

CHAPTER 3: STATEMENT OF NEED

3.1 INTRODUCTION

In 2015, the agricultural land in Johor State was 1,283,994 ha (Johor State Department of Agriculture, 2016). Of this, about 729,387 hectares are oil palm plantations. Based on the growth trend of agricultural land from 2000 to 2015, it is projected that the demand for agricultural land in 2030 will be 1,086,808 ha, with oil palm still occupying the largest cultivated area at 76.3% and coconut is about 0.36%. In the Johor State 2030 Target Plan, S13.1, Johor has targeted oil palm production of 8 MT/ha for year 2030 and coconut is 13 MT/ha (RSNJ, 2030).

With reference to RMK-12, a National Action Plan for Food Security will be developed and completed by the end of 2021. The action plan should identify initiatives that strengthen the four pillars of food security, namely availability, access, consumption and stability. Among other things, this action plan aims to reduce dependence on food imports and the production of sustainable food.

In RMK-12, Strategy A8 noted that the potential of the biomass industry has been harnessed to generate higher exports and contribute to the reduction of greenhouse gas emissions. On average, an estimated 80 million tonnes of dry biomass are produced annually from oil palm plantations.

Therefore, the proposed project is required to achieve the target plan in the RSN Johor 2030 as well as the planning in the RMK-12. In addition, the proposed project will create economic benefits for the state and the nation.

3.2 OIL PALM PLANTATION

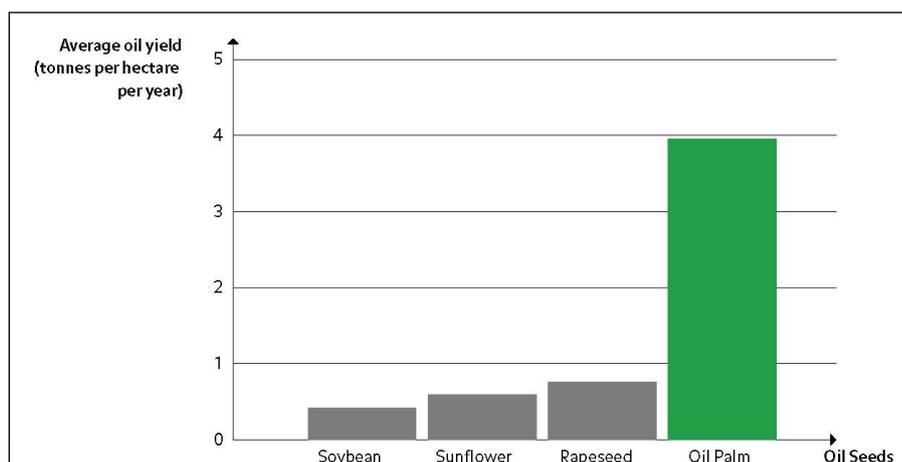
The proposed Project arises in principal due to the need in new oil palm plantations area for the economic growth in Malaysia. The oil palm industry forms the economic backbone of Malaysia and continues to face new challenges in the face of globalization.

Malaysia is the second largest country for oil palm cultivation after Indonesia, producing annually 19 million out of 57 million tonnes globally. The increase in palm oil-based products in Malaysia and most part of the world makes the development

of oil palm plantation as a viable proposal in order to support the increasing demand. Apart from that, the alternative uses of palm oil for diesel, vitamin and other ole-chemical products open up the market considerably.

Palm oil is a steady source of affordable edible and non-edible oils, bio-composites, nutritional and other pharmaceutical products. About 80% of palm oil products are edible while 20 % are for non-edible use such as chemical manufacturing. For instance, currently, palm oil contributes for about 5 % of the world’s bio-diesel production. Production of palm oil has increased significantly due to increasing global demand with major importers being India, China and the European Union. The demand for edible vegetable oils was expected to double from present consumption by 2050. Assuming that all projected expansion of land under palm oil production is realized in major producing counties, the area under harvest could increase by 140 % from 2007 to 2050.

