

Securing Food Supply and Strengthening Social Resilience in Penang during the Covid-19 Crisis

Penang Institute¹

EXECUTIVE SUMMARY

- The globally accepted strategy of 'Flattening the Contagion Curve' in dealing with the Covid-19 pandemic has led the Malaysian Government to execute a Movement Control Order (MCO) that will last from 18 March to 14 April, 2020. Though a necessary move, the MCO brings immediate and serious difficulties to economic players across the board, and has led the government at the federal and the state level to implement stimulus packages of unseen proportions to cushion the damage to many businesses and industrial sectors. Providing healthcare equipment to patients and medical staff and institutions have also been a top priority.
- But just as important is the food supply situation to the population at large. The Penang State Government therefore commissioned Penang Institute to carry out a survey of the major players in the food supply industry in Penang. Among the findings are requests put to the State on the following issues :
 - Prepare a temporary policy on land and premise rental for private owners.
 - Apply economic support mechanisms for all businesses to limit bankruptcy.
 - Help the jobless, the poor, the vulnerable and the aged
 - Review the basic worker salary and sync it to employer ability to conform to it.
 - Prepare permits for petty traders and their staff for use at road blocks.
 - Allow a temporary slaughter facility on Penang Island.
 - Implement drive-through services² for essential food supply collection.
 - Improve facilities at wet markets.
 - Arrange for longer working hours.
 - Lower or subsidize electricity bills.
 - Implement funding support to food distributors.
 - Provide temporary zero-interest loans in needy cases.

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² The EFS survey respondent has identified a potential site at which to implement the drive-through service.

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Flattening the Curve and Supplying Food to Households

Since the Covid-19 pandemic hits Malaysia, much planning and resources have been pumped to soften the negative impact on the healthcare system. Not only are extra beds being prepared, extra hands are being recruited and equipment ranging from oxygen tanks to hand sanitizers have been sourced.

However, the medical infrastructure and staff will be pressured to the limit even with full mobilization of society's resources.

Most governments in the world agree that "Flattening the curve" has become a necessary strategy, and so Malaysia's Movement Restriction Order became necessary. Put into place for 18-31 March, it has now been extended to 14 April. Further extensions cannot be ruled out.

Distancing people from each other as radically as has been necessary, however, has an immediate negative impact on the economic situation of society as a whole, with parts of the population being much more vulnerable than others. With this in mind, the Penang State Government has put into effect a wide range of initiatives to ease the difficulties of the poorest of its citizens.

But beyond this, the Penang State Government realizes that securing the supply of food over the next month to households is vital to the success of the array of measures put into place to fight the virus. In the medium and long term, confidence in these measures will depend, among other things, on the ability of the authorities to keep the supply of necessary goods secure.

Reliable and positive information on this matter is required. To keep itself well informed on the food supply situation in the state, The Penang State Government has directed Penang Institute to carry out the survey that is the basis for this report.

Penang Institute identified the most important hypermarkets and other key deliverers of foodstuff in the state, and its team of young researchers contacted all of them for feedback on the food supply situation at present, and for information on the problems that these frontline players expect to face in the near future.

Securing Food Supplies

The general consensus is that the agriculture sector in Northern Malaysia is strong, and securing food supply to the 1.89 million people in Penang (see Appendix 1) over the next few weeks should not be a difficult task, even in these trying times.

Penang Institute did a telephone survey on 26 March 2020 involving Penang's Essential Food Suppliers (EFS). Our survey team contacted hypermarket and supermarket operators, petty traders and distributors, asking them 10 key questions about the problems they are currently facing. The urgency of the project, carried out at a time when these very players were busily engaged in solving pressing problems, requires that the results be interpreted with some caution. Many of those contacted were in a state of confusion and emotional, and quite a number of the key players were not reachable. More investigative work needs to be done before a comprehensive food security mapping can be developed. The findings presented below are a summary of responses given by a total of 18 respondents³ (See Appendix 3 for questions asked and for the respondents' raw distribution table). It is advisable to consider this a general initial indication of the situation today, as the crisis unfolds.

Supply Sufficiency, Distribution and Inventory Capacity

In terms of supply sufficiency, 67% of the respondents state that they have reliable general supply for the next 3 to 6 months. However, there is some worry over the supply of chicken eggs among both operators and distributors, over vegetable supply from key distributors, and over the distribution channels to petty traders. There is also some worry for lowered production and for the supply of livestock feed in a longer term.

Most EFS source from distributors based either in Penang, or in other parts of Malaysia. Only a small percentage rely on an overseas supplier. When asked about the reliability of their supply lines in terms of delivery, only 22% of the respondents note some concern. These were mainly petty traders – plus one supermarket operator.

Table 1: Source of Supplies

Essential Item	Location of Source		
	Penang	Malaysia	Overseas
Vegetables	6	4	1
Fruits	4	3	
Chicken/ Duck	3	3	-
Egg	-	2	-
Pork	1	1	-
Seafood (Frozen)	-	1	1
Processed food	1	3	

³ The 18 respondents consist of 6 supermarket operators, 7 petty traders, 4 distributors and 1 representative from a farmer's association.

According to the EFS survey, only 22%, or 4 out of 18 respondents (all petty traders dealing in vegetables) do not have any inventory capacity. Out of the 18 EFS, 2 (supermarket operators) indicate that their inventory capacity can last for 3 months while 2 others (one pork supplier and one supermarket operator) think they can last up to 6 months. In terms of operation capacity during the MCO, only 1 supermarket operator has had to close down one outlet due to staffing and operating costs and 1 distributor who distributes to restaurant has stopped operations due to MCO restrictions on restaurant operating procedures.

