



## **ASEAN Measures against the Impact of COVID-19 Pandemic in Relation to the Agri-Food Sector and its Cooperation with Taiwan, India and CJK**

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### **ABSTRACT**

*This paper reviews Taiwan's New South Bound Policy. The main analysis outlines the areas, particularly in agriculture, in which Taiwan can strengthen its partnership with ASEAN countries and India. It is a review paper that carries out interpretive work on prevailing measures and initiatives and contextualizes them in a regional perspective with selected examples that does not pretend to be comprehensive. The paper concludes with a discussion on other potential areas of collaboration related to smart cities. It would be helpful for understanding the potential importance for Taiwan's partnership with ASEAN and possibly other Asian countries, including China, India, Japan, and South Korea. Taiwan's New Southbound policy intends to intensify the partnership between Taiwan and ASEAN/India in the field of agriculture to help New Southbound Policy countries to meet their (and global) growing demand for foodstuffs and food cooperation and to export precision Agriculture 4.0 technologies to ASEAN countries under the New Southbound Policy. The outcome of such agricultural outreaches is Taiwan's augmented collaboration with New Southbound Policy countries in the fields of agriculture, fisheries aquaculture, green technology, climate change, and others. They include Vietnam and the Philippines in Southeast Asia that can benefit from Taiwanese knowhow and advanced technologies in this field. The objective is to integrate into the global economy with wealthier consumers and business community enthusiastic to consume the high-quality Taiwanese products/services.*

**Keywords:** Taiwan, ASEAN, agriculture, COVID-19, coronavirus, food

### **INTRODUCTION**

With the COVID-19 pandemic outbreak, the contours of regional cooperation changed after that. Agricultural activities, food supply, supply chains and logistics were severely disrupted. This affects food supply and delivery to millions of developing economies around the world. It also affects the ability of farmers to harvest and grow their food as well. In terms of medical diplomacy, at the ASEAN summit on April 14, 2020, Singaporean Prime Minister (PM) Lee Hsien Loong outlined three areas for ASEAN collective response. They are: (1) To share each country's information, strategies and experiences; (2) to collaborate to keep trading routes and supply lines open, and (3) to have some agreement on how to impose trade and travel restrictions as well as on relaxing them when the time comes (CNA, 2020). Indeed, after the Summit, ASEAN leaders emphasised a "whole-of-ASEAN community approach" (mutual help for each other) to combating COVID-19, keeping trade routes open, keeping food supplies, medical equipment and other essential products flowing, discussing a post-pandemic recovery plan and setting up a mooted COVID-19 ASEAN Response Fund (CNA, 2020). Japan, Taiwan, China and Republic of Korea (ROK) provided aid to ASEAN countries, alongside Vietnam and Singapore and they have helped their neighbors by extending such help to CLM (Cambodia, Laos, and Myanmar) countries with comparatively weaker healthcare systems. Some of the main cooperation areas included learning from how East Asian countries like Republic of Korea (ROK), Hong Kong Special Administrative Region (HKSAR), Taiwan and Singapore fully learned from the lessons of SARS and set up better defensive systems against COVID-19 coronavirus. In early April 2020, Beijing, Hanoi and Taipei started their medical diplomacy for the ASEAN nations, again indicating how East Asian countries try to assist with each other's needs.

Regional food security and diplomacy, the review focus of this paper, operated within this rubric of regionalism. ASEAN is one of the world's most dynamic developing regions and is fast becoming a hub for major

and middle powers as well as small states to come together in a collective response to ward off COVID-19 pandemic's impact on food logistics/supply and agricultural harvests. Food security was also enhanced during the pandemic by drawing from the ASEAN+3 Emergency Rice Reserve that was established in 2013 as a mechanism to continue with food supplies during emergencies (Blanco, 2020). Agricultural output was challenged by quarantine requirements and logistical limitations, thus the rice reserve was timely and provided near-term supply for individuals trapped in their home (including the vulnerable impoverished individuals) while buying the time to prepare other sources for food supply (Blanco, 2020). The ASEAN+3 dipped into advanced technologies and digital systems to keep business operations going with e-commerce (a rapidly-growing market in ASEAN) orders for food deliveries, thus highlighting a growing virtual industry and excellent opportunity as the world waits for a working vaccine to be concluded (Blanco, 2020). At a time when regional organizations around the world is facing challenges from anti-globalization forces and internal discord due to limited COVID-19-mitigation resources, ASEAN is an important regional organization that is forging cohesion at a time of pandemic and trade wars based on the concept of ASEAN centrality despite urgent individual demands by national economies (Blanco, 2020).

