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AGRICULTURE IN JOHOR: WHAT'S LEFT?

GEOFFREY KEVIN PAKIAM

**ISEAS** YUSOF ISHAK  
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# Trends in Southeast Asia



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## FOREWORD

The economic, political, strategic and cultural dynamism in Southeast Asia has gained added relevance in recent years with the spectacular rise of giant economies in East and South Asia. This has drawn greater attention to the region and to the enhanced role it now plays in international relations and global economics.

The sustained effort made by Southeast Asian nations since 1967 towards a peaceful and gradual integration of their economies has had indubitable success, and perhaps as a consequence of this, most of these countries are undergoing deep political and social changes domestically and are constructing innovative solutions to meet new international challenges. Big Power tensions continue to be played out in the neighbourhood despite the tradition of neutrality exercised by the Association of Southeast Asian Nations (ASEAN).

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# **Agriculture in Johor: What's Left?**

By Geoffrey Kevin Pakiam

## **EXECUTIVE SUMMARY**

- Despite decades of industrialization, Johor remains an agricultural powerhouse.
- The state is Peninsular Malaysia's largest contributor to agricultural gross domestic product, and its official agricultural productivity is Malaysia's third highest.
- Johor's agricultural strengths lie primarily in product specialization, namely the farming of oil palms, various fruits and vegetables, poultry, pigs, cut flowers, and ornamental fish.
- Johor's production clusters have taken decades, if not centuries, to build up their regional dominance. Urbanization, often blamed for diminishing agriculture's importance, has actually helped drive Johor's farm growth, even until the present day.
- Johor's agricultural sector will persist for at least another decade, but may become even more specialized.





# Agriculture in Johor: What's Left?

By Geoffrey Kevin Pakiam<sup>1</sup>

## INTRODUCTION

For those living in Singapore or Peninsular Malaysia, accustomed to having fresh chicken eggs every other morning, chances are that your breakfast comes from one of 17 million broody hens raised in the Malaysian state of Johor.<sup>2</sup> If this comes as a surprise, you are probably not alone. Most recent commentaries concerning Johor's economic growth give the impression that agriculture is now a historical relic. The Iskandar Malaysia development project — accompanied by glittery real estate, oil and gas refining, complex manufacturing, mass tourism, and sophisticated healthcare offerings — now hogs the limelight.<sup>3</sup> Indeed, even for field-leading scholarship on greater Malaysia's economic

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<sup>1</sup> At the time this essay went to press, Geoffrey Kevin Pakiam was a Research Officer at the ISEAS – Yusof Ishak Institute, Singapore. He would like to thank Francis E. Hutchinson and an anonymous reviewer for their comments on an earlier draft, and Pearlyn Y. Pang for the maps accompanying this paper. The usual caveats apply.

<sup>2</sup> Department of Veterinary Services, Malaysia, “Livestock Statistics”; Agri-Food & Veterinary Authority of Singapore, “Annual Report 2016/17”, pp. 20, 25, 53.

<sup>3</sup> *Straits Times*, “Johor to be new economic powerhouse: Malaysian PM Najib”, 6 March 2016; Tan Sri Dr Sulaiman Mahbob, “Johor's economic transformation”, *New Straits Times*, 28 March 2016; A. Ruban, “Johor banks on tourists, rails, ports and parks to drive economy forward”, *Malay Mail*, 14 June 2016; *Straits Times*, “Malaysia's Iskandar economic zone to be three times the size of Singapore: report”, 3 July 2017; Mohd Farhaan Shah, “Johor lines up big plans to spur economic growth”, *The Star*, 24 October 2017; *The Star*, “Tee: Budget 2018 will spur greater economic growth in Johor”, *The Star*, 31 October 2017; Takashi Nakano, “Singapore commuters fueling growth in Malaysia's Johor”, *Nikkei Asian Review*, 18 October 2017.

development, agriculture has been conspicuous by its relative absence, sidelined by an overwhelming focus on manufacturing and services.<sup>4</sup>

This essay represents an initial attempt to redress this imbalance. I ask two basic questions: what is left of agriculture in Johor? And why? My argument is similarly direct: although agriculture's share of Malaysian gross domestic product (GDP) and employment has fallen significantly, much remains, particularly in Johor. Amidst rapid urbanization and industrialization, agriculture's economic contribution in Johor has actually held steady and witnessed resurgence over the past decade. Johor's present-day agricultural strengths lie in oil palms, livestock farming, and certain forms of ornamental products. These agricultural activities are underlined both by high output and productivity relative to the rest of Malaysia. The clusters of trade networks and expertise underpinning these developments were already being developed in Johor prior to independence, and were given additional support from the 1960s onwards through policies linking industry with agriculture.

Johor's unusual situation can be best understood by comparing its present-day context with its past. The following section briefly outlines Southeast Asia's and Malaysia's agricultural transformations since the 1960s. A subsequent section places Johor squarely under the lens, comparing the size and productivity of its farm sector with the rest of Malaysia's. A third section examines the key historical drivers behind Johor's long-standing agricultural prominence. A fourth segment reviews the overarching roles that Malaysia's federal and state governments have played in shaping Johor's resource-heavy economy. I then offer some concluding remarks about Johor's past, present and future agricultural developments, pointing to a number of major uncertainties hanging over Johor's farmscape.

## **THE MALAYSIAN CONTEXT**

In order to understand Johor's peculiar position, we first need to review developments across Malaysia and the surrounding region briefly.

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<sup>4</sup> Exceptions include Arshad, ed. *50 Years of Malaysian Agriculture*; Wong, "Agriculture", pp. 121–46.

Compared with previous decades, agriculture now contributes a miniscule share of Malaysia's gross domestic product. This is largely thanks to the rapid expansion of local manufacturing and service activities. Indeed, the most recent publicly available data show that similar trends have been occurring in neighbouring countries such as Indonesia, the Philippines, Thailand, and Vietnam (Table 1).

Malaysia, however, stands apart from these other economies due to the much lower proportion of workers currently involved in agricultural pursuits. Moreover, Malaysia's population is already much less rural. Johor, as will be discussed later, has been at the forefront these developments since at least the 1980s.

What kinds of activities underscore Malaysia's agricultural earnings? In 2016, just over half of Malaysia's agricultural production by value was derived from oil palm farming and, to a much lesser extent, rubber cultivation. Another fifth came from all other forms of cash cropping, including padi, vegetable, fruit, and food crop farming. Livestock husbandry and fishing together added another fifth to overall agricultural GDP, with forestry and logging activities accounting for the remainder (Figure 1).

Official international trade figures suggest a more sobering story. By one official estimate, Malaysia registered an agricultural trade surplus of RM26 billion in 2015. But this gain was largely thanks to the oil palm sector.<sup>5</sup> Palm oil and palm kernel oil net exports reached almost RM40 billion in 2015 (Figure 2). To be sure, the trade surplus was boosted by exports of wood-based manufactures, processed food, and agricultural chemical inputs. It would be even higher if manufactured goods made from natural rubber, such as footwear and tyres, were included in the official agricultural factors. But even with all these other products taken into consideration, Malaysia's agricultural trade balance would still face dramatic shortfalls without the oil palm sector's support. Stripping out the palm oil/palm kernel oil trade surplus would leave the Malaysia agricultural trade balance in deficit, to the tune of roughly RM13.3

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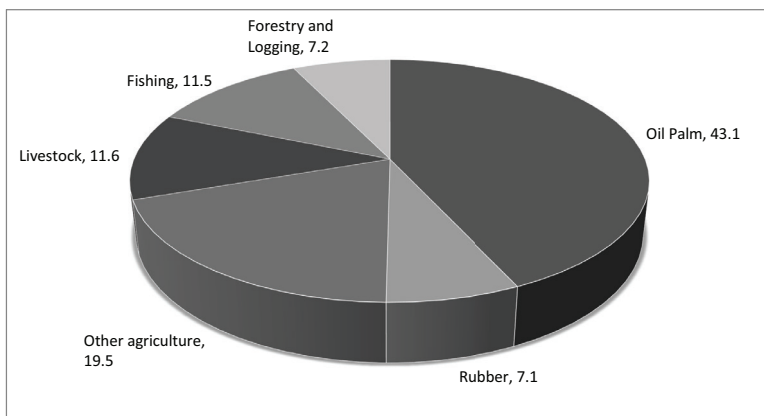
<sup>5</sup> Ministry of Agriculture and Agro-based Industry, Malaysia, *Agrofood Statistics 2015*, pp. 125-26.

*Table 1: Value-added in Agriculture, Employment Levels, and Rural Population, Selected Southeast Asian States, 1960–2015*

Country		1960	1970	1980	1990	2000	2010	2015
Malaysia	Agriculture, value added (% of GDP)	44	33	23	15	9	10	8
	Employment in agriculture (% of total employment)	—	—	37	26	18	14	12
	Rural population (% of total population)	73	67	58	50	38	29	25
Indonesia	Agriculture, value added (% of GDP)	—	—	—	22	16	14	13
	Employment in agriculture (% of total employment)	—	—	56	56	45	39	33
	Rural population (% of total population)	85	83	78	69	58	50	46
Philippines	Agriculture, value added (% of GDP)	27	30	25	22	14	12	10
	Employment in agriculture (% of total employment)	—	—	52	45	37	33	29
	Rural population (% of total population)	70	67	63	51	52	55	56
Thailand	Agriculture, value added (% of GDP)	36	26	23	12	9	11	9
	Employment in agriculture (% of total employment)	—	—	71	64	49	38	32
	Rural population (% of total population)	80	79	73	71	69	56	50
Vietnam	Agriculture, value added (% of GDP)	—	—	—	—	—	21	19
	Employment in agriculture (% of total employment)	—	—	—	—	65	48	44
	Rural population (% of total population)	85	82	81	80	76	70	66

*Source:* World Bank, “World Development Indicators”.

**Figure 1: Share of Agricultural Sector GDP, Malaysia, 2016 (%)**



Source: Department of Statistics, Malaysia. “Selected Agricultural Indicators, Malaysia, 2017”.

billion in 2015.<sup>6</sup> Moreover, these trade figures do not cover palm oil and palm kernels that were being retained within Malaysia to produce higher end exports, such as processed food, cosmetics, and lubricants.

One long-standing issue lies with Malaysia’s general trade in foodstuffs. In 2015, the country’s food trade registered a net loss of over RM18 billion, thanks to costly imports of meat, vegetables, fruits, cereals, dairy produce, as well as concentrated animal feed needed to keep large parts of Malaysia’s domestic livestock industry commercially viable.<sup>7</sup>

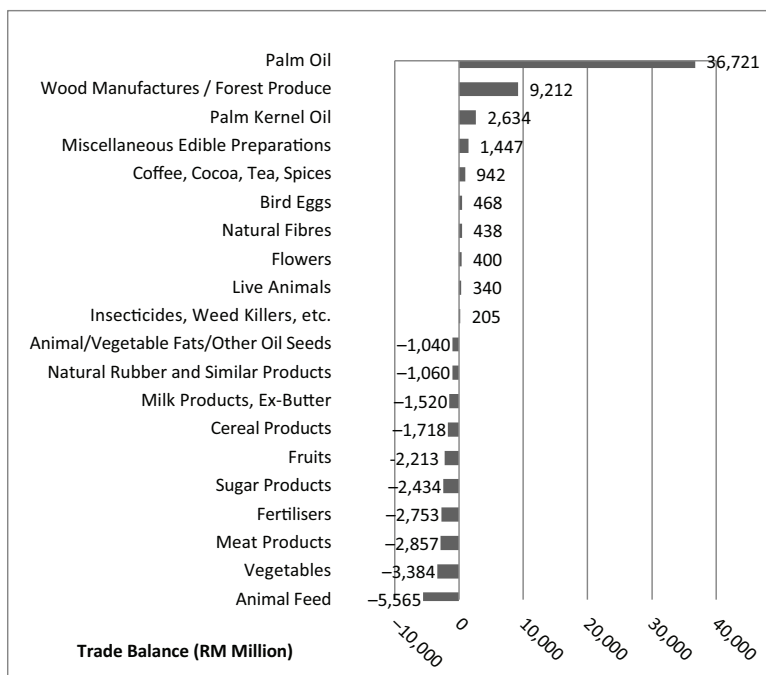
The stark contrast between Malaysia’s heavy reliance on fresh food imports and the economy’s overwhelming surplus from a single tree crop — in this case, oil palms — is not new. Since the colonial period,

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<sup>6</sup> Ibid.

