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Wood-based industry in Kelantan

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Abstract. Forest in Kelantan contributes a significant commitment to economy earnings through the wood-based industry sector. Desktop and field survey was carried out to investigate the current status of the wood-based industry in this state. Surveys and secondary data analysis was done in term of the number of licenced wood-based factories that actively operated in the study area. There are 136 wood factories involved in wood-based industry production that distributed throughout ten main districts in Kelantan. Kuala Krai is the utmost and active area for wood-based sector. The wood-based industry includes sawmills, plywood and veneer mills. The sawmills cover of 45.1% from the overall wood-based factories in Kelantan which commonly produce a product from sawn timber for heavy-duty purposes as well as light application decking, step boards and door frames. The wood-based industry in Kelantan had offered vast job opportunities and increase Malaysia's export earnings. Therefore, strategic management aims to conserve and sustain the natural resources are required to ensure the adequate source for future production.

1. Introduction

One of the most significant sectors that contributes to the Malaysian economy is the wood-based industry [1]. It is also one of the major sector act as a job generator and produces strong export income. The fundamental products of timber in Malaysia are logs, sawn timber, plywood, veneer and mouldings. A sustainable supply of timber produces income, bolsters business and adds to a monetary movement that advances universal financial prospects. This industry had produced billions of income, job opportunities and increase Malaysia's export earnings.

Malaysia has been practising the Sustainable Forest Management using Selected Management System (SMS). Under the SMS structure, forestry activities are categorized into three stages namely pre-harvesting, harvesting and post-harvesting [1]. From the harvested trees, the timber is utilized in various natures. The utilization of timber for the production of manufactured items efficiently used even the residues. Here it comes the wood-based industry that increases its competition through national and international levels. The major wood-based industry in Malaysia comprises of sawn timber, lacquer and board items include plywood, particleboard, chipboard, fireboard, mouldings and builders' joinery and carpentry (BJC).

The wood-based industry put forth the entrepreneurs of a big company to small-medium enterprises (SMEs) business. Statistics published by [2] show that the SMEs constitute almost 95% of the total establishments in the furniture industry. In Kelantan, the SMEs in wood-based industry sectors are quite competitive. Due to stiff competition, only a small number of indigenous or Bumiputera SMEs manufacturing entrepreneurs can sustain in wood-based products in Malaysia [3]. However, from the perspective of the performance of the industry, both SMEs and large enterprises produce an equal



share in terms of the value of gross output, value-added, employment, salary and wages, and value of assets. The aim of this study is to highlight the status of wood-based industry in Kelantan considering of its location, numbers of active operating companies and the nature of operational factory surveyed. This study will lay down essential information for stakeholders, operators and the related agencies on the existing situation of the wood-based industry in this state.

2. Materials and Methods

Kelantan state lies on 15104.62 km² of land area in which 54 per cent of it is forested land. Located at the east peninsular of Malaysia, Kelantan sharing the border with Thailand which giving advantages in import and export trade. This state comprises of 1.88 million people and 93.5 per cent is a Bumiputera that live in ten different administration districts (Figure 1). Wood-based industry in Kelantan has a significant influence on the socio-economic development of the community. It was run by indigenous or Bumiputera SMEs manufacturing. The traditional arts and craft from wood are one of tangible heritage and the uniqueness is well acknowledged.

In this study, the status of the wood-based industry in Kelantan was examined. Survey and desktop review was carried out to obtained related data regarding the wood-based industry of the study area. It includes interviews and survey to selected factories in each district. Hence, the secondary data from newspaper reports, official papers and other documents such as the recent annual forestry report and forestry statistics provided by the Forestry Department of Peninsular Malaysia were investigated and interpreted. Data collected were summarized and calculated. The descriptive statistics and interpretation were made based on the calculated figures to explain the status of the wood-based industry in Kelantan.

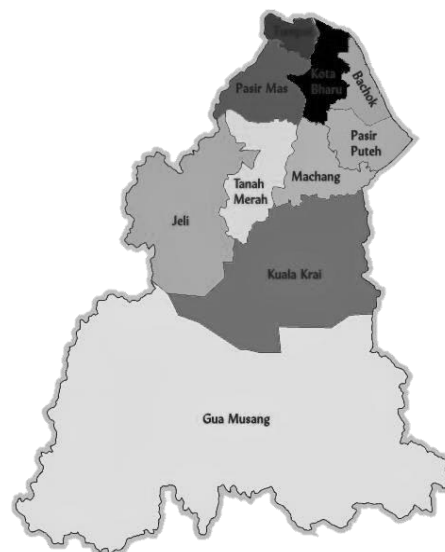


Figure 1. Kelantan states with ten different administration districts

3. Results and discussion

The total forested land of Kelantan state is 8,104.2 km², wherein the permanent forest reserve (PFR) of this state covers about 6,132.7 km². The PFR can be divided into two categories, i) natural forest and ii) plantation forest. In Kelantan, both categories accounted by 5,764.3 km² and 368.5 km² respectively. Within this number, not all PFR is licenced for timber harvesting activities. In 2018, only 217.2 km² of the PFR is licenced and permitted for timber production including forest on the state and alienated land status.

