

# **Joint Study on 10+3 Cooperation for Improvement of Supply Chain Connectivity (SCC)**

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## Preface

This public version of the Joint Study is based on the collaborative outputs of the four Research Institutes (RIs), ERIA, CAITEC, JETRO, and KIEP, and the ASEAN Secretariat.

Background studies or sub-reports for ASEAN, China, Japan, and Korea were written independently by ERIA, CAITEC, JETRO, and KIEP, respectively, reflecting the views of the authoring Research Institute only and respect the opinions of other RIs. Individual RIs may opt to publish their respective sub-reports at their own responsibility.

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## Executive Summary

At the 21st ASEAN Economic Ministers (AEM) Plus Three Consultations held in August 2018, the ASEAN Plus Three (APT) Ministers agreed to carry out a Joint Study on “10+3 Cooperation for Improvement of Supply Chain Connectivity (SCC)”. ASEAN and the Plus Three countries (i.e., China, Japan, and the Republic of Korea, or CJK) announced the launch of the Joint Study at the sidelines of the 21st APT Summit in November 2018, and appointed research institutions the Economic Research Institute for ASEAN and East Asia (ERIA), Chinese Academy of International Trade and Economic Cooperation (CAITEC), Japan External Trade Organization (JETRO), and Korea Institute for International Economic Policy (KIEP), respectively to undertake the Joint Study.

Early this year, the Coronavirus Disease 2019 (COVID-19) broke out, disrupting supply chains, ways of life, and working norms, including in ASEAN and the Plus Three (APT) countries. Recognizing the need to address the challenges posed by COVID-19, a Special ASEAN Plus Three Summit on COVID-19 was convened through a video conference on 14 April 2020. The Joint Statement of the Special ASEAN Plus Three Summit on Coronavirus Disease 2019 (COVID-19)<sup>1</sup> highlighted the need for the ASEAN Plus Three Countries to strengthen the resilience and sustainability of regional supply chains, and to maintain supply chain connectivity in this time of crisis and uncertainty.

In light of the above, the 35th SEOM Plus Three Consultations on 28 April 2020 noted the urgency to move the Joint Study forward and China’s proposal for the Joint Study to take into account the COVID-19 developments. On 5 June 2020, the four RIs, facilitated by the ASEAN Secretariat, agreed on the Revised Terms of Reference (TOR). Based on the TOR, the objectives of the Joint Study are to (1) provide insights on the resilience of supply chains in the region in the face of uncertainties such as COVID-19; and (2) put forward practical policy suggestions on improving supply chain resilience and connectivity of APT region and to be submitted to the AEM Plus Three Consultations and the APT Summit.

After five months of hard work, the four RIs completed the Joint Study. This is the public version, and comprises three parts, namely, the overview, the joint policy recommendations, and the way forward.

### I. Overview

Since its inception in 1999 when APT embarked on regional integration, trade between APT members witnessed a rapid growth of 6.8 percent per annum on average during 2007-2018, and the share of intra-APT trade reached 39 percent of the total APT trade by 2018. The reasons that contributed to this rapid growth in trade include: (1) the supply-side factors such as trade and investment liberalisation and facilitation, and efforts to broaden regional integration in East Asia through ASEAN Plus-One free trade agreements (FTAs); and (2) the large and growing consumer demand for greater variety and higher quality of goods, which is especially sustained by the growing GDP per capita in the ASEAN Member States (AMS).

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<sup>1</sup> See <https://asean.org/joint-statement-special-asean-plus-three-summit-coronavirus-disease-2019-covid-19/>

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One more important factor that drives the favourable economic outcomes is the increasing level of connectivity within the APT region that allows goods to be traded smoothly. Connectivity serves as a platform for production networks to settle, and helps connect local companies within the APT region with global value chains (GVCs), thus allowing resources to be allocated efficiently and keeping the products affordable for consumers. To measure the connectivity within the APT region, this report conducts two ways of measurement. (1) The first measure introduces the backward and forward participation of APT countries in GVCs. The result unveils that the share of intermediate goods trade in total trade by APT countries is considerably high, indicating a close involvement in supply chains throughout the region. (2) Another way to demonstrate the interdependency between APT countries is to examine the sources of imported inputs in ASEAN and CJK countries' manufacturing individually. The analysis shows that the imported inputs coming from CJK contributed to slightly more than 40 percent of the total AMS inputs in 2015, with inputs from China accounting for about half of this import.

COVID-19 at the beginning of 2020 created a deep contraction worldwide and most APT countries experienced sharp negative growth in the first half of the year. Behind the severe pandemic are the great uncertainties as well as prolonged economic impacts arising from it. The first and foremost impact is the disruption of supply chain performance within the region. The pandemic dislocated production plans, resulting in the shortage of intermediate inputs and suspension of production. COVID-19 also created social panic for a global economic crisis and led to the compression of consumptions. Second, there is likely an increase in GVCs' operational costs due to the restriction of expertise movement and the propensity of authorities to apply non-tariff measures (NTMs), such as the export prohibition on essential medical goods and raising the bar for sanitary and phytosanitary (SPS) food safety measures. Third, firm-level behaviors are also deeply affected. Manufacturers turn to bring forward the installation of new technology. Multinational enterprises (MNEs) prefer to diversify their production networks as part of new risk assessments for the post-pandemic period, and to consolidate their activities in the countries of consumption even though it may increase inefficiency.

## **II. Summary of Sub-Reports from APT Countries**

### **A. ASEAN**

The emergence of COVID-19 in early 2020 disrupted the functioning of supply chains, which have been an important driver of ASEAN growth. As a result of restrictions imposed to fight the pandemic, ASEAN-based firms experienced a decline in demand for their output from downstream firms, while also facing difficulty procuring raw materials and inputs from upstream firms. As a result, even when domestic economic activity resumed, firms with inflexible supply chains had difficulty resuming operations or faced higher production costs. Additional production costs were imposed by poor logistics and inefficient regulations and procedures that were in place even before the pandemic. Continued decline in overall world demand, especially in low-value added production sector, could potentially inflict serious damage to ASEAN's export sector. Given that these supply chains are crucial for ASEAN's growth, quickly returning their vibrancy is necessary for the ASEAN economy to remain healthy.

While AMS governments are trying to develop exit strategies to accelerate the recovery of their economies, they will be relying heavily on returning to a "new normal" in international trade. Due to the strong linkages across countries, unilateral domestic policies will not be

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sufficient for full recovery of these trade-dependent sectors. Noting the “inter-relatedness” of these supply chains, the impact of policy responses by individual countries could have far-reaching results if coordinated and concerted efforts are undertaken by the countries in the region. Furthermore, the pandemic has put a spotlight on inefficiencies along the supply chains that have exacerbated the already difficult situation for internationally integrated businesses. Mitigation of these inefficiencies should be an integral part of the exit strategies of AMS, which requires cooperation and partnership among APT countries.

The role of governments is important in ensuring that the region’s supply chain activities remain economically efficient so that APT firms can remain globally competitive. To this end, governments must create a fertile climate and economic structures that lead to competition and enhance firms’ responsiveness to supply chain disruptions. This could be done by reducing the level of protection, restrictions and regulations. They also need to create a conducive investment climate and promote exports to other markets, and create a friendly investment climate in certain sectors. The governance and management of technology and data will be important in the post-pandemic era as technology adoption becomes widespread.

