

NTS Insight, no. IN20-03, June 2020

This insight is part of the centre's COVID-19 series, looking at current developments in the global pandemic and its future implications for the social, political and economic spheres in the region.

COVID-19 and Food Security in Asia: How Prepared are We?

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The COVID-19 pandemic has been described as a 'once in a lifetime' crisis that has severely upended peoples' well-being and security, with potentially long-lasting consequences. Governments have already taken measures to restrict supply chain activities, people movement and food exports. Absent well-thought out preparedness planning and policy responses, the disruptive impact of pandemics can rapidly escalate into a food crisis of global proportions, aggravating problems of malnutrition and hunger, and potentially triggering conflicts. This NTS Insight examines the impact of the COVID-19 pandemic on food security in Asia, and explores measures that countries can take to 'pandemic-proof' the food security of their constituents to prevent pandemic-induced food crises. It looks at Singapore's approaches in food security as potential best-practices for countries that both produce and import food, and also proposes a roadmap in averting and mitigating the serious consequences of pandemics on food security.



Source: Photos taken by Jose Ma. Luis Montesclaros

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Recommended citation: Mely Caballero-Anthony, Paul Teng and Jose Ma. Luis Montesclaros, ‘COVID-19 and Food Security in Asia: How Prepared are We?’, NTS Insight, No. IN20-03 (Singapore: RSIS Centre for Non-Traditional Security Studies (NTS Centre), Nanyang Technological University Singapore 2020).

Introduction

The COVID-19 pandemic has been described as a ‘once in a lifetime’ crisis that has severely upended peoples’ well-being and security. The disruptive effects of this pandemic on human society are so pervasive that it affects all facets of human life from the social to the economic, political and technological forces, with long-lasting consequences. The forced lockdowns to stop the spread of COVID-19 have frozen economic activities, affected supply chains and restricted peoples’ movements, causing millions of jobs lost. The domino effects have resulted in acute problems particularly on low-income households that are increasingly vulnerable to the multiple impact of the pandemic.

The impact of pandemics on food security can be very dire if food production, access and distribution are severely disrupted, as has been seen in the first half of 2020 because of COVID-19. Absent well-thought preparedness planning and policy responses, the disruptive impact of pandemics can rapidly escalate into a food crisis of global proportions, aggravating problems of malnutrition and hunger, and triggering conflicts.

The paper examines the disruptive impact of the COVID-19 pandemic on food security in Asia and explores pathways to prepare and avert the severe consequences of pandemic-induced food crises. Our analysis looks at how the pandemic outbreak has affected the four elements of food security, namely: production/availability, physical access, economic access and utilization, paying particular attention to food importing countries that are more vulnerable to the kinds of risks posed by pandemics. We argue that while the effects of this global health emergency have already led to negative outcomes, such as in the form of economic crises,¹ it does not necessarily have to lead to the same devastating outcomes as food crises. Certain strategies can be designed to avert and mitigate the serious consequences of a pandemic on regional food security.

Given that global pandemics like COVID-19 have long-lasting consequences, the paper further argues that having ‘pandemic-proof’ food security strategies at national and regional levels becomes more urgent than ever if states are to adequately respond to the multi-faceted disruptions caused by pandemics or other types of crises. Using Singapore as a case study, we examine how the small island state of about 800 km², which imports 90% of its food needs from over 170 countries geographically spread,² has been ranked as the most food secure country out of 113.³ Singapore’s food story offers important insights on the kinds of policies, capabilities and technologies that ensure food security in non-crisis situations and its recent responses offer useful learnings when challenged by a pandemic crisis. This has important implications at the regional level where in a post-COVID environment, the imperatives of preparedness and response in

¹ International Monetary Fund (2020). World Economic Outlook, April 2020: The Great Lockdown. Accessed 3 June 2020, <https://www.imf.org/en/Publications/WEO/Issues/2020/04/14/World-Economic-Outlook-April-2020-The-Great-Lockdown-49306#:~:text=Summary%3A,the%202008%E2%80%9309%20financial%20crisis>.

² Singapore Food Agency. (2020). Levelling up Singapore’s food supply resilience. Online publication. Accessed 28 April 2020, <https://www.sfa.gov.sg/food-for-thought/article/detail/levelling-up-singapore-s-food-supply-resilience>

³ The Economist Intelligence Unit. (2019). Global Food Security Index. Accessed 15 January 2020, <https://foodsecurityindex.eiu.com/>.

public health and food crises require comprehensive, multi-sectoral engagement and planning, and stronger multilateral cooperation.

The Impact of Pandemics on Food Security

Even in the absence of COVID-19, food production systems were already facing structural vulnerabilities. Severe weather, natural calamities, and pest and disease outbreaks have influenced food availability by reducing crop yields and overall production; rising energy prices, trade disruptions, crop diversion and criminal activities have affected physical and economic access by preventing the transport of food from production areas to consuming areas, leading consequently to reduced supply and food price rises; and food contamination and diet changes have affected food utilization.

The COVID-19 pandemic adds to these pre-existing risks. The rapid growth in the number of COVID-19 infections, and their geographic spread, have triggered unexpected policies involving extreme movement controls or 'lockdowns' adopted by countries globally. The shutting of borders severely impacted global supply chains, which in turn threatened food security. The extent of the impact is highlighted below:

Disruptions in the supply of labour and inputs to production

Many governments implemented some form of people movement control as a direct response to minimising disease spread. One effect of lockdowns is the delay, or in worse cases, constraints preventing farmers from getting the agricultural inputs they commonly use in their cropping process, such as fertilizers, seeds or pesticides. They may also face shortages in getting sufficient workers in the fields. The absence of fertilizers may mean that agricultural yields will be significantly reduced, while the lack of stress-resistant seeds and pesticides means that crops are more vulnerable to environmental stressors such as droughts and floods, pests and diseases. Therefore, a potential impact of lockdowns is a reduction in the yields and greater vulnerability of farmers to these stressors.

