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COVID-19 Pandemic Implications on Agriculture and Food Consumption, Production and Trade in ASEAN Member States

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ABOUT THE REPORT

This report captures the implications of the COVID-19 pandemic for agriculture and food consumption, production and trade in the Association of Southeast Asian Nations (ASEAN) region. In this context, the Asia Pacific Foundation of Canada and Mouralea Consulting produced this report to provide technical assistance on COVID-19 recovery plans to ASEAN stakeholders including Ministers on Agriculture and Forestry, Senior Officials, and their working groups. To achieve this goal, the authors of this report conducted primary surveys with ASEAN focal representatives, health and nutritional modelling, rudimentary economic analysis, and secondary literature reviews related to the impacts and challenges posed by COVID-19 in the ASEAN agriculture and food sector. As such, an analytical and evidence-based approach was embraced to develop policy insights and recommendations suitable for the varied contexts, capacities, and agendas of the different member states and partners in ASEAN.

This report contains six chapters that touch upon the following topics: i) COVID-19 trajectory, ii) macro impact, demand and consumption, iii) supply and value chains, iv) trade challenges and opportunities, v) gender impacts, and vi) policy recommendations. The results presented in this study are intended to facilitate policy dialogues and enable evidence-based decision-making among ASEAN members and key stakeholders on the best course of action to alleviate the burden of COVID-19. Our report contains a wide-ranging review, analysis and discussion of a number of issues arising as a result of the unfolding pandemic. The report also provides some links and references to relevant state-of-the-art scientific and socio-scientific work undertaken elsewhere. We are hopeful that the report proves useful to ASEAN leaders and senior officials in addressing the pressing challenges they now face.

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ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
APF	Asia Pacific Foundation
ASEAN	Association of South East Asian Nations
AMS	ASEAN Member States
CDC	Centre for Disease Control and Prevention
CGIAR	Consultative Group for International Agricultural Research
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
COVID-19	Coronavirus Disease 2019
ERIA	Economic Research Institute for ASEAN and East Asia
FAO	United Nations Food and Agriculture Organization
GDP	Gross domestic product
GVC	Global value chain
IFPRI	International Food Policy Research Institute
ILRI	International Livestock Research Institute
IMO	International Maritime Organization
NTM	Non-Tariff Measure
OECD	Organization for Economic Cooperation and Development
OIE	World Animal Health Organization
PPE	Personal protective equipment
RCEP	Regional Comprehensive Economic Partnership
SPS	Sanitary and phytosanitary measure
USDA	United States Department of Agriculture
WFP	United Nations World Food Programme
WHO	World Health Organization
WTO	World Trade Organization

GLOSSARY

k	A measure of a disease's dispersion. Generally, "k" is used as indicator of whether a disease spreads incrementally or in clusters.
R0 or Rt	Reproduction number (for transmission of a disease or illness) If R / R_0 is greater than one, the number of people infected will increase and the disease will continue to spread. If R / R_0 remains at or below 1, the number infected will remain steady or decrease, and the disease may disappear in time.
Energy sufficient diet	Diets that meet an individual's caloric requirement, largely based on their livelihood activities. Emphasis is often placed on basic starchy staple to achieve this diet.
Nutrition adequate diet	Diets that contain a balance of carbohydrates, proteins, fats, vitamins and minerals to maintain proper health and avoid diet-related illnesses and diseases
Healthy diet	Diets that provides individuals with adequate calories and nutrients. Emphasis is often placed on dietary diversity to ensure both micro- and macro-nutrient requirements are met.
Staple food	Foods that are eaten regularly and constitute dominant parts of one's diet to meet their total energy requirements. Rice, wheat, and maize are examples of common staple foods in Southeast Asia.
Primary sector	Production activities that cover the harvesting and raw extraction of goods for later processing
Secondary sector	Production activities that involve the processing of raw materials for final consumption

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EXECUTIVE SUMMARY: KEY FINDINGS AND POLICY GUIDANCE

In October 2020, our team was invited by the Association of Southeast Asian Nations (ASEAN) and the Canadian Trade and Investment Facility for Development (CTIF) to examine the impacts of the unfolding COVID-19 pandemic on ASEAN's agri-food sector. Key priorities were to assess and discuss ways and means of limiting the pandemic's adverse impacts on food security and disruptions to trade and agri-food value chains within the ASEAN region. The main aim of the undertaking was to better inform senior and technical officials at the national and ASEAN-wide level of the ramifications of different policy and regulatory choices with regard to containing the pandemic and mitigating its adverse consequences on the economy and society.

To achieve these goals, our team conducted primary surveys with ASEAN local representatives, undertook health and nutritional simulation modelling and statistical analysis, and an extensive literature review related to the impacts and challenges posed by COVID-19 in ASEAN agri-food value chains. Accordingly, an analytical and evidence-based approach was undertaken to develop policy recommendations suitable for the varied contexts, capacities, and agendas of the different member states and partners in ASEAN.

This report contains six chapters that touch on the following topics: i) COVID-19's spread within ASEAN members and approaches to its containment, ii) macroeconomic consequences of the pandemic and containment measures and their impacts on food demand, iii) supply and value chains, iv) trade challenges, options and opportunities, v) gender impacts, and vi) policy recommendations. Our team's findings are intended to facilitate policy dialogues and

enable evidence-based decision-making among ASEAN members and key stakeholders on the best course of action to alleviate the burden of COVID-19. Key findings and policy guidance from this effort follow below.

ASEAN members perform relatively well in virus containment broadly

Because of their economic interdependence with and close geographic proximity to China, ASEAN Member States (AMS) found themselves on the front lines of the COVID-19 pandemic in its initial phases, ranking high for the relative risk of case importation. With the exception of the Philippines, Myanmar and Indonesia, however, ASEAN members have done relatively well in containing the virus. Lessons learned about the nature of the virus and how it spreads since its onslaught can inform the redesign of key components of ASEAN regional food chains: livestock and vegetable primary production, wet markets, processing facilities, slaughter facilities and packing plants.

Macroeconomic prognosis: Sluggish until May 2021, robust growth from 2021 Q3

The ASEAN region's economy will shrink in 2020 by around five per cent in aggregate and growth prospects will remain subdued in the first half of 2021 until effective and widely distributed vaccines are available and key trading partners in the Global North begin to recover. Macro analysts remain wary of making point forecasts and typically include scenarios with a subdued recovery path with repercussions for at least two years. Although effective vaccines do appear to be on the horizon, many countries in the Global North are still struggling with the pandemic and may, once again, need to resort to lockdown and physical distancing measures. For this reason, economic performance is likely to decline over the coming several months, contributing to a double-dip or wobbly "W"-shaped pandemic-induced recession.

Supply of food staples adequate, but transparency is key to avoiding panic on the supply side

When the COVID-19 pandemic first began, several ASEAN members took steps to restrict exports while others impeded imports. Such actions concurrently led to short-term price increases in importing countries and for their consumers and concomitant short-term price declines and lower income prospects for producers in exporting countries. Fortunately, ASEAN leaders recognized that such behaviour was counter-productive and rescinded most of these interventions by May 2020.

Fears of shortfalls and associated panic buying and hoarding have receded due to international efforts to improve communication regarding production, utilization and stocks. Supplies of staple crops are large, production prospects are favourable, and cereal stocks in 2020 are expected to reach their third-highest level on record. Consequently, under current conditions, global food staples (rice, maize, corn, soybeans) supplies and prices should be capable of meeting ASEAN's needs from a "calorie sufficient" perspective.

Transport and border bottlenecks lead to higher costs

The International Air Transport Association indicates that Asia Pacific Air-Cargo-Tonne-Kilometres fell ~ 15 per cent in 2020 while Active-Temperature-Controlled-System Cargo (for perishable items) fell by 25 per cent.¹ Concurrent with these volume shortfalls, air freight costs spiked in the summer of 2020. Ocean-going cargo shipments through the Port of Singapore fell by 5.8 per cent, while container movements through Port Klang fell by 16 per cent. Refrigerated shipments of high-value foodstuffs to and from ASEAN ports are thought to have declined by 10-20 per cent.

¹ IATA. (September 2020). Air Cargo Market Analysis. <https://www.iata.org/en/iata-repository/publications/economic-reports/air-freight-monthly-analysis---september-2020/>

Intra-country travel restrictions amplify existing health and nutritional disparities

Intra-country travel restrictions and checkpoints continue to pose barriers to the distribution of food, despite sufficient supply in most countries. Even in sites near food-producing facilities, the delivery and transport of fresh fruits, vegetables, and animal products may take up to several weeks as personnel are required to adhere to quarantine guidelines. Communities outside city centres will thus become more susceptible to negative health impacts of COVID-19. This contributes to existing health disparities across countries in ASEAN as rural areas experience higher poverty rates and malnutrition. Implementing evidence-based measures that will not disrupt internal logistics and transport is essential to support households with limited access to a stable supply of food and for future vaccine distribution.

Curbs on seafarer movements increase waste, obstruct trade and lower diet quality

With the rise of COVID-19, many nations and ports have started to restrict the movements of crews and seafarers manning cargo ships and other sea craft. This is harmful to the health and well-being of these seafaring men and women. It also constitutes a growing impediment to trade in general, including trade in much-needed agriculture inputs, food staples and more nutritious but time sensitive food items in particular. As Filipinos, Indonesian, Thai and Vietnamese nationals make up a large portion of the global maritime workforce, this new disruption and personnel-based protectionism has ramifications for trade and economic development, food security and nutrition outcomes throughout ASEAN, as well as humanitarian consequences for ASEAN nationals and disruptive impacts worldwide.

Transaction costs and impediments to trade at the border have been rising

New impediments have been placed on product movements. And new constraints have been placed on seafarer shore leave and movements. Such disruptions and delays effectively reduce the quantities of food available, increases waste, lowers food quality and nutritional value, while concurrently increasing their cost to consumers. Efforts to reduce costs and improve timeliness in expediting movements of vegetables and fruit in particular will lead to better nutritional outcomes and should be a high priority.

The above developments pose a two-fold challenge for trade facilitation: i) securing customs clearance ahead of time for the products in question, to minimize costly delays and waste; ii) securing approval prior to entry for crews to use port facilities to avoid delays upon arrival. ASEAN's efforts to ameliorate such bottlenecks while maintaining health and safety precautions will be well-rewarded; a starting point might be to consider those involved in the agri-food value chain and the transportation of such products in the same light as essential healthcare workers.

Constrained movements and false rumours undermine ASEAN fisheries

ASEAN's fisheries provide thousands of jobs catching, consolidating, marketing, processing and trading but the COVID-19 pandemic has inflicted considerable damage on seafood markets. This is partially due to the sector being subject to repeated lockdowns and partially due to misinformation regarding virus transmission (falsely attributed to seafood) dampening demand.

The seafood sub-sector may be the most vulnerable agri-food sector to COVID-19's disruptive impacts. Many fishing fleets are now laying idle and the deteriorating outlook has seen aquaculture producers reduce stocking targets. Authorities in destination ports are reluctant to allow both seafarers and fishermen shore leave and

access to port facilities without quarantine due to concerns relating to COVID-19 spreading. Unless protocols for access to port facilities can be negotiated that allow commercial production and trade to continue while safeguarding human health, COVID-19 precautions could inadvertently undermine the solvency of smallholder seafood operations. This has negative implications for the livelihoods of fishermen and women and, left unresolved, could decrease future availabilities of this high-quality protein source.

Wet markets and other food venues need to revisit food safety practices

All ASEAN members have wet markets, depended on by small and modest-sized food producers as their main channel of distribution, and by consumers for access to fresh food. However, many food vendors in ASEAN countries are not well educated about public health or food safety standards, nor are they trained to maintain good hygiene while distributing food to help prevent the spread of foodborne diseases. The WHO indicates that the Southeast Asia Region has the second-highest burden of foodborne illnesses after the African Region, with more than 150 million cases and 175 000 deaths annually. Since 70 per cent of new viruses originate with animals and livestock products, renewed efforts in risk management and hygiene education focusing on livestock production, livestock processing and wet markets are warranted.²

Medical and scientific insights can improve facility design

Facility design and product flow insights acquired since COVID-19 first appeared could be incorporated into the design and operation of livestock farms, slaughter facilities, processing plants and market places. While such alterations may represent a significant upfront cost, they will lower risk of disease spread, lower incidences of

² Jones, K.E., Patel, N.G., Levy, M.A., Storeygard, A., Balk D., Gittleman, J.L. & Daszak P. (2008). Global trends in emerging infectious diseases. *Nature*, 451, 990–993.

product contamination, improve worker health, reduce time lost due to workforce illnesses, and lower consumer risks.

Women suffer disproportionately from the pandemic-induced economic downturn

COVID-19 has made employment tenuous for men and women. However, women were much more vulnerable to job losses and income declines than men because more women were employed in the processing and service sectors as casual labourers. Shocks to the agri-food system during COVID-19 have caused businesses to resort to furloughs and layoffs, reducing a significant proportion of women's social safety nets. Due to the dominance of women as market food vendors, many of them were also forced to significantly reduce the price of their goods and operating capacity so that they could cover the cost of their household necessities. As a result, negative impacts on household nutrition and food security outcomes were observed. The gender imbalance was accentuated by the uneven division of care and domestic work in the household, further limiting women's livelihood choices and opportunities.

Despite women officially making up over one-third of workers in the agricultural sector in ASEAN, only 13% of agricultural land title holders are women. Operationally, men and women may share roles in resource management responsibilities. However, this legal bias is problematic when female migrant workers return home and intend to start farm production activities but cannot exercise control over their resources due to the absence of their male counterparts. Policies to empower women through greater access to resources, such as land, need to coincide with COVID-19 relief efforts to present women with the independence of household decision-making. Correcting gender imbalances and strengthening safety nets for women and men will be critical challenges in the post COVID-19 era.

Migrants workers remain vulnerable

Migrant workers are even more vulnerable to exploitation than they were before. There are an estimated 10 million migrant workers in ASEAN, with a large share working in the agriculture and food sector. Impediments to the movement of migrants not only jeopardize their livelihoods but also the agricultural productivity of ASEAN's agriculture and food sector and erodes national efforts to improve food security and nutrition outcomes. As a result of migrant repatriations, job losses, and job suspensions, remittance shortfalls for ASEAN members are estimated to be US\$6-12B. In many instances, employers held migrants' passports and other documents, limiting migrants' ability to remove themselves from an abusive or exploitative situation. Increased incidences of deferred, reduced, withheld or non-payment of wages by employers were also experienced by migrant workers. In the absence of social guarantees, the pressure to continue labour activities heightens the exposure of migrants to COVID-19.

Falling incomes and job losses shift dietary patterns and lower nutritional outcomes

To date, the main way in which COVID-19 has threatened food security and undermined households' nutrition is via overall stagnation in the economy and associated income shortfalls and job losses, particularly for migrant workers and poor households. These undermine households' abilities to buy food and other essentials. Poverty levels and food insecurity levels in the Philippines, Indonesia, Cambodia, Thailand, Vietnam, Myanmar, and Lao PDR have all suffered as a consequence. Such job losses and declines in income typically result in consumers shifting toward "caloric sufficiency" starch-based diets, at the expense of "nutrition adequate" diets with greater amounts of nutrition-rich vegetables, fruits, meat and fish.³

³ For more on this issue, see: FAO et al. (2020). *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets.*

Such dietary shifts, if sustained, are likely to further exacerbate already high rates of stunting in children under five years old and anemia among women. In poorer ASEAN member states and poorer households in particular such dietary shifts could have longer-term adverse impacts on maternal and child health, with knock-on complications for the incidence of stunting, mental health issues, and educational attainment prospects. If prevalent across a wide portion of the population, this can also affect an entire nation's long-term prospects.

Achieving a “nutrition adequate” diet will be a challenge for ASEAN

Most countries rely on some combination of domestically-produced and imported vegetables and fruits to broaden their diet, increase their intake of micro-nutrients, and improve nutrition levels.

Besides border impediments mentioned above, production of more perishable horticulture crops and livestock products has also been hampered by labour shortfalls and constrained access to inputs that are time sensitive in their application. Constraining the movements of migrant workers and those undertaking complementary transportation and distribution activities related to agriculture and food value chains undermines their production capacity.

ASEAN Regional Policy Guidance

Three broad categories of actions are identified - immediate action, short term action, and for sustained, long term effort – to guide ASEAN’s regional policy on post–COVID-19 recovery. The actions are further elaborated in Chapter 6 of this report.

IMMEDIATE ACTIONS RECOMMENDED

- Continue with and improve upon effective measures to contain the pandemic.
- Expedite movements of key agriculture and food inputs, products and people.
- Remove remaining export bans and import barriers.
- Expedite cash transfers to farming households.
- Take pre-emptive steps to reduce foodborne illnesses in agriculture and food value chains.
- Collaborate in assessing how existing commercial operations can lower COVID-19 risks.

SHORT-TERM ACTIONS RECOMMENDED

- Expedite visa protocols for migrant workers in agriculture and food value chains and for workers engaged in transporting and distributing agriculture and food products.
- Facilitate, broaden, and accelerate movements to digital transactions in wholesale and retail operations and at the border for both products and people.
- Identify vulnerabilities to COVID-19 within the value-chain and “short circuit” them.
- Harmonize ASEAN Non-Tariff Measures (NTMs) – recognizing Regional Comprehensive Economic Partnership (RCEP) and

Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) foundations as a good start.

- Replace input subsidies and output subsidies with direct income support for farming households.
- Broaden safety nets to include migrants and food system workers.
- Explicitly include women in pandemic stimulus and adjustment policies.
- Improve coverage, reliability, granularity and timeliness of agriculture and food, and nutrition data to assist public and private decision-making on production, distribution, and trade.

LONG-TERM ACTIONS

- Expand and extend infrastructure in an inclusive manner to under-served communities.
- Increase interdisciplinary cooperation to improve knowledge, actions and outcomes.
- Engage in cooperation between governments and private individuals, without eroding opportunities, incentives and responsibility.



CHAPTER 1

BUILDING PANDEMIC SCENARIOS AND EXAMINING THE RAMIFICATIONS OF DIFFERENT POLICY CHOICES AND CONTAINMENT MEASURES

This introductory chapter provides insights on various scenarios regarding COVID-19's spread, analyzed using Imperial College London's pandemic scenario analysis tool. The chapter enables the reader to understand how the virus transmits and spreads and lessons to be learned from some of the best practices implemented to curb or mitigate COVID-19. The coronavirus propagates itself in a non-linear fashion whereas control measures are linear in nature. A key takeaway, therefore, is that swift and decisive action is significantly superior to delayed half measures from both a health perspective and a socio-economic perspective.

As the coronavirus disease (COVID-19) continues to spread worldwide, the global economy is falling into recession. In the absence of a functioning, targeted and widely distributed vaccine, precautions taken to limit the spread and severity of the coronavirus have, to a large degree, curtailed peoples' movements and economic activity, driving many economies into recession.

Because of ASEAN's economic interdependence with and close geographic proximity to China, ASEAN Member States (AMS) found themselves on the front lines of this pandemic in its initial phases, ranking high for the relative risk of case importation. Some AMS have fared relatively well to date, others less so.⁴

Like other regions worldwide, ASEAN has felt the adverse impacts of COVID-19 on its peoples' health, economy, and general well-being. Among these, the agriculture and food trade sector play a critical role within the economy and health and well-being of the society. Understanding the magnitude or severity of the pandemic impacts on this sector thus became necessary for decision makers within the Forestry, Agriculture and Food division of ASEAN. Such an assessment would enable ASEAN and individual AMS to plan how to recover agriculture and food trade from the pandemic.

In this broad context, the APF Canada undertook an overview study of the pandemic implications on agriculture and food trade in ASEAN. Because COVID-19 is largely a health crisis with repercussions for the economy, APF Canada adopted a holistic approach by analyzing not only trade but the overall health, food security and nutrition outcomes for ASEAN. The approach is anchored upon understanding how COVID-19 spreads and its probable trajectory through the use of a simulation model

⁴ We should note, however, that the ASEAN member states – in spite of their close proximity and the extent of their interactions with China – have fared well relative to other destinations. This is due, in part, to their having taken fairly swift and decisive measures to contain the virus's spread and to efforts to inform the public of its risks.

developed by Imperial College of London and COVID-19 data drawn from sources such as the World Health Organization (WHO), John Hopkins Coronavirus Resource Centre, Channel News Asia and others.

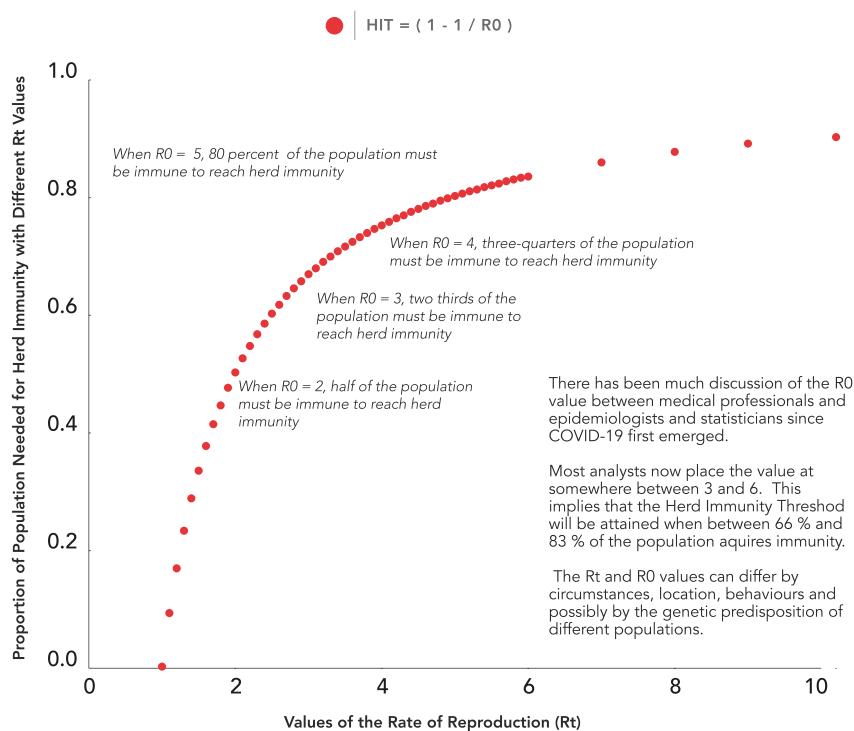
Imperial College's scenario analysis tool is not so much a predictive tool as it is a tool which allows users to make assessments regarding the prevalence of infections and the expected number of people who may subsequently require hospitalization and critical care facilities, given different policy and containment choices. Since Laos and Cambodia recorded zero (0) deaths and Brunei only recorded three as of the date of writing, there was insufficient data for covidsim.org to process simulations for them.

Researchers at Imperial College London use R_0 and R_t values to develop COVID-19 scenarios. R_0 and R_t are mathematical terms that indicate how contagious an infectious disease is. It's also referred to as the reproduction number. R_0 and R_t indicate the average number of people who will contract a contagious disease from one person with that disease. It applies to a population of people who were previously free of infection and haven't been vaccinated.

If a disease has an R_0 of 4, a person who has the disease will transmit it to an average of four other people. If the rate of transmission (R_0 or, subsequently, R_t) exceeds 1, each existing infection causes more than one new infection. The disease will be transmitted between people, and there may be an outbreak or epidemic. If the rate of transmission equals 1, each existing infection causes one new infection. The disease will stay alive and stable, but there won't be an outbreak or an epidemic. If the rate of transmission is less than 1, each existing infection causes less than one new infection. In this case, the disease will decline and eventually die out.

Initially, medical and health researchers thought that the natural R0 for COVID-19 was somewhere between 2 and 3. Now, the estimate has been revised upward with the median R0 for COVID-19 being about 5.7.^{5,6} The 5.7 means that one person with COVID-19 can on an average potentially transmit the coronavirus to five or six people; if left unimpeded without any kind of public intervention or individual restraint, the time it takes for the number of coronavirus cases, hospitalizations, and deaths to double is just two to three days.⁷ With an R0 of 5.7, over 80 per cent of the population needs to become immune through either vaccination or acquired immunity to reach “Herd Immunity” and stop the pandemic (Figure 1.1).

FIGURE 1.1
Hit (Herd Immunity Threshold) for Different Rates of Viral Reproduction (R0 and Rt)



5 Sanche et al. (2020). High Contagiousness and Rapid Spread of Severe Acute Respiratory Syndrome Coronavirus 2. *Emerging Infectious Diseases*, 26(7), 1470-1477.

6 Wu et al. (2020). Nowcasting and forecasting the potential domestic and international spread of the 2019-nCoV outbreak originating in Wuhan, China: a modelling study. *Lancet*, 395, 689-97.

7 Fortunately, in most countries – even those where government oversight has been modest at best – individual judgement and restraint has lowered “R” reproduction values somewhat below what they otherwise would be.

Simulations from the COVID-19 Scenario Analysis Tool for ASEAN member states suggest that the Philippines, Indonesia, Myanmar and Malaysia in particular will need to remain vigilant if they are to meet the challenge of keeping the virus from spreading in the coming months. Through a combination of public policies and cooperative citizen behaviour, most ASEAN members reduced transmission rates somewhat. Vietnam did well in bringing the rate of transmission down below 1. Outside ASEAN, Taiwan has been a success story in curbing the spread of virus, thus providing lessons to learn for the world.

Much earlier than most other countries, Taiwan and Vietnam also considered the tendency of the virus to be dispersed and spread in clusters in their strategy to limit the spread of COVID-19. While many countries have undertaken forward contact tracing after noticing a new case of Covid-19, both Taiwan and Vietnam have engaged in exhaustive “retrospective contact tracing” or backward contact tracing, with a high degree of success. This allowed them to identify individual behaviours and characteristics as well as environments and circumstances that are conducive to “super spreader” events and swiftly take steps to eliminate them.

Results of both epidemiological modelling at Imperial College and socio-economic modelling undertaken by members of the GTAP network suggests that an initial extended period of fairly stringent restrictions is nonetheless economically preferable to a more rapid return to pre-pandemic activities followed by another round of global lockdowns. This is a critical, but inconvenient (and perhaps unpopular), finding for leaders and policymakers who are eager to lift restrictions and perhaps prematurely attempt to stimulate economic recovery.^{8,9}

8 Guan et al. (2020). Global supply-chain effects of COVID-19 control measures. *Nature Human Behaviour*, 4(6), 577–587

9 Ivanov, D. (2020). Predicting the impacts of epidemic outbreaks on global supply chains: A simulation-based analysis on the coronavirus outbreak case. *Transportation Research Part E: Logistics and Transportation Review*, 136, 101922.

Epidemiologists and virologists have been repeatedly warning that there can be no “return to normal” or adjustment to a “new normal” unless and until we have a better understanding of the virus itself and develop better means to contain it. Some of the new habits, protocols and precautions developed will probably serve us well even after effective vaccines are widely available as they are likely to result in safer social and business practices and designs in other contexts and in the face of other threats. A review of medical and scientific literature about the coronavirus has highlighted some key findings below which have helped inform the analysis and recommended actions of this study –

- COVID-19 can’t move on its own; the virus doesn’t move unless people move it. People are both the vehicle and the destination of the virus’s movement.
- The virus replicates itself in exponential fashion.^{10 11} Containment efforts, once introduced, tend to work in a linear direction. Given that the virus replicates itself in an exponential and non-linear way, containment gets increasingly difficult the longer societies wait to act or the greater the tendency to rely on half measures.¹² The math and the evidence affirms that decisive action early in an outbreak or at the earliest sign of resurgence leads to a lower toll on citizens’ health as well as the economy.
- The reproduction rate (R_0 and R_t) of the virus can be lowered through the collective efforts and actions of people and the society as a whole. If the reproduction rate can be brought below 1 for an extended period of time, a virus will eventually die out. A key challenge, therefore, is to somehow “short circuit” or at least severely limit COVID-19 transmission while still allowing economic activities to continue.

10 Ivorra et al. (2020). Mathematical modeling of the spread of the coronavirus disease 2019 (COVID-19) taking into account the undetected infections. The case of China. *Communications in Nonlinear Science & Numerical Simulation*, 88, 105303.

11 Ma, J. (2020). Estimating epidemic exponential growth rate and basic reproduction number. *Infectious Disease Modelling*, 5, 129–141.

12 David, R. (August 2020) Exponential growth bias: The numerical error behind Covid-19. *BBC*.

- The “K” number of COVID-19 is also an important consideration. The “K” number implies that most infections recorded are the result of “clustering” or a “super-spreader” kind of event. Most of such clusters began with an asymptomatic but infected person who did not wear a mask. Mask-wearing, especially in enclosed spaces and close quarters and crowded spaces, should therefore be considered a critical control measure.
- Medical researchers and epidemiologists are learning more about the conditions which contribute to clusters and super spreader events. Some of the common conditions identified are enclosed space, poor air ventilation, relatively dry conditions, crowded with little physical distancing and limited number of people wearing masks for protection.

The above key findings from ongoing applied scientific research can help with envisioning, redesigning and shaping the “new normal.” Going forward, reflecting on what kinds of circumstances within value chains – and within agriculture and food value chains in particular – might be prone to heightened COVID-19 risks could inform the first tentative steps at recovery.

Given the context of how the virus spreads, the conditions that make it viable to turn into a super-spreader event and the pandemic scenarios derived for the ASEAN Member States, the following chapters provide detailed analysis of the impacts on macroeconomics growth prospects, demand and consumption trends, supply chain and trade disruptions and what actions can be taken by ASEAN and individual AMS to recover from COVID-19.

REFERENCES

- David, R. (August 2020) Exponential growth bias: The numerical error behind Covid-19. *BBC*. <https://www.bbc.com/future/article/20200812-exponential-growth-bias-the-numerical-error-behind-covid-19>
- Guan, D., Wang, D., Hallegatte, S., Davis, S. J., Huo, J., Li, S., Bai, Y., Lei, T., Xue, Q., Coffman, D., Cheng, D., Chen, P., Liang, X., Xu, B., Lu, X., Wang, S., Hubacek, K., & Gong, P. (2020). Global supply-chain effects of COVID-19 control measures. *Nature Human Behaviour*, 4(6), 577–587. <https://doi.org/10.1038/s41562-020-0896-8>
- Ivanov, D. (2020). Predicting the impacts of epidemic outbreaks on global supply chains: A simulation-based analysis on the coronavirus outbreak (COVID-19/SARS-CoV-2) case. *Transportation Research Part E: Logistics and Transportation Review*, 136, 101922. <https://doi.org/10.1016/j.tre.2020.101922>
- Ivorra, B., Ferrández, M. R., Vela-Pérez, M., & Ramos, A. M. (2020). Mathematical modeling of the spread of the coronavirus disease 2019 (COVID-19) taking into account the undetected infections. The case of China. *Communications in Nonlinear Science & Numerical Simulation*, 88, 105303. <https://doi.org/10.1016/j.cnsns.2020.105303>
- Ma, J. (2020). Estimating epidemic exponential growth rate and basic reproduction number. *Infectious Disease Modelling*, 5, 129–141. <https://doi.org/10.1016/j.idm.2019.12.009>
- Sanche, S., Lin, Y., Xu, C., Romero-Severson, E., Hengartner, N., & Ke, R. (2020). High Contagiousness and Rapid Spread of Severe Acute Respiratory Syndrome Coronavirus 2. *Emerging Infectious Diseases*, 26(7), 1470-1477. <https://dx.doi.org/10.3201/eid2607.200282>
- Wu, J.T., Leung, K., & Leung, G.M. (2020). Nowcasting and forecasting the potential domestic and international spread of the 2019-nCoV outbreak originating in Wuhan, China: a modelling study. *Lancet*, 395, 689–97. [https://doi.org/10.1016/S0140-6736\(20\)30260-9](https://doi.org/10.1016/S0140-6736(20)30260-9)

CHAPTER 2

COVID-19 IMPACTS ON DEMAND, CONSUMPTION AND FOOD SECURITY

This chapter contains an assessment of the disruptive impacts that COVID-19 and related containment measures have on economic growth, labour markets and, subsequently, food consumption. As incomes and employment decline and become uncertain, consumers may shift their consumption from more nutritious foods (fruits and vegetables, high-value proteins) to more basic food staples that are higher in calories but lower in nutritional value. In low-income ASEAN member states in particular, this could have longer-term adverse impacts on maternal and child health, with knock-on complications for the incidence of stunting, mental health issues, and educational attainment prospects.

2.1. GLOBAL ECONOMIC SLOWDOWNS AND MACRO GROWTH PROSPECTS FOR ASEAN

2.2. MACROECONOMIC CONTRACTIONS, LOWER INCOMES, SHIFTS IN FOOD CONSUMPTION

2.3. COVID-19 IMPACT ON PREVAILING DEMAND AND DISAPPEARANCE TRENDS

2.4. MIGRANT LABOUR CONSTRAINTS, REMITTANCES, NUTRITIONAL OUTCOMES, AND FOOD SECURITY

2.5. SHORT TERM IMPACTS ON FOOD SECURITY AND NUTRITION IN ASEAN MEMBER STATES

2.1. Global Economic Slowdowns and Macro Growth Prospects for ASEAN

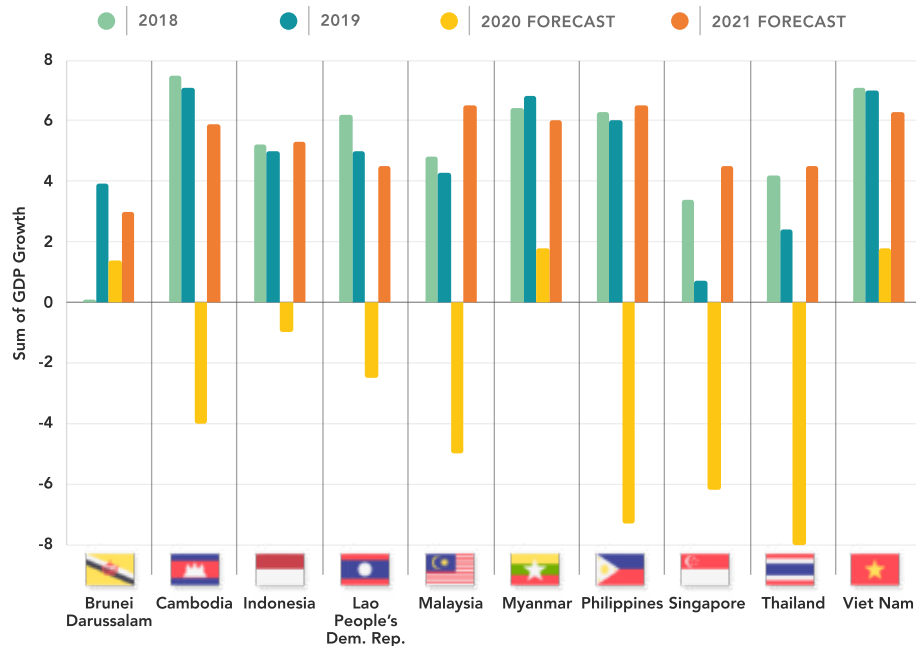
Economic slowdowns in the initial epicentres of the pandemic (China, Europe, and the U.S.) have descended down to low- and-middle income countries, including those in ASEAN, through declines in trade, commodity prices and restrictions on international tourism, travel and freight. These secondary impacts have compounded the economic costs of low-income countries' own COVID-19-related restrictions and struggles. As a result of these income shortfalls and slowdowns, rising protectionism, and increasing risks and costs throughout the value chain, COVID-19 also poses a threat to low-income countries' and households' food security and nutrition. It is therefore important to be vigilant and reflect on what responses and interventions might help to prevent this global health crisis from also becoming a global food crisis.

