



ASEAN FOOD SECURITY INFORMATION SYSTEM

Global Food Crisis and Food Insecurity

30 May 2022

The crisis of high food prices is one of the problems that world's countries have faced. In the past, food prices increased continuously. While at present, the situation of food prices fluctuates, and the prices drastically rise which cause people around the world do not know how to handle the situation. As a result, food can be accessed more difficult than usual which causes people all over the world to be panic and causes part of the world population cannot access to the food. About one-ninth of the world's population have suffered from food insecurity or starvation and hunger from food crisis in which 98% of food insecurity problem occurs in the least developed and developing countries. Therefore, the issue of food security is widely mentioned especially, Food and Agriculture Organization of the United Nations (FAO), has raise the awareness of this issue for a long time as food is the primary factor linked to the stability in human life.

The concept of food security by FAO started since 1970 had been researched and planed until in 1996, FAO had set "World Food Day" on 16 October of every year to raise the awareness and motivate people in all sectors to help solve the issues of starvation and hunger. In recent year, countries all over the world had committed to overcome food hunger as one of eight Millennium Development Goals (MDGs) in a 15-year period (2000-2015). This aimed to reduce the half of the food hunger by 2015. Although this could not be achieved its objective, it still could reduce the number of starving and hungry people. At present, global countries has cooperated to achieve zero hunger by 2030. This goal is considered as one of the Sustainable Development Goals (SDGs) which will be implemented for 15 years from 2015 to 2030.

Rising Food Prices leading to Food Insecurity

The main cause of food crisis is the imbalance between production from supply side and consumer needs from demand side. Factors that caused continuous increase in food prices include the problem of climate change resulting in higher temperature, the spread of COVID-19 leading to higher prices of raw materials, and so on. Furthermore, the Russia-Ukraine war nowadays becomes a big problem that has aggravated the problem of food insecurity occurring from the past. When the war began, the global food prices tended to increase rapidly which resulted from the higher price of agricultural products consumed in households for example, the price of wheat in March 2022 compared to December 2021 has increased up to 31% or the maize price rise to 32%. This increasing food price was originated

from Russia-Ukraine war as those countries are the major producers and exporters of agricultural products for households' consumption in the world namely sunflower oil, wheat, and maize which accounted for 80%, 30% and 19% of world market production respectively. The battle between Russia and Ukraine caused the planted and harvested areas of wheat and maize could not be cultivated or harvested and FAO stated that as the war took place, the planted area around 20-30% could not be cultivated or harvested in 2022. Additionally, the export of such goods aboard through Black Sea ports had to be halted. Thus, many countries that relied on the imports of food and agricultural products from Russia and Ukraine namely as Mongolia, Armenia, Egypt, Yemen, Libya, Pakistan, and Turkey were affected from food insecurity drastically

Furthermore, the Russia-Ukraine war also led to other consequences such as the shortage of fertilizers or higher price of the important raw materials for cultivation. This was because Russia was the major country of producer and exporter of raw materials used in chemical fertilizer production such as potassium sulphate. The war interrupted the transportation of fertilizer overseas and the rising gas prices also affected higher fertilizer price as gas is the important raw material in ammonia production used in fertilizer.

Other Factors that caused Food Insecurity

1. Climate change is a phenomenon caused by the increasing of global average temperature. Although the temperature has increased only a few degrees from the past, the world's climate has been changed drastically and it impacts life on earth severely as global warming results in the changes in world' climate dramatically. Dry season will last longer than usual, while in the rainy season, there will be no rain or rain a lot until flooding. The impact of climate change leads to the decreasing amount of food production or damage from natural disasters such as the delay of rain, drought, insufficient water needs for cultivation, storm and heavy rain resulting in flooding in some areas. The impact from flooding will lead to the widespread of diseases and pest more pervasively.