These impacts can be dire, since farmers need to follow distinct cropping seasons. The failure to plant their crops on time can lead to a failure of the cropping season altogether. For instance, India's planting cycle for its 'Kharif' or rainy season coincides with the lockdowns in March to May. The same problems are faced by Thailand and Vietnam. These three largest exporters of rice in Asia therefore face supply-chain vulnerabilities based on their planting cycles,⁴ which in turn affect food availability based on crop planting phase.

Disruptions in access to markets

Another impact of travel and transport restrictions during the COVID-19 pandemic is the increased difficulty faced by farmers in transporting their produce to markets. Transport capacity for food, from exporting to importing small island states like those in the South Pacific via sea and air, have also been drastically reduced.⁵ In combination, these reduce physical access to food.

Moreover, given that cropping seasons require farmers to harvest their crops once they have matured, farmers and governments will need to expand their capacity to store food and to protect it from pestilence (e.g. rodents, or insects) for

⁴ CGIAR (2014). Ricepedia. Online publication. Accessed 2 June 2020, <http://ricepedia.org/>.

⁵ Teng, P. (2020). COVID-19: Maintaining Food Security in Asia Pacific. Opinion Editorial published by Inter Press Service News Agency, FAO, UN, Rome, April 16 2020. Accessed 2 June 2020, <https://www.ipsnews.net/2020/04/covid-19-maintaining-food-security-asia-pacific/>.

the duration of the lockdowns. The failure to do so can lead to crops rotting and food being wasted, which seriously affects food availability in the region. For instance, COVID-19 lockdowns are likely to already affect Vietnam's Winter-Spring rice harvesting season (April-June) and if lockdowns are extended, it could also affect the Summer-Autumn harvest (August-September). In case it lasts until the end of the year, it could also affect its main harvest season (September-December).

Limited access to food supplies and increased undernourishment

A knock-on effect of delays in the transport of food is that on supermarkets in urban centres of archipelagic countries that are not able to replenish their food stocks. The impact is also acute for food importing countries. Whenever physical access is limited and food becomes scarcer within these local settings, food prices increase. This potentially places food beyond the grasp of poorer populations, thus having a negative impact on their food security.⁶ For instance, during the 2007-08 food crisis, a World Bank report showed estimates of between 100 million and 200 million more individuals being classified as impoverished (that is, because food price inflation significantly reduced the real incomes of poorer populations), and an increase of 63 million undernourished individuals.⁷ Today's 'lockdowns' have deprived millions of daily-waged workers of their ability to purchase food in Asia, with an estimated 109-167 million falling to unemployment regionally,⁸ and 140 million falling into extreme poverty globally.⁹ It is anticipated that there will be increased hunger and malnutrition in many developing countries.

Thus, the vulnerability of countries to this disruption (with negative implications on food affordability and undernourishment), depends on the extent of their import-dependence for their consumption requirements. In the case of cereals which make up the majority of calorie consumption, the most vulnerable countries based on the latest UN FAO data (2011-13) are Singapore (100% dependence) and Brunei (100% dependence), followed by Malaysia (72.6%), and to a smaller extent, Indonesia (15.4%), the Philippines (17.8%) and Timor-Leste (15.7%).¹⁰ However, even with higher import-dependence, countries can still be resilient if they are able to 'pandemic-proof' their food import supply chains.

Push toward export restrictions

Experience from the 2007-08 food crisis has shown that unexpected agricultural production shocks lead to panic reactions by governments to restrict food exports and accumulate domestic stocks, thereby precipitating a chain of events that lead to temporary food shortages, price spikes, price gouging by sellers and food hoarding by consumers. These have all been seen in the first months of the current pandemic in different countries.

The International Food Policy Research Institute (IFPRI) has projected, using data from FAO, UN and its own models, that there are ample food stocks for 2020 and there is no justification for export restrictions.¹¹ Both food availability and economic access to food have been affected by hasty reactions to the perceived threat of reduced food stocks. Thus, as shown by 2019 data in the EIU/GFSI, as long as imports are not hindered and there is trade continuity through supply chains, food security of a country is not lessened because of any dependency on imports (Figure 1, in Appendix).

⁶ The most vulnerable countries will be small island states who also face other disruptors, like severe weather events, natural disasters, and pest and disease outbreaks.

⁷ IEG (Independent Evaluation Group). 2014. *The World Bank Group and the Global Food Crisis: An Evaluation of the World Bank Group Response*. Washington, DC: World Bank. doi: 10.1596/978-1-4648-0091-7. License: Creative Commons Attribution CC BY 3.0 IGO.

⁸ ADB (2020). Updated Assessment of the Potential Economic Impact of COVID-19. ADB Brief, No. 133, May 2020. Manila: Asian Development Bank. Accessed 5 June 2020, <https://www.adb.org/publications/updated-assessment-economic-impact-covid-19>.

⁹ Laborde, D. Martin, W. and Vos, R. (2020). Poverty and food insecurity could grow dramatically as COVID-19 spreads. IFPRI Blogs. Accessed 5 June 2020, <https://www.ifpri.org/blog/poverty-and-food-insecurity-could-grow-dramatically-covid-19-spreads>.