Some observers are hopeful that, if and when effective vaccines are developed and become widely available, a “V-shaped” recovery will unfold; China’s partial recovery in the third quarter of 2020 suggests that such a recovery is not outside the realm of possibility. Such optimism is also reflected in the ADB’s assessment of ASEAN’s economic prospects for 2021 (Figure 2.1). At the time of writing this report, this optimism may not be completely misplaced, as there are over 40 candidate COVID-19 vaccines in clinical trials.¹³ ¹⁴ Ten of these vaccines are in phase 3 trials, and at least 3 will announce the results of those trials before the end of 2020. If the results of the phase 3 trials are satisfactory, wide-scale deployment of vaccines may be possible later in 2021.

¹³ Krammer, F. (2020). SARS-CoV-2 vaccines in development. *Nature*, 586(7830), 516–527.

¹⁴ Anderson et al. (November 2020). Challenges in creating herd immunity to SARS-CoV-2 infection by mass vaccination. *The Lancet*.

FIGURE 2.1
Covid-19 Era Actual and Forecast GDP Growth in ASEAN Member Countries, 2018-2021



Source: ADB. (September 2020). Asian Development Outlook.

However, given that a full recovery requires that countries worldwide manage to contain the pandemic, the intervening months until May 2021 will be challenging. While most ASEAN member states have coped with containing the virus relatively well, leadership and good governance have been lacking in key countries and trading partners critical to a more fulsome global economic recovery; infection rates and fatalities are climbing at an alarming rate in many parts of Europe, North America, Latin America, Russia and elsewhere. Consequently, although recent news reports regarding prospective vaccines are encouraging, it remains advisable to “Plan for the Worst and Hope for the Best.”¹⁵ Macro analysts

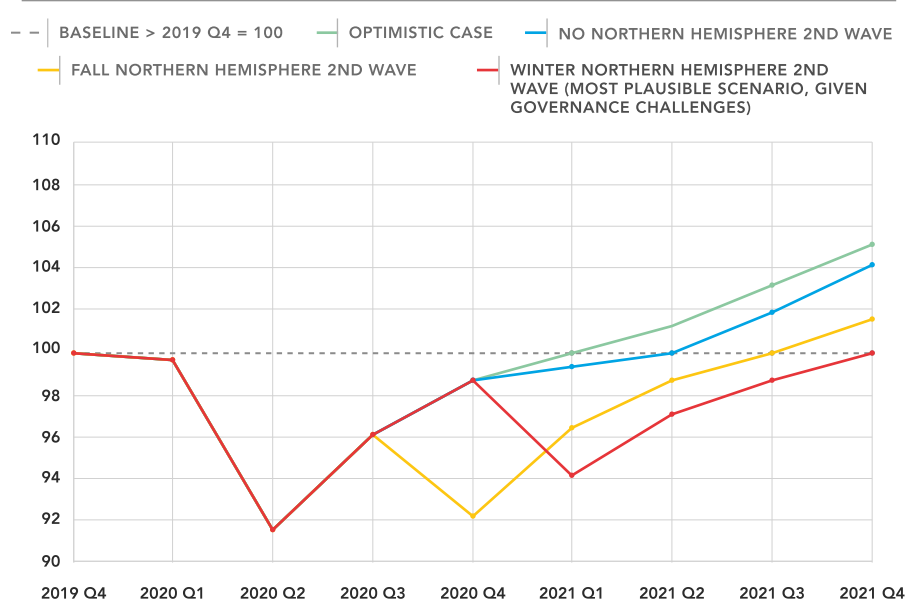
15 Cohesive leadership, informed by science and not politics, will be essential. Developing the structure of a within-country immunisation programme will be crucial, including establishing priorities for receiving vaccination, solving distribution challenges, and encouraging public acceptance of vaccination. Addressing vaccine hesitancy will require good communication strategies on the value of being protected as individuals and the benefits for the community in reducing transmission. See WHO (November 2020). Improving vaccination demand and addressing hesitancy. https://www.who.int/immunization/programmes_systems/vaccine_hesitancy/en/

remain wary of making point forecasts and typically include scenarios with a “COVID-19 recession” or a subdued recovery path with repercussions for at least two years. Recovery prospects are likely to reflect a combination of:

- how quickly truly effective vaccines are developed, distributed and widely embraced;
- the degree of leadership, progressive governance exhibited by leaders in key countries;
- the nature of the virus and the manner in which it spreads if precautions are not taken;
- mass psychology and related behaviours across countries.

Consequently - when informed by assessments of epidemiologists and virologists – our assessment is that the recovery is unlikely to be a quick, “V-shaped” recovery, nor a “U-shaped” one. The modest recoveries experienced in parts of the Global North in 2020’s third quarter are likely to subside somewhat as infections and fatalities rise and official lockdowns and public anxiety escalate as a result. Our view is that economic recovery is likely to take an ill-formed wobbly “W” shape, with economic performance being subdued in the first half of 2021 before strengthening in the latter half of 2021 (Figure 2.2).

FIGURE 2.2
Prospective ASEAN Post COVID-19 Recovery Paths



Note: Orange line, optimistic case assumes vaccine, enlightened leadership, cooperative and progressive behaviour by citizens and no 2nd wave. Grey line is slightly less optimistic case, also assumes vaccine but with a little less enlightened leadership and citizen behavior and no 2nd wave. Yellow line is slightly less optimistic case, also assumes vaccine but with a little less enlightened leadership and citizen behavior and a 2nd wave in autumn/fall. Red line is less optimistic case, also assumes vaccine but with a little less enlightened leadership and citizen behavior and a 2nd wave in winter.

Source: Authors' assessment based on McKinsey Corporation, Oxford Economics and ADB Scenarios.

Within ASEAN, Singapore’s 6.2% contraction in the economy in 2020 has been primarily caused by declines in trade volumes (as seen in Figure 2.1 and Table 2.1). Thailand (-8%) and Cambodia (-4%) have been adversely affected by drops in the tourism and hospitality industries. The Philippines has been impacted by a general slowdown in the economy, damaging natural disasters, and drops in tourism and in remittances from abroad (-7.3%). Vietnam has dealt with the virus fairly well, still registering slightly positive growth (1.8%), although it too has suffered from adverse impacts on its trading partners. Vietnam’s slightly positive growth is also partially attributable to the diversion effects of still-unfolding bilateral United States – China trade tensions.¹⁶

¹⁶ Gopalan et al. (2020). *Tale of two shocks in ASEAN*, ASEAN Regional Outlook. Nanyang Technological University and Nanyang Centre for Emerging Markets, Singapore.

With respect to Brunei's economy, although growth has slowed, it has been buffered by the performance of its petro-chemical sector and will register modest economic growth (1.4%). Indonesia, although it is struggling with the virus's direct and indirect consequences, has been only modestly impacted (-1%) as it has a relatively insulated economy. Myanmar is starting from a low base, with agriculture playing an important role in the economy; its growth was initially expected to be positive up until late September (~1.8%), but may have ended up declining due to lockdowns that were warranted in October as virus infections climbed.

Lockdown measures, physical distancing, the wearing of masks, and personal hygiene are proving to be effective in limiting the coronavirus's spread. However, these control measures are also placing major strains on the economy (as seen in Table 2.1) as well as the population's mental and physical health. Given the progress to date in terms of having a widely effective and widely distributed vaccine available, a more fulsome recovery may be underway by the second half of 2021. However, if vaccines are not as widely effective or embraced as hoped, or if there is a breakdown in individuals' collective behaviour or a shortfall in either leadership or governance, a more robust recovery may not be realized until later in 2021 or even 2022.

TABLE 2.1.

Non Agri-Food Sector Impacts on consumption, investment, and mobility

Economy	% dampening of consumption	% decline in investment	Decline in tourism receipts (% of GDP)	Average Lockdown Stringency Index	Average Mobility
Brunei Darussalam	9.64	13.46	-1.13	57.4	-27.6
Cambodia	6.40	9.39	-15.92	72.3	-33.7
Indonesia	7.50	9.75	-1.21	61.4	-32.5
Lao People's Democratic Republic	5.50	8.13	-3.41	90.6	-42
Malaysia	10.05	12.90	-4.91	64.9	-51.8
Myanmar	8.63	13.52	-4.93	78.70	-54.50
Philippines	9.30	19.95	-2.37	92.9	-63.2
Singapore	10.95	11.55	-4.53	55.6	-25.9
Thailand	9.90	13.35	-10.45	71.2	-33.7
Viet Nam	5.35	7.70	-3.32	75.5	-31.2

Sources: ADB data sets and Abiad et al. 2020. The impact of COVID-19 on developing Asian economies: The role of outbreak severity, containment stringency, and mobility declines; Djankov & Panizza (eds.). (June 2020). COVID in Developing Countries.

2.2 Macroeconomic Contractions, Lower Incomes, Shifts in Food Consumption

The pandemic-induced recession has effectively reduced incomes, lowering peoples' purchasing power. However, the situation could deteriorate further if pre-emptive steps are not taken to preclude creeping trade protectionism, value chain disruptions, and obstructions to the movement of key inputs (including labour) on the supply side.

To date, the main way in which COVID-19 has threatened access to food and household nutrition is via overall stagnation in the economy and associated income shortfalls and a decline in assets that undermine households' ability to buy food. The world's poorest households spend roughly two-thirds of their incomes on food; this makes their food security and nutritional standing particularly vulnerable to income shocks. As the economic costs of physical distancing measures become manifest and the persistence of the virus in the absence of such distancing measures more evident, global economic forecasts became less optimistic. In its most recent forecast, the International Monetary Fund (IMF) projects a five per cent decline of the world economy in 2020 — a deeper worldwide recession than during the 2008-09 financial crisis. The ADB has projected declines of similar magnitude for ASEAN.

Either as a direct result of COVID-19-related health complications or policies introduced to limit its spread, the pandemic can impact all four pillars of food security to some extent: availability (adequacy of the food supply); access (can people easily obtain the food they need?); utilization (do people have enough intake of nutrients?); and stability or reliability (do people have access

to sufficient, nutritious food at all times?).¹⁷ With regard to food demand and nutrition, the consequences of income shortfalls due to the COVID-19-precipitated recession and lower associated incomes and job opportunities, as well as the dampening effects of lockdowns and physical distancing, are likely to result in a reduction in overall food expenditures and consumption. Such impacts are likely to be significant in low-income nations and households within ASEAN.

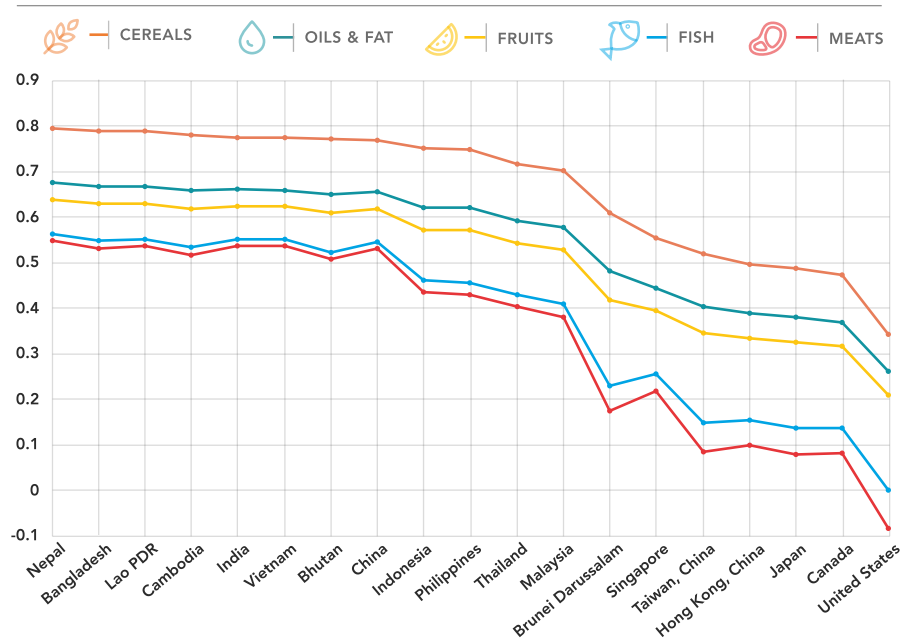
COVID-19 has exerted a shock on final food demand by lowering overall purchasing power, due to declines in overall productivity and incomes. The impact is particularly profound for increasing numbers of unemployed people. The extent of impacts on food demand depend on numerous factors, including the depth and length of the macroeconomic shock, the availability of savings and access to credit and safety-net mechanisms. These factors determine the responsiveness of demand, which will drive the differences in reactions across countries and food groups. For ASEAN member states and households, it is likely that staple grain consumption will increase and consumption of meat, dairy and horticulture products will fall as a result of this pandemic-induced demand-side shock. Barring prospective supply-side disruptions, this suggests more of a deterioration in the nutritional quality of households' diets rather than greater calorie shortfalls.

Whether through falling incomes, rising food prices, or both, ASEAN citizens will have less real income to pay for their food and will adjust accordingly by purchasing the cheaper calorie items. Across ASEAN, the estimated average loss in income is ~7%, but the burden is not evenly spread out. Some have incurred modest income losses while others have lost their jobs entirely. Without more

¹⁷ Fuller explanations of aspects of food security can be found in McCalla & Revoredo. (2001). *Prospects for global food security: a critical appraisal of past projections and predictions*. Brief 71. International Food Policy Research Institute (IFPRI); Stamoulis & Zezza. (November 2003). *A Conceptual Framework for National Agricultural, Rural Development, and Food Security Strategies and Policies*. ESA Working Paper No. 03-17.

information on the demographic details of such income losses, precise predictions are a challenge. But it is well-established that, in the face of drastic declines in income, vulnerable households will often give up nutrient-rich foods in order to preserve their caloric intake.^{18 19 20} In many low- and middle-income countries (like much of ASEAN), calories from nutrient-rich foods like fruits, vegetables, milk, fish, meat and eggs can be up to 10 times more expensive than calories from staples like rice, maize, or wheat.

FIGURE 2.3
Income elasticities for select food subcategories, ASEAN and Selected Countries



Sources: Authors' calculations, derived from USDA data in <https://www.ers.usda.gov/data-products/international-food-consumption-patterns/>, and Seale J., A. Regmi, and J. Berstein. (2005, updated 2011) [International Evidence on Food Consumption Patterns.] USDA, Economic Research Service. Technical Bulletin Number 1904

As incomes and employment decline and become uncertain, consumers may shift their consumption from more nutritious foods

18 Schmidhuber, J., Pound, J. & Qiao, B. (2020). COVID-19: Channels of transmission to food and agriculture. FAO: Rome, Italy.

19 Torero, M. (2020). Without food, there can be no exit from the pandemic. *Nature*, 580(7805), 588–589.

20 Nordhagen, S. (May 2020). Covid-19 and food prices: what do we know so far? *Global Alliance for Improved Nutrition*.

(fruits and vegetables, high-value proteins) to more basic food staples that are higher in calories but lower in nutritional value (Figure 2.3). We have not been able to obtain precise consumption and trade data for ASEAN food products since COVID-19 began, but there is some evidence that trade volumes for perishable agri-food products have fallen somewhere between 10% and 25% in ASEAN since COVID-19 began, possibly as a consequence of income shortfalls and rising costs and impediments to trade (discussed in Chapter 4).

If translated into foregone consumption per capita, the implications are worrisome, with the proportion of households unable to afford nutrition adequate diets rising significantly due to COVID-19. In low-income ASEAN member states in particular this could have longer-term adverse impacts for maternal and child health, with knock-on complications for the incidence of stunting, mental health issues, and educational attainment prospects.^{21,22,23} If prevalent across a wide portion of the population, this will impact upon an entire nation's long-term prospects, in addition to the individual's and household's. Figure 2.4 is a stylised representation of how apparently modest shifts in “average” incomes, once distributed over the full distribution of incomes, can have dramatic impacts on the numbers of people who are able to afford “calorie sufficient” and “nutrition adequate” diets.²⁴

These distributions are unique to each country and community. Such diet adequacy concerns are particularly acute for Cambodia,

21 Grantham-McGregor et al. (2007). Developmental potential in the first 5 years for children in developing countries. *Lancet*, 369, 60–70.

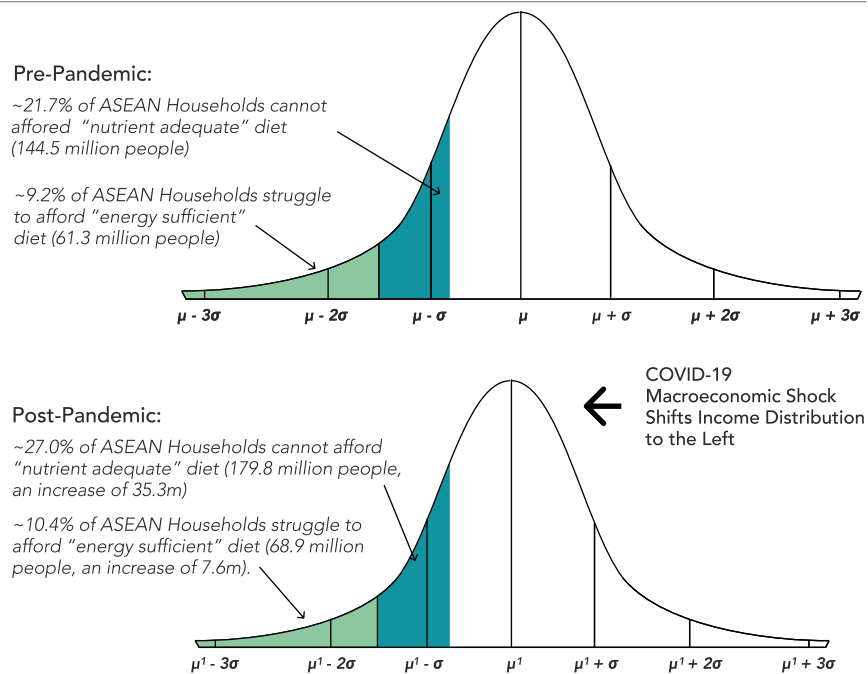
22 Martorell et al. (2010). Weight gain in the first two years of life is an important predictor of schooling outcomes in pooled analyses from five birth cohorts from low- and middle-income countries. *The Journal of Nutrition*, 140(2), 348–354.

23 Victora et al. (2008). Maternal and child undernutrition: Consequences for adult health and human capital. *The Lancet*, 371(9609), 340–357.

24 A fuller explanation of these concepts and supporting data can be found in FAO et al. (2020). *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets*. Rome, FAO.

Lao PDR, Myanmar, Indonesia and the Philippines. Because of such long-term and wide-ranging consequences for both households and societies of these nutrition shortfalls, it is important to think of ways and means of assisting poorer households in particular in their efforts to maintain balanced, nutritious diets.

FIGURE 2.4
How COVID-19 Macro Shocks Impact ASEAN Consumption and Food Security



Source: Authors calculations using USDA, FAO and WFP data

2.3. COVID-19 impact on Prevailing Demand and Disappearance Trends

At the beginning of the COVID-19 pandemic, emotional thinking contributed to panic buying by consumers, as well as some panic interventions by public agencies. As the pandemic has unfolded, more rational thinking started manifesting itself. It is likely that consumer demand for food safety, digital shopping, in addition to technology-driven retail and higher quality-assurance standards, will be more widely sought and embraced in the post-pandemic food system.

Households are eating out less and “cocooning” more at home as a precautionary measure. There are signs that businesses within the food chain are already adapting to such consumption shifts, for example by switching production lines and increasing their capacity to manage larger inventories; moving to online platforms where possible, embracing delivery to households and adjusting the size and nature of their packaging. Some of the biggest sector challenges arise from measures needed to contain COVID-19; adjustments within the sector to comply with preventative measures (which may increase costs); and the need to find alternative markets for products affected as consumption habits shift in response to COVID-19.²⁵

Since the advent of the COVID-19 pandemic, there does not yet appear to be a discernible trend in prices for food staples. As mentioned earlier, this is partially due to considerably less panic buying and hoarding on the demand side than occurred in the 2007-08 food crisis. However, local markets for fresh horticulture and livestock products have been impacted. Demand and consumption have been adversely impacted because of declines in income and employment opportunities reducing the amount of money households have to spend. At the same time, disruptions to production, processing, trade and transport have concurrently increased waste and driven up costs within the value chain lowering availabilities and raising costs to consumers. Because of these concurrent developments, prospects for meeting households’ “energy-sufficient” diets since COVID-19 appeared have not been seriously eroded but efforts to attain “nutrition adequate” diets for most households have suffered a serious setback.

²⁵ OECD. (April 2020). COVID-19 and the food and agriculture sector: Issues and policy responses.

2.4. Migrant Labour Constraints, Remittances, Food Security and Nutrition Outcomes

Like other economic sectors, agri-food supply chains and international trade avenues have been impacted by COVID-19, leading to layoffs of migrants, who then return home as a precautionary measure. In all, ASEAN has some 10 million migrants. Malaysia and Thailand play host to over three million migrants each. Indonesia and Filipino nationals account for around four million each. Many of these migrants work in the agri-food, fisheries and resource sectors. As millions of migrants have lost their jobs or had their hours, wages and benefits reduced, both demand for and supply of agri-food products have been impacted.

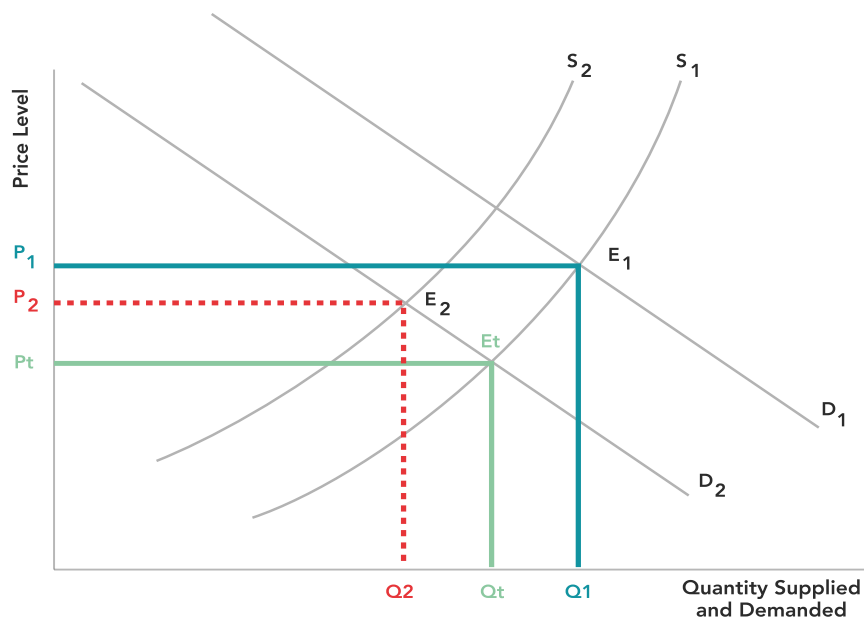
As a result of migrant job losses, job suspensions, and repatriations, ASEAN member remittance shortfalls are estimated to be between US\$6B and \$12B. The loss of or suspension of wage-earning jobs has obvious adverse consequences for the individuals and their families, as well as the wider economy.²⁶ Poverty levels and food insecurity levels in the Philippines, Indonesia, Cambodia, Thailand, Vietnam, Myanmar, and Lao PDR are thought to be worse as a consequence. While some better-off families can use savings to compensate for the loss, more vulnerable households are compelled to work longer and cut spending on necessities such as food and education. Without remittance flows, remittance-dependent households can fall into poverty or have difficulty meeting basic essential needs, as well as access education and health services. This is illustrated in Figure 2.5 below as a shift in demand from D1 (situation prior to the COVID-19 shock) to D2 (situation after COVID-19). Since this year's production is already determined, supply would remain

²⁶ Shah, S. (April 2020). Will a drop in remittances cause further pain? *Capital Economics*; IOM. (March 2020). Migrant workers stream home as Thailand's economy goes into COVID-19 lockdown; Takenaka et al. (2020). *COVID-19 Impact on International Migration, Remittances, and Recipient Households in Developing Asia*. Issue 148. Asian Development Bank.

as depicted by S_1 , but prices would fall from P_1 to the transitional price P_t and actual quantities consumed would fall from Q_1 to Q_t .

However, if circumstances are not remedied before the next production cycle, the situation could deteriorate further in coming production periods. The loss of migrant labour from labour-intensive roles in primary horticulture and livestock production, processing and marketing could result in a loss of productive capacity in coming years. In Figure 2.5, this is represented by an upward shift in the supply curve from S_1 to S_2 . Quantities produced and consumed would then decline still further from Q_t to Q_2 while prices would rise from P_t to P_2 because fewer supplies become available.

FIGURE 2.5
Ramifications of Migrant Layoffs and Reduced Labour Inputs



This discussion illustrates two important points: i) migrant displacement and barriers to their movements will result in serious drops in their incomes and in the ability of ASEAN households to afford a nutritious diet; ii) sustained constraints placed on migrants' movement will result in a contraction of productive capacity. As migrant labour is an important input to the production of highly nutritious horticulture and livestock products, increased

limitations on their movements will result in less production and compound challenges to attaining nutrient adequate diets. Recent work with the Organization for Economic Cooperation and Development (OECD) METRO model indicates that ongoing labour obstructions and other inward-looking policies would lead to a further contraction of seven per cent in Indonesia's GDP and a 10 per cent contraction elsewhere in ASEAN, undermining consumption potentials.²⁷ Additional insights from the OECD METRO model simulations are discussed in chapter 4.

2.5. Short Term Impacts on Food Security and Nutrition in ASEAN Member States

Given the foregoing discussion, a near-term prognosis of food consumption, food security and dietary developments for each ASEAN member follows. Longer-term assessments require an examination of supply side and trade considerations, which is addressed in chapters 3 and 4.

2.5.1. BRUNEI

Brunei has the second-highest GDP per capita in the ASEAN region. This affluence allows Brunei and its population to produce, import, purchase and consume a wide variety of food products. Food availability has been stable and undernourishment has been low. Because of its affluence, most Brunei households are able to afford both calorie sufficient and nutrition adequate diets. However, there are some challenges in practice.

Brunei's anaemia rates are high among women of child bearing age and relatively high for children under five. This suggests that iron may be lacking in the local diet. Improving access to iron-rich meats and vegetables could help to address this issue. There are some signs that zinc, vitamin A and vitamin E and other micronutrients may be

²⁷ OECD. (June 2020). *Shocks, risks and global value chains: insights from the OECD METRO model*. <http://www.oecd.org/trade/documents/shocks-risks-gvc-insights-oecd-metro-model.pdf>

lacking in the diet. The relatively high incidence of stunting, wasting and underweight children under five is also of concern for a country as affluent as Brunei. These conditions can undermine children's potential in the years to come and, if widely prevalent, they can place a drag on the nation's prospects as well.

Alleviating these diet-related challenges could be achieved through a combination of domestic production and trade. However, COVID-19-related actions that raise the cost of border movements and disrupt trade and sales of nutritious perishable foods could exacerbate these dietary and health issues for women and children. It is, therefore, important not to conflate the concepts of food security with self-reliance or food self-sufficiency.

2.5.2. CAMBODIA

Within Cambodia, income shortfalls, dislocations in labour markets and obstructions to trade in agri-food products have raised the percentage of food insecure households from about 18% pre-COVID-19 to around 22% post-COVID-19 (~ 3.6 million people), possibly more. While most households can afford to purchase sufficient staple foods to meet their caloric needs, half the population are now unable to afford a "nutrition adequate" diet.

COVID-19 is seen to have caused market disruptions that undermined productivity and gross output per worker while also reducing citizens' incomes and capacity to buy nutritious foodstuffs. Although everyone suffers when incomes fall and food insecurity manifests itself, children and women are among the first to carry the burden. Unless remedial measures are taken, existing levels of children under five exhibiting stunting (~ 30 percent) and women experiencing anaemia (~ 40 percent) will deteriorate further as a result of the COVID-19-related economic shock.

2.5.3. INDONESIA

Prior to the COVID-19 pandemic, the "average" Indonesian consumed sufficient calories and protein on a daily basis. However, the bottom 40% did not. Employing a framework borrowed

from the United States Department of Agriculture (USDA)²⁸, it is estimated that households who struggle to afford a “calorie adequate” diet will rise from 6% to 8% as a result of the pandemic macro shock.

The United Nations Food and Agriculture Organisation (FAO) and United Nations World Food Programme (WFP) estimate that, post COVID-19, more than one-third of Indonesians would struggle to afford a “nutrition adequate” diet (~ 90 million people). This has adverse consequences for individuals’ health in general and is particularly problematic for the health of women and children. If sustained for a prolonged period of time, permanent damage can be done to the health, educational prospects, and future job prospects for these individuals and their families. If pervasive across society, it will also adversely impact on the nation’s prospects.

2.5.4. LAO PDR

The FAO and WFP recently undertook a food security assessment survey of over 1,000 households in Lao PDR. Households indicated that the primary constraint in access to food was financial – either because households did not have enough income to purchase food, or due to unemployment or under-employment and higher prices for some food products. As a result, households with less income or with fewer daily labour opportunities suffered most. One in every 11 households relies on remittances from migrant labourers; for these households, remittances make up roughly 60% of their income. Obviously, such households would be hit hard with the COVID-19-precipitated repatriation of migrant labourers.

Most of the respondents (82%) reported that all households could access the same foods as before, although this may not be in the same quantities, especially as many respondents indicated that different foods are consumed to cope with the situation. Among the 18% who responded that this was no longer possible, the vast majority cited financial reasons: lack of income, insufficient money,

²⁸ Baquendano et al. (August 2020). *International Food Security Assessment 2020-30*. GFA 31. USDA-ERS.

and price increases; they often responded that the unavailability of employment during the crisis was a key reason for lower access to some foods.

In their International Food Security Assessment, USDA estimates that just 3.5% of Lao PDR's households are food insecure even after COVID-19 struck, but this figure may apply only to an “calorie sufficient” diet. The WFP-FAO assessment provides evidence to suggest that fully half of households find it a challenge to afford a “nutrient adequate” diet (~ 3.5 million people).²⁹

2.5.5. MALAYSIA

After Singapore and Brunei, Malaysia is the third most affluent ASEAN member. Its population comes in at just under 33 million, and is increasingly urbanized. Initially anticipated to grow at around 4% in 2020, it is now anticipated that Malaysia's economy will contract by roughly 5% due to COVID-19 and measures taken to control its spread. While Singapore and Brunei score in the high eighties in the Global Food Security Index for 2019, Malaysia earned a score of 73.8.³⁰ However, since COVID-19 and related measures unfolded, one family in six experienced some food insecurity, particularly as related to “nutrition adequate” diets.³¹

It is of concern that almost one-quarter of Malaysian women of reproductive age suffer from anaemia. Again, this suggests that iron may be lacking in the local diet. Improving access to iron-rich meats and vegetables could help to address this issue. There are some signs that other micronutrients may also be lacking. Around one-fifth of children suffer from stunting, which can conceivably place limits on their development and Malaysia's development in future.

29 WFP & FAO. (2020). *Rapid Assessment of Food Security and Agriculture in Lao PDR*. Vientiane, Lao PDR; FAO et al. (2020). *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets*. Rome, FAO.

30 Corteva Agriscience. (2019). The Global Food Security Index. <https://foodsecurityindex.eiu.com/>

31 FAO et al. (2020). *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets*. Rome, FAO.

2.5.6. MYANMAR

COVID-19-related lockdowns have impacted upon economic activity, income and employment. A significant shutdown was undertaken in April to stem the spread of the virus. Subsequent intermittent lockdowns have been imposed when the virus appeared to be resurging. Many migrants that either lost their jobs or had their jobs suspended have returned home, most of them returning from Thailand and Malaysia. Because of dampened GDP growth prospects and significant reductions in migrant remittances, more households are likely to struggle with food security and nutrition shortfalls.

Myanmar had been making steady progress, almost halving undernourishment in its population from around 28% in 2005, to under 15% in 2019. COVID-19 and efforts to limit its spread may have contributed to undernourishment increasing again in the near term to close to 20%. Prior to COVID-19, two out of five women are thought to have suffered from anaemia and other ailments arising from diets deficient in micro-nutrients. Stunting is thought to have afflicted one in three children under five. Both of these nutritional shortfalls are likely to have been exacerbated by COVID-19.³²

2.5.7. THE PHILIPPINES

GDP growth in the Philippines was initially expected to exceed 6% in 2020, but its economy is now expected to shrink by over 7% due to COVID-19 and efforts to contain it. Natural disasters have further darkened this outlook, among the most recent being Typhoon Vongfong, which hit the Philippines in mid-May, hampering efforts to deal with the virus's spread. Among many other things, the typhoon affected agri-food production, especially perishable horticulture crops, as well as rice, maize, livestock and fisheries operations.

As a result of a shrinking economy, lower remittances from abroad, less work for seafarers, and disruptions throughout the agri-

³² Ibid.

food value chain, nutritional outcomes and benchmarks in the Philippines will deteriorate. Roughly half of the Filipino households are likely to suffer from food insecurity and nutrition shortfalls. COVID-19 and related measures to limit its spread will exacerbate already challenging levels of stunting in children under five (~ one in three) and women afflicted with anaemia and other micro-nutrient shortfalls (~ one in six).

2.5.8. SINGAPORE

Singapore is a city-state, with little arable land. Yet, it consistently ranks among the most food secure nations in the world.³³ Singapore achieves this level of food security because of its open trading policy and status as a leading trading hub, importing roughly 90% of its citizens' food requirements from 170 different countries. Perhaps to the surprise of some, Singapore is even a modest net exporter of agri-food products based on the strength of its agri-food processing sector, biotechnology and plant-breeding innovations, and role as an entrepôt.