Table 2: Essential Food Inventory Capacity by Vendor Category and by Food Type

Inventory capacity	N/A	≤ 1 week	Up to 2 weeks	Up to 1 month	> 1 month
By Vendor Category					
Association	-	-	-	-	1
Distributor	-	2	1	-	1
Petty trader	4	-	2	1	-
Supermarket/Hypermarket	-	1	2	-	3
By Food Type					
Pork	-	1	2	-	4
Vegetables	4	2	3	-	3
Egg	-	2	2	-	3
Seafood	-	1	2	-	4
Chicken/ Duck	-	1	3	1	3
Processed Food	-	1	3	-	3

Problems, Bottlenecks and Current Solutions

In this section, the findings of the survey are presented according to respondent type. This helps identify the specific problems faced by each category of respondents.

Livestock supply

The representative for the farmers' association contacted by our researchers indicates that the livestock supply (of pork) in Penang has always been on the excess side, and approximately 30% of livestock that are produced is sent to other parts of Malaysia. However, due to the MCO, food stocking by consumers has become prevalent and this easily leads to a wrong estimations of what the actual demand is, or will be.

Be that as it may, the bigger problem that the farmers' association will face is the supply of livestock feed. As much as 90% of the livestock feed they use is imported. With the coronavirus pandemic going fully global, the price of livestock feed can be expected to go much higher, especially if a supply chain problem develops in the source countries. A sharp rise in the price of imported livestock feed will quickly translate into more expensive meat in a longer term, and this will have to be largely borne by the end user.

There is also concern that pig farmers will suffer capital turnover problems due to increasing failure to collect arrears from restaurant operators and feast caterers further down the food supply chain. Presently, there is nothing much that the farmers' association can imagine doing to prevent this problem from developing.

Distributors

Most distributors are concerned with the delivery blockages affecting supplies to them and in turn, those affecting their ability to supply their respective customers. Compliance with the MCO in Penang is relatively high, and most consumers prefer not to visit the wet markets. This will cause some hiccup at the 'last mile' in the delivery chain.

An egg distributor mentions that his supply to grocery stores and his sales have dropped by 80% since the MCO started. The foreseeable bottleneck for them is the supply of fresh chicken eggs from the farms. One distributor states concern over payment for his products; he is worried that restaurants and caterers will not be able to honour their debts the way they had been able to do. Given the no-return policy for food, this means that the distributor has to consider being the one to purchase more of the stock he has ordered using his own capital. For example, since fresh vegetables and fresh eggs are commodities that are relatively perishable, the distributor has begun resorting to change their channels of distribution from hotels, restaurants and grocery stores, to home-delivery instead. However, MCO road blocks have limited delivery efficacy, and increased travel time and costs for both the distributor and the consumer.

Petty traders

Of the 7 petty traders interviewed, only one supplies processed food (baked items) while the rest supply raw essential foods. According to the baker, he is now often unable to get the materials he needs for his baked goods to sustain him over the extended period of MCO. He is also concerned about his staff's wellbeing and fears that they might contract the Covid-19 fever while working at his bakery. According to him, if the situation gets any worse, the loss of employment will hit his staff hard, and if society at large is affected the same way, then one could expect a rise in crime (theft). His plan to alter the interior of his bakery so as to limit direct interactions between his staff and customers is however not applicable at the moment since the MCO disallows workmen from coming to the shop.

As for petty traders supplying raw essential foodstuff, the reduced number of visitors visiting wet markets and farms, and the relatively high MCO compliance rate in Penang has driven them to resort to home delivery in order to sustain their business. As with the distributors, MCO road blocks have directly affected their delivery service.

Furthermore, the constant fluctuations and unpredictability in demand have made it difficult for petty traders to gauge their own supply purchases. Another immediate problem is the availability of supply. In many cases, meeting sudden high demands is not possible.

One petty trader who farms his own organic produce has not been able to supply enough to meet the heightened demand for farmed goods. The restriction on chicken slaughter at wet

markets has also limited the supply of poultry meat. The only approved slaughter house located in Seberang Perai.

Supermarket operators

Generally, supermarket operators are not facing any major problem apart from some minor operational issues such as insufficient face masks and gloves for their staff, hand sanitizers for both staff and customers, as well as non-compliance by expatriate customers.

The foreseeable bottleneck is generally in supply logistics. The productivity of farms and the delivery of manufactured goods may suffer disruptions in the long term, due partly to restricted production scale and the current spike in direct-consumption demand. Many Penangites have resorted to home-prepared food instead of ordering takeaways.

Another concern raised is about the general and substantial slowdown in economic activity that will be caused by lowered disposable income. There is also some worry that if the management of (overworked) production and essential food manufacturing staff is not done right, the whole supply chain of essential foodstuff will be disrupted.

For now, all the EFS can do is to refer to and comply with the guidelines provided by the authorities, and to ensure that their staff are not overworked.

Requested Assistance from Penang State Government

The types of assistance requested of the Federal and State authorities by the EFS survey respondents are listed in order of priority and higher frequency as follows:

1. Prepare a temporary policy on land and premise rental for private owners.
2. Supply face masks and gloves to traders and staff on duty.
3. Apply economic support mechanisms for all businesses to limit bankruptcy.
4. Help the jobless get steady jobs other than as delivery riders (to prevent the crime rate from rising).
5. Help the poor, the vulnerable and the aged
6. Review the basic worker salary and sync it to the employer's ability to conform to it.
7. Prepare permits for petty traders and their staff for use at road blocks, in order to reduce screening time on the road during MCO (and to coordinate with armed forces).
8. Allow a temporary slaughter facility on Penang Island to increase the quantity and quality of fresh poultry meat supplied to markets.
9. Implement drive-through services ⁴ for essential food supply collection from distributor/ petty trader.
10. Improve the facilities at wet markets. (e.g. Bukit Mertajam market is in such bad condition that it deters people from visiting)
11. Arrange for longer working hours.
12. Lower or subsidize electricity bills.
13. Implement funding support to food distributors.
14. Provide temporary zero-interest loans in needy cases.