This increase could be greater with the anticipated development of the palm oil industry as a major source of global biofuels. The phenomenal growth in global production and demand for palm oil is attributable to three factors: the relatively lower cost of production compared to other major cash crops; the health benefits of edible vegetable oils rather than alternatives from animal products; and the wide variety, uses, versatility and applications of palm oil products and derivatives, ranging from domestic, industrial, medical and agricultural. Oil palm is the most efficient oil seed crop in the world. One hectare of oil palm plantation is able to produce up to ten times more oil than other leading oilseed crops as shown in **Figure 3-1**.



(Source: Oil World, 2013)

Figure 3-1: Oil Palm Efficiency vs Other Major Oil Crops

In Malaysia, oil palm plantations make up 77% of agricultural land or about 15% of total land area (MPOB, 2012). Malaysian palm oil exploitation began in 1917, but had steeply grown since 1961 when the Federal Land Development Authority (FELDA) allocated 375 hectares specifically for the crop. At the same time, the government encouraged a policy that replaced rubber fields by palm oil plantations in rehabilitated or newly opened area with the dual aim of diversifying agricultural development and also enhancing the commercialization of the sector.

As of December 2020, oil palm planted area in Johor totaled 740,828 ha which is equivalent to 12.6 % of total oil palm plantation in Malaysia (Ministry of Plantation Industries & Commodities, (MPIC) 2020). Johor has the second highest percentage of planted area in Peninsular Malaysia (**Table 3-1**).

Malaysia currently accounts for 28 % of world palm oil production and 33% of world exports. If taken into account of other oils & fats produced in the country, Malaysia accounts for 9.5% and 19.7% of the world's total production and exports of oils and fats. Being one of the biggest producers and exporters of palm oil and palm oil products, Malaysia has an important role to play in fulfilling the growing global need for oils and fats sustainably (MPOB, 2020).

Table 3-1: Oil Palm planted area as of December 2020 (Hectares)

State	Mature (ha)	%	Immature (ha)	%	Total (ha)	%
Johor	688,291	92.9	52,537	7.1	740,828	12.6
Kedah	80,210	89.3	9,572	10.7	89,782	1.5
Kelantan	131,768	78.6	35,831	21.4	167,599	2.9
Melaka	51,672	91.7	4,689	8.3	56,361	1.0
Negeri Sembilan	173,490	91.1	16,972	8.9	190,462	3.2
Pahang	702,163	89.8	80,084	10.2	782,247	13.3
Perak	352,557	90.0	39,211	10.0	391,768	6.7
Perlis	689	99.3	5	0.7	694	0.0
Pulau Pinang	12,540	97.7	289	2.3	12,829	0.2
Selangor	113,911	90.0	12,614	10.0	126,525	2.2
Terengganu	148,244	83.0	30,384	17.0	178,628	3.0
Peninsular Malaysia	2,455,535	89.7	282,188	10.3	2,737,723	46.7
Sabah	1,344,608	87.1	198,446	12.9	1,543,054	26.3
Sarawak	1,431,600	90.3	152,920	9.7	1,584,520	27.0
Sabah & Sarawak	2,776,208	88.8	351,366	11.2	3,127,574	53.3
Malaysia	5,231,743	89.2	633,554	10.8	5,865,297	100.0

(Source: Ministry of Plantation Industries & Commodities, (MPIC) 2020).

Based on the **Table 3-2**, Agriculture sector contribute 7.40% toward total National GDP amounting of RM99,278 out of RM1,342,027. Oil palm sector hold a share of 48.67% from the total of agriculture to GDP. Palm oil to GDP at constant Price 2015 in 2020 decrease by 3.4% from RM 48,313 million from RM50,012 million in 2019.

