

The industrial mineral-based industries in Malaysia – Current status and prospect

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Abstrak: The industrial mineral-based industry in Malaysia can be broadly grouped into three categories, viz, rock-based, clay-based and sand-based. During 1999, from a total amount of RM17.0 billion worth of mineral-based products manufactured, RM7.3 billion originated from the industrial mineral sector, while the remaining RM2.8 billion came from tin smelting and RM6.9 billion from the basic iron and steel industries. The clay-based industry is well developed, producing a wide range of products to cater for the construction, domestic and industrial consumers both locally as well as abroad. The clay-based products include activated clay, advanced ceramic, ceramic decorative ware, ceramic former, ceramic tiles, clay brick, clay pipe, refractory bricks, roof tile, rough pottery, sanitaryware and tableware. In 1999, the total output from these manufacturers was estimated at RM1.4 billion. The sand-based manufacturers include those producing filter sand, glass, silicon and sodium silicate. In 1999, a total of 42 manufacturers were involved in this sector. The total output from these manufacturers was estimated at RM2.3 billion. The glass industry, as part of the sand-based industry, is fairly well-developed with highly automated manufacturing processes. It produced a wide variety of products including container glass, domestic glassware, optical lenses, sheet glass, glass funnels and panels for cathode ray tubes, etc. However, most of the higher end silica products, such as optical and ophthalmic glasses use imported blanks. The rock-based manufacturers produced a variety of products from essentially granite and limestone. In 1999, the total output from these manufacturers was estimated to be around RM3.6 billion. Dimension stone is mainly produced from locally obtained granite and limestone. Cement, lime, limestone powder and terrazzo constitute value-added products produced from limestone. Whilst demand for traditional rock tiles has dwindled owing to stiff competition from ceramic tiles, the limestone powder industry is at present, expanding rapidly with the production of coated ground calcium carbonate (GCC) as well as precipitated calcium carbonate (PCC). They offer stiff competition to the kaolin producers for use as fillers. The issues pertaining to these sectors include their pertinent linkage to the construction growth, promotion of the Investments Act 1986, value-adding capabilities, export market and globalisation/open market. With globalisation, free-trade, open-market system and AFTA coming into force soon, Malaysia's industrial mineral based-industries will face stiff competition from our neighbouring countries where cheap labour and low fuel costs are readily available. High productivity, advanced technology, quality of products and the search for new markets will to a certain extent determine the success of our industries in the globalised market.

INTRODUCTION

The industrial mineral-based industry in Malaysia can be broadly grouped into clay-based, sand-based and rock-based.

In 1999, RM17.0 billion worth of mineral-based products were manufactured in the country, contributing about 18.5% of the total manufactured goods. Of this, more than RM7.3 billion (about 42%) came from the industrial mineral sector. They constituted clay-based (RM1.4 billion), sand-based (RM2.3 billion) and rock-based products (RM3.6 billion) respectively (Azimah Ali, 1999; Minerals and Geoscience Department, 1999; Bank Negara Malaysia, 2000)

The number of manufacturers totalled 712 which comprised 544 clay-based producers, 42 sand-based and 126 rock-based producers. The distribution of these manufacturers was concentrated in states with major development projects such as Perak, Johor, Selangor and Sarawak (Selvarajah *et al.*, 1999).

THE INDUSTRIAL MINERAL-BASED INDUSTRIES

Clay-Based Industry

In 1999, there were a total of 544 clay-based factories operating in the country. The major producers in terms of numbers were the clay brick manufacturers, totalling 319, and the rough pottery manufacturers. Others, in order of declining abundance, are ceramic decorative ware, ceramic tiles (wall, floor, mosaic tiles), clay pipe, sanitaryware, tableware, roofing tiles, ceramic formers, refractory, advanced ceramic components, and activated clay manufacturers. The claybrick, rough pottery and lower-valued products dominate this sector.

