

Thailand's oil palm industry in the period 2017-2019 is expected to see ongoing growth as a result of higher domestic demand for palm oil, especially for using as raw materials for biodiesel industry. Crude palm oil prices are expected to stabilize, close to the previous year.

Overview

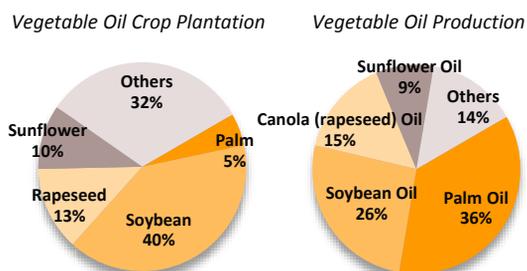
Of all oil-bearing crops grown globally, **oil palm is, in terms of its oil yield, the most productive^{1/}** and as such has more potential than alternatives such as coconut, olive, cotton, peanut, soy, sunflower, and rapeseed. The yields of oil production per rai from oil palm are 6-10 times more than those of other oil-bearing crops. As a result of its considerable output, **although oil palm accounts for only 5% of the area under cultivation, palm oil production is as much as 36% of all vegetable oils globally.**

The world's major oil palm producing region is ASEAN, with **Indonesia and Malaysia being the largest producers in the region.** They have combined output of 52.5 million tonnes, or 85% of world production and more than 90% of all exports. **As a result of their control of export markets, these two countries are able to dictate trends in prices for palm oil on global exchanges.**

Over the past 5 years, trade in crude palm oil on world markets has grown by 5.1% p.a., supported by expanding demand for foodstuffs and for alternative energy fuels. **The most important consumers are India, the EU, and China, which together purchase around half of all imports.** Indonesia in particular has seen considerable expansion in supply for more than a decade now (although a portion of this is Malaysian-backed investment). As a result, **Indonesia accounts for 52.2% of world exports, with Malaysian exports totaling another 37.9%.**

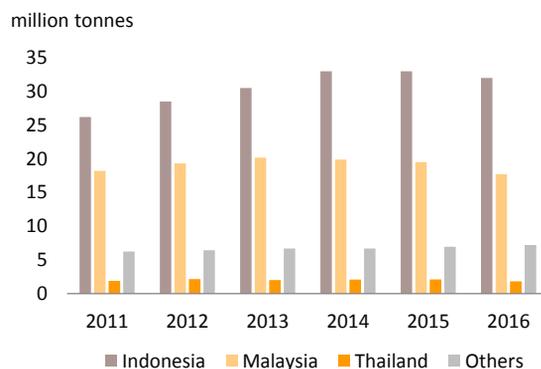
Thailand sits in third place in the global rankings in crude palm oil production, behind these two powerhouses, with an annual output of approximately 2 million tonnes/p.a., or 1.2% of global output. 85% of Thai oil palm plantations and crude palm oil extraction mills are in the South of the country^{2/}. However, during the period 2008-2012, oil palm plantations expanded in the North, Northeast and Central regions as a consequence of government support for oil palm production as part of its plan for developing alternative energy supplies. By 2016, oil palm plantation areas totaled of 4.7 million rai, producing an annual total of 11.2 million tonnes of oil palm^{3/}.

Figure 1: Share of World Vegetable Oil Plantation and Production



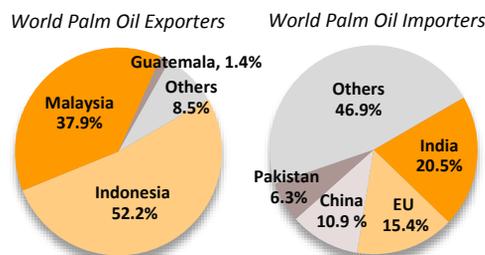
Source : LMC International.