This paper reviews Taiwan's New South Bound Policy. It outlines the areas, particularly in agriculture, in which Taiwan can strengthen its partnership with ASEAN countries and India. The paper concludes with a discussion on other potential areas of collaboration related to smart cities. The paper would be helpful for understanding the potential importance for Taiwan's partnership with ASEAN and possibly other Asian countries, including China, India, Japan, and South Korea.

### **WHAT TAIWAN CAN OFFER FOR THE ASEAN IN THE NEW SOUTHBOUND POLICY (NSP)**

**Background of Taiwan's non-food advantages in interactions.** The "Southbound policy" (originally "Go South" policy) originated with former Taiwanese Presidents Lee Teng-hui and Chen Shui-bian to increase Taiwanese investments in Southeast Asia in the late 1990s to early 2000s, resulting in a dramatic increase in Taiwan's FDI's to Southeast Asia, a genesis that would attain milestones thereafter (Tu, 2019). The NSP has progressed beyond the original aims envisioned by Lee in 1994 and even beyond just economic rationale to tap into the New Southbound Policy countries' market size, lower costs of production, resource and skill base of 18 NSP economies (King, 2020). Tsai's NSP has a bigger number of economic partners than past schemes, going beyond ten Associations for South East Asian Nations (ASEAN) economies to include eight economies in South Asia and Australasia and India has an attractive and large size of 1.2 billion consumers, affordable production and resource costs, and trained manpower (King, 2020). India's consumer market and economic collaboration with Taiwan from 2017-2020 makes up 5% of Taiwan's export market (approximately US\$7 billion in 2016) while, up till September 2019, 120 Taiwanese businesses in technologies (such as AI), car/automobile, renewable energy and the agricultural sector have invested US\$100 million in India (King, 2020).

After Tsai's inauguration as president, Taiwanese exports to ASEAN went up by 14.2% in 2017 and investments increased by 73.3% in 2016 from the previous years (Tu, 2019). 7 of Taiwan's top ten partners were ASEAN countries in 2016-2018 and, in 2017 Taiwan's exports to ASEAN came up to US\$58.57 billion, up 14.2% from 2016, and inbound investments from ASEAN economies increased by nearly 25% in 2017 (King, 2020). A key feature of the New Southbound Policy is to reenergize Taiwan's economy by augmenting Taiwanese economic/trade, science and technology with Southeast Asia. In the Indo-Pacific, recognizing ASEAN has become a regional economic powerhouse (2018 KPMG Business Guide mentions ASEAN is now the third largest economy in Asia) blessed with diverse economies, youthful workers, and increasing economic integration/regionalism (Tu, 2019).

Taiwan, with its New Southbound policy, has reached out to ASEAN and India for economic and business opportunities. These two regions were amongst the world's most promising growth rates (higher than the global average) before the COVID-19 coronavirus pandemic and are expected to have growth after the stabilization of the COVID-19 situation. In the arena of exporting Taiwanese agricultural products and foodstuffs, ASEAN countries have large populations with 500 million people in Southeast Asia and over 1 billion people in India. Vietnam, India, the Philippines, Indonesia, all have young demographic profiles with growing consumption/purchasing power and thus long term consumer market growth. Bilateral trade between Taiwan and the NSP target countries (ASEAN, six South Asian countries including India, New Zealand and Australia) came up to US\$112 billion while the figure in the first half of 2020 reached US\$52 billion despite coronavirus (Taiwan Today, 2020).

Taiwan, a ranking international high tech ICT economy and the world's 18th largest exporting economy (according to 2018 WTO statistics), is keen to partner ASEAN and India in trade, transactions in industrial/consumer sectors, economic development (Taiwan Expo India, 2020). Due to the COVID-19 coronavirus pandemic, most Southeast Asian countries locked down but Taiwanese exports towards ASEAN nations are better than those of South Korea/Japan (Yang and Tung, 2020). Moreover, in the post-COVID-19 coronavirus period, trade and economic cooperation can resume quickly. With strong government support,

TAITRA(Taiwan External Trade Development Council) has held TAIWAN EXPOs since 2017 in 6 ASEAN countries and 14 cities drawing in almost 300,000 participants attaining more than 90% satisfaction rate for all participants (Taiwan Expo India, 2020).

