CHAPTER 3

STATEMENT OF NEEDS

3.1 STATEMENT OF NEEDS

Bukit Slim Forest Reserve is one of the forest reserves in Perak. It was located in Mukim Slim, District of Muallim, specifically. Currently, the project is a secondary forest. In order to rehabilitate the forest, the forest plantation project must be carried out. For forest classification, this area falls under production forest in National Forestry Act 1984. The Project Proponent (PP) plans to develop forest plantation on the site as an effort of forest enrichment and to improve the regeneration of the forests.

Forest plantation is already recognized and become as an essential part of the strategic development plan for the suitable management of forest resources in Malaysia (Krishnapillay; Mohamed & Razak). Development of forest plantation may results to direct benefits and indirect benefits.

Malaysia is one of the world's largest exporters of tropical timber and timber products and the 10 largest exporter of furniture (second in Asia) with over 183 export destinations. Malaysia has also established itself as a major producer and exporter of sawn timber, panel products (plywood, medium density fiberboard (MDF) and particle board), flooring, doors and other joinery products (Zubaidah *et al.,* 2014).

As timber industry is one of the major revenue contributors to the country's economy, the Ministry of Natural Resources and Environment Malaysia stressed that innovative research and development initiatives have to be intensified to meet the target of RM53 billion in wood and timber product exports by 2020, as outlined in the National Timber Industry Policy. Therefore, it is estimated that at least 60% of export earnings must be derived from downstream products and the balance 40% from primary processed products (NATIP Report 2009-2020).

Based on the Department of Forestry Annual Report 2017, an area of 35,263 hectares of permanent reserve forest which was managed based on Sustainable Forest Management practices were harvested in 2017 which represent 82.2% of the total Annual Allowable Cut (AAC) approximately amounting to 42,877 hectares (**Figure 3.1.1**). Based on **Figure 3.1.2**, the production of the selected timber products from 2016 to 2017 such as log and saw timber showed a decrease with annual change of -14.42%.

The forestry sector has a important role in Malaysian socio-economy as the sector contributed RM7.8 billion or 0.6% of Malaysia's Gross Domestic Product of RM1,353.4 trillion in 2017. Also in 2017, there is an increase of timber production trade and forest revenue collection to the state government by RM6.31 billion and RM523.3 million respectively.

Jenis Hutan *Forest Type*	Hektar *Hectares*	Peratus *Percent* (%)
Hutan Simpanan Kekal / *Permanent Reserved Forest*		
• CTT / *ACC*	35,263	44.4
• Luar CTT* / *Outside AAC**	29,263	36.9
Hutan Tanah Kerajaan / *State Land Forest*	10,627	13.4
Tanah Berimilik / *Alienated Land*	4,206	5.3
Jumlah / *Total*	**79,359**	**100.0**

* Kawasan HSK yang diusahasil secara tebang habis untuk tujuan penyelidikan, pembangunan dan perladangan hutan
* *PRF clear-felled for research, development and forest plantation*

Source: Department of Forestry Annual Report 2017

Figure 3.1.1: Area Licensed for Harvesting 2017

Pengeluaran Hasil Kayu Terpilih
Production of Selected Timber Products

Industri *Industry*	2017	2016	Perubahan Tahunan (2017/2016) *Annual Change (2017/2016)* (%)
Kayu Balak / *Log*	3,809,185	4,450,784	-14.42
Kayu Gergaji / *Sawn Timber*	2,446,411	2,484,569	-1.54
Papan Lapis / *Plywood*	439,698	364,247	20.71
Venir / *Veneer*	142,692	93,854	52.04
Kayu Kumai / *Moulding*	86,264	71,900	19.98

Soure: Department of Forestry Annual Report 2017

Figure 3.1.2 Production of Selected Timber Products

Based on the Perak Forestry Department Annual Report 2019, the total Annual Allowable Cut (AAC) of forest reserves in State of Perak as in **Figure 3.1.3**.