2. Planted and harvested areas decreased according to the increasing number of world's population. The more urbanization in each country and economic prosperity become the problems that many countries are facing at the moment. As the economic situation or the country development in terms of economic has improved, areas which are suitable for agricultural activities will be allocated to build a residential and industrial areas. Consequently, the agricultural areas in many countries in the world decrease, while the demand for food consumption tends to rise according to the increasing number of world's population.

3. Demand for food is various. Economic growth changes the population's behaviour for food consumption especially in countries with the two largest population such as China and India. In other words, when the incomes increase, the demand for food becomes more various or people need to consume different types of meat more. This affects livestock farming business that needs more feed ingredients for farming to meet the demand for meat consumption. This impact leads to the higher demand for feed ingredients and will affect the agricultural areas that need to be allocated for grain-based animal products.

4. The impact of rising petroleum price causes many countries to switch to grow energy crops more than the past. As the planted areas for energy crops increase, the planted areas for food crops tend to fall. This can be considered as the substitution of planted areas from food crops to energy crops. As energy crops is one of the solutions to overcome the problem of petroleum price which increases continuously, the expansion of planted areas of energy crops is one of the factors that affect the planted areas of food crops and will impact the food prices throughout the world.

The expected impact of food crisis on global community

Food and Agriculture Organization of the United Nations (FAO) has revealed the information that implies the high food price crisis all over the world. Regarding to the FAO report, Food Price Index is an index measuring monthly change in price of a basket of food commodities which include cereals, vegetable oils, sugar, meat, and dairy products. In 2022, FAO released that the food price index in March 2022 increased up to 13% from February in the same year and the food price rose to almost 30% compared year-on-year to April 2022. As the food prices go up, this leads to food insecurity. When the prices of food necessary for life such as rice, bread, milk, meat, and eggs increase, this implies that people need to pay more living costs. For countries where costs of living are corresponding to the expenditure, it might be slightly affected. However, for the low-income countries, people will be severely affected if food prices get higher, while the income is still the same or decrease. This will have direct impact on the access of food to be more difficult and lead to the issue of food insecurity. The country group of global community can be divided as follows:

1. *Group of low-income countries* which are suffered from starvation and hunger without purchasing power will drastically affect from high food prices the most. Although most of the countries receive help and support from the international organizations, the increasing of food prices will lead to the limited aid from international organizations according to limited budget. In the next 2-3 years, the impact on those countries will be more severely than nowadays. According to the trend of rising food price together with the increasing price of transportation and petroleum oil, it is expected that low-income countries will have to pay more costs for importing food grain up to 56% compared to the previous year at 37%. Moreover, low-income countries in Africa have to pay higher cost for food grain up to 74%. As the food prices rise continuously, it expects that 37 countries in the world are facing the problem of food shortage dramatically.

2. *Group of high-income countries with purchasing power are Middle East countries.* These countries do not export food and have to rely on the import of goods. For example, Middle East countries can make high income from exporting petroleum products which lead them to have the purchasing power to import food even in the situation that the food prices in world market tends to increase.

3. *Group of high-income countries that cannot produce enough food* to meet domestic demand and have to rely on the food import namely China, Indonesia, Philippines, Japan, European Union (EU), the United States (US) will be affected from the rising food prices. Some countries will have to adjust their production plan and measure for food import especially accelerating the expansion of food crop production and reducing tax or abolishing the import quota for food products. This is to guarantee that the amount of food production will be sufficient for domestic demand in the future by mitigating dependence on food imports and maintaining the food prices in the country in the level that does not create excessive burden for domestic consumers.

4. *Group of food producers and exporters is affected the least when food prices tend to go up.* However, it depends on food management system of government and related organizations within the country. The short-term measure that most countries use is to slow down or suspend food export temporarily.