***Taiwan and Vietnam.*** Taiwan is developing a strong relationship with individual countries like Vietnam with Taipei placing Vietnam at the core and center of the New Southbound policy and Vietnam was enthusiastic in endorsing the New Southbound Policy (Tu, 2019). Taiwan signed bilateral investment agreements (BIA) with India and the Philippines in 2018 and 2017 respectively, and an upgraded agreement with Vietnam in December 2019 to augment "...interests and rights of Taiwanese companies operating in Vietnam..." (King, 2020). Vietnam benefits from Taiwanese investments in agriculture with Taiwan tapping into the so-called Vietnamese "golden age" population ('demographic dividends), affordable labor force, and low infrastructure costs; moreover, Taiwanese businesses are finding ease in dealing with Vietnam and they are finding new ways to collaborate while acknowledging the constant and natural challenges of slowly-rising labor and operational costs (Tu, 2019).

***Taiwan and India in the food sector.*** Ramping up bilateral economic relations is an offshoot of the Tsai Ing-wen government's NSP which started in 2016. In this Policy, there are five leading programs designed to intensify the partnership between Taiwan and ASEAN/India and one of them is in the field of agriculture with the goal of upgrading the wellbeing of their populations through the sharing of resources, experiences, and expertise (Yang and Tung, 2020). Smart agriculture is one of the focuses of Taiwan's outreach to India (South Asia Monitor, 2020) while other focuses for bilateral cooperation were mutually conveyed in the 2019 youth delegation interactions. Two Taiwanese Ministry of Education (MoE)-sanctioned NSP delegations (with 15 young Taiwanese agricultural university student ambassadors each) visited India to augment interactions with local agricultural officials, farmers to look at prevailing joint projects in bamboo/mushroom crops while aiming to have cross- recognition of organic agriculture standards with India (Times of India, 2019). This Young Agricultural Ambassadors New Southbound Policy Exchange Program is co-organised by Taiwan's Ministry of Foreign Affairs (MOFA) and the Council of Agriculture (COA) as a "showpiece of Taiwan youth soft power" (according to Deputy COA Minister Chen Junne-jih) (Times of India, 2019).

***Taiwan and Indonesia in the food sector.*** Since 2016, Taiwan has inked more than 70 memoranda of understanding (MOUs) with various countries to strengthen collaboration in agriculture and science and technology (Taiwan Today, 2020). Closely associated with environmental protection and sustainable agriculture, Taiwan's contemporary agriculture industry is a strong base of agricultural resources, equipment, and smart technologies and it can help New Southbound Policy countries to meet their (and global) growing demand for foodstuffs and food cooperation (especially after the COVID-19 pandemic outbreak) (King, 2020).

***Taiwan's Council of Agriculture's outreach in Karawang, Indonesia.*** In 2018, Taiwan's Council of Agriculture, together with Indonesia's Ministry of Agriculture, started Taiwan's first agricultural demonstration zone in Karawang, West Java, a mushroom showpiece farm in Baguio, Philippines in working relationships that were open and transparent by respecting the willingness and need of the recipient communities. In 2018, under the Modern Agriculture Demo Farm in Karawang (MADFK), Indonesia's Ministry of Agriculture dispatched 30 core farmers/officials to Taiwan for 15-days training to augment their agribusiness technical skills/management in Taiwan, especially in terms of irrigation, rice cultivation, horticulture industry, duck farming and farmers' organizations in the Demo Farm (Council of Agriculture, Executive Yuan, R.O.C., 2018). Taiwan shared its agricultural/irrigation technologies, agricultural materials, seedlings, and agricultural machinery and organizational units like farmers' associations/production-and-marketing groups with the hope of replicating successful features throughout Indonesia and increase the Indonesian farmers' incomes (Council of Agriculture Executive Yuan R.O.C., 2018).