TAHUN	CTT DILULUSKAN (HA)	CTT DISELARASKAN (HA)
2016	7,744	5,806
2017	7,744	6,628
2018	7,744	9,037
2019	7,744	9,292
2020	7,744	7,957
Jumlah	**38,720**	**38,720**

Source: Perak Forestry Department Annual Report 2019

Figure 3.1.3 AAC of Perak Forest Reserves

Besides that, Perak is the fourth highest timber production state in Peninsular Malaysia based on the statistics in accordance with land status on December 2012, released by Ministry of National Resources and Environment (NRE) (**Figure 3.1.4**).

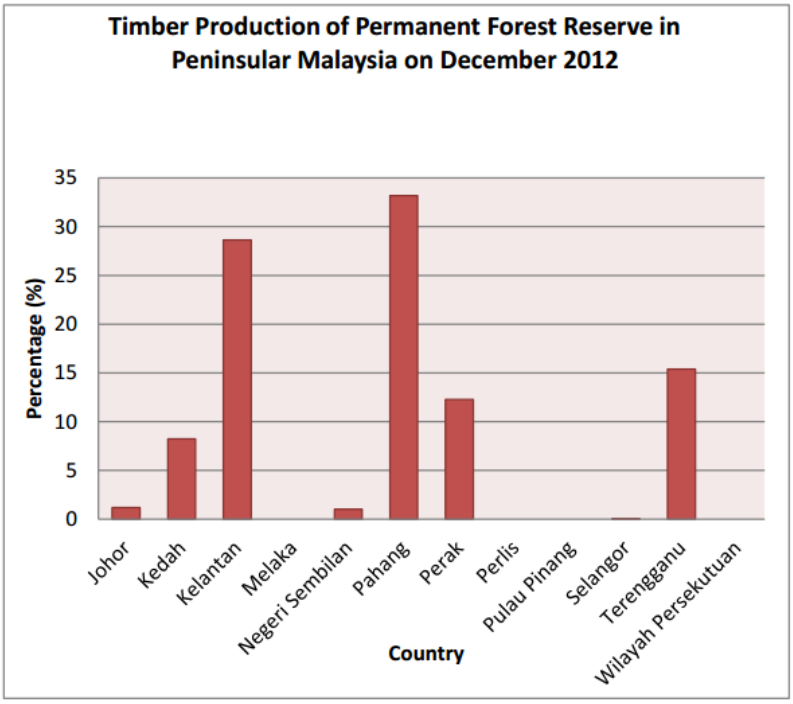


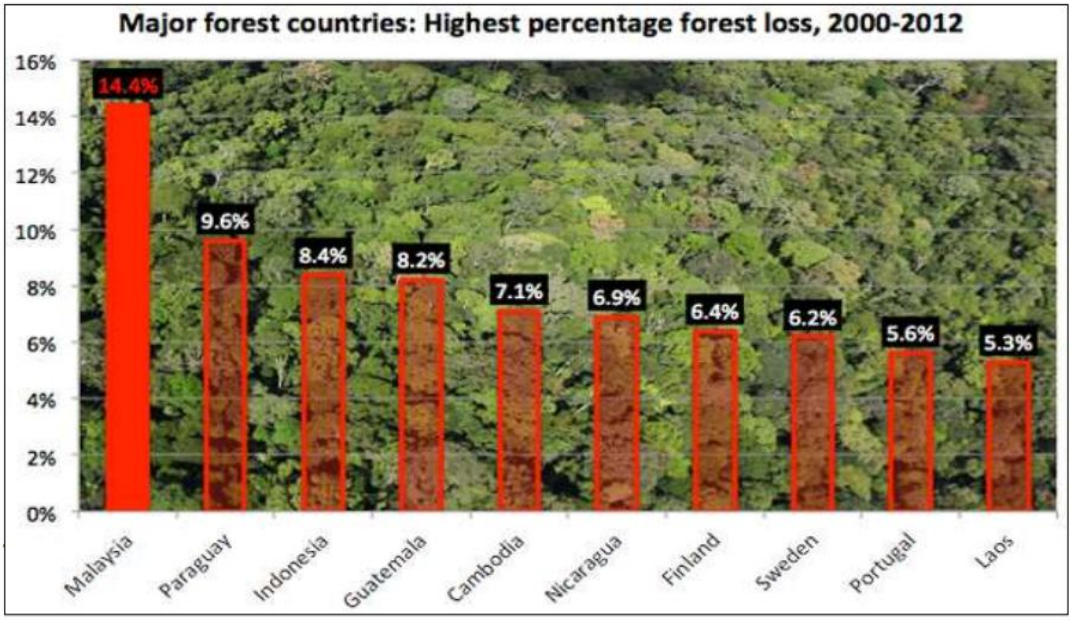
Figure 3.1.4: Percentage of Timber Production of Permanent Forest Reserve in Malaysia