Perak was the top state with the highest number of clay-based manufacturers (102), followed by Selangor (85), Sarawak (84) and Kelantan (65).

The decline in the output of rock-based industries in the last few years was reported to be attributed largely to

the lower output of construction-related industries such as those producing cement and concrete products while the industries related to the clay-based and sand-based showed an upward trend. Although there was continuation of some major infrastructure projects, the construction sector continued to be subdued. Construction of low and medium cost housing units was sustained, as demand for these residential units remain strong. Over the last few years, there have been positive efforts to venture aggressively in the overseas market. Hence, export venture should be encouraged and restrictions and quota, if any, need to be kept to a minimum.

In terms of sales, statistics showed that the sale value of structural clay products was RM1.3 billion in 2000 as compared with RM1.1 billion in 1999 and RM1.0 billion in 1998 (Jabatan Perangkaan Malaysia, 2001). Pottery, china and earthenware was maintained at RM264 million in 2000 as compared with RM257 million in 1999 and RM265 million in 1998.

The clay-based industries can be sub-divided into 11 main sectors:

- Activated clay
- Advanced ceramics
- Ceramic decorative ware
- Ceramic formers
- Ceramic tiles
- Clay brick
- Clay pipe
- Rough pottery
- Roof tiles
- Sanitaryware
- Tableware

The main raw materials required in this industry are ball clay, kaolin, alumina, silica, feldspar, porcelain and potterystone.

In terms of external trade, the total export value of clay-based products in 1999 was RM424.6 million as compared to RM459.5 million in 1998. The total of imports during the same period was RM169.7 million and RM163.8 million, respectively.

Sand-Based Industry

There were 43 manufacturers involved in the manufacturing and value adding of sand-based products in Malaysia during 1999. The total output from these manufacturers was estimated to be around RM2.3 billion, which is about 31% of the total industrial mineral-based manufactured. These manufacturers can be subdivided into 4 main sub-sectors:

- Filter sand
- Glass
- Silicon wafer
- Sodium silicate

Selangor has the most number of sand-based manufacturers totalling 15, followed by Johor (13). In 1999, these two states accounted for more than 60% of the total sand-based manufacturers in the country. Although

sand is a commodity found in most states in the country, only 8 out of the 14 states have sand-based establishments.

There were 3 companies producing filter sand for water treatment, 2 in Johore and one in Perak. The total production of filter sand was estimated to be about 6,250 tonnes per annum. The glass sector in Malaysia started in the early 70's with facilities catering to the demand for flat glass and glasswares to meet the requirements of the building and automobile industries as well as for household consumption. A number of the products were value-added to meet the more stringent demands created by the growth of manufacturing activities in Malaysia. Quality raw material is critical to float glass producers since viscosity is the only way to control thickness variations which result in distortion in the glass. The ceramic fibre and glass wool industries were set up to cater for the demand for thermal and sound insulation materials.

All these products were made from a number of essential ingredients. Apart from silica as the main component, other raw materials required in this sector include limestone, soda ash and alumina. Their composition vary in proportion depending on the required end-product.

Export of glass and glassware totalled RM886.6 million in 1999, which accounted for 55% of the total industrial mineral-based products exported. Imports however amounted to RM1,066 million, or about 77% of the total industrial mineral-based products imported.

Rock-Based Industry

There were 126 rock-based manufacturers involved in the manufacture and value adding of essentially granite and limestone -based products in Malaysia in 1999, which comprised 39 lime product manufacturers, 29 limestone powder, 33 dimension stone, 14 cement plant and 9 terrazzo and silicate brick manufacturers. The total output from these manufacturers was estimated at RM3.6 billion, about 49% of the total industrial mineral-based products manufactured in the country. The state with the highest number of rock-based manufacturers is Perak (171). This corresponds with the vast resources of limestone and granite located in the state. Other manufacturers were located in Selangor (127), Sarawak (86) and Johor (81).