Figure 2: World Palm Oil Producers



Source : U.S. Department of Agriculture (USDA)

Figure 3: World Palm Oil Market (2015/16)



Source : U.S. Department of Agriculture (USDA)

1/ Oil production per rai of oil-bearing crops are: oil palm (crude palm oil): 512 kilos/rai; oil palm (from palm kernel oil): 73 kg/rai; canola (rapeseed): 89 kg/rai; sunflower seed: 81 kg/rai; coconut: 54 kg/rai; soybean: 52 kg/rai; and peanut: 51 kg/rai.

2/ Generally, crude palm oil extraction mills are located close to raw material site since the palm needs to be processed within 24 hours of harvesting to guarantee high-quality oil.

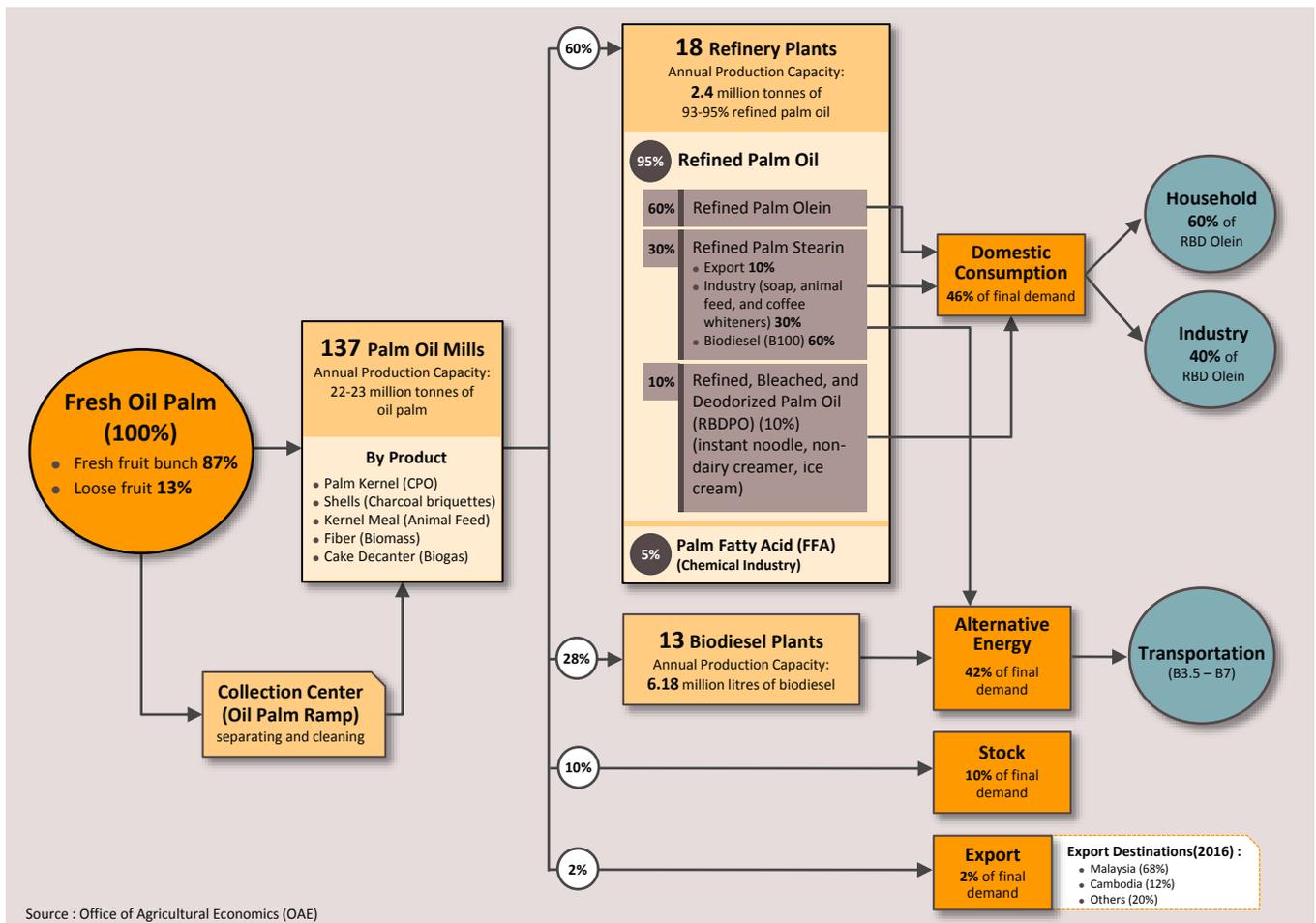
3/ 5.88 kg of oil palm fresh fruit bunch is required to produce 1 kg of crude palm oil and 1.48 kg of crude palm oil is needed to obtain 1 kg of refined palm oil.