Traditionally, the management of forest resources in Malaysia has always emphasized on the selective felling of mature trees and leaving sufficient trees behind for future crops. A research by Thai See Kiam, Forest Plantation Unit, Forest Department Headquarters, Peninsular, Malaysia stated that the prescription of conservative felling regime worked very well in the 1950's through the 1970's when harvesting was confined mainly to lowland dipterocarp forests, and the demand from timber industries was rather limited. Line planting of indigenous timber species was carried out only in areas where natural regeneration was found to be inadequate.

Malaysia's forests are under thread from rapid deforestation, illegal removal of forest products and encroachment. A case study by Yong *et al.* (2014), listed the main drivers of

deforestation in Malaysia are commercial timber harvesting, commercial agribusiness, mining, infrastructure, mega dams and urban development's.

The declining of forest cover in Malaysia has been a long time and continuous issue over the past decades. Its deforestation rate is accelerating faster than in any other tropical country and in between year 1990 and 2010, it lost 8.6%, or 1,920,000ha of its forest cover (Yeo, 2013). According to a statistic on new global forest map developed in partnership with Google (Butler, 2013), Malaysia had been ranked as the world's highest rate of forest loss between year 2000 to 2012 (**Figure 3.1.5**).



Source: New global forest map developed in partnership with Google (Butler, 2013).

Figure 3.1.5: Major Forest Countries of Highest Percentage Forest Loss in Year 2000 to 2012

In an effort to reduce the pressure on native forest as a source for raw materials and to ensure its continuous availability in the domestic timber industry as well as to overcome the country's deforestation issue, the Government is encouraging the development of large-scale commercial forest plantations. In line with this policy, the Cabinet, in March 2005 gave an important task to the Ministry of Plantation Industries and Commodities (MPIC) to pursue an aggressive program for the development of forest plantations in Malaysia. Under

this program, the Ministry has planned to develop 375,000 hectares of forest plantation at an annual planting rate of 25,000 hectares per year for the next 15 years. Once successfully implemented, every 25,000 hectares of land planted is expected to produce 5 million cubic meters of timber.

Moreover, the development is also in line with the National Forestry Policy by Forestry Department of Peninsular Malaysia where forest plantation activity is classified under production forest. In which, means for the supply in perpetuity at reasonable rates of all forms of forest produce which can be economically produced within the country and are required for agricultural, domestic and industrial purposes, as well as for export. Another aspect of the National Forestry Policy is to implement a planned programme of forest development through forest regeneration and rehabilitation operations in accordance with appropriate silvicultural practices, as well as the development of forest plantations of indigenous and exotic species to supplement timber supply from the natural forest.

Furthermore, forest plantation also promotes efficient harvesting and utilization within the production forest for maximum economic benefits from all form of forest produce and to stimulate the development of appropriate forest industries commensurate with the resource flow, especially in the production of more value-added finished and semi-finished products for local consumption and export, and to create employment opportunities. Therefore, the need for the development of forest plantation has long been recognized as an important step to supplement sustainable supply of timber from the natural forests in the country.