Global food crisis leading to food protectionism in many countries

Russia-Ukraine war has an impact on global economy in many aspects particularly in food crisis that is likely to expand the level of global food insecurity. Those two countries stop exporting commodity products such as maize, wheat, rapeseed oil (canola oil), and fuel to reserve food and energy for country stability. These products are crucial production inputs for livestock farming and food production. This becomes a trend that drives food-producing countries to impose the policy for “Export ban” to maintain the sufficient food level for domestic consumption. Countries apart from Russia and Ukraine that ban the important food grain export are Indonesia, the world’s largest palm oil exporter which has banned exports of cooking oil. Kazakhstan has imposed the temporary restriction on the export quota of wheat and wheat flour until 15 June 2022. Argentina, the world’s fifth-largest beef exporter, has prohibited beef export until 2023. Recently, India has announced wheat export ban to ensure food security for people in the country. This is shown that Food Protectionism policy has been well-known in many countries even not in the war because they all are aware of the direct impact on country administrative policy from now on. At present, countries that has prohibited food exports are as follows:

- Argentina: soybean oil and soybean meal will be banned until December 31, 2022
- Algeria: pasta, wheat, vegetable oil, and sugar will be banned until December 31, 2022
- Egypt: vegetable oil, maize will be banned until June 12, 2022 and wheat, flour, oils, lentils, pasta, and beans will be banned until June 10, 2022
- Indonesia: palm oil and palm kernel oil will be banned until December 31, 2022
- Iran: potatoes, eggplants, tomatoes, and onions will be banned until December 31, 2022
- Kazakhstan: wheat and wheat flour will be banned until June 15, 2022
- Kosovo: wheat, maize, wheat flour, vegetable oil, salt, and sugar will be banned until December 31, 2022
- Turkey: beef, lamb, goat meat, butter, and cooking oil will be banned until December 31, 2022
- Ukraine: wheat, oats, millet, sugar will be banned until December 31, 2022
- Russia: sugar, sunflower seeds will be banned until 31 August 2022 and wheat, meslin flour, rye, barley, maize will be banned until 30 June 2022

- Serbia: wheat, maize, wheat flour, vegetable oil will be banned until 31 December 2022
- Tunisia: vegetables and fruit will be banned until 31 December 2022
- Kuwait: chicken product, grains, vegetable oil will be banned until 31 December 2022

(Cited from Peterson Institute for International Economics: PIIIE)

Situation of Food Crisis and Food Insecurity in ASEAN Region

ASEAN Region is relatively abundant in terms of geography which has plenty of water and weather atmosphere. This makes ASEAN suitable for agricultural activities. The major agricultural products of ASEAN are rice, maize, sugarcane, soybean, cassava, and palm oil which are directly used for consumption. Maize and cassava will be used to produce animal feed, while rice is considered as the staple food in ASEAN Region. Regarding to the ASEAN Agricultural Commodity Outlook Report (ACO report), it is shown that paddy production in the region was inclined to rise from 2020 which accounted for 187.98 million tons to 193.60 million tons in 2021, while in 2022, it is predicted that paddy production will climb to 196.59 million tons (as shown in Table 1). According to the Table 1, countries that can produce largest amount of paddy production are Indonesia, Vietnam, and Thailand respectively.

Unit: 1,000 Tons

| Country | 2020 (2019/20) | 2021 (2020/21) | Change 2021 over 2020 | | 2022 (2021/22) | Change 2022 over 2021 | |
|--------------|-------------------|-------------------|--------------------------|-------------|-------------------|--------------------------|-------------|
| | | | Quantities | (%) | | Quantities | (%) |
| ASEAN | 187,977.81 | 193,596.60 | 5,618.79 | 2.99 | 196,591.01 | 2,994.41 | 1.55 |
| Brunei | 3.86 | 4.08 | 0.22 | 5.61 | 4.20 | 0.12 | 3.00 |
| Cambodia | 10,885.73 | 10,935.62 | 49.89 | 0.46 | 10,957.49 | 21.87 | 0.20 |
| Indonesia | 54,649.20 | 55,269.62 | 620.42 | 1.14 | 57,449.83 | 2,180.21 | 3.94 |
| Lao PDR | 3,506.81 | 3,802.31 | 295.50 | 8.43 | 4,076.59 | 274.28 | 7.21 |
| Malaysia | 2,356.39 | 2,293.80 | -62.59 | -2.66 | 2,306.88 | 13.08 | 0.57 |
| Myanmar | 26,269.65 | 25,982.53 | -287.12 | -1.09 | *25,699.09 | -283.44 | -1.09 |
| Philippines | 18,932.13 | 19,708.04 | 775.91 | 4.10 | *19,839.65 | 131.61 | 0.67 |
| Thailand | 28,617.95 | 31,858.72 | 3,240.77 | 11.32 | 32,621.25 | 762.53 | 2.39 |
| Vietnam | 42,756.09 | 43,741.90 | 985.81 | 2.31 | 43,636.04 | -105.85 | -0.24 |