<sup>7</sup> Ibid.

**Figure 2: Malaysia's Agricultural Trade, Top 10 Exports and Top 10 Imports, 2015**



Source: Ministry of Agriculture and Agro-based Industry, Malaysia, *Agrofood Statistics 2015*, pp. 125–26.

policymakers and the general public have worried frequently about local food shortages. Staples like rice had to be imported in large quantities to meet the appetites of growing numbers of migrant labourers and smallholders. Recent concerns, however, stem from a different dynamic: rising incomes from new manufacturing and service jobs have made agricultural work as a whole less attractive to locals, while at the same time encouraging greater household expenditure on larger quantities and varieties of food.

These shifting patterns of food consumption are especially pronounced when we look at the average Malaysian's food intake, coupled with the

country's official food self-sufficiency levels (Table 2). The numbers do need to be viewed with some caution: not only are publicly available figures incomplete, but the complete range of food items selected to represent vegetables, fruits, and fish are not stated officially, and may have changed over time.

The figures nevertheless tell a forceful story. Malaysian rice intake per person has fallen since the 1970s, presumably due to greater access to alternative starchy staples, such as wheat- and potato-based fare. Meanwhile, Malaysian vegetable and meat consumption has risen with each successive decade. For chicken alone, the average Malaysian resident now eats the equivalent of an entire chicken every six days. Put another way, Malaysians today eat twice as much pork, 2.5 times as many eggs, 3.5 times as much beef, and 6.5 times as much chicken meat per person compared to forty years earlier. To their credit, Malaysian farms have generally managed to keep up with the public's growing appetite for eggs, poultry meat, pork, and to a lesser extent, certain types of fish, fruits and vegetables. But beef, mutton, and dairy production have continued to fall far short of local requirements.

Does Malaysia's current agricultural profile reinforce beliefs, held by many development economists, that countries generally follow an evolutionary pathway out of agriculture? In some ways, yes. According to these assumptions, as gross domestic product increases, agriculture in each country ceases to be a leading engine of economic growth. As farms shed labour, manpower is freed up to participate in the growing non-farm sector. With time, each country becomes highly urbanized, and raw agricultural produce sales end up being dwarfed by the value contributed by local food manufacturing and associated services, which is in turn outweighed by the non-farm sector's overall growing heft.<sup>8</sup> As we have already seen for Malaysia, agriculture has been steadily marginalized relative to manufacturing and services. What remains of Malaysia's agricultural trade now relies heavily on exports of processed (and semi-processed) agricultural goods, in turn made possible by massive imports

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<sup>8</sup> World Bank, *Report 2008*, pp. 4–5; Vandergeest and Rigg, "Southeast Asia", p. 5.



**Table 2: Per Capita Food Consumption (kg/year) and Self-sufficiency Level (SSL) (%) in Main Food Types, 1975–2015**

	1975		1985		1995		2005		2015	
	Per capita	SSL	Per capita	SSL	Per capita	SSL	Per capita	SSL	Per capita	SSL
Rice	117.8	89.8	102.3	73.3	86.9	76.3	80.5	72	93.2	72.3
Vegetables	18.1	56.6	40.8	36.1	48.5	71.6	45.9	74	N.A.	N.A.
Fruits	N.A.	N.A.	47.9	101.8	49.9	99.8	39.2	117	N.A.	N.A.
Eggs <sup>a</sup>	191.3	99.3	227.2	100	372.7	110.3	N.A.	113	465.9	112.3
Fish	47.6	84.5	45.7	71.1	N.A.	92	N.A.	91	N.A.	N.A.
Poultry	7.8	99.5	14.1	99.9	30	110.7	35.2	121	50.1	98.5
Beef	1.8	71.5	2.5	36.4	4.3	19.2	N.A.	23	6.4	24
Mutton	0.3	26.3	0.5	9	0.6	6	0.6	8	1.2	11.4
Pork	9.8	99.9	11.4	99.9	13.2	104	N.A.	107	18.2	93.7
Milk	N.A.	8	47.6	3	51.5	3.5	44.53	5	N.A.	N.A.

*Note:* a. Individual eggs as unit of measurement. Figures for 1995 and 2015 originally provided by weight, assumed to be medium-sized chicken eggs, and converted to individual egg units using *Convert To* website <<http://convert-to.com/720/chicken-eggs-5-sizes-conversion-plus-nutrients-values.html>> (accessed 11 December 2017).

*Source:* For years 1975 and 1985, see Arshad and Shamsuddin, “Food Security”, p. 110; for year 1995, see Ministry of Agriculture, Malaysia, *Third National Agricultural Policy*, pp. 31, 33, and Arshad, Radam and Mohamed, *Fruits Industry*, p. 3; for year 2005, FAOSTAT, “Food Supply”; Mohamed Salleh, and Rokiah Yusof, “Tropical Fruits”, pp. 1–2, and Government of Malaysia. *Ninth Malaysia Plan*, p. 93; for year 2015, Department of Statistics, Malaysia, *Selected Agricultural Commodities*, pp. 29, 67–71.

of food and agricultural inputs for domestic use. The low proportion of Malaysia's workforce participating in agriculture, relative to other Southeast Asian economies, is also very striking. And as we shall now see, these tendencies are particularly acute in the case of Johor.

## JOHOR'S PECULIAR POSITION

Why look at Johor? To begin with, it remains one of Malaysia's most substantial states, whether in terms of land area (third largest in the peninsula), population size (currently third highest in Malaysia), or the size of its economy (at present, third biggest in Malaysia, excluding Kuala Lumpur).<sup>9</sup> Johor's urbanization has also kept pace with general developments across Malaysia: in 2010, when the most recent population census was conducted, just under 72 per cent of Johor's population was classified as living in urban areas, compared to the national average of 71 per cent.<sup>10</sup>

Indeed, if we think of urbanization not just as a measure of population density and built-up area (as the official estimates tend to do), and more as a way of life, Johor's urban reach is probably far larger. Sociologists and anthropologists have long contended that Peninsular Malaysian villagers are already heavily integrated into "urban, industrial, national, and even international circuits" of living, by virtue of their heavy usage of modern communications, extensive commuting habits, as well as the socioeconomic sensibilities they share with city-dwellers.<sup>11</sup> Rural households in Johor — including lower income groups — now own a wide array of modern conveniences, ranging from cars, air conditioners, washing machines and refrigerators, to laptops, mobile phones, and Internet subscriptions, all at levels considerably higher than the national

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<sup>9</sup> For current land size, see Department of Statistics, Malaysia, *Demographic Characteristics 2010*, p. 11; for current population size, see Idem, *Population Estimates 2017*; for current state-level GDP estimates, see Idem, *GDP by State*.

<sup>10</sup> Department of Statistics, Malaysia, *Demographic Characteristics 2010*, p. 11.

<sup>11</sup> Thompson, *Unsettling Absences*; Preston and Ngah, "Interpreting Rural Change in Malaysia", p. 360.

rural average, if not the highest in Malaysia.<sup>12</sup> These ownership patterns contrast sharply with those of 1980, when Johor's rural households tended to own major purchases at below-average national levels.<sup>13</sup>

Urbanization was driven in large part by the expansion of non-farm activities in Johor. While in 1980, three-fifths of Johor's GDP came from manufacturing and service activities, the proportion had increased to 85 per cent by 2016.<sup>14</sup> The numbers employed in these pursuits also grew accordingly, from just over half of Johor's resident citizen population in 1980, to 93 per cent of all those working in 2016.<sup>15</sup> Much of the workforce fuelling these non-farm activities was drawn from villages and Federal Land Development Authority (FELDA) settlements across Johor, ultimately enhancing material standards of living in home communities.<sup>16</sup> Unsurprisingly, able-bodied residents continued to spend less time farming in Johor: where in 1980, just under 235,000 people listed agriculture as their primary occupation, such individuals only numbered 101,000 by 2016, despite Johor's total workforce tripling during the same interval.<sup>17</sup> To be sure, such transformations were hardly unique to Johor, and have been witnessed in other states, not least Selangor.<sup>18</sup> But compared to the rest of Malaysia, Johor's development has been peculiar in several ways.

The first of these concerns a principal gauge of economic transformation: the productivity of those who remain farmers. If agriculture is to contribute, rather than detract from overall economic output, the value of agricultural produce churned out by each employee

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<sup>12</sup> Department of Statistics, Malaysia, *Household Income*, Tables 4.10, 5.2a.

<sup>13</sup> Department of Statistics, *Census Volume 1*, pp. 150–51.

<sup>14</sup> RMA Perunding Bersatu, *Johor*, Table 3.1.

<sup>15</sup> Department of Statistics, Malaysia, *Census of Malaysia 1980*, Table 19.1; *Idem*, *Labour Force*, Table B4.8.

<sup>16</sup> See, for instance, Rogers, *Rural Malaysia*, pp. 96–99; Lie and Lund, *Malaysia*, *passim*, esp. 70–93.

<sup>17</sup> Department of Statistics, Malaysia, *Census of Malaysia 1980*, Table 19.1; *Idem*, *Labour Force*, Table B4.8.

<sup>18</sup> For example, see Ariffin, *HAWA Study*; Ong, *Capitalist Discipline*.

needs to rise and keep pace with the rest of the growing, diversifying economy. The official figures show that, in 2016, Johor's value-added per agricultural worker was two-and-a-half times higher than the Malaysian average, twice that of Pahang's, and nearly six times that of Sabah's (Table 3). Only Melaka's figures were significantly higher than Johor's. But Johor's agricultural sector is far larger than either Melaka or Penang's.

This brings us to the second unusual feature of Johor's agricultural economy: its sheer size. Between 2005 and 2016, Johor's share of Malaysian agricultural gross domestic product rose the most amongst all states, barring Melaka, from 13.8 to 15.7 per cent (Table 4). This allowed Johor to draw level with Sabah (the largest agricultural economy

**Table 3: Value-added per Month, per Worker in Agriculture by State, 2010 prices (RM)**

	<b>2010</b>	<b>2016</b>
Melaka	14,142	16,158
Pulau Pinang	11,402	11,960
Johor	9,818	11,518
Perlis	7,668	7,466
Negeri Sembilan	5,624	7,342
Perak	6,055	7,287
Selangor	7,314	7,030
Pahang	6,732	6,017
Kelantan	3,910	5,330
Terengganu	4,722	4,750
Sarawak	3,631	4,076
Kedah	3,670	3,637
Sabah	3,048	2,020
National Average	4,823	4,631

Source: Department of Statistics, Malaysia, *GDP by State*, Tables 3, 26; Idem, *Census of Malaysia 2010*, Tables 4.2–4.14; Idem, *Labour Force*, Table B4.8.