## **B. China**

Since the COVID-19 outbreak, the Chinese government has, following the principle of open and win-win development through cooperation, joined hands with other countries to safeguard the stability of global industrial and supply chains while coordinating its efforts of containing the epidemic and resuming work and production. It has rolled out a raft of targeted and effective policies and measures to improve the environment for opening up, promote trade and investment liberalization and facilitation, drive the recovery of global supply chain (GSC), enhance the mechanisms for COVID-19 prevention and control, push unimpeded flows of people and supplies, and deepen regional economic and trade cooperation. Through all these efforts, China aims to make regional supply chains more resilient, sustainable and less vulnerable to shocks, contribute its share to the improvement of SCC, and bring opportunities and development benefits to the international community.

CAITEC conducted online questionnaire surveys to Chinese overseas investment enterprises that do business with Japan, ROK and ASEAN countries, and had in-depth interviews with them from July to August 2020. It collected responses from 218 companies and held virtual meetings with 33 companies for in-depth interviews. Building on the analysis of the above-mentioned questionnaire survey and interview results, CAITEC has the following key findings. (1) Insufficient cross-border infrastructure facilities and inadequate local policy systems are major barriers to SCC in APT countries. (2) COVID-19 has adversely affected the supply chains of 80% of the respondents. About 40% of the respondents have seen recovery of operations. The supply side is recovering steadily while the demand side is making its way slowly. The sluggish market demand and reduced orders have brought severe challenges to enterprises’ supply chains. To mitigate the losses to their supply chain and overall development, more than half of the respondents have adjusted their production plans. Other countermeasures include developing new markets, adjusting inventories, building diversified sales channels, etc. Most respondents have no plans of relocating production bases. (3) Market and cost are the key considerations for enterprises to develop overseas supply chain, including entering local markets, meeting the requirements of overseas customers or partners, cutting production costs, enjoying preferential policies provided by local governments, etc. (4) The economy of the APT region has recovered rapidly amid COVID-19. Economies in the region are highly complementary and have great potential in cooperation with each other. Though governments

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of some developed countries outside of the region have introduced policies to re-shore their manufacturing sectors amid COVID-19, the dominant position of APT region in GSC cannot be replaced in the short term. (5) The COVID-19 outbreak has provided an opportunity for the rapid development of digital supply chains. In particular, digital supply chains are gaining robust momentum in sectors that have long industrial chains and require sophisticated production management.

All parties need to take joint measures to improve the resilience and connectivity of supply chains in the region so as to mitigate the negative effects of COVID-19 on businesses, boost their confidence in trade and investment, and promote economic recovery and growth in the region. APT countries should conduct cooperation in the following areas: (1) strengthening policy communication and coordination and working together to ensure an unimpeded supply chain; (2) making further efforts to shore up weak links in infrastructure and improving cross-border transportation connectivity; (3) enhancing regulatory coordination and cooperation and gradually establishing a mutually recognized and compatible system of standards and rules; (4) accelerating the building of FTAs and other mechanisms to provide institutional guarantee for SCC; (5) stepping up the construction of new types of infrastructure and improving the connectivity of digital supply chains; (6) promoting technology sharing and capacity building to make SCC benefit more people; and (7) deepening comprehensive reforms to stimulate domestic circulation and power SCC in the region.

### **C. Japan**

Japanese firms have expanded their business and supply chain in Asia, such as ASEAN, China, Korea and India. Many data reveal that ASEAN+3 and India is a critically important region for Japanese business. However, it is also true that Japanese firms in this region have been affected because of COVID-related matters. In the wake of difficulty in procuring raw materials and parts during the first quarter of 2020 and economic deterioration in the region, far-reaching ramifications have occurred especially on Japanese firms targeting the regional market.

In response to this situation, JETRO's sub-report analyses what the COVID-19 related challenges Japanese firms have faced on their supply chain management and where those challenges came from through interviews and questionnaire surveys. Based on the analysis, JETRO proposes policy recommendations necessary for future external shocks which hinder supply chain connectivity such as COVID-19. The effects of the COVID-19 observed in the Japanese manufacturing industry in China, Korea and ASEAN are summarized as follows: (1) Reduced order due to economic contraction. Decreased production by final goods manufactures and stoppage of production have an impact on suppliers; (2) Production stoppage due to movement and travel restrictions and factory closures imposed by the government and local authorities; (3) Production efficiency declines due to infection control measures in factories; (4) Employees are unable to commute due to suspension of public transportation; (5) Suspension of operations by suppliers handling raw materials and parts; (6) Transport costs increase due to flight reduction, difficulty in delivery arrangements, difficulty in import and export due to flight suspension; and (7) Increase in length of time spent on customs clearance and movement of goods due to reduced number of customs officers.

It is most important that the government take infection prevention measures and place first priority on human life. At the same time, companies expect the government to take policies and measures that do not hinder nor weaken the supply chain. From the perspective of



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maintaining supply chain connectivity in cases of external shocks such as COVID-19, there are corresponding policy-related issues and recommendations, classified as short term and medium/long term basis.

Short-term policy issues and main policy recommendations include: (1) Restrictive measures that do not hinder supply chain in the region as much as possible; (2) Continuous operation of customs as much as possible on the premise of implementing prevention measures (remote operations of the authorities); (3) Special entry permits for necessary foreign engineers and managers; and (4) Temporary liberalization of cross-border services by foreign companies.

Mid- to long-term issues and main policy recommendations include: (1) Digitalization of trade documents and administrative documents, such as certificates of origin, and further penetration of the self-certification system; (2) Digitalization of customs procedures; (3) Enlightenment activities and public-private partnerships for the digitization of international trade and logistics processes, and the establishment and collaboration of a platform for trade information; (4) Expanding the AEO system and promoting mutual certification, making permanent the flexible measures to accept certificates of origin, promoting further trade facilitation measures and reducing non-tariff barriers; (5) Advancement of production and logistics through the use of digital technology and the formation of unified rules to facilitate data distribution within the region; (6) Technical and Vocational Education and Training (TVET) for development of human resources and management to play a leading role in the digitalization era; (7) Realization of supply chain resilience; and (8) Promoting liberalization, standardizing rules and reducing uncertainty through regional cooperation, early conclusion of RCEP, and moving forward the mega-FTAs.

#### **D. Republic of Korea**

The Korean government has emphasized the importance of free trade, restoring multilateralism, and cooperation on digital economy in the process of overcoming the COVID-19 pandemic. The Korean government proposed policies toward ASEAN or APT on COVID-19. The Korean government is also planning to enhance cooperation through the upgrade of the New Southern Policy (ASEAN + India), which has been promoted since 2017 especially in the following areas: (1) strengthening cooperation in the healthcare sector including COVID-19; (2) diversifying GVC and expanding FTAs responding to changes in trade and investment environment caused by COVID-19; (3) expanding support for rural and urban development to improve the quality of life of people in ASEAN and India; and (4) deepening cooperation in future industries such as industries related to the Fourth Industrial Revolution, 5G, and digital economy. Moreover, in July 2020, the Korean government announced the “Green New Deal,” a large-scale future-oriented project in order to take the economic downturn caused by the COVID-19 shock as an opportunity for innovation and to proactively respond to climate change. For the new growth strategy, the Korean government proposed a goal of creating 1.9 million jobs and investing a total of 160 trillion won (about 134.8 billion dollars) by 2025.

KIEP conducted an online survey from July 15 to August 14, 2020. The online survey collected 130 responses from Korean firms operating in the APT region, specifically in seven ASEAN countries (Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam), China and Japan. The survey questionnaire consisted of 4 elements and a total of 36 questions: (1) Current status of the SCC in APT countries; (2) Impact of COVID-19 on the SCC in APT countries; (3) Current status and challenges in Digital Supply Chain in APT countries; and (4) Current status and challenges in relocation of production bases in APT countries. KIEP also conducted

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in-depth interviews from September 7 to 25, 2020, with the manufacturing and service firms in Korea, which have business in ASEAN, China, and Japan. The questions are similar to the structure of the online survey, hence, it was decided not to report the in-depth interview results separately because they are almost the same with the online survey results.