***Taiwanese technologies and outreach in the food sector.*** Starting from 2018, Taiwan's Council of Agriculture (COA) has pumped in US\$1 billion to upgrade farmers' smart tech/infrastructure, equipment and Information Technology (IT) to reduce manpower requirements facilitating Taiwan's ambition to become a test-bed for ASEAN to test and locate new technologies (Gulf Agriculture, 2020). Cutting edge Taiwanese tech include Yuan Kai Machinery Co. Ltd's mechanized fertilizer spreader (reduce manpower and improve productivity), ALIGN Corp Ltd's agricultural drones that has spray efficiency 30 times that of manual spraying, Tatung Co.'s integrated smart greenhouse that tracks the climatic condition for data collection, real-time feedback, enhanced efficiency and manpower reduction (Gulf Agriculture, 2020). Just prior to the COVID-19 pandemic, Taiwan had already started its outreach to ASEAN countries.

***Agriculture 4.0.*** In the first half of 2019, Taiwan's Council of Agriculture noted that Taiwan exported US\$2.7 billion worth of agricultural products augmented by farming methods that utilizes precision Agriculture 4.0 technologies (precision farming defined as "farming system that integrates high-technology innovations" (BusinessMirror, 2019). Agriculture 4.0 taps into solar technology for energy, lighting to grow plants at various wavelengths, drones for soil and water modelling purposes, Internet of Things connecting smart sensors on the farms, semiconductors to produce sensors, control software and data mining algorithms, and robotics in planting/harvesting (BusinessMirror, 2019). There are more examples of cutting-edge Taiwanese technologies in the agricultural industry. They include: LEDs to tune wavelengths for plant growth/yield, Owlting's big data for

monitoring rain/temperature/soil, LeBio Spectral X's agriculture net to control sunlight for plant health/growth, Thunder Tiger Thunder Hawk drones for applying pesticides (one hectare of land in 8 minutes) preventing human exposure to chemicals (BusinessMirror, 2019). And others like Geosat Aerospace & Technology Alpas II drones with computer-managed flight/laser sensors for precise spraying, all of which enable the eventual consumers to enjoy cheaper and higher quality food produce (BusinessMirror, 2019).

***Taiwanese cutting-edge technology and their customers.*** Advanced Taiwanese drones used in agriculture was on display at the biennial Taipei Aerospace & Defense Technology Exhibition (TADTE) held by Taiwan External Trade Development Council (TAITRA) with foreign drone buyers coming mainly from Europe, US and the ASEAN (Taiwan Excellence, 2020). Taiwan's drone industry is keen to enter the ASEAN market with TAITRA making its appearance in the Taiwan Expo and Taiwan Excellence Pavilion (Taiwan Excellence, 2020). In the agricultural sector, Taiwanese GEOSAT Aerospace & Technology Inc. has a foothold into the ASEAN markets with a joint ventures (JVs) in Malaysia (drones to augment palm oil and rice output) and, in the Philippines and Taiwan Excellence Smart City Seminar, GEOSAT's ALPAS-Smart Agriculture Unmanned Helicopter was a smart agriculture solution for agribusiness companies in Mindanao (Taiwan Excellence, 2020). Taiwan and the Indo-Pacific region are shifting towards precision agriculture to cope with aging populations (and their accompanying labor shortages); and so, Walter Yeh, TAITRA President and CEO, argued that smart technologies like pesticide-spraying drones can solve these challenges (Taiwan Excellence, 2020).

***Taiwan, the New Southbound policy and Japan's food sectors in the era of COVID-19 pandemic.*** Taiwanese customs department revealed that agricultural exports to Japan was US\$143 million (January-February 2020), an increase of 11.4% over the same period in 2019, largest export market amongst its trading partners); but, other than Japan, to make up for the dips in exports due to COVID-19, the Council of Agriculture is diversifying Taiwan's export destinations (Council of Agriculture, 2020). At the start of the pandemic, the Council organized the Taiwan Fruits & Vegetables Festival and marketing activities in New Southbound countries and Japan to market Taiwanese pineapples and sugar apples at Singapore's HAO mart (Council of Agriculture, 2020). Taiwan kept up exports of its rice, tuna, frozen green soybean, dolphin fish, fourfinger threadfin, swordfish, sugar apple, banana, and guava to its trading partners (demand for these products still growing despite COVID-19) (Council of Agriculture, 2020).