**Table 4: Share of Malaysia’s Agricultural Gross Domestic Product, by State, 2005–16**

	<b>2005</b>	<b>2010</b>	<b>2016</b>
Johor	13.8	15.1	15.7
Kedah	4.9	5.3	5.6
Kelantan	5.2	5.4	5.7
Melaka	1.8	3.1	3.9
Negeri Sembilan	3.6	4.1	4.2
Pahang	12.0	12.1	12.2
Pulau Pinang	1.4	1.5	1.7
Perak	10.4	10.4	10.9
Perlis	1.6	1.4	1.2
Selangor	3.8	4.7	3.9
Terengganu	3.5	3.2	2.7
Sabah	21.5	19.2	15.8
Sarawak	16.2	14.3	16.5

Source: Department of Statistics, Malaysia, *GDP by State*, Tables 4, 28; Idem, “Gross Domestic Product”.

in Malaysia in 2010), and close the gap with Sarawak (the largest state agricultural economy in 2016) to less than a percentage point; all this despite East Malaysia’s much larger land area.

These shifts were both relative and absolute. In Johor’s case, agriculture’s share of state gross domestic product actually rose from 12.3 per cent in 2005 to 13.5 per cent in 2016, eating into the space occupied by non-agricultural activities.<sup>19</sup> Incredibly, this swing occurred

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<sup>19</sup> Department of Statistics, Malaysia, *GDP by State*, Table 32; Idem, “Gross Domestic Product”.

despite the steady expansion of local manufacturing and service activities, including long-term investments in southern Johor's Iskandar Malaysia project.<sup>20</sup>

In sum, agriculture remains a major part of Johor's physical and economic landscape. For now, Johor's agriculturalists are outperforming the rest of Malaysia's growers in productivity *and* output. They are even increasing their lead over time, despite hard evidence of extensive urbanization and industrialization.

## PRODUCT SPECIALIZATION

What secrets lie behind Johor's currently elevated agricultural profile? We can start by asking if Johor's labour demographics are atypical compared to other Malaysian states. On the whole, Johor's labour force composition is actually not that unusual, if the most recent official statistics are to be believed. Between 2000 and 2010, the age of those involved in Johor agriculture tended to be slightly elevated compared to the national average, but not glaringly so.<sup>21</sup> Comparing agricultural employment between states by gender yields little of interest: the most productive agricultural states — Penang, Melaka and Johor — veer wildly in their use of female labour.<sup>22</sup>

By the same token, factors such as ethnicity and the proportion of agricultural employment in urban areas reveal little about Johor's dynamism, at least on their own. Like Penang and Melaka, Johor has had consistently elevated levels of Chinese involved in farming since the 1980s, as well as rising levels of agricultural work in urban areas. But states with far lower farm productivity levels, including Perak, Selangor and Pahang, have also had high levels of Chinese involvement, and

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<sup>20</sup> Iskandar Malaysia Regional Development Authority, *Progress Report*, p. 66.

<sup>21</sup> Department of Statistics, Malaysia, *Census of Malaysia 2000*, Tables 4.1–4.14; *Idem*, *Census of Malaysia 2010*, Tables 3, 4.1–4.14.

<sup>22</sup> Department of Statistics, Malaysia, *Labour Force*, Table B4.9.

plenty of agriculture in areas pigeonholed as urban.<sup>23</sup> Even where foreign labour use is concerned, Johor's situation is not especially atypical, with official state figures running at slightly below the national average in 2010 (the most recent population census).<sup>24</sup> That being said, the situation on undocumented labour is trickier; we will return to this issue in the essay's penultimate section.

Instead of focussing broadly on *who* is producing Johor's crops, more rewarding answers can be found in *what* is currently being produced. In 2015, over half of Johor's entire land surface was being utilized for cultivating crops.<sup>25</sup> Nearly three quarters of this landscape was devoted to oil palms, another sixth to rubber (mostly in northwest Johor), with the remainder dedicated mostly to fruit and vegetable cropping, including old-time cultivars like pineapples and coconuts (Table 5).<sup>26</sup>

Every district in Johor devotes significant amounts of land to crop farming, including the relatively built-up districts of Kulai and Johor Bahru. But Kluang, Segamat, Batu Pahat and Kota Tinggi currently lead the way.<sup>27</sup> In other words, the western, central and eastern portions of the state tended to harbour the most expansive farmlands (Figure 3).

Focusing on land-hungry farming activities, however, only reveals part of the picture. In 2015, over 66 million chickens were housed in compact dwellings peppering the Johor landscape. This vast army of poultry, bred for their meat and eggs, constituted the bulk of Johor's

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<sup>23</sup> Department of Statistics, Malaysia, *Census of Malaysia 1980*, Tables 18–32.1; Idem, *Census of Malaysia 1991*, Tables 1.2–14.2; Idem, *Census of Malaysia 2000*, Tables 4.1–5.1; Idem, *Census of Malaysia 2010*, Tables 3, 4.1–4.14; Idem, *Labour Force*, Tables B4.8, B4.10.

<sup>24</sup> Department of Statistics, Malaysia, *Census of Malaysia 2010*, Tables 3, 4.1–4.14.

<sup>25</sup> Department of Statistics, Malaysia, *Demographic Characteristics 2010*, p. 11; Jabatan Perancangan Bandar dan Desa Negeri Johor, *Kajian Semula*, p. 2.32.

<sup>26</sup> Jabatan Perancangan Bandar dan Desa Negeri Johor, *Kajian Semula*, p. 2.32.

<sup>27</sup> *Ibid.*, p. 2.35.

**Table 5: Crop Area and Output, Johor, 2015**

Crop Type	Area Covered		Output	
	Hectares	%	Mt	%
Oil Palm	729,387	73.5	3,117,619	62.6
Rubber	172,831	17.7	562,492	11.3
Fruits	44,090	4.4	530,543	10.7
Vegetables	14,921	1.5	252,264	5.1
Pineapples	11,181	1.1	329,954	6.6
Coconuts	11,550	1.2	98,869	1.9
Other crops	8,902	0.9	91,331	1.7
Total	992,862	100	4,983,072	100

Source: Jabatan Perancangan Bandar dan Desa Negeri Johor, *Kajian Semula*, p. 2.32.

livestock farming (Figure 4).<sup>28</sup> There were also considerable amounts of pig farming, duck rearing, and cattle raising occurring across the entire Johor state, as well as a significant number of fishery enterprises, including freshwater aquaculture, marine-based aquaculture and open-water fishing.<sup>29</sup>

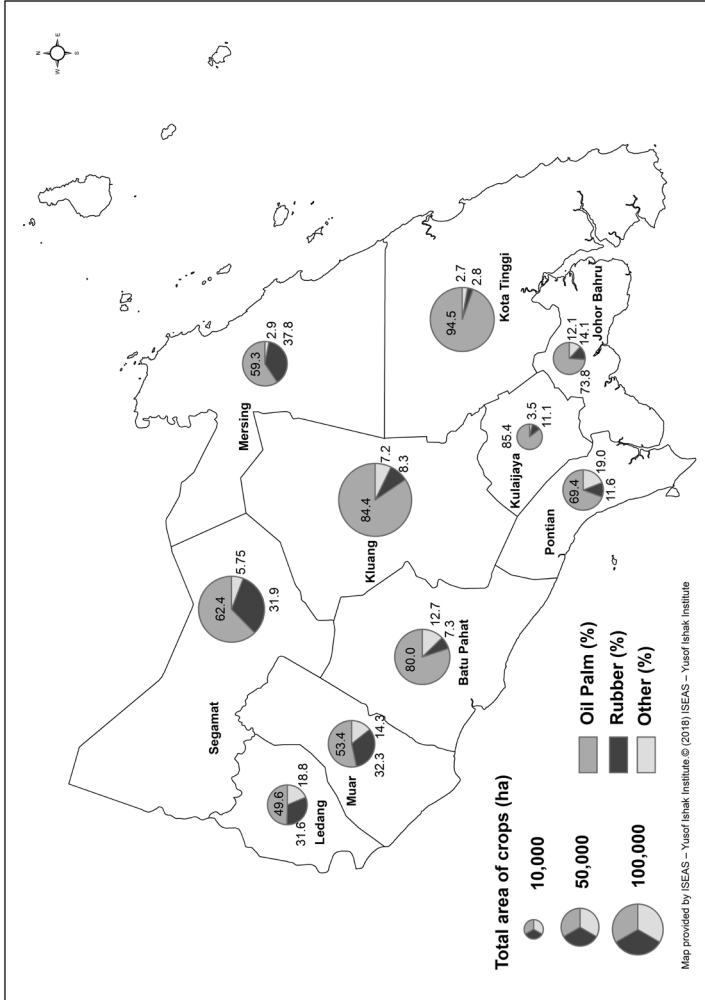
Things become even clearer when we compare Johor’s agricultural profile with the rest of Malaysia’s. The National Agrostistics Compendium tells us that in 2015, Johor ranked among the leading Malaysian states in a wide variety of crops and livestock, including oil palm products, coconuts, various fruits, leafy and root vegetables, tubers, legumes, spices, flowers, pork, chicken meat and eggs, and ornamental

<sup>28</sup> Ibid.; Agri-Food and Veterinary Authority of Singapore, “Country: Malaysia. Chicken Layer Farms Approved to Export Table Eggs to Singapore, MY180516” <[https://www.ava.gov.sg/docs/default-source/tools-and-resources/resources-for-businesses/my\\_layerfarm.pdf](https://www.ava.gov.sg/docs/default-source/tools-and-resources/resources-for-businesses/my_layerfarm.pdf)> (accessed 19 June 2018)

<sup>29</sup> Jabatan Perancangan Bandar dan Desa Negeri Johor, *Kajian Semula*, p. 2.36.

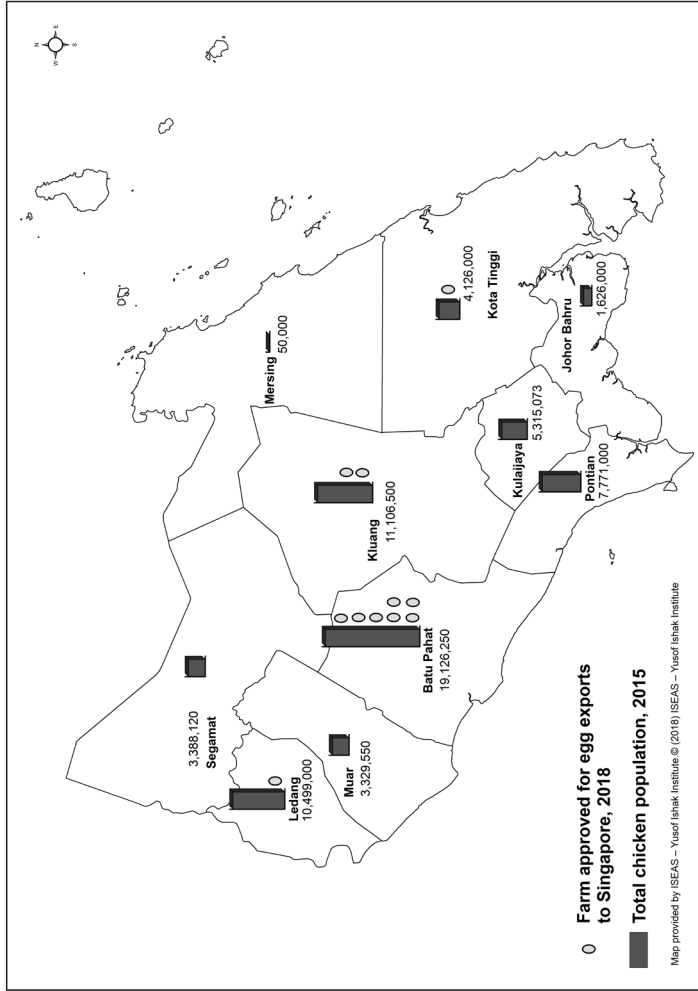


Figure 3: Crop Land Use by District, Johor, 2015



Source: Jabatan Perancangan Bandar dan Desa Negeri Johor, *Kajian Semula*, p. 2.35.