Nevertheless, **problems exist with the sector. The increase in production at the national level has been achieved by devoting a greater area of land to oil palm cultivation, rather than increasing yields per rai, which have risen only slightly.** This is because the variety of palm which tend to be grown in Thailand itself has relatively low yields of between 14-17% oil, compared to those grown in Indonesia and Malaysia, which achieve rates of over 20%^{4/}. In addition, Thai oil palm cultivation tend to be centered around small, independent farmers producing oil palm on plantations with an average size of only 20-25 rai. This compares unfavorably to Malaysian and Indonesia operators; 80% of plantations in these countries are over 200 rai and this puts Thai operators at a significant disadvantage in terms of their efficient management, the selection of palm seeds, preservation of fresh palm, harvesting (premature harvesting reduce oil extraction yield), looking after stocks, and selling on to buyers, with stock possibly passing through middlemen or being left in collection centers or oil palm ramp (since yields are relatively low, it may not be cost-efficient to send the oil palm directly to crude palm oil extraction mills) and for these reasons, the cost of production of Thai palm oil is higher than that of Indonesian and Malaysian suppliers.

The cost disadvantages which Thai producers thus face has prompted Thai governments to intervene in the market and to establish the Thailand Oil Palm Board (OPB). This is responsible for (i) supervising policy and development plans for the oil palm sector and (ii) managing the production of oil palm, including apportioning supplies to consumers and to industry, importing palm oil and oil palm and palm oil (via the Public Warehouse Organization, a publicly owned industry under the Ministry of Commerce)^{5/}, purchasing oil palm at certain periods of time, in particular when supplies are high and prices are low, and arranging for the Department of Internal Trade (also under the Ministry of Commerce) **to specify the prices for oil palm and palm oil at all stages of the production process.**

1) Oil palm fresh fruit bunch price is set by the Department of Internal Trade (DIT), which specifies a general reference price for oil palm fresh fruit bunch, quoted without consideration of the grade of the product but with the assumption that the oil extraction yields are 17%. The consequence of not setting prices relative to quality is that farmers lack an incentive to develop higher-yielding of palm and they may also harvest before the fruits have had the time to develop the highest possible oil extraction yields. This reduces the ability of Thai producers to compete outside the country.

Figure 4: Structure of Thailand Oil Palm Industry



4/ 'Research on the potential of agricultural trade to meet the challenges of the AEC: A case study of palm oil', the Bureau of Agricultural Economic Research, Office of Agricultural Economics (2015).

5/ The Thailand Oil Palm Board appoints Public Warehouse Organization as a solely importers when shortages exist in the market. Import duties are set at the rate of (i) 20% for imports beneath the quota of 4,860 tonnes, (ii) 143% for imports in excess of the quota and (iii) 0% for imports from within the ASEAN Free Trade Area.

2) Fixing the price for crude palm oil is set with reference to the cost of inputs (i.e. the domestic cost of fresh oil palm) and trends in the price of crude palm oil on world markets. Currently, the DIT determines producers of refined palm oil, biodiesel manufacturers, and other buyers of crude palm oil to pay at least THB 26.2/kg. for it.

3) The retail price of bottled refined palm oil is also set by the DIT when it is sold domestically. At present, this is fixed at a rate of THB 42/liter.

This official interference in the market has, however, led to market distortions, with the costs of producing refined palm oil in Thailand being some 10% higher than in Indonesia and Malaysia and this clearly restricts the ability of Thai products to compete effectively on export markets and so more than 95% of Thai production is consumed domestically. Imports of palm oil into Thailand are all of crude palm oil and are limited to times when stocks fall below the buffer level of 225,000 tonnes, although a certain amount of refined palm oil is imported illegally when the costs of doing so are lower than the costs of sourcing supplies legally on the domestic market.

