

Fingerboards Mineral Sands Project

Critical Minerals for Renewable Energy and New Technologies

Do you use a mobile phone, computer or flat screen TV?

Do you support the global shift to electric vehicles and wind power?

Do you appreciate the benefits of medical technologies such as MRI scanning?

All these technologies rely on the rare earth minerals that come from mineral sands.



If approved, the Fingerboards Project will be one of the largest zircon and rare earth development projects in the world.

The zircon sand from the Fingerboards will be used mainly in the refractory and ceramics industry. It is a very hard material, resistant to chemicals and heat and gives ceramics their opaque white appearance. It is also used in computers and electronics.

Rare Earths are used in many modern technology applications, including the manufacture of mobile phones, computers and the permanent magnetic motors required for green technologies.

What are Rare Earths?

"Rare earths" are a group of 17 chemically similar elements crucial to the manufacture of many hi-tech products.

Neodymium (Nd)

This is used to make powerful magnets used in loudspeakers and computer hard drives to enable them to be smaller and more efficient. Magnets containing neodymium are also used in green technologies such as wind turbines and hybrid cars.

Dysprosium (Dy)

Dysprosium is added to neodymium-based magnets for use in high temperature operating conditions.

Praseodymium (Pr)

Used to create strong metals for use in aircraft engines. Praseodymium is also a component of a special sort of glass, used to make visors to protect welders and glassmakers and is combined with neodymium in magnets (Nd-Pr).

Terbium (Tb)

Terbium is used in solid-state devices, low-energy light bulbs and mercury lamps and to improve the safety of medical x-rays by reducing exposure time.

Lutetium (Lu)

One of the rarest, most difficult to separate and most valuable metals, Lutetium's is increasingly used in cancer treatments.

Electric Vehicles: Did you know?

Electric vehicles are expected to make up 30% of new car sales in Europe by 2025.

Globally, it is expected that there will be 100 million electric cars on the road by 2030, requiring 100,000 tonnes of Nd-Pr, or half of the entire world's current production.

Almost all electric vehicle manufacturers use rare earth magnets in their electric motors due to their low weight, high power and low maintenance.



Once in production, the Fingerboards rare earths are expected to supply up to 10% of the global demand for the magnetic rare earths needed for the development of clean energy and over 20% of the global demand for heavy rare earths.

Wind Power: Did you know?

Bloomberg's world energy review 2017 estimated that wind and solar energy will reach a combined 48% of global energy capacity by 2040. China's wind and solar capacity is predicted to increase eight-fold by 2040.

It is expected that up to 15,000 tonnes per annum of NdPr oxides will be required globally to supply wind power technology.

An offshore wind farm has been proposed off the Gippsland Coast. If this goes ahead using PMG technology, it would be expected to use over 1,000t of NdPr oxides, or roughly 50% of the Fingerboards annual NdPr production.



Above: Rare earths production from the Fingerboards Project could account for 2.8 million electric vehicles annually.

Rare earths are vital for renewable energy

In recent years, rare earth magnetic materials (Nd, Pr, Dy, Tb) have become vital to clean energy production.

In 2011 the United States Department of Energy listed five rare earth elements as critical to production of wind turbines, electric vehicles and photo-voltaic cells. Three of these elements make up almost three quarters of the rare earths value of the Fingerboards Project.

Shifting to Sustainable Production

Over 95% of the global heavy rare earths come from ionic clay deposits in southern China, where the mining methods use aggressive chemicals causing extreme environmental damage. The Chinese Government is now closing much of this often illegal mining.

In the future, raw mineral supplies of rare earth metals will increasingly come from safer and cleaner operations outside China.

Rare earth minerals make up approximately 3% of the mineral concentrate at the Fingerboards and are easily separated using magnetic methods, without harmful chemicals.



Above: Rare earths from the Fingerboards Project could be used in turbines capable of generating 14,000 gigawatts of wind power annually (enough to power 14 million homes).

Contact us

If you have any questions or require further information, please contact us.

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