To some extent, Singapore offers a case study on the policies, capabilities and technologies that contribute to assuring food security in a small island state.³⁴ Like many other ASEAN members, however, Singapore also faces challenges with a high prevalence of anaemia in women of child-bearing age (one in five).³⁵ This issue has not arisen as a consequence of COVID-19, but requires attention never-the-less.

2.5.9. THAILAND

As we have seen earlier in this study, Thailand has been relatively successful in containing the spread of COVID-19. However, because of COVID-19's impact on the tourism, restaurant and hospitality

³³ Corteva Agriscience. (2019). The Global Food Security Index. <https://foodsecurityindex.eiu.com/>

³⁴ Teng, P. (2020) Assuring food security in Singapore, a small island state facing COVID-19. *Food Security*, 12, 801–804.

³⁵ FAO et al. (2020). *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets*. Rome, FAO.

industries, the Thai economy is expected to experience the largest downturn among all ASEAN economies, contracting by over 8% in 2020.

Although Thailand is ASEAN's largest net agri-food exporter at the macro level, food accessibility at the household level remains a challenge. Lockdown measures, supply-chain disruptions, and declining tourism have all contributed to a faltering economy, declining purchasing power, and fewer employment opportunities. As a result of declines in income and employment, households reduced their nutritious food intake. Anecdotal evidence is that Thai households have shifted their diets toward starchy foods and away from more nutritious vegetables, fruits, fish, poultry, pork and dairy products. This is especially true for low-income households and households experiencing job loss or drops in income.³⁶

Prior to COVID-19, just over 9% of Thailand's population (~ 6.5 million people) were considered food insecure. Due to the virus and associated lockdowns and other measures, the number of food insecure people may have climbed to around 8 million. Almost one-third of Thai women suffered from anaemia prior to COVID-19 and this figure could deteriorate further if trade and consumption of nutrient-rich vegetables and livestock products are not facilitated. Thailand did well in reducing stunting in children under five to around 10% before the pandemic, but will need to marshal its resources well to ensure such progress is not stalled in the wake of COVID-19.

2.5.10. VIETNAM

Vietnam has done well in its virus control efforts to date. This is, in part, due to concerted and coordinated efforts and consistent messaging by different government departments. Vietnam's

³⁶ Partially in response, the Ministry of Agriculture and Cooperatives hopes to rekindle domestic consumption for Thai vegetables and fruits to improve nutrition, expand distribution channels and offset the downturn in exports and declines in the tourism sector. www.coopshoph.com

economy is likely to grow modestly (~ 2 percent) in 2020, down from pre-COVID-19 assessments but stronger than most of its neighbours. This positive growth is due in part to Vietnam's success in containing the virus, in part due to its increasing openness, and in part due to the diversion effects of the ongoing China–United States trade dispute.

However, Vietnam's circumstances are not a panacea. While it has not been affected as severely as some of its neighbours, there is some evidence that consumption has shifted slightly to starchier food items and away from more nutrition-rich foods. The proportion of households experiencing caloric undernourishment in Vietnam had fallen to just over 6% before COVID-19. This may not have changed significantly, given Vietnam's position as a leading rice producer and exporter. However, the profile with respect to “nutrition adequacy” is a little different. The presence of stunting in children under five remains stubbornly high (~ one in four), as does the prevalence of anemia in women of child-bearing age (also ~ one in four).³⁷ If sustained for a prolonged period of time, permanent damage can be done to the health, educational prospects, and future job prospects for these individuals and their families. If pervasive across society, it will also adversely impact on the nation's prospects. Efforts to ramp up consumption of nutritious vegetables, fruits, livestock and fish products would be well rewarded.

³⁷ FAO et al. (2020). *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets*. Rome, FAO.

REFERENCES

- Abiad, A., Arao, M., Lavina, E., Platitas, R., Pagaduan, J., & Jabagat, C. (2020). The impact of COVID-19 on developing Asian economies: The role of outbreak severity, containment stringency, and mobility declines. Vol. 1, pp. 86–99. *Centre for Economic Policy Research*. <https://ideas.repec.org/h/cpr/ebchap/p330-05.html>
- Anderson, R.M., Vegvari, C., Truscott, J., & Collyer, B.S. (November 2020). Challenges in creating herd immunity to SARS-CoV-2 infection by mass vaccination. *The Lancet*. [https://doi.org/10.1016/S0140-6736\(20\)32318-7](https://doi.org/10.1016/S0140-6736(20)32318-7)
- Asian Development Bank (ADB). (September 2020). *Asian Development Outlook (ADO) 2020 Update: Wellness in Worrying Times*. Issue 2020. <https://www.adb.org/publications/asian-development-outlook-2020-update>
- Baquendano, F., Christensen, C., Ajewole, K., & Beckman, J. (August 2020). *International Food Security Assessment 2020-30*. GFA 31. USDA-ERS. Washington, D.C. https://www.ers.usda.gov/webdocs/outlooks/99088/gfa31_summary.pdf?v=9122.5
- Corteva Agriscience. (2019). The Global Food Security Index. <https://foodsecurityindex.eiu.com/>
- Djankov, S., & Panizza, U (eds.). (June 2020). *COVID in Developing Countries*. Centre for Economic Policy Research: London, UK. <https://voxeu.org/content/covid-19-developing-economies>
- Gopalan, S., Park, S.H., and Gopalakrishnan, B.N. (2020). *Tale of two shocks in ASEAN, ASEAN Regional Outlook*. Nanyang Technological University and Nanyang Centre for Emerging Markets, Singapore.
- Grantham-McGregor, S., Cheung, Y.B., Cueto, S., Glewwe, P., Richter, L. Strupp, B., & the International Child Development Steering Group. (2007). Developmental potential in the first 5 years for children in developing countries. *Lancet*, 369, 60–70. [https://doi.org/10.1016/S0140-6736\(07\)60032-4](https://doi.org/10.1016/S0140-6736(07)60032-4)
- International Organization for Migration (IOM). (March 2020). Migrant workers stream home as Thailand's economy goes into COVID-19 lockdown. Press release.
- Schmidhuber, J., Pound, J. & Qiao, B. 2020. *COVID-19: Channels of transmission to food and agriculture*. FAO: Rome, Italy. <http://www.fao.org/3/ca8430en/CA8430EN.pdf>
- Krammer, F. (2020). SARS-CoV-2 vaccines in development. *Nature*, 586(7830), 516–527. <https://doi.org/10.1038/s41586-020-2798-3>
- Martorell, R., Horta, B. L., Adair, L. S., Stein, A. D., Richter, L., Fall, C. H. D., Bhargava, S. K., Biswas, S. K. D., Perez, L., Barros, F. C., Victora, C. G., & Consortium on Health Orientated Research in Transitional Societies Group. (2010). Weight gain in the first two years of life is an important predictor of schooling outcomes in pooled analyses from five birth cohorts from low- and middle-income countries. *The Journal of Nutrition*, 140(2), 348–354. <https://doi.org/10.3945/jn.109.112300>
- McCalla, A, & Revoredo, C. (2001). *Prospects for global food security: a critical appraisal of past projections and predictions*. Brief 71. International Food Policy Research Institute (IFPRI). <https://www.ifpri.org/publication/prospects-global-food-security-0>
- Muhammad, A., Meade, B. G. S., Regmi, A., & Seale, J. L. (2011). International Evidence on Food Consumption Patterns: An Update Using 2005 International Com-

parison Program Data. In *Technical Bulletins* (No. 120252; Technical Bulletins). United States Department of Agriculture, Economic Research Service. <https://ideas.repec.org/p/ags/uerstb/120252.html>

Nordhagen, S. (May 2020). Covid-19 and food prices: what do we know so far? *Global Alliance for Improved Nutrition*. <https://www.gainhealth.org/media/news/covid-19-and-food-prices-what-do-we-know-so-far>

Organisation for Economic Co-operation and Development (OECD). (April 2020). COVID-19 and the food and agriculture sector: Issues and policy responses. *OECD*. <https://www.oecd.org/coronavirus/policy-responses/covid-19-and-the-food-and-agriculture-sector-issues-and-policy-responses-a23f764b/>

Organisation for Economic Co-operation and Development (OECD). (June 2020). *Shocks, risks and global value chains: insights from the OECD METRO model*. Paris, France. <http://www.oecd.org/trade/documents/shocks-risks-gvc-insights-oecd-metro-model.pdf>

Shah, S. (April 2020). Will a drop in remittances cause further pain? *Capital Economics*. <https://www.capitaleconomics.com/publications/emerging-asia-economics/emerg-ing-asia-economics-update/will-a-drop-in-remittances-cause-further-pain/>

Stamoulis, K. & Zezza, A. (November 2003). *A Conceptual Framework for National Agricultural, Rural Development, and Food Security Strategies and Policies*. ESA Working Paper No. 03-17. FAO: Rome, Italy.

Takenaka, A. K., Villafuerte, J., & Gaspar, R. (2020). *COVID-19 Impact on International Migration, Remittances, and Recipient Households in Developing Asia*. Issue 148. Asian Development Bank. <https://www.adb.org/publications/covid-19-impact-migration-remittances-asia>

Teng, P. (2020) Assuring food security in Singapore, a small island state facing COVID-19. *Food Security*, 12, 801–804. <https://doi.org/10.1007/s12571-020-01077-0>

Torero, M. (2020). Without food, there can be no exit from the pandemic. *Nature*, 580(7805), 588–589. <https://doi.org/10.1038/d41586-020-01181-3>

United Nations Food and Agriculture Organization (FAO), International Fund for Agricultural Development (IFAD), United Nations Children's Fund (UNICEF), United Nations World Food Programme (WFP) and World Health Organization (WHO). (2020). *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets*. Rome, FAO. <https://doi.org/10.4060/ca9692en>

Victora, C. G., Adair, L., Fall, C., Hallal, P. C., Martorell, R., Richter, L., & Sachdev, H. S. (2008). Maternal and child undernutrition: Consequences for adult health and human capital. *The Lancet*, 371(9609), 340–357. [https://doi.org/10.1016/S0140-6736\(07\)61692-4](https://doi.org/10.1016/S0140-6736(07)61692-4)

World Food Programme (WFP) & United Nations Food and Agriculture Organization (FAO). (2020). *Rapid Assessment of Food Security and Agriculture in Lao PDR*. Vientiane, Lao PDR. <https://reliefweb.int/report/lao-peoples-democratic-republic/rapid-assessment-food-security-and-agriculture-lao-pdr-may>

World Health Organization (WHO). (November 2020). Improving vaccination demand and addressing hesitancy. *WHO*. https://www.who.int/immunization/programmes_systems/vaccine_hesitancy/en/

CHAPTER 3

SUPPLY IMPACTS AND VALUE CHAIN CHALLENGES

This chapter discusses the potential disruptions at vulnerable points within ASEAN agri-food value chains and some potential remedies that could help to ameliorate their impacts.

3.1. STAPLE CROPS: TOWARDS A KNOWLEDGE-BASED, TRANSPARENCY FIRST APPROACH

3.2. INPUTS, AGRI-FOOD SERVICES AND INFRASTRUCTURE: MAINTAINING AGRICULTURE CAPACITY

3.3. VEGETABLE AND FRUIT CROPS: ENABLING PRIMARY PRODUCTION IN A POST-COVID WORLD

3.4. LIVESTOCK AND MEAT PRODUCTION CHALLENGES

3.5. SEAFOOD, FISH, AND AQUACULTURE MARKETS HAVE BEEN PARTICULARLY DISRUPTED

3.6. MEAT, FISH AND SEAFOOD PROCESSING PLANTS

3.7. IMPROVING PRE-EMPTIVE ENGINEERING CONTROLS

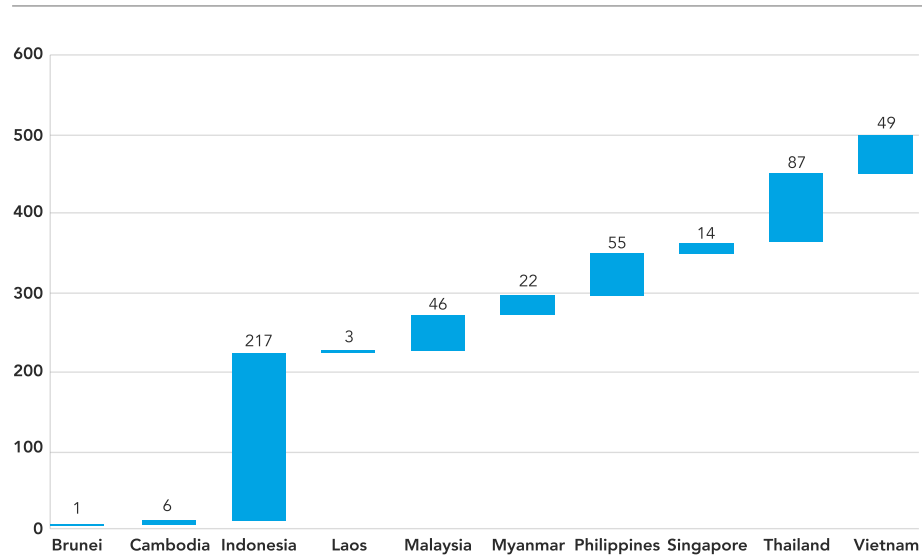
3.8. IMPROVING CONDITIONS IN WET MARKETS

3.9. INFORMAL AND MIGRANT WORKERS AND THEIR TURNKEY ROLES IN ASEAN VALUE CHAINS

3.10. THE NEED TO "SHORT-CIRCUIT" ASEAN VALUE CHAIN DISRUPTIONS

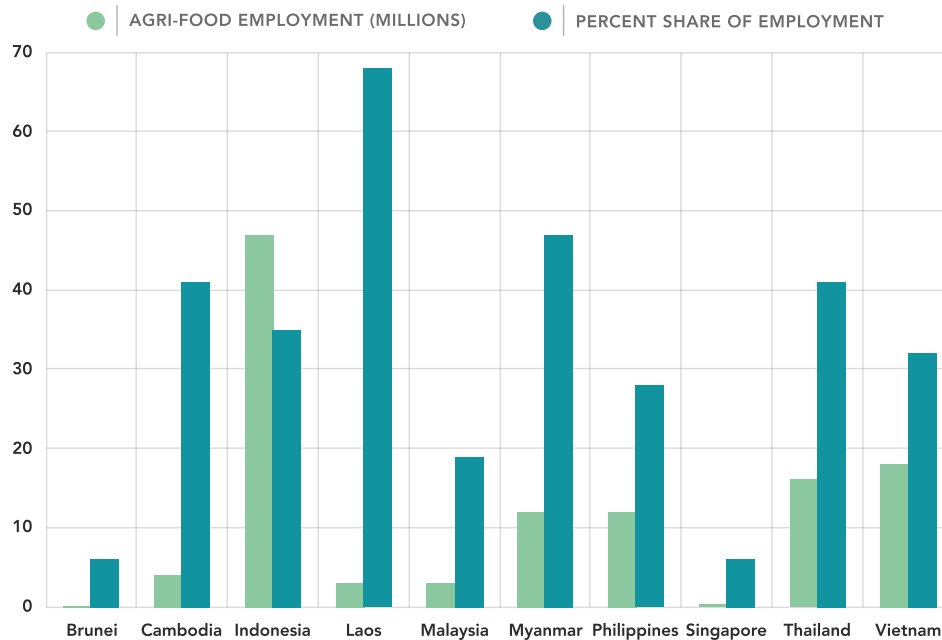
The agriculture and food industry is of major importance to the ASEAN region, providing essential nutrition to populations, but also driving a large share of economic output and employment. It contributes around US\$500 billion to the region’s output, about 17% of ASEAN’s total GDP (Figure 3.1); Indonesia is the largest producer. The share of employment is even higher, with the industry accounting for around 116 million jobs in ASEAN, or about 35% of the total labour force (Figure 3.2). The agri-food industry is therefore of huge importance to both the economic wellbeing and health of ASEAN citizens.

FIGURE 3.1
 ASEAN’s Agri-Food Sector GDP, 2018 (\$ USD Billions)



Source: FAO, World Bank

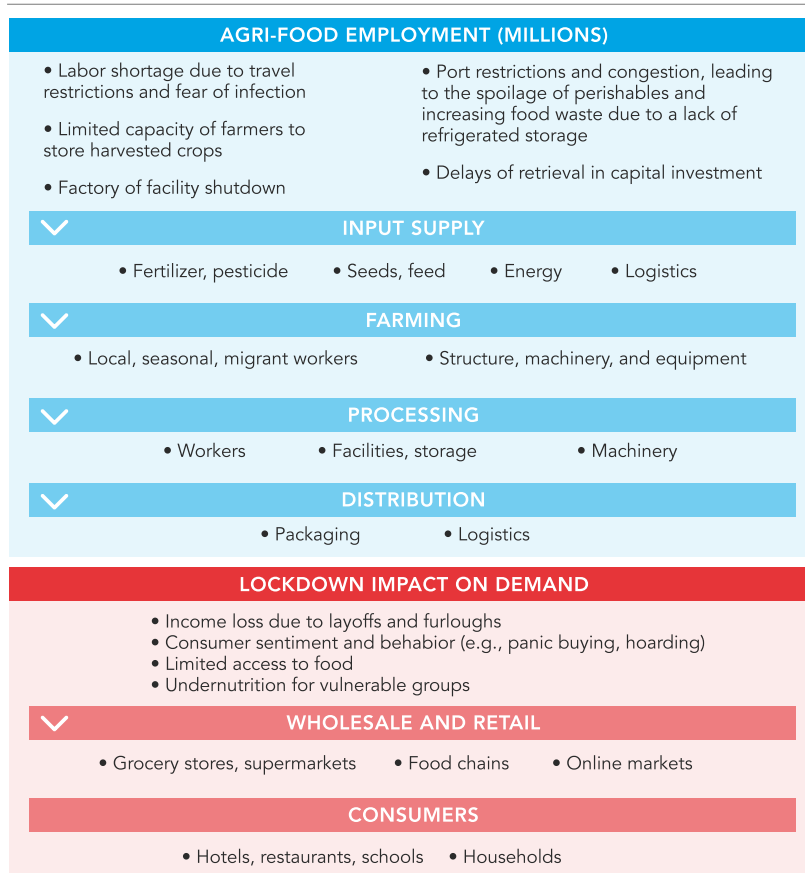
FIGURE 3.2
 ASEAN's Agri-Food Sector Percent Share of Employment



Source: FAO, World Bank, International Labour Organisation

The COVID-19 pandemic has placed unprecedented stresses on food supply chains, with bottlenecks in farm labour, processing, transport and logistics and marketing. Figure 3.3 illustrates just a few ways in which the COVID-19 pandemic can disrupt ASEAN value chains. Most of these disruptions are a result of policies adopted to contain the spread of the virus. To date, value chains have demonstrated remarkable resilience in the face of these stresses. Supplies have been replenished over time, stockpiling behaviour largely has disappeared and value chains have responded to shifts in demand. Border bottlenecks have declined somewhat in response to policies to alleviate unnecessary restrictions. While COVID-19's impacts are still unfolding, experience to date demonstrates the importance of open and predictable domestic marketing arrangements and international trade arrangements to ensure food can move to where it is needed. The biggest risk for food security is not with food availability but with consumers' access to food: safety nets are essential to avoid an increase in hunger and food insecurity.

FIGURE 3.3
Potential COVID-19 Pandemic ASEAN Food System Disruption Pathways



Source: Amjath-Babu et al. (2020). Key indicators for monitoring food system disruptions caused by the COVID-19 pandemic. *Food Security*, 12, 761-768.

As part of this study, APF Canada conducted a survey among AMS to identify challenges and major disruptions from COVID-19 pandemic to trade and value chains. Perceived disruption of the agri-food value chain was the greatest in the Philippines, Vietnam, Lao PDR, and Indonesia, and less so in Brunei Darussalam and Malaysia. High disruption to agricultural inputs, value-added processing, and product transportation was reported in the Philippines, Vietnam, Indonesia, and Lao PDR. Low disruption on the value-added processing and storage of goods were reported in Brunei Darussalam and Malaysia. The disruption on the product wholesale and retail ranged from moderate to high. These varied responses likely reflect the differences in the horizontal and vertical integration of agri-food supply chains across ASEAN, allowing

some member states to weather COVID-19 and other external shocks better than others. Among sectors, the livestock, vegetables, fruits and fishery sectors were considered the most vulnerable and logistics and transportation operators were thought to be quite susceptible to disruption.

The virus poses a threat to food security and livelihoods in lower income countries within ASEAN, where agricultural production systems are more labour-intensive and there is less residual capacity to withstand any sizeable shock. Any disruptions to the manufacture and distribution of key inputs (e.g. seeds, fertilizer, petrol, pesticides) in 2020 could also contribute to lower production in 2021 and 2022. It is also of concern that various points within agri-food value chains are also at risk of disruption; epidemiologists, medical professionals and engineers have learned that conditions where employees work in close quarters (e.g. processing plants), where people gather (e.g. wet markets), and where employees work in tandem (e.g. where consolidation, packaging, transport and shipping take place) may also be vulnerable to disease spread and covid-19 based disruption unless appropriate precautions are taken.

There have been large impacts on GDP, incomes, demand, and consumption and nutrition in 2020. Agri-food production, for the most part, has not yet been seriously impacted thus far, although bottlenecks have arisen in transportation, distribution, value-added processing, and retail locations due to COVID-19 containment measures. This is because production decisions and capacity were already determined earlier in the year.

However, if value-chain disruptions and constraints on inputs, credit and labour are left unresolved, contractions on the supply side could occur in 2021 and possibly in 2022. Just as health professionals try to “short circuit” the virus’s spread, the agri-food sector needs to explore ways of limiting the adverse consequences of COVID-19 containment measures. Just as each sub-sector and component within value chains has their own unique nature, the

ways and means of moderating adverse impacts arising from the coronavirus may be equally unique.

Staple crops like rice, wheat, corn, and soybeans are typically grown under extensive conditions and farmers can adjust their production decisions on an annual basis. Poultry production, although typically capital intensive, has a short production cycle so farmers and commercial enterprises can adjust their production plans and feed input mix to adapt to changes in market conditions. Many horticulture crops are perennials, are labour intensive, and involve a fair amount of fixed capital investment. Dairy, beef and hog production and marketing cycles are longer because of the nature of their gestation cycles. These wide-ranging underlying characteristics determine how rapidly and the extent to which farmers and commercial firms can respond to external shocks. As a result of such considerations, livestock production and marketing are likely to be more severely impacted by COVID-19 containment strategies than the cropping sector. Dairy and pork production will be more disrupted than poultry production. In the crop sector, fruits and vegetables will be more adversely impacted because of their labour intensity, perishability, degree of capital fixity, and lags in production for perennial crops.^{38 39}

With new COVID-19 precautions, movements of product and people through ports and other points of entry have also been restricted, creating bottlenecks; these kinds of delays result in quality reduction and waste of perishable foods. How damaging and sustained these impacts turn out to be for the livelihoods of farmers, fishermen and women and others working along the food supply chain depends in large part on health policy, agri-food policy and trade policy responses over the short, medium and long term. ASEAN faces the challenge of managing multiple demands – responding to the health crisis, managing the consequences of the economic shock, and ensuring the agri-food system can function.

38 OECD & FAO. (2020). *OECD-FAO Agricultural Outlook 2020-2029*. doi.org/10.1787/1112c23b-en

39 OECD & FAO. (2020). The Aglink-Cosimo Model. <http://www.agri-outlook.org/about/>

3.1. Staple Crops: Towards a Knowledge-Based, Transparency First Approach

ASEAN members are significant players in the world's grain and oilseed markets. Rice production occurs throughout ASEAN, and Thailand, Vietnam and Myanmar all rank among the top 10 rice exporters, while the Philippines and Malaysia rank among the top importers. The Philippines, Indonesia, Thailand and Vietnam are all significant wheat importers. Most ASEAN members import quantities of maize and soybeans for both human consumption and livestock feed. While the focus here is on the ASEAN region, these staple crops are traded globally.

In the initial period following the global spread of the COVID-19 outbreak, there were a number of instances of panic-buying and hoarding behaviour for these staple foods, particularly when lockdowns were first announced and implemented. Staple foods like rice, wheat flour and noodles were hoarded because of their longer shelf life and because people were anticipating shortages. This contributed to rising prices for some food staples, rice in particular. Among the contributing factors to rising prices was the suspension of new export contracts in Vietnam, the world's third-largest rice exporter, as well as in Myanmar, combined with an export ban on rice by Cambodia. Compounding this, the national lockdown in India, the world's largest rice exporter, and quarantine measures in Pakistan resulted in logistical constraints and uncertainty, which also pushed prices upwards. However, as knowledge of actual availabilities became more widespread, most export restrictions were removed by May 2020.⁴⁰

Transparency about market conditions, combined with transparency in policy decisions, kept the situation from escalating

⁴⁰ Vietnam, Cambodia, and Myanmar all ceased such interventions by the end of May.

and halted any tendency to respond with tit-for-tat export restrictions. To halt panic buying and prevent artificial shortages, some countries (including Vietnam and Thailand) started publishing reports on supply and demand balances. Several countries with public stocks of grains announced the levels of grains stored to reassure citizens that there were sufficient stocks to meet domestic demand. Some countries distributed supplies from their public stocks to prevent panic buying that could lead to artificial shortages and rising prices.

Since these events, value chains for staple grains have been impacted by COVID-19 containment measures but have largely adjusted to the new realities by altering the way that staples are provided to consumers rather than ceasing to function. Prices for food staples now appear to reflect normal market conditions. OECD and FAO estimates for this year’s global wheat production have also been raised in recent months – 2020 wheat production will reach an all-time high, mostly on improved yield prospects in many countries (Table 3.1). Wheat prices increased slightly in September and October, largely as a result of elevated trade activity and some concerns over production prospects in the global south and dry conditions in parts of Europe, but unrelated to COVID-19 measures. Global food prices remain within acceptable levels and reflect normal market behaviour (Figure 3.4)

FIGURE 3.4
Global Price Indices for Selected Food Categories

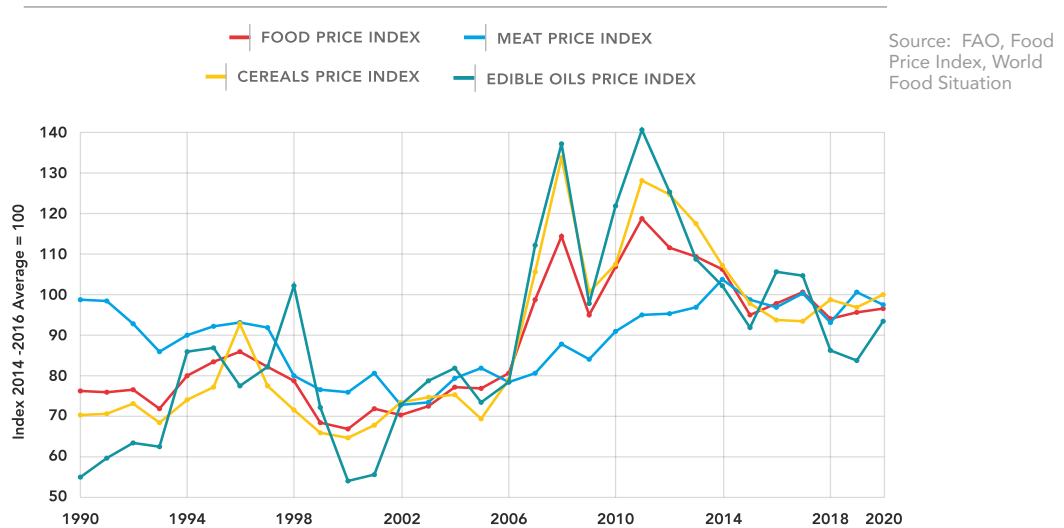


TABLE 3.1.
World Production and Stocks of Key Staples are Adequate

RICE			
in million tonnes	2018/19	2019/20 estimate	2020/21 forecast
Opening Stocks	176.42	185.08	181.81
Production	506.51	500.69	508.43
Supply	682.92	685.77	690.24
Food Use	407.95	413.82	421.26
Feed Use	17.1	16.12	16.24
Other Uses	74.74	72.78	72.76
Domestic Utilization	499.8	502.71	510.26
Trade	44.14	44.51	47.6
Closing Stocks	185.08	181.81	181.02
WHEAT			
in million tonnes	2018/19	2019/20 estimate	2020/21 forecast
Opening Stocks	287.08	271.76	276.6
Production	732.52	761.98	761.72
Supply	1,019.60	1,033.74	1,038.32
Food Use	515.18	520.53	527.56
Feed Use	141.17	136.79	136.75
Other Uses	93.98	92.17	93.28
Domestic Utilization	750.33	749.49	757.58
Trade	168.99	184.55	184.5
Closing Stocks	271.76	276.6	282.87
MAIZE			
in million tonnes	2018/19	2019/20 estimate	2020/21 forecast
Opening Stocks	366.31	361.28	354.77
Production	1,117.58	1,138.25	1,154.85
Supply	1,483.90	1,499.53	1,509.62
Food Use	139.6	142.03	143.45
Feed Use	651.84	674.91	686.5
Other Uses	344.89	326.26	339.21
Domestic Utilization	1,136.33	1,143.20	1,169.16
Trade	166.63	173.98	182.55
Closing Stocks	361.28	354.77	335.54
SOYBEANS			
in million tonnes	2018/19	2019/20 estimate	2020/21 forecast
Opening Stocks	51.69	63.26	56.63
Production	364.59	339.35	366.37
Supply	416.28	402.61	422.99
Domestic Utilization	350.69	360.26	372.96
Trade	149.9	169.06	168.24
Closing Stocks	63.26	56.93	49.42

Sources: International Grains Council (IGC) and Agricultural Market Information System (AMIS), amis-outlook.org

As for rice, the latest figures confirm expectations of larger plantings translating into an annual production recovery this coming season. Global rice production in 2020-21 will remain relatively unchanged due to a downgrade in Thailand and an offsetting upward revision in the production estimate for India. Global utilization in 2020-21 is expected to expand by 1.5%, despite a slight downward revision largely attributable to lower anticipated uses in Indonesia. The global rice trade will be relatively unchanged in 2021, as subdued export prospects for Pakistan, Thailand and Vietnam will be compensated for by increases in India's shipments. Carryover stocks will be roughly on par with their year-opening levels due to recent revisions upward in key exporters.

Within ASEAN, domestic rice prices exhibited mixed trends in September but generally remained slightly above year-earlier levels in most member states.⁴¹ In the main exporters (like Vietnam), prices of rice showed signs of softening in September, after increases in July and August. Similarly, prices decreased marginally in Thailand, ahead of the 2020 main harvest, responding also to slow export demand. Adequate market availabilities from the 2020 harvests kept prices stable in Cambodia, which is also expected to harvest an above-average 2020 main crop. In contrast, rice prices increased sharply in Myanmar and were at high levels in September, supported by tightening supplies ahead of the 2020 main crop and steady exports in previous months. Prices changed little in the Philippines, amid adequate market availabilities from the 2020 harvest and imports.

International maize prices also climbed slightly, responding to cuts in production prospects, especially in the EU, and the expectation of a decline in supplies in the U.S., as the country reduces its previous season maize carryovers. Still, world maize output in 2020 is expected to exceed the high 2019 level, reaching a new record.⁴² In

41 Analysis informed by government trade and statistics databases in Thailand, Cambodia, Philippines, and Viet Nam, and relevant CGIAR and IFPRI reports for ASEAN price trends.

42 OECD & FAO. (2020). The Aglink-Cosimo Model. www.agri-outlook.org/about/

the case of soybeans, OECD and FAO anticipate increased global production in 2020-2021, despite some recent weather challenges.⁴³

Although production, stocks and utilization for most staple crops are adequate, past experience suggests that vigilance be maintained. An examination of the situation for different staple crops reveals that, while global wheat, maize and soybean markets were stable, the rice market is more thinly traded and more sensitive to changes in production and stocks and, therefore, more subject to extreme swings. Therefore, there is an even greater need for transparency in the rice market and among rice traders, importers, and exporters. As noted above, international rice prices started to rise significantly in March, driven in part by hoarding; by April, the FAO's rice price index reached its highest level since December 2011, even though production and stocks were adequate.

While food staples for this crop year are reasonably secure, the situation for the coming two crop years is a little less apparent. As mentioned earlier, abnormal stockpiling behaviour and impediments to the movements of key inputs across borders could pose problems. A key challenge will be how to alleviate COVID-19-related breaks within the value chain before they have serious impacts on market operations and market signals, food security or nutritional outcomes. Transparency and timely reporting regarding production intentions and stock levels will be important to address the challenge.

⁴³ OECD & FAO. (2020). *OECD-FAO Agricultural Outlook 2020-2029*. <https://doi.org/10.1787/1112c23b-en>

3.2. Inputs, Agri-Food Services and Infrastructure: Maintaining Agriculture Capacity

The COVID-19 pandemic poses a risk to agricultural input supply chains.⁴⁴ It can detrimentally affect access to and availability of inputs, including petrol, seeds, fertilizers, and pesticides, as well as labour. As such, disruptions to the supply and demand of inputs will have diverse impacts across and within countries and will need to be reflected in different policy responses depending on the context. However, it remains the case that primary agricultural activities depend on the season and weather. Activities need to follow a particular schedule and sequence, with some flexibility reflecting conditions suitable for planting, fertilizing and harvesting, etc. Since all processes and stages in the supply chain are strongly interconnected, delays or disruptions can trigger knock-on effects, resulting in large yield and output losses. Unless COVID-19-related disruptions to labour markets and input markets are addressed, ASEAN's agri-food sector may contract by three to five per cent in the coming years.^{45 46}

With the aim of maintaining domestic production and supporting farmers' incomes, some member states may be tempted to subsidize input procurement and use.^{47 48} However, OECD and FAO assessments of such programs using their Policy Evaluation

44 For both decision-making processes and policy design, we recommend reading: OECD. (2020). How can governments leverage policy evaluation to improve evidence informed policy making?

45 Gregorio & Ancog. (2020). Assessing the Impact of the COVID-19 Pandemic on Agricultural Production in Southeast Asia. *Asian Journal of Agriculture and Development*, 17(1).

46 FAO. (June 2020). *Impacts of coronavirus on food security and nutrition in Asia and the Pacific: building more resilient food systems*. Rome, Italy.

47 Doguiles, D.E. (May 2020). Rice farmers to receive seed, fertilizer subsidy. *Philippine Information Agency*.

48 Ikhsan, M., & Yulius. (November 2020). Analysis: Moving Indonesia's fertilizer subsidies to direct model efficiently. *Jakarta Post*.

Model⁴⁹ indicate that interventions can be highly production and trade distorting, often contributing to environmental degradation (e.g. through over-application, nutrient and pesticide loading) and are extremely inefficient in terms of actually supporting farmers' incomes and well-being.

