

Iluka Resources quietly becomes a western rare earths producer

Australian company now producing rare earths concentrates to meet increased demand

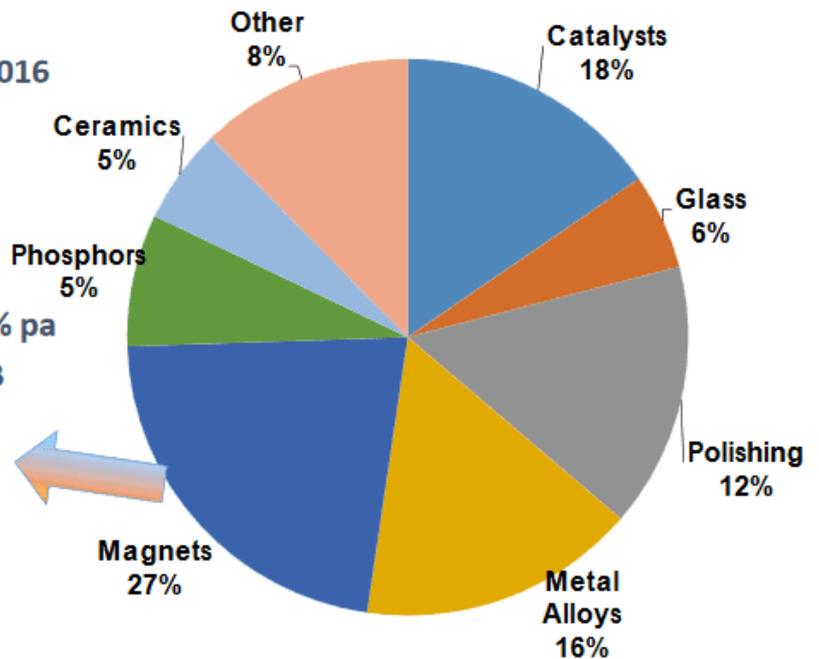
The boom in electric vehicles should increase the demand for rare earths dramatically in the decade ahead. Electric Vehicles (EVs) are forecast to grow about 11 times from the 2.2m cars and trucks produced in 2019 to 22.4 million vehicles a year by 2030. Other strong demand sources for rare earths include catalysts, metal alloys, high tech products (smartphones etc), aerospace & manufacturing. Against this backdrop any company that can bring on production of rare earths (especially the valuable valuable Nd, Pr) is set to do very well based on the increased forecast demand.

Rare earths demand drivers

Rare Earth Demand Drivers

- US\$3-5B Global market
- 159,500t Annual consumption 2016
- 6-8% Annual growth estimates
- 85-90% REE produced by China
- Permanent magnets dominate consumption and growth 6 - 12% pa
- Annual magnet market ~US\$20B
- Major use for Nd, Pr, Dy and Tb
- 80% by value 20% by volume
- Growth in other REs for special metal alloys and ceramics

REE Demand 2016 by Application



Source

Additional NdPr oxide needed per EV (additional to an Internal Combustion Engine vehicle)

Electric Vehicle (EV) Drivetrain: 1 kg of NdPr



Source

One Australian miner has recently become a rare earths producer.

Iluka Resources (ASX: ILU | OTC: ILKAY) (“Iluka”) is better known as an Australian mineral sands (zircon) and titanium producer, but in April 2020 they quietly commenced production of rare earths at their Eneabba Project in Western Australia.

Iluka has recently completed Phase 1 (construction and commissioning) of the Eneabba Project and intends to sell 50,000 tpa of a 20% monazite-zircon ore concentrate for further processing offshore beginning in Q3, 2020. Iluka has an offtake agreement for 50ktpa for 2 years. Project life is estimated at 13 years with a projected 6 month payback.

Iluka is now working on a Phase 2 of the Eneabba Project which involves a FS investigating techniques to purify the monazite to an 80% concentrate for sale further down the value chain. The early CapEx estimate for Phase 2 is \$20–40m, but this is subject to change as the FS advances.