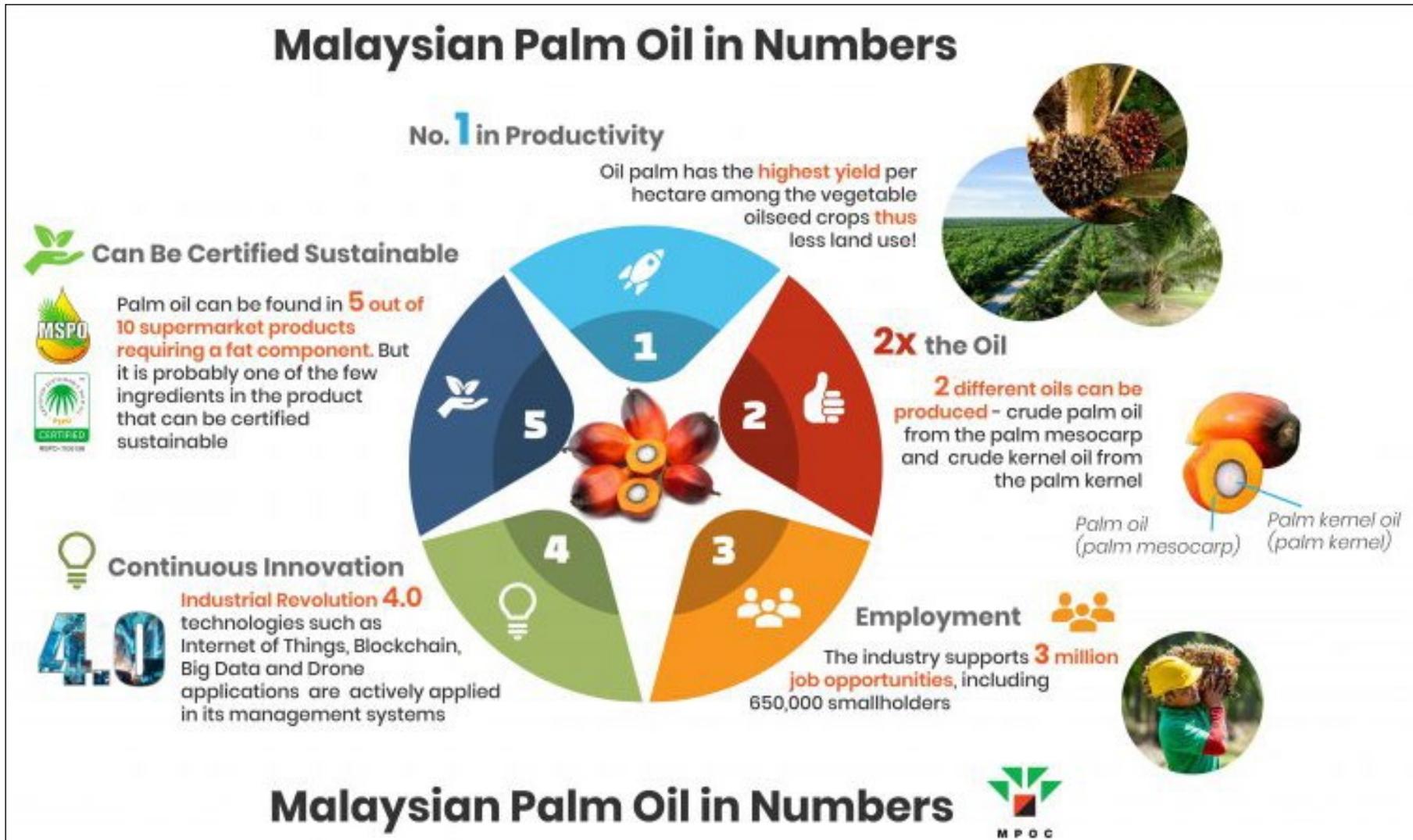
As Malaysia has an important role in fulfilling the growing global need for oils and fats sustainably, the proposed project will benefit for Malaysian's economy. The proposed project will also contribute a positive impact to the socio economic to the local communities in providing employment opportunities and source of income to Johor State and Malaysia in general.