Firstly, with regard to the logistics infrastructure in the ASEAN+3 region, a high relative number of Korean firms operating in Myanmar, Philippines, Indonesia and Vietnam expressed their dissatisfaction in terms of both physical infrastructure and logistics service. In particular, Korean firms were less satisfied with railways and roads compared to airports and harbors in terms of physical infrastructure. The dissatisfaction on logistics services in cross-border customs clearance procedures, shipping logistics and inbound logistics services were pointed out as well. The respondents indicated that the lack of regulatory transparency, complicated customs clearance procedure, and insufficient automation and digitalization in customs-related documents and process in some APT countries were the main impediments to trade across the ASEAN+3 region.

Secondly, negative impacts of the COVID-19 pandemic have been observed in Korean firms operating in the ASEAN+3 region. More than half of the respondents operating in China, Myanmar, Philippines and Indonesia indicated that they are facing on-going severe losses due to COVID-19. With respect to measures adopted by local governments due to COVID-19, entry restrictions on the borders and restrictions on the movement of local workers have brought disruptions in Korean firms' economic activities. In the meantime, protectionist policy and strengthened tariff and non-tariff measures had little effect from the COVID-19 pandemic.

Thirdly, regarding the digital supply chain issues, Korean companies that have entered the APT region perceive that the advancement of local IT and digital technology has a great influence on the establishment of a global supply chain. With regard to logistics automation and digitalization, local Korean companies responded that they needed to visualize the logistics system (introduction of new technologies such as RFID) and to automate logistics warehouses (introduction of AGVs and robots, etc.) Also, in order to strengthen digital supply chains, Korean companies responded that local policy authorities should pay attention to the establishment of control towers (organizations) and systems for the digital economy, making investment in the 5G communication infrastructure, and fostering of digital human resources.

Lastly, regarding the relocation of the production hubs in the APT region, the need for the Korean government to actively promote reshoring policies was perceived as relatively low. Instead, should the COVID-19 pandemic continue for an extended period and Korean firms wish to reshore their operations, it is recommended that Korean government authorities focus on lowering the exit barrier through support for relocation costs (equipment investment) or negotiations based on bilateral or multilateral investment agreements with local authorities.

### **III. Joint Policy Recommendations**

Based on responses from firms located in China, Japan, Korea, and ASEAN, and looking at the prevailing economic and policy environment, the four RIs came together and agreed on policy recommendations for improving supply chain coordination in the region. The following are the joint policy recommendations, for consideration of the APT Countries:

- (1) Apply a more holistic consideration to supply chain connectivity, to give due consideration to essential services as well as human resources and intermediate inputs for the production of essential products.

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- (2) Improve both physical and soft infrastructure: production, logistics, new and digital technologies.
  - (3) Ensure supply chain resilience by strengthening the development of domestic supporting industries and ensuring the openness of and circulation in the domestic market, diversification of production bases and procurement source.
  - (4) Strengthen regional coordination and dialogue to deepen supply chain connectivity and intra-regional trade, especially the implementation of FTAs, the signing and early entry into force of the Regional Comprehensive Economic Partnership (RCEP).
  - (5) Address cross-border bottlenecks by implementing necessary reforms to simplify and expedite border formalities, and exploring the expansion of trade facilitation initiatives.
  - (6) Prioritize investments in ICT infrastructure and corresponding human resource development, and promote the use of digital technology in supply chains, with the aim of achieving end-to-end trade digitization.

#### **IV. Way Forward**

The outbreak and wide spread of COVID-19 have presented new challenges to SCC in APT countries. Under the new circumstances, governments of APT countries need to cooperate to maintain the stability and resilience of global industrial and supply chains, while striking a balance between containing COVID-19 and resuming work and production in their own countries. It is desirable to wait for COVID-19 treatments and vaccines to be developed in the near future. However, to avoid similar risks that could occur in the future, APT countries should cooperate together and take concrete actions as soon as possible, particularly among the countries living and working together in the same region and the same economic activity area. To this end, it is necessary to implement the policies recommended in this report.

In the long run, the APT region has mature and large-scale manufacturing systems, strong industrial support capabilities and huge consumer markets. This supply chain, based on highly specialised division of labor and broad collaboration, has strong resilience and unique advantages in cushioning the impact of global public emergencies. Although there are a lot of uncertainties to COVID-19 and other possible challenges in the future, the APT region will keep the competitive advantage position in global industrial and supply chain networks and remain as the most dynamic region in the world if the APT countries work together to jointly improve SCC. Thereby, it will make greater contributions to the connectivity of global supply chains (GSC) and global economic growth.

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## I. Overview Chapter

Since its inception in 1999, ASEAN Member States (AMS) and its three Dialogue Partners, i.e., China, Japan, and the Republic of Korea (the Plus Three countries, or CJK), have embarked in regional integration efforts resulting in mutually beneficial economic outcomes. Trade among APT members (ASEAN Plus Three) grew by 6.8 percent per annum on average over the period 2008-2018<sup>1</sup> and the share of intra-APT trade reached 39 percent of the total APT trade by 2018<sup>2</sup>.

A number of factors contributed to the high growth rates in trade and investment. The supply side factors include investment in connectivity between the APT countries and in AMS, trade and investment liberalization and facilitation especially in AMS under the framework of the ASEAN Economic Community (AEC), and efforts of AMS to broaden the ASEAN integration to East Asia through ASEAN Plus-One free trade agreements (FTAs). All these are matched by large and growing consumer demand from the population of all APT countries combined. Growing gross domestic product (GDP) *per capita* of AMS is another key factor as it sustains the growth in demand especially for greater variety and higher quality of goods consumed by the people in the region.

The favourable business environment and relatively open trade and investment regimes in AMS paved the way for the establishment of production networks in the ASEAN region as Japan and Korea started slicing up and distributing production blocks throughout the AMS. The networks of production continue to grow mainly fuelled by better connectivity, more open trade regimes in ASEAN and shifting of global manufacturing center to China, in addition to the growing generic demand from within the region. At the same time, investments from CJK to ASEAN for production network activity have also been growing. The economy in ASEAN and East Asia has then become more characterised with value-chain economy at the regional level, expanded to cover more countries or sectors over time, and also intensified.

Without warning, the Coronavirus disease 2019 (COVID-19) pandemic struck the world at the beginning of 2020 and the world economy dived to the bottom since then, including the AMS and Dialogue Partners. Countries were juggling in managing three crises at the same time, that is, health, economic, and potentially social crisis, as economic activities halted because of lockdowns or social distancing measures in a bid to contain the spread of the virus. Countries were preoccupied with domestic concerns during the pandemic and efforts for regional economic integration had to be put aside.

But, looming in the horizon are disruptions in production networks throughout ASEAN and East Asia due to the fall and potentially slow recovery in demand. Interdependence among the APT countries means that quick recovery will need coordination. Regional efforts therefore are required to preserve the established production networks and sustain the flow of goods and services in value chains that exist in the region. This study was done in this context, by documenting the impact of the pandemic to companies and their responses in terms of their connectivity with supply chains in the APT region. It aims at providing recommendations for

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<sup>1</sup> See Figure 1.