One interesting proposal offered by an EFS respondent was this. He needs state support to provide more job opportunities through expanding his food production capacity. He is able to do this at his own cost, but he would require help in the acquisition of the extra machines and room/space needed for such an expansion. This proposal holds potential for being a model that the Penang State Government can adopt to create a job-catalysing and job-matching platform where willing private sector players can help mitigate the immediate financial difficulties faced by daily-wagers, for example.

Food Security

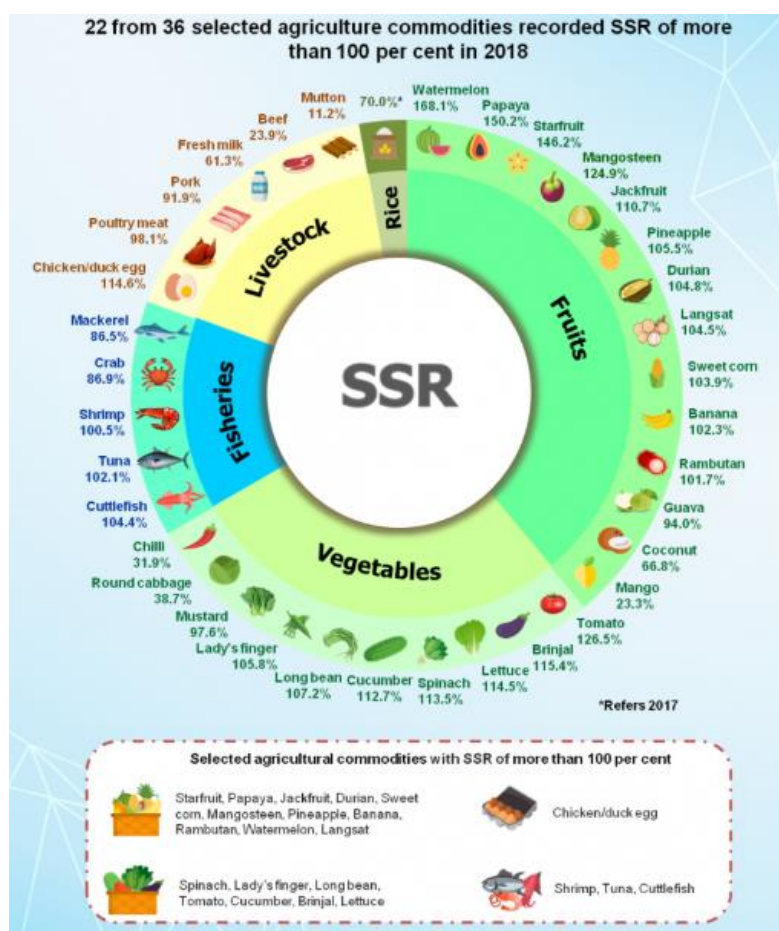
In the study of food security, self-sufficiency ratio (SSR⁵) is often used as a benchmark for identifying a country's ability to meet the food demand of her people. Based on Malaysia's self-sufficiency ratio (SSR) for selected agriculture commodities (Figure 1) published by

⁴ The EFS survey respondent has identified a potential site at which to implement the drive-through service.

⁵ SSR = production x 100 (production + import – export). Extracted from <http://www.fao.org/3/i2493e/i2493e06.pdf> on 27 March 2020

DOSM⁶, only 22 out of 33 selected agriculture commodities recorded SSR of more than 100% in 2018. These include 11 types of fruits, 7 types of vegetables, eggs, and 3 types of seafood.

Figure 1: SSR of Selected Agriculture Commodities, 2018



Source: DOSM

Another benchmark that is frequently used in food security discussions to gauge a population's demand is per capita consumption (PCC) by each type of food supply. The per capita consumption clearly depicts the pattern of consumption that will affect the national food security policy. The PCC per year for Malaysia based on the selected agriculture commodities as published by DOSM⁷, is shown in Figure 2. In Table 3, a summarised tabulation has been used to categorise the data from Figure 2 into five main categories.

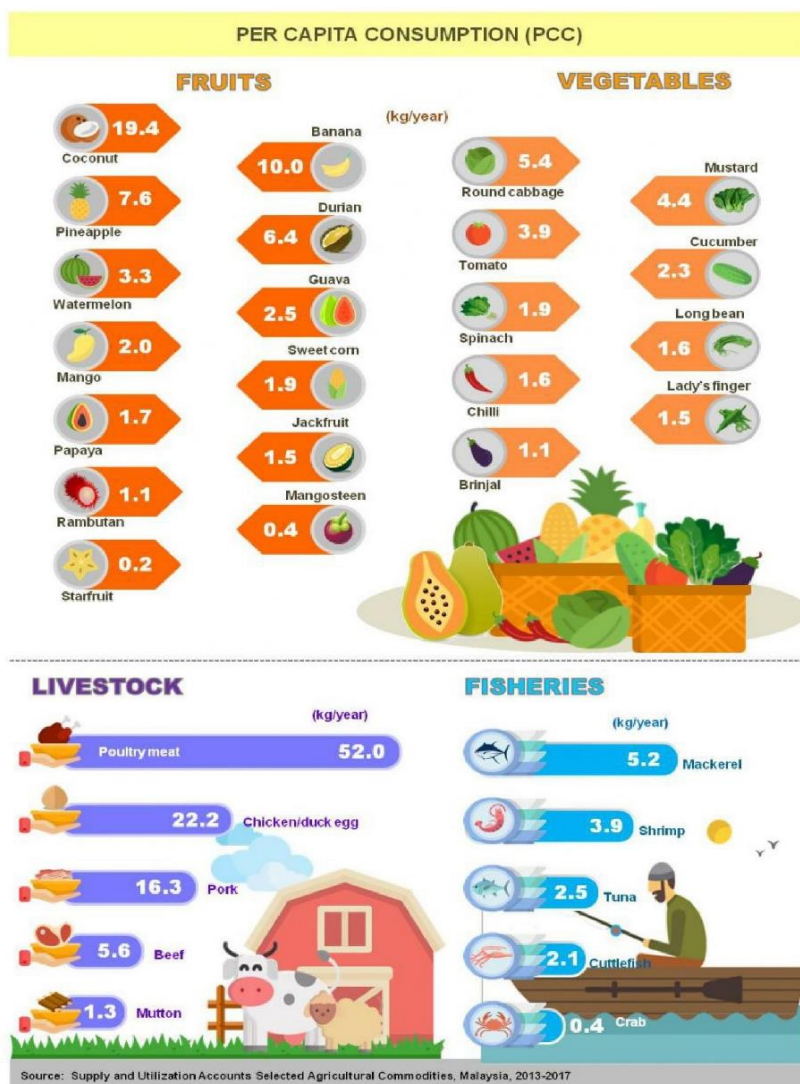
Figure 2: Per capita consumption per year, 2017