Table 1: Paddy production in ASEAN countries, 2020 – 2022, ACO No 27 on page 4

When considering the issues of planted areas of energy crops that will replace the planted areas of food crops, it does not affect the decreasing rice planted areas as a staple food. From the data in Table 2, it is implied that rice planted area in ASEAN region tends to increase. This is because the consequence of the spread of COVID-19 in the past two years that ASEAN region had concerned about food insecurity and each country in the region reduced the amount of food imports and exports to prevent the spread of COVID-19 so that they will have enough food production for domestic consumption. Many countries are imposed measures to promote production and boost domestic consumption or expand the agricultural planted areas to increase production to meet domestic demand. From Table 2, overall, rice planted area in ASEAN region tended to increase from 45.68 million hectares in 2020 to 45.90 million hectares in 2021. In 2022, it forecasts that rice planted area will rise to 46.99 million hectares. Countries with largest rice planted areas are Thailand, Indonesia and Vietnam respectively.

Unit: 1,000 Hectares

| Country | 2020 (2019/20) | 2021 (2020/21) | Change 2021 over 2020 | | 2022 (2021/22) | Change 2022 over 2021 | |
|--------------|-------------------|-------------------|--------------------------|-------------|-------------------|--------------------------|-------------|
| | | | Quantities | (%) | | Quantities | (%) |
| ASEAN | 45,678.67 | 45,897.69 | 219.02 | 0.48 | 46,990.23 | 1,092.54 | 2.38 |
| Brunei | 1.42 | 1.46 | 0.04 | 3.00 | 1.51 | 0.04 | 3.00 |
| Cambodia | 3,328.85 | 3,404.13 | 75.28 | 2.26 | 3,421.15 | 17.02 | 0.50 |
| Indonesia | 10,752.92 | 10,552.20 | -200.72 | -1.87 | 11,213.99 | 661.79 | 6.27 |
| Lao PDR | 1,064.32 | 945.25 | -119.06 | -11.19 | 956.58 | 11.32 | 1.20 |
| Malaysia | 644.91 | 677.91 | 33.00 | 5.12 | 676.61 | -1.29 | -0.19 |
| Myanmar | 7,003.92 | 6,961.93 | -41.98 | -0.60 | *6,976.43 | 14.50 | 0.21 |
| Philippines | *4,637.26 | *4,761.28 | 124.01 | 2.67 | *4,852.23 | 90.96 | 1.91 |
| Thailand | 10,966.27 | 11,370.99 | 404.72 | 3.69 | 11,663.63 | 292.65 | 2.57 |
| Vietnam | 7,278.81 | 7,222.54 | -56.28 | -0.77 | 7,228.10 | 5.56 | 0.08 |

Table 2: Paddy planted area in ASEAN countries, 2020 – 2022, ACO No 27 on page 5

To consider the planted areas of 5 major crops namely rice, maize, soybean, sugarcane, and cassava from 2020-2022, direct consumption crop such as rice is likely to have an increasing planted area. Animal feeding crop namely maize, and crops which can be considered as food crops, energy crops, or animal-feeding crops such as soybean and cassava tend to have increased planted area. While the planted area of sugarcane tends to decrease as the sugarcane prices fall, farmers switch to grow other crops that give them higher prices such as rice and maize (ACO No.27). This is because in the ASEAN region, the demand for food crops, energy crops and animal feeding crops tend to go up and producing countries in the ASEAN region still have empty areas for expanding the planted area.