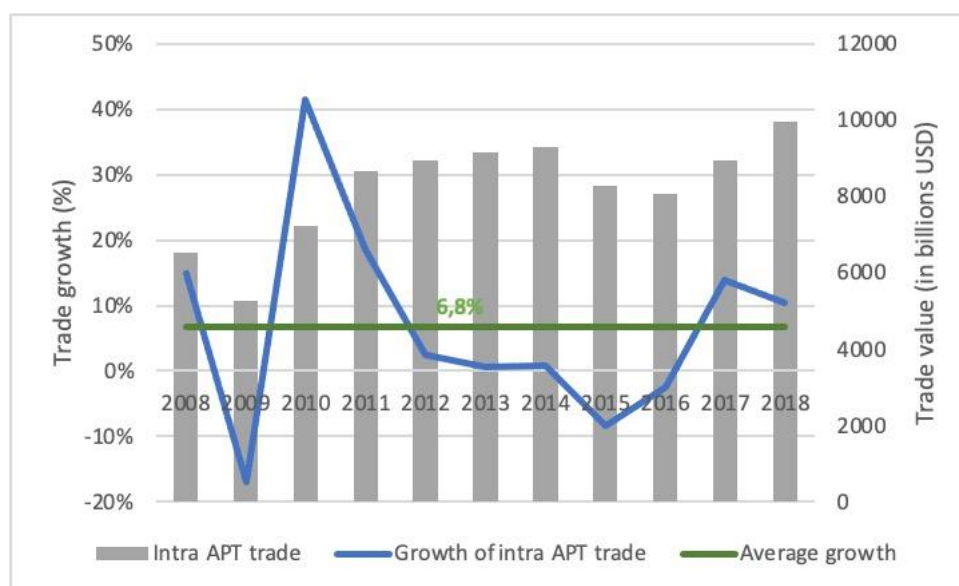
<sup>2</sup> See Figure 2.

the APT economic ministers, as input to strengthening cooperation during and moving out of the crisis.

## 1. Supply chains among APT

Trade among APT countries has been favourable in the past decade. Figure 1 shows its size steadily increased over the period 2008-2018 with growth averaging at 6.8 percent per annum. The past two years before the COVID-19 pandemic even witnessed a well-above average growth rate, reflecting continuation of rapidly growing demand coming from the expanding economies within the APT region. Aside from the demand, another factor driving favourable growth is the presence of well-connected countries that allows goods to be traded smoothly within the region.

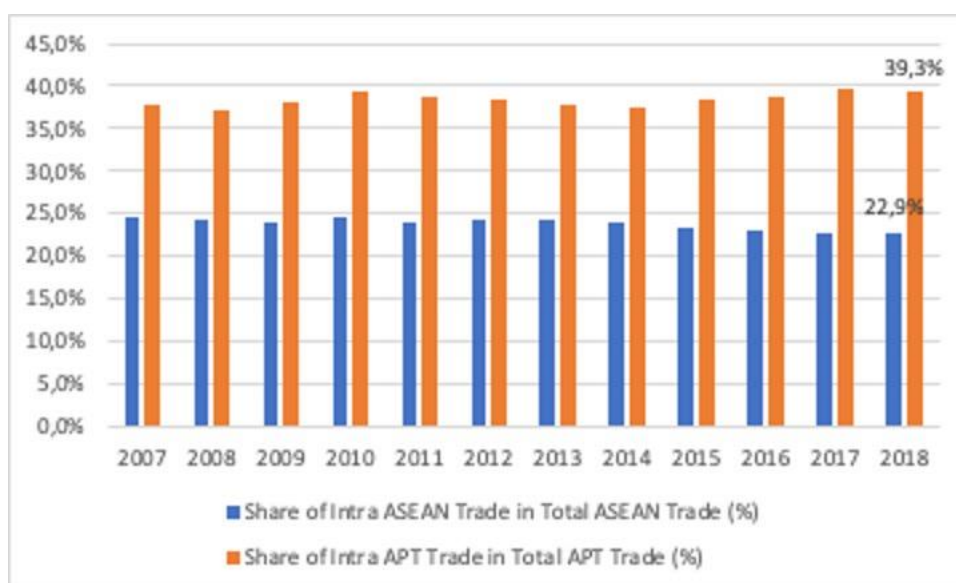
**Figure 1 Trade among members of APT, 2008-2018**



**Source:** UN Comtrade, data extracted from WITS (retrieved on 23 September 2020).

There is a steady expansion in trade between AMS as a group and the Plus Three countries, and as the share of intra-ASEAN trade slowly declined the share of intra-APT increased over time during the same period (Figure 2). This suggests that AMS have traded more with the Plus Three over this period and, given the huge demand from AMS, one can speculate that the increase in the trend of intra-APT is also a reflection of better connectivity between the ASEAN region and the Plus Three region. The trend and pattern in Figure 2 show a growing East Asia region and possibly a testament to the significance of ASEAN Centrality as the basis for wider ASEAN integration. Connectivity therefore is critical for putting the abstract idea of ASEAN Centrality into motion.

**Figure 2 Intra-ASEAN and intra-APT trade, 2008-2018**



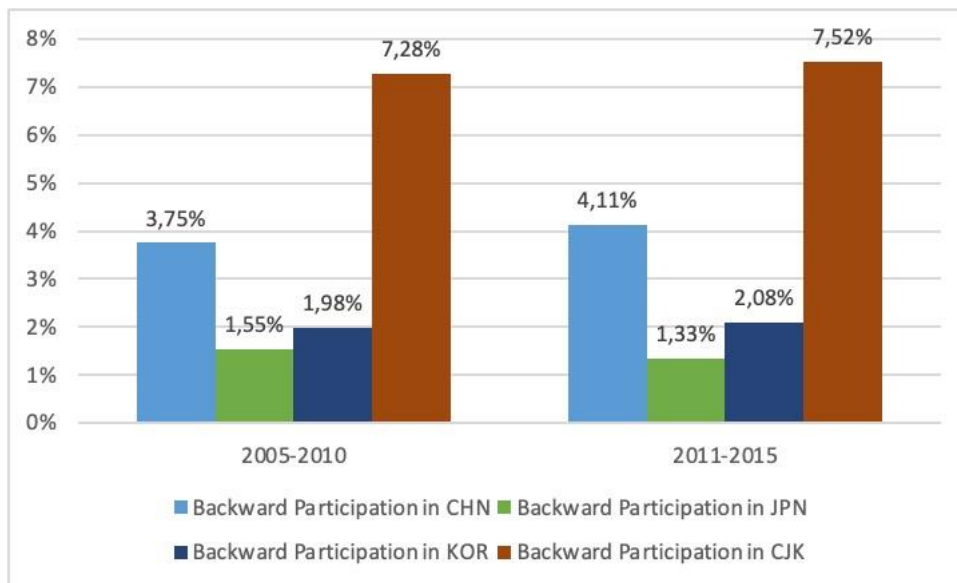
Source: UN Comtrade, data extracted from WITS (retrieved on 23 September 2020).

In the business and economic reality of regional integration, connectivity serves as a platform for production networks to settle and then connect value chains of production located in various places, including those across countries. Internationally linked value chains of production, or commonly known as global value chains (GVC), is the method adopted by companies in the world including those in the APT region. Productivity gains from GVCs enable efficient allocation of resources and keep the products affordable for consumers. In the APT region where open regionalism is practiced, GVCs fuel the high demand from the growing and relatively young population of the region that motivates production to expand and deepen value chains in the region. All these contribute to the relatively high growth of trade within the region as depicted by Figures 1 and 2.

How connected is the APT region in terms of value chains across the APT countries? One way to see the extent of connectivity in value chains (or supply chains) is by examining the backward or forward participation along the supply chains within the region. Backward participation occurs when a firm establishes an inter-firm relationship with firms in upstream industries with a purpose to acquire intermediate inputs. Forward participation occurs in the opposite direction with the purpose of supplying intermediate inputs to downstream industries.