Forest plantation management is discussed to meet the deficit in timber supply, to reduce pressure on natural forests and to ensure better land use. Forest plantations have long been recognized as an essential part of the strategic development plan for the suitable management of forest resources in Malaysia. This strategy dates back to the beginning of the century, when efforts were made to ensure there will be sufficient timber supply and also preserved the ecology of the environment.

3.2 WOOD BASED INDUSTRY (*Industri Berasas Kayu* (IBK))

A total of 733 factories have been licensed under Wood Based Industry (IBK) in Perak Darul Ridzuan until 2019. Of that amount a total of 561 factories are operating while a total of 172 factories were not operating. Fractions number of IBK factories in Perak by District Forests up to 2019 are as shown in **Figure 3.2.1**.

BILANGAN KILANG (BERDAFTAR) MENGIKUT DAERAH HUTAN

JENIS LESEN	KINTA MANJUNG			LARUT MATANG			PERAK SELATAN			KUALA KANGSAR			HULU PERAK			JUMLAH KESELURUHAN		
	Lesen	Operasi	Tidak Operasi	Lesen	Operasi	Tidak Operasi	Lesen	Operasi	Tidak Operasi	Lesen	Operasi	Tidak Operasi	Lesen	Operasi	Tidak Operasi	Lesen	Operasi	Tidak Operasi
Kilang Papan	44	36	8	12	11	1	15	14	1	16	16	0	11	10	1	98	87	11
Kilang Papan Lapis/ Venir	5	4	1	0	0	0	5	5	0	3	3	0	3	3	0	16	15	1
Tanur Pengering	16	15	1	6	2	4	2	2	0	5	5	0	1	1	0	30	25	5
Loji Pengawet	23	21	2	6	2	4	2	2	0	3	3	0	1	1	0	35	29	6
Perabot / Kerja Kayu	207	144	63	72	25	47	45	41	4	38	32	6	10	5	5	372	247	125
Kayu Kumai	2	2	0	0	0	0	1	1	0	0	0	0	1	0	1	4	3	1
Cebis Kayu	4	4	0	1	1	0	0	0	0	3	3	0	2	2	0	10	10	0
Tepung Kayu	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	3	3	0
Tanur Arang	0	0	0	144	132	12	0	0	0	0	0	0	1	1	0	145	133	12
Kilang Buluh	2	0	2	0	0	0	11	4	7	0	0	0	1	1	0	14	5	9
Kilang Rotan	0	0	0	2	1	1	2	1	1	2	2	0	0	0	0	6	4	2
JUMLAH	**303**	**226**	**77**	**243**	**174**	**69**	**83**	**70**	**13**	**73**	**67**	**6**	**31**	**24**	**7**	**733**	**561**	**172**

Source: Perak Forestry Department Annual Report 2019

Figure 3.2.1 Wood Based Industry by Perak District Forest

Usage of Logs and Timber by the Wood Based Industry (IBK)

The consumption of timber by the Sawmill (*Kilang Papan*) was 386,569.60 cubic meters, with production 267,279.22 cubic meters (69%), consumption of timber by Plywood/Veneer Factory (*Kilang Papan Lapis/Venir*) is 147,662.59 cubic meters with production of 71,435.07 cubic meters (48%), while consumption timber to the Molding Factory (*Kilang Kayu Kumai*) was 11,161.90 cubic meters with a production of 10,657.25 cubic meters (95%). Further details on this matter are as set out in **Figure 3.2.2**.

