

Future of Rock Quarrying in Peninsular Malaysia

Issues and Challenges

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Aggregates : The cheapest building material for modern construction industry



Contribution of Rock Quarrying for the country

- A strong national economy and excellent quality of life are built on a foundation of aggregates products.
- Aggregates touch our everyday lives, from driveway to workplace
- We drive, sit, stand and walk on aggregates related products
- Without sound infrastructure, such as highways, bridges, mass transit, airports, water system and rail, the planned economy could not flourish.
- Therefore, it is imperative to integrate a thriving and sustainable quarrying industry via systematic initiatives to create a *conducive business environment* for the future growth of the industry.

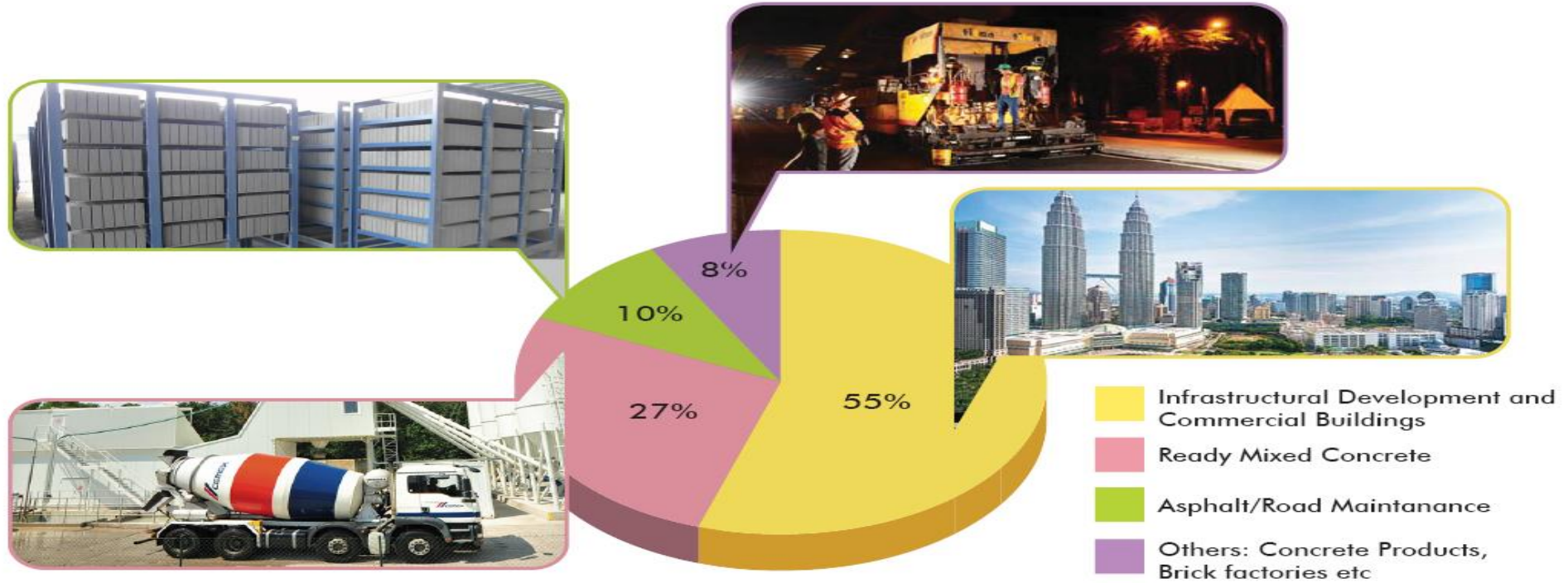
General Perception : It is a vital industry but majority hold the “NIMBY” stand



Quarrying Industry in Peninsular M'sia in Brief

- Rock quarrying in P. M'sia. is a very fragmented industry with an annual consumption of 70- 75 million ton
- There are more than 275 operating quarries
- The rock extracted are processed into aggregates for building material
- More than 90% of the output are consumed domestically
- In P. M'sia, the rocks are predominately from good quality **granite** (75%) and **limestone** (20%)
- Per Capita of stone consumption is around 3 to 3.25 tons.

