

Headline	A better place to quarry		
MediaTitle	The Star		
Date	13 Jul 2015	Color	Full Color
Section	StarTwo	Circulation	338,368
Page No	4,5	Readership	1,032,000
Language	English	ArticleSize	1330 cm²
Journalist	Tan Cheng Li	AdValue	RM 44,193
Frequency	Daily	PR Value	RM 132,579



There are more limestone resources underground, so why not quarry them instead of blasting the hills?

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WE really do not have to blast limestone hills to get materials for making cement. There is a whole lot more limestone deposits just below the ground in many old mining areas in Perak, which can be tapped instead.

In fact, the cache of limestone in these places is six times more than what can be obtained from the hills, according to Ramli Mohd Osman,

senior research officer at the Mineral Research Centre, an agency under the Minerals and Geoscience Department.

He says idle tin mining land can be good sources of limestone as much of the peninsula is underlain with the sedimentary rock. Of the 38,100ha of such land in Perak, he says 21,100ha have limestone reserves and these can yield 21 billion tonnes of the material.

Ramli says extracting sub-surface stores of limestone is one way to stop the destruction of majestic limestone hills, which threatens plans to set up the Kinta Valley Geopark. Sprawling over 2,000sqkm in the Kinta and Kampar districts, the park is to be a showcase of the state's geological heritage. But even

as Perak Menteri Besar Datuk Seri Dr Zambry Abdul Kadir was announcing grand plans for the geopark, the karsts there continue to be blasted.

"There is an obvious conflict between the geopark and limestone quarrying. In the heart of the proposed geopark, there is extensive exploitation and gross defacing of the limestone hills of Gunung Terundum, Gunung Rapat and Gunung Lanno. The valley has become more like sites of massive destruction of limestone hills rather than sites of preservation of natural wonders of great heritage significance," says Ramli, who heads the unit on rehabilitation of mines and quarries.

Sub-surface limestone quarrying is nothing new. Ramli says three companies which are already quar-

rying for limestone in old mining land in Perak – Tasek Corp in Kinta, Hume Cement in Kampar and Lhoist in Batang Padang – show it to be practical and economical.

From surveys with the companies, he found that the additional cost – because of assessments to locate the limestone deposit, depth and quality – is only marginally higher than quarrying limestone hills.

"That is the cost we have to pay if we want to preserve limestone hills," he says.

As sub-surface quarrying can reach depths of 60m to 100m, the main concerns are drawing down of the water table and vibrations. So Ramli says there should be studies to determine the impact on the

environment and nearby land-use activities, such as farming.

He hopes his findings can help government agencies to encourage quarry operators to work on old mining land instead of karsts. "The quarrying sector in Perak will not be affected. The limestone reserve in idle mining land is sufficient to compensate the loss in exploitation of surface limestone," he says.

Key roles

Karsts are like islands of biodiversity – they support many endemic species due to their multitude of ecological niches created by different terrain such as fissured cliffs, cave chambers, streams and forests. The species found on karsts are also

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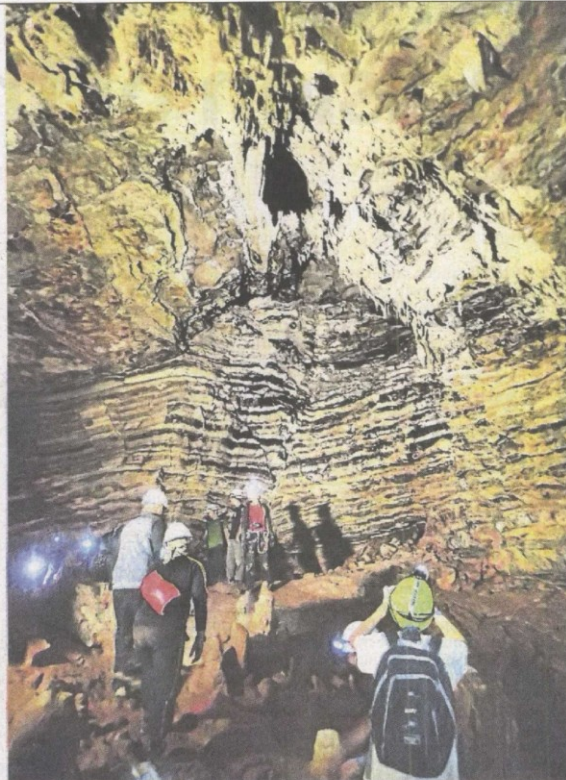