According to the Table 3, rice consumption of ASEAN region in 2022 is approximately 106.89 million tons while the region has a production capability to produce rice around 126.05 million tons. This implies that rice production in ASEAN exceeds the demand for rice consumption. If considering at the regional level, it is shown that the major rice exporting countries in ASEAN region are Vietnam and Thailand in which the amount of rice exports are 7 million tons for Vietnam and 6 million tons for Thailand. However, Brunei, Malaysia, Philippines, and Singapore that rely on rice import from abroad as those countries cannot produce enough rice production for domestic consumption.

Unit: Tons

| Country | Supply | | | | Demand | | | |
|--------------|-------------------|--------------------|------------------|--------------------|----------------------|-------------------|-------------------|--------------------|
| | Beginning Stock | Production | Imports | Total | Domestic Utilization | Exports | Ending stock | Total |
| ASEAN | 31,419,180 | 126,046,156 | 4,197,488 | 161,662,825 | 106,892,755 | 14,165,166 | 40,604,904 | 161,662,825 |
| Brunei | 22,998 | 2,732 | 32,523 | 58,252 | 33,776 | - | 24,477 | 58,252 |
| Cambodia | 5,825,754 | 7,026,819 | - | 12,852,573 | 4,210,657 | 830,294 | 7,811,622 | 12,852,573 |
| Indonesia | 1,232,259 | 36,044,021 | 28,655 | 37,304,934 | 34,940,675 | 3,072 | 2,361,188 | 37,304,934 |
| Lao PDR | 204,796 | 2,445,953 | 25,538 | 2,676,288 | 2,258,017 | 24,175 | 394,095 | 2,676,288 |
| Malaysia | - | 1,476,401 | 915,370 | 2,391,770 | 2,316,517 | 75,253 | - | 2,391,770 |
| Myanmar | 9,846,997 | 16,190,426 | - | 26,037,422 | 14,670,381 | 133,779 | 11,233,262 | 26,037,422 |
| Philippines | 2,457,386 | 13,292,567 | 2,000,000 | 17,749,953 | 15,100,027 | - | 2,649,927 | 17,749,953 |
| Singapore | - | - | 389,236 | 389,236 | 290,642 | 98,593 | - | 389,236 |
| Thailand | 8,591,091 | 21,203,811 | 49,768 | 29,844,671 | 11,495,850 | 6,000,000 | 12,348,821 | 29,844,671 |
| Vietnam | 3,237,899 | 28,363,427 | 756,399 | 32,357,725 | 21,576,212 | 7,000,000 | 3,781,513 | 32,357,725 |

Table 3: Rice balance sheet of ASEAN countries, 2022 (milled rice), ACO No 27 report on page 7

Apart from rice that is the staple food in ASEAN region, rice is exporting products which make income into the country as well. As nowadays each country has prepared the stock of production in case of shortage or during the crisis for example, in the spread of COVID-19, each country in the region have prepared themselves since the pandemic occurred to ensure that people in the country would have adequate food for domestic consumption. The global food crisis that countries have faced at present raise concerns to many countries. However, countries in ASEAN region do not have much concern as they are major producers and are able to produce sufficient food to meet domestic demand.