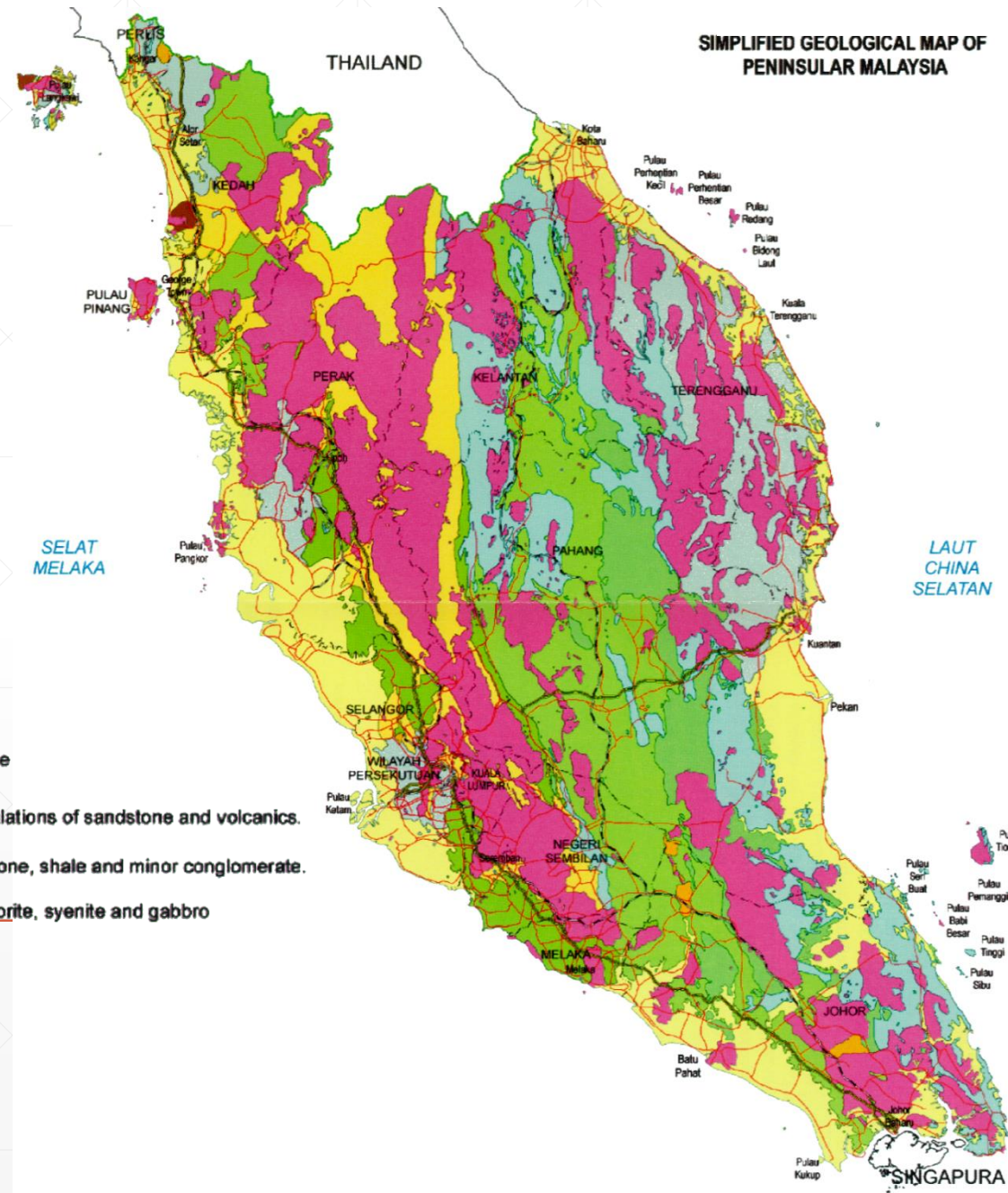
Breakdown of aggregates industry













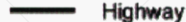


Location of Prevailing Quarries

- Sites of quarry are located where rock deposit could be economically extracted to serve local demand.
- Generally the distance to market served is not more than 50km in the local context, as trucking is used in the delivery of aggregates and cost would be prohibitive beyond this range – **Non-perishable low price high bulky material**.
- Most quarries located to serve major towns have relatively bigger crushing capacity. (*Local Derived Demand*)
- Capacity building over the years as a result of random peaks in the cyclical demand of aggregates caused over supply is a norms.
- Most prevailing quarries are sited at the fringe of major townships and which are now generally encroached over the years with sprouting linear development.