Iluka is certainly advancing fast and has essentially become a largely unrecognized, western-located, rare earths concentrate producer.

Iluka Resources monazite ore Eneabba Project in Western Australia



Source

Closing remarks

New rare earths supply is very hard to come by because of large CapEx and environmental hurdles. Combine this with what is expected to be a 2 times surge in demand for rare earths this decade (boosted by demand for magnets used in electric vehicles and high tech devices) and you have a very compelling reason to be looking closely at the rare earth miners. In particular, any near term pure play rare earths producers located in safe western locations will be very highly attractive.

It appears for now that many investors are not fully aware of the potential NdPr demand surge ahead. This is understandable as we are yet to see EV demand really surge, and NdPr prices have not yet responded. A rise in NdPr prices as the dependent industries gain more attention will follow as analysts up their forecasts. For investors willing to come in early and

take a forward looking decade approach, right now is an excellent time to get familiar with and invest into the rare earths sector. The usual risks apply, and yes China will no doubt continue to be a fierce competitor.

Iluka Resources, while not a pure play, is an exciting new western entrant in the field of rare earths producers. Assuming Iluka can execute well, the coming decade should provide an excellent tailwind for Iluka to build a valuable rare earths business to compliment their existing business.

Arafura advances forward in the rare earths market

Around the time of the last financial crisis, concern was growing that China's stranglehold on the rare earth elements (REE) market would bring about catastrophic shortfalls in supply that would impact everything from consumer electronics to military hardware. In response to the fearmongering, a number of explorers began to focus on REE extraction outside of China, but when the recession struck, buyers abandoned the initial public offering that would provide funding to Arafura Resources Ltd. (ASX: ARU) ("Arafura") so that the company could advance their Nolans Project in Northern-Australia to production.

Thanks to the dependable effects of competition and innovation, the REE bomb never did go off, and after striking funding deals with Chinese investors the company has managed to make positive strides every year towards the construction of a functioning pilot plant. In fact, the company's last share purchase plan closed early, raising A\$3.1 million,

raising their cash balance at the end of last quarter to A\$12.5 million, which is more than enough to complete the Nolans pilot program. It has been a long and difficult road for rare earth explorers in particular, but the way is now clear for Arafura and a select few others to change the space dramatically in the very near future.

While opportunistic cowboy operations in China were mostly responsible for the disaster zone of a marketplace over the past decade, the country's continued regulatory crackdown on illicit and harmful mining practices is exactly what has caused the sustained REE price increases we have seen in 2017. Arafura's product offering is a rare earth oxide (REO) mix in which neodymium and praseodymium concentrations are particularly high, at 20.6% and 5.9% respectively. Both of these magnetic metals are leading the curve in terms of the recent value surge, and as they are fundamental in the manufacture of motors used to create efficient wind turbines and electric vehicles, the future of these metals is bright.

Wind power and electric vehicles are two markets that are already undergoing considerable growth and have been given almost unanimous positive forecasts over the coming decades. The UK government recently announced that it is considering a ban on cars powered by fossil fuels by 2040 to push the populace toward electric vehicle uptake. Of course, alongside this, renewable energy solutions must be the focus to avoid simply burning more oil downstream to keep the charge ports operational. It has been rather nice to watch the survivors of the REE space seeing a multitude of silver linings appearing simultaneously, and this year represents a key opportunity to join them in providing the materials essential to our cleantech driven future.

The pilot operations at Nolans are well-advanced, currently having completed phase 3 of 7 of the initial production run, and with the funds on-hand to complete this process, we should expect this to be somewhat of a formality. The Environmental

Impact Assessment was submitted back in February and is expected to be finalized this month, with plans for phase 4 of the pilot scheme already underway and scheduled for this quarter, in which a full acid bake will be undertaken before the purification and precipitation phase begins.

It may have been a long time coming, but it seems the time has finally arrived for Arafura to launch into full swing. Keep a close watch on this guys over the next twelve months, as I anticipate that the bounce-back will be swift, sharp and easy to miss.