**Figure 4: Chicken Population and Egg Farms by District, Johor**

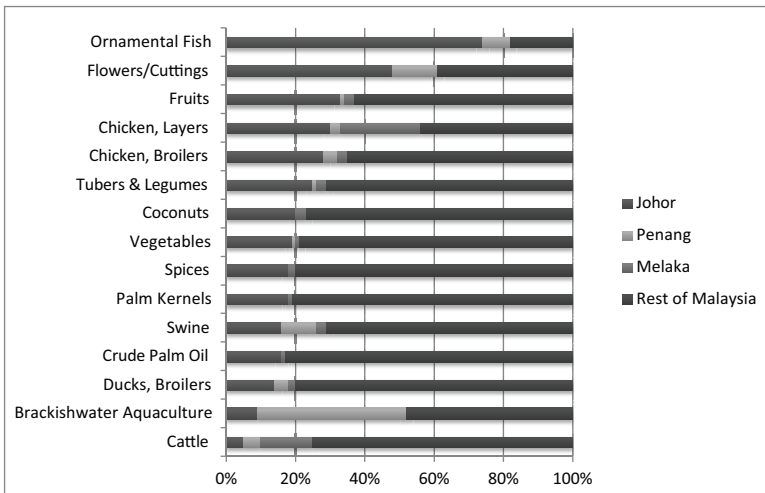


Source: Jabatan Perancangan Bandar dan Desa Negeri Johor, *Kajian Semula, 2.35; Agri-Food and Veterinary Authority of Singapore, "Country: Malaysia. Chicken Layer Farms Approved to Export Table Eggs to Singapore, MY180516". <https://www.ava.gov.sg/docs/default-source/tools-and-resources/resources-for-business/my\_layerfarm.pdf>* (accessed 19 June 2018).

fish. This dominance becomes especially apparent when we compare Johor’s share of agricultural output with that of other states leading in agricultural productivity, such as Penang and Melaka (Figure 5).

As indicated in Malaysia’s most recent national census of economic activity, the *Economic Census 2016*, considerable numbers of these above-mentioned agricultural products rank highly by value-added per worker. Table 6 shows that in 2015, the most productive forms of Malaysian agriculture included poultry farming (both eggs and meat), oil palm cultivation, pig and cattle farming, and freshwater aquarium fish rearing. These were all activities weighing heavily on Johor’s agricultural profile. Oil palm produce accounted for the majority of Johor’s earnings from arable activities (RM5.71 billion in 2015).<sup>30</sup> Thanks largely to this

**Figure 5: Proportion of Malaysian Agricultural Production by State, Selected Commodities, 2015**



Source: Ministry of Agriculture and Agro-based Industry, Malaysia, *Agrofood Statistics 2015*, passim; Department of Veterinary Services, Malaysia, “Livestock Statistics”.

<sup>30</sup> Department of Statistics, Malaysia, *Economic Census 2016: Crops*, p. 107.

**Table 6: Value-added per Worker per Month, and Fixed Asset Values per Establishment, Selected Agricultural Products, Malaysia, 2015**

Type of agricultural commodity	Value-added per worker per month		Fixed asset value per establishment	
	Average (RM)	Highest rank (out of 82)	Average (RM '000)	Highest rank (out of 82)
Chicken, eggs	10,025	5	7,346	6
Chicken, broilers	9,045	6	3,501	14
Oil palms (estates)	8,426	7	15,449	3
Ducks, broilers	6,685	10	3,000	17
Swine	5,612	13	1,468	37
Oil palms (smallholdings)	5,587	14	1,454	38
Coconuts (estates and smallholdings)	5,547	15	4,220	11
Cattle	4,908	19	322	69
Ornamental fish	3,665	32	459	65

Source: Department of Statistics, Malaysia, *Economic Census 2016: Livestock*, pp. 101–3; Idem., *Economic Census 2016: Crops*, pp. 101–6; Idem., *Economic Census 2016: Fisheries*, pp. 99–101.

tree crop, Johor's cash crop sector remains one of Malaysia's greatest by output and employment.<sup>31</sup>

Not to be overshadowed, Johor's livestock sector, led by chicken and pig husbandry, also made significant contributions to overall agricultural gains (RM0.89 billion in 2015).<sup>32</sup> Indeed, because of these pastoral activities, Johor's livestock business has become Malaysia's largest, whether in terms of output value, or people employed.<sup>33</sup>

It is probably no coincidence that many of Johor's leading agricultural activities also tend to be fairly capital-intensive, as indicated by the relatively high values of land, buildings, and equipment used to generate output (fixed asset values). We can thus safely infer that the more muscular features of Johor's agricultural sector are underpinned by selective specialization in high-earning, capital-intensive activities.

Focusing on present-day product specialization, however, does not tell us *why* such clustering has occurred in Johor. Answering this puzzle means turning to history, both of the more distant and recent varieties. Much of Johor's agricultural past still lies buried and unappreciated; that which is being progressively unearthed is fascinatingly complex, and only the briefest of outlines can be provided here.

## PRE-INDEPENDENCE ACTIVITIES

Most narratives of Johor's oil palm landscape usually emphasize how quickly oil palm cultivation expanded from the 1960s onwards. Much of this explosion was triggered by oil palm's increasing profitability relative to Malaysia's then-agricultural export mainstay, *Hevea* rubber. Large-scale land development initiatives pioneered by the FELDA, Johor's own state schemes, as well as the replanting efforts of private estates and independent smallholders collectively fuelled a surge of oil

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<sup>31</sup> Ibid.

<sup>32</sup> Ibid.; Department of Statistics, Malaysia, *Economic Census 2016: Livestock*, p. 104.

<sup>33</sup> Department of Statistics, Malaysia, *Economic Census 2016: Livestock*, p. 104.

palm planting.<sup>34</sup> These transformations, by and large, ensured that nearly three out of every ten acres of oil palms in Malaysia would be found in Johor by the mid-1980s.<sup>35</sup> Until today, Johor's oil palm acreage remains Peninsular Malaysia's highest.<sup>36</sup>

While Johor's rapid ascendance certainly owes much to these recent developments, the speed, scope, and character of this expansion would have been impossible without two "gifts" from the more distant past. First, at independence, the territory inherited vast areas of suitable agricultural land for replanting — crucial to a land-hungry crop like the oil palm — as well as wide-ranging transport networks needed to convey heaps of bulky good to the marketplace. As far back as the early nineteenth century, Johor's rulers demonstrated a predilection for encouraging wealth accumulation through extensive forest clearance for cash cropping. This began with awarding riverine concessions for Chinese-controlled pepper and gambier farming, followed by financial support to encourage Dutch East Indies immigrants to farm areca nuts and coconuts along Johor's lengthy coastlines. From the 1910s onwards, cheap land concessions for rubber and pineapple cultivation could be added to this list. Thus, over the course of one-and-a-half centuries, successive agricultural enterprises bequeathed independence-era Johor with over a million acres of already-cleared agricultural land suitable for oil palm cultivation.<sup>37</sup>

Johor's denizens can also lay claim to a second legacy: privileged access to unrivalled flows of trade, investment, manpower, and commercial expertise, all tailored towards export-oriented agriculture. By the 1820s, two groups of merchant communities — one predominantly Western in origin, the other Asian — had begun converging on Singapore, after the island's re-emergence as a major entrepot under British colonial

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<sup>34</sup> Rasiah, "Export Expansion", pp. 164–65.

<sup>35</sup> Malek bin Mansoor and Barlow, "Smallholder Subsector", p. 15.

<sup>36</sup> Malaysian Palm Oil Board, "December 2016".

<sup>37</sup> Pakiam, "Johor", pp. 54-71, 334.

rule. The Western segment specialized in supplying both capital inputs and skilled human resources to local planters and smaller merchants, while operating as gatekeepers to European markets. The Asian, Chinese-dominated segment used their intimate familiarity with regional trade networks to act as intermediaries for remote communities. In exchange for raw produce, they carved out niches supplying credit, consumer goods, and unskilled labour to smaller enterprises, especially those operating within Singapore's geographic vicinity, such as Johor and Sumatra. Both mercantile groups quickly developed complementary relations, in turn encouraging local cash croppers to quickly scale up production in tandem with rising global demand for agricultural commodities.<sup>38</sup> The aristocrats who oversaw Johor's agricultural development — and indeed, its transition from a maritime-based polity to a territorial state during the nineteenth century — did so leaning on the economic advantages of being physically proximate to Singapore.<sup>39</sup>

Western capital, Asian merchants, mobile labour, and local rule thus propelled rubber cultivation across Johor, Singapore and neighbouring areas during the early 1900s. When rubber markets slumped after the First World War, oil palms beckoned to estate planters and their mercantile backers, not least in Johor.<sup>40</sup> By 1940, Johor was already hosting nearly half of Malaya's oil palm lands, not to mention some of the most advanced (and costly) palm fruit processing technologies seen to date in Southeast Asia.<sup>41</sup>

As local populations grew, so did their need for fresh food. By the 1930s, vast patchworks of Chinese market gardens were surrounding Johor's railway stations, enabling the swift despatch of leafy vegetables, tubers, beans, and other legumes.<sup>42</sup> These products catered directly to the appetites of Singapore and Johor's growing resident populations.

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<sup>38</sup> Giacomini, "Export Cluster", pp. 282–86.

<sup>39</sup> Trocki, *Prince of Pirates*, pp. 86–91, 98–123.

<sup>40</sup> Giacomini, "Export Cluster", pp. 286–98.

<sup>41</sup> Pakiam, "Johor", pp. 160, 334.

<sup>42</sup> Grist, *Outline*, pp. 242–48.

Vegetables like *kangkong* were also nurtured to feed an expanding Johorean pig industry; pork had become one of the main sources of fresh protein for burgeoning Chinese communities in both Johor and Singapore during the 1930s. Pig farming also became more economically viable during this interval because of lower production costs. Protein-rich copra cake, a pulverized by-product of Singapore's rapidly expanding coconut kernel crushing industry, helped cheapen pig feed outlays, while simultaneously shortening the time needed to raise slaughter-ready hogs to just eight months.<sup>43</sup>

War and social upheaval brought Johor and Singapore even closer together. During the 1940s and 1950s, market gardens proliferated in response to local food shortages since the outbreak of the Second World War. Despite the illegal status of many such "squatter" farms, Johor's administrators condoned their expansion within southern Johor because of widespread hunger, as well as the need to provide livelihoods for otherwise unemployed Chinese labourers.<sup>44</sup> Other Johor-based vegetable and pig farms were catalysed by federal efforts to relocate Chinese communities to new village sites, as part of a strategy to counter Malayan Communist Party guerrilla tactics.<sup>45</sup>

By the same token, Johor's ornamental fish farm industry appears to have been kick-started during the 1950s. Local entrepreneurs spied a market opportunity and started collecting fish from Johor's wetlands and peat swamps for breeding purposes and sale to nearby Singapore, long before such practices spread to other parts of Malaysia.<sup>46</sup>

## MORE RECENT TRENDS

Other prominent forms of Johor-based produce are more readily traced to recent times. Take the example of the poultry industry, now Malaysia's

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<sup>43</sup> Pakiam, "Johor", pp. 209–10.

<sup>44</sup> Local Produce Working Committee, *Singapore*, pp. 7–11, 18, 23.

<sup>45</sup> Pakiam, "Johor", pp. 283–84.