AMS are well connected in their supply chains with the Plus Three countries. This is shown in Figure 3 in which backward participation, or the share of intermediate inputs supplied by the Plus Three countries in total exports of AMS, was considerably high at 7 percent over the period 2005-2010 and 2011-2015, although with different contribution from each of the Plus Three countries. China's backward participation was about 4 percent over the two periods, while Japan's and Republic of Korea's (ROK's) were only about half of the contribution from China. Over the two periods, there was an increase in the AMS' backward participation from China and from ROK but not from Japan

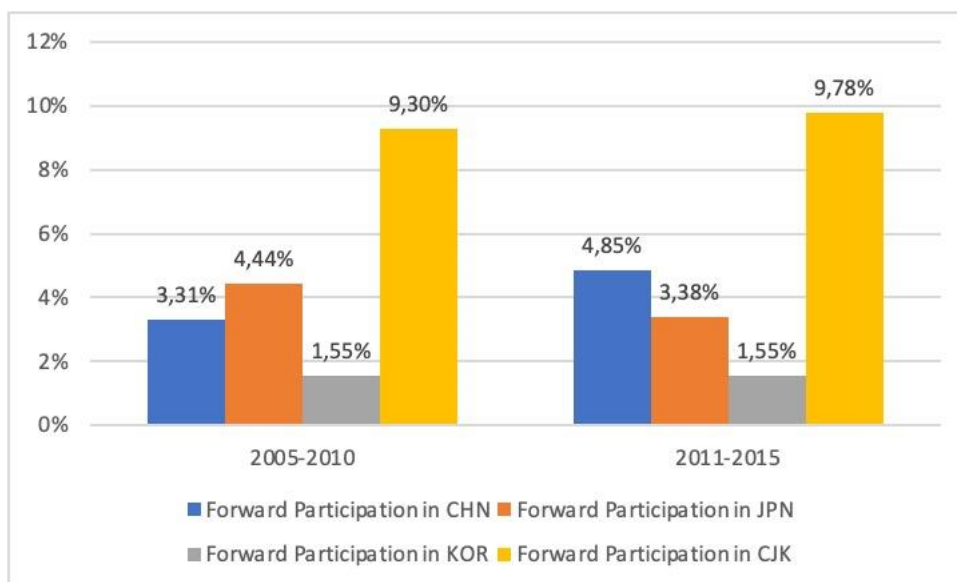
**Figure 3 AMS backward participation to the Plus Three, 2005-2010 and 2011-2015**



Source: TiVA (Trade in Value Added) 2015.

The pattern is similar for forward participation of AMS to the Plus Three. As Figure 4 shows, the share of intermediate inputs in the total export of the Plus Three countries was about nine percent over the periods 2005-2010 and 2011-2015. This was considerably high compared to the backward participation of the AMS, recorded at seven percent for the two periods. There were also varying forward participation among the Plus Three, with Japan and China recording similar but strong country level forward participation.

**Figure 4 AMS forward participation to the Plus Three, 2005-2010 and 2011-2015**



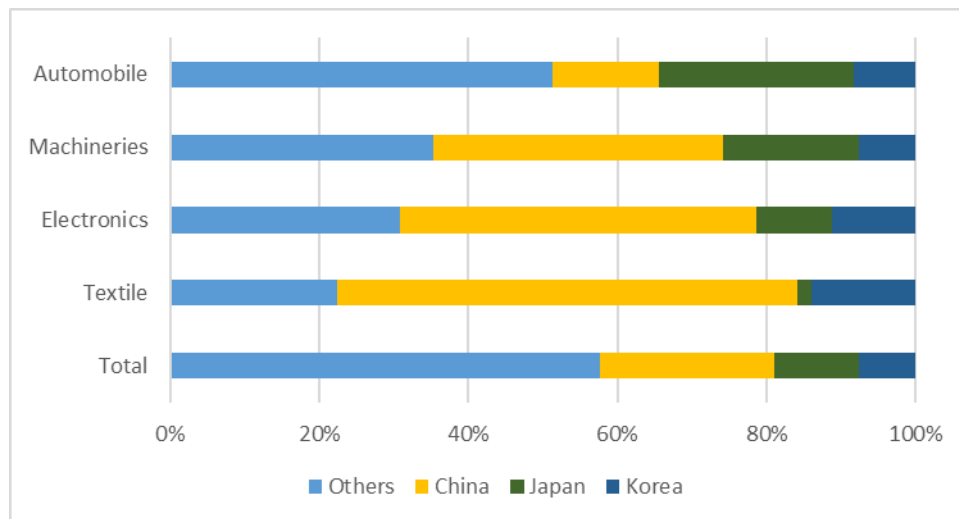
Source: TiVA (Trade in Value Added) 2015.

The interdependence between AMS and the Plus Three is clear from Figures 3 and 4 and the extent of it appears to have increased over time, reflecting that supply chains throughout the region are well connected and growing. A number of factors are behind this, with one that is particularly important is the ASEAN Economic Community (AEC). Continuous and persistent

movement of AMS with measures under the AEC initiative keeps the regime in ASEAN region open for trade and investment.

Another way to see how ASEAN and the Plus Three are deeply connected is to examine the importance of countries in the APT in each country/region in the structure of input in manufacturing. Figure 5 presents the share of imported input coming from the Plus Three in the total input used by AMS for 2015. The figure breaks down the total to several industries that are commonly characterised by the GVC model. Few observations are worth highlighting. First, input coming from the Plus Three contributed to slightly more than 40 percent of the total AMS input in the year (2015), with input from China accounting for about half of this import. Second, the pattern varies considerably between industries, with Japan contributing the highest share in automobile industries while China contributed the highest in the other industries shown in the figure. The difference can be attributed to the specialisation of the Plus Three countries in these industries.

**Figure 5 Share of imported input in AMS from the Plus Three, 2015**



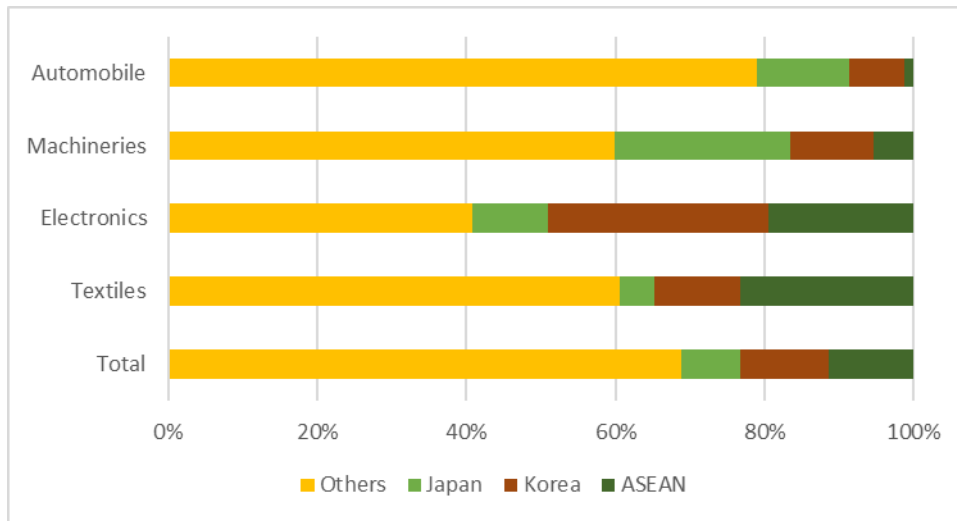
Source: TiVA (Trade in Value Added) 2015.