Table 3-2: Gross Domestic Products of Agricommodity-Based Activities at Constant Prices 2015

Sector	2018 (RM Million)	2019 (RM Million)	2020 (RM Million)	Change
Total National GDP	1,362,815	1,421,454	1,342,027	-5.6
Agriculture	99,579	101,549	99,278	-2.2
Manufacturing	304,843	316,320	308,053	-2.6
Upstream-based activities	50,026	50,229	46,826	-6.8
Oil Palm	37,664	38,239	36,869	-3.6
Timber and Forestry	6,986	6,382	5,182	-18.8
Rubber	2,829	3,002	2,444	-18.6
Cocoa	6	7	5	-33.5
Pepper	2,541	2,598	2,326	-10.5
Downstream-based activities	35,116	36,258	38,295	5.6
Oil Palm	12,009	11,772	11,444	2.8
Timber	10,567	11,105	9,979	-10.1
Rubber	7,419	7,933	12,084	-52.3
Cocoa	1,435	1,548	1,634	5.5
Tobacco	3,686	3,899	3,153	-19.1
Total GDP of Agricommodity Sector	85,142	86,487	85,121	-1.6

(Source: Ministry of Plantation Industries & Commodities (MPIC) 2020)

Below (**Figure 3-2**) is few facts and figures that about healthy Malaysian sustainable palm oil, which is a key global player in the oils and fats market. Palm oil is a fruit oil (just as olive oil is a fruit oil) that is widely used in food and non-food products worldwide. It comes from the oil palm fruit, which is unique as an oil-bearing crop since it produces two different oils: palm oil from the flesh, and palm kernel oil from the seed.



(Source: <https://mpoc.org.my/malaysian-palm-oil-in-numbers>)

Figure 3-2: Benefit from Palm Oil Industries

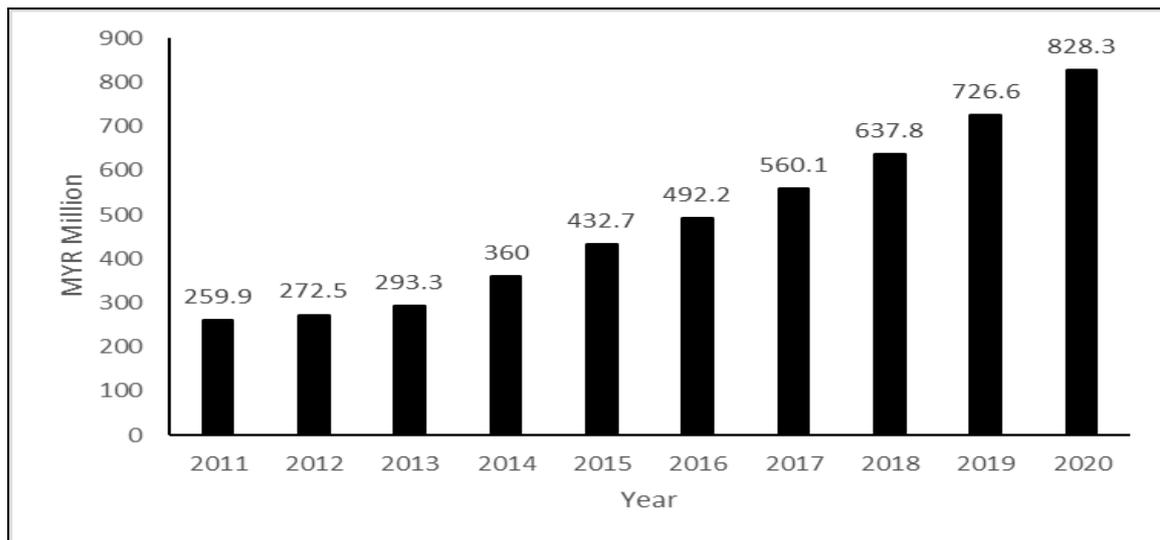
3.3 COCONUT PALM PLANTATION

Coconut (*Cocos nucifera* L.) is well-known for its various uses from our daily meals to our cosmetic routines. In contrast to oil palm, coconut palm highlights on its multi-utility value.