¹⁰ UN FAO (2020). FAO Stat Database: Suite of Food Security Indicators. Accessed 21 May 2020, <http://www.fao.org/faostat/en/#data/FS>.

¹¹ Glauber, J., Laborde, D., Martin, W. and Vos, R. (2020). COVID-19: Trade restrictions are worst possible response to safeguard food security. IFPRI Blog. Accessed 5 June 2020, <https://www.ifpri.org/blog/covid-19-trade-restrictions-are-worst-possible-response-safeguard-food-security>.

On the other hand, risks from other disruptors remain which may confound these projections. If food producing or exporting countries were unable to ‘pandemic-proof’ their supply chains for food inputs in particular areas, then they may face worse yields and greater vulnerability to environmental stressors wiping out their crops. Examples of these environmental stressors, which have coincided with the current pandemic, are the Fall Armyworm affecting the corn crop in multiple countries stretching from Sub-Saharan Africa, through South Asia to China; the worst locust swarms in decades affecting Pakistan and Somalia leading them to declare national emergencies; Thailand’s worst drought in 40 years; and bushfires in Australia that affect both crops and livestock.¹²

Reduced production targets for farmers

Finally, a further risk is if farmers in the food producing countries reduce their food production targets. If farmers anticipate that they will not be able to sell their produce because of the enhanced travel restrictions, then they may reduce their production targets in the next planting seasons. For instance, if farmers see 30% of their produce unsold, then they may reduce their future production targets by 30% in order to avoid additional costs to storing food; in fact, some have already dumped fresh produce because they could not be sold, as in the case of Malaysia’s vegetable farmers.¹³ Even if lockdown measures were lifted, this still means reduction in food sales. There is also the added effect of reduced demand by consumers as large numbers have suffered losses in their earnings.

It is also evident that a pandemic like COVID-19 is but one of many potential disruptors to farm-level production. Even in the best of times, farmers already face challenges such as unexpected severe weather events when farming in a region known to have high frequencies of such environmental stressors.¹⁴

‘Pandemic-Proofing’ as a Tool for States’ Food Security

One of the key messages often lost as countries struggle to manage the multiple consequences of a severe pandemic outbreak is the importance of preparedness. Within the framework of global health security, pandemic preparedness requires three things: to prevent, detect and respond to outbreaks of infectious diseases. Having the ability to do all three allows countries to contain and mitigate the grave consequences of pandemics by strengthening their respective health systems and putting in place policies and infrastructure that can be readily deployed when disease outbreaks become Public Health Emergencies of International Concern (PHEIC).¹⁵

We find that despite recent precedents of pandemics like SARS and H1N1, the responses have very often been reactive rather than anticipatory and proactive.¹⁶ Reactive policies are usually inadequate to prevent and contain the spread of

¹² Montesclaros, Jose Ma. Luis (2020). From a Health Pandemic to Food Crisis. *Khmer Times*, 9 April 2020. Accessed 20 May 2020, <https://www.khmertimeskh.com/711039/from-a-health-pandemic-to-food-crisis/>; Paul S. Teng (2020). Global Health Security – COVID-19: Its Impact on Food Sufficiency. *RSIS Commentary*, 25 March 2020. Accessed 21 May 2020, <https://www.rsis.edu.sg/rsis-publication/nts/global-health-security-covid-19-its-impact-on-food-sufficiency/#.Xsa2umgzbb0>.

¹³ Lim, Janice (2020). The Big Read: Global supply chain shock has farmers dumping food as consumers fret over shortages, price hikes. *Channel News Asia*, 20 April 2020. Accessed 1 June 2020, <https://www.channelnewsasia.com/news/singapore/big-read-covid19-global-supply-chain-shock-food-shortages-12655836>.

¹⁴ Wood, J. (2018). Why Asia-Pacific is especially prone to natural disasters. World Economic Forum. Online Publication. Accessed 5 June 2020, <https://www.weforum.org/agenda/2018/12/why-asia-pacific-is-especially-prone-to-natural-disasters/>.

¹⁵ For Public Health Emergency of International Health Concern (PHEIC), see *International Health Regulations 2005*, (IHR), <https://www.who.int/ihr/procedures/pheic/en/>, accessed 1 June 2020.

¹⁶ Caballero-Anthony, Mely (2018) Health and human security challenges in Asia: new agendas for strengthening regional health governance. *Australian Journal of International Affairs*, 72:6, 602-616. See also Caballero-Anthony, Mely (2005), SARS in Asia: Crisis, Vulnerabilities and Regional Responses. *Asian Survey*, Vol. XLV, No. 3, pp. 475-495.

infectious diseases. It is notable how government officials have struggled to reduce risks and increase national capacity and resources (both financial and human resources) to respond effectively.

Similarly, when applied in the context of food security, 'preparedness and response' begin with prevention, anticipating what could go wrong when a severe pandemic breaks out and putting in place measures to prevent and reduce the kinds of risks that could result from a health crisis. In this regard, we introduce the concept of 'pandemic-proofing' as a key tool for preventing, preparing and responding to a pandemic-induced global food crisis.

'Pandemic-proofing' covers a slew of measures that address multiple issues from food production and access, import restrictions and resilience of food supply chains to economic access including pricing and nutrition. The kinds of measures to be taken, which can be divided into immediate, short term and long-term strategies, constitute a proactive agenda for ensuring food security both in non-crisis and crisis situation.