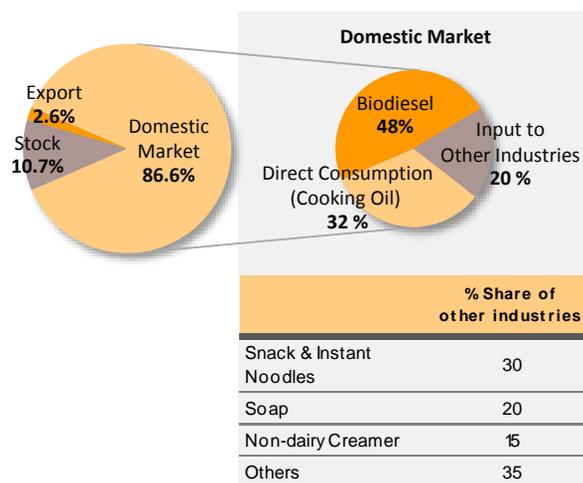
Domestic consumption of palm oil falls under three main headings:

- **Direct consumption of refined palm oil^{6/}** in households and restaurants. This accounts for 32% of crude palm oil domestic consumption.
- **Use of palm oil as an input into other consumer goods.** This takes 20% of the domestic market for crude palm oil. 30% of this total goes to the production of snacks and instant noodles, 20% goes to soap, 15% goes to the production of condensed milk and coffee creamer, and the remaining 35% is used by a range of industries, including cosmetics, lubricants and plastics.
- **As an input into biodiesel production (B100).** This sector is taking an increasing proportion of crude palm oil consumption in the domestic market, up from 32% in 2009 to 48% in 2016.

The government, by the Department of Energy Business, **regulates biodiesel production with some flexibility in the proportion of B100 in the diesel mix, according to the palm oil output situation after allocation for direct consumption.** In addition, domestic palm production falls, the proportion of B100 which producers are required to include in diesel is reduced as a way of maintaining adequate supplies to other sectors.

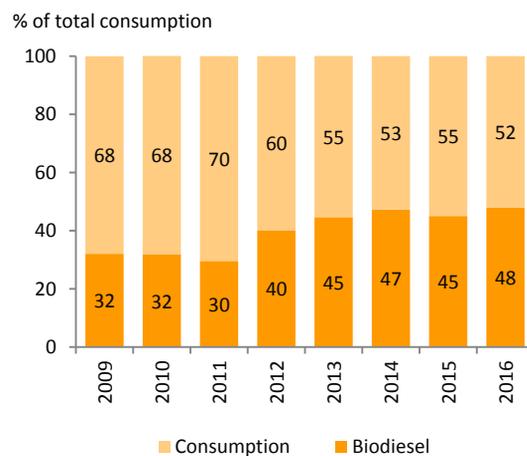
Investors and producers active in the Thai oil palm sector can be divided into three groups: (i) **Growers of oil palm**, a group which includes both independent growers and contract growers involving palm oil extraction mills; (ii) **crude palm oil extraction mills.** At present, there are 137 mills with total capacity of 22-23 million tonnes of oil palm. The majority of these operations have been operating for an extended period of time and enjoy close connections with the farmers from whom they source inputs.; and (iii) **palm oil refinery plants.** Currently, 18 plants produce 2.4 million tonnes of refined palm oil. Larger players in the palm oil sector are likely to integrate into the supply chain. For example, Univanich Palm Oil Public Company Limited is a manufacturer of crude palm oil but also operates plantations and breeds oil palm cultivars, while Lam Soon Public Company Limited, a vegetable oil producer, has invested in both crude palm extraction mills and palm oil refinery plants.