Coconuts are Malaysia's fourth largest industrial crop behind oil palm, rubber and rice with most of the plantations found in Sabah and Sarawak. According to a report by the Malaysian Agricultural Research and Development Institute (MARDI), Malaysia ranked the 12th largest producer of coconut in the world with a production capacity of 538,685 mt in 2018.

Due to rising health consciousness, an increasing number of people are aware of the health benefits of consuming coconut-related products, especially as a substitute for dairy products. The production value of this industry is about RM603 million with a total planted area of 85,182 ha. The total consumption of coconut in Malaysia is 745,657.1 mt a year. Because of the over consumption, Malaysia needs to import the coconut mainly from Indonesia and Philippines to overcome the supply deficit at 250,126.0 mt per year (MARDI, 2020). Department of Statistic Malaysia (DOSM), 2020 reported that Per Capita Consumption (PCC) of coconut was the highest with consumption of 22.7 kilograms per year followed by durian (10.7 kg / year) and banana (9.5 kg / year).

According to research and analysis from Ipsos Business Consulting, **Figure 3-3** sets forth the market value of the coconut and related products production industry in Malaysia from 2011 to 2015 and forecast from 2016 to 2020.



(Source: Ipsos Business Consulting Research and Analysis)

Figure 3-3: Market Value of the Coconut and Related Products Production Industry in Malaysia from 2011 to 2015 and forecast from 2016 to 2020

Malaysia's Third Industrial Master Plan 2006-2020 aims to establish Malaysia as a leading supplier of HALAL products and services. The Halal Industry Development Corporation was established in 2006 to spearhead and coordinate the overall growth of the HALAL industry. Muslims generally only consume products which are certified Halal. Given that Malaysia is an Islamic country and the government supports the development of the Halal food production industry, Malaysian made products are suitable to be sold in Islamic countries. Such government policy initiatives are expected to continue to expand the export market for Malaysian coconut and related products manufacturers, especially to the Middle East and other countries with Islamic populations. In general, countries with predominately Islamic populations tend to have local cuisines which commonly use coconut and related products.

Malaysia per capita consumption of coconut is at 22.7 kg/year which is the highest among eleven main crops. According to projections under the 11th MP, the demand for coconut by 2020 is expected to be 1.2 billion a year. Among the numerous coconut varieties, Malaysia cultivates the Malayan Tall as the predominant variety (92.2%). Others include the 4.3% of hybrid MATAG, 1.7% of each MAWA and Pandan (1.7%) and the Malayan Dwarfs constitutes a mere 0.2% (Man & Shah, 2020).

Table 3-3 presents the distribution of the planted area of coconut in Malaysia and the production volume by the state in 2019. Selangor has the largest planted area in Peninsular Malaysia with 15,075.7 ha, followed by Johor with 10,762.9 ha, Kelantan 9,978.7 ha and Perak 7594.1 ha. If compared with Sabah, Sarawak and Labuan Federal Territory, Sabah accounted as largest planted area with 17,041 ha followed by Sarawak with 12,0401.1 ha. Sabah also has the largest harvested area with 15,810.6 ha meanwhile Selangor is the largest in the peninsular Malaysia. From the data available for 2019, the coconut total planted area in Malaysia is 86,466.3 ha.

In term of production, Selangor is the highest producer with 99,760.7 tonnes in Peninsular Malaysia followed by Johor with 99,375.1 tonnes and Perak with 78,644.3 tonnes. The total production of coconut in Sabah is only at 55,337.1 tonnes. Although Sabah and Sarawak have the largest planted area, the productivity rate is low because of the soil conditions and topography that are less ideal for coconut cultivation.