Geological Map of Peninsular Malaysia



LEGEND

QUATERNARY		Clay, silt, sand and peat
TERTIARY		Shale, sandstone, conglomerate
CRETACEOUS-JURASSIC		Sandstone, shale/mudstone.
TRIASSIC		sandstone, siltstone and shale
PERMIAN		Phyllite, slate and shale
CARBONIFEROUS		Phyllite, slate, shale and sandstone
DEVONIAN		Phyllite, schist and slate; limestone and sandstone
SILURIAN-ORDOVICIAN		Schist, phyllite, slate and limestone. Minor intercalations of sandstone and volcanics.
CAMBRIAN		Sandstone/metasandstone with subordinate siltstone, shale and minor conglomerate.
		Intrusive rocks, mainly granite with minor granodiorite, syenite and gabbro
		Highway
		Road
		Railway

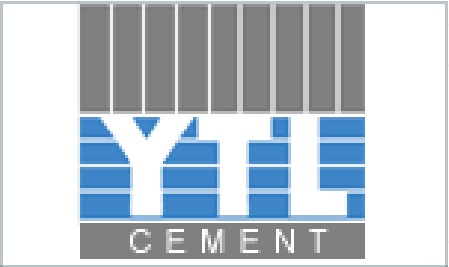
Encroachment of Quarry by Residential



Positive Industry Trend evolving over the last decade

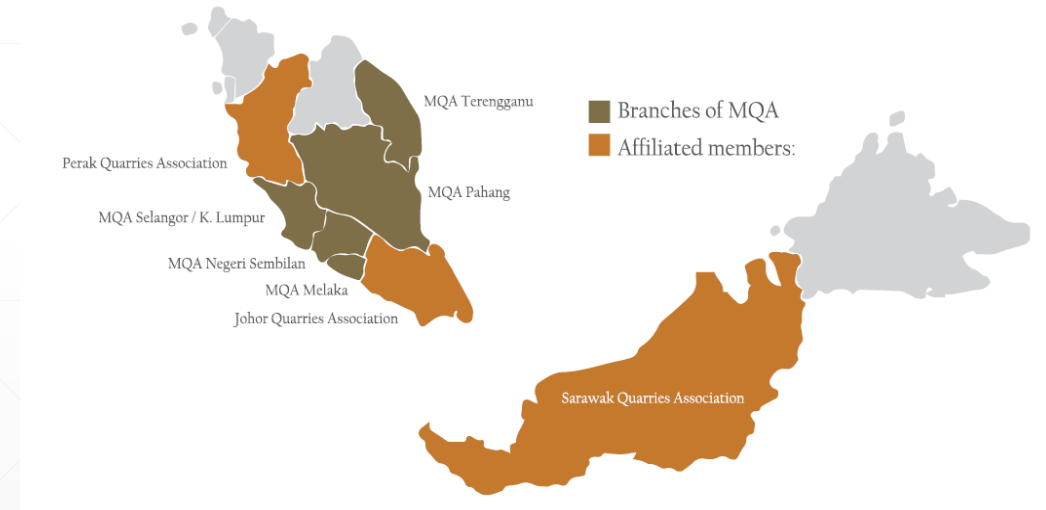
- Adoption of good practices and benchmarking with MNC
- Emerging of effective industry association to coordinate with players to promote collaboration/dialogue with government agencies for betterment
- Adopting load/fuel efficient trucks to increase productivity and to circumvent manpower shortages.
- Emphasis on initiatives on HSE to revert the negative public perception.
- Gain traction/recognition with HRDF, Human Resource Ministry, to introduce industry specific training to workers to upgrade the skill within the industry.

Companies with multiple quarries operations



The Roles of Malaysia Quarries Association

- Serving as a channel of communication with the Government and relevant organizations
- Monitoring and analyzing issues pertaining to the industry development and resolve problems faced
- Seek ways to improve the industry practices and develop skill upgrading of workforce engaged.