Figure 5: Sales Volume Thai Palm Oil Industry (2016)



Source : Department of Internal Trade (DIT) and collected by Krungsri Research

Figure 6: Share of Domestic Consumption



Source : Office of Agricultural Economics (OAE)

^{6/} 65% of vegetable oil consumed in Thailand is palm oil. The remainders are soybean oil (25%), rice bran oil (5%) and other types (5%).

▲ Situation

Businesses in the oil palm supply chain have seen ongoing growth over the past 5 years.

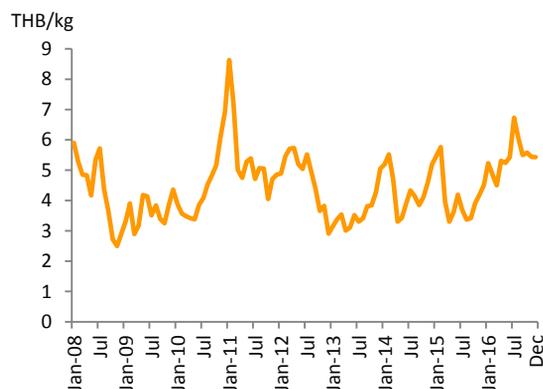
- **Oil palm growers:** Restricting imports of crude palm oil and manipulation of the market by the state, including the setting of prices of oil palm fresh fruit bunch and specifying the quantity of B100 in the diesel mix, has helped to maintain the price of oil palm fruit and so has helped to boost the income of farmers.
- **Crude palm oil extraction mills:** Businesses in this sector have seen continuing growth on the back of rising demand, particularly for biodiesel. In addition, the price of crude palm oil has tended to move in line with that of domestic costs of production^{7/} and this has enabled mills to maintain their profit margins.
- **Palm oil refinery plants:** A growing economy has supported growth in the demand for refined palm oil, as has its continuing substitution for other vegetable oils, in particular for soybean oil. In addition, although Thai products are significantly more expensive than those of Indonesia or Malaysia, the latter are redder, more turbid and have a higher fat content and so are less preferred by Thai consumers^{8/} and this restricts the quantity of imports. However, profits are still dependent on the difference between the cost of crude palm oil and the price realized by distributing refined palm oil domestically, which is set by government fiat, and since government intervention has tended to support producers of oil palm fresh fruit bunch, this has sometimes put downward pressure on profit margins.

Thai oil palm industry in 2016; however, had to face the negative consequences of the extended and severe drought which ran from 2015 into the first half of 2016; oil palm output for 2016 was down 12.3% YoY, with yields of 2,436 kg/rai in 2016 compared to 2,803 kg/rai for 2015. At the same time, the manufacturing production index (MPI) of crude palm oil extraction mills and palm oil refinery plants were 62.9 and 121.5, respectively in 2016, down from 74.5 and 122.6 in 2015.

Demand for crude palm oil in 2016 totaled 1.86 million tonnes, down 1.3% YoY. This was a result of a fall in consumer demand, which slumped by 7.8% YoY to 0.97 million tonnes, itself caused by a significant switch to the use of soybean oil as domestic bottled soybean oil price dropped to THB46.34/litre, close to bottled palm oil price of THB40.49/litre.

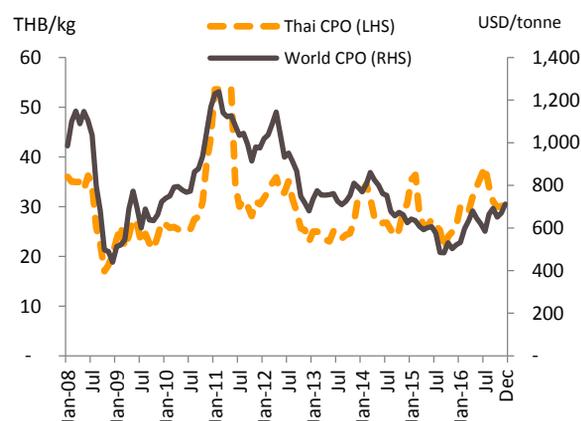
Tightening supply prompted an increase in the average purchase costs of oil palm fresh fruit bunch from growers, which rose 31.8% YoY (from THB4.1/kg in 2015 to THB5.4/kg in 2016). At the same time, the price for Thai crude palm oil also rose in line with prices on world markets so that for 2016, domestic prices averaged USD 32.0/tonnes, up 17.2% YoY from USD 27.3/tonnes in 2015. As a result of the discrepancy between these, profit margins for crude palm oil extraction mills narrowed.