As an example, some nations subsidize both the manufacture of fertilizers and pesticides as well as their use, ostensibly in an effort to stimulate production and protect farmer incomes. This two-fold form of subsidies often leads to over-application and environmental deterioration in the form of soil and water, nutrient loading, chemical run-off, leaching, and biodiversity or wildlife habitats. Such subsidies that are tied to specific inputs or particular outputs are also less helpful to farming households as they tie the households to specific production and consumption options rather than allowing them to make choices reflecting their own needs and judgement.

If income support to farmers is thought to be necessary, it is preferable to provide it via direct transfers or general vouchers if at all possible, rather than tying it to the procurement of a specific input or the production of a particular output. Besides the previously mentioned adverse environmental impacts, OECD, FAO, and International Food Policy Research Institute (IFPRI) research has shown that the transfer efficiency of tied input subsidies is low in terms of improving farmers' well-being while typically distorting production and trade.⁵⁰

If transfers are warranted, it is best if delivered as broadly based income support unrelated to specific production decisions. Or, if such an approach is a challenge in some of ASEAN's transitional economies, support is better provided via investments which do not

49 The Policy Evaluation Model is a partial equilibrium model of agricultural production that is designed to connect the data in the Producer Support Estimate database with economic outcomes in terms of production, trade and welfare. Review: OECD. (2011). Annex D. The OECD Policy Evaluation Model, in *Evaluation of Agricultural Policy Reforms in the United States*.

50 Dewbre et al. (2001). The Transfer Efficiency and Trade Effects of Direct Payments. *American Journal of Agricultural Economics*, 5, 1204-1213.

prejudice or prejudge farmers' production and consumption choices going forward. In the current context, such investment might be directed towards improvements in enabling infrastructure or to address gaps in logistics. Such investments would not tie farmers' hands in terms of their production, marketing or consumption choices. Given the realities of COVID-19, additional effort could be made to accelerate movements toward digital marketing and other mechanisms which provide greater scope for physical distancing in production and marketing activities.

Timely access to inputs and infrastructure services is critical, especially where perishable, time-sensitive crops and livestock products are concerned. Investments in ways and means of improving timeliness and limiting the loss of perishable products (e.g. planting, harvesting, storage, chilled handling for fruits, vegetables, livestock and fishery products) should be a priority both in terms of improving both income and nutritional outcomes. Initiatives that reduce post-harvest losses and prevent deterioration in nutritional value while in storage or being handled and transported would also be helpful.

3.3. Vegetable and Fruit Crops: Enabling Primary Production in a Post-COVID World

In the survey undertaken for this study, fruit and vegetable production was considered second most susceptible to potential disease spread, after livestock production. Fruit and vegetable farms are typically very labour-intensive worldwide, but especially so in ASEAN economies. In a number of instances, migrant workers not only work on the farm in close proximity, they often share accommodation facilities. Some of these working and living arrangements correspond to the conditions for "cluster" spreading events identified in Chapter 1. In most ASEAN member states, migrant workers have had restrictions placed on their movements. In this regard, the survey indicated that quarantine requirements

and constraints on labour movements were problematic for ASEAN members.⁵¹ On the flip side, many migrant workers are reluctant to work if they believe working and living conditions are putting them at risk.

Firms and farms engaged in the production of horticulture crops are critical to the agri-food economy and to the provision of foods with higher nutritional value. Reduction in their productive capacity could seriously undermine ASEAN members' ability to maintain access to "nutrition adequate" diets.⁵² Yet, the nature of some of these operation's work environment and living conditions are conducive to the disease's spread. Fortunately, more is known now about the virus, how it spreads, and basic hygiene measures to adopt than was known a few months ago: physical distancing, mask wearing, hand washing, frequent cleaning and alterations to air flow and accommodation environments to reduce the risk of disease spread.

Vessel Dynamics Laboratory (VDL) has provided an online simulation tool to see how simple changes in shared housing and worker behaviours affect COVID-19 spread.⁵³ The simulator assumes that someone who is infected with coronavirus may be asymptomatic yet contagious for between 2-14 days before showing signs that they are sick. It also assumes that, once a worker shows symptoms, the worker is identified as sick and is relocated to quarantine housing the next workday. If a worker is not removed after being identified as COVID positive, the spread of infection would be far worse.

VDL's simulation is run for a one-week period and employs a mathematical infectious disease model known as S-I-R.⁵⁴ A S-I-R

51 Asia Pacific Foundation of Canada.(2021).COVID-19 Pandemic Implications on Agriculture and Food Trade in ASEAN: Study Methodology

52 Aday & Aday. (2020). Impact of COVID-19 on the food supply chain. *Food Quality and Safety*, 4(4), 167-180.

53 VDL. (2020). Room for Improvement: An Online Tool for Reducing the Spread of COVID-19 in Farmworker Housing. <https://vesseldynamics.com/research/farmworker-housing-simulator/>

54 The mathematical details of the S-I-R modeling framework are explained by Smith and Moore (2004).

(Susceptible-Infected-Recovered). It is an epidemiological model that computes the theoretical number of people infected with a contagious illness in a closed population over time. The VDL S-I-R simulation results are meant to show how simple changes in shared housing and farmworker behaviours can reduce or increase the spread of infection and should not be viewed as an exact prediction. Such modeling frameworks might also be helpful in informing decisions in other situations where workers are in close quarters.

Collaborative interdisciplinary work between medical professionals, epidemiologists and engineers could significantly improve the physical design and safety of work spaces, work flows, and living arrangements for agri-food enterprises and their workforces. Failure to embrace such improvements could adversely impact on workers' health, lead to a decline in workers' willingness to work in such environments, and erode the productive capacity of horticulture production, thereby contributing to a decline in the availability of nutritious fruits and vegetables that might otherwise improve ASEAN citizens' diets and nutrition outcomes.

3.4. Livestock and Meat Production Challenges

Total global meat production is forecast to decline somewhat in 2020, depressed by COVID-19-related market disruptions,^{55, 56} animal diseases (particularly in China's swine herd), and the lingering effects of droughts. Much of the contraction is expected to be attributable to a drop in global production of pork, largely concentrated in China

⁵⁵ While the greatest risk for Covid-19 transmission remain person-to-person, some nations have used the ostensive threat of Covid-19 transmission to constrain trade in higher value seafood and livestock products.

⁵⁶ This discussion draws extensively from the following sources:

- 1) FAO. (June 2020). *Food Outlook - Biannual Report on Global Food Markets: June 2020*. Rome, Italy.
- 2) OECD & FAO. (2020). *OECD-FAO Agricultural Outlook 2020-2029*.
- 3) Schmidhuber & Qiao. (2020). *Comparing crises: Great lockdown versus great recession*. FAO: Rome, Italy.
- 4) FAO. (April 2020). *Agri-Food Markets and Trade Policy in the Time of COVID-19*. FAO: Rome, Italy.
- 5) Glauber et al. (2020). COVID-19: Trade restrictions are worst possible response to safeguard food security. In *COVID-19 and global food security*, J Swinnen and J McDermott (eds.).

and Southeast Asian countries affected by the African Swine Fever (ASF) viral disease; within ASEAN, swine herds in the Philippines, Indonesia, Vietnam, Cambodia, Lao PDR and Myanmar have all been adversely affected. However, there will also be a decline in beef production in North America and Australia.

In contrast, global poultry meat production is forecast to expand, but at a more subdued rate. With Indonesia as the world's second-largest producer and Thailand as the world's fourth-largest exporter, ASEAN's poultry sector may be part of this expansion if it deals constructively with migrant agri-food labour issues and other supply-side challenges.⁵⁷ However, the expansion has been dampened somewhat by COVID-19 and related containment efforts, including limits on migrant worker movements and intermittent value-chain lockdowns.

Within ASEAN, COVID-19-related economic challenges, logistical bottlenecks and a sharp decline in volumes needed by the food services sector due to lockdowns have proven problematic, with declines in restaurant and food service sales resulting in meat stock accumulation. Challenges remain in terms of managing COVID-19 health and sanitary challenges in slaughterhouses, processing and packing facilities.

The international meat trade was originally projected to grow at almost seven per cent in 2020. However, a combination of stresses related to the U.S. – China trade dispute, COVID-19 restrictions, and subdued consumption levels also mean that the meat trade is likely to be static or perhaps up very slightly for the year.

Logistical bottlenecks, limitations in shipping, port backlogs, and obstructions arising from the treatment of shipping vessel crews are also likely to restrain the world meat trade going forward. However, China's economic resurgence in recent quarters may help to buoy

⁵⁷ Indonesia is ASEAN's largest poultry producer, ranking second world-wide ... trailing China and ahead of the United States. Thailand is the world's fourth largest poultry exporter, after Brazil, the United States and the European Union (FAOSTAT).

livestock product markets slightly, if its recent economic recovery can be sustained.

3.5. Seafood, Fish, and Aquaculture Markets Have Been Particularly Disrupted

Indonesia, Vietnam, the Philippines, Thailand, Malaysia and Myanmar are among the world's top 20 producers of catch fishery.⁵⁸ ASEAN member states capture each of the most highly valuable groups – tunas, cephalopods, shrimps and lobsters – but tunas are arguably the most important among these. Indonesia and the Philippines rank among the top five tuna producers in the world. Indonesia's share of global tuna production hovers around 18 per cent, while Philippines comes in at just over six per cent. Thailand is the world's biggest exporter of prepared or preserved tuna, accounting for almost 30 per cent of the world's exports. The Philippines, Indonesia and Vietnam also export processed or canned tuna to major brands in key markets. ASEAN's tuna industry provides thousands of jobs in the areas of catching, consolidating, marketing, processing and trading.

Besides its catch fishery, ASEAN is also an important aquaculture region, with ASEAN members Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Thailand, Singapore and Vietnam together producing roughly 20 per cent of the world total. The ASEAN region has a diverse mix of aquaculture systems and species, including shrimps and prawns, catfish, carp, tilapia, crabs, lobsters and seaweed. Ponds and off-bottom culture rank as the most common production systems. Aquaculture is not only a significant part of the economy, it also contributes significantly to rural livelihoods and improved nutrition within ASEAN.

⁵⁸ This section relies on excerpts from: FAO. (2020). *The State of World Fisheries and Aquaculture*. Rome, Italy.

Fish and fish products are among the most traded food items in the world. In 2018, roughly 67 million tonnes of seafood was traded internationally for a total export value of US\$164B. This equates to almost 38 per cent of all fish caught or farmed worldwide. However, trade contracted by about two per cent in 2019. Initially, 2020 was forecast to be a year of recovery for seafood and fish markets, but this prospectus has been upended by the emergence of the COVID-19 pandemic. It continues to inflict considerable damage on seafood markets, particularly for fresh products and species popular in the restaurant and hospitality sector. This is partially due to the restaurant and hospitality sector being adversely impacted by periodic lockdowns and partially due to misinformation regarding virus transmission that has dampened demand. On the supply side, many fishing fleets are laying idle and the deteriorating outlook has seen aquaculture producers reduce their stocking targets.

Disruptions to labour markets, health-related challenges in processing facilities and other business challenges appear likely to continue exerting a negative impact on seafood production across the world. Aquaculture harvests are being delayed and stocking targets reduced, affecting production of heavily traded commodities like shrimp, salmon, tilapia, and seabass.

Trade in seafood and fishery products is expected to fall by between five and ten per cent in 2020. The general outlook for fish and seafood markets in the coming few years remains uncertain. Less perishable processed, canned tuna trade volumes have strengthened, but higher value perishable seafood and fish product exports are in decline due to rising trade costs and border friction. Perishable high-end products and popular restaurant items will likely be the most adversely affected, including lobster, fresh tuna, fresh salmon, cephalopods and bivalves.⁵⁹ The depressed state of the market and disruptions along fisheries and aquaculture value chains will be particularly frustrating for all ASEAN member

⁵⁹ FAO. (June 2020). *Food Outlook - Biannual Report on Global Food Markets: June 2020*; OECD & FAO. (2020). *OECD-FAO Agricultural Outlook 2020-2029*.

states, but most notably for Vietnam, Thailand, Indonesia, and the Philippines. Like livestock products, challenges also arise when managing COVID-19-related health and sanitary challenges in processing facilities.

Fishing is dependent on vessel mobility. But immobilization is a key tool for virus containment; mobility is associated with a risk of virus spread. Many fishing vessels, as currently configured, correspond to the conditions considered ripe for disease spread: tight working and living quarters; limited opportunities to change clothing and masks; vessels that can spread disease to multiple locations as they move through the sea. Typically, when fishing vessels arrive into port they offload catch, resupply and rotate crew, and quickly return to sea. Today, such mobility is constrained in the interest of public health. Many ports now either ban shore leave and crew changes, or require 14-day quarantine either at sea or in designated onshore accommodations.⁶⁰ Such limits on mobility create costs for vessel owners and workers alike, and has greatly impacted the flow of raw material into supply chains.

Labour protections are already a challenge in the capture fishery sector, given its mobile nature and the fact that fleet ownership may differ from the nationality of the fishermen and women manning the vessel. Now, difficult challenges have become even more complex. To date, many commercial interests and fishing exporters have been hesitant to engage in discussions with the International Labour Organization (ILO) and international health authorities to resolve these emerging challenges. Yet, unless reasonable protocols for access to port facilities can be negotiated that concurrently allow commercial seafood production, capture and trade to continue while safeguarding human health, COVID-19 precautions could inadvertently undermine both economic well-being and nutritional

⁶⁰ ITF Seafarers. (2020). COVID-19 Information for Seafarers. <https://www.itfseafarers.org/en/embed/covid-19-country-information-seafarers>; BIMCO. (2020). Coronavirus (COVID-19) Crew Challenges. <https://www.bimco.org/ships-ports-and-voyage-planning/crew-support/health-and-medical-support/novel-coronavirus---crew-challenges>

outcomes. Because of COVID-19 containment strategies placing limits on mobility,⁶¹ movement away from capture fisheries to aquaculture fish farming is likely to accelerate.

3.6 Meat, Fish and Seafood Processing Plants

Workers involved in meat, poultry, fish and seafood processing face COVID-19 risk through the nature of the enterprise they work in.⁶² Their work environment — processing lines and other areas in busy plants and enclosed spaces where they have close contact with coworkers and supervisors — may contribute somewhat to their potential exposures. The risk of occupational transmission of COVID-19 depends on several factors. Distinctive factors that affect workers' risk for exposure to COVID-19 in meat, fish and seafood processing workplaces include:

Distance between workers – processing workers often work close to one another on processing lines. Workers may also be near one another at other times, such as when clocking in or out, during breaks, or in locker/changing rooms.

Duration of contact – processing workers often have prolonged closeness to coworkers (e.g., seven to 10 hours per shift). Continued proximity to potentially infectious individuals increases the risk of COVID-19 transmission.

Type of contact – meat and poultry processing workers may be exposed to the infectious virus through respiratory droplets in the air – for example, when workers in the plant who have the virus cough or sneeze. It is conceivable,

⁶¹ For an overview of each seaport or country, and the restrictions on vessels and crew, Wilhelmsen's has provided an interactive COVID-19 Global Port Restrictions Map, together with supporting documentation: <https://www.wilhelmsen.com/ships-agency/campaigns/coronavirus/coronavirus-map/>

⁶² This section draws on published guidance from the OIE, Canadian Food Inspection Agency, the CDC and USDA.

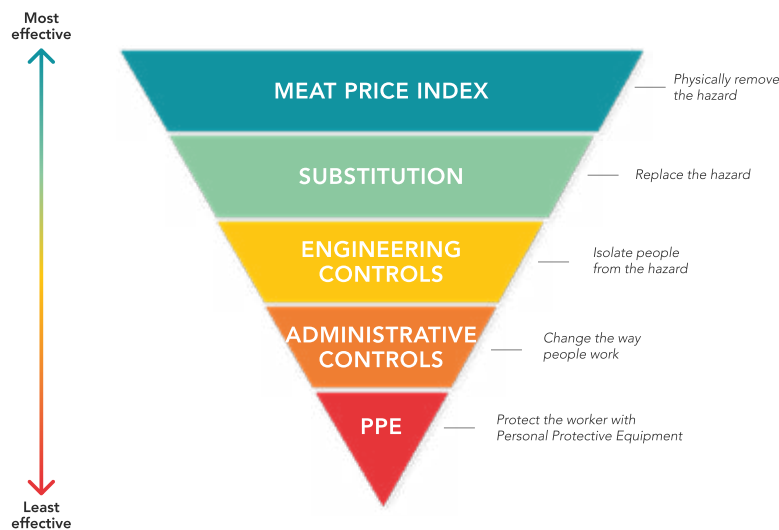
although less likely, in such cases that exposure could also occur from contact with contaminated surfaces or objects, such as tools, workstations, or break room tables.

Pooled transport - a common practice at some workplaces of sharing transportation such as ride-share vans or shuttle vehicles, car-pools, and public transportation.

Frequent contact - with fellow workers in community settings in areas where there is ongoing community transmission and the enterprise is a significant local employer.

The Center for Disease Control has noted that controlling exposures to occupational hazards is a fundamental method of protecting workers. Traditionally, a hierarchy of controls has been used as a means of determining how to implement feasible and effective control solutions. One representation of this Hierarchy of Controls is as follows: Elimination, Substitution, Engineering Controls, Administrative Controls, Personal Protective Equipment (PPE). This is typically represented as an upside-down triangle as seen in Figure 3.5 below.

FIGURE 3.5
Heirarchy of Controls



Source: Center for Disease Control

The idea behind this hierarchy is that the control methods at the top of the graphic are potentially more effective and protective than those at the bottom. Following this hierarchy normally leads to the implementation of inherently safer systems, where the risk of illness is substantially less.

3.7. Improving Pre-emptive Engineering Controls

Engineering controls are favored over administrative guidance and PPE for controlling existing worker exposures. This is because they are designed to automatically remove the hazard at the source, before it comes in contact with the worker. They also require less of a thought process by workers under conditions where they might be stressed or fatigued. Well-designed engineering controls can be highly effective in protecting workers and will largely be independent of worker interactions to provide a high level of protection.

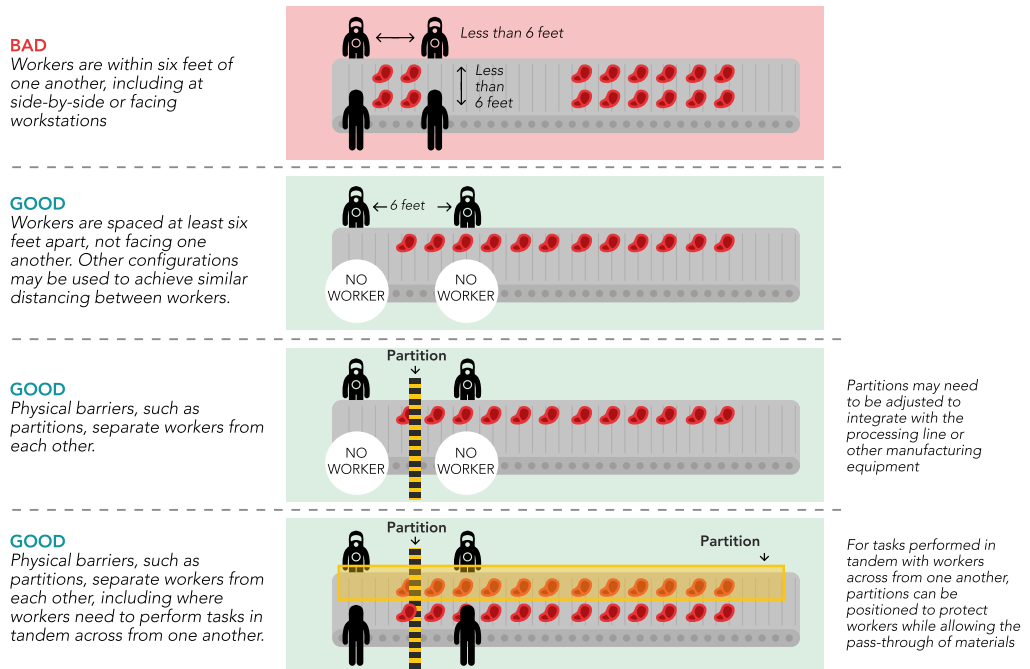
The initial cost of engineering controls may be higher than the cost of administrative guidance or PPE, but over the longer term, operating costs are frequently lower, and in some instances, can provide a cost savings in other areas of the process. The use of PPE is helpful but it does not eliminate all risks and it relies on workers to remember and adhere strictly to all safety protocols at all times. This sounds straightforward but may be a challenge over the course of a long working day.

With regard to “Engineering Controls,” it is advisable to configure communal work environments so that workers are spaced at least six feet apart, if possible. Current information about the asymptomatic spread of COVID-19 supports the need for physical distancing (discussed in Chapter 1) and other protective measures within a processing plant environment. Changes in production practices may be necessary in order to maintain appropriate distances among workers.

Figure 3.6 below shows one bad alignment option to avoid for processing workstations and three good options that provide adequate protection for workers. Commercial processors should modify the alignment of workstations, including along processing lines, if feasible, so that workers are two metres or more apart in all directions (e.g., side-to-side and when facing one another), when possible. Ideally, modify the alignment of workstations so that workers do not directly face one another. It is best to use markings and signs to remind workers to maintain their location at their station away from each other and practice physical distancing on breaks.

Physical barriers, such as strip curtains, plexiglass or similar materials, or other impermeable dividers or partitions, can be used to separate processing workers from each other, if feasible. Given what we have learned thus far regarding the conditions the virus thrives in, facilities should consider consulting with heating, ventilation, and air-conditioning specialists to ensure adequate ventilation in work areas to help minimize workers' potential exposures. If fans are used, take steps to minimize air from fans blowing from one worker directly at another worker.

FIGURE 3.6
Altering Redesigning and Re-engineering Processing Facilities and Work Flow



Source: CDC / Guidance for Meat, Poultry, Fish and Seafood Processing Plants and Workers

Handwashing stations or hand sanitizers with at least 75 % alcohol should be placed in multiple convenient locations to encourage hand hygiene. Touch-free stations are preferable.

Reconsider and reconfigure clock-in/out stations to ensure that they are well spaced and designed to reduce crowding. Consider touch-free alternatives and staggering shifts to reduce bottlenecks and crowding.

Stagger break times. Reflect on and reconfigure the arrangement of tables and chairs and partitions in break rooms and other areas workers may frequent to increase worker separation. If migrant workers are present, ensure safety signage is in all languages used in the workplace.

3.8. Improving Conditions in Wet Markets

The WHO has recently called for stricter safety and hygiene standards when wet markets reopen in China and elsewhere. It has also strongly suggested that governments and oversight agencies must more rigorously scrutinize the sale and trade of wildlife for food.

The WHO is working with other UN bodies to develop guidance on the safe operation of wet markets, which remain an important source of affordable food and a livelihood for millions of people, particularly in poorer nations. However, these markets have not always been well regulated and well maintained. The WHO strongly suggests that these markets should only be allowed to reopen if and when they conform to stringent food safety and hygiene standards.

Because roughly 70 per cent of all new viruses originate with animals, the WHO has also been encouraged to work more closely with the World Organization for Animal Health (OIE), the Consultative Group on International Agriculture Research (CGIAR), and the Food and Agricultural Organization (FAO) to more proactively understand, anticipate and, if possible, prevent pathogens crossing from animals to humans. Markets which engage in the sale of wildlife and exotic livestock are considered a particular challenge.

Many food vendors in Southeast Asia (and other parts of the world) are not well educated about public health or food safety standards, nor are they trained to maintain good hygiene while distributing food to help prevent the spread of foodborne diseases. However, it may be possible to address such problems with a combination of regulations and proper training, to allow local food to be safely and abundantly available to the public.

Most ASEAN members have a number of wet markets, depended on by small and modest sized food producers as their main channel of distribution, and by consumers for access to fresh food. There may be benefits from renewed efforts to apply a simplified version of the Hazard Analysis Critical Control Point (HACCP) management system to wet markets and affiliate activities and agents. Through a HACCP approach, food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product. With the collaboration of the FAO and OIE, significant such efforts were made in China and Southeast Asian economies in the late 1990s and early 2000s, but may not have been pursued as diligently recently as the perceived threats subsided from the public's memory and imagination.

Continued efforts to enhance food safety and hygiene in wet markets will also strengthen food security by generating greater accessibility to local food. Initiatives to improve food safety in developing countries are especially important because they create opportunities for local food producers and consumers to conduct trade in a clean and safe environment.

Wet markets have little if any packaging and the products usually come without certifications to indicate that they comply with food safety standards. Some observers view wet markets and farmers markets as somehow riskier than modern value chains and a few have even advocated for their closure.⁶³ However, such all-encompassing remarks don't necessarily hold. It depends on how wet markets are managed and operated.⁶⁴

Wet markets in Southeast Asia can be hygienic when they are managed well, with local authorities (randomly) checking on the

⁶³ For more on this issue, see the discussion in Reardon et al. (2020). How COVID-19 may disrupt food supply chains in developing countries. *International Food Policy Research Institute (IFPRI)*.

⁶⁴ ACIAR. (2020). Wet markets – close down or keep? *The Pig Site*.

conditions. Regardless of products' origins, a key is safe handling, transportation and storage. One advantage with wet markets is that value chains are relatively short and the food moves quickly to prevent it spoiling.⁶⁵

Key considerations for a clean and safe operating wet market:

- Is the wet market in question fastidious regarding the clean-up of fecal contamination of roads and surrounding areas?
- Has the wet market established facilities for the disposal of fecal matter and for disinfecting transport cages before they are returned to farms?
- Does the wet market allow sick or dead stock to be sold on its premises?
- Does the wet market allow wild or exotic animals to be sold on its premises? Is it possible to track and trace the origins of such livestock and related products?
- Does the wet market implement regular disinfection and upgrade procedures of all wet market vendor spaces and equipment to prevent the buildup of pathogens and pests?
- Does the wet market enforce legal limits on the number of animals allowed in each cage or pen to prevent overcrowding, which otherwise can lead to poor animal health?
- Is it possible to trace livestock products back the distribution chain to track infections?
- Are hygienic, humane slaughtering and processing facilities and processes employed?

⁶⁵ In many ASEAN wet markets, livestock might be slaughtered in the early morning hours, sold by breakfast, and in the pot by midday, with leftovers eaten at night, leaving little time for contamination to occur. With modern value chains, while everything may look more hygienic, products have often travelled much further and longer.

- What precautions are in place to protect vendors, distributors and customers from the spread of disease or illness? Have barriers been erected to encourage distancing and reduce droplet travel? Are vendors and clients alike required to wear masks?
- Are livestock products sold in a physically distant, distinctly separate location from fruits, vegetables, cereals and dry goods?

Recently appointed as a Lancet “One Health” Commissioner, Dr Anna Okello indicates that a holistic approach is warranted and will ultimately improve our understanding, management and prevention of future disease spillover events. This is not to deny the risks or that the disease could have emerged from a wet market or farmers’ market scenario, but also argues for ongoing assessment of food safety risks with research-based evidence to quantify claims.

Dr John McDermott, director of CGIAR-IFPRI’s Program on Agriculture for Nutrition and Health, has emphasized that upgrading wet market safety involves helping those who use them – vendors and clients - to better understand and manage the risks. Efforts to ramp up exchanges between human health and veterinary disciplines are overdue and commendable as they coexist and inform each other, especially on zoonotic diseases. The value of researchers and health officials working together to reshape food systems to deal with COVID-19 and other health risks needs to be recognized. Open and timely information sharing is critical.⁶⁶

⁶⁶ See also, 1) de Garine-Wichatitsky et al. (2020). Will the COVID-19 crisis trigger a One Health coming-of-age? *The Lancet – Planetary Health*, 4(9), E377-E378, 2) Amuasi et al. (2020). Calling for a COVID-19 One Health Research Coalition. *Lancet*, 395, 1543-1544, and 3) Wilcox et al. (2019). Operationalizing One Health employing socio-ecological systems theory: lessons from the Greater Mekong Sub-region. *Frontier Public Health*, 7, 85.

3.9. Informal and Migrant Workers and Their Turnkey Roles in ASEAN Value Chains

Roughly 75 per cent of ASEAN's workforce can be considered informal labour. We should note, however, that ASEAN does not officially include workers in primary agriculture in its official informal labour statistics.⁶⁷ Migrant workers and informal workers working in agriculture have few benefits, if any. Although their labour efforts are critical to both agri-food production and, ultimately, food security and nutrition outcomes, informal workers typically have no access to sick leave or unemployment benefits. Their access to health benefits is often precarious. For many of them, savings are extremely limited if not non-existent. If these workers cannot work for periods of time, their family's income is at risk.

These workers will not be paid if they do not work, even if they are ill. Inadvertently, this provides incentives for these workers to work while they are ill. If informal labourers and migrant workers work while they are ill, the risk of disease spread rises. On the flip side, many migrant workers and informal labourers are faced with tough choices: they may be reluctant to work if they believe working and living conditions are putting them at risk; yet, their resources are such that their family's income and even its food security may be at risk if they can't work. From both a broader welfare perspective, an agri-food productivity perspective, and an epidemiological control perspective, these choices and dilemma are not ideal.

Quarantine provisions and restrictions on their movements place additional burdens on migrant workers working in ASEAN's agri-food sector. They can ill afford the downtime required to self-isolate or quarantine in place. But it must be recognized that, unless steps are taken to protect migrant workers and informal labour, COVID-

⁶⁷ ASEAN Secretariat. (2019). *Regional Study on Informal Employment Statistics to Support Decent Work Promotion in ASEAN*.

19-related disruptions to labour markets could further undermine the productivity and throughput of ASEAN's agri-food value chain – through both the absence of their labour and delays in the ability to apply other inputs such as fertilizer – adversely impacting both economic and food security prospects.

Working with employers, ASEAN may wish to monitor and respond to illness and absenteeism at the workplace. As mentioned earlier, physical alterations and changes in workflow could be made to better protect workers while maintaining productive capacity.

Employers could also develop contingency plans to continue essential business functions in cases of higher than usual absenteeism as precautions against disease spread. CDC Health practitioners and epidemiologists recommend reviewing incentives within attendance policies:

- Analyze sick leave policies and consider modifying them to ensure that sick workers are not in the workplace. Make sure that employees understand these policies and do not feel compelled to come to work if they are unwell.
- Analyze any incentive programs and consider modifying them, if warranted, so that employees are not penalized for taking sick leave if they fall ill.
- Consider grouping cohorts of workers together. This can increase the effectiveness of altering the plant's normal shift schedules by ensuring that groups of workers are always assigned to the same shifts with the same coworkers. Such cohorting may also reduce COVID-19 transmission by minimizing the number of different individuals who come into close contact with each other over the course of a week.
- Establish a system for employees to alert managers if they are experiencing symptoms of COVID-19 or if they have had recent close contact with a suspected COVID-19 case.

If sick leave, medical insurance and unemployment benefits are insufficient, workers have strong incentives to continue to work even if they are ill. This is unfortunate even in the best of times but can be catastrophic when faced with a pandemic. If the disease were to spread widely within agri-food value chains due to poorly aligned incentives, there would be adverse health impacts, adverse economic consequences, and adverse food security and nutrition outcomes.

It is for this reason that FAO, WFP and others advocate for better working conditions and benefits for agri-food sector workers, expedited visa approvals, and recognition on par with frontline healthcare workers. The IMF also suggests that ASEAN may now wish to consider a wider, more aspirational post-pandemic “New Deal” for the region, particularly its workforce.⁶⁸

Getting the basics right. If international assistance and internal financing can be found, countries in developing Asia should use this to mount an effective public health response, shoring up public health infrastructures and expanding coverage, and correcting deficiencies in clean water, and sanitation.

Setting up more expansive and inclusive safety nets.

Governments could use citizen identification systems and digital technologies so that social protection programs can reach the people most at risk more quickly and efficiently, with the ability to scale up in times of crisis.

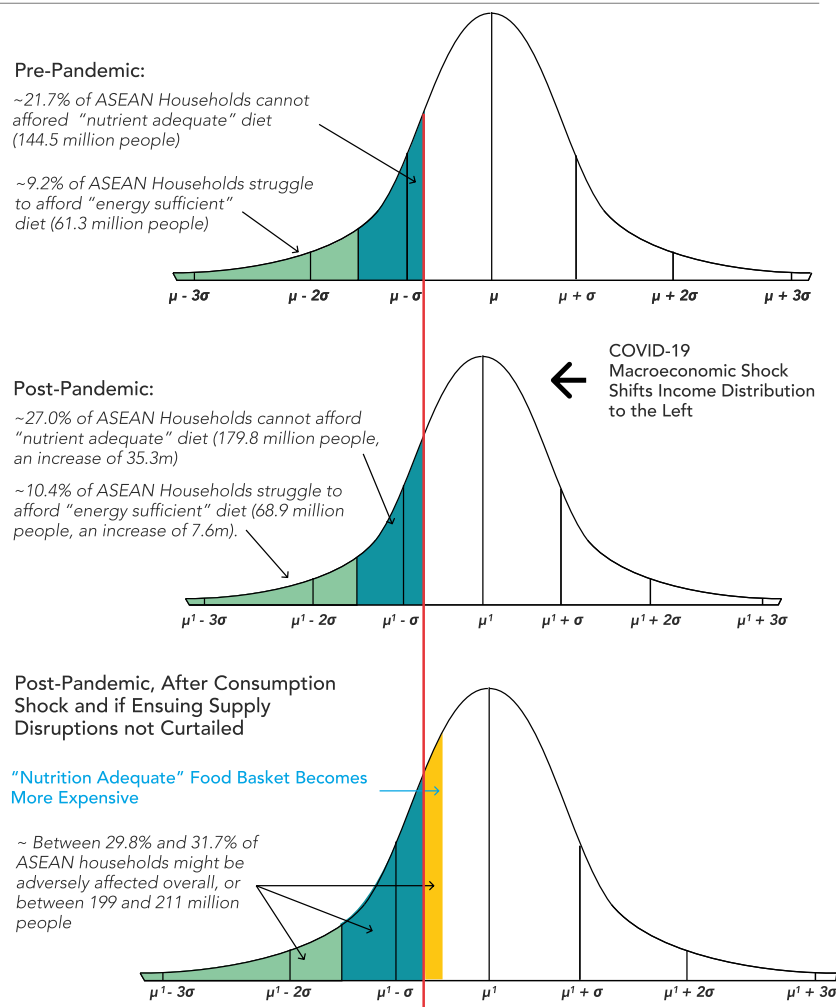
Investing in digital capacity and bandwidth. Across the developing world, expanding the availability of digital platforms for e-commerce, education and financial services would help to ensure greater and more equitable access for all. We understand that a number of ASEAN nations and both local and global commercial firms are already moving quickly in this area.