Adopting Heavy-duty trucks for productivity and safety



3 : 1



On- Site Short Firer Training Courses



On- Site Drilling Training Courses



Industry Specific Training



Issues Plaguing the Quarrying Industry

- No security on the tenure of the quarrying operations
- Yearly approval on permit renewal on Form 4C/Lesen Kecil mandatory.
- Length of tenure not based on rock reserve extractable
- Approved quarries were constraint by economic size

Against the backdrop of:

- High capital intensive investment, bank borrowing (rate), exit barrier
- Long term rockface development in tandem with modern and productive quarrying practices.
- Unable to commit to longer term contractual supplies and disruption of daily sales

Types/Categories of Land used in Quarrying

- Quarrying is under the jurisdiction of State Administration, as royalties collected is under the coffer of state treasury. Rates differ from state to state
- But National Land Code (Federal) shall provide the guidelines on the administration and enforcement to the states
- Sources of quarry land is derived from
 - a. State leasehold land
 - b. State forest reserve, and
 - c. Private/alienated land – permanent quarry and “project quarry”

Agencies involved in conformance

- Besides Land Office on Form 4c & Forestry Department on Lesen Kecil, some of the other agencies involved administering are: (not exhaustive)
- The Environment Quality Act 1974 by Department of Environment - Federal
- Explosive Act 1957 (Act 207), Explosive Rules, 1923 – The Royal Malaysia Polis - Federal
- Roads and Public Utilities – Public Work Department (JKR) – Federal/State
- River Streams Channel Water Resources and Public Drainage – JPS – Federal/State
- Quarry Rules – Mineral & Geoscience Dept (JMG) - State
- Electricity Act (National Electricity Board) - Federal
- Labour Law – Department of Human Resources - Federal
- Occupational Safety & Health Act – OSHA - Federal
- Aborigine Reservation Act – Department of Aborigine Affairs - Federal
- Laws pertaining to Development – State Economic Planning – F/S
- Local Government Act, By-laws, City, Local Council, Municipality By-laws - State

The Challenges ahead is to create a Conducive Business Environment - (Wish List)

- To establish Quarry Belt and Zone
- To prevent the of sterilization of valuable rock reserve because of encroachment other human activities proximate to quarries.
- Automatic renewal of Form 4C, a relook at NLC and on longer tenure
- Creating an entity - OSA – and to get all states to adopt the Quarry Rules
- To streamline the implementation of **Rehabilitation/Re-vegetation** of quarries on the on-going basis.

The Issues on Rehabilitation of Quarries

- This issue has been hotly deliberated since 2011
- Most industry players take it in good faith that it is a right direction to move ahead and embrace it positively, cos'
 - Land is depleting/exhaustive resources, land after quarrying operations has to be put into good use.
 - Visual impact of quarrying rock faces during the interim and post operations is important to the surrounding
- Sinking fund or pooled/deposit appeared to be the regulatory's preferences.
- Nonetheless, industry players have differing views.....

Existing Legislative Frameworks Related to Quarry Rehabilitation

- National Land Code 1965
- National Forest Act 1984
- Environmental Quality Act (EQA) 1974
- Aborigine People Reservation Act 1954
- State Quarry Rules
- National Mineral Policy 2

MQA's Position Paper on Rehabilitation

- Rehabilitation is defined as returning the land back to its 'original' state but for post quarrying, land could only be *Re-vegetated*, as the bulk and landscape changes permanently with rock extracted and were carted away.
- *Re-vegetation should be carried out progressively and at the terminal rock benches. The rock extraction is usually done by phases, based on quarry scheme.*
- *Strict enforcement could weed out non-conformance and assessment via EIA or quarry scheme established for integrated mining.*
- *More importantly, extraction and revegetation protects the terrain and allow future land use and preserve state resources.*
- *No retrospective rehabilitation actions*

Private Land (Project Quarry) on Post Quarrying



Conventional Practices in Quarrying @ Terminal Phases



Successful Transformation of an ex-quarry land into a thriving township



Rehabilitation in quarries under state forest reserve



Looking for an acceptable solution

- All stakeholders need to come forward to voice out and to streamline and derive an acceptable solution where it is transparent
- Final land use has to be spelt out at onset of future quarry if it is under state land
- More studies needed to introduce on viable floral and fauna suitable for the hostile rock benches
- Systematic approach in demarcating of lots to ensure economic value after post quarrying

Moving Forward – There is no cheap substitutes

- The prospect of quarrying industry remains bright as the nation's appetite for rock aggregates is huge for continuous development.
- The question here is not “is there a market, but where?”
- The opportunity to upgrade grading/shaping of final products
- The emergence of “M-Sand” as a sub-product

A well developed domestic quarrying industry which is internationally competitive is a preamble for oversea expansion

Thank You