Figure 7: Farm Gate Prices of Thai Oil Palm



Source : Office of Agricultural Economics (OAE)

Figure 8: Crude Palm Oil (CPO) Prices



Source : Department of Internal Trade (DIT) and World Bank

Figure 9: Thai CPO and Edible Palm Oil MPI

Year	Index (2011 = 100)		
	Crude Palm Oil	Refined Palm Oil	Refined Soybean Oil
2008	139.50	139.50	150.57
2009	140.30	140.30	131.94
2010	164.34	164.34	142.73
2011	100.00	100.00	100.00
2012	58.30	111.20	80.60
2013	90.60	116.65	66.64
2014	80.12	122.21	75.43
2015	74.55	122.62	86.81
2016	62.93	121.54	124.40
% YoY	-15.59	-0.88	43.30

Source: The Office of Industrial Economics (OIE)

^{7/} The domestic price of crude palm oil is dependent on the direction taken by prices on world markets, which in turn reflects global supply and demand. However, the price is also connected to the cost of purchasing fresh palm fruits and research over the period 2012-2016 shows that the price of fresh palm fruits and the price of crude palm oil are closely correlated (with a correlation of 91.2%).

^{8/} Refined palm oil production in Thailand focuses on the household market, which places it in competition with soybean oil and as a consequence, the best quality oil (clear, yellow and with a low fat content) is required as an input. To meet consumer demand, Thai producers thus remove more of the fat content during processing and this makes Thai products more expensive than those from Indonesia and Malaysia.

Demand for crude palm oil from the biodiesel industry continues to strengthen, and is up 7.9% YoY at 0.91 million tonnes p.a. A part of this increase has gone into rising stocks of crude palm oil, the volume of which rose 47.8% YoY in 2016 (up to 23,602 tonnes from 15,986 tonnes in 2015). Production has expanded in line with that in domestic demand for diesel. However, the Ministry of Energy cut the proportion of B100 in diesel mix from 7% for the first half of the year to 3-5% for the latter half. This restricted annual growth in demand to 6.9% YoY.

At the same time, **exports of palm oil fell by 16.7% YoY as a consequence of falling domestic production, which was insufficient to meet demand. This led to destocking. Therefore, the level of which fell by 31.0% YoY in late 2016, down to 0.231 million tonnes.**

▲ Outlook

Given an expected return of normal weather during the next 1-3 years after the adverse El Nino and expansion of plantation areas in Indonesia and Malaysia in the past few years in order to meet rising global demand. These new plantations will begin to bear fruit with the result that world markets, having seen a shortage during the 2016 drought, will move to a position of oversupply. **This will tend to increase inventories. However, demand for palm oil and an expected rise in global crude oil prices will cause crude palm oil price to be stable, compared to those last year.**

In Thailand, given better weather and more abundant rainfall, domestic oil palm is expected to expand, yields of oil extraction should be higher. In addition, the expansion in oil palm cultivation throughout Thailand between 2008 and 2012 will push up the volume of palm oil entering the market. Moreover, the government's strategic plans for palm oil for 2015-2026 will continue to expand oil palm output from 2017 onwards.

It is forecast that the domestic demand for palm oil will continue to grow, particularly for use in biodiesel production following the government's policy (see the development plan for the oil palm sector). Ministry of Energy announced to increase the diesel mix from 5% to 7%. **However, consumption of edible palm oil is forecast to see only low levels of growth due to the low price of soybean oil, a direct substitute** (this in turn having been caused by an abundance of soybean on world markets). **In addition, the domestic demand growth for crude palm oil/palm fat (from palm oil extraction process) in consumption goods production is likely to slow** because end-user industries will import semi-finished raw materials from overseas instead.