⁶⁸ IMF. (2020). A “New Deal” for Informal Workers in Asia. *IMF*. <https://blogs.imf.org/2020/04/30/a-new-deal-for-informal-workers-in-asia/>

3.10. The Need to “Short-Circuit” ASEAN Value Chain Disruptions

Without taking pre-emptive steps to short-circuit value chain disruptions, the adverse consequences of the pandemic on agri-food systems, food security and nutrition levels within ASEAN could linger well into 2021 and even 2022. Unless such pre-emptive steps are taken, supply could contract as illustrated in Figure 2.5 above, raising the cost of healthier food and “nutrition adequate” diets in the region. Such cost increases mean that almost one-third of ASEAN’s population – perhaps 211 million people - would struggle to afford “nutrition adequate” diets, significantly undermining future potentials in the region (Figure 3.7).

FIGURE 3.7
Ramifications if COVID-19 Induced Supply Shocks are not Curtailed



Source: Authors’ calculations based on FAO and WFP data and OECD-FAO AGLINK-COSIMO Supply Elasticities

REFERENCES

- Aday, S., & Aday, M.S. (2020). Impact of COVID-19 on the food supply chain. *Food Quality and Safety*, 4(4), 167-180. <https://doi.org/10.1093/fqsafe/fyaa024>
- Amjath-Babu, T.S., Krupnik, T.J., Thilsted, S.H., & McDonald, A.J. (2020). Key indicators for monitoring food system disruptions caused by the COVID-19 pandemic. *Food Security*, 12, 761-768.
- ASEAN Secretariat. (2019). *Regional Study on Informal Employment Statistics to Support Decent Work Promotion in ASEAN*. Jakarta, Indonesia. <https://asean.org/storage/2012/05/13-Regional-Study-on-Informal-Employment-Statistics-to-Support-Decent-Wo....pdf>
- Australian Centre for International Agricultural Research (ACIAR). (2020). Wet markets – close down or keep? *The Pig Site*. <https://www.thepigsite.com/articles/wet-markets-not-so-cut-and-dry>
- Baltic and International Maritime Council (BIMCO). (2020). Coronavirus (COVID-19) Crew Challenges. <https://www.bimco.org/ships-ports-and-voyage-planning/crew-support/health-and-medical-support/novel-coronavirus---crew-challenges> .
- Dewbre, J., Anton, J., & Thomson, W. (2001). The Transfer Efficiency and Trade Effects of Direct Payments. *American Journal of Agricultural Economics*, 5, 1204-1213. <https://doi.org/10.1093/fqsafe/fyaa024>
- Doguiles, D.E. (May 2020). Rice farmers to receive seed, fertilizer subsidy. *Philippine Information Agency*. <https://pia.gov.ph/news/articles/1042568>
- Glauber, J., Laborde, D., Martin, W., & Vos, R. (2020). COVID-19: Trade restrictions are worst possible response to safeguard food security. In *COVID-19 and global food security*, J Swinnen and J McDermott (eds.). International Food Policy Research Institute (IFPRI): Washington, DC.
- Government of Cambodia. (2020). Cambodia Agriculture Market Information System. <https://foodsecurity.gov.kh/pages/content/cambodia-agricultural-market-information-service>
- Government of Philippines. (2020). Philippines Statistical Organisation. <https://psa.gov.ph/content/selected-statistics-agriculture>
- Government of Thailand. (2020). Department of Internal Trade, Ministry of Commerce Agriculture Market Information. <https://www.dit.go.th/en/AgriCom.aspx>
- Government of Viet Nam. (2020). Vietnam Agroinfo. <http://agro.gov.vn/vn/default.aspx>
- Gregorio, G., & Ancog, R. (2020). Assessing the Impact of the COVID-19 Pandemic on Agricultural Production in Southeast Asia. *Asian Journal of Agriculture and Development*, 17(1). doi.org/10.22004/ag.econ.303781
- Ikhsan, M., & Yulius. (November 2020). Analysis: Moving Indonesia's fertilizer subsidies to direct model efficiently. *Jakarta Post*. <https://www.thejakartapost.com/paper/2020/11/02/analysis-moving-indonesias-fertilizer-subsidies-to-direct-model-efficiently.html>

International Monetary Fund (IMF). (2020). A “New Deal” for Informal Workers in Asia. IMF. <https://blogs.imf.org/2020/04/30/a-new-deal-for-informal-workers-in-asia/>

ITF Seafarers. (2020). COVID-19 Information for Seafarers. <https://www.itfseafarers.org/en/embed/covid-19-country-information-seafarers> .

Organisation for Economic Co-operation and Development (OECD) & United Nations Food and Agriculture Organization (FAO). (2020). *OECD-FAO Agricultural Outlook 2020-2029*. OECD Publishing: Paris and FAO: Rome. <https://doi.org/10.1787/1112c23b-en>

Organisation for Economic Co-operation and Development (OECD) & United Nations Food and Agriculture Organization (FAO). (2020). The Aglink-Cosimo Model. <http://www.agri-outlook.org/about/>

Organisation for Economic Co-operation and Development (OECD). (2020). How can governments leverage policy evaluation to improve evidence informed policy making? OECD: Paris. <https://www.oecd.org/gov/policy-evaluation-comparative-study-highlights.pdf>

Organisation for Economic Co-operation and Development (OECD). (2011). Annex D. The OECD Policy Evaluation Model, in *Evaluation of Agricultural Policy Reforms in the United States*. OECD Publishing: Paris. <https://www.oecd.org/publications/evaluation-of-agricultural-policy-reforms-in-the-united-states-9789264096721-en.htm>

Schmidhuber, J., & Qiao, B. (2020). *Comparing crises: Great lockdown versus great recession*. FAO: Rome, Italy. <http://www.fao.org/3/ca8833en/CA8833EN.pdf>

United Nations Food and Agriculture Organization (FAO). (2020). *The State of World Fisheries and Aquaculture*. Rome, Italy. <http://www.fao.org/documents/card/en/c/ca9229en>

United Nations Food and Agriculture Organization (FAO). (April 2020). *Agri-Food Markets and Trade Policy in the Time of COVID-19*. FAO: Rome, Italy. <http://www.fao.org/3/ca8446en/CA8446EN.pdf>

United Nations Food and Agriculture Organization (FAO). (June 2020). *Impacts of coronavirus on food security and nutrition in Asia and the Pacific: building more resilient food systems*. Rome, Italy. <http://www.fao.org/3/ca9473en/CA9473EN.pdf>

United Nations Food and Agriculture Organization (FAO). (June 2020). *Food Outlook - Biannual Report on Global Food Markets: June 2020*. Rome, Italy. <https://reliefweb.int/report/world/food-outlook-biannual-report-global-food-markets-june-2020>

United Nations Food and Agriculture Organization Corporate Statistical Database (FAOSTAT). (2020). Food and agriculture data. <http://www.fao.org/faostat/en/>

Vessel Dynamics Laboratory (VDL). (2020). Room for improvement: an online tool for reducing the spread of covid-19 in farmworker housing. <https://vesseldynamics.com/research/farmworker-housing-simulator/>

ADDITIONAL MATERIALS

Amuasi, J.H., Walzer, C., Heymann, D., Carabin, H., Huong, L.T., Haines, A., & Winkler, A.S. (2020). Calling for a COVID-19 One Health Research Coalition. *Lancet*, 395, 1543-1544. [https://doi.org/10.1016/S0140-6736\(20\)31028-X](https://doi.org/10.1016/S0140-6736(20)31028-X)

de Garine-Wichatitsky, M., Binot, A., Morand, S., Kock, R., Roger, F., Wilcox, B.A., & Caron, A. (2020). Will the COVID-19 crisis trigger a One Health coming-of-age? *The Lancet – Planetary Health*, 4(9), E377-E378. [https://doi.org/10.1016/S2542-5196\(20\)30179-0](https://doi.org/10.1016/S2542-5196(20)30179-0)

Reardon, T., Bellemare, M., & Zilberman, D. (2020). How COVID-19 may disrupt food supply chains in developing countries. *International Food Policy Research Institute (IFPRI)*. <https://www.ifpri.org/publication/how-covid-19-may-disrupt-food-supply-chains-developing-countries>

Smith, D., & Moore, L. (2004). The SIR Model for Spread of Disease, Convergence. *Mathematical Association of America*. <https://www.maa.org/press/periodicals/loci/joma/the-sir-model-for-spread-of-disease-the-differential-equation-model>

Wilcox, B.A., Aguirre, A.A., De Paula, N., Siritroonrat, B., & Echaubard, P. (2019). Operationalizing One Health employing socio-ecological systems theory: lessons from the Greater Mekong Sub-region. *Frontier Public Health*, 7, 85. <https://doi.org/10.3389/fpubh.2019.00085>

Wilhelmsen. (2020). COVID-19 port restrictions. <https://www.wilhelmsen.com/ships-agency/campaigns/coronavirus/coronavirus-map/>

CHAPTER 4

AGRI-FOOD TRADE, REGIONAL INTERDEPENDENCE, DISRUPTIONS & OPPORTUNITIES

This chapter explores a wide range of trade-related issues. Impediments which needlessly raise the costs of trade and contribute unnecessarily to waste are scrutinized closely. Movements toward regulatory convergence or mutual recognition are examined, discussing how consumers' health and well-being can be safeguarded without contributing significantly to transaction costs. Assessments of the relative merits of recognizing and building upon mutual interdependence vis-à-vis a more localised “go it alone” approach provide significant food for thought; leveraging resources, achieving (complementary) scale economies, and building on each AMS's strengths suggests that a focused “better together” approach will lead to superior outcomes.

4.1. ASEAN'S REGIONAL AND GLOBAL AGRI-FOOD TRADE INTERDEPENDENCE

4.2. EXAMINING TECHNICAL TRADE DISRUPTIONS AND CHALLENGES WITHIN ASEAN

4.3. TRADE AND GLOBAL VALUE CHAINS' PROSPECTIVE ROLES IN MODERATING COVID-19 IMPACTS

4.4. SELF-SUFFICIENCY: REGIONAL OR NATIONAL?

4.5. IMPORTANCE OF KEEPING TRADE OPEN

4.1. ASEAN's Regional and Global Agri-Food Trade Interdependence

ASEAN members have become increasingly involved in international agri-food markets as their economies continue to develop.^{69 70} The strong increase in production and income growth has led to an equally strong increase in both agri-food exports and agri-food imports, with the result that ASEAN has become increasingly influential in international agri-food markets for several products. In addition, ASEAN's involvement in international markets has influenced the development of those sectors in ASEAN that are involved in and exposed to trade.

Trade is an increasingly important source of income for producers and a wider range of food choices for consumers in ASEAN, with direct links to both sector development and to food security and nutrition levels for a wide range of households. Getting the most from international markets is important for ASEAN to leverage the benefits of trade for both producers and consumers, as well as improve food security and nutrition.

ASEAN member states collectively export about USD\$141B in agri-food products (Table 4.1), roughly equivalent to one-third of their combined agri-food GDP. Key agri-food exports include palm oil, fish products, forest products, rubbers and gums, fruit, and rice. Roughly one-third of ASEAN agri-food trade is intra-ASEAN trade, but there is considerable extra-ASEAN trade with partners in China, the United States, the European Union, and East Asia (Figure 4.1).

⁶⁹ Figures in this sub-section are 2019 estimates from the ASEAN Secretariat, Comtrade and OECD.

⁷⁰ OECD (2017). *Building Food Security and Managing Risk in Southeast Asia*. Paris. dx.doi.org/10.1787/9789264272392-en

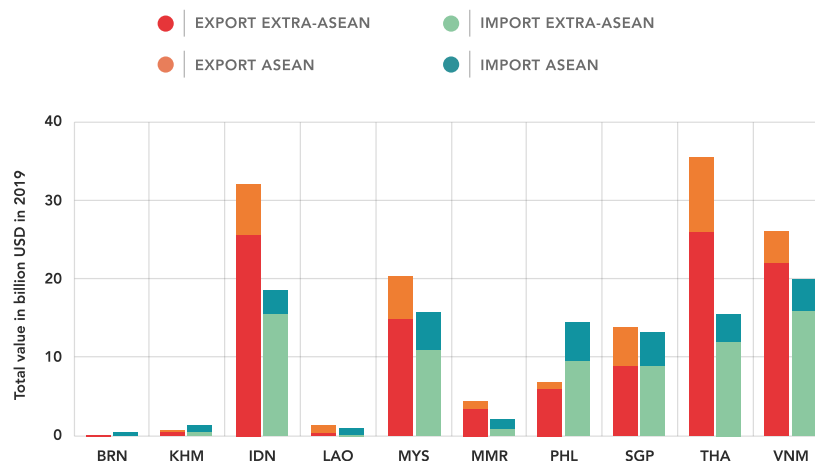
TABLE 4.1.
ASEAN commodity trade with all partners in billion USD, annual value

Year	All commodities			Agri-food commodities		
	Export	Import	Net	Export	Import	Net
2015	1,171.73	1,101.13	70.60	123.01	81.67	41.34
2016	1,153.61	1,086.29	67.32	125.94	87.38	38.56
2017	1,324.78	1,246.51	78.27	141.09	92.46	48.63
2018	1,436.05	1,388.87	47.18	142.17	101.19	40.98
2019	1,423.15	1,392.05	31.10	141.03	102.55	38.48

Note: Agri-food commodities values added from harmonized system codes (1-24) in the ASEAN International Trade Statistics. Source: Data from ASEAN Secretariat (2020)

ASEAN member states import around US\$103B in agri-food products, with soybean products, fish products, wheat products, dairy products and fruit included among the key imports. Intra-ASEAN trade is the largest component of imports, followed by significant imports from the United States, the European Union, China, Oceania, and Brazil.

FIGURE 4.1
Intra- and extra-ASEAN trade of agri-food commodities in 2019



Note: Country names abbreviated as: BRN = Brunei Darussalam, KHM = Cambodia, IDN = Indonesia, LAO = Lao People’s Democratic Republic, MYS = Malaysia, MMR = Myanmar, PHL = Philippines, SGP = Singapore, THA = Thailand, VNM = Viet Nam. Agri-food commodities values added from harmonized system codes (1-24) in the ASEAN International Trade Statistics.

Source: Data from ASEAN Secretariat (2020).

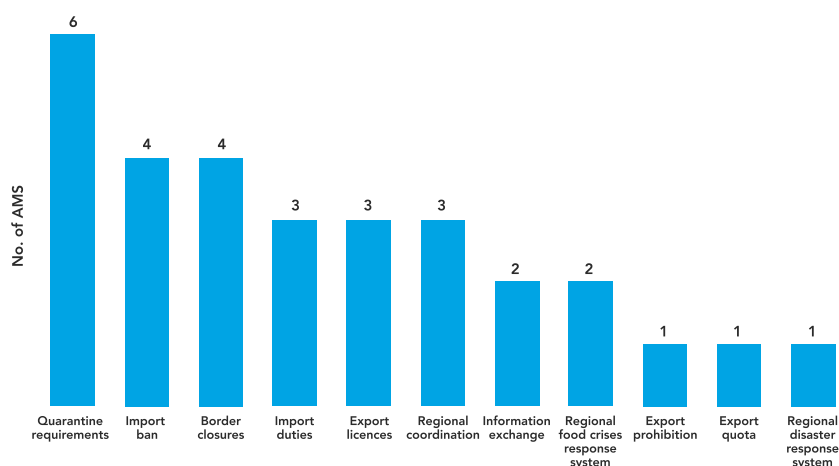
For agri-food exports, within-ASEAN trade represented about 30% of the national value of all agri-food products exported in 2019; 70% of ASEAN agri-food exports were for destinations outside the region. For agri-food imports, within-ASEAN trade represented a larger share of the average national value of all agri-food products imported at about 43%; 57% of agri-food imports came from origins outside the region. Such trade relations between member states can assist in anticipating how COVID-19 might have different impacts on different trading partners and agri-food sub-sectors, potentially requiring different strategic responses to improve the resiliency and robustness of supply chains.

ASEAN members have expressed concern that COVID-19 containment measures and some forms of protectionism may inadvertently be undermining the benefits of the regional and international trading systems and the gains from reciprocal trade. More importantly, they are concerned that such measures will contribute to declines in their collective ability to meet food security and nutrition goals due to adverse impacts on domestic agri-food production, disruptions to agri-food value chains, and disruptions to movements and trade in agri-food inputs and products.

4.2. Examining Technical Trade Disruptions and Challenges Within ASEAN

To identify some of the specific challenges and disruptions faced by the food and agriculture sector of the ASEAN member states, APF Canada conducted a survey of ASEAN member states as part of this research project. The analysis of challenges encountered has been derived through a combination of survey responses and literature review from secondary sources. In the survey, member states were asked to select the top five intra-regional challenges to agriculture and food trade (Figure 4.2).

FIGURE 4.2
ASEAN Intra-regional Trade Challenges



4.2.1. QUARANTINE REQUIREMENTS FOR PERSONNEL

This is not the typical type of border restriction involved in constraining movements in agri-food products. Here, it refers mostly to the mobility restrictions placed on personnel acquiring goods outside the country rather than the restrictions on products themselves (which is the more typical quarantine concern in “normal” times). Such quarantine requirements are a challenge worldwide as governments are responsible for the well-being of their citizens. In the face of a global pandemic, governments need to constrain or even prevent entry through perceived avenues by which the virus can enter and spread through their country.

However, ASEAN members have also recognized that there are critical trade-offs between efforts to contain virus spread and trade facilitation efforts to meet food security and nutrition requirements. Obstructions or extensive delays to people transporting agri-food products across borders will result in quality deterioration and waste for perishable horticulture and livestock and fishery products in particular, undermining food security objectives. Acknowledging such trade-offs, Malaysia and the Philippines facilitated the safe entry of foreign workers

transporting live animals and perishable agri-food products who would otherwise be subject to national lockdowns barring people from going abroad.

In many ASEAN countries, policies on intra-country travel have yet to be addressed with accounts of growing food delivery delays due to testing and quarantine requirements of personnel. In Myanmar, food transport workers have to be tested for COVID-19 in townships flagged by the government and may be quarantined for 14 days before continuing onto their delivery destination.⁷¹ Barriers to domestic supply and distribution of food are concerning for communities living in remote areas of the country, where access to fresh produce and markets is more limited. These communities also typically have greater incidences of poverty and malnutrition. Thus, disruptions to national transport create bottlenecks that undermine food and nutrition security for the most disadvantaged groups.

Moreover, the COVID-19 pandemic has put in the spotlight the vital role migrants play in agriculture and food systems. FAO chief economist Maximo Torero Cullen has observed that, just as frontline medical professionals are critical to our health, workers throughout our agri-food value chains and transportation systems do not get sufficient recognition and consideration for their contributions to our collective food security.

The precarious working conditions of migrant workers within ASEAN's agri-food sector require a regional approach to guarantee the well-being of workers and families of all classes, which is fundamental to national and regional progress. In the APF Canada survey, Vietnam indicated that it undertook sanitary and phytosanitary standards and policy measures to support the livestock sector and migrant workers. The governments of the Philippines and Indonesia also implemented sectoral agri-food

⁷¹ Issue raised by Myanmar representative in validation meeting of our report held on 10 December 2020.

measures, which were extended to help informal and migrant workers. These national initiatives are a good start.

It would be worthwhile for ASEAN members to consider shared protocols for expediting quarantine procedures and implementing a fast-track visa approval process for intra-ASEAN migrants working in agriculture and agri-food value chains to ensure that the critical productive capacity of the sector is maintained. Without such workers, knock-on impacts of quarantine and other COVID-19 containment policies could significantly reduce productive capacity in labour-intensive agri-food sub-sectors (e.g. horticulture, livestock) by three to seven per cent, possibly even more.^{72, 73} When combined with the initial macroeconomic contraction which contributed to income shortfalls and job losses, such a contraction in available supplies could seriously undermine households' abilities to procure a "nutrition adequate" diet.

4.2.2. IMPORT CONSTRAINTS

Post COVID-19 increases in impediments to imports were reported in a number of ASEAN members. Increases in tariffs and import duties were reported in the Philippines, Indonesia and Vietnam. Import restrictions and outright import bans were reported by the Philippines, Malaysia, Indonesia and Vietnam. The rationale behind these tariff increases, import duties, import restrictions and import bans is difficult to ascertain as they do little in the way of retarding COVID-19's spread or addressing food security and nutrition concerns. In fact, depending on the sector to which they are applied, such interventions are likely to work counter to food security objectives.

⁷² Gregorio & Ancog. (2020). Assessing the Impact of the COVID-19 Pandemic on Agricultural Production in Southeast Asia. *Asian Journal of Agriculture and Development*, 17(1).

⁷³ OECD. (June 2020). *Shocks, risks and global value chains: insights from the OECD METRO model*. <http://www.oecd.org/trade/documents/shocks-risks-gvc-insights-oecd-metro-model.pdf>

4.2.3. EXPORT IMPEDIMENTS (LICENSES, PROHIBITIONS, QUOTAS)

In the APF Canada survey, the Philippines, Malaysia, Indonesia, and Vietnam reported challenges related to both export and import measures. These measures include export restrictions on food such as rice, eggs and on medical supply products and import restrictions on poultry meat and wild animal products.⁷⁴ While most restrictions on food exports put in place earlier in 2020 were later rescinded, supply and distribution challenges for import-dependent countries were exacerbated.⁷⁵

Export restrictions are problematic in a number of ways. First, export restrictions typically result in lower domestic prices, harming farmers and reducing incentives to produce more and invest in the sector for the future. Consequently, while it may make more local stocks available in the near term, such restrictions likely reduce long-term prospects. These effects will be larger for countries where exports account for a large share of domestic production. Within ASEAN, for rice production and exports, these observations apply to countries like Thailand and Vietnam.

Second, restrictions on exports inadvertently benefit competitors on international markets. When Thailand indirectly restricted rice exports beginning in late 2011 by stockpiling a large share of domestic output, it subsequently lost market share to Vietnam, India, Australia and others. Thailand was the world's leading rice exporter for three decades, but India has now taken top spot.

Third, export restrictions undermine the exporter's reputation as a reliable supplier and encourages importers to reduce reliance on the world market. In turn, this reduces confidence in international trade, and seriously undermines future business prospects.

⁷⁴ ITC. (2020). COVID-19 Temporary Trade Measures. <https://www.macmap.org/covid19>

⁷⁵ Chandra et al. (July 2020). Trade Measures in the Time of COVID-19: The Case of ASEAN. ASEAN Policy Brief. https://asean.org/storage/2020/07/ASEAN-Policy-Brief-3_FINAL_.pdf

Finally, in the current context, rice export restrictions could prove contagious and spread to other types of food, driving up demand and prices of alternative foodstuffs needlessly. As all countries import food of one kind or another, all countries would suffer in such a scenario. Thus, export restrictions can backfire by creating panic and jeopardizing food security for all countries.

While export restrictions can benefit consumers in exporting countries in the short term, those benefits come with a wide range of costs. Those costs include lower prices for farmers, reduced domestic production and investment in future years, loss of global market share to competitors, reputational damage, and sowing seeds of contagion that could easily backfire by affecting availability and prices of other foods. They also distort the allocation of resources and effort both at home and abroad, contributing to inefficiency in both markets.

After some disruption earlier in the pandemic, a number of countries realized the problematic nature of food export restrictions and responded accordingly. Commendably, AMS agreed in the final declaration from their recent online summit to “remain committed to keeping ASEAN’s markets open for trade and investment, and enhance cooperation among ASEAN Member States and also with ASEAN’s external partners with a view to ensuring food security ... and strengthening the resiliency and sustainability of regional supply chains, especially for food and ... essential supplies.”⁷⁶

⁷⁶ ASEAN. 2020. Declaration of the Special ASEAN Summit on Coronavirus Disease 2019 (COVID-19). <https://asean.org/storage/2020/04/FINAL-Declaration-of-the-Special-ASEAN-Summit-on-COVID-19.pdf>

4.2.4. AIR FREIGHT CHALLENGES, BOTTLENECKS AND COSTS FOR PERISHABLES

Prior to COVID-19, vegetable and fruit production, trade and consumption rose markedly in developing countries over the 30 years prior to COVID-19, particularly in China, ASEAN and Latin America.⁷⁷ Moreover, considerable untapped production potential still exists in these countries, where improving the quantity, quality and distribution of fresh produce remains a challenge. Post-harvest losses keep many farmers from entering local and international markets, largely on account of a lack of enabling infrastructure for product transport and processing. An estimated 30-40 per cent of the vegetables and fruits grown can be lost post harvest, particularly when there are delays at the border and bottlenecks in their transport.⁷⁸

Since the COVID-19 crisis began, international logistics and border measures have increased transaction costs, making trade less efficient and more expensive. Getting products to export destinations has become more challenging. Trade in fresh fruit and vegetables (both intra-ASEAN and extra-ASEAN), like other perishables, has been facing serious difficulties due to flight restrictions and constraints on transportation in many countries. Traditionally, large volumes of fruit and vegetables have been transported in the hold of passenger aircraft. As passenger flights have been seriously curtailed, air cargo transport via those routes has declined proportionally. This has had knock-on effects as firms then try to get their products on the specialist cargo freighters still available. As a result, airfreight costs increased sharply in the first

⁷⁷ FAOSTAT. (2020). Food and agriculture data. <http://www.fao.org/faostat/en/>

⁷⁸ Mitra et al. (2011). Postharvest technology of tropical export produce: recent developments and challenges of a future free-trade world market. *Acta Horticulturae*, 906, 115-23.

half of 2020, while many fewer routes are available.⁷⁹ ⁸⁰ Rates have started to decline recently.

4.2.5 SEA FREIGHT BOTTLENECKS AND A GROWING SEAFARER HUMANITARIAN CRISIS

Products that are slightly less time-sensitive that can be shipped by sea in refrigerated containers and/or in vacuum-packs are also feeling the impact of the crisis. Security measures to stop the spread of COVID-19 have also resulted in schedule changes and capacity issues.⁸¹ As roughly four-fifths of trade is carried by sea, it is evident that disruptions to sea transport, ocean cargo and crew movements can damage trade flows and disrupt supply chains. COVID-19 containment policies have impacted sea transport, particularly port restrictions.

The COVID-19 crisis has shone the light on problems in the “business as usual” approach, emphasizing linkages, risks, strengths and weaknesses. It is clear that the way we produce, trade and organize supply chains must evolve if we are to reduce short-term consequences and better prepare for a post-crisis environment, especially where time-sensitive perishable agri-food products are concerned. Many key ports have imposed restrictions on movements of cargos, vessels and crew, including prohibitions that have stopped crew changes. For an overview of each port or country, and the restrictions on vessels and crew, Wilhelmsen’s has provided an interactive COVID-19 Global Port Restrictions Map, together with supporting documentation.⁸²

⁷⁹ The International Air Transport Association (IATA) indicates that air cargo volumes fell from 61.3 million tonnes to 54.3 million tonnes, a drop of over 11 percent. IATA figures show that overall cargo capacity was down by around 24 percent last year while air cargo charges rose 30 percent. IATA expects a near full recovery of capacity in 2021.

⁸⁰ Accenture. (December 2020). COVID-19: Impact on air cargo capacity. <https://www.accenture.com/ca-en/insights/travel/coronavirus-air-cargo-capacity>

⁸¹ See Heiland & Ulltveit-Moe. (May 2020). An unintended crisis: COVID-19 restrictions hit sea transportation.

⁸² Wilhelmsen. (2020). COVID-19 port restrictions. <https://www.wilhelmsen.com/ships-agency/campaigns/coronavirus/coronavirus-map/>

Satellite data for ships show that sailings to destinations with crew-change restrictions are down significantly in 2020 for container ships compared to previous years.⁸³ More flexible regulations based on screening of crews, vessels and their cargo are needed to ensure the continuity of freight distribution in order to secure that supply chains do not get a double hit. This is particularly true for perishable agri-food products critical to providing ASEAN citizens with balanced, nutritious consumption options.

Screening of vessel crews and assuring their health while also controlling for the conceivable spread of COVID-19, is a problematic issue. The International Maritime Organization (IMO) estimates that some 400,000 seafarers and port workers are currently stranded at sea. Incidents where crews are denied the opportunity for shore leave or to change ships are rising as a result of different countries' and ports-of-call precautions against COVID-19. It is of concern that such new obstructions to trade are rising in the name of COVID-19 just as disciplines on protectionist tariffs and quotas start to bind.⁸⁴

Whether deliberately or inadvertently, many countries are now making international trade more of a challenge as they delay or even deny vessels the opportunity to dock out of concerns that crew members may be carrying COVID-19.⁸⁵ This raises both costs and uncertainties in relation to international trade. It is particularly problematic when the product being shipped is perishable in nature. For this reason, it is important that countries like ASEAN member

83 FleetMon. (2020). Agricultural Commodities Trading Database. <https://www.fleetmon.com/services/agricultural-commodities/>; FleetMon. (2020). Complete Global Coverage through Satellite AIS and Terrestrial AIS. <https://www.fleetmon.com/global-vessel-coverage/>

84 Devadason, E.S. (2020). New Protectionism in ASEAN. *Journal of Asia-Pacific Business*, 21(1), 57-76; There is an emerging and somewhat vexing scenario of "new protectionism", especially with the rise of protectionist non-tariff measures (NTMs). This largely refers to standard-like NTMs (sanitary and phytosanitary measures and technical barriers to trade, known as SPS and TBTs respectively) with a dual purpose of legitimate non-trade policy objectives mixed with less legitimate concealed protectionism.

85 Wilhelmsen. (2020). COVID-19 port restrictions. <https://www.wilhelmsen.com/ships-agency/campaigns/coronavirus/coronavirus-map/>

states work together to develop protocols for customs clearance not only for products but also for critical personnel on ships and in ports. Otherwise, the benefits to be had through trade will be undermined, resulting in wasted products, reduced economic activity, lost jobs, fewer choices and lower nutrition for consumers.

Governments around the world have created significant hurdles to crew changes and the repatriation of seafarers, which has led to a growing humanitarian crisis as well as significant concerns for the safety of seafarers and shipping.⁸⁶ The International Maritime Organisation has now intervened, urging countries to designate seafarers as key workers, so they can travel between the ships that constitute their workplace and their countries of residence. Seafarers have been collateral victims of the pandemic as travel restrictions have left tens of thousands of them either stranded on ships, or unable to join ships. The IMO established a Seafarer Crisis Action Team to help them out of a variety of critical situations.⁸⁷

Disruptions in distribution – especially of agri-food products – can potentially be as damaging as the pandemic itself. However, the health and well-being of the people who enable such movements is being compromised. The ILO indicates that Filipinos make up almost one-third of the world’s working seafarers. Indonesian, Thai, Vietnamese and other ASEAN nationals are also well-represented among seafarers. Because of fears regarding virus spread, these workers are being denied shore leave and other basic entitlements. ASEAN may wish to take a lead role with IMO in advocating for protocols for expediting trade while improving working conditions and protections for these seafarers (many of whom are ASEAN nationals).

⁸⁶ See also, ITF Maritime Safety Committee. (September 2020). Beyond the Limit: How COVID-19 Corner-Cutting Places Too Much Risk in the International Shipping System.

⁸⁷ For more on this and possible remedies: IMO. (2020). Coronavirus disease (COVID-19) Pandemic. <https://www.imo.org/en/MediaCentre/HotTopics/Pages/Coronavirus.aspx>

4.2.6. TRADE FACILITATION MEASURES, NON-TARIFF MEASURES AND OPPORTUNITIES FOR GROWTH

Trade regulatory measures such as quality standards, information regulations, customs procedures and food safety standards all can be considered trade facilitation measures. If well designed, such border measures improve the efficiency of trade by reducing the costs incurred by ASEAN citizens in ascertaining the safety, quality and value of products. If they are less well designed, they also can be inadvertent trade barriers. While some technical border measures are desirable and necessary to protect ASEAN citizens, excessive or inappropriate services may create inefficiencies or be counter to their well-being, impinging on trade and reducing the degree of choice open to ASEAN citizens.

Non-Tariff Measures (NTMs) can serve as disguised protection to some sectors. Recent work undertaken using the GTAP model illustrated the benefits to ASEAN members and their trading partners from the partial liberalisation by ASEAN members of their most trade-distorting types of NTMs. Liberalization increased GDP and welfare in all countries, with the effect being particularly pronounced for the ASEAN economies themselves, especially the Philippines and Vietnam. As trade in perishable plant products and livestock products is particularly affected by these NTMs, these sectors would show the largest expansion in trade.⁸⁸

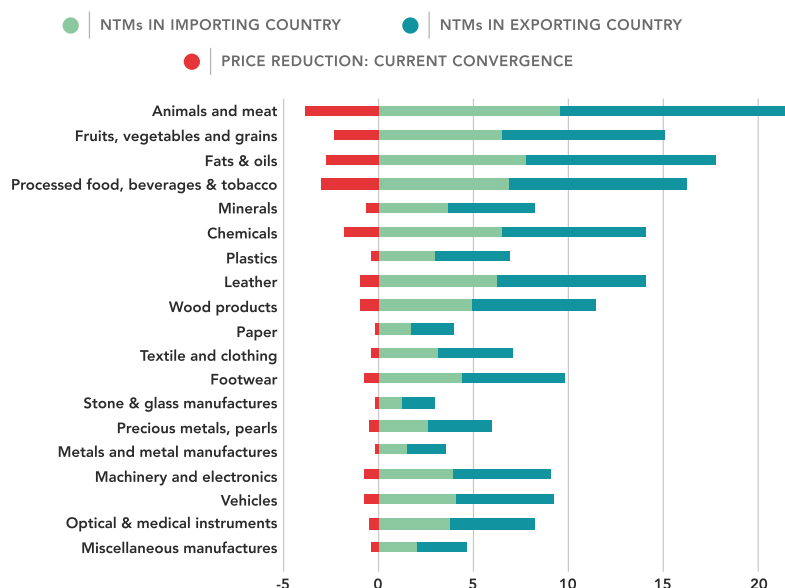
The use of NTMs, and in particular the differences in those applied among trading partners, increases trade costs for both ASEAN and non-ASEAN exporters. One way to view these is to examine the extent to which NTMs raise the unit cost of products traded and to use this information to calculate an ad valorem tariff equivalent. The estimates suggest that the combined effects of NTMs, on average across ASEAN, are akin to an equivalent tariff of 22 per

⁸⁸ Webb et al. (2020). Modelling the Impact of Non-Tariff Measures on Supply Chains in ASEAN. *The World Economy*, 43(8).

cent, or almost twice the actual applied tariffs on agri-food trade. The largest effects of these measures are seen in the Philippines and Myanmar.⁸⁹

Figure 4.3 below illustrates that the four largest price impacts of NTMs within ASEAN all pertain to agri-food products: i) animals and meat; ii) fruits, vegetables and grains; iii) fats and oils; iv) processed food. Figure 4.3 illustrates the total “gross” price-increasing impacts of domestic exporter’s and foreign NTMs on the right of the axis, and the respective price-reducing effects of current regulatory overlap on the left of the axis. Taking the sum of domestic and foreign NTMs, they range between 17 per cent and 22 per cent for ASEAN agri-food sectors.⁹⁰ To date, regulatory overlap or regulatory convergence has had only a modest impact, ranging between three and four per cent in the agri-food sector. Efforts to reduce the “regulatory distance” and promote regulatory convergence through harmonization or mutual recognition agreements have the potential to significantly reduce transaction costs, improving trade flows and consumer wellbeing.