Figure 6 provides the picture of the AMS contribution in the import of inputs of the Plus Three in 2015. Rather different, the extent of contribution by AMS does not seem to be as large as the contribution of the Plus Three in AMS' total imports. There was however variation across the Plus Three countries and across industries. The AMS share seemed rather equal across industries for Japan, but not so for China and ROK. ASEAN's contribution to inputs in the automobile sector of Japan was the highest, while in the case of China and Korea, the highest contribution of ASEAN inputs were in the electronics and textiles sector.

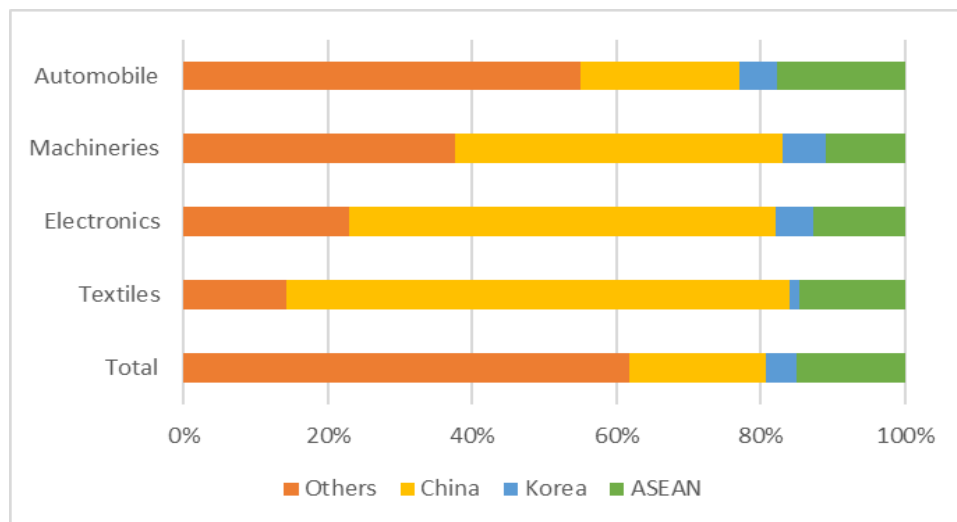


**Figure 6 Share of imported input in the Plus Three from AMS, 2015**

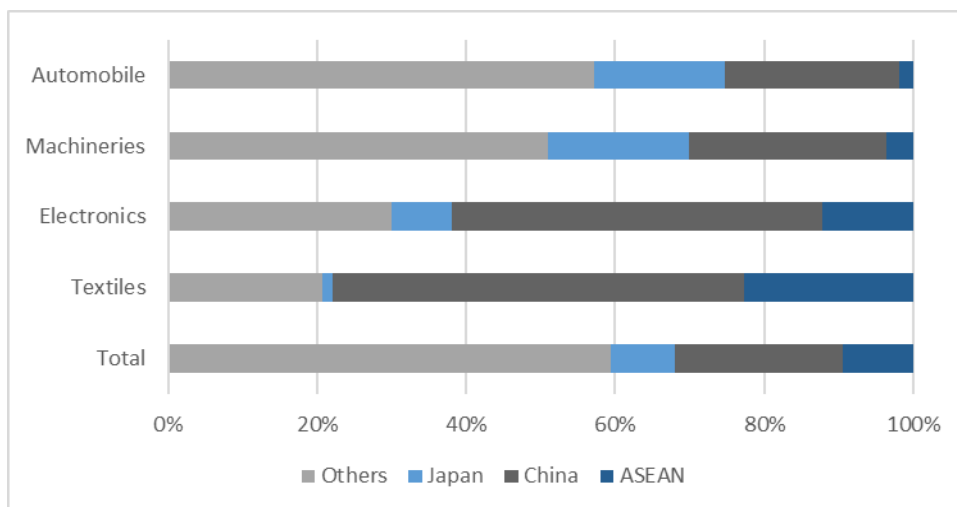
**China**



**Japan**



**ROK**

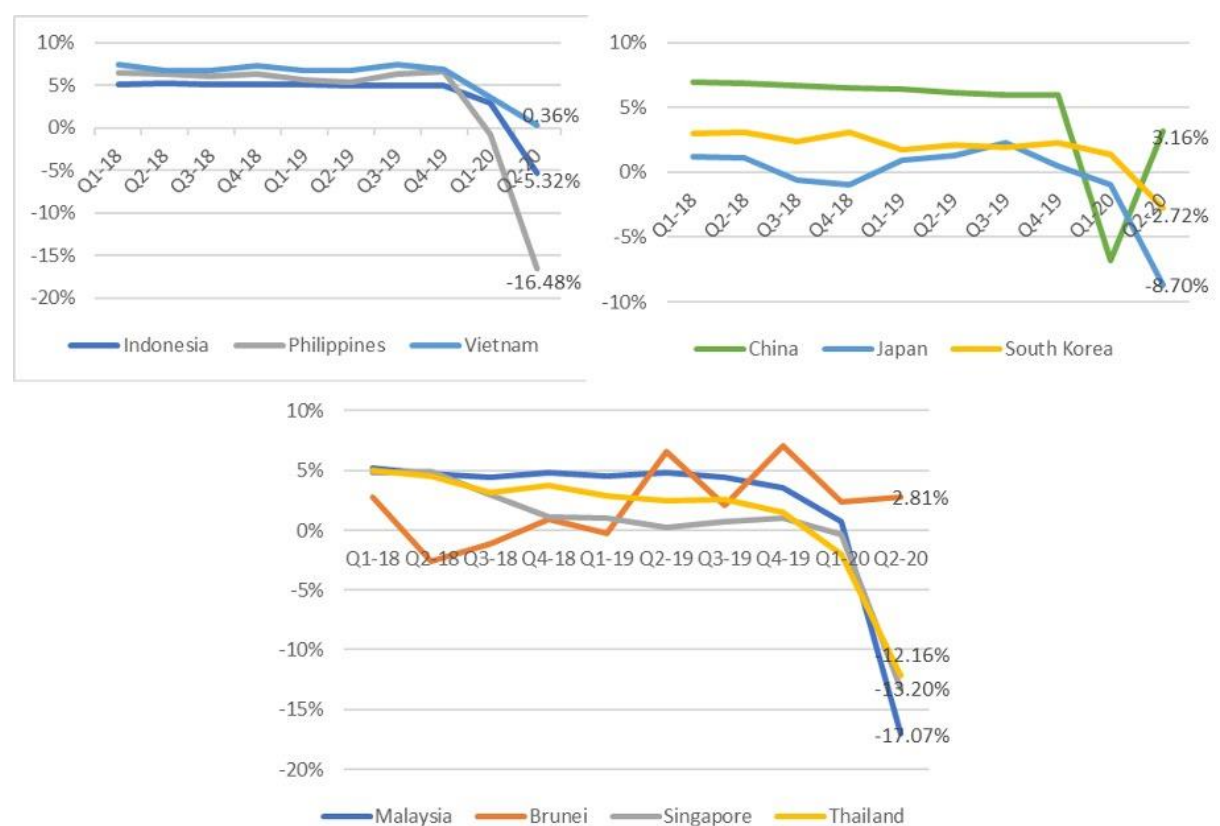


Source: TIVA (Trade in Value Added) 2015 for all the Plus Three countries.

## 2. Covid-19 pandemic and implications

The COVID-19 pandemic affected all countries in the world and created deep contractions almost at the same time. This is also clear for the APT countries as shown in Figure 7. Countries experienced sharp negative growth in both the first and second quarters of 2020, with the exception of Brunei Darussalam and China. China contracted severely in the first quarter but was quickly back to positive growth in the second quarter. The Philippines, Thailand, Singapore, and Malaysia were those most adversely affected in the second quarter, with contractions of more than 10 percent on annual basis. Viet Nam and Indonesia contracted moderately – relative to the other AMS – in the second quarter, with Viet Nam managing to stay in the positive growth region. It seems that stronger connection with the global economy worsens the adverse impact of the pandemic in some AMS.