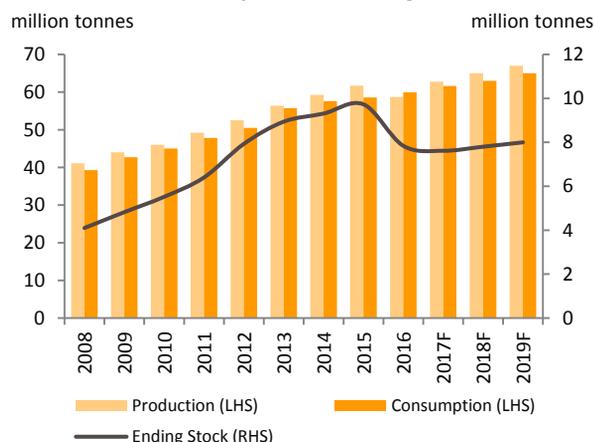
However, despite this, for the period out to 2019, anticipated solid demand for palm fat and rising prices on world markets will likely result in domestic prices for oil palm fresh fruit bunch and crude palm oil following suit and rising, too.

Figure 10: Thai Palm Oil Stock Balance

	'000 tonnes		
	2014	2015	2016
Production	2,000.6	2,068.5	1,814.5
Import	0.0	53.2	0.0
Domestic Con.	1,781.8	1,886.5	1,861.5
-Refined Oil Industry	939.4	1,053.3	970.9
-Biodiesel Industry	842.4	833.2	890.6
Export	255.3	68.0	56.6
Ending Stock	167.6	334.7	230.9
-Extraction Mills	52.3	105.7	104.2
-Refinery Plants	87.1	149.7	132.8
-Warehouses	13.8	63.4	32.9
-Biodiesel Plants	14.8	16.0	23.6

Source : Department of Internal Trade (DIT) and Office of Agricultural Economics (OAE)

Figure 11: Global Palm Oil Production, Consumption, and Ending Stock



Source : U.S. Department of Agriculture (USDA)

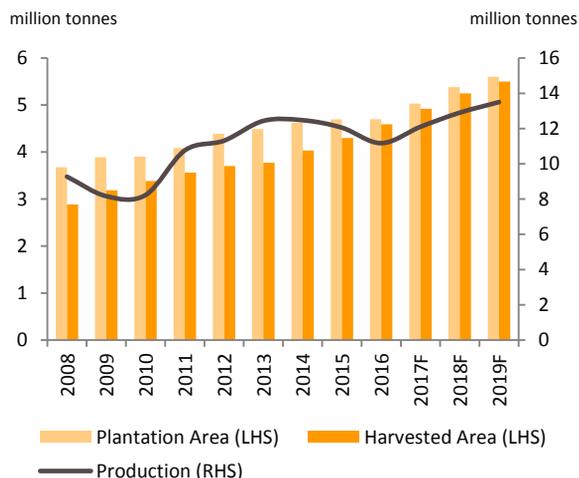
9/ In 2016, the Ministry of Energy adjusted specifications for the quantity of B100 to be included in diesel 3 times. (i) On 25th July 2016, this fell from 7% to 5%, (ii) on 25th August, it fell from 5% to 3%, and (iii) on 25th November, this was reversed and increased from 3% back to 5%.

10/ Generally, oil palm will start to be harvested when it is 2.5-3 years old and plants aged 8-25 years old will give the highest yields.

Over the long-term, it is expected that operators throughout the Thai oil palm and palm oil industries including supply chain will continue to receive support from the state due to the government's lacking a plan to liberalize the sector in the nearterm. In fact, palm oil is one of the twenty-three Thai products on the ASEAN 'sensitive list'. As result of this government protection is that the sector is forecast to grow without facing risks from the import of Indonesian or Malaysian products.

In addition, Malaysia and Indonesia are cooperating to establish the Council of Palm Oil Producing Countries (CPOPC), modeled on OPEC, and which is expected to grow to include other palm oil producing nations such as Brazil, Colombia, and Thailand. This should help to increase global oil palm price stability and so benefit global producers worldwide.