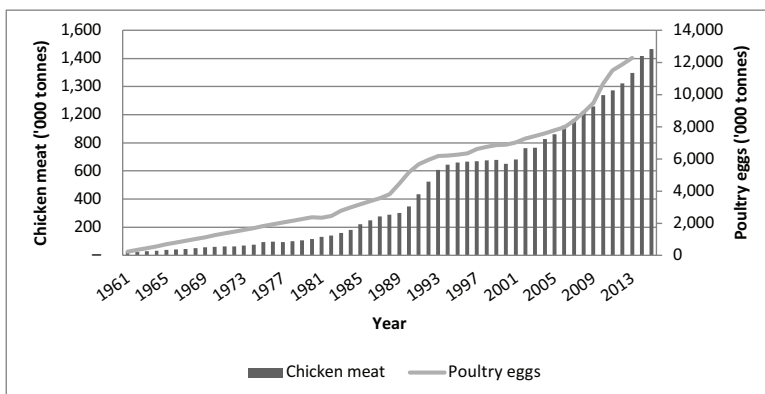
<sup>46</sup> Ng, *Fish Trade*, p. 9.



largest livestock offering: until the 1960s, local chicken meat and egg production was relatively insignificant. Malayan village holdings had played host to complementary flocks of fowls since antiquity, but there were apparently few specialist producers around using capital-intensive farming methods. Most poultry supplies before the Second World War had to be sought from mainland Southeast Asia and China.<sup>47</sup> This all seems to have changed markedly by the 1980s, if not earlier (Figure 6).

Malaysian chicken meat saw production surge from the mid-1980s to the mid-1990s, before regaining momentum after the 1997–98 Asian Financial Crisis. Poultry egg output (of which chicken eggs constitute the vast majority) mirrored these gains. In fact, by the mid-1990s, local poultry farmers had turned Malaysia’s long-standing national poultry product trade deficit into a surplus (see Table 2 earlier).

**Figure 6: Production of Chicken Meat and Eggs, Malaysia, 1961–2015**



Source: FAOSTAT, “Food Supply — Crops, Livestock and Fish Primary Equivalent”, FAOSTAT website, <[www.fao.org/faostat/en/#data](http://www.fao.org/faostat/en/#data)> (accessed 11 December 2017).

<sup>47</sup> Grist, *Outline*, pp. 338–39.

Remarkably little seems to have been written on the recent histories of these Malaysian-based agribusinesses, let alone Johor's. In many ways the rise of Malaysia's poultry sector is encapsulated by the rise of Leong Hup (Malaysia) Berhad, today one of the country's largest home-grown poultry operations. Leong Hup apparently began operations in the early 1960s as a small Chinese family-run "backyard farm" in northwest Johor, eventually mutating into an incorporated business by 1979.<sup>48</sup> By the early 1990s, the Lau family had successfully breached the other end of the poultry value chain, acquiring some 30 per cent of KFC (Malaysia) Holdings Berhad. They were eventually pressured into selling their stake to Datuk Ishak Ismail, a businessman linked with Malaysia's largest political party — United Malays National Organization — in 1996. The Laus reportedly used their sales proceeds to expand their chicken farm holdings (which, if true, may partly help explain the surge in poultry production after the Asian Financial Crisis).<sup>49</sup>

Today, Leong Hup Holdings is a leading Malaysian industry integrator, breeding and rearing parent stocks, raising broiler day-old chicks, contracting farming out to smaller producers, slaughtering and processing broiler chickens, retailing produce, as well as farming eggs and supplying poultry inputs.<sup>50</sup> The firm currently controls a quarter of Malaysia's poultry market share, and continues to operate Johor-based facilities, including a large chicken farm in Desaru.<sup>51</sup> Its current executive chairman, Tan Sri Francis Lau Tuan Nguang, reportedly engages in occasional discussions with Malaysian government officials to ensure that Malaysian consumers are supplied with sufficient chicken meat during major local festivals.<sup>52</sup>

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<sup>48</sup> Munira binti Halili, "Chicken Lovers", p. 10.

<sup>49</sup> Gomez, "Political Business", p. 88; Risen Jayaseelan and Ng Bei Shan, "Francis Lau on chicken and eggs", *The Star*, 7 March 2015.

<sup>50</sup> Munira binti Halili, "Chicken Lovers", p. 10.

<sup>51</sup> Ho Wah Foon, "Soaring high on roosters", *The Star*, 12 February 2017.

<sup>52</sup> *Ibid.*

While Chinese-owned poultry farming enterprises such as Leong Hup's continue to dominate Johor's poultry sector, the state-linked Johor Corporation also commands a significant share of the domestic Malaysian sector. Through a controlling stake in QSR Brands (Malaysia) Holdings Sendirian Berhad — which in turn oversees the Ayamas group of companies — the Corporation manages a dense chain of large-scale poultry-based activities.<sup>53</sup> To begin with, Ayamas Integrated Poultry Industry Sendirian Berhad operates Malaysia's largest single feedmill. Feed products are channelled towards the Group's own chicken farms, as well as contract broiler farms throughout Malaysia. Ayamas Integrated's breeder unit supplies chicks to some forty contract farms, and currently has its own farm units in Sedenak, Johor, and Mantin, Negri Sembilan. Taken together, Ayamas' farm network has the capacity to supply up to 36 million broilers per year to three processing plants owned by Ayamas Food Corporation Sendirian Berhad. Ayamas' plants are deliberately located close to densely populated areas, with facilities at Port Klang, Penang and Johor's Bandar Tenggara. Processed meat is then retailed through the open market under the Ayamas brand, or else channelled into QSR Brands' fast-food restaurant chains, especially KFC Malaysia.<sup>54</sup>

The domestic market for chicken is probably already fairly saturated. With each Malaysian consuming around 42 to 50 kilograms of chicken meat per year, per capita rates are among the world's highest, falling only slightly behind the United States, Saudi Arabia, and Israel.<sup>55</sup> Perhaps recognizing this limitation from early on, Malaysian poultry integrators have already gone regional in various ways. The Lau family has expanded Leong Hup's meat and egg supply chains to Indonesia, the Philippines and Vietnam.<sup>56</sup> In Indonesia, for example, Leong Hup International has a controlling stake in twenty-year-old PT Malindo. A publicly listed firm that engages not just in chicken husbandry, but food

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<sup>53</sup> Hutchinson, "Electronics Sector", pp. 28-29.

<sup>54</sup> Johor Corporation, *Annual Report*, pp. 16, 50–52, 249–53.

<sup>55</sup> OECD, "Meat consumption".

<sup>56</sup> Wong, "Agriculture", p. 143.

processing and large-scale animal feed manufacture, PT Malindo had an estimated market capitalization of RM1 billion in 2015.<sup>57</sup>

Meanwhile, through QSR Trading, Johor Corporation has overseen the geographic expansion of its fast-food retail segment, notably through KFC Singapore, KFC Brunei and KFC Cambodia. Such transnational linkages do not show up easily via conventional statistical measurements of Malaysian agricultural trade. While considerable analytical research on transnational business networks has already been conducted on Malaysia's oil palm sector,<sup>58</sup> there is still nothing comparable for the Malaysia's poultry enterprises, which is surprising given their size, reach, and complexity.

Amidst these expansions, Singapore's market presence continues to weigh considerably on Johor's agricultural landscape. A contemporary account of Johor's economic development, written in 1995, noted that Johor's poultry sector output had been mounting, largely in response to recent demands from Singapore-based restaurants and households.<sup>59</sup> These expansions were partly driven by Singapore-based entrepreneurs' overseas investments in livestock production, following Goh Keng Swee's decision (in his capacity as Singapore's Director of the Primary Production Department) to phase out Singapore's family-run farms from 1984 onwards.<sup>60</sup> As late as 2013, observers were still considering Singapore a "captive market" for Malaysian chicken eggs, with over 94 per cent of fresh eggs found in Singapore's wet markets, supermarkets and restaurants coming mostly from Johor (the proportion has since come down, mostly due to a resurgence of local production in Singapore, but still remained above 75 per cent in 2016).<sup>61</sup>

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<sup>57</sup> Jayaseelan and Ng, "Francis Lau on chicken and eggs", *The Star*, 7 March 2015; PT Malindo Feedmill Tbk, *Annual Report*, pp. 15, 41.

<sup>58</sup> Pye and Bhattacharya, *Controversy*; Cramb and McCarthy, *Complex*; Varkkey, *Haze Problem*.

<sup>59</sup> Anon., "Review of Johor", pp. 83–84.

<sup>60</sup> Chou, "Singapore", pp. 234–36.

<sup>61</sup> Anon. (website), "Malaysian Poultry Industry", p. 16; Faris Mokhtar, "Singapore does not import chicken and eggs from Kelantan: AVA", *Today*, 9 March 2017.

Singapore's strong connections to markets beyond Southeast Asia also continue to shape Johor's farming options. In present-day Johor, proximity to Singapore's Changi Airport (one of the world's busiest and most efficient cargo airports) has been a boon to Johor's production of cut flowers and ornamental fish, destined for lucrative markets in Europe and the Pacific region. Changi Airport's unmatched reputation for cost-effective cargo-handling — crucial for sustaining production clusters of high-value perishable goods — has allowed Singapore-based entrepreneurs to retain footholds in the ornamental product business, even as local farm production declined. Singapore businesses have taken up the mantle of becoming middlemen to smaller Johor-based farm operators. Moreover, for the past three decades, a supportive Malaysian licensing regime has encouraged Singaporean entrepreneurs to relocate their farms, or establish subsidiaries within Johor.<sup>62</sup> These trends all dovetail with the manner in which Johor's previous agricultural mainstays were sired, from pepper and gambier, to rubber and pineapples.

## AGRICULTURE'S GOVERNMENT

Seen from history's vantage point, the various official strategies and initiatives undertaken by Malaysian authorities to support Johor's agricultural development fall into several interrelated channels. First, Johor's state government — throughout history — has sought to harness opportunities for “economic twinning” with Singapore. Through the provisioning of cheap land, liberal investment policies, and efficient transport networks, Malaysia's southernmost territory has consistently sought to capture gains from international trade in primary products, relying to a large extent on networks of capital, labour and marketing expertise via Singapore.<sup>63</sup>

This internationalist orientation has not diminished significantly, despite Singapore's political independence since 1965. Malaysia's federal

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<sup>62</sup> Gasco, “Airport”, pp. 348–55.

<sup>63</sup> Khazanah Nasional, *South Johor*, p. 4.15.

authorities have, in fact, helped prolong this economic interdependence through massive public infrastructural upgrades, not least through initiatives to widen the Singapore-Johor Causeway in 1976, as well as the early 1990s.<sup>64</sup> At the same time, federal allocations directed towards Johor's internal transport networks and general development plans have been fairly generous. Those for Johor were amongst the highest of all states during the 1980s and 1990s.<sup>65</sup> Such allocations suggest close political ties between Barisan Nasional-dominated Johor and federal political elites. All in all, this balance between internal and externally-oriented infrastructure has helped bolster agricultural expansion and intensification within Johor's countryside.<sup>66</sup>

Second, federal and state authorities have gotten directly involved in Johor-based agricultural initiatives, whether in terms of research and development (R&D), producer cooperative formation, or through government-linked enterprises, such as FELDA, and the Johor Corporation (and its earlier incarnation, the Johor State Economic Development Corporation). These endeavours, especially those of government-linked enterprises, have tended to be coloured by ethno-nationalist considerations supporting greater Bumiputera capital ownership, and attempts to wrest lucrative trade flows away from Singapore. Adding further to these tensions — as well as indirect pressures to speed up structural change within agriculture — have been efforts to accelerate industrialization in Johor since the 1970s, if not earlier.

These dynamics are encapsulated in the Johor government's past struggles to enlarge its economy by fostering a new industrial cluster at Pasir Gudang, operating in the shadows cast by Johor Bahru and Singapore. In 1966, the year following Singapore's separation from the Malaysian mainland (and even before the onset of the Bumiputera-friendly New Economic Policy in 1970), Johor's government began planning for a new port near Johor Bahru, both in the interests of

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<sup>64</sup> Unit Perancang Ekonomi Negeri Johor, *Johor*, p. 145.

<sup>65</sup> Anon., "Review of Johor", pp. 36-37.