In looking at how we can envision 'pandemic-proofing' in practice, we start by setting out a comprehensive agenda for food security that is most relevant to Southeast Asia which has a mix of four net food exporting and six net food importing countries. More significantly, Southeast Asia has the Association of Southeast Asian Nations (ASEAN) as the regional organisation that has developed mechanisms specifically geared toward helping members states address collectively shared problems and issues on food security. ASEAN also provides an important platform for its member states to engage with other countries in the wider Asian region and find opportunities to work together on strategies and policies aimed at ensuring the food security of Asia, such as through the ASEAN Plus Three Emergency Rice Reserve (APTERR) mechanism,¹⁷ the ASEAN Food Security Information System (AFSIS),¹⁸ and the Senior Officials Meeting of the ASEAN Ministers on Agriculture and Forestry (SOM-AMAF).¹⁹

In the post-COVID environment, ASEAN's food security agenda in the immediate to short term should focus on the following:

Ensuring sufficient access to food production inputs: ASEAN countries will benefit from putting in place special arrangements to ensure that food production inputs and labour for farms, are available in a timely manner, prioritising farms whose planting seasons coincide with lockdowns. China pioneered this by establishing 'Green Channels' in their transport system to allow free flow of inputs, labour and supplies related to food.²⁰

Supporting farmer decisions: Advisory services and subsidised financing will need to be provided to farmers. This is to provide them with additional assurance so that they do not reduce their production targets in fear they may not be able to sell them, in anticipation of lockdown extensions. Moreover, since the COVID-19 has occurred alongside other major food threats such as floods and pestilence in the first quarter of 2020, a focused approach by the AFSIS will be needed to guide the farmers and consumers accordingly to reduce production- and food-safety risks.

¹⁷ The ASEAN Plus Three Emergency Rice Reserve (APTERR) mechanism is a 'virtual stockpile' of rice that is made up of rice pledges/commitments by ASEAN Plus Three countries (i.e. ASEAN and China, Japan and South Korea).

¹⁸ The ASEAN Food Security Information System (AFSIS), focuses on systematic collection, analysis and dissemination of food security related information.

¹⁹ The Senior Officials Meeting of the ASEAN Ministers on Agriculture and Forestry (SOM-AMAF) guides overall cooperation in food and agriculture among ASEAN countries.

²⁰ Fei, Shulang and Ni, Jia (2020). Local food systems and COVID-19: A look into China's responses. *UN FAO City Region Food Systems Programme: Reinforcing Rural-Urban Linkages for Resilient Food Systems*. Accessed 1 June 2020, <http://www.fao.org/in-action/food-for-cities-programme/news/detail/en/c/1270350/>.

Expanding food storage capacity: ASEAN countries can identify ways of expanding their storage capacity, especially countries whose crop harvesting seasons coincide with the COVID-19 pandemic. This further leads to increased food stocks which confer more confidence to governments. Supporting countries to adopt the best practices in food stocking and the most cost-efficient ways to expand storage capacity, is a potential new role that the APTERR council can possibly explore.

Securing food imports: Food imports are critical especially in the case of countries with limited natural resources to self-produce. Thus, countries will need to provide sufficient support and standardised mechanisms for workers in the industry, to ensure that the transport of food from exporting/producing countries is not disrupted.²¹ Singapore, for example, implemented a 'supply chain connectivity agreement' with ten other countries.²² Such initiatives may be explored in supporting regional cooperation in food and agriculture.

Preventing supply crises arising from export restrictions: It is important that countries refrain from panicking and restricting their exports. Otherwise, this could lead to worse crises, such as a repeat of the 2007-08 food price crisis mentioned earlier where over 63 million people fell into undernourishment.²³ ASEAN is well-positioned in this regard, given the recent Joint Statement issued by ASEAN Ministers on Agriculture and Forestry (AMAF) to 'minimise disruptions in regional food supply chains by working closely together to ensure that markets are kept open and transportation of agricultural and food products are facilitated'.²⁴

Supporting consumers to maintain regular food consumption. Earlier, we raised that consumers may, as a result of lockdowns, be prevented from obtaining their regular incomes. This contributes to reduce food demand which may cause producers to reduce their targets for production in the immediate-to-short-term; these could spell temporary shortages in the supply chains in the long-term. Governments will thus need to provide their consumers with sufficient income to meet their regular food consumption requirements.²⁵

Pandemic-Proofing and Singapore's Experience in Food Security

Much of the work and progress in realising a 'pandemic-proofing' agenda depends on how this agenda is translated and implemented at the national level. Here, we bring in Singapore's approach to food security, both in non-crisis and crisis situations, which reflects most of the issues outlined in the agenda above. As a city-state which is 90 per cent import-dependent on its food supplies, Singapore's 'food story' (Box 1) offers salient insights on how it became one of the most food secure countries globally.²⁶

²¹ This applies especially to countries that have higher external dependence for their food consumption needs.

²² Ministry of Trade and Industry, Singapore (2020). *Joint Ministerial Statement by Australia, Brunei Darussalam, Canada, Chile, Laos, Myanmar, Nauru, New Zealand, Singapore, the United Arab Emirates and Uruguay Affirming to Commitment to Ensuring Supply Chain Connectivity Amidst the COVID-19 Situation*. 3 May 2020. Accessed 1 June 2020, <https://www.mti.gov.sg/-/media/MTI/Newsroom/Press-Releases/2020/05/Joint-Ministerial-Statement-on-supply-chain-connectivity-3-May-2020.pdf>.

²³ Ibid.

