All Eyes on Australia in 2022 as a Global Rare Earths Production Leader

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The rare earths sector, particularly the rare earth magnet metals (such as neodymium (Nd)), had a great 2021; but given that the electric vehicle (EV) and clean energy booms are just getting started, 2022 should be another strong year. The most powerful electric motor magnets used today are known as permanent magnets, and they typically are made of neodymium iron boron (NdFeB). Dysprosium (Dy) and praseodymium (Pr) are also commonly used in permanent magnets.

As shown below, neodymium prices had a very strong 2021 reflecting a very strong demand for permanent magnets used in powerful electric motors. It is interesting to note the correlations of price and EV car sales from the chart below especially when considering that the peak months for global electric car sales in 2021 were March, June, October, November, and most likely December (usually the best month of the year).

If you think electric car sales will boom again in 2022 and throughout the decade (as I do), then there is a strong case for owning the rare earth miners of these key magnet metals.

Neodymium 1 year price chart – Currently at CNY 1,110,000/t (USD 174,134/t)

Source: Trading Economics (red arrows by the author to show peak e-car sales months in 2021)

Where is the opportunity in rare earths?

Most rare earths reserves are found in China, followed by Vietnam, Brazil, Russia, India, Australia and the USA. Canada also has some rare earths. Most of the global rare earths production is from China followed by USA and Australia.

For Western investors, the two largest rare earths producing mines are owned by Lynas Rare Earths Limited (ASX: LYC) and MP Materials Corp. (NYSE: MP). A third smaller producer is Energy Fuels Inc. (NYSE American: UUUU | TSX: EFR), which, however, is a processor, not a rare earth miner.

For investors looking at the next potential rare earths producer then best to look to Australia and Canada. Today I will focus on Australia.

Australian rare earth miners

Lynas Rare Earths Limited (ASX: LYC) (Lynas)

Lynas is the second largest NdPr producer in the world. Lynas owns the Mt Weld rare earth mine and Concentration Plant in Western Australia (WA), one of the world's highest grade rare earths mines. Lynas ships concentrate from WA to their Malaysian plant for separating and processing into commercial rare earths' materials. As part of their 2025 plan, Lynas is progressing their new Kalgoorlie Rare Earths Processing Facility in WA as well as their LRE/HRE separation & specialty materials facility in the USA.

Boosted by strong prices and production (5,461t of NdPr in FY 2021), Lynas reported record sales of A$498 million and a record profit of A$157 million in FY 2021. I would expect this to continue in 2022.

Lynas is no longer cheap and trades on a market cap of A$9.69

billion, and a 2022 PE of 24.9. A top tier Western rare earths (NdPr) producer.

Australian Strategic Materials Limited (ASX: ASM) (ASM)

Australian Strategic Materials is an emerging integrated producer of critical metals for advanced and clean technologies based in Australia and South Korea. ASM plans a "mine to metal" strategy to extract, refine and manufacture high-purity metals and alloys that they can then supply directly to global manufacturers. ASM plans to produce a range of high-purity metals, alloys and powders from their metals plant in South Korea. Products will include titanium, zirconium and rare earths, required for permanent magnet production with the raw materials initially sourced from the market. The plan is to later source some materials internally, notably from their flagship Dubbo Project.

The Dubbo Project deposit contains rare earths, zirconium, niobium and hafnium. The Dubbo Project is ready for construction, subject to financing. In December 2021 ASM announced an updated base case in which the 20-year life of mine is expected to achieve a pre-tax NPV of A$2,361 million and a pre-tax project internal rate of return of 23.5%.

In November ASM announced the commissioning of their Korean Metals Plant in Ochang Province, South Korea. In December ASM announced they had formed a JV with Resource Corporation (KOMIR) (formerly known as Korean Resources Corporation (KORES)) to enable the supply of critical minerals and metals into Korea.

Korea is a tech-based manufacturing powerhouse, and this JV is very timely as non-Chinese tech manufacturers try to wean themselves from dependence on China-centric supply chains.

ASM trades on a market cap of A$1.34 billion.

Arafura Resources NL (ASX: ARU) (Arafura)

Arafura own the shovel ready Nolans rare earths (NdPr) Project in the Northern Territory of Australia. Arafura is aiming to be a trusted global leader for sustainably mined and processed rare earth products and plans to mine and process ore to separated commercial oxides at a single site at their Nolans Project. The main focus being to produce NdPr oxide. The Project has all Federal & NT Environmental approvals secured and Government and Minister support for A$300 million senior debt facility. Basically, the Project is ready to go subject to final project funding being secured. Subject to that funding, first production is targeted to begin late 2024.

Arafura trades on a market cap of A$333 million.

An interesting side note to end on is that Arafura quote:

- "EV market growth is exponential: 10 to 40 times in the next 20 years. This will require 6–15 times more rare earth elements.
- Most EVs need about 1kg of rare earths for their motor magnets.
- Just 0.05% of the vehicle cost: but it can't run without it.
- Market analysts forecast a supply gap that represents 109% of global supply today and is in excess of 11 Nolans Projects."