<sup>66</sup> Unit Perancang Ekonomi Negeri Johor, *Johor*, p. 145.

resource-based industrialization, as well as ensuring that Johor's rising flows of agricultural exports were not beholden to Singapore's own port facilities.<sup>67</sup> Backed by massive financial, technical, and regulatory support from Malaysia's federal government, the Johor authorities eventually established a modern harbour, Johor Port, and an accompanying industrial estate at Pasir Gudang in the late 1970s.<sup>68</sup> Cognizant of Singapore's incumbent advantages as a global trading centre, the Johor authorities had expended a total of \$165 million on Pasir Gudang's industrial estate by 1987, developing local housing, a town centre, as well as ancillary railways and highways, all in order to attract manufacturing investment.<sup>69</sup> Chaired by the state's Chief Minister, the Johor State Economic Development Corporation became the de facto manager of Pasir Gudang Industrial Estate.<sup>70</sup> In addition, both the Johor Corporation and FELDA bought their way into a large number of resource-based manufacturing activities housed at Pasir Gudang, including food processing and palm oil refining.<sup>71</sup>

Notwithstanding these combined efforts, Johor Port struggled to displace its Singapore counterpart during its opening decades. The exceptions to this trend lay in the trade of palm oil, fertilizers and rubber products. Between 1971 and 1985, Johor's overall share of primary exports dropped from 69.4 per cent to 6.5 per cent, displaced mostly by resource-based manufactures.<sup>72</sup> This outcome reflected Johor's agricultural strengths; not just a major site for tree crop cultivation and livestock husbandry, but as a rapidly ascending centre for the processing of bulky, perishable commodities. Johor's industrial development thus relied to a significant degree on the handling of live animals, meat, meat

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<sup>67</sup> Guinness, *Mukim Plentong*, p. 33.

<sup>68</sup> *Ibid.*, pp. 33–35.

<sup>69</sup> *Ibid.*, p. 35.

<sup>70</sup> *Ibid.*, pp. 34, 45.

<sup>71</sup> *Ibid.*, pp. 34–39.

<sup>72</sup> Unit Perancang Ekonomi Negeri Johor, *Johor*, pp. 55–56.

preparations, palm oil, palm kernels, rubber, as well as their derivatives and by-products, such as fertilizers and animal feed.<sup>73</sup>

By helping to propel Johor's industrialization, however, federal and state authorities indirectly contributed to a third major factor transforming Johor's agricultural scene: increasingly scarce labour. Thus, at Pasir Gudang Industrial Estate, roughly three-fifths of all workers by the mid-1980s were sourced from other parts of Johor. Nearby villages also saw labourers exit rubber tapping and weeding, seeking out better paying work in factories, construction and port-side activities. Large numbers of youth from FELDA settlements sought out job opportunities at Johor Port and Pasir Gudang, owing partly to underemployment on settler smallholdings.<sup>74</sup>

By the early 1990s, Johor's farmers were thus under heavy pressure to move into new crops and implement labour-saving technologies where possible.<sup>75</sup> "Fruits, vegetables, horticulture, aquaculture, and tropical fish are among sectors that are increasing in popularity," noted a major internal review of Johor's long-term development plans. "These sub-sector[s] are able to offer more value-added production with less labour requirement."<sup>76</sup> With the international market for cut flowers booming, Johor's flower exports consequently quadrupled in value in just four years, reaching RM20 million in 1994. Similar booms occurred in poultry meat and egg production during the same interval.<sup>77</sup> To be sure, the Johor authorities also dedicated large sums of money to agricultural restructuring. Under the Fifth Malaysia Plan, the state government put aside RM10.4 million for "agricultural development".<sup>78</sup>

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<sup>73</sup> Guinness, *Mukim Plentong*, pp. 39, 47; Unit Perancang Ekonomi Negeri Johor, *Johor*, p. 130.

<sup>74</sup> Guinness, *Mukim Plentong*, pp. 59, 126–27, 149–52, 156–57.

<sup>75</sup> Anon., "Review of Johor", p. 79.

<sup>76</sup> *Ibid.*, p. 80.

<sup>77</sup> *Ibid.*, pp. 83–84, 91.

<sup>78</sup> Unit Perancang Ekonomi Negeri Johor, *Johor*, p. 125.



There were nevertheless distinct limits to how much labour could be displaced by new technologies and agricultural activities. The oil palm industry, for instance, remains heavily dependent until today on manual labour for fieldwork. Federal efforts to advance fruit harvesting technology beyond the predominant pole-mounted sickle/chisel combination have not been popular. The latest attempt to do so, the Malaysian Palm Oil Board's *CANTAS* — a petrol-powered, motorized version of the extended sickle — can potentially triple labour productivity. But the limited reach of current versions restricts their use to shorter (and hence less productive) palms, while vibrations from prolonged wielding can cause serious nerve tissue damage to a worker's upper limbs.<sup>79</sup>

Notwithstanding these genuine technological constraints, local firms have also had little incentive to improve labour productivity, thanks to the federal government's liberal foreign labour policies.<sup>80</sup> Lax migrant labour regulations have effectively repressed Malaysian agricultural wages, and enabled rapid agricultural labour shedding (mostly of the Indonesian variety) during commodity downcycles.<sup>81</sup> Moreover, undocumented migrant workers have become a long-term social and economic concern in Malaysia; as many as 50,000 undocumented immigrants were thought to be employed in Johor plantations alone by the late 1980s.<sup>82</sup>

To be fair, this situation is hardly unique to Johor's agricultural sector. Low-wage activities within construction, manufacturing and services are also affected. Pasir Gudang, a now long-time hive of industrial activity, is still heavily peppered by undocumented Indonesian migrants, some of whom have already been residing for over fifteen years in southern Johor.<sup>83</sup> But state and federal authorities — unable to provide credible estimates of migrant workers for decades — have turned a blind eye to the

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<sup>79</sup> Salleh et al., "Vibration Analysis", pp. 615–25; Guturu and Singh, "Oil Palm", pp. 23–27.

<sup>80</sup> Zunaira Saieed, "Reducing reliance on foreign workers", *The Star*, 2 May 2016.

<sup>81</sup> Saravanamuttu, "Malaysia", pp. 120–39.

<sup>82</sup> Unit Perancang Ekonomi Negeri Johor, *Johor*, p. 126.

<sup>83</sup> Ibrahim Ngah, "Pasir Gudang", p. 4.

phenomenon.<sup>84</sup> Malaysia's publicly available agricultural productivity figures are thus almost certainly overestimates. In other words, we do not know how many people actually work in Johor's agricultural sector each year, except to say that the numbers are probably underestimates. Until more accurate estimates (including previously undocumented workers) can be tabulated and publicly disseminated, Johor's agricultural productivity figures remain somewhat provisional in nature.

## FINAL REMARKS

Many development economists, including those from the World Bank, have suggested that state-level economic growth usually follows an evolutionary path from agricultural-based production, to that of densely populated urban societies anchored in high-tech manufacturing and services, where agriculture contributes only around 5 per cent of gross domestic product.<sup>85</sup> At the sub-national level, however, Johor's present status complicates this assumption somewhat: despite being an already highly urbanized economy, agriculture still contributed almost 14 per cent of state gross domestic product in 2016. This paper has argued that such an aberration may not be a temporary phenomenon, but rather something structurally embedded within Johor's historical geography.

From early on, urban growth appears to have offered complex challenges and opportunities for Johor's agricultural sector. Since the nineteenth century, Johor's wealth creation through agriculture was based on deep engagement with international markets, not least through what the town of Singapore could offer through ancillary trade, labour, and services. Singapore's continued growth in population and prosperity has also created new agri-business opportunities for Johor, not least in food production. However, Singapore's economic growth has also seen various manufacturing and service activities relocate to cheaper locales in Johor since at least the 1980s. In turn, Johoreans have spent

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<sup>84</sup> Lee and Khor, "Migrant Workers".

<sup>85</sup> World Bank, *Report 2008*, p. 4.

progressively less time in agriculture, in favour of higher earning non-farm occupations.

Nonetheless, as incomes within Johor and the rest of Malaysia have increased, so too has the domestic market for agricultural produce, especially food items, presenting new opportunities for growers to satisfy local appetites. But this dynamic lies in tension with accompanying pressures to convert increasingly expensive local farmland to higher value uses, often of non-farm varieties. This seems especially pertinent to Johor's Iskandar Malaysia region, whose regional development authority is only prepared to safeguard about three-fifths of all existing farmland within the Iskandar Malaysia development corridor by 2030, leaving the remainder to be converted to more lucrative urban purposes.<sup>86</sup>

What might the future portend for agriculture in Johor? State planners, reflecting on recent growth trends since 2000, project that agriculture's footprint in Johor is likely to expand up to 2030. Most new cultivation will occur in districts that planners believe will be least affected by urban sprawl, namely Kota Tinggi, Batu Pahat, Kluang and Tangkak.<sup>87</sup> Oil palms are likely to increase their foothold in Johor by an additional 100,000 hectares in 2030 (13 per cent more than 2015 figures). Chillies, pineapples, vegetables and other food crops may see further additional planting in the next decade. Similar increases are projected for aquaculture.<sup>88</sup> There are also publicly and private-funded moves afoot to expand Johor's already-considerable livestock sector — especially in the areas of chicken-rearing, beef cattle-ranching, and dairy-farming — and integrate it further into the oil palm industry's complex value chain.<sup>89</sup>

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<sup>86</sup> Khazanah Nasional, *South Johor*, p. 11.2; Iskandar Malaysia Regional Development Authority, *Plan II*, pp. 6.6, 8.10, 8.56; Jabatan Perancangan Bandar dan Desa Negeri Johor, *Kajian Semula*, p. 2.97.

<sup>87</sup> Jabatan Perancangan Bandar dan Desa Negeri Johor, *Kajian Semula*, p. 2.97.

<sup>88</sup> *Idem*, *Draf Rancangan*, pp. 2.27–2.28.

<sup>89</sup> Ariff, Sharifah and Hafidz, “Beef Industry”, pp. 1–21; P. Aruna, “Potential game changer - palm kernel made into chicken feed”, *The Star*, 11 May 2017; *The Malaysian Insight*, “Johor agriculture hub gets RM500 million in new investments”, 2 December 2017; *The Star*, “Johor to be hub of country's beef production”, 28 May 2018.

In short, oil palm's continued expansion in Johor may actually benefit a number of other closely related high-earning agrofood activities, rather than crowd them out.

These synergies are also reinforced by the fact that Johor's still-expanding agrofood and oleo-chemical processing industries, support by the Johor state and Iskandar Malaysia authorities, are likely to draw upon Johor-sourced agricultural offerings, especially where they are either highly perishable (like poultry) or are bulky to transport, with a relatively low value-to-weight ratio (like crude palm oil).<sup>90</sup> As Khaled Nordin, Johor's then-Chief Minister and Chairman of the Iskandar Regional Development Authority declared in November 2016, "We are ... banking on our position as one of the top three states in the country in [agricultural production] to develop the [industrial] bioeconomy sector."<sup>91</sup> Iskandar Malaysia's ambition to supply the global halal consumer market (estimated to be worth over USD\$6 trillion a year by 2020) with processed foods is also likely to catalyse local agricultural expansion.<sup>92</sup> There is nothing quaint about such ambitions: in many urbanized economies today, agribusiness, food industry and services still account for much as a third of national-level gross domestic product.<sup>93</sup>

That being said, local complications abound. Coconuts, coffee, and rubber farming, having been either commercially stagnant or in retreat for decades, are likely to see croplands in Johor continue to shrink, or at least cease expansion.<sup>94</sup> Johor's cocoa growers are unlikely to revive production significantly, despite the fact that the state's cocoa grinders and chocolate-making industries are geared to expand production

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<sup>90</sup> Khazanah Nasional, *South Johor*, p. 4.11; Iskandar Malaysia Regional Development Authority, *Plan II*, pp. 4.3, 4.20–4.24.