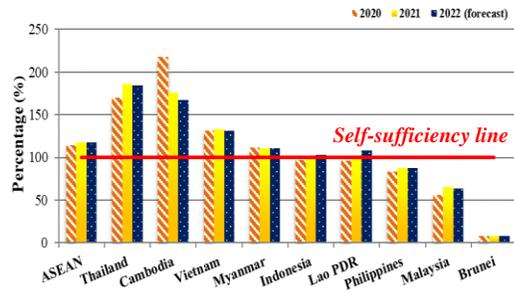


Figure 1 Ratio of rice production to domestic utilization in ASEAN countries, 2020 – 2022

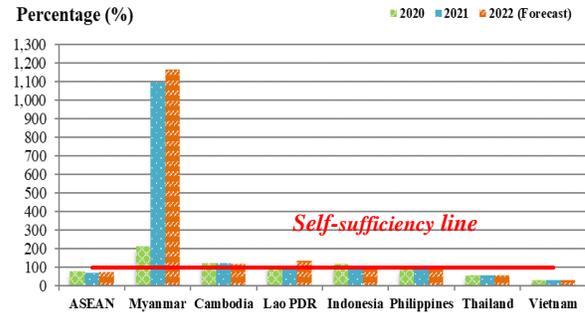


Figure 2 Ratio of maize production to domestic utilization in ASEAN countries, 2020 – 2022

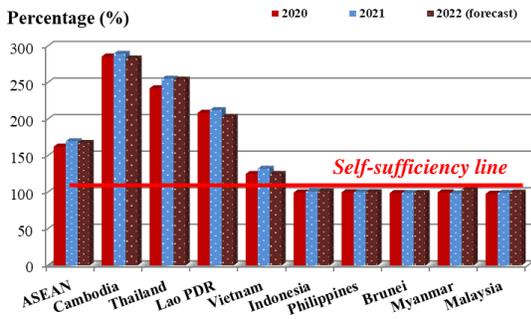


Figure 3 Ratio of cassava production to domestic utilization in ASEAN countries, 2020 – 2022

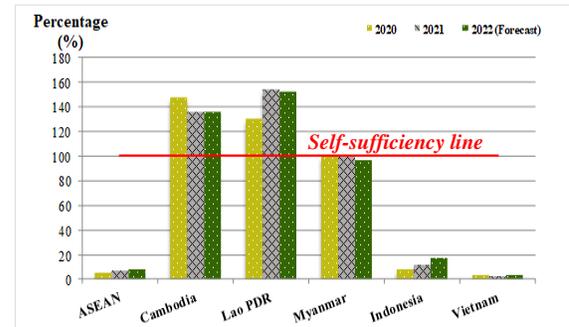


Figure 4 Ratio of soybean production to domestic utilization in ASEAN countries, 2020–2022

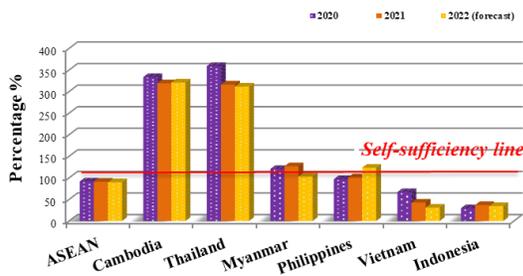


Figure 5 Ratio of sugar production to domestic utilization in ASEAN countries, 2020 – 2022

Comparison of the overall of production volume of 5 main crops namely rice, maize, sugarcane, soybean, and cassava to food sufficiency in ASEAN region shows that the volume of rice and cassava exceeds demand for those products in the ASEAN Region. When considering figure 1-5 by products, the volumes of rice in Thailand, Cambodia, Vietnam, Myanmar, Indonesia, and Lao PDR and the volumes of cassava in Cambodia, Thailand, Lao PDR, and Vietnam are greater than domestic demand. While the volumes of maize, soybean and sugarcane produced in ASEAN region are not enough for

domestic use. Especially, soybean that many countries in ASEAN region still rely on import. The countries that have largest import volumes of soybean in 2021-2022 are Thailand around 3.9 million tons in 2021 and 4 million tons in 2022 followed by Indonesia at 2.75 million tons in 2021 and 2.79 million tons in 2022, Vietnam about 2.04 million tons in 2021 and 2.16 million tons in 2022 respectively. Those countries still have a tendency to increase soybean imports (Figure 6-7). Even if soybean is not an important crop for consumption in ASEAN region, it is still crucial as it is raw material for animal feed and cooking oil production. However, economic growth in ASEAN region affects people need to consume a variety of products which lead to significantly increase in soybean import.