BIL.	JENIS KILANG	PENGGUNAAN (M3)	PENGELUARAN (M3)	PERATUS (%)*
1.	Kilang Papan	386,569.60	267,279.22	69
2.	Kilang Papan Lapis / Venir	147,662.59	71,435.07	48
3.	Kilang Kayu Kumai	11,161.90	10,657.25	95
JUMLAH		**545,394.09**	**349,371.78**	**64**

*Pengeluaran Berbanding Penggunaan

Source: Perak Forestry Department Annual Report 2019

Figure 3.2.2 Usage of Logs and Timber

3.3 *PARASERIANTHES FALCATARIA* (*BATAI*) INDUSTRY IN MALAYSIA

There are some other benefits which may gain from the *Paraserianthes Falcataria* (*Batai*). Among of the indirect benefits of forest plantation are offers protection and improvement of soil conditions on the project; improves water infiltration, diminishing the risks of floods and enhancing the availability of water; while also increasing the habitat availability for flora and fauna. Furthermore, the establishment of forest plantation may also result on ameliorate the local climate, decrease the temperature and increase humidity.

Hence, with the development of the project by Liput Raya Sdn. Bhd., it is believed that among the beneficial aspects of the project would include the following:

a) Overview in an effort to reduce pressure on native forest as a source for raw materials and to ensure its continuous availability for the domestic timber industry, the Government is encouraging the development of large-scale commercial *Paraserianthes falcataria* (*Batai*) with higher productivity would reduce pressure on the Forest Reserve.
b) In line with this policy, the Cabinet, in March 2005 gave an important task to the Ministry of Primary Industries (MPI) to pursue an aggressive programme for the development of forest plantations in Malaysia.

c) To promote establishment of forest plantations for future sustainable timber supply as well as to increase the investment in the timber industry.
d) The beneficiaries from *Paraserianthes falcataria* (*Batai*) plantations will not only be the obvious downstream woodworking mills that produce indoor and outdoor furniture, but also mills that manufacture mouldings, doors and flooring.
e) To enhance the sustainable development of *Paraserianthes falcataria* (*Batai*) plantations in Malaysia, especially in Perak.
f) To increase the production of raw materials for the timber industry especially for Perak State and to increase the export volume to Malaysia. The project will provide job opportunities among the communities in Mukim Slim, District of Muallim.
g) The Project will stimulate socio economic growth in the district as a result of the improved in purchasing power and livelihood of local people in the district (indirect impact).

According to the (Orwa et.al, 2009), there are several products and services that can be produced from *Paraserianthes falcataria*. **Table 3.3.1** shows the beneficial of *Paraserianthes falcataria* plantation while **Table 3.3.2** shows the beneficial of product from *Paraserianthes falcataria*.

Table 3.3.1: Beneficial of *Paraserianthes falcataria* Plantation

Function	Beneficial of *Paraserianthes falcataria* Plantation
Erosion control	Pure stands give a good protective cover to prevent erosion on slopes and are recommended in the Philippines for this purpose on catchment areas sheltered from typhoons.
Shade or shelter	The plant is extensively planted in Southeast Asia as a shade and nurse crop for coffee, cocoa, tea, other crops and young timber plantations. Its fast growth and good shading properties outweigh the disadvantages of its sensitivity to strong winds and its relatively short life.
Reclamation	Plantations of P. falcataria have been established even on tailings left after tin mining. It is planted extensively for reforestation and afforestation of denuded and eroding land.
Nitrogen fixing	Nodulates and fixes atmospheric nitrogen. Soil improver: The natural drop of leaves and small branches contributes nitrogen, organic matter and minerals to upper layers of soil. The plant's extensive root system further improves soil conditions by breaking up soils to provide channels for drainage and aeration.