Source: Arafura Resources October 2021 company presentation

Closing remarks

We should remember that in 2021 the Morrison led Australian Government announced a A$2 billion loan facility for Australian critical minerals projects. These funds have the potential to help Australian rare earths juniors to move towards production.

Combine this with high magnet rare earths prices and surging demand, and we have all the ingredients for a strong 2022 from the Australian rare earths' miners.

Search Minerals' MOU with USA Rare Earth Advances Canada's Participation in a non-Chinese Rare Earths' Supply Chain

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Canadian rare earth junior miners are starting to see increasing interest in their projects with off-take agreements and MOUs signed recently. The pieces of a future European and USA vertically integrated 'rare earths to magnets' total supply chain are being put in place.

Last week it was announced that Search Minerals Inc. (TSXV: SMY | OTCQB: SHCMF) ("Search") has entered into a non-binding MOU with USA Rare Earth LLC for the future delivery of a rare earth mineral concentrate supply containing 500 tpa of the "magnet" rare earths product, neodymium/praseodymium (NdPr). The 500 tonnes/year of contained NdPr is to come from future production at Search's Deep Fox or Foxtrot deposits, located in Labrador, Canada.

Just the week before that Australia's Vital Metals Limited (ASX: VML) announced a similar off-take deal from future production at Vital's Nechalacho mine-site, in Canada's Northwest Territory,

with Ucore Rare Metals Inc. which followed on from Vital's off-take deal with Norwegian rare earth metals/alloys start-up, REEtec, as you can read here.

Search Minerals Inc. MOU for rare earths concentrate off-take supply to USA Rare Earth

The announcement stated:

"This MOU is part of Search's and USA Rare Earth's development plans to expand the collaboration to include discussions regarding separation, marketing and offtake of a portion of the future production at Deep Fox and Foxtrot. **These discussions are in line with Search's ambition to be an important contributor to the development of a North American Critical Material supply chain and USA Rare Earth's strategy of Mine-to-Magnet production, and the development of a complete and sustainable North American rare earth supply chain.**"

Search Minerals and USA Rare Earth to collaborate further

USA Rare Earth is supporting Search's efforts as it helps it to achieve its place in a North American total supply chain. Once operational, USA Rare Earth's NdFeB magnet plant has an initial target production of 2,000 tonnes annually of high-performance, neodymium-iron-boron type rare earth magnets, with the ability to scale production further based on growing market demand.

About Search Minerals

Search Minerals Inc. is an emerging rare earths miner with three properties in Labrador, Canada. The three are:

- The Port Hope Simpson (PHS) property (flagship) – Includes Foxtrot, Deep Fox, Silver Fox, Awesome Fox, and Fox Meadow deposits.
- The Henley Harbour Area in Southern Labrador.

- The Red Wine Complex located in Central Labrador, plus some newer acquisitions.

Search Minerals' resources contain the permanent magnet rare earth elements (neodymium, praseodymium, dysprosium and terbium). Search is currently working on advancing the testing of its proprietary Direct Extraction Process, developed with noted rare earth processing expert, Professor (UBC) David Dreisinger. The company also is advancing work on a resource upgrade, and on a Preliminary Economic Assessment ("PEA"), which work is fully funded.

Search's strategy

Search aims to deliver added shareholder value by leveraging the Foxtrot PEA (and soon the combined Deep Fox and Foxtrot PEA), using its proprietary, lower cost, hydrometallurgical process, and continuing to explore its highly accessible district-scale opportunity, as foundations with which to forge strategic partnerships and additional offtake agreements. The aim is to facilitate early monetization and more rapid delineation of additional resources intended to strengthen the Company's position as a reliable, strategically located, low-cost producer.

Next steps

The next steps for Search include:

- A Q1 2022 PEA based on the combined Deep Fox and Foxtrot deposits. Search is already fully funded to achieve the PEA. More details here.
- Continued environmental baseline studies.
- Raising an 80 tonne bulk sample of deposit material for testing the magnetic separation demonstration plant due to be operational (subject to funding) in 2022.

- A full-scale rare earths hydrometallurgical processing plant to be under construction by the end of 2023 (subject to funding).

Demand for magnet rare earths is forecast to boom

Adamas Intelligence forecasts:

- "The value of global magnet rare earth oxide consumption will rise five–fold by 2030, from US$2.98 billion this year to US15.65 billion at end of the decade (2030)."
- "Global shortage of neodymium, praseodymium, and didymium oxide will collectively rise to 16,000 tonnes in 2030, an amount equal to roughly three–times Lynas Corporation's annual output, or three–times MP Material's annual output of neodymium and praseodymium oxide."

Search Minerals now has a resource, a proprietary extraction process, a MOU for separation, and an MOU for off-take

Source: Search Minerals company presentation

Closing remarks

Search Minerals continues to make positive steps towards a production start-up, albeit still at the early stages. Search has achieved a resource, a PEA, has a propriety extraction technique, a separation technology MOU, and now an MOU for an off-take (not yet a binding agreement). The most recent MOU, for mined product, with USA Rare Earth, is a strong endorsement of Search Minerals' Port Hope Simpson Project, notably the Deep Fox and Foxtrot deposits.

Search Minerals trades on a market cap of C$66 million. One to follow closely given that it is now moving at a good pace in

the right direction.