Figure 12: Thailand Oil Palm Plantation and Production



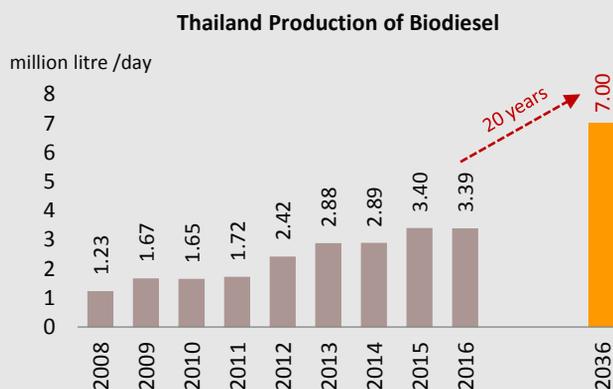
Source : Office of Agricultural Economics (OAE)

▲ Thailand Oil Palm Industrial Development Plan

The Office of Agricultural Economics (OAE), Ministry of Agriculture and Agricultural Cooperatives, has set out the **Oil Palm and Oil Palm Industries Development Strategy 2015-2026**. It aims to accomplish the following objectives:

- Expand the oil palm plantation areas by another 3 million rai as well as increase yields per rai from 3.2 tonnes to 3.5 tonnes and raise the proportion of oil in fresh palm to 20%. These measures combined will increase output of oil palm to serve future demand.
- Increase domestic demand through (i) increasing oil consumption by 3% p.a, (ii) doubling the use of palm oil for alternative energy and maintaining the volume of exports at a level between 0.3-0.7 tonnes p.a.
- By 2019, the government plans to have issued the ASEAN Sustainable Palm Oil standards and to have pushed through measures to support a legal structure to drive forward research and development of the palm oil sector.

The Alternative Energy Development Plan for 2015-2036 (AEDP2015), operated by the Department of Alternative Energy Development and Efficiency, makes reference to the 'Strategy for the Palm Oil and Oil Palm Sector 2015-2026' by considering both the output of oil palm given the total area under cultivation in Thailand and the amount of palm oil left for domestic consumption. This makes a forecast for potential biodiesel production, with the goal of producing 7 million liters of biodiesel per day by 2036 (based on the assumption of average oil prices of USD50/barrel)^{11/}



Source: Department of Alternative Energy Development and Efficiency (2016), Local Press compiled by Krungsri Research

11/He authority prepares to adjust alternative energy by downgrading assumption of prices from USD90-100/barrel to USD50/barrel. As a result, target of biodiesel production in 2039 from USD14/barrel to 7 million litre per day (source: newspaper)

Krungsri Research view: Turnover throughout the sector is expected to be sufficient for the sector to be self-sustaining.

- **Growers of oil palm:** This group will benefit from demand within Thailand which shows a tendency to strengthen and prices which should remain healthy. However, independent oil palm farmers may still face risks as they lack prearranged sales channels, unlikely those of planters with trade connection with crude palm oil extraction mills and palm oil refinery plants. Oil Palm ramp trading may be able to push down the level of prices which growers are able to realize.
- **Crude palm oil extraction mills:** business structures help support their ability to adjust prices to cover increases in costs. Rising demand will also benefit this group but an excess of processing capacity will heighten competition for raw materials. This will depress profitability to be low, especially for independent crude palm oil extraction mills who are not part of a network or who do not have business associations with refined palm oil distilling plants.
- **Palm oil Refinery Plants:** It is expected that this group will maintain healthy profits due to ongoing increases in domestic demand. However, the still-low soybean oil price (a direct substitute) is low and this may hold back growth to lower levels than it would otherwise be.
- **Traders (oil palm ramp):** Expansion in the harvest of palm oil should help to support the income of oil palm ramp since the majority of oil palm growers are small scale relying on selling oil palm at oil palm ramp (around 75% of the total). Nonetheless, an effort to reduce costs by palm oil refinery plants may encourage the latter group to start buying directly from growers and should this happen, this may limit oil palm trading growth at oil palm ramp.

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