²⁴ ASEAN (2020). ASEAN pledges to ensure food security during COVID-19 outbreak. Press Release, 17 April 2020. Accessed 21 May 2020, <https://asean.org/asean-pledges-ensure-food-security-covid-19-outbreak/>.

²⁵ Helping governments do so, can be a special focus that complements the ASEAN's current efforts, such as its commitment of 10% of ASEAN Development Fund/cooperation funds to support essential commodities. For further reference, see ASEAN (2020). Declaration of the Special ASEAN Summit on Coronavirus Disease 2019 (COVID-19), 14 April 2020. Accessed 25 May 2020, <https://asean.org/storage/2020/04/FINAL-Declaration-of-the-Special-ASEAN-Summit-on-COVID-19.pdf>.²⁶ Singapore Food Agency. (2020). Levelling up Singapore's food supply resilience. Online publication. Accessed 28 April 2020, <https://www.sfa.gov.sg/food-for-thought/article/detail/levelling-up-singapore-s-food-supply-resilience>.

²⁶ Singapore Food Agency. (2020). Levelling up Singapore's food supply resilience. Online publication. Accessed 28 April 2020, <https://www.sfa.gov.sg/food-for-thought/article/detail/levelling-up-singapore-s-food-supply-resilience>.

The Global Food Security Index (GFSI) rank given to Singapore was based on a multi-rubric scoring system that adopted the 1996 World Food Summit definition for Food Security – that it ‘exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.’²⁷ Singapore scored high on the rubrics concerning availability, affordability, quality and safety, but low on natural resources and resilience.

Box 1: ‘Pandemic-proofing’: Insights from the Singapore Food Story

Food Availability and Physical Access to Food

As with other small island states, food availability is made possible through limited self-production of some food items; importation of most food items; and having sufficient stockpiles. Self-production is done mainly in surrounding coastal waters (for fish) and in six agro-technology parks which collectively comprise about 1.8 % of total land area (used to produce fish, vegetables, eggs and miscellaneous minor items like quails and frogs). As of 2019, there were 77 vegetable farms, 3 egg farms and 122 fish farms. These farms met, respectively, 14%, 10% and 26% of the island’s needs of vegetables, fish and eggs, for a population of 5.7 million.²⁸ Singapore, like most middle-to-high income island states, applied an approach which the Food and Agriculture Organization of the United Nations (UN FAO) called ‘self-reliance’. This means maintaining some level of domestic food production, while ensuring sufficient capacity to import from the world market as needed.²⁹ There is no explicit goal to achieve 100% food self-sufficiency.

The second approach to make food available is what Singapore calls its ‘Resilience’ strategy for food import sourcing. This strategy is implemented by importing from a geographically diverse group of countries for each food item. For example, chicken is imported mainly from Brazil, Malaysia, U.S.A. and Argentina while vegetables are imported from Malaysia, China, India and Australia.³⁰ The government’s food agency routinely sends out ‘scouting’ teams around the world to develop new sources and supply chains.

Stockpiles are the third approach used by most countries to ensure availability of key food items during periods of scarcity. A recent study by the Southeast Asian Center for Graduate Studies and Research in Agriculture (SEARCA) showed that every one of the ten countries in ASEAN had stockpiles of, minimally, rice.³¹ While the Singapore government does not intervene directly in market operations, it does support firms to become resilient; for example, it requires rice importers to hold stocks of roughly two months’ worth of rice.³² In the case of other commodities, such as vegetables, fish and meat, importers have avenues through which they can request for government support should they face challenges to maintain sufficient stocks, such as in keeping bilateral trade lines open.

²⁷ Food and Agriculture Organization of the United Nations. (2009). Draft Declaration of the World Summit on Food Security, Rome, 16-18 November 2009. Document no. WSFS 2009/2. http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Declaration/WSFS09_Draft_Declaration.pdf. Accessed 25 April 2020.

²⁸ Singapore Food Agency. (2020). Levelling up Singapore’s food supply resilience. Accessed 28 April 2020, <https://www.sfa.gov.sg/food-for-thought/article/detail/levelling-up-singapore-s-food-supply-resilience>.

²⁹ Konandreas, P. (2000). *Trade and food security: Options for developing countries*, in Multilateral Trade Negotiations on Agriculture: A resource manual, FAO, Rome.

³⁰ Singapore Food Agency. (2020). Levelling up Singapore’s food supply resilience. Online publication. Accessed 28 April 2020, <https://www.sfa.gov.sg/food-for-thought/article/detail/levelling-up-singapore-s-food-supply-resilience>.

³¹ Teng, P.S. & Darvin. B.A.C. (2019). (Ed). *Food Reserves: A Comparative Study on Food Reserve Management and Policies in Southeast Asia*. SEARCA College, Los Baños, Laguna, Philippines.

³² Enterprise Singapore (2018). Rice Stockpile Scheme. Online Publication, last updated 7 March 2018. Accessed 2 June 2020, <https://rice.enterprisesg.gov.sg/Home/RiceStockpileScheme.aspx>.

Economic access to food

The affordability of food, as another important dimension of food security, depends on the price of food and the purchasing power of citizens. A zero-tariff policy on food, and efficient food logistics systems, are two factors which help prevent the need to raise prices.

Empowering its citizens with purchasing power adds to the favorable economic access of food, and consequently, overall food security (Figure 2, in Appendix). The average Singapore household has a relatively high Gross Domestic Product (GDP) per household, and with zero tariffs on food, this makes food expenditures a relatively small part of household budgets; by government statistics, the share of household budgets allocated for food is less than 10%. This compares well with neighbouring countries in which household expenditures on food are in the range of 30-45% of household incomes.³³ It may be argued that economically less developed island states may not have the same capacity to import and provide food with affordable access to most of their citizens because of lower GDP per household.