Historically, the total planted area of coconut in Malaysia from 2013 to 2018 is declining from 87,974 amounted at RM562 million to 84,022 with RM479 million production value in 2018 (**Table 3-4**). The main reasons for the decline in coconut plantations were the change of cultivated areas from coconut to palm oil, rubber or other profitable crops, less youth involvement and due to land use for other development purposes such as property development (Nor, et al., 2020). From the data available in 2018, most of the coconut planted area are owned by smallholdings with 78,960 ha and 458,623 tonnes of production. Estates planted area only accounted for 78,960 ha with 79,960 tonnes of production.

Table 3-5 shows the average productivity of four coconut varieties, namely Malayan Tall, Malayan Dwarf, MATAG, and Pandan. Of the varieties, Malayan Tall has the lowest productivity with only 6,000-8,000 coconut per ha, a massive comparison with the other three varieties. Both Malayan Dwarf and Pandan varieties share a similar productivity rate with 27,000-30,000 coconuts.

Table 3-3: Planted Area and Production of Industrial Crops by State, Malaysia, 2019

Negeri State	Kelapa Coconut			Kopi Coffee			Nipah Nipa Palm		
	Luas Bertanam (ha)	Luas Berhasil (ha)	Pengeluaran (Mt)	Luas Bertanam (ha)	Luas Berhasil (ha)	Pengeluaran (Mt)	Luas Bertanam (ha)	Luas Berhasil (ha)	Pengeluaran (Mt)
	Planted Area(ha)	Harvested Area (ha)	Production (Tonnes)	Planted Area(ha)	Harvested Area (ha)	Production (Tonnes)	Planted Area(ha)	Harvested Area (ha)	Production (Tonnes)
JOHOR	10,762.9	9,885.4	99,375.1	451.1	341.5	2,319.6	-	-	-
KEDAH	995.7	920.5	5,131.3	0.9	0.9	3.4	4.2	4.2	4.5
KELANTAN	9,978.7	8,735.0	77,807.1	-	-	-	-	-	-
MELAKA	1,530.3	1,387.5	9,195.8	-	-	-	-	-	-
NEGERI SEMBILAN	1,290.3	1,174.6	12,768.3	-	-	-	-	-	-
PAHANG	4,205.5	3,765.2	24,263.2	2.4	0.5	7.5	-	-	-
PERAK	7,594.1	7,404.9	78,644.3	-	-	-	-	-	-
PERLIS	429.6	400.6	3,405.0	-	-	-	-	-	-
PULAU PINANG	40.2	37.8	263.1	-	-	-	-	-	-
SELANGOR	15,075.7	14,575.1	99,760.7	-	-	-	-	-	-
TERENGGANU	4,991.9	3,871.3	16,144.2	-	-	-	-	-	-
SEM. MALAYSIA <i>Peninsular Malaysia</i>	56,895.0	52,157.7	426,758.1	454.4	342.9	2,330.5	4.2	4.2	4.5
SABAH	17,041.0	15,810.6	55,337.1	1,473.9	1,205.1	1,205.1	-	-	-
SARAWAK	12,401.1	8,712.9	54,023.3	186.2	28.5	22.9	-	-	-
WP LABUAN	129.3	93.2	487.2	-	-	-	-	-	-
MALAYSIA	86,466.3	76,774.5	536,605.7	2,114.5	1,576.5	3,558.5	4.2	4.2	4.5

(Source: Department of Agriculture, 2019)