***Taiwan and the Philippines in the food sector.*** Taiwan and the Philippines are close in proximity and share similar ideological and political systems. They even share similar Austronesian cultural past and the Taiwanese foreign ministry regards the Philippines highly for "high and sustained growth and its market has become one of the most prosperous ASEAN markets," thus prioritized by the Republic of China (Taiwan) as the gateway to ASEAN countries in the New Southbound Policy (Ministry of Foreign Affairs, 2020). Centered on the New Southbound Policy, Taiwan is augmenting collaboration with the Philippines in agriculture, fisheries aquaculture, green technology, climate change, and others (Ministry of Foreign Affairs, 2020). In 2019, Taiwan and the Philippines' bilateral trade came up to US\$8.25 billion (Ministry of Foreign Affairs, 2020). They intend to enhance multifaceted partnerships for continued growth.

## **NORTHEAST ASIA (CJK/CHINA, JAPAN, KOREA) COOPERATION WITH ASEAN**

The Northeast Asian powers of East Asia are also keen to work with China, World Health Organization and the world to fight this common scourge to humanity. In a pandemic, the supply of medicines, food, masks, ventilators, disinfectants and other vital supplies have become a priority for countries that are keen to keep these supplies available. Worried about the economic fallout, these economies are also keen to work together to keep their economy open and free for trade. The 14 April 2020 ASEAN+3 meeting published a joint statement to show their intention to the rest of the world about their seriousness in tackling the crisis together.

They promised to keep their consumer markets open and free and to protect healthcare/frontline workers, increase collaboration in epidemiological research, maintain food security amongst all 13 countries, keep regional supply chains going and a common desire to improve regional response and coordination to natural/manmade disasters like viral outbreaks (SARS and COVID-19), tsunami and global financial crises (CGTN, 2020). In this area, there is space for ASEAN to work with their Plus Three partners of China, Japan and Korea (CJK) given that the latter three are all manufacturing powerhouses that can produce vital supplies for the region, especially since there are expected subsequent waves of infections. Having closer cooperation between regional manufacturing powers and strong food (a vital commodity in a pandemic) production in ASEAN (Thailand and Vietnam are the largest rice producers in the world), it is potential symbiotic relationship between the two regions.

Due to existing maritime territorial/historical memories disputes and differing geopolitical alliances, CJK has not been able to work together effectively to drive East Asian regionalism. Instead, East Asian regionalism is driven by ASEAN ('in the driver's seat') through the ASEAN+3 format and Regional Comprehensive Economic Partnership (RCEP). Due to cross-straits tensions, Taiwan is also unable to link up with CJK effectively. Nevertheless, despite complicated Northeast Asian ties, the Taiwanese agricultural sector appears to quite adapt in seeking new markets for its products. For example, when pineapple exports to China experienced a decline

after its suspension in March 2021, the Taiwanese agricultural sector quickly found new markets in South Korea and expanded Japan consumer base to make up for the shortfall. According to Taiwan's Council of Agriculture (COA) on 15 May 2021, South Korea is a new market for Taiwanese pineapples (after a brief gap for a few years, now a priority export market for Taiwanese pineapple farmers keen to work with Korean businesses) and, by mid-May 2021, 11,286 tonnes (61.9% of its stock) were sold to Japan (Yang, 2021). Thus, Taiwan appears to be able to leverage its strengths in certain products in the Northeast Asian market in accordance with market forces, quality assurances and political-economic residual goodwill.

**Indigenously-designed robotic systems in China.** China was also busy deploying robotics system to combat the viral outbreak. In early March 2020, Smart Field Hospital manned by robots which can attend to 20,000 patients was established in the Hongshan Sports Centre in Wuhan China, the epicentre of the pandemic, by Wuhan Wuchang Hospital, China Mobile and CloudMinds (a China-US cloud robotics systems manufacturer) to replace burnout medical workers. In such medical facilities, there are several robot models to manage COVID-19 outbreak. They include the humanoid Cloud Ginger (aka XR-1) and Smart Transportation Robot which can move food and pharmaceutical supplies prescribed by physicians to those who need them as well as track the patient's critical readings, bypassing direct physical contact; Cloud Ginger can also provide individuals in confinement with news and entertainment contents (Hornyak, 2020).

Even the private sector firms are involved in providing significant supplies of healthcare, food and other supplies to the needy countries, including Alibaba, Baidu, Bank of China, ByteDance, China Construction Bank, China COSCO Shipping Corporation, China Merchants Group, Envision Energy, Fosun Group, Guangzhou Pharmaceutical, JD.com, Mengniu, Ping An, SinoChem, Sinopec, Tai Kang Insurance, Tencent, Xiaomi, Yili, etc. (Ma, 2020). They may be possible technologies that some ASEAN countries would want to tap into.