Additionally, during the COVID-19 pandemic, the Singapore government provided local consumers with income support, which helps in maintaining regular food consumption levels. This came in the form of three relief packages – the Unity Budget, the Resilience Budget, and the Solidarity Budget.³⁴

Food Utilization

Another foundational reason for Singapore's high GFSI ranking is with respect to food quality and safety, which influences food utilization. It is generally recognized in the Southeast Asian region that the country has one of the strictest and most robust systems to assure food safety, whether it is chemical or biological. Additionally, food handling regulations stipulate procedures to maintain the nutritive value of fresh produce.

As with other small island states, Singapore lacks the natural resources and ecological resiliency in its agriculture base. But the country has attempted to counter this by focusing on space-limited, technology-enabled urban farming which currently provides about 10% of its needs.³⁵

Singapore's strategy of self-reliance, mixing imports, self-production and food stock management, provides an example of how each state can, according to its own circumstances, strike the proper balance to achieve resilience from a food security perspective. Furthermore, Singapore's story of 'preparedness and response', as seen through its pro-active and comprehensive strategies and policies in food security, is instructive for ASEAN and the wider region. The insights that can be gleaned from this story of preparedness and 'pandemic-proofing' are useful to ASEAN countries if they were to draw up a strategic roadmap to manage food security risks resulting from, but not limited to, severe pandemics like COVID-19.

³³ Our World in Data. (2020). Determinants of food expenditure. Engel's Law. <https://ourworldindata.org/food-prices>. Accessed 15 April 2020.

³⁴ Gov.Sg Portal (2020). Solidarity Budget 2020 : Additional cash payments to help families get through Circuit Breaker phase. Online publication. Accessed 2 June 2020, <https://bit.ly/3gMLvMs>.

³⁵ Singapore Food Agency. (2000). Singapore's modern farm series. Online publication. Accessed 15 April 2020, <https://www.sfa.gov.sg/food-for-thought/tags?tag=singapores-modern-farm-series&page=1>.

Food Security Preparedness Imperatives in Asia

Much like pandemic preparedness, being prepared to ensure food security particularly in times of crises requires long-term and sustained planning. It is akin to having a roadmap that sets out pathways/strategies to help us realise the agenda of being food secure. Against a post-COVID environment, the roadmap sketched out below identifies key policy approaches at national and regional levels which are critical to preventing and mitigating the consequential impact of COVID-19 pandemic and other crises.

Expanding intra-regional food production and trade: ASEAN, as noted by Singapore Ambassador Tommy Koh, 'is an intergovernmental body rather than a supranational body'.³⁶ In this regard, the agency in ensuring food security at the national level falls primarily on the governments of member states, although they may rely on the regional body to help in coordinating policies and preventing food crises.

As COVID-19 increases the risk of trade and transport disruption in ASEAN, countries in the region would benefit from exploring ways of improving the productivity of their crop production levels, thus boosting regional self-production. For instance, as rice is primarily transported by sea rather than by air or land, a significant delay can be expected for rice to be shipped in cases of emergencies. Other commodities such as wheat, soybean and corn need to go through longer distances whenever they are imported from outside the region. In fact, intra-ASEAN agrifood trade makes up only 25% of member states' exports, and all states import agrifood products from outside the region.³⁷

A potential initiative is to explore the crops where 'regional food corridors' can be developed, to expedite the exploration of opportunities for increased intra-regional food production and trade. For instance, Table 1 (Appendix) shows the top produced crop is rice, but the region still imports 1-2% of this crop. This indicates potential for the region to explore whether the farmers in the producing countries can increase their self-production capacity to meet the additional demand by their Southeast Asian neighbours. Complementary to this, the AFSIS can help in bridging information gaps to help farm farmers providing such information.

Ensuring food trade between and within regions through diverse supply chains with geographically distributed origins: As Asian countries improve economically and become more urban, there is a corresponding increase in the demand for more diverse diets and for more of specific food types like animal protein and temperate climate foods. The FAO food security definition has recognized that there is no common, static food secure state, but rather that food security has to meet 'dietary needs and food preferences'. Asia has to recognize this changing food security landscape.

To satisfy the needs and preferences of their citizens, countries need to ensure that the capacity to trade remains strong. The earlier observation that more food is traded outside the region than within the region shows that much can be done to remove the hurdles for increased intra-ASEAN trade. Currently, Asia is home to many large agro-commodity traders with annual revenue over US\$ 1 billion, such as Wilmar, CP Group, Sime Darby, Olam, FELDA Holdings, IOI Bhd., IndoFood, San Miguel, and Golden Agri-Resources. Their effectiveness to move food around, however, is also

³⁶ Centre for International Law (2020). Where is ASEAN in COVID-19? Part 5 of e-Conference Series, 'Covid-19': A challenge to the International Legal Order? <https://cil.nus.edu.sg/event/e-conference-series-on-covid-19-session-5-of-5/>

³⁷ Teng, Paul S. (2020). Sustaining ASEAN Food Supply and Food System Resilience - Challenges and Opportunities (2020-2025). ILSI ASIA COVID-19 Webinar Series: Part 1, Food System Resilience - Global and Asian Perspectives.

dependent on in-country logistics and infrastructure. This calls for further supportive policies and regulations which enable increased intra-regional export and import.

