number of smaller magnet manufacturers – particularly those unaffiliated with the nation's six large groups – will be shaken off in the coming months, increasing 'Big 6' control over China's permanent magnet supply chain.

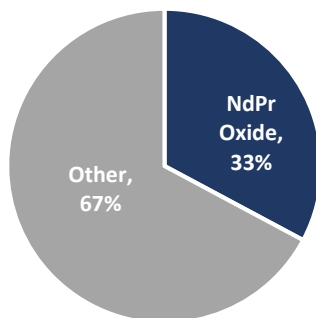
Lynas a clear winner as NdPr oxide prices strengthen and spot supplies decrease

With annual NdPr oxide production of approximately 5,400 tonnes and high profit exposure to NdPr oxide, Lynas is well positioned to capitalize on higher NdPr oxide prices and reduced spot supplies in the near-term. The company currently supplies an estimated 3,000 tonnes of NdPr oxide annually to Sojitz in Japan via a long-term supply agreement, and supplies the net of its output to Daido Steel, Showa Denko, Shin-Etsu, and a handful of metals and magnet manufacturers in China – both independent and state owned.

Since 2012 Lynas has continuously ramped up NdPr oxide output while dialing in its Malaysia-based processing facility, and driving down production costs. In the most recent quarter Lynas reported TREO production of 4,093 tonnes, NdPr oxide production of 1,343 tonnes, and pre-tax operating profits of approximately US \$4.25 per kilogram – positive results that we believe the company will better in the third and fourth quarters of 2017.

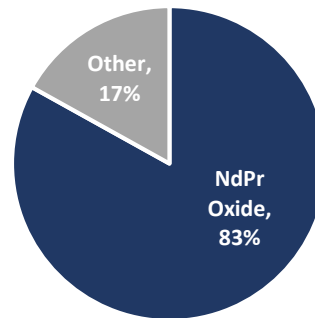
With higher prices, rising sales, rising cashflows, and increased demand from China we believe Lynas will look to increase NdPr oxide output from its Malaysia-based processing plant towards 6,000 tonnes per annum in the near-term, and in the medium-term will look at prospects for major capital expansions.

Lynas' Annual TREO Output



16,500 tonnes per Annum

Value of Output by Product



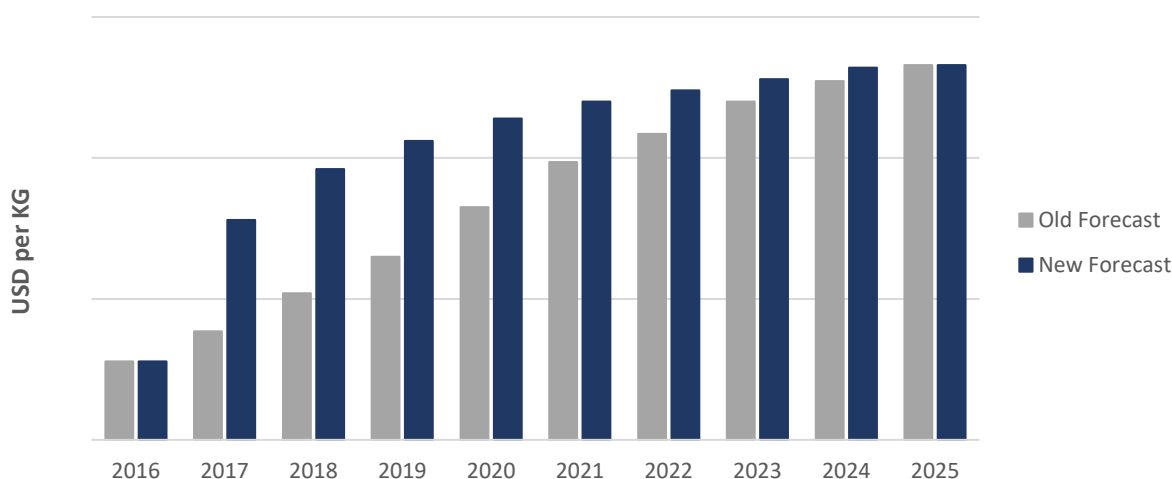
83% of Product Value in NdPr

Our long-term NdPr oxide price forecast unchanged, near-term forecast has increased

In light of moderated production, normalized inventory levels, thinning of spot supplies, and increased government oversight and enforcement, we have increased our near-term forecast for NdPr oxide prices in China, but maintain our long-term forecast through 2025.

At price levels above our long-term forecast we believe the risk of demand destruction and substitution increases rapidly for several key demand-drivers of NdFeB. Following the rare earth price spike of 2011, and the wealth of demand destruction it induced, we believe major suppliers in China will be cautious not to push prices beyond that threshold as the market evolves.

Our long-term NdPr oxide price forecast remains unchanged but our near-term forecast has increased



Higher prices sooner to provide a boost for late-stage rare earth exploration projects

Higher near-term NdPr oxide prices will provide a major boost for late-stage rare earth exploration companies – particularly those with a high level of potential revenue exposure to NdPr oxide, along with heavy rare earths used in high-grade NdFeB permanent magnets, such as terbium and dysprosium.

Such companies (and projects) include (among others):

- ⦿ *Peak Resources (Ngualla), Mkango Resources (Songwe Hill), Rainbow Rare Earths (Gakara) in Africa*
- ⦿ *Commerce Resources (Ashram), Matamec Resources (Kipawa), Search Minerals (Foxtrot) in Canada*
- ⦿ *Greenland Minerals & Energy (Kvanefjeld) in Greenland, Minera BioLantanidos (El Cabrero) in Chile*
- ⦿ *Alkane Resources (Dubbo), Arafura Resources (Nolans), Northern Minerals (Browns Range) in Australia*

Traditional explorers aside – companies with low-cost, nimble business strategies that enable them to go to market quickly also stand to benefit. Such companies include (among others) Medallion Resources, Rare Earth Salts, Innovation Metals, Ucore Rare Metals, and REEtec.

More Information:

Report from Adamas Intelligence:

“Rare Earth Market Outlook: Supply, Demand, and Pricing from 2016 through 2025”

- 825-pages, 8 months of primary research
- Forecasts for over 250 individual end-uses and applications
- Three supply-demand-price scenarios for 2016 through 2025
- Transparent analyses, hundreds of data tables and charts
- Readers on 6 continents



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