FIGURE 4.3
Regional Average Price Impact of NTMs and Regulatory Convergence



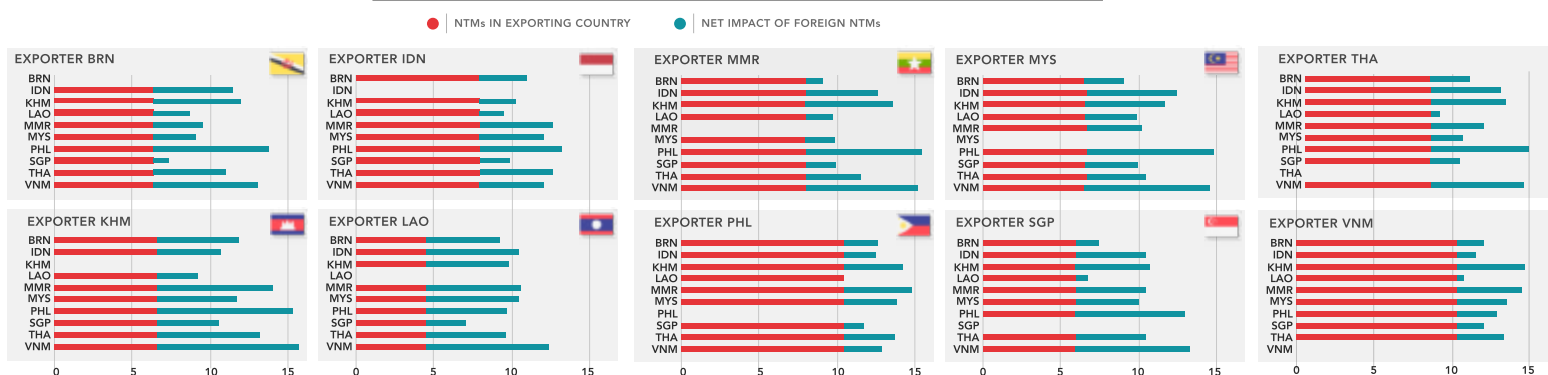
89 Greenville & Kawasaki. (2018). *Agri-food trade, GVCs and agricultural development in ASEAN*. OECD Food, Agriculture and Fisheries Papers, No. 116.

90 Vanzetti et al. (June 2018). *Non-tariff Measures and Regional Integration in ASEAN*. GTAP GEA.

In Figure 4.4 below, each ASEAN exporter’s domestic measures are the same for all export destinations. The “net effect” is then calculated by assessing the impact of each ASEAN importing partner’s NTMs minus the price reductions achieved through regulatory overlap or regulatory convergence. The impact of regulatory overlap can be illustrated with a couple of examples.

Thailand has a relatively moderate regulatory intensity for agri-food products at about eight per cent of gross value when exporting. In addition, regulations in importing market destinations raise unit values by between one and six per cent, depending on the regulatory intensity of the destination market and after deducting the price-reducing effect of regulatory overlap or complementarity. For Thailand, Lao PDR is a relatively easy trading partner to access, with only a one per cent premium to adapt Thailand’s products to the requirements of Lao PDR. However, to access the markets of the Philippines or Vietnam, unit costs increase by around six per cent of gross export value when preparing a product for those market destinations.

FIGURE 4.4
Average Cost Reductions in Agri-Food Sector of Technical Measures Through Regulatory Convergence



Source: Vanzetti et al. (June 2018). Non-tariff Measures and Regional Integration in ASEAN. GTAP GEA.

Relative to Thailand, Cambodia’s agri-food sector is less regulated domestically. Domestic regulation costs raise trade unit values by about 6% in comparison to Thailand’s 8%. However, when competing with Thailand for the Malaysian market, regulatory

overlap becomes more important. Because of regulatory complementarity, Malaysia's NTMs have a net effect of only 2% for Thailand's exporters. But Cambodia's exporters face a 5% net effect. This is because Malaysian regulations overlap more with Thailand than with Cambodia. Consequently, Thai exports entering the Malaysian market are lower priced (8% plus 2%) than exports originating in Cambodia (6% plus 5%) because the impacts of regulatory overlap between Thailand and Malaysia more than offset the benefits of lower regulatory costs in Cambodia; the "regulatory distance" between Cambodia and its neighbours placed it at a disadvantage even though its regulatory costs were low.

Regulatory overlap can reduce the price-increasing effects of NTMs and even enhance competitiveness, if undertaken in complementary fashion between trading partners. On the import side, regulatory convergence can help reduce consumer prices while still maintaining consumer confidence in the quality and safety of the products they are purchasing. On the export side, regulatory overlap would effectively lower the "net" export price and create a competitive edge. If embraced widely throughout ASEAN, such regulatory overlap and convergence could allow the region's agri-food sub-sectors to lower transaction costs, and realize greater complementarities and economies of scale in agri-food value chains. In Figure 4.4, the Philippines' and Vietnam's NTMs most often appear to add most significantly to net trade costs in the agri-food sector.

Ongoing collaborative work within ASEAN to harmonize regulatory standards or undertake regulatory Mutual Recognition Agreements can help to protect ASEAN citizens from unnecessary risks while concurrently lowering costs of trade between ASEAN nations. In the specific context of COVID-19 and related containment measures, collaborative efforts within ASEAN and between ASEAN and its largest trading partners to expedite trade in perishable agri-food goods would do much to improve food security and nutrition outcomes. Issues that might benefit from an ASEAN collaborative approach include:

Pre-approval release: “Pre-approval” of a range of low-risk but perishable goods eliminates the necessity for business to provide repetitive information on shipments. Within ASEAN movements of vegetables and fruit products might benefit from such an expedited approach, provided protocols for the control of insects and pests are in place.

Pre-arrival release: Through the transmission of shipment information while the goods are in transit, customs decides whether to examine or release the shipment prior to its arrival. This type of customs pre-clearance could greatly reduce time-related economic losses and health concerns associated with delays for some perishable products.

Harmonizing Risk Management Approaches for Poultry and Seafood in ASEAN: Working with OIE to harmonize Risk Management Approaches across ASEAN borders for high-volume, high-value products like seafood and poultry. This would allow ASEAN member states and their commercial firms to reduce transaction costs, reduce border delays and develop even greater complementarity within regional value chains. Targeting high-value, high-volume livestock and fishery products in which ASEAN has some comparative advantage could also serve as a growth area for the agri-food economy while also meeting regional demands for higher quality protein foodstuffs.

4.3 Trade and Global Value Chains’ Prospective Roles in Moderating COVID-19 Impacts

The economic effects of the COVID-19 pandemic have contributed to renewed discussions on the benefits and costs of intra-regional and global value chains. For this enquiry, some questions have been raised as to whether integrated regional and global value

chains increase risks and vulnerabilities to shocks from a food security and nutrition perspective. These questions revolve around whether localised production can provide greater security against disruptions which lead to supply shortages and uncertainty for consumers and businesses.

Analysis by a number of international organizations and think tanks, notably the ADB, FAO, IFPRI, World Bank and OECD, all arrive at the same conclusion: increasing delays and costs of border movements and interfering with trade movements of agri-food products in particular compounds problems relating to food security and nutrition rather than addressing them.^{91 92}

Recent research undertaken with the OECD Metro model is instructive.⁹³ The OECD explored the consequences of stylized versions of the global economy, one with production taking place largely within slightly fragmented global value chains, much as we see today, and another where production is more localised and businesses and consumers rely less on foreign suppliers. Then, as unforeseeable shocks can occur under both approaches to engaging with the rest of the world, the OECD analysts explored which approach to engaging the global economy offers better performance, in terms of both the level and the stability of activity in the face of shocks. Their scenarios were constructed in the context of COVID-19.

The simulations explore the consequences of moving toward a more localised regime on trade, production and incomes. In addition, the simulations also explored the impact on the stability of production, incomes and supply of goods and services (security of supply) in the face of risks in the more open and in the more local regimes. The OECD simulations' findings are clear:

91 Greenville & Kawasaki. (2018). *Agri-food trade, GVCs and agricultural development in ASEAN*. OECD Food, Agriculture and Fisheries Papers, No. 116.

92 Baldwin & Evenett (eds). (April 2020). *COVID-19 and Trade Policy: Why Turning Inward Won't Work*.

93 OECD. (June 2020). *Shocks, risks and global value chains: insights from the OECD METRO model*. <http://www.oecd.org/trade/documents/shocks-risks-gvc-insights-oecd-metro-model.pdf>

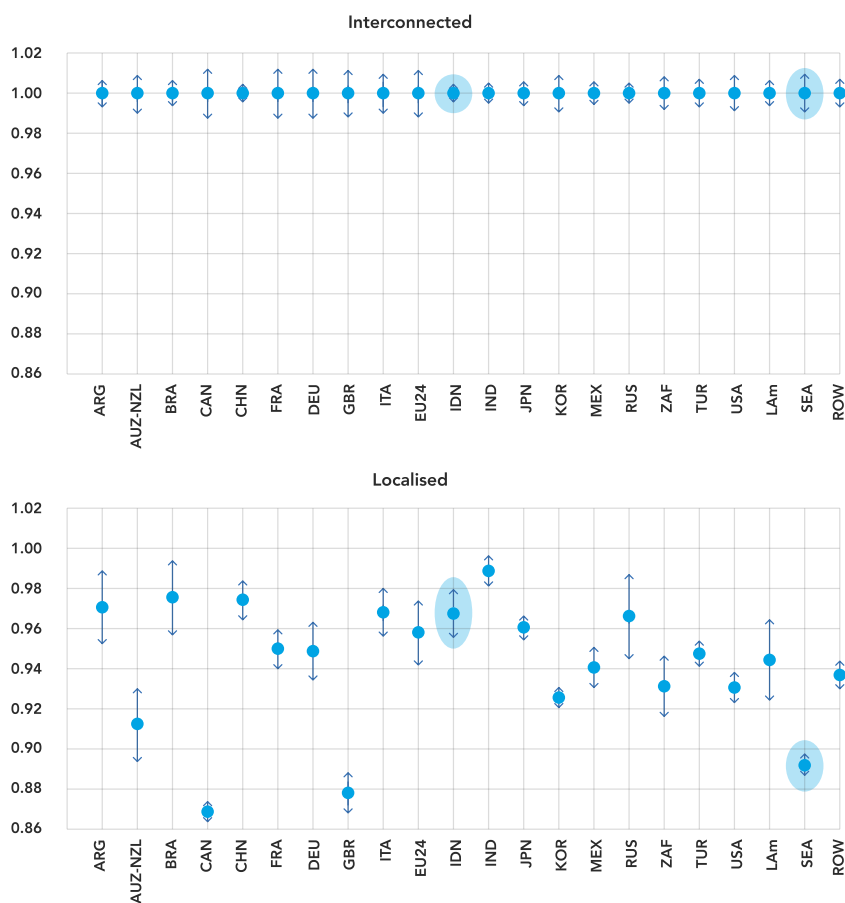
- A localised regime, where economies are less interconnected via global value chains (GVCs), has significantly lower levels of economic activity and lower incomes. Increased localization would thus add further GDP losses to the economic slowdown caused by an event analogous to the COVID-19 pandemic.
- A localised regime has less trade and less geographic diversification of production stages in supply chains. Because of this, a localised regime was found to be more - not less - vulnerable to shocks.
- While external shocks (those that originate abroad) have fewer and narrower trade channels to grow, the localised regime also provides fewer opportunities for adjustment to these shocks. This lack of options for adjustment leads to increased instability in trade, incomes, prices, and ultimately household incomes, expenditures and consumption.
- Domestic shocks (those that originate inside the local economy) generally have bigger effects on the home economy than external shocks. These shocks are also magnified in the localised regime, where there are fewer options to cushion impacts through trade. Output, household incomes, expenditures and consumption also become less stable in the localised regime.
- Moreover, even under a localised regime, not all stages of production can be undertaken in the home country, and trade in intermediate inputs and raw materials continues to play an important role in domestic production. Yet more localization also means more concentration in terms of reliance on fewer sources of - often more expensive - inputs. In this regime, when a disruption occurs somewhere in the supply chain, it is harder, and more costly, to find ready substitutes, giving rise to greater risk of insecurity in supply.

The OECD Metro model simulations contained representations for Indonesia's economy on its own and for the rest of Southeast Asia in aggregate. Moving away from current levels of integration with regional and global value chains would result in 3.2% drop in Indonesia's GDP and a 10.8% drop in the rest of Southeast Asia's GDP. Indonesia's aggregate domestic production would also fall by 3.8% while Southeast Asia's aggregate production would drop by 15.2%. Production of agri-food products would fall by around 7% in Indonesia and 10% elsewhere in Southeast Asia due to an inability to procure critical intermediate inputs under the more localised regime, undermining nutrition-related objectives.

Because of greater reliance on local sources for intermediate inputs and an inability to engage in trade in buffer shocks, GDP and incomes are also more volatile in a localised regime (Figure 4.5). This can affect investment and consumption decisions. Moreover, in strategic sectors like primary agriculture and food production, production levels were both lower and slightly more volatile under a localised regime; average production drops in agriculture were ~ 7% in the localised regime while food production was seen to fall by ~ 10% (Figure 4.5).⁹⁴ This demonstrates that a move toward a more localised regime is likely to compound problems in meeting food security and nutrition goals. In Figures 4.5 and 4.6 below, the "Interconnected" scenarios are normalized such that each national average is 1.00. This allows comparison with the results of the "Localised" scenarios, which typically result in lower levels of economic activity accompanied by wider range of volatility when subjected to external shocks.

⁹⁴ High-value livestock products, orchard crops, fruit and vegetable crops with high levels of fixed capital and palm oil will be more affected over time than annual crops.

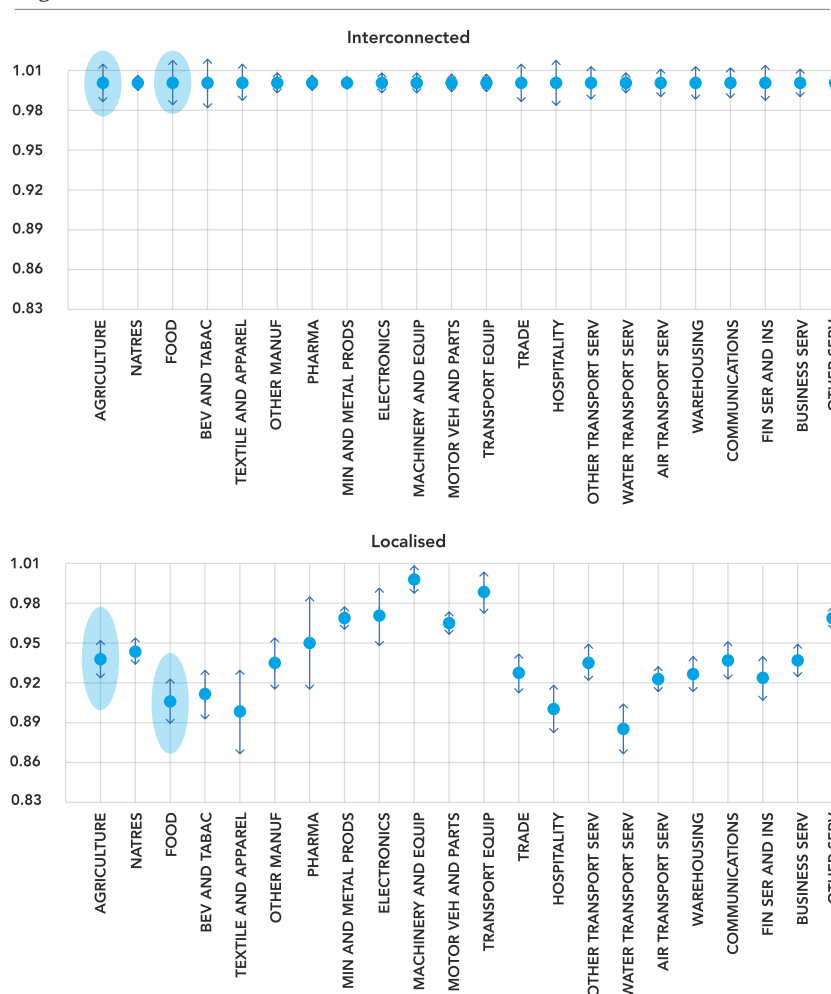
FIGURE 4.5
GDP and Income Volatility is Much Greater in a Localised Regime



Note: ARG = Argentina, AUSNZL = Australia and New Zealand, BRA = Brazil, CAN = Canada, CHN = China, FRA = France, DEU = Germany, GBR = Great Britain, ITA = Italy, IDN = Indonesia, IND = India, JPN = Japan, KOR = Republic of Korea, MEX = Mexico, RUS = Russia, ZAF = South Africa, TRU = Turkey, USA = United States, LAm= Latin America (without Argentina, Brazil, Mexico), SEA = South East Asia, ROW = Rest of the World, EU24 = European Union, less France, Germany, Great Britain and Italy.

Source: OECD Metro database and simulations

FIGURE 4.6
Production levels decline and volatility increases in agri-food sectors in Localised Regimes



One of the reasons that the “Interconnected” approach dominates the “Localised” approach is the effect that global value chains have in decreasing costs to producers of their intermediate inputs. Increased access to more competitive inputs and access to better information about how to use these inputs in the production process improves their productive performance. This fall in the relative cost of these factors (or growth in value at a given cost) and improvements in efficiency increases the returns to other factors of production as well – land, labour, and capital.⁹⁵

95 Greenville & Kawasaki. (2018). *Agri-food trade, GVCs and agricultural development in ASEAN*. OECD Food, Agriculture and Fisheries Papers, No. 116.

4.4. Self-Sufficiency: Regional or National?

Several ASEAN members have put in place self-sufficiency policies targeted at a range of different commodities. In most, rice is a key part of the product mix, with a range of targets between full self-sufficiency or some set proportion of total annual consumption.

The general aim of such policies is to reduce the reliance on imports based on the assumption that domestically-sourced production is more stable and secure than that sourced from international markets. In this way, ASEAN member states have linked self-sufficiency and food security policies.

However, where self-sufficiency targets are supported by market interventions, the impacts on food security have been most often negative in aggregate, due to higher domestic prices and risks to supplies from greater exposure to more frequent domestically-based risks.

Another consideration is that one goal of ASEAN is to create a common production base which includes agricultural production. When viewed from a regional perspective, ASEAN is self-sufficient in rice and is in fact a significant exporter of rice. With different climatic and agronomic zones across members, regional production is less variable than in any one ASEAN member state.

In this light, further embracing the goals of ASEAN and the ASEAN Economic Community Blueprint mean that national targets for self-sufficiency are not required. However, for this to be fully achieved, both exporters and importers in the region need to have confidence in each other, suggesting that greater trust and additional disciplines may need to be included in the regional architecture.

4.5. Importance of Keeping Trade Open

Trade allows market forces to equilibrate markets, convey signals regarding scarcity and surplus, and improve the efficiency of resource allocation and use. For agri-food markets, trade is also fundamental to ensuring international food security and improving nutritional outcomes.⁹⁶ COVID-19 containment measures are absolutely necessary. However, it is important to explore different ways of achieving containment objectives with minimal disruption to the agri-food sector, which is also critical to human health. For this reason, interventions which add significantly to “border frictions,” border delays, and costs and delays relating to logistics, transportation and distribution must be closely scrutinized. Recent outreach efforts by ASEAN to engage in larger regional trade agreements like the RCEP and CPTPP are commendable as they provide new impetus to mutually beneficial reductions in trade barriers.

Food is fundamental to survival. Viewing food in this way requires that farmers and agricultural workers be regarded in the same manner as health workers engaged in fighting COVID-19. Likewise, national, regional and global food systems must be considered as components of societies’ health systems, geared to addressing food scarcity, hunger and malnutrition and improving the human condition. Governments must therefore recognize the importance of ensuring that trade and exchange, whether domestic or international, remains open and as frictionless as possible, free from unnecessary restrictions. This also implies speedy clearances at customs, borders and ports, particularly for time-sensitive perishable products. Such approaches will provide both producers and consumers with a wider slate of choices and lead to superior economic and dietary outcomes.

⁹⁶ Schmidhuber & Qiao. (2020). *Comparing crises: Great lockdown versus great recession*. FAO: Rome, Italy; Glauber et al. (2020). COVID-19: Trade restrictions are worst possible response to safeguard food security. In *COVID-19 and global food security*, J Swinnen and J McDermott (eds.).

REFERENCES

- Accenture. (December 2020). COVID-19: Impact on air cargo capacity. <https://www.accenture.com/ca-en/insights/travel/coronavirus-air-cargo-capacity>
- ASEAN Secretariat. (2020). ASEANStatsDataPortal. <https://data.aseanstats.org/>
- ASEAN. (2020). Declaration of the Special ASEAN Summit on Coronavirus Disease 2019 (COVID-19). ASEAN: Jakarta, Indonesia. <https://asean.org/storage/2020/04/FINAL-Declaration-of-the-Special-ASEAN-Summit-on-COVID-19.pdf>
- Baldwin, R.E., & Evenett, S.J. (eds). (April 2020). *COVID-19 and Trade Policy: Why Turning Inward Won't Work*. CEPR Press. <https://voxeu.org/content/covid-19-and-trade-policy-why-turning-inward-won-t-work>
- Chandra, A.C., Mujahid, I., & Mahayssari, R.K. (July 2020). Trade Measures in the Time of COVID-19: The Case of ASEAN. ASEAN Policy Brief. https://asean.org/storage/2020/07/ASEAN-Policy-Brief-3_FINAL_.pdf
- Devadason, E.S. (2020). New Protectionism in ASEAN. *Journal of Asia-Pacific Business*, 21(1), 57-76. doi.org/10.1080/10599231.2020.1708232
- FleetMon. (2020). Agricultural Commodities Trading Database. <https://www.fleetmon.com/services/agricultural-commodities/>
- FleetMon. (2020). Complete Global Coverage through Satellite AIS and Terrestrial AIS. <https://www.fleetmon.com/global-vessel-coverage/>
- Glauber, J., Laborde, D., Martin, W., & Vos, R. (2020). COVID-19: Trade restrictions are worst possible response to safeguard food security. In *COVID-19 and global food security*, J Swinnen and J McDermott (eds.). International Food Policy Research Institute (IFPRI): Washington, DC.
- Greenville, J., & Kawasaki, K. (2018). *Agri-food trade, GVCs and agricultural development in ASEAN*. OECD Food, Agriculture and Fisheries Papers, No. 116. OECD Publishing: Paris. https://www.oecd-ilibrary.org/agriculture-and-food/agro-food-trade-gvcs-and-agricultural-development-in-asean_89d40ebb-en
- Gregorio, G., & Ancog, R. (2020). Assessing the Impact of the COVID-19 Pandemic on Agricultural Production in Southeast Asia. *Asian Journal of Agriculture and Development*, 17(1). doi.org/10.22004/ag.econ.303781
- International Air Traffic Association (IATA). (November 2020). IATA: Cargo demand set to return to near 2019 levels next year. *Air Cargo News*. <https://www.aircargonews.net/airlines/cargo-demand-set-to-return-to-near-2019-levels-next-year/>
- International Trade Centre (ITC). (2020). COVID-19 Temporary Trade Measures. <https://www.macmap.org/covid19>
- Mitra, S.K., Chakraborty, I., & Pathak, P.K. (2011). Postharvest technology of tropical export produce: recent developments and challenges of a future free-trade world market. *Acta Horticulturae*, 906, 115-23. <https://dx.doi.org/10.17660/ActaHortic.2011.906.15>
- Organisation for Economic Co-operation and Development (OECD). (2017). *Building Food Security and Managing Risk in Southeast Asia*. OECD Publishing: Paris. <http://dx.doi.org/10.1787/9789264272392-en>

Organisation for Economic Co-operation and Development (OECD). (June 2020). *Shocks, risks and global value chains: insights from the OECD METRO model*. Paris, France.

Schmidhuber, J., & Qiao, B. (2020). *Comparing crises: Great lockdown versus great recession*. FAO: Rome, Italy. <http://www.fao.org/3/ca8833en/CA8833EN.pdf>

United Nations Food and Agriculture Organization Corporate Statistical Database (FAOSTAT). (2020). Food and agriculture data. <http://www.fao.org/faostat/en/>

Vanzetti, D., Knebel, C., & Peters, R. (June 2018). Non-tariff Measures and Regional Integration in ASEAN. GTAP GEA. <https://www.gtap.agecon.purdue.edu/resources/download/8863.pdf>

Webb, M., Strutt, A., Gibson, J., & Walmsley, T. (2020). Modelling the Impact of Non-Tariff Measures on Supply Chains in ASEAN. *The World Economy*, 43(8). <https://doi.org/10.1111/twec.12955>

Wilhelmsen. (2020). COVID-19 port restrictions. <https://www.wilhelmsen.com/ships-agency/campaigns/coronavirus/coronavirus-map/>

ADDITIONAL MATERIALS

Heiland, A., & Ulltveit-Moe, K. (May 2020). An unintended crisis: COVID-19 restrictions hit sea transportation. <https://voxeu.org/article/covid-19-restrictions-hit-sea-transportation> .

International Maritime Organization (IMO). (2020). Coronavirus disease (COVID-19) Pandemic. <https://www.imo.org/en/MediaCentre/HotTopics/Pages/Coronavirus.aspx>

International Transport Workers' Federation (ITF) (September 2020). Beyond the Limit: How COVID-19 Corner-Cutting Places Too Much Risk in the International Shipping System. www.itfglobal.org/sites/default/files/node/news/files/ITF%20MSC%20Report%20September%202020_Beyond_the_limit_v8.pdf

A person wearing a red and white checkered shirt and a white hat is bent over, working in a lush green field. The background shows rolling green hills under a dark sky.

CHAPTER 5

COVID-19 GENDER IMPACTS IN AGRICULTURE AND FOOD TRADE

This chapter uses sex-aggregated data to identify the impacts of COVID-19 on women and men in the agri-food system. Although women constitute over one-third of the agricultural workforce, they possess only 13% of all farm landholdings in the region. Due to limited financial freedom and asset control, women are highly vulnerable to COVID-19 threats to food and nutrition security. The chapter argues the need for member states to increase women's access to resources, such as land, so that both men and women have independence in household decision-making. Migrant workers' experiences and workers' mental health are also examined alongside an analysis of member states' financial support to women and low-income households during COVID-19.

5.1. AGRICULTURAL EMPLOYMENT

5.2. EXPERIENCES OF MIGRANT WORKERS AND MENTAL HEALTH

5.3. DISTRIBUTION OF ASSETS

5.4. HOUSEHOLD PURCHASING POWER AND NUTRITION

5.5. FINANCIAL SUPPORT MEASURES

5.1. Agricultural Employment

While sex-disaggregated data on agricultural employment is not systematically collected, statistics and modelled estimates from the ILO indicate the large role of women in the ASEAN agri-food sectors (Figure 5.1 and Figure 5.2). About 37% of the agricultural labour in the ASEAN region are women, with proportions similar between men and women in Lao PDR, Vietnam, and Cambodia (Figure 5.1). The aggregate sum is 34 million for female workers and 56 million for male workers in agriculture.⁹⁷

Based on the percentage of total employment in 2020, 64% of all women employed in Lao PDR work in agriculture (Figure 5.2). This percentage is slightly higher than male agricultural employment (60%). Likewise, female agricultural employment is higher in Vietnam and Cambodia than male agricultural employment. In Myanmar, a greater percentage of male labour (52%) is employed in agriculture than female labour (43%). Nonetheless, in these countries where agriculture constitutes at least one-third of total employment, women are critical drivers in the value-added agricultural contribution to the GDP.

In the other AMS with robust primary and secondary agricultural sectors,⁹⁸ women also hold important agricultural positions alongside men. The percentage of female agricultural employment in these countries range from 6% to 34% (Figure 5.2). Specifically, women facilitate most transactions as traders and food processors along the agri-food value chain. For example, in Thailand, women are predominantly involved in post-harvest operations of small-scale fisheries.⁹⁹ The informality of these positions often results in the underestimation of the role of women as suggested by FAO's recent report on the state of world fisheries and aquaculture.¹⁰⁰

⁹⁷ FAOSTAT. (2020). Food and agriculture data. <http://www.fao.org/faostat/en/>

⁹⁸ Primary sector refers to the raw extraction and production of goods and secondary sector refers to processing and packaging for final consumption.

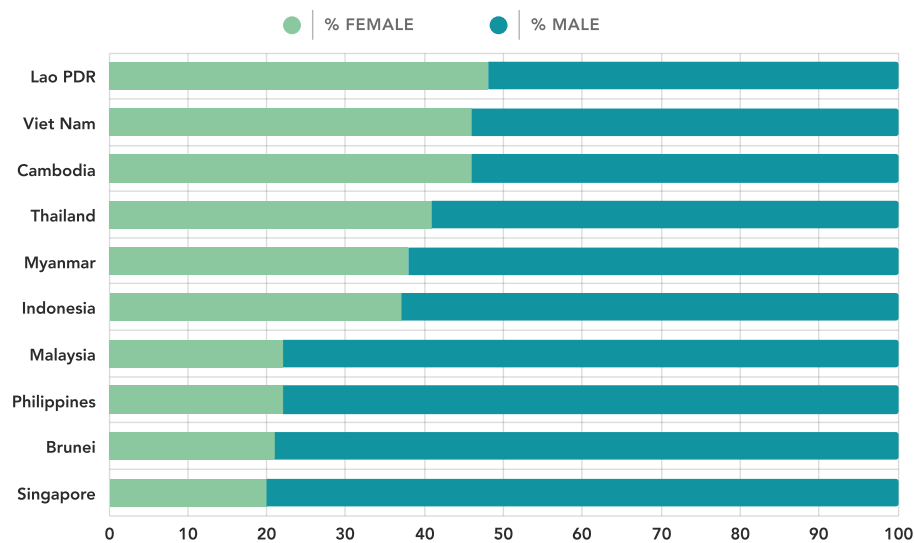
⁹⁹ Chanrankij et al. (July 2020). Preliminary study on acute impacts of COVID-19 pandemic to small-scale fisheries in Thailand.

¹⁰⁰ FAO. (2020). *The State of World Fisheries and Aquaculture*. Rome, Italy.

When both primary and secondary seafood sectors are considered, 50% of all seafood workers are reported to be women.¹⁰¹ However, this finding is overshadowed by official data showing that the proportion of women in the world’s primary aquaculture and fisheries sectors is only 19% and 12%, respectively.¹⁰²

Thus far, ASEAN and related agencies have not reported on employment in the secondary sector nor informal sector, leading to difficulties in assessing the full-scale impacts of COVID-19. However, given the close physical proximity of processing and selling agri-food goods and recent accounts of COVID-19 outbreak clusters in these sectors, this might indicate that the gender impacts of COVID-19 and related containment measures are not fully captured in reporting and monitoring databases.

FIGURE 5.1
Gender distribution of agricultural employment in the ASEAN region



Note: The latest years with male and female employment data were used where possible: 2019 in Viet Nam; 2018 in Brunei Darussalam, Indonesia, Malaysia, Myanmar, Philippines, and Thailand; 2017 in Lao PDR; 2012 in Cambodia; 2004 in Singapore.

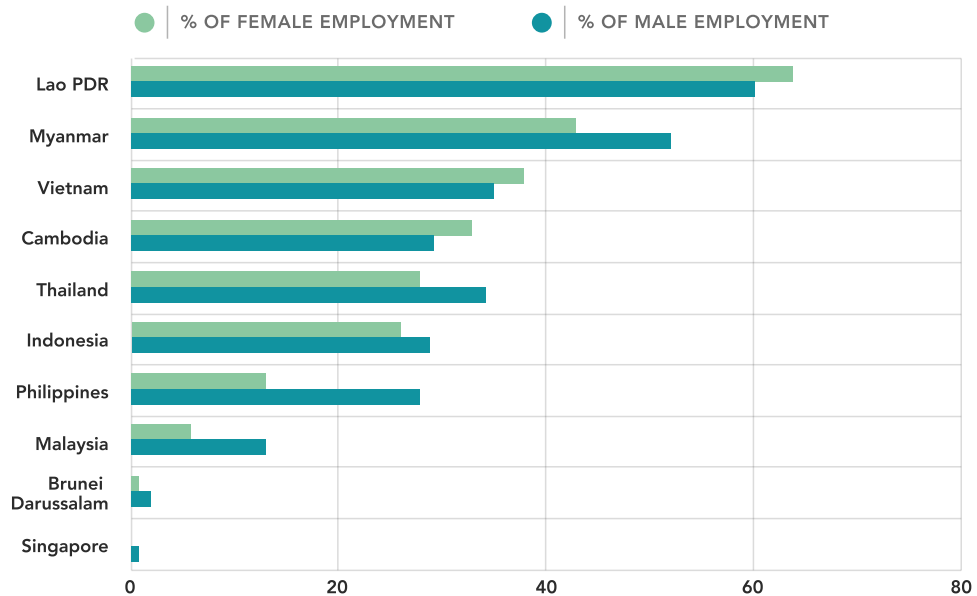
Source: ILO statistics in the FAOSTAT.¹⁰³

101 Ibid.

102 Ibid.

103 FAOSTAT. (2020). Food and agriculture data. <http://www.fao.org/faostat/en/>

FIGURE 5.2
Female and male agricultural employment as total employment, 2020



Note: Agriculture consists of activities in agriculture, hunting, forestry and fishing
 Source: Data from modeled ILO estimates in the World Bank database.¹⁰⁴

5.2. Experiences of Migrant Workers and Mental Health

At the onset of COVID-19, numerous migrant workers were left stranded in their host country, with limited means to return home or practice precautionary measures to reduce their exposure. In 2019, there were an estimated 10 million international migrants in ASEAN of whom nearly half were women.¹⁰⁵ In a recent survey on migrant workers’ experiences in ASEAN, the ILO found that most returnees’ short-term plans were to stay at home and find a job at home, open their own business, or work on the family farm.¹⁰⁶

¹⁰⁴ World Bank. (2020). World Bank Open Data. <https://data.worldbank.org>

¹⁰⁵ UN DESA. (2019). International Migrant Stock 2019 (United Nations database, POP/DB/MIG/Stock/Rev.2019).