Improving food system resilience and food security robustness: At a recent global webinar, Dr Fan Shenggen, former IFPRI Director-General, argued that countries need to have resilience, defined as ‘helping people, communities, countries, and global institutions prevent, anticipate, prepare for, cope with, and recover from shocks and not only bounce back to where they were before the shocks occurred, but become even better-off.’³⁸ To do this, food systems would have to be more inclusive of all stakeholders, from the smallholder farmers, to consumers and institutions. This inclusiveness will have to further build-in resilience along the food supply chain, from input supply, production, processing, all the way to retail, so that each step of the supply chain has capacity to adjust to stressors like COVID-19.

In an earlier study, the RSIS had proposed adopting the concept of ‘robustness’³⁹ when aiming for food security. ‘Robustness’ is the ability to withstand perturbations to food systems based on four rubrics that aims to answer an associated question. These rubrics are: (1) farm-level actors- whether farmers have the capability and means to be productive over the longer term; (2) demand and price factors that look at how food security needs in the country are likely to evolve in terms of quantity, affordability and access; (3) environmental factors that look at the capacity in the country to provide for long-term agricultural productivity and sustainability; and (4) policy and trade -whether they encourage open markets, investment and innovation on an on-going basis. COVID-19 has affirmed that food security robustness has to be achieved in a country and is integral to its preparedness.

Increasing investments in the agrifood sector through R&D and entrepreneurship: The Asian region has a poor record of investing in agricultural R&D, which as shown by the EIU GFSI data for 2019, is positively linked to food security (Figure 3, in Appendix). Unmet goals to increase and diversify crops, animals and fish will remain as such until governments invest more in R&D to spur new enterprises in the agrifood sectors of Asian countries. Expanded R&D is needed to promote food systems that offer nutritious and healthy food, use climate-smart and resource efficient technologies, and in the longer term are sustainable and resilient.

Conclusion

The severity and magnitude of the impact of COVID-19 pandemic have demonstrated how hundreds and thousands of lives can be lost, livelihoods destroyed, and our way of life drastically altered-- in so short a time if we are ill-prepared to deal with risks and uncertainties. Given how interconnected states and societies have become, the pandemic has also shown that it is not a stand-alone crisis but has easily spiraled into an economic crisis of global proportions. These dual crises have in turn threatened food security and other facets of human security.

The foregoing discussion has laid out a comprehensive agenda and a roadmap to mitigate the impact of the pandemic and economic crises on food security. In doing so, we looked at the experiences of countries, like Singapore, which are instructive in adopting an anticipatory and pro-active approach to food security. We argued that the goal of being food secure in non-crisis and crisis situations is made possible by being well prepared. And preparedness is more than a state

³⁸ Fan, Shenggen (2020). Impact of COVID-19 on Global Food Supply Chain - Current Status, Implication, and Outlook into the Future. *ILSI ASIA COVID-19 Webinar Series: Part 1 Food System Resilience - Global and Asian Perspectives*. www.ilsisea-region.org.

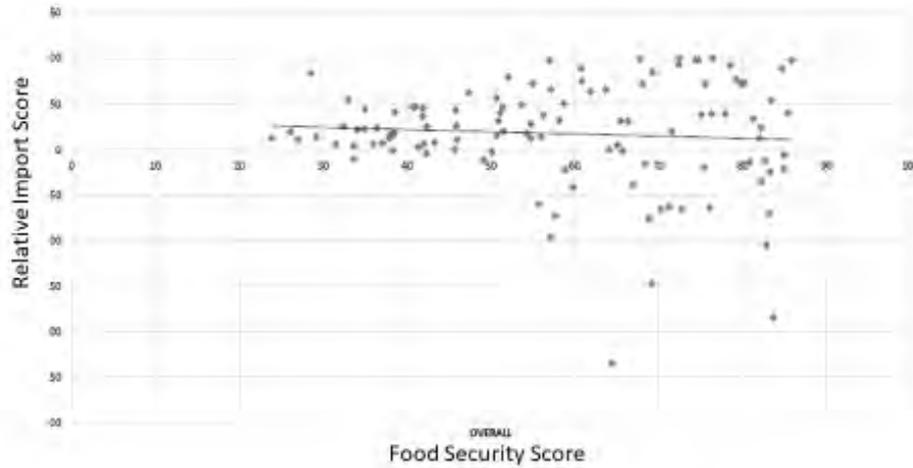
³⁹ Teng, P. and M.C.S. Morales (2013). A new paradigm for food security: robustness as an end goal. *RSIS NTS Policy Brief* PO 13-05. 6 pp.

of mind. It requires foresight, well-thought out policies, and implementing strategies that are responsive to the growing list of complex factors that define the global security environment. It is these complexities that compel states to be always prepared for disruptions and decisively respond to them.

More importantly, preparedness in food security requires no less than a 'whole of government' approach. In practice, this has to involve more than just the government agencies concerned with agriculture and food, and include agencies responsible for trade, climate change, manpower development and transport. It also needs to be more inclusive, getting other actors involved, like the private sector that has the technological advantage and the resources that can support farmers boost food production. One must also not forget the role of NGOs and other civil society organisations that can provide much needed services to strengthen national and regional food systems and collectively help to ensure food security.