Besides Taiwan, India, Japan and China, there are other progressive and technologically empowered ASEAN countries that are using their resources to cope with agri-food supply situation.

### **REPUBLIC OF SINGAPORE CASE STUDY—FOOD SUPPLY**

As a state without water resources and adequate self-sufficiency in food supply, Singapore faced a food supply issue in the COVID-19 pandemic. When food supply became an issue, the Singaporean government-imposed quotas on staples like rice (Vietnam, the world's largest rice exported decided to ban all exports in order to shore up food supply for its own people), eggs and vegetables. As concerns and anxieties mounted with regard to second wave of infections, the government divided Singapore into four main zones and designated a market for each of the zone. Identity cards were checked to determine how many members of each household could enter and shop in those markets.

There were two small and very brief panics in Singapore during the COVID-19 episode, when the government elevated the level of emergency for Singapore to the highest level of alert and when Malaysia decided unilaterally to close its borders. These were the only two times when Singaporeans thronged the supermarkets to buy food due to some fears of food shortage. Much of Singapore's food supply comes from neighbouring Malaysia. Due to spiking coronavirus cases in Malaysia, the country decided to close its land borders through the causeway and food supply in Singapore immediately became an issue. Fortunately, the strong friendship between Singapore and Malaysia (as well as the state of Johor) kept the lanes for food supply open.

The Singaporean government moved fast to tackle this as well. First, it moved quickly into food source diversification. Egg supplies came from as far as Holland and food supplies from Poland as well. Singapore also signed agreements with Australia and New Zealand to keep essential supplies like food and medical supplies going. Indeed, Australia and New Zealand are important friends, partners and allies, after all they are in the military pact of Five Power Defence Arrangement (FPDA) together with Malaysia and United Kingdom. As a good neighbor of Singapore, Malaysia under the new Muhyiddin administration (a former Johorean chief minister who was well-acquainted with Singapore and had received world-class cancer treatment in the Lion City) kept food supply going for Singapore. Singapore's impeccable global and regional standing as a consistent, pragmatic and principled country with par excellence diplomatic skills gained Singapore credits during a crisis like COVID-19. Singapore never has a beggar-thy-neighbor policy and always helped out neighbors in times of need.

The Republic of Singapore's Ministry of Trade and Industry (MTI) expected the following sectors to be severely affected: Accommodation Air Transport Arts, Entertainment & Recreation (AER) and the other industries like food Services, Retail, Trade Land Transport to be significantly affected (Christopher Saw, *et al.*, 2020). For those whose revenues, profits and operating abilities are hurt by the COVID-19 pandemic, the government has instituted the Resilience Budget 2020 with S\$900 (US\$668) GST vouchers, S\$1,000 (US\$742) monthly payments for the self-employed amidst other financial help (Eugenia Liew, 2020). This was a progressive, pro-business and pro-welfare help for the population and businesses of Singapore. It follows the Singaporean government's philosophy that no one would be left behind.

Despite global fluctuations in food supplies, the Singapore government worked hard to find diverse food sources for Singapore. Essential goods appear to be a very important focus point for Singapore's initiatives with

other countries. In their joint declarations, Singapore and Japan promised to keep markets open, prevent stagnation of economies, sustain regional/global supply chains, work with ASEAN (Association of Southeast Asian Nations), keep essential goods flowing, desist from export bans or limitations (especially in medicines and foodstuffs that contravene World Trade Organization or WTO rules) (Ministry of Economy Trade and Industry, 2020).

In fact, the two countries are eyeing the restarting of supply chains especially for essential goods. The other ways in which Singapore and China can collaborate is to work on the restoration and restarting of supply chains and production/manufacturing activities and increase flight/freight links and hasten customs procedures, especially for the movement of important supplies like pharmaceuticals, medicines and foodstuffs (CNA, 2020). Singapore also facilitated supplies by China to its migrant workers in Singapore. On Tuesday 5 May 2020, the People's Republic of China (PRC) government and its Embassy in Singapore gave the Singapore Migrant Workers' Centre material like edible food supplies and soaps to alleviate the needs of the "bulk of the COVID-19 patients in Singapore [who] are foreign workers residing in dormitories" (Lili Wang, 2020). This was part of the Republic of Singapore's meticulous and caring treatment of foreign workers. These workers have contributed so much to the economy of Singapore by building its infrastructures.