Table 3-4: Main Information of Coconut, 2013 – 2018

PERKARA Item	2013	2014	2015	2016	2017	2018
JUMLAH						
<i>Total</i>						
Keluasan Bertanam (Ha) <i>Planted Area (Ha)</i>	87,974	88,092	82,001	84,609	83,250	84,022
Pengeluaran (Tan Metrik) <i>Production (Tonne)</i>	624,727	595,097	505,614	504,773	517,589	495,531
Nilai Pengeluaran (RM '000) ¹ <i>Production Value (RM '000)¹</i>	562,254.30	535,586.95	556,175.16	555,249.78	579,699.18	479,013.44
ESTET						
<i>Estate</i>						
Keluasan Bertanam (Ha) <i>Planted Area (Ha)</i>	4,343	4,889	4,493	5,115	5,074	5,062
Pengeluaran (Tan Metrik) <i>Production (Tonne)</i>	107,308	102,977	80,587	78,544	72,980	36,908
KEBUN KECIL						
<i>Smallholdings</i>						
Keluasan Bertanam (Ha) <i>Planted Area (Ha)</i>	83,631	83,203	77,508	79,494	78,176	78,960
Pengeluaran (Tan Metrik) <i>Production (Tonne)</i>	517,419	492,120	425,027	426,229	444,608	458,623

(Source: Ministry of Agriculture and Agro-based Industry Malaysia, 2018)

Table 3-5: Average Productivity for Different Variety of Coconut

Variety	Productivity (Number/Ha)
Malayan Tall	6,000-8,000
Malayan Dwarf	27,000-30,000
MATAG	20,000-25,000
Pandan	27,000-30,000

(Source: Man & Shah, 2020)

Table 3-6 below shows the potential production for different variety of coconuts in Malaysia. From the table, Pandan, Malayan Yellow Dwarf (MYD) and Malayan Red Dwarf (MRD) are the highest potential production with 40,800 of coconuts per ha of planted area per year. Three of these variety is a dwarf type of coconut compared to the other. **Table 3-7** shows the differences between Pandan coconut and Matag Coconut. The Pandan coconut can produce average of 150 coconut per tree over the year while Matag can only produce average of 140 coconut per tree over the year. For the planted area, 272 Pandan coconut tree can be planted

for a hectare meanwhile only 180 Matag coconut tree can be planted per hectare. That makes the different of production is larger for both type of tree with 40,800 pandan coconut per year and 25,000 Matag coconut per year.

Table 3-6: Potential Production for Different Type of Coconuts

Vareiti	Jenis	Potensi Hasil (Biji/Ha/Tahun)
Malayan Tall	Tinggi	8,000
Tagnanan Tall	Tinggi	10,000
Malayan Red Dwarf (MRD)	Rendah	40,800
Malayan Yellow Dwarf (MYD)	Rendah	40,800
Matag (Hibrid)	Tinggi	25,000
Pandan	Rendah	40,800
MAWA (Hibrid)	Tinggi	25,000
West African Tall (WAT)	Tinggi	10,000
Rennel Tall	Tinggi	10,000

(Source: Haari, 2019)

Table 3-7: Differences of Pandan and Matag Coconut

	Pandan	Matag
Average production/tree/year	150	140
Brix %	6-7	4.09
Average weight	0.32 kg	0.5 kg
Average flesh thickness	11.22 mm	12.40 mm
No of planted tree	272/ha	180/ha
Production/year/ha	40,800	25,000

(Source: Haari, 2019)

The agriculture sector contributed 7.1 per cent (RM101.5 billion) to the Gross Domestic Product (GDP) in 2019. It has been forecasted to be an important commodity that will contribute to the country's gross domestic product (GDP). the coconut industry is grown in Malaysia for both fresh produce and downstream products such as coconut powder, coconut milk, charcoal, activated carbon, coconut oil and coco peat fiber. Malaysia ranked the 12th largest producer of coconut in the world with a production capacity of 538,685 mt in 2018 (Department of Statistics, 2019).

Malaysia export of coconut-based product in 2019 amounted at \$5.4 million. Compared with 2014, the export value had a huge decline with \$9.7 million amounted at \$15.1 million in 2014. **Table 3-8** stated that coconut processing in Malaysia has low supply of raw materials which leads to low production of coconut. These include coconut oil and non-edible material such as wood, shell, and husks materials. To consistently meet the demand of coconut production, Malaysia must increasingly import raw supply and reduce its exports for coconut product due to lack of material supply.