**Figure 7 GDP growth of the APT countries, 2018 – Q2-2020**



**Source:** National income statistics of APT countries collected through CEIC database.

Behind the severe impact of the pandemic on economies is the great uncertainty arising from it. There is no clear picture of how the disease will transform the global economic landscape, which is characterised by production networks and interdependence, or whether it will alter the way the economy is run.

What then, are the likely economic impacts and implications of the pandemic on the regional economy, especially with respect to regional economic governance?

The first major impact is the disruption of supply chain performance in the region. With the major pandemic shock, the supply and demand of intermediate inputs by factories in China and the outputs of many AMS have been badly affected. This is exacerbated by disruptions to

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factories in Japan and the Republic of Korea, albeit to a lesser extent than in China. However, the supply side is not the whole story. With high expectations of a major global economic crisis, there will be a sharp drop in global consumer demand from the large negative wealth effect, which reinforces the supply-side effect and deepens disruptions to the GVCs. Thus, GVCs are affected from both the supply and demand sides of the regional and global economies.

Growth in connectivity – the key factor of a stronger GVC – has been disrupted by the pandemic and is expected to stagnate for the next few years as countries recover. Public investment, one of the drivers of the expansion in hard infrastructure projects for connectivity, is likely to be depressed in the near future because of the massive funding reallocation and new government debt stemming from reviving the national health systems and providing stimulus or social safety nets for people adversely affected by the downturn/recession. Thus, ensuring growth in connectivity is one of the critical challenges to be resolved in the post-pandemic era.

Second, there is likely an increase in GVCs' operational costs due to the limited supply of services and the application of restrictive NTMs. Disruptions to the supply of services will likely result from more restrictive movement of professionals between countries, as one source of disease transmission is through the movement of people across borders.

Countries are likely to apply NTMs to help manage the situation if a similar event occurs in the future. Since our knowledge of COVID-19 is still nascent, countries could begin by raising the bar for sanitary and phytosanitary (SPS) food safety measures. Some AMS have imposed other forms of NTMs, such as export prohibitions on essential goods like medical equipment and masks, in response to concerns about supply shortages (Global Trade Alert 2020). The uncertainty caused by the pandemic could force additional countries to apply more restrictive NTMs, which could become permanent if regional efforts do not monitor and control it. More restrictive NTMs increase the cost of inputs in the value chains for manufacturers.

The pandemic affects manufacturers operating in various sectors, especially those that are part of GVCs, and it may induce them to implement new strategies as they learn how to deal with the pandemic. The first strategy is the adoption of new technology. The pandemic caused a drop in both supply and demand, as noted above, but this is expected to recover at some point. When that happens, manufacturers investing in technology have a better chance of increasing production rapidly as demand picks up. This is possible because the disruption comes at a time when the manufacturing process has undergone rapid technological change through the introduction of automation and robotics (typical IR 4.0 technology).

Many manufacturers could bring forward the installation of new technology because of the pandemic. This is not uncommon, as evidence from other crises has shown the existence of this behaviour. The pandemic could thus introduce a change that is permanent at the company level.

MNEs will also be impacted. One potential response is 'reshoring', i.e. transferring production activities (or value chains) back to home countries. Since the home countries are typically developed countries, reshoring is based on the logic that the use of advanced technology is skill-intensive and labour-saving. Firms may choose to reshore some production activity back to their home base or to source locally made inputs rather than importing, taking advantage of supply chain diversification incentives provided by governments partly because of the recognition of the inherent risks of massive supply disruptions to fragmented production networks.

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In the short term, MNEs could also diversify their production networks to new locations in other countries. This is part of their new risk assessment for the post-pandemic period that depends on various changes in the business environment, host-country investment and trade policy, and production technology.

Another possible response from MNEs is to consolidate their activities in the countries of consumption of their products. Such consolidation reduces the risk of a breakdown in value chains if another crisis of a large magnitude occurs, although it increases inefficiency because it relies less on international production networks. Consolidation is less damaging than reshoring, but it only favours countries with high growth.

It is important for a country, or regional country grouping such as ASEAN or ASEAN with its Dialogue Partners, to minimize all potential adverse impacts of the pandemic and to ensure that all these impacts are temporary. While the existence of networks along the value chains tends to exacerbate the adverse economic impact, it is well known that production networks within the chains are inherently resilient to economic shocks.<sup>1</sup> Recovery can come faster relative to that in other economic activities once the shock is over, as production networks were typically robustly established with substantial investment in the long-run perspectives (Kimura 2020).

Therefore, regional policy coordination is critical to mitigate and isolate the pandemic shock and that reacting early to the pandemic shock reduces the pending economic shock (Kimura et al. 2020). It provides opportunity to recognise infrastructure and institutional gaps in regional value chain networks, which should be useful to maintain the existence of the networks and their sustainability during slow-demand recovery period.

### **3. Objectives of the study**

This report was prepared to document the Joint Study on 10+3 Cooperation for Improvement of Supply Chain Connectivity (SCC) conducted by four research institutions representing the Plus Three and AMS. The joint study is the implementation of the agreement made by the Economic and Trade Ministers of China, Japan and ROK at the 11th Trilateral Economic and Trade Ministers' Meeting, to extend the Joint Project on "Trilateral Cooperation for Improvement of Supply Chain Connectivity (SCC)" to cover AMS under the framework of the APT.

The objectives of the study are as follows:

- a. Provide insights on the resilience of supply chains in the region in the face of uncertainties such as COVID-19.
- b. Put forward practical policy suggestions on improving supply chain resilience and connectivity of APT region and to be submitted to the AEM Plus Three Consultations and the APT Summit.

The research results are expected to play a role in further deepening cooperation on supply chains within the APT countries, raising regional trade and investment levels and overall international competitiveness, and promoting economic development in the APT region. The Joint Study will also complement on-going ASEAN initiatives to improve the trade environment and deepen integration.

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<sup>1</sup> Evidence for this were documented in, for example, Obashi (2011), Ando and Kimura (2012) and Okubo, Kimura, and Teshima (2014).

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The joint study covers APT countries and was done by four research institutes, that is, Chinese Academy of International Trade and Economic Cooperation (CAITEC), Economic Research Institute for ASEAN and East Asia (ERIA), Japan External Trade Organization (JETRO) and Korea Institute for Foreign Economic Policy (KIEP). The study adopted in-depth interviews with companies as the main methodology, covering mostly manufacturers that have supply chain connections within APT countries. Inferences about how companies responded to the pandemic were drawn and used as the basis in formulating the policy recommendations.

## **II. Sub-Reports of each Research Institution (See Preface)**

### **III. Joint Policy Recommendations**

The preceding chapter presented an assessment of supply chains in the region, based on responses from firms located in the four economies, namely, China, Japan, Korea, and ASEAN, and looking at the prevailing economic and policy environment. Each Sub-Report contained policy recommendations for improving supply chain coordination in the region, ranging from detailed propositions to broad statements, with some particular to the economy and others concerning the region. The recommendations found common in the four Sub-Reports are consolidated in this chapter.

The following are the joint policy recommendations, for consideration of APT Countries:

#### **1. Apply a more holistic consideration to supply chain connectivity to give due consideration to essential services as well as human resource and intermediate inputs for the production of essential products.**

With the disruption caused by COVID-19, countries have been quick to commit to ensuring supply chain connectivity, focusing on essential products for combating COVID-19, such as food and medical supplies and equipment, as well as safeguarding livelihoods. However, connectivity is required not only for the final goods and services but also for the corresponding intermediate inputs and services. Thus, the movement control restrictions imposed in countries can still disrupt production and supplies even in the exempted sectors.