⁶ Retrieved from

https://www.dosm.gov.my/v1/index.php?r=column%2FcthemByCat&cat=164&bul_id=Tm50aVh6RFpFM2VGOTlrZzltbWg3QT09&menu_id=Z0VTZGU1UHBT1VJMFpXRRR0xpdz09 on 27 March 2020

⁷ Retrieved from

https://www.dosm.gov.my/v1/index.php?r=column/cthemByCat&cat=164&bul_id=ZE12R XM2SDM1eGRxRXR3bU0xRThrUT09&menu_id=Z0VTZGU1UHBT1VJMFpXRRR0xpdz09 on 27 March 2020



Source: DOSM

Table 3: Summarised PCC per day by Food Type

Food type	PCC per year	PCC per day
Meat	127.2 kg	0.35 kg
Seafood	14.1 kg	0.04 kg
Vegetables	23.7 kg	0.06 kg
Fruits	58.0 kg	0.16 kg
Eggs	22.2 kg	0.06 kg

Source: DOSM & Penang Institute's Calculation

Additionally, the Ministry of Agriculture and Food Industry report dated 20 March 2020⁸ states that the nation's livestock supply is capable of meeting demand for the coming month (see Table 4).

Table 4: Malaysia's Key Livestock Supply and Demand

Food Supply	Stock Availability	National Demand	Demand per Capita*
Chicken	59 million birds	43 million birds per month	1.32 birds per month
Egg	800 million eggs	620 million eggs per month	19 eggs per month
Rice	534,005 metric tonnes	200,000 metric tonnes per month	6.14 kg per month
Beef	18,000 metric tonnes	Sufficient	0.55 kg per month
Fish	185,000 metric tonnes	155,000 metric tonnes per month	4.76 kg per month

Source: Bilik Gerakan Pemantauan Krisis Covid-19, MOA (20th March 2020), Department of Statistics (DOSM) and Penang Institute's Calculation

Note: * Based on DOSM estimated Malaysia's population of 32.6 million people⁹

However, the EFS survey indicates that uneven supply coupled with unpredictable demand is in fact the prevalent problem. The current status of raw essential food supply in Penang shows a trend similar to that mentioned in a statement dated 25 March 2020 from the Department of Veterinary Services, Penang (see Appendix 5) which elaborates on the current livestock supply according to respective SSR, based on data collected in 2019 (see Table 5).

Table 5: Current Livestock Supply in Penang

Livestock	SSR	Measures/ Notes
Poultry	141%	Due to the restriction of the slaughtering live chicken at wet markets, the retail price of chicken has slightly increased due to the additional cost incurred for logistics and payment to the slaughter house located in Seberang Perai
Eggs	40%	To source from other states
Beef/ lamb	<50%	To import from overseas in the form of frozen meat. The report states that local supply and imported supply are sufficient for the time being. It is also estimated that the demand for beef will be reduced during MCO due to the drop in catering for wedding and other celebrations
Pork	265%	N/A
Milk	20%	To import from overseas

Source: Department of Veterinary Services, Penang (25 March 2020)

⁸ See Appendix 4

⁹ Extracted from

https://www.dosm.gov.my/v1/index.php?r=column/cthemByCat&cat=155&bul_id=aWJZRk4UdEdKcUZpT2tVT090Snpydz09&menu_id=L0pheU43NWJwRWVVSZklWdzO4TlhUUT09 on 26 March 2020

Penang Institute's survey team has therefore prepared a general assessment of an average person's daily needs in order to stay healthy in terms of nutritional intake¹⁰. According to the Ministry of Health's Recommended Nutrients Intakes for Malaysia, the recommended energy levels are broadly segregated to four categories – low active (Physical Activity level (PAL) 1.4), moderately active (PAL 1.6), active (PAL 1.8) and very active (PAL 2.0)¹¹. The average Malaysian is considered to be PAL 1.6, hence requiring 2034kCal/day, with variance depending on gender, age and disease state.

Given that the MCO reduces physical activity across the whole population, it is estimated that the average Malaysian now fits the PAL 1.4 description, and has an average requirement of 1780kCal/day. Therefore, the total daily energy intake (TEI) should consist of 50-65% carbohydrates, 25-30% fats, and protein 10-20%, and intake of free sugar <10% of TEI. As a general guide, protein intake should be at 1.0-1.5 g/kg/day and dietary fibre at 20-30 g/day. Given that, and to put it simply, an average person in Malaysia will need to consume the amount of food as summarized in the table below.

Table 6: Food Consumption Guide for Average Person in Malaysia during MCO

Nutrient	Recommended TEI	Example	Assumptions	Serving/ day	kCal/day
Carbohydrates	Between 50-65%	*Rice (cooked)	50% TEI; 100g = 111 Cal	800g	888 Cal
Protein	Between 10-20% (or 1.0-1.5 g/kg/day)	Meat	20% TEI; 100g = 140 Cal	250g	350 Cal
Fibre	20-30 g/day	Fruits	1 cup = 57 Cal	2 cups	114 Cal
		Vegetables	1 cup = 118 Cal	2 cups	236 Cal
Fats	Between 25-30%	Cooking oil & fat from meat	N/A	Moderately	N/A
		Milk	1 cup = 103 Cal	Occasionally	N/A
Free sugar	<10% TEI	Nescafe Regular 3in1	1 cup = 90 Cal	Occasionally	N/A
		Milo kosong	1 cup = 82 Cal	Occasionally	N/A

Source: Penang Institute's tabulation based on various reports and calories reference.