¹⁰⁶ ILO. (Jun 2020). *Experiences of ASEAN migrant workers during COVID-19*. ILO Brief.

For their long-term plan, more male migrant workers in Myanmar intended to re-migrate compared to female migrant workers.¹⁰⁷ This insight suggests that women will carry more of the responsibilities in looking over family health and needs, which requires adequate social protection to counter the added burden of COVID-19. Gender imbalances also arise through the greater responsibilities of women in household and domestic care, which are mostly unpaid.

The strain placed on families is well captured in the findings of household surveys conducted with forest users by the Center for People and Forests.¹⁰⁸ From a sample of 59 male and 40 female respondents living in forest communities across Thailand, men and women had similar ratings on the impact of COVID-19 on their lives but men ranked stress and anxiety 10% higher than women. On the other hand, women ranked loss or suspension of work nearly 9% higher than men. Male forest users rated their capacity to handle COVID-19 slightly higher compared to female forest users. Differences may be due to women being more often employed in temporary positions and men being the primary income provider in many households, requiring them to exercise control to develop coping strategies. Further investigation into the household roles and labour dynamics will help highlights the differentiated gender impacts of COVID-19 on mental health and well-being.

5.3. Distribution of Assets

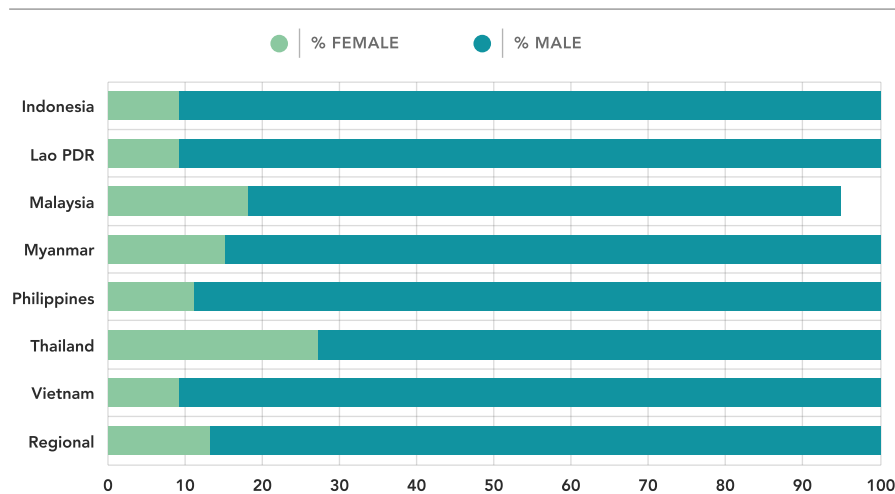
Women officially comprise over one-third of the agricultural labour force in the ASEAN region (Figure 5.1). However, the actual number is likely higher if one includes employment in informal and secondary sectors. Yet only 13% of agricultural title holders are women (Figure 5.3). Agricultural holders exercise management control over landholdings and are typically identified as the head

¹⁰⁷ Ibid.

¹⁰⁸ RECOFTC. (2020). *Impact of COVID-19 on forest communities in Thailand*. Bangkok, Thailand.

of the household. Accordingly, while shared management and economic responsibilities may exist between male and female household members, the cultural tradition of assigning men as the landholders often reduces the assets of women through the loss of land ownership. From experiences of female and male migrant workers returning home during COVID-19, this situation is concerning given that women may be highly dependent on men to weather the external shocks of COVID-19.

FIGURE 5.3
Gender distribution of agricultural land holding among the ASEAN Member States



Note: Data missing for Cambodia, Singapore, and Brunei Darussalam. Year for latest available data vary by country: 2005 in Malaysia; 2003 in Myanmar and Thailand; 2002 in the Philippines; 2001 in Vietnam; 1999 in Lao PDR; 1993 in Indonesia. About 5% of landholding for Malaysia was not accounted for in the database.

Source: FAO Gender and Land Rights Database.¹⁰⁹

With women often responsible for household finances and the food and nutritional security of children in Southeast Asia, the reliance on their husband or male family member may increase their vulnerability to COVID-19-related shocks. This may be pronounced in places where large-scale rural-to-rural migration occurs.¹¹⁰ Along with the limited control of assets and unpaid household labour of women, the challenges of mitigating the triple burden

¹⁰⁹ FAO Gender and Land Rights Database. (2020). <http://www.fao.org/gender-landrights-database/en/>

¹¹⁰ Robins et al. (2020). *COVID-19 and food systems in the Indo-Pacific: An assessment of vulnerabilities, impacts and opportunities for action*. ACIAR technical report.

of undernutrition, including underweight, stunting, and wasting, heighten women's exposure to food system shocks and fluctuations in agricultural prices.¹¹¹ Underlying socioeconomic conditions result in gender inequalities during and after natural disasters as women are more disproportionately affected than men.¹¹²

In communities with long-term migrants, women take up the work typically done by men. Accordingly, women's ability to access finances without their male counterpart is essential in ensuring the health of children and the elderly who are left behind. Addressing the gender inequalities of control over land and natural resources and access to credit will help minimize the impacts of shortfalls in remittances due to COVID-19, as more women are able to establish their own businesses to meet household budgets.

Empowering women through greater access to resources, such as land, needs to coincide with COVID-19 relief efforts so that both men and women have independence in household decision-making. Joint land ownership and recognition of customary practices through national policies can embolden the statutory rights of female household members in managing the land and accessing finance for agricultural production. In countries such as Vietnam, national governments have promoted joint land ownership in recent years, but progress remains slow. Similarly, the government of Myanmar has included customary land tenure rights in its 2016 Land Use Policy to recognize indigenous land-use practices, but a law codifying this policy has yet to be enacted. Actions on this front will help alleviate the added burden experienced by women, indigenous groups, and poor households during COVID-19. The results can also be linked to ASEAN Ministers of Agriculture and Forestry's commitment to mainstream gender issues in the agri-food sector, as expressed in the 40th AMAF meeting in October 2018.¹¹³

111 Ibid.

112 FAO. (2019). *Country gender assessment of agriculture and the rural sector in Indonesia*.

113 ATWGARD. (2018). *AMAF's approach to gender mainstreaming in the food, agriculture and forestry sectors*.

5.4. Household Purchasing Power and Nutrition

Women in agribusiness face specific difficulties in absorbing the economic shock of COVID-19. The predominance of women in the processing and marketing of agri-food products as traders and food vendors have led many of them to significantly reduce their prices and operating capacity to obtain sufficient cash flow to cover household necessities.¹¹⁴ In Indonesia, for example, cattle prices have fallen by 50% in some areas, indicating the desperation of families to stay afloat.¹¹⁵ Furthermore, female-headed households are among the groups most vulnerable to price shocks and labour market shrinkage because they possess fewer resources.¹¹⁶ The cumulative impacts of COVID-19 in the agri-food sector result in greater indebtedness for both female and male agricultural workers, with the impacts percolating into the nutrition and well-being of children and the elderly.

COVID-19 has reduced consumption of resources for nearly 50% of households in eight ASEAN economies, according to an ADB Institute report.¹¹⁷ These households barely managed less than one month's supply of basic necessities.¹¹⁸ About 87% of households in Indonesia and 52% of households in the Philippines had enough resources to meet less than two weeks of basic necessities. Common coping strategies included reducing consumption and expenditures, withdrawing cash and savings, and borrowing from friends and relatives. Due to higher prices of nutritious foods and reduced purchasing power, people residing in urban areas may have experienced greater difficulty maintaining healthy diets, especially

114 Robins et al. (2020). COVID-19 and food systems in the Indo-Pacific: An assessment of vulnerabilities, impacts and opportunities for action. ACIAR technical report.

115 Ibid.

116 Ibid.

117 ADBI. (September 2020). Impacts of COVID-19 Pandemic on Households in ASEAN economies.

118 ADBI conducted surveys via telephone to examine the household-level impacts of COVID-19 in eight ASEAN Member States, which included Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Thailand and Viet Nam. The target sample was 1,000 surveys per country. In total, 8,416 surveys were completed between May and July 2020.

women and men with casual jobs and no social guarantees (FAO et al., 2020).¹¹⁹ The rapid urbanization and the informalization of employment in Southeast Asia require an inclusive post-COVID-19 recovery plan to ensure a healthy and productive population.

5.5. Financial Support Measures

All ASEAN Member States have implemented financial support measures during COVID-19, with some in more promising directions than others (Table 5.1). Overall, economic stimulus measures taken by member states represent over 12 billion USD.¹²⁰ In March 2020, the Government of Cambodia allocated between US\$800M to \$2B to support legally registered small- and medium-sized enterprises.¹²¹ Despite the positive response, this program excluded 95% of informal enterprises.¹²² While this problem remains unaddressed, progress has been made in assisting low-income families through the national poverty identification programme.¹²³ Excluding Lao PDR, all countries allocated funds in financial aid or cash payments to low-income households affected by COVID-19.

However, disbursement of funds has been slow in many contexts, as witnessed in the Philippines where the Department of Labour and Employment confirmed that only a small portion of unemployed Filipinos was helped thus far.¹²⁴ However, despite these challenges, initiatives are heading toward an optimistic direction in targeting the informal sector for COVID-19 relief, with the government of

119 FAO et al. (2020). *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets*. Rome, FAO.

120 OECD. (May 2020). COVID-19 crisis response in ASEAN Member States.

121 White, H. (Apr 2020). Only 'legal' SMEs to benefit from aid package: Ministry. *Khmer Times*.

122 Ibid.

123 Chanvirak, K. (Oct 2020). Government allocates over \$31 million more for IDPoor scheme. *Khmer Times*.

124 Gonzales, C. (Sep 2020). DOLE official admits only small portion of unemployed Filipinos received aid so far. *Inquirer.net*.

Myanmar providing payments to more than 680,000 unregistered workers as an example.¹²⁵

These developments in the trajectory and scope of support measures assert the need to apply context-specific measures that accommodate the most vulnerable segments of the population so that AMS and ASEAN can move forward as a collective entity in the COVID-19 recovery. Through their provision of financial support to 8.4 million households registered as farmers, the government of Thailand is leading the ASEAN Member States on financial support measures taken in the agri-food sector.¹²⁶ This provision includes subsistence support to fisher farmers and small-scale fishers, whose activities have largely been curtailed due to COVID-19.¹²⁷ The government of Myanmar has also provided targeted loans for businesses in agriculture, livestock, fisheries, and food industries.¹²⁸ Among the few countries to take gender-specific measures, Indonesia has established a micro-loan program for female-entrepreneurs from low-income families to assist with COVID-19 recovery.¹²⁹

The varied dynamics of each country addressing the same overarching problem requires a strengthening of regional information - and resource-sharing procedures so that best practices are implemented with minimal costs and disruption to the affected women, men, and children in the agri-food system.

125 Hlaing, T. (Oct 2020). Yangon Begins Cash Payments to Pandemic-Affected Workers Not Covered by Welfare. *The Irrawaddy*.

126 Center for Strategic & International Studies (CSIS). (2020). Southeast Asia Covid-19 Tracker. <https://www.csis.org/programs/southeast-asia-program/southeast-asia-covid-19-tracker-0>

127 Chanrankij et al. (July 2020). Preliminary study on acute impacts of COVID-19 pandemic to small-scale fisheries in Thailand.

128 Hein, Z. (Aug 2020). Second COVID-19 loan tranche in Myanmar closed. *Myanmar Times*.

129 Yulisman, L. (Oct 2020). Indonesia extends interest-free loans to women, including housewives, to sustain low-income families. *The Strait Times*.

TABLE 5.1.
Selected COVID-19 financial support measures taken by ASEAN Member States

Country	Description of financial support
Brunei Darussalam	<ul style="list-style-type: none"> • US\$400 monthly allowance for healthcare workers • Deferment of principal/loan payment to aim small- and medium-sized enterprises (SMEs)
Cambodia	<ul style="list-style-type: none"> • Allocated US\$800 to \$2 2B to support small- and medium-sized enterprises that are legally registered and verified • US\$22M in loans under its SMEs co-financing scheme • Designated US\$350M in aid for vulnerable groups and wage subsidies • Fund to support low-income families through the poverty identification programme • US\$100M for job training for suspended workers • US\$1M initiative to support migrant returnees
Indonesia	<ul style="list-style-type: none"> • Allocated US\$324M for low-income households • Subsidized loan repayments for 60 million borrowers • Disbursed US\$160M to one million small businesses • Disbursed US\$76M through a regular cash-for-work program • Disbursed US\$67.5M in microloans for female entrepreneurs from low-income families • Monthly payment of US\$40 given to workers earning less than US\$340 per month
Lao PDR	<ul style="list-style-type: none"> • Exempted SMEs from paying income tax for three months
Malaysia	<ul style="list-style-type: none"> • Nationwide electricity discounts for two per cent of users and monetary assistance scheme for employees • Allocated US\$23B for businesses and US\$2.3 billion in direct cash payments for four million low-income households • Wage subsidies, grants, and loans for SMEs • Wage subsidies amounted to US\$2.9B, benefitting more than 2.6 million employees and 300,000 employers

<p>Myanmar</p>	<ul style="list-style-type: none"> • Allocated US\$70 million in a fund to provide soft loans to affected businesses including the SMEs and those in the garment and tourism sectors • Provided targeted loans for agriculture, livestock, fisheries and food industries • Extended deadlines for paying income and commercial taxes for SMEs and the garment, textile, and tourism industries • Disbursed cash payments to workers not registered with government’s social safety net • US\$31 cash handout to households facing hardships due to COVID-19
<p>Philippines</p>	<ul style="list-style-type: none"> • US\$3.9B social protection program for low-income families and health workers • US\$1B wage subsidy package to support 3.4 million small business workers • Provided US\$340 for two months to workers qualifying for financial assistance • Legislate programmes to create 4.5 million jobs and provide assistance to more than 5.5 million SMEs
<p>Singapore</p>	<ul style="list-style-type: none"> • US\$4.4B of relief funding to co-fund business costs and provide tax relief for workers • Allocated US\$33B in the stimulus package to assist hard-hit sectors, self-employed individuals, and provide cash payments to eligible citizens • Allocated US\$23.2B to support workers and businesses affected by COVID-19 • Launched traineeship schemes for new graduates and mid-career job seekers • Allocated US\$364M to help citizens and businesses adapt to the digital working environment • Allocated US\$2.9B to support households affected by COVID-19-related job losses, with each household to receive a one-time payment of US\$370

<p>Thailand</p>	<ul style="list-style-type: none"> • Provided monthly payment of US\$145 for three months to 8.4 million households registered as farmers • Earmarked US\$18B for financial aid to workers, US\$15B for soft loans to SMEs • Allocated US\$28.5M stimulus package to supporting farming and tourism sectors • US\$100 handout to 10 million people • Provided a tax reduction of up to US\$960 on purchases good and services from December to November for 3.7 million taxpayers
<p>Viet Nam</p>	<ul style="list-style-type: none"> • Allocated US\$1.16B for a fiscal package that included tax breaks, delayed tax payments • Provided monthly payment of US\$76 to individuals displaced from their jobs and US\$42 to household • Allocated US\$26M in financial support to over 500,000 individuals impacted by COVID-19

Note: This table is not meant to be an exhaustive list of measures taken during COVID-19 but rather than the prominent ones to summarize the key activities in each country. The data is updated as of 23 November 2020. Source: Data from CSIS.¹³⁰

130 Center for Strategic & International Studies (CSIS). (2020). Southeast Asia Covid-19 Tracker. <https://www.csis.org/programs/southeast-asia-program/southeast-asia-covid-19-tracker-0>

REFERENCES

- ASEAN Technical Working Group on Agriculture and Research Development (ATWGARD). (2018). *AMAF's approach to gender mainstreaming in the food, agriculture and forestry sectors*. <https://asean.org/storage/2012/05/AMAF-Approach-to-gender-mainstreaming.pdf>
- Asian Development Bank Institute (ADBI). (September 2020). Impacts of COVID-19 Pandemic on Households in ASEAN economies. Slideshow presentation. ADB. https://drive.google.com/file/d/161IFW9JfZTI5EX6o4_hRk4m7Sh6VPSPA/view
- Center for Strategic & International Studies (CSIS). (2020). Southeast Asia Covid-19 Tracker. <https://www.csis.org/programs/southeast-asia-program/southeast-asia-covid-19-tracker-0>
- Chanrankij, I., Larnmeen, J., Sornkliang, J., Yasook, N., Laongmanee, P., Sausi, T., Tiaye, R. & Putsa, S. (July 2020). Preliminary study on acute impacts of COVID-19 pandemic to small-scale fisheries in Thailand. SEAFDEC presentation. http://www.seafdec.org/documents/2020/07/webinar_covid19_ppt5.pdf
- Chanvirak, K. (Oct 2020). Government allocates over \$31 million more for IDPoor scheme. *Khmer Times*. <https://www.khmertimeskh.com/50776774/government-allots-over-31-million-more-for-idpoor-scheme/>
- Gonzales, C. (Sep 2020). DOLE official admits only small portion of unemployed Filipinos received aid so far. *Inquirer.net*. <https://newsinfo.inquirer.net/1333385/dole-official-admits-only-small-portion-of-unemployed-filipinos-received-aid-so-far#ix-zz6eebsD46u>
- Hein, Z. (Aug 2020). Second COVID-19 loan tranche in Myanmar closed. *Myanmar Times*. <https://www.mmtimes.com/news/second-covid-19-loan-tranche-myanmar-closed.html>
- Hlaing, T. (Oct 2020). Yangon Begins Cash Payments to Pandemic-Affected Workers Not Covered by Welfare. *The Irrawaddy*. <https://www.irrawaddy.com/specials/myanmar-covid-19/yangon-begins-cash-payments-pandemic-affected-workers-not-covered-welfare.html>
- International Labour Organization (ILO). (Jun 2020). *Experiences of ASEAN migrant workers during COVID-19*. ILO Brief. https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/briefingnote/wcms_746881.pdf
- RECOFTC – Center for People and Forests. (2020). *Impact of COVID-19 on forest communities in Thailand*. Bangkok, Thailand. <https://www.recoftc.org/publications/0000381>
- Robins, L., Crimp, S., van Wensveen, M., Alders, R.G., Bourke, R.M., Butler, J., Cosijn, M., Davila, F., Lal, A., McCarthy, J.F., McWilliam, A., Palo, A.S.M., Thomson, N., Warr, P., & Webb, M. (2020). *COVID-19 and food systems in the Indo-Pacific: An assessment of vulnerabilities, impacts and opportunities for action*. Australian Centre for International Agricultural Research. Technical Report 96. <https://aciar.gov.au/publication/covid19>
- United Nations Food and Agriculture Organization (FAO) Gender and Land Rights Database. (2020). <http://www.fao.org/gender-landrights-database/en/>

United Nations Food and Agriculture Organization (FAO), International Fund for Agricultural Development (IFAD), United Nations Children's Fund (UNICEF), United Nations World Food Programme (WFP) and World Health Organization (WHO). (2020). *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets*. Rome, FAO. <https://doi.org/10.4060/ca9692en>

United Nations Food and Agriculture Organization (FAO). (2019). *Country gender assessment of agriculture and the rural sector in Indonesia*. <http://www.fao.org/3/ca6110en/ca6110en.pdf>

United Nations Food and Agriculture Organization (FAO). (2020). *The State of World Fisheries and Aquaculture*. Rome, Italy. <http://www.fao.org/documents/card/en/c/ca9229en>

United Nations Food and Agriculture Organization Corporate Statistical Database (FAOSTAT). (2020). Food and agriculture data. <http://www.fao.org/faostat/en/>

United Nations, Department of Economic and Social Affairs (UN DESA). (2019). *International Migrant Stock 2019* (United Nations database, POP/DB/MIG/Stock/Rev.2019).

White, H. (Apr 2020). Only 'legal' SMEs to benefit from aid package: Ministry. *Khmer Times*. <https://www.khmertimeskh.com/708031/only-legal-smes-to-benefit-from-aid-package-ministry/>

Yulisman, L. (Oct 2020). Indonesia extends interest-free loans to women, including housewives, to sustain low-income families. *The Strait Times*. <https://www.straitstimes.com/asia/se-asia/indonesia-extends-interest-free-loans-to-women-including-housewives-to-sustain-low>

CHAPTER 6

RECOMMENDED ACTIONS AND POLICY GUIDANCE

In this chapter, we discuss actions that can be taken immediately, in the short term, and in the longer term to expedite recovery from the COVID-19 pandemic and mitigate adverse consequences for society in general and for poorer households in particular. Informed by discussion and observations from ASEAN commentators, we also discuss pressing issues and conceivable actions for each ASEAN

6.1. IMMEDIATE ACTIONS

6.2. SHORT TERM ACTIONS

6.3. LONG TERM ACTIONS

6.4. SOME COUNTRY-SPECIFIC OBSERVATIONS AND SUGGESTIONS

6.5. CONCLUSION

In this chapter, we draw on insights derived from preceding chapters to provide policy guidance which might help to:

- contain the pandemic's spread within the sector
- limit the pandemic's adverse impact on food security and nutrition
- where needed, assist with the redesign of agri-food enterprise work flows to improve safety so they can continue to function without undue risks to workers and clients
- expedite movements of people and products, facilitating trade so that markets and enterprises operate more efficiently and responsively, with lower waste
- improve governance structures relating to migrant worker and transport worker movements to sustain (and possibly enhance) sector productivity, enable trade, and contribute to superior health and safety outcomes

Three broad categories of actions were identified - immediate action, short-term action, and for sustained, long-term effort. Activities for immediate action should be resolved post haste, as delays may cause further deterioration in one or more of the following: health, food security outcomes, economic scarring and a decline in agri-food production prospects for 2021. The following discussion elaborates on the immediate, short-term and sustained long-term actions.

6.1. Immediate Actions

Continue with and improve upon effective measures to contain the pandemic

ASEAN member states and the region as a whole must all have “find, test, trace, isolate, and support” systems in place. Limiting disease spread is the first step to mitigating both the health and the economic impacts. Face masks, physical distancing, frequent hand washing and avoiding crowded indoor spaces are key components of this until vaccines are widely available.

Expedite movements of key agri-food inputs, products and people

Priority should be placed on enabling movements of inputs, horticulture crops and meat products so that 2021 production prospects are not undermined. While we know that fruit that goes unpicked or unsold will go bad, similar concerns apply in all value chains. Farmers won't grow what will spoil or what people can't buy, impacting availability, affordability, and accessibility. Expedite the movements of migrants involved in agri-food production and transporting and distributing agri-food products. Otherwise, output may fall in 2021 because of labour shortages and an inability to cultivate, plant, fertilize, weed, and harvest on a timely basis. Likewise, without timely distribution, waste levels will rise and quality of agri-food products will deteriorate. Intervention measures need to be applied for intra- as well as inter-country travel to ensure adequate food supply among national populations.

Remove remaining export bans and import barriers

Remove remaining export bans and technical import barriers to agri-food product movements within ASEAN, other than those sanitary and phytosanitary measures (SPS) controls that protect human health and the environment. The removal of these trade

irritants will reduce waste arising from border delays and lower the cost of “nutrient adequate” diets in ASEAN.

Expedite cash transfers to farming households

Grants and favourable loans will assist farming households in maintaining household consumption and sustaining production. However, such assistance should not be tied to the production of particular crops or the purchase of specific inputs as this prejudices households’ needs and priorities, distorting both production and consumption choices. It may be worthwhile partnering with the regional offices of the WFP and FAO to leverage their experience in targeting and operationalizing such transfers through the WFP’s Empowering People, Markets & Governments initiative. WFP has found that, when vulnerable households are provided with purchasing power, they make choices that improve their overall well-being and are less likely to sacrifice food security to meet other needs (e.g. rent, medical bills). Such an approach strengthens market operations and doesn’t rely on the presumed omniscience of administrators.

Take pre-emptive steps to reduce foodborne illnesses in agri-food value chains

In collaboration with commercial enterprises, ensure livestock and livestock products are physically distanced from other wet market sections. With guidance and assistance from CGIAR- International Livestock Research Institute (ILRI), FAO and OIE, undertake public-private outreach and training to improve handling and hygiene practices in wet markets and SME value chain locations. Such efforts could leverage ILRI’s experience with food safety and hygiene in Southeast Asia’s pork sector that deployed a participatory guarantee approach for SMEs.

Collaborate in assessing how existing commercial operations can lower COVID-19 risks

In partnership with commercial firms and farms, utilize the expertise of medical personnel, epidemiologists and engineers to either physically restructure processing and packaging operations or workflows to minimize transmission risks. Such assessments could also include examining possible alterations to existing dormitory and accommodations for migrant and resident workers. Such restructuring may be eligible for grants under the ADB's projects relating to "Improved Sanitary and Phytosanitary Handling in Greater Mekong Subregion." This effort could also link to and leverage the efforts and networks of the ASEAN Coordinating Central for Animal Health and Zoonosis and the ASEAN Sanitary and Phyto-Sanitary Contact points.

In addition to the physical and workflow-related parameters, effort should be made to examine whether commercial farming and processing operations inadvertently have incentives for employees to work while ill. If workers do not have sick leave or medical benefits that can be relied upon, incentives exist for them to work when they are ill. This is contrary to their well-being and could result in greater contagion. The ASEAN Secretariat could work with host countries as well as the ILO to assist in this effort. Such an initiative may actually improve commercial enterprises' performance as there may be lower infection rates arising when workers do not have built-in incentives to be in the workplace when they might be contagious.

6.2. Short Term Actions

Expedite visa protocols for migrant workers in agri-food value chains and for workers engaged in transporting and distributing agri-food products

In ASEAN, much farm work is done by migrants. To avoid labour shortages at critical times in the cropping cycle and in livestock production and pre-empt production shortfalls in coming years, visa protocols should be expedited for migrant workers in the farm sector and agri-food chains. Likewise, visa protocols should be expedited for workers transporting and distributing agri-food products. ASEAN senior officials and the ASEAN Secretariat could broker such an initiative among AMS, while working collaboratively with firms and farms employing these migrants.

Such initiatives could draw upon the shared experience and insights of entities such as the ILO's Task Force on ASEAN Migrant Workers and the Labour Rights Promotion Network Foundation (LPN). The LPN and Charoen Pokphand Foods (CPF) recently teamed up to promote labour rights protection and encourage the workforce, including migrant workers, to report instances of wrongdoing. Improvements to regional legal and policy frameworks for labour migration governance and the protection of the rights of both male and female migrant workers can help to ensure the agri-food sector's continuity and productivity in 2021 and beyond.

Facilitate, broaden, and accelerate movements to digital transactions in wholesale and retail operations and at the border for both products and people

The private sector and commercial enterprises throughout ASEAN are already embracing movements toward digital transactions. Expediting the movement of perishable agri-food commodities within the ASEAN region make the perfect test case for ASEAN's

Digital Integration Framework Action Plan (DIFAP). DIFAP's aim is to facilitate seamless trade. Digital-enabled trade of goods and digital integration can jumpstart investments in physical infrastructure to accommodate new favourable turnkey trade policies which facilitate seamless trade flows across ASEAN.

Leveraging its Master Plan on ASEAN Connectivity (MPAC) digital solutions can reduce the cost and number of transactions before product reaches consumers and limit direct physical contact of actors in value chain. Through MPAC, the ASEAN Secretariat can also encourage ongoing expansion of digital platforms in such a manner that does not leave remote or resource-poor communities behind.

Digital solutions for customs clearance and pre-approvals are of particular interest and can greatly reduce the time and cost of border delays. If pre-clearance conditions can be navigated, ASEAN would experience significant reductions in handling, transport and trade costs as well as dramatic declines in wasted food products. This is of considerable benefit in terms of agri-food value chain profitability and in terms of meeting regional food security objectives. Initiatives under this umbrella could be a collaboration between the ASEAN AMAF and the ASEAN Coordinating Committee on Electronic Commerce.

Identify vulnerabilities to COVID-19 within the value chain and “short circuit” them

Working in collaboration with commercial firms, reengineer workplaces for the health and safety of the workers. Informed by health professionals, epidemiologists and engineers, work to improve the structure and work flow of commercial spaces in agri-food value chains. Prioritize the following areas, which exhibit one or more of the conditions conducive to the virus's spread and take steps to ameliorate them:

- Primary livestock production
- Primary horticulture production
- Food Processing and Packaging
- Wet Markets and Retail Locations
- Dormitories and Shared Spaces of Workers in the Above Operations

ASEAN Health Ministers and ASEAN Ministers of Agriculture and Forestry may wish to seek the cooperation of international agencies like the FAO, OIE, CGIAR-ILRI and ADB to help jumpstart efforts in this area, leveraging the networks and expertise of the ASEAN Expert Group on Communicable Diseases and the ASEAN Sectoral Working Group on Livestock. For illustrative purposes, our earlier discussion regarding the possible (re)design of commercial agri-food enterprises' premises and dormitories to reduce virus spread drew on easily accessed engineering resources from Virginia Tech University. However, we are confident that ASEAN member states' tertiary institutions and public agencies also possess similar such applied expertise that can be applied to local conditions.

Harmonize ASEAN NTMs

The Economic Research Institute for ASEAN and East Asia (ERIA) has called on ASEAN member states to harmonize regulations to improve trade performance in the Southeast Asian region. Although tariffs have been reduced somewhat over the past two decades, actual intra-ASEAN trade remains relatively low. As discussed in previous chapters, there are several reasons why intra-ASEAN trade remains low, including Non-Tariff Measure (NTMs), as well as logistics, customs procedures and other trade facilitation issues.¹³¹

Efforts to harmonize SPS and NTM measures would bring substantial benefits to ASEAN both economically and from a

131 ERIA. (January 2020). ASEAN Countries Need to Harmonise Regulations to Improve Trade Performance.

nutritional perspective. Harmonizing risk management approaches would allow ASEAN member states and their commercial firms to reduce transaction costs, reduce border delays and develop even greater complementarity within regional value chains.¹³² Targeting high-value, high-volume livestock and fishery products in which ASEAN has some comparative advantage could also serve as a growth area for the regional agri-food economy while also meeting regional demands for higher quality protein foodstuffs.

Now is the time to act, based on knowledge yielded by ASEAN's 'Seamless Trade Facilitation Indicators' project, which was developed by the ERIA in cooperation with the ASEAN Trade Facilitation Joint Consultative Committee. Seamless trade facilitation is within reach and can help to create an ASEAN Economic Community single market and production base which promotes trade competitiveness, better governance and improved development outcomes.

Replace input subsidies and output subsidies with direct income support

Work undertaken by the OECD, IFPRI, FAO and other agencies has shown such subsidies to be production and trade distorting; this is the reason why the World Trade Organization (WTO) has disciplines in place to discourage them. Direct income support has been shown to be both less distorting and less harmful to the environment while also exhibiting a higher level of transfer efficiency in terms of improving farm households' incomes and well-being. Agricultural subsidization of seed and fertilizer inputs is a major disincentive to the adoption of sustainable agriculture. The land-use sector is responsible for about a quarter of global anthropogenic greenhouse gases and so liberalizing choices of farming households may encourage the environmentally friendly behaviour needed to mitigate climate change. The WFP, FAO,

¹³² Vanzetti et al. (June 2018). Non-tariff Measures and Regional Integration in ASEAN. *GTAP GEA*.

CGIAR-IFPRI and OECD all could be called upon to share insights as to how to efficiently target and deliver direct income support to low-income households.

Broaden safety nets to include migrants and food system workers

Since the COVID-19 outbreak began, many nations have implemented measures to return migrants to their home countries while repatriating their own nationals. This may have inadvertently contributed to an acceleration of the virus' spread in ASEAN and worldwide. In hindsight, the provisions of medical and sick leave benefits to migrant workers in host nations might have slowed this trend.

Ensuring the safety of food-system workers is critical to ASEAN, where agriculture is at the bedrock of the many national economies. Onsite health measures, sick-leave policies, physical distancing practices and capabilities need to be assured in food production facilities to boost public confidence. The same applies to elements of the agri-food transport and delivery system through increasingly used digital platforms across Southeast Asia such as Gojek, Grab, and Food Panda. Moreover, access to paid sick leave and medical services to male and female migrant workers can also reduce the spread of COVID-19 as workers will be less encouraged to work while contagious with COVID-19-related symptoms.

Discussions regarding how to facilitate such benefits could be led jointly by the ASEAN Ministry of Agriculture and Forestry and the ASEAN Coordinating Committee on Services, working together with the Healthcare Services Sectoral Working Group and engaging with ASEAN member states. Our thinking is that these benefits would be covered by the host state and commercial enterprises as most of the economic benefits from these labour activities would accrue to them. However, we recognize that these are issues for ASEAN to resolve within its own governance structures.

Explicitly include women in pandemic stimulus and adjustment policies

Women typically carry a disproportionate burden of household-related child and elderly care and domestic work.¹³³ In Malaysia, women spend more than three times as much time on this work as men do; in Cambodia, 10 times as much.¹³⁴ What this means though is that women are critical to efforts to contain the pandemic; it is through their actions as the lead caregivers in the household and in the community that the virus will be contained. While men suffered more from COVID-19's health impacts, women have suffered more from its knock-on economic impacts.

Thus far, female-targeted stimulus measures are scarce in ASEAN. Stimulus packages and employment policies need to explicitly include the needs of women and supporting businesses and sectors where female workers are concentrated to mitigate their mental and financial burden during COVID-19. Economic stimulus packages that target women and focus on socially inclusive job creation and social investment will help enable a smooth and robust recovery. Emphasis should also be placed on resource and financial access through joint land ownership and recognition of customary land rights to strengthen women's role in agri-business and household decision-making. To this end, ASEAN policymakers can meet its stated gender mainstreaming commitment in the 40th AMAF meeting.¹³⁵

To reduce women's vulnerabilities in natural and economic disasters, ASEAN can involve women as focal points and regional leads in emergency response and recovery efforts. These efforts should be informed by gender-disaggregated data to highlight

133 Naciri, M. (April 2020). Putting women, girls at heart of COVID-19 response and recovery in ASEAN: Turning challenges into opportunities. *Jakarta Post*.

134 Yeni et al. (2020). Predictive modeling, empowering women, and COVID-19 in South Sumatra, Indonesia. *ASEAN Journal of Community Engagement*, 4(1).

135 ATWGARD. (2018). AMAF's approach to gender mainstreaming in the food, agriculture and forestry sectors.

the leadership roles that women can play in public hygiene and precautionary behaviour during disasters like the coronavirus pandemic.