Appendix: Figures and Table

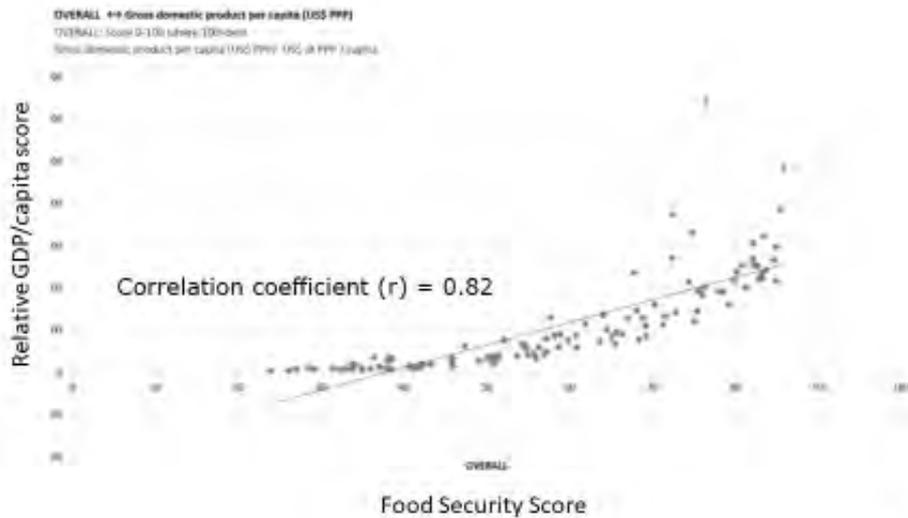
Figure 1: Food security scores and import dependence



Data Source: EIU/GFSI 2019

Source: Teng, Paul S. (2020). *Sustaining ASEAN Food Supply and Food System Resilience - Challenges and Opportunities (2020-2025)*. ILSI ASIA COVID-19 Webinar Series: Part 1 Food System Resilience - Global and Asian Perspectives.

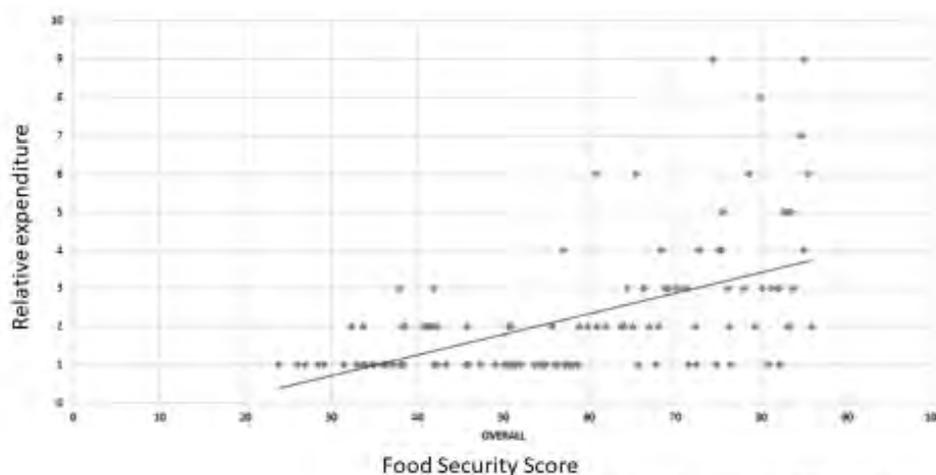
Figure 2: GDP per Capita and Food Security Scores



Data Source: EIU/GFSI 2019

Source: Teng, Paul S. (2020). *Sustaining ASEAN Food Supply and Food System Resilience - Challenges and Opportunities (2020-2025)*. ILSI ASIA COVID-19 Webinar Series: Part 1 Food System Resilience - Global and Asian Perspectives.

Figure 3: Relationship between investments in agriculture R&D and food security scores



Data Source: EIU/GFSI 2019

Source: Teng, Paul S. (2020). *Sustaining ASEAN Food Supply and Food System Resilience - Challenges and Opportunities (2020-2025)*. ILSI ASIA COVID-19 Webinar Series: Part 1 Food System Resilience - Global and Asian Perspectives.

Table 1: Top ASEAN Food Crop Production and Imports in 2018 (million tonnes)

Rank	Top Crops Produced		Top Crops/Crop-Derived Items Imported	
1	Rice, paddy	218.88	Wheat	25.42
2	Sugar cane	184.17	Cake, soybeans	14.99
3	Cassava	73.39	Maize	12.61
4	Maize	50.93	Soybeans	7.97
5	Coconuts	36.33	Sugar Raw Centrifugal	6.14
6	Vegetables, fresh nes*	27.57	Beverages, non alcoholic	2.74
7	Bananas	17.69	Sugar refined	2.62
8	Palm kernels	15.51	Rice - total (Rice milled equivalent)	2.47
9	Rubber, natural	10.70	Food prep nes	1.63
10	Mangoes, mangosteens, guavas	8.06	Fatty acids	1.31
11	Fruit, tropical fresh nes*	8.18	Cashew nuts, with shell	1.29
12	Pineapples	7.60	Meal, meat	1.19
13	Fruit, fresh nes*	6.80	Cassava dried	1.08
14	Beans, dry	5.39	Malt	0.96
15	Plantains and others	4.30	Flour, wheat	0.94

Source: UN FAO (2020). *FAO Stat Database: Commodity Balances – Crops Primary Equivalent*. Accessed 21 May 2020, <http://www.fao.org/faostat/en/#data/BC>.

Note: *nes refers to 'other vegetables (or fruits or items under the same category) that are not identified separately because of their minor relevance at the international level' as reported by countries to FAO, based on UN FAO (1994). Definition and classification of commodities. Accessed 1 June 2020, <http://www.fao.org/waicent/faoinfo/economic/faodef/faodefe.htm>.

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