*Note: * Assuming no other sources of carbohydrate consumed, e.g. bread, noodle or starch*

¹⁰ This assessment is assisted by Eunice Lim and Low Wen Yan, leader and senior medical students

¹¹ Retrieved from <http://nutrition.moh.gov.my/wp-content/uploads/2017/05/FA-Buku-RNI.pdf> on 26 March 2020

Based on the assumption that 800g of cooked rice is equivalent to 200-250 grams of uncooked white rice grains and that no other sources of carbohydrate are available for a family of 5 adults, technically a bag of 5kg rice can only last the family for 4 days. This assumption is not far off from the normal consumption pattern for a Malaysian indicated in a paper published by Noraida MK, Mohamad Hasnan A, Azli BS et al¹² which showed that an average Malaysian adult consumed 250g of rice per day in year 2014 (see Table 7). A crosscheck with the current report by MOA (see Table 3) shows that the current estimated demand is equated to approximately 6.14kg of rice per person per month or 205g of rice per person per day.

Table 7: Prevalence and Mean Frequency of the Top Ten Food Items Consumed Daily (MANS 2003 and MANS 2014)

MANS 2003				MANS 2014			
Food Items	Prevalence (%)	Servings consumed per day (95% CI)	Intake per day (g)	Food Items	Prevalence (%)	Servings consumed per day (95% CI)	Intake per day (g)
White rice	97.2	2.1 (2.1, 2.2) plates	210.0	White rice	89.8	2.5(2.4, 2.6) plates	250.0
Sugar	58.5	4.1 (3.9, 4.3) teaspoons	20.5	Sugar (white, brown, palm sugar)	55.9	3.7(3.4, 3.9) teaspoons	18.5
Marine fish	40.8	1.9 (1.8, 2.0) whole medium	201.4	Green leafy vegetables	43.2	5.9(5.6, 6.3) tablespoons	88.5
Green leafy vegetables	39.9	4.8 (4.7, 5.0) tablespoons	72.0	Marine fish	29.4	1.6(1.5, 1.7) whole medium	169.6
Sweetened condensed milk	35.3	2.8(2.7, 2.9) teaspoons	25.2	Chilies	24.2	1.8(1.6, 2.1) tablespoons	12.6
Powdered milk	17.1	3.1(3.0, 3.2) tablespoons	22.5	Condensed milk/creamer	23.5	2.7 (2.3, 3.0) tablespoons	24.3
Bread	17.1	3.3(3.1, 3.5) slices	94.1	Soy sauce	20.3	2.1(1.9, 2.3) teaspoons	17.8
Biscuit	16.3	4.8 (4.6, 5.0) pieces	36.8	Biscuit	13.8	4.8(4.3, 5.4) pieces	43.2
Traditional delicacies	14.5	2.3(2.2, 2.4) pieces	69.0	Condiment	14.6	2.4(2.1, 2.7) teaspoons	19.2
Hen eggs	12.1	1.7(1.2, 2.1) whole medium	91.8	Hen eggs	14.2	1.6(1.4, 1.8) pieces	86.4

Source: Food choices among Malaysian adults: Findings from Malaysian Adults Nutrition Survey (MANS) 2003 and MANS 2014¹³

¹² Retrieved from <http://nutriweb.org.my/mjn/publication/24-1/g.pdf> on 26 March 2020

¹³ Extracted from <http://nutriweb.org.my/mjn/publication/24-1/g.pdf> on 26 March 2020

RECOMMENDATIONS

Securing Food Supply for Penang

The supply distribution situation is escalated not only by the panic buying and hoarding habits that have developed since the announcement of MCO on 16 March 2020, it also escalated because of the logistics control carried out on roads as part of the MCO enforcement ordered by the National Security Council (Majlis Keselamatan Negara). Longer hours of transportation of goods have also affected not only the quality of the produce, but also the efficiency of distribution. Therefore, it is recommended that:

- 1) A mechanism for essential food supply logistics be derived at the federal level in order to ensure that the distribution of essential food can happen in timely fashion to all states.
- 2) At the state level, it is important to quantify the estimated bare minimum amount of essential foodstuff required by the population for the coming month as the impact of MCO becomes more obvious. A quick estimate by Penang Institute, based on Table 3, 4, 6 and 7, shows that the minimum quantity of essential food required by Penang state on a daily basis totals 472.5kg of white rice, 472.5kg of meat and 756.0kg of vegetables or fruits (see Appendix 2 for more details by locality).

Supplying to the Vulnerable (through a food bank)

During the MCO period, welfare support for the vulnerable, especially those in the B40 group and/or the daily-wagers, can be provided through the supply of raw food or cooked food to them. The Penang State Government's initiative, Mutiara Food Bank, already has the mechanism and process ready to provide such support. According to Mutiara Food Bank, the only bank centre for the state of Penang is located at the Caring Society Complex (Kompleks Masyarakat Penyayang). During the MCO period, distribution can be done through collaboration with Majlis Pengurusan Komuniti Kampung (MPKK) throughout the state.

Mutiara Food Bank is also one of the strategic partners of the Malaysia Food Bank Programme, whose beneficiaries are those in people housing projects, students of public universities, as well as flood victims. However, it is important to establish a basic guide for how much food is required, in order to increase the efficiency of food procurement and distribution.

It is also unfortunate that the Mutiara Food Bank is not able to provide a clear indication of their current food bank's stock within the time frame of this assessment.