<sup>91</sup> Zazali Musa And, "3 core sectors to spearhead Johor's regional economic plan", *The Star*, 18 November 2016.

<sup>92</sup> Iskandar Malaysia Regional Development Authority, *Plan II*, pp. 4.17–4.20; *IM BizWatch*, "Iskandar Malaysia Halal Technology Hub", 31 January 2014, p. 4.

<sup>93</sup> World Bank, *Report 2008*, p. 4.

<sup>94</sup> Jabatan Perancangan Bandar dan Desa Negeri Johor, *Draf Rancangan*, pp. 2.27–2.28.

further, as part of government plans to make Malaysia Asia's next "King of Chocolate".<sup>95</sup> Pest and disease problems stemming from forest rent exhaustion, state neglect, competition from Indonesia's cocoa producers, and higher returns from oil palm cultivation have all discouraged local growers from remaining invested in cocoa.<sup>96</sup>

Water management issues also pose further conundrums. Although Johor's inhabitants receive far more rainfall than they will ever probably ever draw on for the conceivable future, their access to potable supplies continues to be problematic. As recently as April 2016, 85,000 Johorean residents and industrial users had water rationing imposed on them, triggered by a conjunction of drought, pollution, and saltwater infiltration of freshwater bodies.<sup>97</sup> Worse still, Johor's near-term population growth and projected future water usage is set to smash earlier estimates by concerned observers. Iskandar Malaysia's gathering momentum is responsible for these revisions. The most recent figures from 2018, drawn from the state government's draft planning review for the period up until 2030, posit 6.2 million Johorean residents by 2030, a quarter higher than projections made in 2011. By the same token, projected state-level potable water demand for domestic, industrial and commercial purposes by 2030 (some 2,761 million litres/day) is set to surpass earlier projections that forecasted such levels being attained only after 2050.<sup>98</sup>

Although most of this burgeoning water demand will come from urban activities, agriculture will also draw upon larger volumes of water as it expands. Future demand is less likely to come from Johor's cash crops (which require little irrigation, being predominantly rain-fed), and more likely to stem from Johor's rising livestock population. Most of the water used by poultry, cattle, pig and ruminant-keepers goes to keeping

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<sup>95</sup> *Straits Times*, "Malaysia aims to be chocolate king of Asia", 8 October 2016; *The Iskandarian*, "Time to Celebrate with Hershey's Johor", 8 May 2017.

<sup>96</sup> Arshad and Ibragimov, "Cocoa Beans", pp. 1–14.

<sup>97</sup> Ewing and Domondon, "Water Needs", p. 2.

<sup>98</sup> Jabatan Perancangan Bandar dan Desa Negeri Johor, *Draf Rancangan*, 2.35; Ewing and Hangzo, "Water Access", p. 396.

animals well-hydrated, with smaller amounts dedicated to livestock washing and abattoir cleansing. Should livestock population growth follow recent historical trends, Johor's water usage by livestock could almost treble from 2010 figures to constitute 6 per cent of Johor's total water demand by 2030.<sup>99</sup> Moreover, unless additional measures are taken to stem water pollution from livestock farming and agro-processing in Johor, incidents such as 2017's multiple shutdowns of water treatment facilities at Semanggar and Sungai Johor are likely to happen again, if not on an even larger scale.<sup>100</sup>

Given Pakatan Harapan's recent electoral victory at both the federal and Johor state seat levels, other uncertainties affecting local agriculture are also becoming more apparent. With Mahathir Mohamad having reclaimed the premiership he relinquished in 2003, some observers anticipate that Malaysia's federal authorities may soon opt for policies privileging manufacturing and services growth over domestic food production, as they supposedly did under Mahathir's rule during the 1980s and 1990s. The historical link between Mahathir's earlier inclinations and agricultural neglect, however, is inconclusive, and is still being contested by analysts.<sup>101</sup> Under Mahathir, Malaysia's federal and state governments had in fact periodically pumped large sums of money into domestic food cultivation before the turn of the century, for instance, increasing the federal Fund for Food to RM600 million in 1995.<sup>102</sup> If anything, Malaysia's newly appointed Minister for Agriculture and Agro-Based Industries, Salahuddin Ayub, appears keen to revive plans to expand cattle husbandry in Johor (as well as rice cultivation in East Malaysia). First formulated during the premierships of Abdullah Badawi and Najib Razak, Salahuddin has vowed to avoid the venality that

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<sup>99</sup> Department of Irrigation and Drainage Malaysia, *Johor*, pp. 1.4, 9.8.

<sup>100</sup> *Bernama*, "Poultry Farm Linked to Ammonia Pollution Given 6 Months To Buck Up", 6 February 2018.

<sup>101</sup> For instance, see Wong, "Agriculture", p. 131.

<sup>102</sup> Anon., "Review of Johor", pp. 85, 91, 149.

characterized previous operations.<sup>103</sup> Much also depends on the evolving world trade situation. Malaysian agriculture and food processing have previously fared better than higher end activities during global recessions in the 1990s and 2000s.<sup>104</sup>

Other political issues may be even more pertinent to Johor's long-term agricultural future. The changing of the political guard in Malaysia is usually accompanied by new publicly funded schemes — often associated with a key political figure — that may overturn previous planning assumptions. The situation in Johor seems little different in this regard so far. In rural northern Johor, for instance, Gambir's powerful assemblyman Muhyiddin Yassin has already secured the Chief Minister's agreement to develop a new industrial park in the locality, possibly taking out agricultural land in the process.<sup>105</sup> Although Muhyiddin is publicly touting the proposed manufacturing zone in rural Tangkak as a boon to local agriculturalists looking to sell their goods to food processors, such schemes nevertheless introduce new uncertainties into preconceived land use projections, such as the continued expansion of Johor's oil palm lands.

Finally, ongoing moves to reduce income inequality, including the pending implementation of higher minimum wages, are likely to squeeze agricultural enterprises reliant on cheap labour.<sup>106</sup> Elsewhere, Malaysia's new Human Resources Minister, M. Kulasegaran, has already broadcast intentions to trim the country's intake of lowly paid migrant workers, in line with Pakatan Harapan's campaign manifesto.<sup>107</sup> Although federal

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<sup>103</sup> Tasnim Lokman and Fahmy Azril Rosli, "Transparency and fairness: Salahuddin to reform ministry", *New Straits Times*, 27 May 2018; *The Star*, "Johor to be hub of country's beef production", 28 May 2018; Davidson, "Rice Sector", pp. 123–26.

<sup>104</sup> Arshad, Radam and Mohamed, *Fruits Industry*, p. 1.

<sup>105</sup> Zazali Musa, "Gambir, north Johor growth area", *The Star*, 28 May 2018.

<sup>106</sup> *Bernama*, "RM1,500 minimum wage will hurt plantation industry, says Sime Darby", 31 May 2018.

<sup>107</sup> Pakatan Harapan, *Buku Harapan*, pp. 38, 95.

authorities have previously expressed intentions to prioritize domestic employees over non-nationals, the new Pakatan Harapan-led federal government is currently under unprecedented pressure to deliver on its election promises. While it is clearly too soon to make any definitive statements, a forthcoming reduction of foreign workers in agriculture will help highlight the extent to which Johor’s agricultural operations have been reliant upon cheap foreign labour.

These uncertainties provoke further questions. To what extent does Johor’s high agricultural productivity — far higher than oil palm-heavy states like Sabah and Sarawak — lie in specific synergies between agriculture, manufacturing and services that help agriculture to “stick around”, as opposed to dependence on low-wage labour? And what more might studying the transnational linkages within Johor’s other current agricultural mainstay — poultry farming — tell us about the persistence of agriculture within Johor, if not Malaysia itself? Further research should provide more refined answers to these puzzles.

## REFERENCES

- Anon. “Review of Johor Long-Term Economic Development Plan 1995–2010”. Mimeographed. Johor Bahru, December 1995.
- Ariff O. M., N. Y. Sharifah and A. W. Hafidz. “Status of Beef Industry of Malaysia”. *Malaysian Journal of Animal Science* 18, no. 2 (2015): 1–21.
- Ariffin, Jamilah, ed. *From Kampung to Urban Factories: Findings from the HAWA Study*. Kuala Lumpur: University of Malaya Press, 1994.
- Arshad, Fatimah Mohamed, ed. *50 Years of Malaysian Agriculture: Transformational Issues, Challenges and Direction*. Serdang: University Putra Malaysia, 2007.
- and Mad Nasir Shamsuddin. “Food Security and the Issue of Agricultural Land”. In *Tanah Air Ku: Land Issues in Malaysia*, edited by Consumers’ Association of Penang. Penang: Consumers’ Association of Penang, 2000.
- , Alias Radam and Zainalabidin Mohamed. *The Fruits Industry in Malaysia: Issues and Challenges*. Serdang: Universiti Putra Malaysia Press, 2005.



- and Abdulla Ibragimov. “Malaysia’s Cocoa Beans Decline: A Prognosis”. *International Journal of Agriculture, Forestry and Plantation* 1 (2015): 1–14.
- Chou, Cynthia. “Agriculture and the End of Farming in Singapore”. In *Nature Contained: Environmental Histories of Singapore*, edited by Timothy Barnard. Singapore: NUS Press, 2014.
- Cramb, Rob and John F. McCarthy, eds. *The Oil Palm Complex: Smallholders, Agribusiness and the State in Indonesia and Malaysia*. Singapore: NUS Press, 2016.
- Davidson, Jamie S. “Stagnating Yields, Unyielding Profits: The Political Economy of Malaysia’s Rice Sector”. *Journal of Southeast Asian Studies* 49, no. 1 (2018): 105–28.
- Department of Irrigation and Drainage Malaysia. *Review of the National Water Resources Study (2000–2050) and Formulation of National Water Resources Policy. Final Report. Volume 17 — Johor*. Kuala Lumpur: Ministry of Natural Resources and Environment of Malaysia, 2011.
- Department of Statistics, Malaysia. *Population and Housing Census of Malaysia: General Report of the Population Census, Volume 1*. Kuala Lumpur: Department of Statistics, Malaysia, 1983.
- . *Population and Housing Census of Malaysia 1980: Population Report for Administrative Districts, Occupation, Industry*. Kuala Lumpur: Department of Statistics, Malaysia, 1984.
- . *Population and Housing Census of Malaysia 1991: Population Report for Administrative Districts: Occupation and Industry*. Kuala Lumpur: Department of Statistics, Malaysia, 1995.
- . *Population and Housing Census of Malaysia 2000: Economic Characteristics of the Population*. Putrajaya: Department of Statistics, Malaysia, 2003.
- . *Population and Housing Census of Malaysia 2010: Economic Characteristics of the Population*. Putrajaya: Department of Statistics, Malaysia, 2013.
- . *Population Distribution and Basic Demographic Characteristics, 2010*. Putrajaya: Department of Statistics, Malaysia, 2013.
- . *Supply and Utilization Accounts, Selected Agricultural Commodities, 2011–2015*. Putrajaya: Department of Statistics, Malaysia, 2016.

