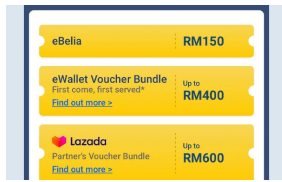


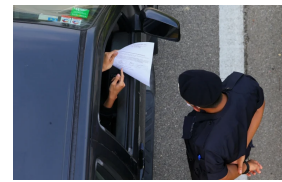
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Rare earth could be music for Malaysians

By [Dr Noorhana Yahya](#) - June 1, 2021 @ 12:13am

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Malaysia has been blessed with a significant amount of non-radioactive rare earth deposits. The US Geological Survey (USGS) estimates that some 30,000 metric tonnes of rare earth ores can be found in Peninsular Malaysia. - NSTP/LOONG WAI TING.

JUST as your smartphone would be useless without plastic or silicone, it would also not be able to work without special metals known as rare earth elements, a group of 17 non-radioactive elements.

With exotic names, such as dysprosium, cerium or neodymium, they are indispensable across a wide range of industries, especially in technological applications from smartphones, tablets, computer monitors and plasma televisions to rechargeable batteries and magnetic resonance imaging machines.

They are also particularly essential for clean energy generation – in wind turbines and electric cars. To maintain our technology driven and sustainable lifestyles, we must seek more knowledge about these non-radioactive rare earth elements, which is why events such as National Science Week, organised by the Science, Technology and Innovation Ministry, are crucial.

Some of its initiatives, such as the National Science Challenge, Math

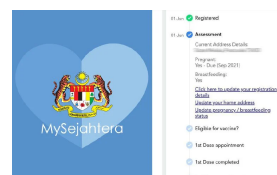
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Genius and STREAM competitions (all virtual because of the Covid-19 pandemic) are great ways to attract students and young people to begin focusing on rare earth elements.

Rare earth elements are actually quite common. Deposits are found all over the world. Most of them are found in China, Australia, India and Vietnam.

In recent decades, China has been the most dominant producer with a peak of more than 90 per cent of the world's total output, leading to a few prickly political situations, as world powers recognise the importance of this natural resource.

Last September, the United States House of Representatives introduced a bipartisan bill aimed at reducing the country's reliance on China for these elements, particularly for its national defence. It is clear that they are of tremendous technological and economic importance.

Malaysia has been blessed with a significant amount of non-radioactive rare earth deposits. The US Geological Survey (USGS) estimates that some 30,000 metric tonnes of rare earth ores can be found in Peninsular Malaysia (cited by Teoh Lay Hock, a geological and mineral business consultant based in Kuala Lumpur, in the Blueprint for the Establishment of Rare Earth Based Industries in Malaysia, published by Akademi Sains Malaysia in 2014).

Although this represents less than one per cent of the world's total deposits, it is more than enough for the country to become a major regional player in rare earth mineral supply. A domestic production chain would not only benefit Malaysians, but could also attract foreign interest and investment, especially as major economies seek to diversify supply away from China.

Today, China has progressed to using an in-situ leaching process, which is a soluble mining technique that does not require clearing of large tracts of land and upheaval of the soil. This is knowledge which we must acquire and refine to ensure that our environment is protected.

The future of mining, which is safer, resilient and sustainable and essentially more productive, has been proposed by some Western countries companies. Data driven analytics, integrated and optimised productivity are proposed as some of the smart or green mine.

Rare earth production is integral to a sustainable lifestyle. The net benefits will offset the environmental damage and, if managed well, may even one day result in a net zero carbon emission.

The local industry must be held to high standards and stringent laws, and regulatory bodies, such as the Atomic Energy Licensing Board, must keep a close watch.

Rare earth recycling is also an avenue that is starting to be considered. None of this will be possible if Malaysia does not foster a homegrown expertise to spearhead the process.



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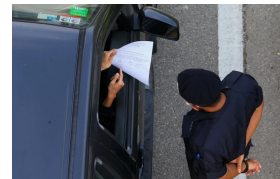
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The maximisation of rare earth production would take the country to the next level, especially in the inception of Industry 4.0. As the industry is evolving fast, we cannot be left behind and neither can we dive in blindly. Talent and human capital development must be projected and carefully curated.

This will require concerted partnerships between the government, participating industries and higher-learning institutions.

In particular, technical and vocational educational universities that provide robust training for all levels of the rare earth minerals production process must be established.

As always, the future lies in the hands of the younger generation. It is imperative that the country prepares them to take charge of rare earth exploration, mining and turn them into value added products.

Let's not squander this opportunity to claim and develop what is rightfully ours. As William Shakespeare wrote: "The earth has music for those who listen."

Rare earth could be that music for Malaysians.

This is a the first of a three-part series. In Part 2: Have you ever heard of the F-Orbital?

The writer is a physicist specialising in electromagnetics, nanotechnology, and Lanthanide and Ferrite-based magnetic materials. She is a board member of Perak Eclat TVET, set up to assist the Perak government in implementing Technical and Vocational Education and Training initiatives to help train manpower for the state's industries

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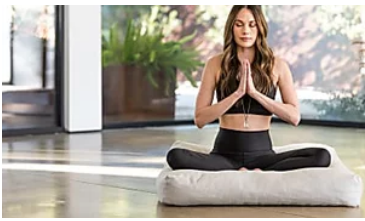
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