Based on the assumptions derived from Table 3, 4, 6 and 7, it is concluded that the capacity of the Mutiara Food Bank, for an average family of 5, should be based on a simple calculation for essential items such as that which follows:

Table 8: Estimated Essential Food Required by Vulnerable Family

Food type	Assumptions (demand)	Donation Quantity per week/ family
White Rice	200g – 250g per person/ day	8.75 kg
Meat	250g – 350g per person/ day	12.25 kg
Seafood	40g – 50g per person/ day	1.75 kg
Egg	4 – 5 eggs per person/ week	25 eggs
Fruits	160g per person/ day	5.6 kg
Vegetables	60g per person/ day	2.1 kg
Food type	Assumptions (nutrients)	Donation Quantity per week/ family
White Rice	200g – 250g per person/ day	8.75 kg
Meat and/or Seafood	200g – 250g per person/ day	8.75 kg
Egg	4 – 5 eggs per person/ week	25 eggs
Fruits and/or Vegetables	500g – 750g per person/ day	26.25 kg

Source: Penang Institute Calculations

APPENDIX 1: Penang's Population Distribution, by Administrative District

Administrative District/ PBT	YEAR ('000)			
	2005	2010	2015	2020 ^a
TOTAL	1,468.8	1,609.8	1,750.9	1,889.9
SEBERANG PERAI TENGAH				
MB Seberang Perai	355.9	393.4	430.8	467.4
Berapit	3.3	3.3	3.3	3.3
Bukit Mertajam	21.3	22.8	24.1	25.2
Bukit Tengah	0.3	0.3	0.4	0.7
Juru	2.8	3.9	5.4	7.4
Kubang Semang	1.5	1.7	1.8	1.8
Machang Bubuk	2.1	2.3	2.5	2.7
Perai	15.1	16.3	17.2	17.7
Pematang Pauh	2	2.2	2.2	2
Permatang Tinggi	3.4	4.2	5.2	6.5
Pertama	0.6	0.6	0.7	1
Simpang 4 Bukit Tengah	4.5	5.2	6	6.9
Sungai Lembu	0.6	0.7	0.7	0.6
Other city council areas	298.5	329.9	361.2	391.8
SEBERANG PERAI UTARA				
MB Seberang Perai	288	312.9	337.8	362.4
Butterworth	77.8	80.6	82.7	84
Kepala Batas	1.4	1.5	1.6	1.7
Penaga	0.5	0.6	0.6	0.5
Pematang Kuching	12.8	13.5	14	14.3
Sungai Dua	0.7	0.8	1	1.4
Sungai Puyu	1.2	1.3	1.3	1.2
Tasek Gelugor	0.9	1.1	1.2	1.2
Telok Ayer Tawar	1	1.1	1.1	1
Other city council areas	191.6	212.6	234.2	256.1
SEBERANG PERAI SELATAN				
MB Seberang Perai	146.4	162.2	177.9	193.2
Besar	0.3	0.3	0.3	0.3
Bukit Tambun	0.5	0.6	0.7	0.8
Cangkat	0.3	0.3	0.3	0.3
Jawi	2.3	2.3	2.4	2.6
Kampong Tasek	0.1	0.1	0.1	0.1
Nibong Tebal	3.5	3.6	3.6	3.5
Permatang Kling	1.7	1.8	1.9	2
Permatang Tok Mahat	1	1.1	1.1	1
Simpang Ampat	0.7	0.8	1	1.4
Sungai Bakap	1	1.1	1.2	1.3
Sungai Kecil	0.3	0.3	0.3	0.3
Valdor	5.2	6.3	7.2	7.8
Other city council areas	129.5	143.7	158	172.1

TIMUR LAUT				
MB Pulau Pinang	483	520.9	557.5	592.1
Air Itam	26.5	30.8	35.2	39.6
Batu Feringgi	4.6	4.4	4.3	4.3
Bukit Bendera	0.3	0.3	0.3	0.3
Gelugor	23	27.2	31.4	35.4
George Town	194.8	193.2	189.7	184.4
Sungai Nibong	0.9	1	1.2	1.6
Tanjung Bunga	12.3	12.3	12.2	12
Tanjung Tokong	14.2	14.2	14.1	13.9
Other city council areas	206.5	237.5	269.2	300.7
BARAT DAYA				
MB Pulau Pinang	195.5	220.4	246.9	274.8
Balik Pulau	0.6	0.7	0.7	0.6
Bayan Lepas	0.4	0.4	0.4	0.4
Gertak Sanggul	0.6	0.6	0.6	0.6
Ganting	2.2	2.6	3.1	3.7
Pulau Betong	0.3	0.3	0.4	0.7
Sungai Ara	0.6	0.7	0.8	0.9
Sungai Nibong	0.5	0.6	0.7	0.8
Sungai Pinang	0.6	0.6	0.7	1
Teluk Kumbar	1.7	2	2.3	2.6
Other city council areas	188	212	237.3	263.7

Source: Department of Statistics and Penang Institute's Calculation

Note: 1. Adjusted population projection based on 2000 Population and Housing Census

2. Total might be different due to rounding error

a. Projection by Penang Institute based on Department of Statistics, Malaysia's data

APPENDIX 2: Daily Essential Food Supply Required, by Administrative District in Penang