- . *Economic Census 2016: Crops*. Putrajaya: Department of Statistics, Malaysia, 2017.
- . *Economic Census 2016: Livestock*. Putrajaya: Department of Statistics, Malaysia, 2017.
- . *Economic Census 2016: Fisheries*. Putrajaya: Department of Statistics, Malaysia, 2017.
- . *Current Population Estimates, 2017*. Putrajaya: Department of Statistics, Malaysia, 2017.
- . *GDP by State, National Accounts, 2010–2016*. Putrajaya: Department of Statistics, Malaysia, 2017.
- . *Household Income and Basic Amenities Survey Report 2016*. Putrajaya: Department of Statistics, Malaysia, 2017.
- . *Labour Force Survey Report, 2016*. Putrajaya: Department of Statistics, Malaysia, 2017.
- Ewing, Jackson J. and Pau Khan Khup Hangzo. “Development in Johor and Singapore’s Water Access: Challenges and Opportunities”. In *The SIJORI Cross-Border Region: Transnational Politics, Economics, and Culture*, edited by Francis E. Hutchinson and Terence Chong. Singapore: ISEAS – Yusof Ishak Institute, 2016.
- and Karissa Domondon. “Drought, Pollution and Johor’s Growing Water Needs”, *ISEAS Perspective* 47/2016, ISEAS – Yusof Ishak Institute, Singapore, 26 August 2016.
- Gasco, Anna. “The Airport and the Territory: Transnational Flows in the Singapore-Johor-Riau Cross-Border Region”. In *The SIJORI Cross-Border Region: Transnational Politics, Economics, and Culture*, edited by Francis E. Hutchinson and Terence Chong. Singapore: ISEAS – Yusof Ishak Institute, 2016.
- Giacomin, Valeria. “The Emergence of an Export Cluster: Traders and Palm Oil in Early Twentieth-Century Southeast Asia”. *Enterprise & Society* 19, no. 2 (2017): 272–308.
- Gomez, Edmund Terence. “Political Business in Malaysia: Party Factionalism, Corporate Developmentalism, and Economic Crisis”. In *Political Business in East Asia*, edited by Edmund Terence Gomez. London: Routledge, 2002.
- Government of Malaysia. *Ninth Malaysia Plan, 2006–2010*. Putrajaya: The Economic Planning Unit, Prime Minister’s Department, 2006.

- Grist, D.H. *An Outline of Malayan Agriculture*. Kuala Lumpur: Department of Agriculture, Straits Settlements and Federated Malay States, 1936.
- Guinness, Patrick. *On the Margin of Capitalism: People and Development in Mukim Plentong, Johor, Malaysia*. Singapore: Oxford University Press, 1992.
- Guturu, Kusuma and Vidhan Singh. “Harvesting of Oil Palm: An Ambitious Task Behind Ag. Engineers”. *International Journal for Research in Emerging Science and Technology* 2, no. 7 (2015): 23–27.
- Hutchinson, Francis E. “Johor and Its Electronics Sector: One Priority among Many?”. *ISEAS Working Paper* no. 1, Institute of Southeast Asian Studies, Singapore, 2012.
- Ibrahim Ngah. “Pembangunan Komuniti Di Pinggir Kawasan Metropolitan Kajian Kes Di Kawasan Parlimen Pasir Gudang (Community Development on the Fringe of a Metropolitan Area: The Case of Pasir Gudang Parliamentary Constituency”. Unpublished research report. Iskandar Malaysia UTM Research Centre, Johor Bahru, 2010.
- Iskandar Malaysia Regional Development Authority. *Comprehensive Development Plan II 2014–2025: Iskandar Malaysia*. Johor Bahru: Iskandar Regional Development Authority, 2015.
- . *10 Year Progress Report*. Malaysia: Iskandar Regional Development Authority, 2016.
- Jabatan Perancangan Bandar dan Desa Negeri Johor. *Johor 2030: Rancangan Struktur Negeri Johor 2030 (Kajian Semula)*. Kota Iskandar: Jabatan Perancangan Bandar dan Desa Negeri Johor, 2017.
- . *Draf Rancangan Struktur Negeri Johor 2030*. Kota Iskandar: Jabatan Perancangan Bandar dan Desa Negeri Johor, 2018.
- Johor Corporation. *Annual Report 2016*. Johor Bahru: Johor Corporation, 2016.
- Khazanah Nasional. *Comprehensive Development Plan for South Johor Economic Region 2006–2025*. Kuala Lumpur: Khazanah Nasional, 2006.
- Lee Hwok-Aun and Khor Yu Leng. “Counting Migrant Workers in

- Malaysia: A Needlessly Persisting Conundrum”. *ISEAS Perspective* 25/2018, ISEAS – Yusof Ishak Institute, Singapore, 25 April 2018.
- Lie, Merete and Ragnhild Lund. *Renegotiating Local Values: Working Women and Foreign Industry in Malaysia*. Richmond: Curzon Press, 1994.
- Local Produce Working Committee. *Food Supplies for Singapore*. Singapore: Government Printing Office, 1951.
- Malek bin Mansoor and Colin Barlow, “The Production Structure of the Malaysian Oil Palm Industry with Special Reference to the Smallholder Subsector”. *PORIM Occasional Paper No. 24*. Kuala Lumpur: PORIM, 1988.
- Ministry of Agriculture, Malaysia. *Third National Agricultural Policy (1998–2010)*. (Kuala Lumpur: Ministry of Agriculture, 1999).
- Ministry of Agriculture and Agro-based Industry, Malaysia. *Agrofood Statistics 2015*. Putrajaya: Ministry of Agriculture and Agro-based Industry, Malaysia, 2016.
- Mohamed Mohd Salleh and Rokiah Mohd Yusof. “Tropical Fruits and Vegetables in Malaysia: Production and Impact on Health”. In *Fruits and Vegetables for Health Workshop*, 15–16 August 2006, Seoul, Korea.
- Munira binti Halili. “The Factors Influencing Chicken Lovers in Malaysia, Race as the Moderating Variable”. Master’s Thesis, Universiti Sains Malaysia, 2011.
- Ng, Casey. “The Ornamental Freshwater Fish Trade in Malaysia”. *Agriculture Science Journal* 2 (2016): 7–18.
- Ong, Aihwa. *Spirits of Resistance and Capitalist Discipline, Second Edition: Factory Women in Malaysia*. Albany: State of University of New York Press, 2010.
- Pakatan Harapan. *Buku Harapan: Membina Negara Memenuhi Harapan*. Petaling Jaya: Pakatan Harapan, 2018.
- Pakiam, Geoffrey Kevin. “Smallholder Involvement in Tree Crops in Malaya, with Special Reference to Oil and Coconut Palms in Johor, 1862–1963”. Ph.D. Thesis, SOAS, University of London, 2017.
- Preston, David and Ibrahim Ngah. “Interpreting Rural Change in Malaysia”. *Singapore Journal of Tropical Geography* 33, no. 3 (2012): 351–64.

- PT Malindo Feedmill Tbk. *Annual Report 2016: Stepping into a New Milestone*. Jakarta: PT Malindo, 2017.
- Pye, Oliver and Jayati Bhattacharya. *The Palm Oil Controversy in Southeast Asia*. Singapore: Institute of Southeast Asian Studies, 2012.
- Rasiah, Rajah. "Explaining Malaysia's Export Expansion in Palm Oil and Related Products". In *Technology, Adaptation and Exports*, edited by Vandana Chandra. Washington, D.C.: World Bank, 2006.
- RMA Perunding Bersatu. *Johor Operational Master Plan Study*. Johor Bahru: State Economic Planning Unit, 1996.
- Rogers, Marvin L. *Local Politics in Rural Malaysia: Patterns of Change in Sungai Raya*. Boulder: Westview Press, 1992.
- Salleh, S. MD, Erween Abd Rahim, Imran Hj Ghazali, Khairull Azmi, Abdul Razak Jelani, Mohd Fauzi Ismail and Mohd Rizal Ahmad. "Hand-Arm Vibration Analysis of Palm Oil Harvester Machine". *Applied Mechanics and Materials* 315 (2013): 615–25.
- Saravanamuttu, Johan. "Migration and Flexible Labour in Malaysia". In *The Palm Oil Controversy in Southeast Asia: A Transnational Perspective*, edited by Oliver Pye and Jayati Bhattacharya. Singapore: Institute of Southeast Asian Studies, 2013.
- Thompson, Eric C. *Unsettling Absences: Urbanism in Rural Malaysia*. Singapore: NUS Press, 2007.
- Trocki, Carl A. *Prince of Pirates: The Temenggongs and the Development of Johore and Singapore, 1784–1885*. Singapore: NUS Press, 2007.
- Unit Perancang Ekonomi Negeri Johor. *Pelan Ekonomi Negeri Johor, 1990-2005*. Johor Bahru: Government of Johor, 1989.
- Vandergeest, Peter and Jonathan Rigg. "The Restudy 'Problem' and Agrarian Change: Revisiting Rural Places in Southeast Asia". In *Revisiting Rural Places: Pathways to Poverty and Prosperity in Southeast Asia*, edited by Jonathan Rigg and Peter Vandergeest. Singapore: NUS Press, 2012.
- Varkkey, Helen. *The Haze Problem in Southeast Asia: Palm Oil and Patronage*. London: Routledge, 2016.
- Wong, Larry C.Y. "Agriculture". In *Malaysia: Policies and Issues*

*in Economic Development*, edited by Khoo Siew Mun, Susan P.S. Teoh and Haji Ibrahim Ismail. Kuala Lumpur: Institute of Strategic and International Studies, 2011.

World Bank. *World Development Report 2008: Agriculture for Development*. Washington, D.C.: World Bank, 2007.

### **Websites**

Agri-Food & Veterinary Authority of Singapore. “Annual Report 2016/17”, November 2017 <<https://www.ava.gov.sg/docs/default-source/publication/annual-report/ava-ar-2016-17>> (accessed 20 November 2017).

———. “Country: Malaysia. Chicken Layer Farms Approved to Export Table Eggs to Singapore, MY180516”. “[https://www.ava.gov.sg/docs/default-source/tools-and-resources/resources-for-businesses/my\\_layerfarm.pdf](https://www.ava.gov.sg/docs/default-source/tools-and-resources/resources-for-businesses/my_layerfarm.pdf) (accessed 19 June 2018).

Anon. “Malaysian Poultry Industry: Past, Present & Future”. 30 November 2013 <[http://www.vet.upm.edu.my/dokumen/90301\\_malaysian\\_poultry\\_industry.pdf](http://www.vet.upm.edu.my/dokumen/90301_malaysian_poultry_industry.pdf)> (accessed 13 December 2017).

*Convert To* website <<http://convert-to.com/720/chicken-eggs-5-sizes-conversion-plus-nutrients-values.html>> (accessed 11 December 2017).

Department of Statistics, Malaysia. “Gross Domestic Product by Kind of Economic Activity at Constant Prices (2005=100), 2005–2013, Malaysia” <<http://www.epu.gov.my/sites/default/files/2.7.1.pdf>> (accessed 10 December 2017).

———. “Selected Agricultural Indicators, Malaysia, 2017” <<https://www.dosm.gov.my/v1/index.php?r=column/pdfPrev&id=MDN YUitINmRkKcENRY2FvMmR5TWdGdz09>> (accessed 4 January 2018).

Department of Veterinary Services, Malaysia. “Livestock Statistics 2015/2016. P. Malaysia: Poultry Population”, February 2017 <<http://www.dvs.gov.my/index.php/pages/view/1743>> (accessed 20 November 2017).

FAOSTAT. “Food Supply — Crops, Livestock and Fish Primary Equivalent”, FAOSTAT website, <[www.fao.org/faostat/en/#data](http://www.fao.org/faostat/en/#data)> (accessed 11 December 2017).

- Malaysian Palm Oil Board. “Oil Palm Planted Area by State as at December 2016(Hectares)”. n.d. <[http://bepi.mpob.gov.my/images/area/2016/Area\\_summary.pdf](http://bepi.mpob.gov.my/images/area/2016/Area_summary.pdf)> (accessed 24 January 2018).
- Organisation for Economic Co-operation and Development (OECD). “Meat consumption (indicator)”, 2018 <doi: <http://10.1787/fa290fd0-en>> (accessed 25 January 2018).
- World Bank. “World Development Indicators”, <<http://databank.worldbank.org/data/views/variableSelection/selectvariables.aspx?source=World-development-indicators#>> (accessed 21 November 2017).

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