The total consumption of logs and sawn timber in Kelantan is about 800,116 m³yr⁻¹. The timber was mostly consumed by sawmills and plywood or veneer mills. Table 1 showed the production of three main wood-based products of Kelantan. Comparing the result with Malaysia's wood-based production sector, the sawn timber in Kelantan has contributed about 19% from the country's production, while veneer and plywood contributed about 48% and 3.3% to Malaysia wood production respectively. The production of wood-based in Kelantan is significantly important for national earning. Besides, the demand for wood-based products is increasing globally, coupled with the increment in population growth [4]. Therefore, sustainable resources and strategic management are required to ensure adequate production to supply for the demand.

Table 1. Production of selected wood-based product in Kelantan

Wood-based product	Volume (m ³)
Sawn timber	515,178
Plywood	14,703
Veneer	64,806

Wood is a material of great economic importance. Generally, wood products came from log production classified into four classes, namely heavy hardwood, medium hardwood, light hardwood and softwood. Table 2 presents wood products based on its classes in the wood-based industry. In 2018, Kelantan had produced about 916,081 m³ of logs. Light hardwood mainly from Lauraceae family, followed by medium hardwood such as *Eugenia sp.*, *Cynometra malaccensis* and *Dialium indum* are among the topmost hardwood species harvested, while *Agathis alba* is the only softwood species harvested in Kelantan. Chengal (*Neobalanocarpus hemii*) belong to heavy hardwood produced about 4,757 m³ of wood in 2018. It worth about RM11.9 million using the average domestic price calculation of Peninsular Malaysia rate [5]. Another premier wood species price such as Red Meranti and Red Balau is recorded at RM1,222 m⁻³ and RM1,167 m⁻³ respectively. Wood has a proven track record as a sustainable economic driver. Therefore sustaining the forest resources for wood-based production sector is vital for sustainable economic growth.

Table 2. Total production of wood based on wood classes

Wood class	Production (m ³)
Heavy hardwood	67,331
Medium hardwood	325,448
Light hardwood	523,280
Softwood	22
Total	916,081

Looking at the sharing number of the wood-based industry and factory by location in Kelantan (Figure 2), 25 per cent is situated at Kuala Krai. It followed by Tanah Merah, Kota Bharu and Gua Musang districts with 17.6%, 16.9% and 14.7% respectively. In Kuala Krai district, the major wood-based industries are from sawmills and wood factories. There are 15 sawmills recorded in these districts, which poses the highest number of factory recorded compare to other districts in Kelantan. Sawmills in Kelantan supply various sizes of wood-based on trades demand. Most of the company supply the wood to domestic users and few are exporting to fulfil international request such as from China. The sawmills factory usually produce a product from sawn timber for heavy-duty purposes such as wooden boat building as well as light application decking, step boards and door frames.