Administrative District/ PBT	Est. Pop (‘000)	Rice	Meat	Vegetables
TOTAL	1,889.9	472.5 kg/day	472.5 kg/day	756.0 kg/day
SEBERANG PERAI TENGAH				
MB Seberang Perai	467.4	116.85	116.85	186.96
Berapit	3.3	0.825	0.825	1.32
Bukit Mertajam	25.2	6.3	6.3	10.08
Bukit Tengah	0.7	0.175	0.175	0.28
Juru	7.4	1.85	1.85	2.96
Kubang Semang	1.8	0.45	0.45	0.72
Machang Bubuk	2.7	0.675	0.675	1.08
Perai	17.7	4.425	4.425	7.08
Pematang Pauh	2	0.5	0.5	0.8
Permatang Tinggi	6.5	1.625	1.625	2.6
Pertama	1	0.25	0.25	0.4
Simpang 4 Bukit Tengah	6.9	1.725	1.725	2.76
Sungai Lembu	0.6	0.15	0.15	0.24
Other city council areas	391.8	97.95	97.95	156.72
SEBERANG PERAI UTARA				
MB Seberang Perai	362.4	90.6	90.6	144.96
Butterworth	84	21	21	33.6
Kepala Batas	1.7	0.425	0.425	0.68
Penaga	0.5	0.125	0.125	0.2
Pematang Kuching	14.3	3.575	3.575	5.72
Sungai Dua	1.4	0.35	0.35	0.56
Sungai Puyu	1.2	0.3	0.3	0.48
Tasek Gelugor	1.2	0.3	0.3	0.48
Telok Ayer Tawar	1	0.25	0.25	0.4
Other city council areas	256.1	64.025	64.025	102.44
SEBERANG PERAI SELATAN				
MB Seberang Perai	193.2	48.3	48.3	77.28
Besar	0.3	0.075	0.075	0.12
Bukit Tambun	0.8	0.2	0.2	0.32
Cangkat	0.3	0.075	0.075	0.12
Jawi	2.6	0.65	0.65	1.04
Kampong Tasek	0.1	0.025	0.025	0.04
Nibong Tebal	3.5	0.875	0.875	1.4
Permatang Kling	2	0.5	0.5	0.8
Permatang Tok Mahat	1	0.25	0.25	0.4
Simpang Ampat	1.4	0.35	0.35	0.56
Sungai Bakap	1.3	0.325	0.325	0.52
Sungai Kecil	0.3	0.075	0.075	0.12
Valdor	7.8	1.95	1.95	3.12
Other city council areas	172.1	43.025	43.025	68.84

TIMUR LAUT				
MB Pulau Pinang	592.1	148.025	148.025	236.84
Air Itam	39.6	9.9	9.9	15.84
Batu Feringgi	4.3	1.075	1.075	1.72
Bukit Bendera	0.3	0.075	0.075	0.12
Gelugor	35.4	8.85	8.85	14.16
George Town	184.4	46.1	46.1	73.76
Sungai Nibong	1.6	0.4	0.4	0.64
Tanjung Bunga	12	3	3	4.8
Tanjung Tokong	13.9	3.475	3.475	5.56
Other city council areas	300.7	75.175	75.175	120.28
BARAT DAYA				
MB Pulau Pinang	274.8	68.7	68.7	109.92
Balik Pulau	0.6	0.15	0.15	0.24
Bayan Lepas	0.4	0.1	0.1	0.16
Gertak Sanggul	0.6	0.15	0.15	0.24
Ganting	3.7	0.925	0.925	1.48
Pulau Betong	0.7	0.175	0.175	0.28
Sungai Ara	0.9	0.225	0.225	0.36
Sungai Nibong	0.8	0.2	0.2	0.32
Sungai Pinang	1	0.25	0.25	0.4
Teluk Kumbar	2.6	0.65	0.65	1.04
Other city council areas	263.7	65.925	65.925	105.48

Source: Penang Institute's Calculation

APPENDIX 3: EFS Survey Questions & Raw Distribution Table

1. Do you feel your sources for raw food supply are sufficient and reliable over the next 3 to 6 months?
2. Are your food items mainly from Penang, Malaysia or overseas?
3. Please list your suppliers – vegetables, fruits, beef, poultry, pork, seafood, processed food.
4. How reliable are your supply lines over the next 3 to 6 months?
5. How long can your current stock inventory last?
6. Do you have more than one outlet? Are all of your outlets operating now?
7. What problems are you having at the moment under MCO?
8. What bottlenecks in your delivery system do you foresee over the next 6 months?
9. What initiatives have you taken since the pandemic started?
10. What help do you need from the Penang State Government?

Respondents Raw Distribution Table

Respondent	Type of Supply	Supplies Sufficiency	Origin	Reliable Delivery	Inventory Capacity	Operating All Outlets
Association	Pork	Yes	Penang	Yes	6 months	Yes
Distributor	Vegetables	No	Penang	Yes	2 weeks	Yes
Distributor	Egg	No	Malaysia	Yes	3 days	Yes
Distributor	Seafood	Yes	Overseas	Yes	2 years	No
Petty traders	Poultry	Yes	Penang	Yes	1 month	Yes
Petty traders	Poultry	No	Penang	No	2 weeks	Yes
Petty traders	Vegetables	No	Penang	No	N/A	Yes
Petty traders	Vegetables	Yes	Malaysia	No	N/A	Yes
Petty traders	Vegetables	Yes	Penang	Yes	N/A	Yes
Petty traders	Vegetables	Yes	Penang	Yes	N/A	Yes
Petty traders	Processed Food	No	Malaysia	Yes	2 weeks	Yes
Distributor	Vegetables	Yes	Overseas	Yes	3 days	Yes
Hypermarket	Full range	Yes	Penang	Yes	1-2 weeks	No
Hypermarket	Full range	Yes	Malaysia	Yes	1 week	Yes
Hypermarket	Full range	Yes	Penang	Yes	3 months	Yes
Hypermarket	Full range	No	Penang	Yes	2 weeks	Yes
Hypermarket	Full range	Yes	Malaysia	Yes	6 months	Yes
Hypermarket	Full range	Yes	Malaysia	No	3 months	Yes