1. Quarrying limestone hills not only mars the landscape but destroys a wild habitat. — Forest Research Institute Malaysia

2. Destroying caves mean destroying bats, which are important pollinators and pest controllers. — AP

3. Unique formations in caves, such as this one in Merapoh, can bring in tourism dollars. — LAILI BASIR

4. New species are constantly found in limestone hills, such as the freshwater crab, *Phricotelphusa hymeiri*, named after caver Hymeir Kamarudin who found it in a limestone hill in Perlis. — Filepic



highly specialised as they have to adapt to the harsh environment there, which ranges from highly alkaline conditions to thin soil layers and fluctuating levels of light. In Peninsular Malaysia, 21% of 1,216 karst-associated plant species are endemic to the peninsula, and 11% are strictly confined to karsts.

The presence of rare species is not the only reason for preserving limestone hills, however. These outcrops serve other important ecological roles too, says Universiti Malaysia Terengganu conservation scientist Dr Reuben Clements. He says limestone hills capture rain which then replenishes groundwater. In Indonesia, quarrying led to water shortages in villages — in the absence of water storage in karsts, rain quickly flows into streams that empty into the sea.

Caves shelter bats that provide humans with important services such as pollination and pest control. "With no bats, we lose the ecosys-

tem services from them as fruit tree pollinators and seed dispersers. In one study in Thailand, it was found that fruit trees further away from limestone hills have lower produce. If you lose limestone karsts, you lose the bat population and the quality of fruit trees decline."

As bats prey on insects, they act as a biological pest control. In the southern United States, free-tailed bats protect cotton crop as they feed on cotton bollworms. In Thailand, the wrinkle-lipped bat feeds on white-backed planthoppers, a major rice pest, and prevented rice losses of almost 2,900 tonnes per year.

Need to protect karsts

Clements says laws to protect karsts are sorely lacking and many receive protection only because they happen to sit within national parks. To curb unnecessary limestone hill blasting, he says quarrying rates should be monitored and

made more transparent. And we need to protect hills that harbour not only endangered species, but also functionally important ones.

The Natural Resources Ministry is urged to draw up a policy to protect limestone karsts. There is none currently and many karsts remain uncharted. Quarrying totally destroys the flora, fauna, geological features and archaeological artefacts, so it is important to ascertain that the hill to be quarried is of no value in these areas.

"Yes, we need to exploit limestone for products such as cement and marble but only after scientific studies are completed," says Universiti Teknologi Malaysia scientist Dr Maketab Mohamed. "All the hills should be classified and those which have high conservation value should be left alone. Those which do not can be considered for exploitation. Any blasting or destructive exploitation before scientific studies are done will proba-

bly cause extinction of endemic species without them being found and taxonomically classified."

Maketab, too, wants to see quarry operators mine underground limestone deposits but "unfortunately, most operators take the easy way out, exploiting the visible karst hills or the 'tip of the icebergs'."

Caver Hymeir Kamarudin says 80% of the country's limestone resources is actually underground. "Most above-ground karsts are important for biodiversity, recreation and natural landscapes, and should be protected. The stuff that is not important is underground but that is not being looked at."

The protem chairman of the newly-formed Malaysian Cave and

Karst Conservancy says there has to be a national policy on limestone resources, to be adopted by the states. He says knowledge on limestone resources is spread out among research bodies, individuals and conservation groups and so, not easily available. Hymeir plans to seek government funding to pool the information in a database, which can be used to determine which karsts to protect.

"We have to look at karst resources in a holistic manner. Now, we're studying the hills only when there is a threat."

Since we are already protecting our forests, mangroves, coral reefs and mountains, it is time to do the same for limestone hills.