The industry can be sub-divided into the following sub-sectors:

- Cement
- Dimension Stone
- Lime
- Limestone Powder
- Terrazzo/Silicate brick

In 1999, there were 14 cement manufacturers operating in the country: 8 integrated plants, 5 cement grinding plants and one clinker production plant. These plants supply high quality cement to meet the nation's growing needs. The total clinker production was 10.64 million tonnes whereas that for cement was 11.21 million tonnes, estimated to be worth RM2.01 billion. Currently, Malaysia has excess capacity for the production of both cement and clinker.

The dimension stone manufacturers can be sub-divided into marble dimension stone and granite dimension stone manufacturers. Some of these manufacturers produce both types of dimension stones. Overall, the dimension stone industry is not faring well because of the decline in the construction industry and stiff competition from ceramic tile manufacturers. In 1999, there were 25 marble (mainly in Perak) and 8 granite producers in the country. Currently, these companies use mainly local granite blocks from Johor, Negeri Sembilan and Terengganu. The colours of the local blocks are confined to grey, black, pink and dark green. Some of these manufacturers also produce marble dimension stone, using imported marble blocks.

The lime industry is a well-established value-added limestone industry in the country whose higher-grade products are mainly exported. In 1999, there were 39 manufacturers producing hydrated and/or quick lime. Most of these manufacturers are small to medium scale. The main uses of these products are for water treatment, agriculture, construction and chemical treatment industries. Selangor and Perak have the most number of lime producers.

Another value-added limestone industry is the limestone powder industry. Calcium carbonate and dolomite powder of various grades are produced. The calcium carbonate powder manufacturers are mainly located in Perak and Selangor. Bigger plants with world standard highly automated-technology came on line recently to cater not only for the local, but for the regional market as well.

The demand for terrazzo is dwindling and the industry faces stiff competition from clay-based tile manufacturers. Silicate brick is facing competition from concrete brick as well as from clay brick.

RECOMMENDATIONS AND CONCLUSIONS

Linkage to the Growth of the Construction Industry

Demand for industrial mineral-based products has always been closely linked to the growth of the construction sector. Hence development and revival of the construction sector such as the building of roads, highways, bridges, housing development will have positive spill-off effects on the building material sector, which is dominated by the clay-based, sand-based and the rock-based industries.

In line with the construction sector's growth of 1.4% in 2000, an estimated 4.7% this year, the impetus of the industrial mineral-based industry should gain in momentum.

Promotion of Investments Act 1986

Under the Promotion of Investments Act 1986, the clay-based industry (advanced material- superconductors, fine/advanced ceramics, composites) is a promoted activity and the products manufactured are eligible for consideration for pioneer status and investment tax allowance. This

information should be made clear to the clay-based and ceramic industry so that the industry could further expand, progress and develop itself accordingly.

Value Adding

The value adding factor of industrial minerals should be emphasised, and incentives should be given to expanding industries. As an example, since lime now commands a higher price than dimension stone in the rock-based industry, efforts should be geared towards promoting, processing and exporting lime-based products.

Export Market

During 1999, although the country produced a total of RM7.3 billion worth of industrial mineral-based products, export was only RM1.5 billion. The export market is important to earn foreign exchange. During and after the economic crisis from mid-1997 to 2000, the companies that have survived were those showing a high export:local market ratio (70:30). Hence, any form of restriction to export should be kept to a minimum to ensure optimum local usage and to cater for the export market.

AFTA, Free-Market and Trade Liberalisation

With AFTA coming into force, the sector should prepare itself to sustain and compete in the open market.

Quality local material

Local material should be used in the most optimum manner. Mineral resources, left unexplored and unprocessed, is of no use to the economy. Research and development should be geared towards higher quality product manufacture to cater not just for the local demand, but the export market as well.

High Productivity, Advanced Technology, Quality Products, Search for New Products, and New Market

Some suggestions to upgrade and improve the status of the industry include increased productivity by using advanced technology, producing superior quality products to match and compete with regional markets, research into new creative products, and creating new markets.

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