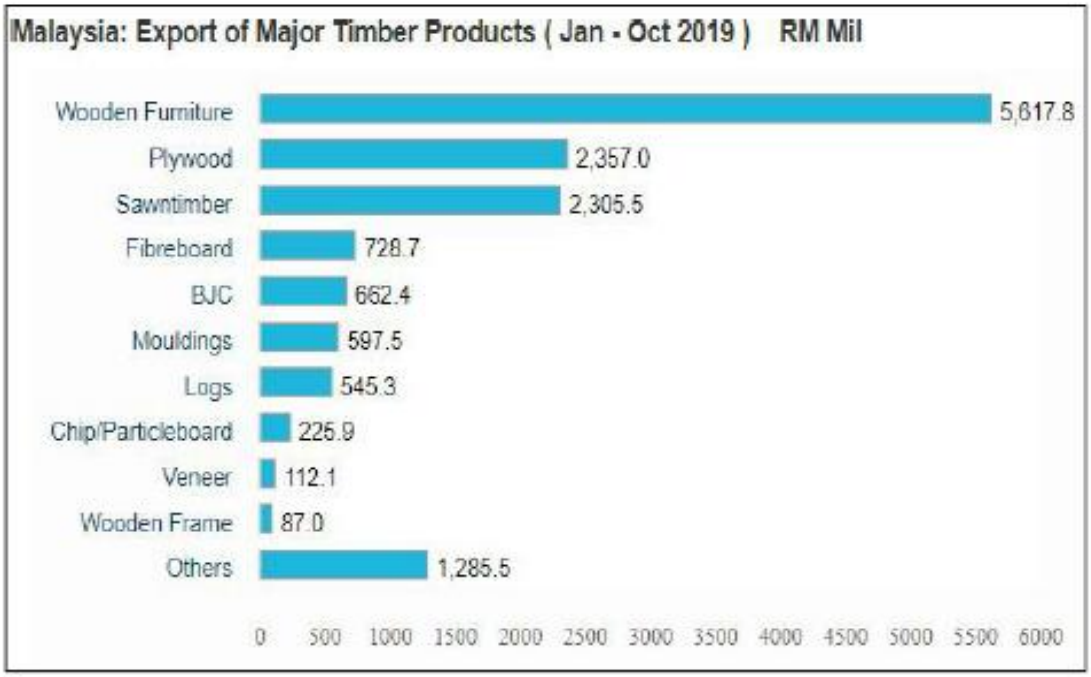
Table 3.3.2 : Beneficial of Product from *Paraserianthes falcataria*

Product	Beneficial of Product from *Paraserianthes falcataria*
Fodder	An activated tree metabolism at the beginning of the wet season synthesizes a complex polysaccharide that increases palatability for cattle of the bark. Leaves are used to feed chickens and goats.
Fuel	Widely used for fuelwood and charcoal production despite its low density and energy value.
Fibre	P. falcataria trees coppice well, an advantage for pulpwood production. The wood is suitable for pulping and papermaking. It can be used to produce good-quality pulp by mechanical, semi-chemical or chemical processes. Because of its light colour, only a little bleaching is required to achieve good white paper. The neutral, semi-chemical process produces pulp with excellent strength properties. It has also been used for the manufacture of viscose rayon.
Timber	The comparatively soft timber is suitable for general utility purposes, such as light construction, furniture, cabinet work, lightweight packing materials and pallets, and chopsticks. Because the wood is easy to cut, P. falcataria is also suitable for wooden shoes, musical instruments, toys and novelties, forms and general turnery. P. falcataria is an important source of veneer and plywood and is very suitable for the manufacture of particleboard, wood wool board and hardboard and has recently been used for blockboard.
Tannin or dyestuff	The bark of P. falcataria has tanning properties