***Food sector trade with Taiwan and pandemic situation updates.*** Just before the pandemic between January and September 2019, things were looking rosy for Taiwanese agricultural exports to Singapore. Taiwan's Council of Agriculture noted a 8.2% increase over 2018 in total exports to Singapore (with Taiwanese rice exports to Singapore doubling from 2018 to 2019, agricultural exports made up US\$72.58 million or NT\$2.22 billion Jan-Sept 2019) and the COA Minister Chen, Chi-chung travelling to Singapore to boost Taiwan agricultural products sales on 20 October 2019 (DeAeth, 2019). Chen also participated in the opening ceremony of a new excellent grocery location by HAO Mart that had a dedicated "Taiwan Agricultural Product" zone and a large purchase of Taiwanese rice by Singapore's Sheng Siong supermarket group (DeAeth, 2019). It is within this context that Singapore and Taiwan may gain from greater food sector contact and interactions. While a large number of cultural and other forms of cooperation were affected by the pandemic, trade in agricultural products went up (Chen, 2020), especially in essential products like food. There appears to be renewed pandemic-era desire to increase agricultural trade by the two entities. According to Singapore Trade Representative to Taiwan Yip Wei Kiat, Taiwan's exported goods to Singapore including agricultural/meat products increased 7% in the COVID-19 pandemic (Chen, 2020).

Even in a critical COVID-19 impacted economy, amongst other available part-time employment, five jobs are suggested as possible COVID-19 coronavirus-era gig economy part-time occupations in Singapore: social distancing ambassador, temperature checker/healthcare screener, coronavirus-related administrators, food deliverer/riders, contract data analysts at Singapore Tourism Board (STB) (Eugenia Liew, 2020). These jobs, gigs and assignments are still in demand due to challenges posed by the pandemic. For example, the stay-at-home orders and work-from-home (WFH) format created an acute demand for food deliverers not just in Singapore but in the wider world as well. Singapore's famous food hawkers were given additional help. Non-governmental groups and well-wishers from the public mobilized and stimulated consumption demand and public support through the use of social media. These groups did advertising for the food hawkers, recommended their food to the public and worked with food deliverers to bring delicious hand-cooked food to the doorsteps of the customers. This was a compassionate society in action, everyone had a role to play and they cooperated with each other to bring about a resilient society that cared.

## THE FUTURE—COOPERATION IN SMART CITIES

It is not only in the rural urban agricultural sectors that Taiwan is collaborating with Southeast Asia. Taiwan is also working with Southeast Asia in smart cities projects. Smart cities may see the deployment of robots will not only be found in occupations that are dirty, demanding and dangerous which may include backbreaking agricultural work and heavy lifting of produce in the logistic field. On a more macro scale, robotic applications, algorithm-based applications, A.I. and other digital technologies will be implemented on a city-wide scale, turning entire cities into 'smart cities'. This may help with logistical tracking and movement of time-perishable agricultural products and foodstuffs to their end destinations. In Taiwan, for example, there are interested stakeholders who want to embed IoT technologies into the public transportation system, especially a system that can manage scooter traffic and drivers [or unmanned vehicles] in the near future (Salmonsens, 2018). Smart transportation has implications for the movement of agricultural produce and food logistics. In these areas, Taiwan, especially its capital city Taipei, is already a smart city.

Other entities look into the utilization of energy management, enhancement of standards of living, sustainable development and bringing about liveable cities as the criteria for smart cities, all of which may bring about a clean environment that benefits agricultural sectors. The urgency and significance of building smart cities lies in the reality that more than half the globe's denizens now live in urban cities and it is projected to increase to 70% by 2050 (Asia will be the lead here) with an exponential growth in mega cities (Carmodyon, 2016). Therefore, the first-tier cities of the world today are now keen to come up with innovative solutions to allocate resources,

manage sustainable growth and practice good governance. This includes delivering food resources to its denizens. For example, Chunghwa Telecom has scanners, monitors and sensors placed on public lighting to manage the intensity of energy use for lighting and also to monitor temperatures, pollution indexes, and precipitation/rainfall (Carmodyon, 2016). The NSP economies are well-integrated into the global economy with wealthier and more financially aware consumer base and business community enthusiastic to consume the high-quality Taiwanese products/services; and this can translate into soft power for Taiwan in South-South relations (King, 2020).

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