Malaysia export most of the coconut-based products to United Kingdom, Pakistan, and Singapore. In 2019, Malaysia export total value of \$2.3 million and had been the highest importing country for coconut-based product since 2014 though the export value had been decreasing from \$6.0 million in 2018. Export of coconut-based product to Pakistan increase from \$700.4 thousand in 2018 to \$1.6 million in 2019.

Table 3-8: Malaysia Export Value of Coconut Product, 2014-2019

Exporter	Importer	Export Value (USD)					
		2014	2015	2016	2017	2018	2019
Malaysia	World	\$15.1M	\$12.5M	\$13.0M	\$9.3M	\$7.7M	\$5.4M
Malaysia	United Kingdom	\$6.0M	\$5.6M	\$4.2M	\$4.0M	\$5.4M	\$2.3M
Malaysia	Pakistan	-	\$52.5K	\$11.1K	\$288.9K	\$700.4K	\$1.6M
Malaysia	Singapore	\$1.0M	\$724.9K	\$790.7K	\$1.2M	\$1.0M	\$916.1K
Malaysia	China	\$35.5K	\$152.0K	\$16.7K	\$137.2K	\$58.7K	\$216.6K
Malaysia	Netherlands	\$697.2K	\$73.3K	\$7.2K	\$205.1K	\$243.8K	\$186.5K
Malaysia	United Arab Emirates	\$134.0	-	\$39.6K	-	\$45.6K	\$69.9K
Malaysia	Saudi Arabia	\$296.4K	\$224.6K	\$37.9K	\$140.8K	-	\$50.0K
Malaysia	Canada	\$8.1K	\$23.4K	\$24.6K	\$38.7K	\$32.8K	\$36.5K
Malaysia	Brunei	\$2.1K	\$1.3K	\$5.6K	\$7.9K	\$683.0	\$15.1K
Malaysia	Indonesia	\$269.0	\$622.0	\$3.5K	\$50.0	\$54.0	\$3.3K

(Source: Tridge, 2019)

The world import of coconut-based product to Malaysia reached the highest valued at \$47.9 million in 2019 (**Table 3-9**). The import value increase from \$12 million in 2014 to \$47.9 million in 2019. From the amount, Indonesia contributes 90% of the import valued at \$43.2 million in 2019. Followed by Singapore with \$2.2 million, India with \$2.0 million and Thailand with \$424.4 thousand. As mentioned in previous paragraph, to consistently meet the demand of coconut production, Malaysia must increasingly import raw supply and reduce its exports for coconut product due to lack of material supply.

Table 3-9: Malaysia Export Value of Coconut Product, 2014-2019

Exporter	Importer	Import Value (USD)					
		2014	2015	2016	2017	2018	2019
World	Malaysia	\$12.0M	\$28.8M	\$19.6M	\$29.7M	\$45.1M	\$47.9M
Indonesia	Malaysia	\$10.1M	\$27.4M	\$18.1M	\$28.5M	\$40.8M	\$43.2M
Singapore	Malaysia	\$810.2K	\$39.0	\$35.0	\$146.0	\$2.1M	\$2.2M
India	Malaysia	\$1.2K	\$7.4K	\$11.2K	\$268.5K	\$577.1K	\$2.0M
Thailand	Malaysia	\$1.1M	\$706.0K	\$417.0K	\$181.3K	\$292.4K	\$424.4K
Vietnam	Malaysia	-	\$667.2K	\$1.1M	\$628.9K	\$125.7K	\$73.4K
Philippines	Malaysia	-	-	-	-	-	\$5.5K
United States	Malaysia	-	\$14.3K	\$3.1K	-	\$197.0	\$4.1K
Australia	Malaysia	-	-	\$141.0	-	\$217.0	\$67.0

(Source: Tridge, 2019)