3.4 *PARASERIANTHES FALCATARIA* (*BATAI*) MARKET IN MALAYSIA

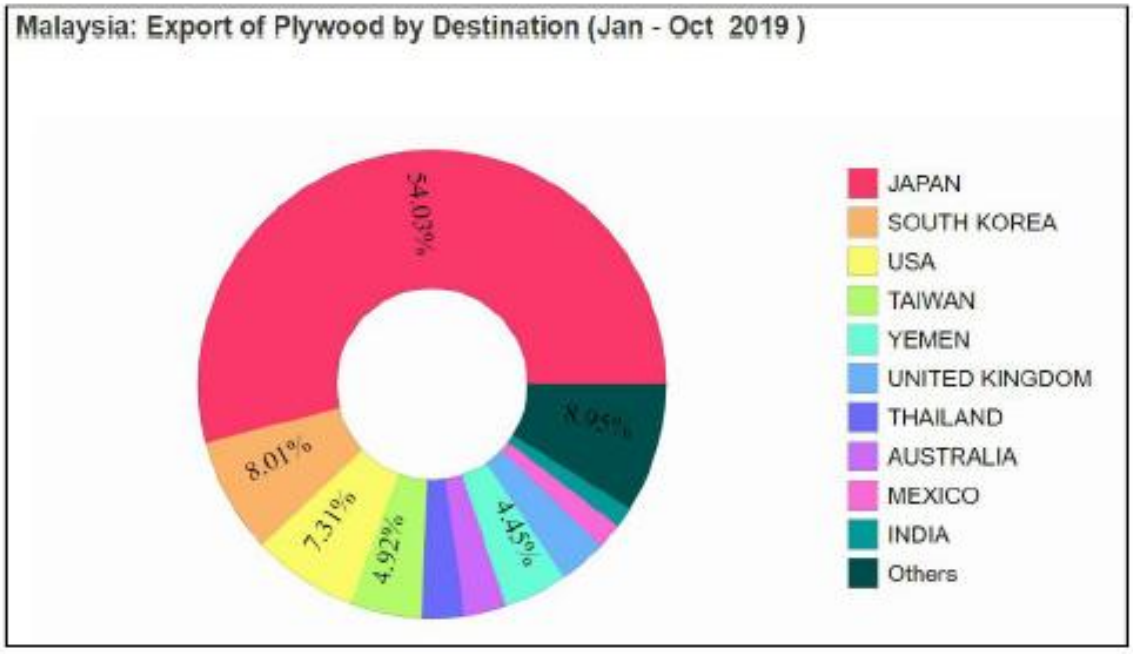
Paraserianthes falcataria wood is generally lightweight and soft to moderately soft. The colour of the heartwood ranges from whitish to a pale pinkishbrown or a light-yellowish- to reddishbrown; the heartwood of the younger trees is not clearly demarcated from the sapwood (pale coloured), but it is more distinct in older trees (Soerianegara and Lemmens 1993). The wood density is between 230 and 500 kg/m at 12–15% moisture content. The grain of the wood is straight or interlocked, and the texture is moderately coarse but even. The wood is not durable when used outside; it is often highly vulnerable to various kinds of insects and fungal attacks. Graveyard tests in Indonesia showed an average service life in contact with the ground of 0.5 – 2.1 years.

However, the wood treated with preservatives can have an average life in contact 3 with the ground of 15 years in tropical conditions (Soerianegara and Lemmens 1993) upper layers of soil. The plant's extensive root system further improves soil conditions by breaking up soils to provide channels for drainage and aeration. *P. falcataria* is one of the important commercial timber species used for both the pulp and paper industry and furniture. The wood is also suitable for general purposes such as light construction (e.g. rafters, panelling, interior trim, furniture and cabinetwork), lightweight packing materials (e.g. packages, boxes, cigar and cigarette boxes, crates, tea chests and pallets), matches, wooden shoes, musical instruments, toys, novelties and general turnery. The wood is an important source of lightweight veneer and plywood and is very suitable for the manufacture of light- and medium-density particleboard, wood– wool board and hardboard as well as block-board. The wood is extensively used for the manufacture of rayon and for supplying pulp for the manufacture of paper (Soerianegara and Lemmens 1993). **Figure 3.4.1** shows the major export timber products which is related to *Paraserianthes falcataria* wood in Malaysia from January to October 2019. **Figure 3.4.2** shows the export of plywood by destination on January - October 2019.



Sources: Malaysian Timber Industry Board, (MTIB)

Figure 3.4.1: Major Export of Timber Products (Jan – Oct 2019)



Sources: Malaysian Timber Industry Board, (MTIB)

Figure 3.4.2: Export of Plywood by Destination (Jan – Oct 2019)