

# Talking sense on rare earths

CONTROVERSY over the mining and processing of rare earths has surfaced yet again. Despite the known scientific facts confirming that rare earths are safe when properly handled, the detractors are again spouting off their inaccurate pronouncements after the Perak state government said it would go ahead with the mining of lanthanide in Gerik.

Their action may deny states with viable deposits of rare earths the opportunity to inject new vigour into their economy.

It is time for people in authority, including radiation experts from academia and the Malaysia Nuclear Agency, to come forward, clear the air and put a stop once and for all to the fault-finding.

A recent conversation with a rare earths expert provided some clear information about this unique metal. Rare earths are the 15 elements in the periodic table known as the Lanthanide series, plus Yttrium, that tend to occur in the same ore deposits.

Their complex atomic structure provides each of them very specific properties such as optical, magnetic, electrical and chemical. Once

separated, purified and, in some cases, combined, each rare earth element is essential for a variety of applications. Examples include energy-efficient electric motors, semiconductors, medical scanners and many more.

A popular application is the manufacture of permanent magnets. Permanent magnets made with the rare earth elements neodymium and praseodymium allow electric motors to achieve 15% to 30% reduced energy consumption. This allows electric cars to reduce the size of their batteries, which are major cost components in the production of such vehicles.

As cars go electric, the demand for high power electrical motors will increase. The rare earth elements dysprosium and terbium, which improve magnet temperature resistance, will therefore be in high demand.

Another fast-growing market segment for rare earth elements is the production of new generation semiconductors. As evident from the current trade scuffle between the United States and China, semiconductor chips will continue to be a much sought-after material. So

will the energy-efficient motors relying on rare earths-based permanent magnets.

In fact, the energy-efficient automotive industry is among the few that did not suffer the adverse effects of the Covid-19 pandemic. It actually grew by 16% in 2021 and 20% in 2022, and is expected to deliver around 10% growth in the coming 10 years as the world continues to improve on energy efficiency to reduce CO2 emissions.

Malaysia stands to gain from this development if we play our cards right. So far, others are benefiting from the rare earths that are available at our doorstep. Vietnam, for example, has developed the third biggest magnet manufacturing base in the world, behind China and Japan, using all the rare earths produced by Lynas. It is estimated that this manufacturing venture generated around 5,000 direct jobs.

Leveraging its unique position as a country with a local supply of rare earths, Malaysia could trigger the development of a locally based 10,000 tonne (10% of the growth expected from 2020 to 2030) super magnet factory that could create up to 3,000 jobs for an investment of

RM1bil. In fact, Lynas is critical to Malaysia as much as it is critical to all downstream projects worldwide.

So, instead of criticising the states that are planning to exploit their own rare earths deposits, the detractors should provide them with guidelines on how to make the mining sustainable and responsible. And with the current available technology, this is not impossible.

Many countries around the world, including Indonesia and the Philippines, have embraced responsible mining techniques that do not harm the environment.

And instead of just mining and selling the refined rare earths metals, we should encourage the states to attract investments, both foreign and local, in the downstream products such as permanent magnets and energy-efficient motors.

We must be sensible when talking about rare earths. Otherwise, we may live to regret it.

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