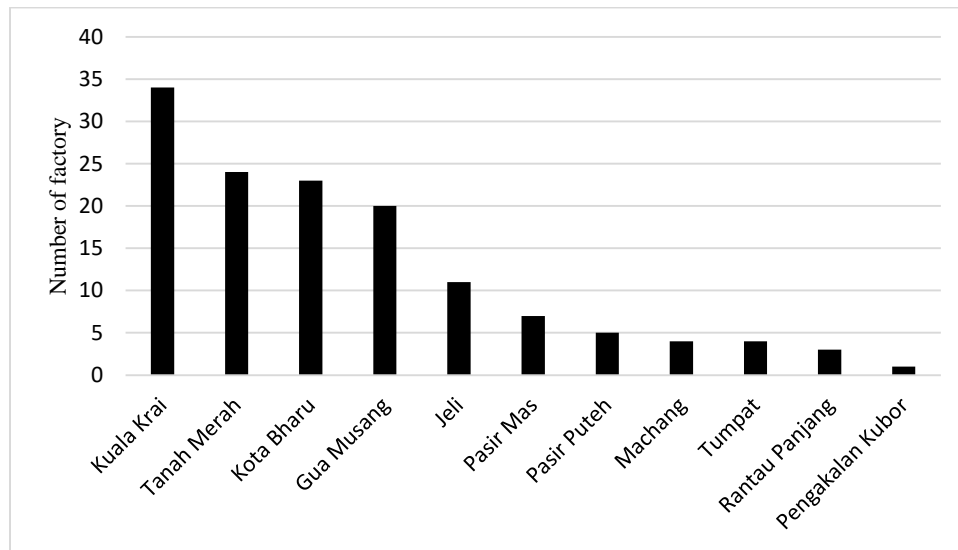


Figure 2. Distribution of wood factories in Kelantan by districts

Meanwhile, in Kota Bharu district, despite of hectic capital city of Kelantan there are 12 licensed wood-based furniture factories built in this area. Most of the business focus on built a home and office furniture. The producers create a wide run of furniture from office, kitchen, room, feasting room, periodic, living room, upholstered furniture or couch, open-air and cultivate furniture as well as arts and craftwork for home decoration. The list of licenced wood factories actively operated in Kelantan is presented in Table 3. From the data, only one match factory found in the study area named Kelantan Match Factory Sendirian Berhad that been operated since 1933. The business was run in a medium-sized premise using an old machine. They use imported wood from China in making the matches due to the type of wood used is difficult to find in Malaysia and it is cost-wise. Because timber produces major marketable products, effective forest management is required to maintain the sustainability of this industry [6]. Besides that, few agencies and institutions related to the wood-based industry in Malaysia are responsible for managing the forests and improving the wood-based industry development apart from state governments such as Ministry of Plantation Industries and Commodities (MPIC), Ministry of Natural Resources and Environment, Malaysia Timber Industry Board (MTIB), Malaysia Timber Council (MTC) and Malaysian Timber Certification Council (MTCC) [7].

Table 3. Licenced wood factories in Kelantan

Type of wood factory	Number	Percentage (%)
Sawmills	60	45.1
Wood factory	33	24.8
Furniture factory	22	16.5
Plywood mills	5	3.7
Preservation kiln	4	3.0
Chip wood	4	3.0
Moulding mills	2	1.5
Match factory	1	0.8
Wood briquette	1	0.8
Distillation kiln	1	0.8

The wood-based industry sector could decrease of local poverty [8]. Hence, rural communities can rely on jobs from the domestic wood industry for generations to come. In Kelantan, a total of 4,084 people is employed under various categories from timber harvesting until workers for sawmills, plywood and veneer mills. The highest job opportunity is in sawmilling sectors (64%), followed by plywood and veneer mills with 14%. Hence, 90% of the wood-based associate workers are Malaysian citizen. Forests are renewable resources that benefit humans in terms of economic growth, job opportunities, and urbanization. Further research is necessary to evaluate the relationship between the raw materials' consumption pattern and operation of the wood-based industry in Kelantan to know the amount of wood consumed by each factory as well as to answer what is the main wood-product in Kelantan that can be commercialized world widely.

4. Conclusion

The wood-based industry in Kelantan makes a significant commitment towards country economy income. The sustainable wood-based industry needs on a sustainably managed forest to sustain their role for future generations. To date, there are 136 active licenced factories involved in wood-based industry production that distributed throughout ten main districts in Kelantan. This industry had offered vast job opportunities and increase Malaysia's export earnings. Therefore, strategic management aims to conserve and sustain the natural resources are required to ensure the adequate source for future production.

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References

- [1] Malaysian Timber Council Certification 2017 Certified Forest Management Unit (FMU) Malaysian Timber Council Certification, Retrieved online at <https://mtcc.com.my/certified-forests>.
- [2] Department of Statistics, Malaysia 2019 Retrieved online at https://www.dosm.gov.my/v1/index.php?r=column/cone&menu_id=Nk1JZnJBMm1TdmRF50xaTXZnanIrQT09
- [3] Tuan M R T H Mohd Rafi Y and Nik Kamaruzaman A 2014 *Social and Behavioral Sciences* **115** (2014) 221 – 234.
- [4] Gemechu E, Butnar I, Goma-Camps J, Pons A and Castells F 2010 Life Cycle Assessment and Forest Products: A White Paper, Forest Products Association of Canada, Ottawa, Canada.
- [5] Jabatan Perhutanan Semenanjung Malaysia (JPSM) (2018) Laporan Tahunan. Retrived online at https://www.forestry.gov.my/images/Laporan_Tahunan/2018/ARJPSM2018.pdf
- [6] Siry J P, Cubbage F W and Ahmed M R 2005 *Forest Policy and Economics* **7**(4), 551-561
- [7] Malaysian Timber Industry Board 2019 Retrieved online at <http://www.mtib.gov.my/corporate-info/government-open-data>
- [8] International Monetary Fund (IMF) 2011 Annual Report 2011. Pursuing Equitable and Balanced Growth. Washington DC.
- [9] Zainul Armir N A, Zakaria S, Ara Begum R, Chamhuri N, Mohd Ariff N, Harun J, Mohd Talib, N and Kadir M. 2020. *BioRes.* **15**(2), 2971-2993.