APPENDIX 4



KEMENTERIAN PERTANIAN DAN INDUSTRI MAKANAN
MALAYSIA

BILIK GERAKAN PEMANTAUAN KRISIS COVID-19
KEMENTERIAN PERTANIAN DAN INDUSTRI MAKANAN
20 MAC 2020

Mohon untuk di masukkan dalam rerayap melalui siaran TV

BEKALAN MAKANAN NEGARA KONSISTEN DAN MENCUKUPI
KEDUDUKAN SEMASA STOK MAKANAN DALAM PASARAN

- | | |
|-----------|--|
| 1. Ayam | : Stok 59 juta ekor ; Keperluan 43 juta ekor sebulan |
| 2. Telur | : Stok 800 juta biji ; Keperluan 620 juta biji sebulan |
| 3. Beras | : Stok 534,005 tan metrik ; Keperluan 200,000 tan metrik sebulan |
| 4. Daging | : Stok 18,000 tan metrik ; memenuhi Keperluan |
| 5. Ikan | : Stok 185,000 tan metrik ; Keperluan 155,000 tan metrik sebulan |

Sekian terima kasih

BILIK GERAKAN PEMANTAUAN KRISIS COVID-19
KEMENTERIAN PERTANIAN DAN INDUSTRI MAKANAN

APPENDIX 5

KENYATAAN MENGENAI BEKALAN DAGING, SUSU DAN TELUR

1. Berdasarkan statistik ternakan tahun 2019, kemampuan menyediakan bekalan daging, susu dan telur dalam negeri yang mencukupi adalah bergantung kepada kadar pengeluaran komoditi tertentu sektor penternakan. Pengeluaran daging ayam/itik dan babi adalah melebihi tahap sara diri (SSL) malah menyumbang lebih bekalan untuk keperluan dalam negara. Kedua-dua komoditi berkenaan adalah merupakan penyumbang utama Nilai Hasil Ternakan (NHT) iaitu sebanyak 82.77% @ RM918.94 juta daripada NHT tahun 2019.

Baki sejumlah 17.23% @ RM191.23 juta telah disumbangkan oleh komoditi yang lain seperti telur ayam/itik, lembu/kerbau dan kambing/bebiri pedaging, lembu/kerbau dan kambing/bebiri tenusu dan sebagainya. Semua komoditi berkenaan masih tidak mencapai tahap pengeluaran SSL.

2. Pengeluaran bulanan bagi daging ayam/itik dianggarkan berjumlah hampir 8,000 TM berbanding permintaan yang dianggarkan sejumlah 5,664 TM bagi komoditi berkenaan. Bagaimanapun bagi bekalan telur ayam/itik yang mana kadar SSL sekitar 40%, ianya boleh ditampung melalui sumber bekalan dalam negara sekiranya keadaan memerlukan.
3. i. Bekalan daging ayam:
 - a. Tempoh bertahan: Tiada masalah bekalan
 - b. Harga: RM8.80/kg (runcit/*retail*)
RM6.40/kg (borong/*wholesale*)ii. Bekalan telur ayam:
 - a. Tempoh bertahan: Tambahan bekalan dari negeri lain
 - b. Harga: Gred A 0.41, B 0.39, 0.37 (runcit/*retail*)
Gred A 0.36, B 0.345, C 0.325 (borong/*wholesale*)

***24 Mac 2020, Bukit Mertajam (FAMA)**

4. Pengeluaran komoditi daging lembu/kerbau dan kambing/bebiri yang mana SSL kurang dari 50%, kekurangan bekalan dijangka akan ditampung melalui pengimportan dalam bentuk daging sejuk-beku dan bekalan ternakan hidup. Pengimportan masuk 2,280 ekor lembu/kerbau dan 385 ekor kambing/bebiri dan daging sejuk beku sejak awal tahun 2020 adalah bagi menampung permintaan tempatan bagi memenuhi permintaan kerana pengeluaran tempatan yang tidak mencukupi. Pengimportan masuk ternakan dijangka akan terus meningkat dalam bulan April/Mei tahun ini untuk memenuhi permintaan yang dijangka akan meningkat menjelang musim perayaan pada bulan Mei dan Julai 2020.
5. Bekalan daging lembu:
 - i. Tempoh bertahan: Tambahan bekalan import
 - ii. Harga runcit: RM34.00-37.00/kg(runcit/*retail*)

Permintaan dalam keadaan situasi biasa daging lembu tempatan & import di Negeri Pulau Pinang dianggarkan 11,626.400 TM setahun@ (968.866 TM sebulan) .

Dalam keadaan situasi biasa, bekalan lembu tempatan hidup sebulan dalam 40% daripada 968.866 TM = 387. 545 TM(sebulan)

**Dalam tempoh wabak covid-19, dijangka terdapat penurunan permintaan semasa sebanyak 30% daripada 387.545 TM = 116.263 TM (sebulan).
Bekalan bagi (3825 ekor) lembu tempatan adalah bersamaan 478.125 TM.**

Dianggarkan bahawa bekalan lembu tempatan semasa 478.125 TM dapat di manfaatkan sekurang-kurangnya bagi tempoh 3 bulan berdasarkan anggaran permintaan 116.263 TM sebulan.

Maklumbalas diterima menunjukkan bahawa bekalan daging tempatan dan import mencukupi buat masa ini dan tiada kenaikan harga yang ketara dilaporkan.

Secara amnya, permintaan daging lembu dan telur dijangka berkurang & penawaran berlebihan dalam tempoh PKP disebabkan banyak pengusaha kedai makan dan pusat jualan mengurangkan operasi. Permintaan juga berkurang kerana pembatalan majlis perkahwinan serta aktiviti lain sepanjang cuti persekolahan.

6. Bagi pengeluaran daging babi, pengeluaran bulanan tempatan dianggarkan berjumlah 2,794 TM berbanding dengan permintaan yang dianggarkan sebanyak 1,055 TM. Lebihan pengeluaran di sumbangkan ke negeri lain yang memerlukan. Sekiranya berlaku sebarang peningkatan bagi permintaan daging babi, ianya akan ditampung melalui lebihan bekalan tempatan sediaada.
7. Keperluan susu yang mana SSL hanyalah disekitar 20% bagi bekalan tempatan, dijangka akan dipenuhi melalui pengimportan dari luar negara.

Jabatan Perkhidmatan Veterinar
25 Mac 2020

D/Statistik /Covic19