Figure 6 Share of soybean import (tons) among ASEAN countries, 2021



Figure 7 Share of soybean import (tons) among ASEAN countries, 2022

For the overall production, the data from major crop namely rice, the staple food of ASEAN region, demonstrates that many countries in the region have self-dependency in terms of food production and have food security. However, they still have to deal with the problem of high food prices which is one of the determinants that cause food insecurity. As most of the producing countries are developing countries, the majority of populations in the countries have low-income and middle-income which will affect the most from high food prices crisis. In the past, ASEAN countries had faced an energy crisis resulting in the increased demand for petroleum and renewable energy. Thus, there were expansion of the planted area to increase the production volume of food and energy crops to generate country’s income. The expansion of planted area may invade forest areas and watersheds in many countries for instance Thailand and Myanmar.

Additionally, the impact from Russia-Ukraine war had led to the increasing prices of fertilizer and shortage. As most countries in ASEAN region are agricultural producing countries, main income of population in the country comes from agricultural activities which lead to high demand for fertilizers. When the energy price is high, agricultural equipment will be expensive and fertilizer will also be costly and shortage resulting in the increase of production costs suddenly. This will affect agricultural producing countries which are developing countries such as Thailand, Cambodia, Lao PDR, and Vietnam, etc. In addition to agricultural producing countries in the ASEAN region that have been affected by this food insecurity, countries with less agricultural areas and high income are also affected namely, Singapore and Brunei Darussalam where domestic economy is good and populations in the country have high income. However, those countries have food self-insufficiency because of less production area and limited resources for agricultural areas. Consequently, they cannot produce enough food for domestic consumption and need to rely on food import from neighbouring countries such as animal products, vegetable, rice, and fruits to live up to the domestic demand. These countries were

affected a lot from the impact of food insecurity as most of the exporting countries or trading partners has prohibited the export of food outside the countries. Therefore, high-income countries will need to find other sources of food or food trading partners that have enough production capability and can export food during the crisis.

Furthermore, there are countries that have confronted with the problem of food insecurity since the situation of climate change from sudden change of weather may cause severe drought and heavy rain leading to flooding and damage of food production. For example, Malaysia is a high-income country but agricultural area in the country is limited. As a result, Malaysia has lower food production which has raised the concerns of food insecurity. In Philippines, the country has often faced the problem of natural disasters such as typhoon or storm that cause heavy rain leading to flooding and populations in the country have middle income which might raise the concerns of food insecurity in the future. Besides previous factors that have already cause food insecurity, the war between Russian and Ukraine have made the food become more scarcity and the food prices become more expensive resulting in food insecurity in many countries. On other hand, this situation can be advantages for food export of ASEAN countries especially for countries that has excessive supply (as shown in Figure 1-5)

Therefore, when considering such situations, it is crucial for government of each country to impose policy, measure, and implementation plan thoroughly and accurately by using statistical data as the information to review and analyse situation, production volume and domestic food demand for planning to prevent the impact of rising food prices. Government should forecast and assess the situation whether it is necessary to impose the export restrictions on some products or not in order to have adequate food for domestic consumption. In addition, government of each country should plan for food export restrictions on major food such as food crops by collecting and checking the amount of beginning and ending stock in their own country (Table 3). Government should reduce the volume of imports for products which are unnecessary or are not the major food in life to improve efficiency and maintain food security of the country as well as should support farmers and producers to exploit the benefits from market truly. More importantly, government has to take care all people to have access to food everywhere and every time as well as create opportunity and income distribution to people equally.

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