Improve coverage, reliability, granularity and timeliness of agri-food and nutrition data

This will assist public and private decision-making on production, distribution, and trade. Without relevant data, it is difficult to tell whether progress is truly being made. The collection of systematic data as to which populations are experiencing the greatest hardships and which industries are failing, where, why and how is essential to the establishment of clear priorities and in designing and refining efficient, and targeted assistance. Additional areas for improved monitoring include:

- a. Achieving “calorie sufficient” diets
- b. Achieving “nutrition adequate” diets
- c. Lowering incidence and levels of anemia in women
- d. Lowering incidence and degree of stunting in children
- e. Enumerating roles and opportunities by gender in agri-food chains & elsewhere

We also recommend collecting more comprehensive data regarding COVID-19’s impacts on women and informal workers in the agri-food sector. Critical areas include the extent to which women hold titles to land, have access to credit, and engage in agri-business activities.

Intervene to Expedite Seafarers’ Movements

With the rise of COVID-19, many nations and ports restricted the movements of seafarers manning cargo ships and other sea craft. This is harmful to the health and well-being of these seafaring men and women. It also constitutes a growing impediment to

trade in general, including trade in much-needed agri-food inputs, food staples and more nutritious but time-sensitive food items in particular. As Filipinos, Indonesian, Thai and Vietnamese nationals make up a large portion of the global maritime workforce, this new disruption and personnel-based protectionism has ramifications not only for trade and economic development, food security and nutrition outcomes throughout ASEAN, it has humanitarian consequences for ASEAN nationals and disruptive impacts worldwide. Working with the ILO, the International Maritime Organization, and the WTO, ASEAN could work to ensure that obstructions to seafarer movements do not: (a) compromise seafarers' health and wellbeing; (b) emerge as new non-tariff measures, obstructing trade and causing border delays.

6.3. Long Term Actions

Expand and Extend Infrastructure in an Inclusive Manner to Under-Served Communities

Expand infrastructure that gives remote rural and fishing communities better access to roads and communication services. Such access will provide them with opportunities to make their own choices and explore different opportunities and means of improving their household's and communities' well-being. Reliable roads and reliable broadband are critical. Reliable roads are needed to convey products to market destinations. Broadband allows farmers and entrepreneurs to discern which products and markets are most advantageous for them to pursue. Amongst farming households, improved public and private transportation, storage, and processing infrastructure will also enable communities to move beyond largely cereals-based subsistence operations to the production (and consumption) of more nutritious and more lucrative perishable foods.

Increase Interdisciplinary Cooperation to Improve Knowledge, Actions and Outcomes

ASEAN senior officials could choose to re-energize regional “One Health” efforts in collaboration with CGIAR, FAO, OIE and WHO. Better and more timely exchange of information and greater cooperation between relevant agri-food agencies and the WHO is needed. Such efforts could have contributed to earlier warnings and more cohesive and comprehensive early responses across disciplines and agencies. Given the hesitancy in some countries to acknowledge and share information regarding emerging outbreaks of human and/or livestock diseases, ASEAN senior officials may wish to explore measures to coordinate with international agencies so that sound science is not sacrificed at the altar of other exigencies.

Engage in Cooperation between Governments and Private Individuals, Without Eroding Opportunities, Incentives and Responsibility

ASEAN members may wish to reflect on what has gone right and what has gone wrong in their collective responses in dealing with the pandemic and related challenges with a view to informing how to meet other shared challenges in future. Reflect on a vision for 2021 and beyond. Of what remains, what can be built upon and what should be let go? Some sample questions follow.

- Are there activities that can be handled remotely and digitally to maintain productive capacity while safeguarding the health of workers and consumers?
- Can a digital approach expedite trade and transport? Can digital platforms reduce the number of transactions products go through before reaching consumers? Can the redundant capacity be redeployed to productive uses?
- Are there processes that should be automated to reduce physical contact, improve efficiency and reduce risks?
- Which processes and commercial environments might require re-engineering and renewal to better protect workers, clients and consumers?

- How might women’s voices be heard in choosing between alternative futures?
- In the wake of COVID-19, what new skills are required of workers in agri-food value chains and how are they best acquired? Which agencies can best manage these interventions?

6.4. Some Country-Specific Observations and Suggestions

In this sub-section, we make some closing observations and suggestions regarding each ASEAN member state. Although each member state has its difficulties, Myanmar’s circumstances and challenges are particularly daunting and warrant concerted effort. Singapore and Vietnam each provide “touchstone” examples of what might be best practices that could be starting points for other nations.

Brunei. In the wake of the COVID-19 pandemic, Brunei has expressed its resolve in pursuing greater self-reliance in the production of agri-food products with a view to improving its food security and nutrition outcomes. At this time, cereals and starchy foods account for roughly 40% of the local diet, while vegetables and fruits make up 5% and fish account for 1%. While understanding Brunei’s motivation, a more nuanced approach drawing on supplies from a number of sources is likely to yield superior outcomes.

We concur with the notion that Brunei should make a concerted effort to maintain the latent productive capacity of its land and water resources. However, households’ dietary outcomes would likely suffer if too closely tied to local capacities alone. Instead, Brunei could follow Singapore’s example and broaden its diet both geographically and across food types by: a) integrating more fully with regional value chains through regulatory convergence

or mutual recognition agreements; b) improving its logistics performance¹³⁶ in general (where it underperforms relative to its income level) such that agri-food products critical to food security can be cleared expeditiously; we would suggest focusing on expediting trade in perishable vegetable products and fishery products initially. The World Trade Organization (WTO) Agreement on Trade Facilitation (TFA) may be of help in two areas: i) its standards are subject to the WTO's binding trade disciplines, unlike previous conventions; ii) to support this framework, the TFA strengthens the delivery of technical assistance and capacity-building support for developing countries.

Cambodia. As roughly half of Cambodia's population will find it a challenge to afford a "nutrition adequate" diet as a result of the COVID-19 pandemic and efforts to contain it, the key challenges are to: a) ensure that agri-food supplies and value chains continue to function, and b) with the assistance of national, regional and international agencies, expand financial and food assistance programs to poorer households, women and children.

Regarding a), Cambodia could work within the parameters for essential goods to support the effective implementation of the Hanoi Plan of Action on Strengthening ASEAN Economic Cooperation and Supply Chain Connectivity in Response to the COVID-19 Pandemic. This could involve working with the ASEAN Trade Facilitation Joint Consultative Committee to harmonize or accelerate regulatory convergence with its ASEAN neighbours to reduce costs and time delays when trading nutritious perishable products. To address choke points relating to bottlenecks relating to performance gaps related to its infrastructure and customs processes, Cambodia and Lao PDR may wish to work in tandem with the ASEAN Connectivity Coordinating Committee, the Economic Research Institute for ASEAN and East Asia, and the Singapore Logistics Association. This mix of public oversight, applied academic

136 World Bank. (2018). *Connecting to Compete: Trade Logistics in the Global Economy, the Logistics Performance Index and Its Indicators*.

insight, and practical experience might help jumpstart and more precisely target Cambodia's transport and logistics reforms.

With respect to b), the WFP has ramped up its efforts to provide households with take-home rations or cash-based transfers in Cambodia, Laos, and Myanmar, but additional national, regional and international efforts and resources will be needed in the coming year. Within Cambodia, efforts to promote greater private investment and ramp up horticulture production should pay dividends, but also depends critically on timely distribution and marketing. National objectives to increase the number and productivity of rice field fisheries should also be helpful in alleviating protein shortfalls in the diet. Along a similar vein, efforts to expedite border movements of poultry feed ingredients would also help to maintain production and consumption levels of poultry meat. Challenges with regard to post-harvest losses and timeliness issues that undermine food safety and quality might benefit from the efforts of the ASEAN Senior Transport Officials' Meeting and its Transport Facilitation Working Group.

Indonesia. The Indonesian archipelago lies on the Pacific Rim's "Ring of Fire." Because of its location, it is frequently exposed to damaging tropical storms, earthquakes, volcanic activity and tsunamis. Although it is a large country with many resources, the frequency and magnitude of these domestic shocks suggest that efforts to "go it alone" are ill-advised, especially from a food security and nutrition perspective. Rather, true food security is probably best addressed by diversifying procurement across a range of domestic, regional and international sources. This echoes the findings yielded from OECD METRO model simulations with regard to market integration versus localization discussed in Chapter 4. Efforts to improve the efficiency and efficacy of customs services¹³⁷ and harmonize or promote regulatory convergence with key trading

137 World Bank. (2018). *Connecting to Compete: Trade Logistics in the Global Economy, the Logistics Performance Index and Its Indicators*.

partners¹³⁸ will serve to improve food security over time. On the domestic front, efforts to improve cold chain management and supporting infrastructure should pay dividends both economically and from a nutrition perspective as nutritious high-value fish and vegetables will reach consumers at home and abroad rapidly and with less waste.¹³⁹

Since the COVID-19 pandemic began, the number of Indonesians who struggle to afford “nutrition adequate” diets increased to about one-third of the population, or over 91 million people. Different geographic jurisdictions have provided food baskets with different products to their local populations. Some analysts have argued for pulses, legumes and nuts (eg. mung beans, peanuts) and grains might offer a better alternative to processed food and noodles in terms of nutrition, items delivery and storage. However, others have argued that the use of cash transfers or cash vouchers is preferable as this provides households with greater flexibility in choosing items from local shops, while also supporting the local economy.

The government continues to subsidize fertilizer purchases for rice production, with only modest impacts on yields. Various studies have highlighted the need to phase out fertilizer subsidies and use these outlays instead to provide agricultural public goods with higher returns, such as irrigation infrastructure, extension services, or targeted cash transfers to small farmers.¹⁴⁰

Lao PDR. Half of Lao’s households now struggle to afford a nutrition adequate diet, a situation similar to neighbouring Cambodia. Key challenges are to: a) ensure that agri-food supplies and value chains continue to function, and b) with the assistance of national, regional and international agencies, expand financial

¹³⁸ Vanzetti et al. (June 2018). Non-tariff Measures and Regional Integration in ASEAN. *GTAP GEA*.

¹³⁹ Kusano, E. (ed.). (2019). *The Cold Chain for Agri-Food Products in ASEAN*.

¹⁴⁰ Osorio et al. (2011). Who Is Benefiting from Fertilizer Subsidies in Indonesia?

and food assistance programs to poorer households, women and children.

Regarding a), Lao scores quite poorly in terms of the capacity and efficiency of its infrastructure, the efficiency and efficacy of its customs services, and its logistics and distribution performance. These deficiencies increase both costs and waste related to getting perishable products into the hands and mouths of consumers. Lao PDR could work within the parameters for essential goods to support the effective implementation of the Hanoi Plan of Action on Strengthening ASEAN Economic Cooperation and Supply Chain Connectivity in Response to the COVID-19 Pandemic. This could involve working with the ASEAN Trade Facilitation Joint Consultative Committee to harmonize or accelerate regulatory convergence with its ASEAN neighbours to reduce costs and time delays when trading nutritious perishable products. To address choke points and bottlenecks relating to performance gaps related to its infrastructure and customs processes, Lao PDR may also wish to work in tandem with the ASEAN Connectivity Coordinating Committee, the Economic Research Institute for ASEAN and East Asia, and the Singapore Logistics Association. This mix of public oversight, applied academic insight, and practical experience might help jumpstart and more precisely target Lao PDR's transport and logistics reforms.

With respect to b), the WFP has ramped up its efforts to provide households with take-home rations or cash-based transfers in Cambodia, Laos, and Myanmar, but additional national, regional and international efforts and resources will be needed in the coming year. Within Lao, efforts to promote greater private investment and ramp up horticulture production should pay dividends, but also depends critically on timely distribution and marketing. Challenges with regard to post-harvest losses and timeliness issues that undermine food safety and quality would benefit from insights forthcoming from the ASEAN Senior Transport Officials' Meeting and its Land Transport Working Group.

Smallholders in AMS like Lao PDR and Cambodia often operate with limited working capital and can survive only for a short time in the event of an economic shock (like the one induced by the COVID-19 pandemic). Policy makers throughout ASEAN as well as with international agencies recognize this. Given the low rates of interest prevailing internationally and the recognized need to recover and rebuild after COVID-19, domestic, regional and international policy makers and financiers could make financing for working capital more easily available for smallholders. To achieve some economies of scale and realize some production complementarities and synergies, efforts could be made to form and coordinate cooperatives among such smallholders. This could also allow them to ramp up adoption of digital technology, management and marketing systems. Although such investments would involve an upfront cost, adoption of these new technologies and systems will boost smallholder incomes, accelerate streamlining within the agri-food sector, remove duplication, contribute to value-added activities, and result in a lower carbon footprint. Potential international partners for such initiatives could include the UNDP, ADB, and CGIAR. If broadened to include coordinated activities across Northern ASEAN member states, experts from the ASEAN Secretariat, the Economic Research Institute for ASEAN and East Asia, the Singapore Food Agency, and Nanyang Technological University's S. Rajaratnam School of International Studies (RSIS) could be called upon to assess initiatives holding the most promise.

Malaysia. Although Malaysia is a significant net agri-food exporter, its exports are largely made up of plantation crops like palm oil and rubber. For daily dietary needs, Malaysia imports roughly 30 per cent of domestic requirements.

Malaysia has been forward-thinking in terms of keeping agri-food markets open, enabling domestic production and market functions, and facilitating international trade. Information regarding stocks, production, market prices and trade have been disseminated widely and on a timely basis, avoiding panic buying and hoarding

behaviours. Ongoing improvements in the capacity and efficiency of port facilities in peninsular Malaysia will help to enable efficient and competitive agri-food markets.

Movements toward e-commerce and digital technologies have been accelerated and have improved efficiency within value chains while concurrently reducing the number of contacts and transactions before products reach consumers. E-commerce will increasingly be used to facilitate trade, reduce transportation risks and enable market access. The Malaysian government has allocated RM40 million to help SMEs in the agriculture sector sell their products on e-commerce platforms and reach a larger pool of consumers.

A challenge for Malaysia going forward will be determining how to enable smallholder households and SMEs within the agri-food sector and ensure their ongoing viability without resorting to protectionism. Complementary initiatives could include encouraging cooperatives that allow such households and SMEs to secure financing and achieve economies of scale and respond more effectively to evolving consumer needs and demands; through digitalization and automation, public-private partnerships in this area could accelerate this process. Malaysia is also in the process of developing a list of essential food items and strategically locking in supplies for several months in advance. Efforts are also being made to formulate needs-based and health-based systems for allocating vouchers to needy households that could be redeemable for higher-value foodstuffs like fruits and vegetables. Malaysia is exploring ways of securing feed inputs for its livestock industries to ensure ongoing supplies of high-value proteins.

Myanmar. Myanmar is still feeling the after effects of a second wave of high virus reproduction rates that prevailed until the first half of October. Official rural income poverty rates among farming households have risen from one in five in January 2020, to over half in June, to almost two in three in November. Those most at risk of falling into poverty are smallholders farming five acres or less.

Constraints to movements of agri-food products, inputs and the people involved in their transportation and distribution within Myanmar are ill-advised. In areas of surplus, such constraints result in higher levels of waste and lower prices. These, in turn, further reduce the incomes, resources and incentives of the farmers in areas of surplus such that they may not produce at the same level in the coming year. Concurrently, areas of shortage are already experiencing serious increases in the proportion of households that are confronted by food insecurity. To avoid further escalation of food insecurity levels and a dampening of agri-food production incentives, Myanmar should establish within-country transportation corridors whereby agri-food products, inputs and the people transporting and distributing them are exempted from COVID-19 containment provisions. Masking, physical distancing and good hygiene practices should continue to be followed, but additional constraints on agri-food production and distribution related activities could further contribute to a humanitarian crisis.

In cooperation with bordering countries China, Thailand, Lao PDR, and nearby Singapore, Myanmar should ramp up efforts to re-invigorate trade in agri-food products. *Transportation corridors with these neighbours and trading partners* for essential agri-food inputs and products will be instrumental in avoiding serious supply-side contractions in the coming year; developing shared protocols for approving movements of products and people involved in agri-food product transport and distribution will be particularly critical. As the vast majority of overseas freight comes through the Yangon port, increasing infrastructure capacity to move foods beyond the Yangon region is critical. If financing can be secured, elements of the National Logistics Master Plan and development strategy could be accelerated in the coming year, including major transport and cargo systems such as roads and rivers to link industrial clusters to hinterlands, border regions, and ports.¹⁴¹ Such corridors could comprise the north-south corridor linking Yangon to China; the

¹⁴¹ PwC. (2018). Myanmar Business Guide; World Bank Group. (2018). Myanmar Economic Monitor.

southeast corridor linking Myanmar to Thailand and Lao PDR, as well as the Main River and Coastal Marine Logistics Corridors.

Myanmar should scale up its COVID-19 Comprehensive Economic Recovery Program (CERP), particularly for the agri-food sector. Transfers to agriculture to date have been insufficient to offset serious economic harm to households in Myanmar's agri-food system or to prevent food insecurity from increasing. While CERP provides loans for commercial agribusinesses, an expanded CERP should include provisions that sustain smallholder farming households, giving them sufficient confidence to purchase inputs, and offsets pandemic containment measures that threaten to undermine their economic well-being, food security and their productivity. Short-term income subsidies, flexible loan repayment conditions, freezing of interest payments on loans, and debt forgiveness for smallholder farming households would go some way toward ensuring that 2021's prospects improve over 2020's; this will also ensure that agri-food production and value chains continue to function going forward.

Given the degree to which maternal and child health and nutrition have been undermined due to the pandemic and associated containment measures, cash transfer programs and food assistance should be ramped up. Otherwise, these households will suffer the consequences of food insecurity and malnutrition in terms of future shortfalls in physical and mental well-being and productivity.

Philippines. Like neighbouring Indonesia, the Philippine archipelago lies on the Pacific Rim's "Ring of Fire." Because of the country's location, it is frequently exposed to damaging tropical storms, earthquakes, volcanic activity and tsunamis. The frequency and magnitude of these domestic shocks suggest that efforts to "go it alone" are ill-advised, especially from a food security and nutrition perspective. True food security is best addressed by diversifying procurement across a range of domestic, regional and international sources.

Restrictive trade policies in rice motivated by the government's pursuit of rice self-reliance has led to domestic prices well above prevailing world prices and substantially over levels paid by consumers in nearby ASEAN countries. Although it is ASEAN's largest net importer, its sanitary and phytosanitary measures, technical standards, border control measures and quantitative restrictions are the highest in the region, amounting to an ad valorem equivalent of around 14 per cent and constraining movements of agri-food products at the border.¹⁴² This raises the costs and lowers the availability of nutritious foodstuffs to a population that is already struggling to afford a “nutrition adequate” diet; at least one-third of Filipino families are in that position and the proportion is growing. Consequently, efforts to improve the efficiency and efficacy of customs services and promote regulatory convergence with key trading partners will serve to improve food security over time.

On the domestic front, efforts to improve cold chain management and supporting infrastructure should pay dividends both economically and from a nutrition perspective as nutritious high-value fishery and vegetable foodstuffs will reach consumers at home and abroad on a timely basis and with less waste.

Since the COVID-19 pandemic began to unfold, the number of Filipinos who struggle to afford “nutrition adequate” diets increased to over one-third of the population, or around 36 million people. The World Food Program has collaborated with the Philippines' Food and Nutrition Research Institute to assess how to improve access to low-cost but nutritionally adequate food; provision of iron-fortified rice and cash transfers for the acquisition of nutritious foodstuffs would do much to stem malnutrition among poorer households, children and women in particular. The WFP has also provided technical and financial support to the Department of Social Welfare and Development and the Department of Education

¹⁴² OECD & ERIA. (2018). *SME Policy Index: ASEAN 2018*.

in developing and Implementing the Rules and Regulations of the National School Feeding Law.

Singapore. The island city-state's experience with the COVID-19 pandemic has affirmed several elements of its strategy to maintain food security which could offer insights for other small states.¹⁴³ Overall, increasing citizen's wealth and economic well-being is important to assure access to food. The Global Food Security Index (GFSI), developed by the Economist Intelligence Unit in collaboration with UN agencies, clearly shows the strong correlation that as GDP per capita increases, so does household food security; in spite of having few natural resources of its own, Singapore ranked first worldwide in the 2019 GFSI.¹⁴⁴

Besides commercial enterprises, Singapore has several public agencies that are involved in ensuring that the city state has reliable and diverse food supplies. These agencies include the Singapore Food Agency (SFA), which oversees food safety and security, and the Ministry of Trade and Industry (MTI), Enterprise Singapore (ESG), and the Ministry of Foreign Affairs (MFA), which facilitate agri-trade and link importers with potential new suppliers overseas. In diversifying their import sources, Singapore avoids being overly-reliant on any single source and spreads the risk of food supply disruption across as many sources as possible to minimize potential disruptions. In the wake of the COVID-19, Singapore has accelerated its "30 by 30" initiative, providing grants to enterprises which can quickly ramp up the production of eggs, leafy vegetables and fish in the next six to 24 months with a view to eventually supplying 30 per cent of Singapore's dietary needs locally by 2030.

Singapore continually renews and improves upon its supply chain logistics and infrastructure to handle food importation and

¹⁴³ Caballero- Anthony et al. (June 2020). COVID-19 and food security in Asia: How prepared are we? NTS Insight, no. IN20-03.

¹⁴⁴ Corteva Agriscience. (2019). The Global Food Security Index. <https://foodsecurityindex.eiu.com/>

distribution with high-quality food safety standards.¹⁴⁵ The city-state has been pragmatic in its approach, diversifying its imports from around the world to mitigate risks and ensure food imports have geographically-disperse sources.¹⁴⁶ Foreign direct investment has been encouraged largely because of the good governance, sound intellectual property regime and tax incentives put in place; Singapore serves as regional headquarters for a number of the world's leading biotech firms, pharmaceutical firms, and agri-food firms. Its role as a transportation and logistics hub and its advanced cold chain management systems also position Singapore well from both a food security and agri-food value-added perspective. Should national and foreign commercial and public agencies in Singapore choose to do so, they could be called upon to play a catalytic and leadership role in spearheading improvements to logistics, transportation and cold chain management for high-value, perishable agri-food products in the ASEAN region.

Thailand. The kingdom is better off than many of its neighbouring countries with regard to food security and nutrition outcomes. Availability of food has not been a concern to date, as Thailand is a food surplus country and an exporter. Still, the pandemic has increased the number of households that do not have calorie sufficient diets to around 7% while around 11% of households struggle to afford nutrition adequate diets, and these numbers could rise further unless preemptive measures are taken. There are also wide inequities in outcomes among provinces and social groups. For instance, 29% of children under five in Narathiwat Province in the south were stunted and 13.3% of children under five were wasted in Pattani Province (also in the south). Minority households and households with migrants as heads also have higher levels of stunting and wasting. Without an adequate response, the COVID-19 shock and its associated economic contraction and job

145 Teng, P. (2020). Assuring food security in Singapore, a small island state facing COVID-19. *Food Security*, 12, 801–804.

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

losses will exacerbate poorer households' circumstances, halt any progress that was being made in improving nutrition outcomes, and put new groups at risk of malnutrition and food insecurity.

Authorities should ensure that school lunch programs and associated budgets are safeguarded to meet short- and medium-term needs. These programs provide the main source of nutritious food for disadvantaged children. In the event of school closures, contingency plans need to be in place to distribute food packages to households in need.

Due to disruptions in access to inputs like fertilizers, seeds and herbicides as well as constraints on the movements of migrant workers and transport personnel, Thailand's agri-food production may fall as much as three per cent in 2021. This may adversely impact consumption within Thailand as well as lower its exportable surplus, which may undermine food security elsewhere in the ASEAN region as well. Transport corridors that facilitate movements of agri-food and those involved in their production and distribution need to be established both within Thailand and between the kingdom and its near neighbours.

If farm inputs are rationed and farm labourers are constrained in their movements, production will fall. If agri-food products can't be distributed or sold at market, it will go to waste or it will be sold at a substantial discount locally, undermining incentives to produce in subsequent production periods. Without facilitating market operations and distribution channels, local production will be undermined and prospects of shortfalls will increase for both Thailand and its neighbours and trading partners.

Vietnam. The socialist republic's quick response to the COVID-19 pandemic is commendable. In spite of sharing a long border with China, the number of COVID-19 cases and deaths in Vietnam are much lower than in most countries worldwide due to early and aggressive anti-pandemic response. But Vietnam authorities recognize that on-going vigilance is key.

Vietnam's economy is expected to grow modestly in 2020 and its agri-food sector has managed to maintain much of its productive capacity to date. A key focus going forward will be to allow markets to function and prevent disruptions to movements of key inputs and agri-food products. Ensuring social order and safety, and maintaining an adequate healthcare workforce and facilities to support staff in their work, and guaranteeing community compliance with control measures and securing social security are all necessary for Vietnam to continue its successful fight against COVID-19.

6.5. Conclusion

The COVID-19 pandemic continues to threaten lives, health, livelihoods and well-being worldwide. Thus far, most ASEAN nations have had some success in containing the virus's spread. Early in the pandemic, some ASEAN nations restricted exports of staple commodities while others erected barriers to imports. Such actions unnecessarily add costs and complexity to trade and result in lower, not higher, levels of food insecurity. Fortunately, ASEAN leaders recognized that such actions were mutually destructive and removed most of these obstructions by late May 2020.

COVID-19 and measures to contain its spread have resulted in a pandemic-induced recession and considerable job losses and disruptions in labour markets. ASEAN's migrant workers and informal labour market being the most adversely impacted.

Income shortfalls and job insecurity will have caused many ASEAN households to change their consumption patterns, especially those in poorer households. Estimates from the FAO, WFP and USDA suggest that roughly one-fifth of ASEAN households (~ 125 million people) are considered food insecure. These income and resource-constrained households will increasingly consume starchy foods within "energy sufficient" diets and less "nutrition adequate" diets which include vegetables, fruit, meat and fish. Such dietary shifts can have longer-term adverse impacts on maternal and child health, with knock-on ramifications for stunting, mental health issues, and educational attainment prospects. If prevalent across wide portions of the population, a nation's long-term prospects can also be impacted.

The COVID-19 virus has impacted the well-being of both genders. In general, the disease has more drastic impacts on men's health. However, ASEAN women have suffered disproportionately from the pandemic-induced economic slowdown, with women's employment being hit almost twice as hard. Women typically are more likely to

engage in uncontracted work in sectors and vocations hardest hit by the pandemic: food preparation, food marketing, food service, hospitality, tourism, domestic work, textiles and manufacturing. This imbalance is accentuated by the uneven division of care and domestic work in the household, further limiting women's livelihood choices and opportunities. Correcting these gender imbalances, improving opportunities for women and strengthening safety nets for women and men will be a critical challenge as ASEAN adjusts to the post-COVID-19 era.

While COVID-19 has resulted in considerable damage to health, lives and livelihoods, it has also accelerated some broad trends in societies and economies and opened the doors for others. Challenged with “picking up the pieces,” ASEAN's leaders are now in the position of influencing and shaping the nature of their societies and economies to improve upon what came before.

As a catalyst and core member of the recently-signed Regional Comprehensive Economic Partnership, ASEAN has shown foresight in embracing an outward-looking future. Post-COVID-19, it now has the opportunity to influence and shape the development prospects and inclusivity of its members' economies and societies.

REFERENCES

- ASEAN Technical Working Group on Agriculture and Research Development (ATWGARD). (2018). *AMAF's approach to gender mainstreaming in the food, agriculture and forestry sectors*. <https://asean.org/storage/2012/05/AMAF-Approach-to-gender-mainstreaming.pdf>
- Caballero- Anthony, M., Teng, P., & Montesclaros, J.M.L. (June 2020). COVID-19 and food security in Asia: How prepared are we? NTS Insight, no. IN20-03. RSIS Centre for Non-Traditional Security Studies (NTS Centre) and Nanyang Technological University Singapore: Singapore.
- Corteva Agriscience. (2019). The Global Food Security Index. <https://foodsecurityindex.eiu.com/>
- Economic Research Institute for ASEAN and East Asia (ERIA). (January 2020). ASEAN Countries Need to Harmonise Regulations to Improve Trade Performance. <https://www.eria.org/news-and-views/asean-countries-need-to-harmonise-regulations-to-improve-trade-performance/>
- Kusano, E. (ed.). (2019). *The Cold Chain for Agri-Food Products in ASEAN*. Economic Research Institute for ASEAN and East Asia: Jakarta. <https://www.eria.org/publications/the-cold-chain-for-agri-food-products-in-asean/>
- Naciri, M. (April 2020). Putting women, girls at heart of COVID-19 response and recovery in ASEAN: Turning challenges into opportunities. *Jakarta Post*. <https://www.thejakartapost.com/academia/2020/04/21/putting-women-girls-at-heart-of-covid-19-response-and-recovery-in-asean.html>
- Organisation for Economic Co-operation and Development (OECD) & Economic Research Institute for ASEAN and East Asia (ERIA). (2018). *SME Policy Index: ASEAN 2018*. OECD Publishing: Paris and ERIA: Jakarta. <https://www.oecd.org/investment/sme-policy-index-asean-2018-9789264305328-en.htm>
- Osorio, C.G., Abriningrum, D.E., Armas, E.B., & Firdaus, M. (2011). Who Is Benefiting from Fertilizer Subsidies in Indonesia? Policy Research Working Paper 5758. <https://openknowledge.worldbank.org/bitstream/handle/10986/3519/5758.pdf?sequence=4>
- PwC. (2018). Myanmar Business Guide. PwC: Yangon. <https://www.pwc.com/mm/en/publications/assets/myanmar-business-guide.pdf>
- Singapore Food Agency. (2020). Levelling up Singapore's food supply resilience. <https://www.sfa.gov.sg/food-for-thought/article/detail/levelling-up-singapore-s-food-supply-resilience>
- Teng, P. (2020). Assuring food security in Singapore, a small island state facing COVID-19. *Food Security*, 12, 801–804.
- Vanzetti, D., Knebel, C., & Peters, R. (June 2018). Non-tariff Measures and Regional Integration in ASEAN. GTAP GEA. <https://www.gtap.agecon.purdue.edu/resources/download/8863.pdf>
- World Bank Group. (2018). Myanmar Economic Monitor. World Bank Group: Washington D.C. <https://openknowledge.worldbank.org/handle/10986/31031>
- World Bank. (2018). *Connecting to Compete: Trade Logistics in the Global Economy, the Logistics Performance Index and Its Indicators*. World Bank: Washington, D.C.
- Yeni, Y., Najmah, N., & Davies, S.G. (2020). Predictive modeling, empowering women, and COVID-19 in South Sumatra, Indonesia. *ASEAN Journal of Community Engagement*, 4(1). <https://doi.org/10.7454/ajce.v4i1.1094>

ANNEX 1.

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ABOUT THE ASIA PACIFIC FOUNDATION OF CANADA

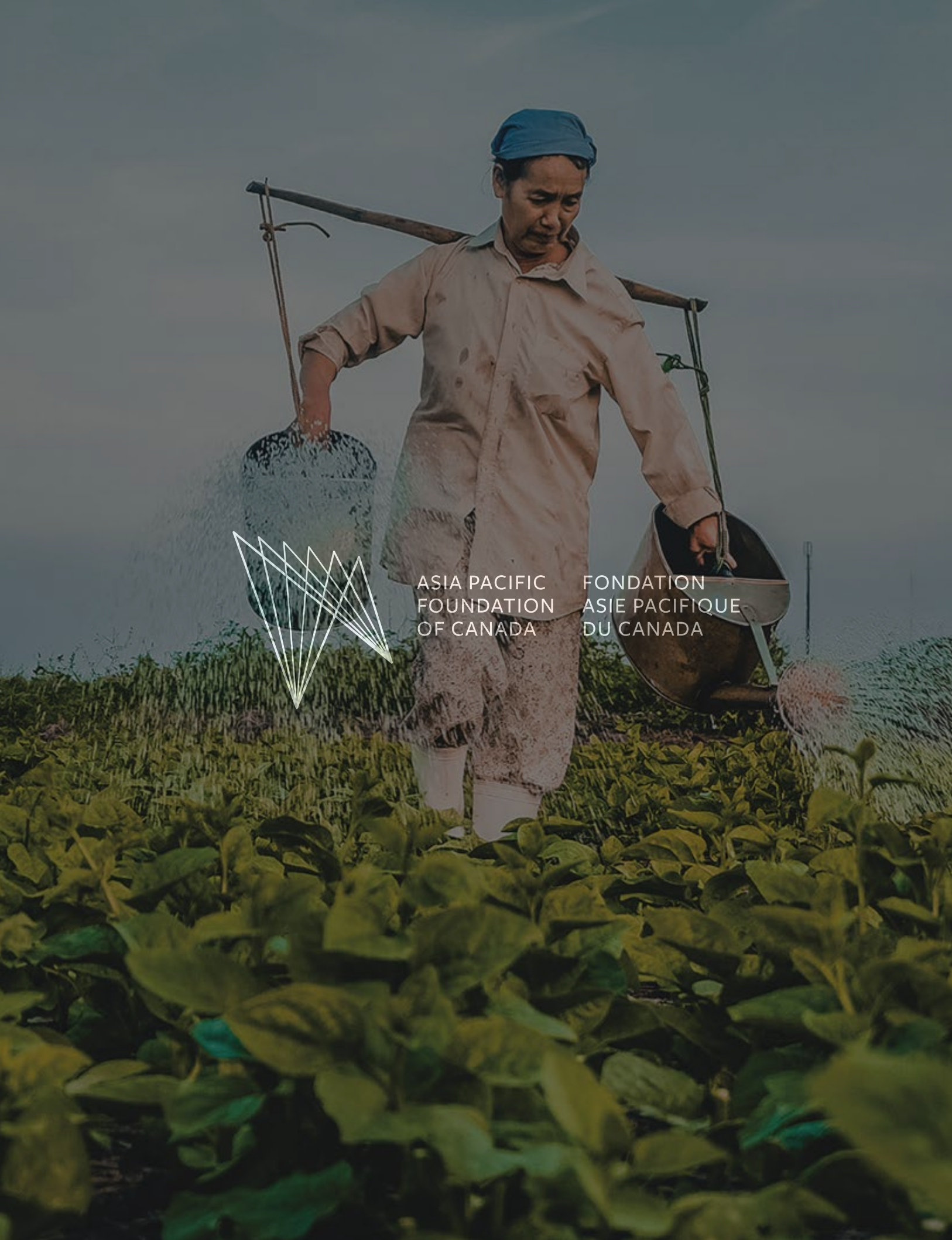
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- We pride ourselves on handling complexity well, drawing on insights from multiple disciplines
- Proven communication, partnership and strong networking skills to draw upon

Past clients and collaborators include ADB, APEC, IFPRI, OECD, PECC, UNCTAD, UN-FAO and USDA. We have applied experience with the OECD-FAO AGLINK-COSIMO partial equilibrium modelling framework and with Purdue University's GTAP general equilibrium framework. We have extensive experience with complex issues requiring a capacity to work in an interdisciplinary and multi-cultural context to achieve balanced, holistic and evidence-based results.



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