In terms of intermediate inputs, for example, it was highlighted that production in the exempted essential sectors may be disrupted by the difficulty in obtaining intermediate inputs that are deemed “non-essential” such as packaging materials either due to production or operational disruptions. The same can be experienced in terms of supporting services e.g. machinery maintenance, processing, and the supply of other secondary materials beyond direct materials such as tools and consumables.

Similarly, due consideration should be given to the travel required for the operational needs of supply chains or in other words the industry human resources. For example, firms need

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professional and technical experts for production, installation, and maintenance of equipment or plants; case in point is the need for engineers and managers. Discussions on travel corridor arrangements, with observation of health protocols as a priority, should therefore be encouraged, but shall be informed by inputs of the supply chain and industry operators on the ground.

## **2. Improve infrastructure: production, logistics, new and digital technologies**

In some APT countries, logistical costs can be significant, eroding competitiveness of the industry. There need to be continuous effort to increase the availability and quality of logistics infrastructures to boost overall competitiveness. To a large extent this would include both physical and soft infrastructure. There is no doubt that digital technology can significantly upgrade the quality and efficiency of infrastructure.

Additionally, the industry engaged in global supply chains should also be encouraged to invest in digital-based production infrastructure, retiring old technologies and machineries, introduction of new technologies, among others to improve productivity or to improve transparency of such supply chains. To an extent this can be supported with well-designed policies that encourage innovation and technology investment, adoption, and capabilities building.

Investment in new infrastructures such as 5G infrastructure, fibre-optic communication networks, data centres, will improve efficiency, lower costs, and promote integration into global markets.

## **3. Ensure supply chain resilience**

While this is a long-standing recommendation, it has been further amplified by the supply chain disruptions caused by the COVID-19 pandemic. On the outset, it should be made clear that this recommendation does not vouch for de-globalisation or complete reshoring, or non-inclusive or discriminatory global value chains, but rather put forward the business case of ensuring resilience by way of risk diversification of sourcing and procurement alike.

Efforts to ensure supply chain resilience in the face of supply or demand-side shocks include strengthening development of domestic supporting industries both in downstream and upstream sectors, including through foreign investment and development of local human capital, ensuring the openness of and circulation in the domestic market, and diversification of production bases and procurement sources. The development of small and medium-sized supporting industries should not be overlooked as they play a key role in enabling the operation of large manufacturers in high-value industries that often get the attention.

## **4. Strengthen regional coordination and dialogue to deepen supply chain connectivity and intra-regional trade**

In normal days, and even more so in times of crises, strong communication and coordination on policies can help support the continued operations of supply chains in the region. The sharing and exchange of information of border measures e.g. customs clearance, SPS introduced, amended, or removed, can significantly help in the planning and coordination of supply chain activities, supported by the commitment to maintain the operation of cross-border administrative and logistical procedures. Similarly, in the event of border control due

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to pandemic or other infectious diseases, close coordination between relevant authorities is essential.

In addition, the implementation of FTAs can help provide certainty for supply chain connectivity, as they would typically contain provisions related to tariff liberalisation, customs procedures, trade facilitation, SPS measures, and standards and conformance. To this end, the signing and early entry into force of the Regional Comprehensive Economic Partnership (RCEP) is crucial.

APT Countries shall also make the best use of the recently adopted ASEAN Plus Three Plan of Action on Mitigating the Economic Impact of the Covid-19 Pandemic, which focuses on keeping markets open for trade and investment and strengthening economic resiliency and echoes the spirit of this recommendation.

## **5. Addressing cross-border bottlenecks**

Lengthy customs and other cross-border administrative procedures create bottlenecks and increase trade costs. Inconsistent and incompatible border regulations and standards hinder supply chain connectivity in the region. APT countries should implement necessary reforms to simplify and expedite border formalities to ensure seamless flow of goods, focusing on expediting goods releases and removing unnecessary import restrictions. This may include the use of new infrastructures and digital technology, to facilitate cross-border connectivity, and for an expanded use of advanced risk management approach.

Within ASEAN, a number of trade facilitation initiatives have been pursued and gaining pace recently, including the ASEAN Trade Repository, ASEAN Single Window, ASEAN-wide Self Certification Scheme, and Authorised Economic Operators (AEO). While there is still unevenness in the implementation, this is a step in the right direction, and regular engagements should be encouraged to reduce information gap and address technical issues. In addition, given the close interconnection of the APT Countries particularly in the supply chain context, the expansion of some of these initiatives, where appropriate, could be explored, for example on the use of the single window facility for the exchange of certificate of origin.

## **6. Promote digitalisation in supply chains, with the aim of achieving end-to-end trade digitisation**

APT Countries should prioritise investments in ICT infrastructure and corresponding human resource development, and promote the use of digital technology in supply chains. Such effort should be pursued by industry and governments alike.

Digitisation of customs and other administrative documents and digitalisation of cross-border formalities, including customs procedures, would shorten the length of time for trade transactions, and should be progressively applied more broadly to documents and transactions required for cross-border trade. To achieve this, cooperation among countries in the electronic exchange of documents and trade related data, which may include development or improvement of relevant infrastructure, as well as the corresponding laws and regulations that provides the same legal authority for digital documents and procedures, as the original hard copies, should be strengthened.

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## IV. Way Forward

The APT region, as one of the world's most dynamic and promising regions in terms of economic growth, plays an increasingly important role in GSC. Economies in the region are highly complementary and have great potential in cooperation with each other. The outbreak and wide spread of COVID-19 have presented new challenges to SCC in APT countries. The shock of COVID-19 has impeded logistics, trade, and mobility of the people, caused many negative effects on the operation of firms, and made SCC in the region face the risk of a breakdown. As of September 2020, there were countries where COVID-19 infections were not yet under control and countries where infections rebounded. Under the new circumstances, improving SCC will help forge a more resilient supply chain and ensure economic recovery and growth in the region. It also plays an important role in boosting confidence in global economic recovery and facilitating the achievement of sustainable development goals (SDGs).

While striking a balance between containing COVID-19 and resuming work and production in their own countries, governments of APT countries need to cooperate to maintain the stability and resilience of global industrial and supply chains. They should strengthen communication and coordination on policies that may affect supply chains, especially to discuss coordination of policies during the recovery phase to ensure that existing production networks are functional, so that upstream and downstream firms in different countries can quickly recover. They should try to prioritise human life without hindering global supply chains, by taking concrete measures that can realize contactless and remote business activity through the use of digital technologies and data, as well as the provision of regional rules that support them.

APT governments should keep on promoting liberalisation and facilitation of trade and investment, reducing cost of customs formalities, facilitating transportation and personnel exchange, and building a freer, fairer, more transparent, non-discriminatory and convenient environment for international logistics, trade, and investment. They should accelerate the establishment of RCEP and other region-wide FTAs or mechanisms to provide institutional guarantee for SCC, and enhance the implementation of these agreements. Furthermore, they should discuss how to expand the trade facilitation provisions of the AEC Blueprint and those specified in the "ASEAN Plus One" trade agreements with CJK, or even the feasibility of an APT FTA.

Considering the rapid development of digital economy in the pandemic and its importance to firms and individuals, APT countries should step up to improve the connectivity of digital supply chains, promote its application in production and governance, enhance technology sharing and capacity building, and develop Technical and Vocational Education and Training (TVET) programs, to make SCC benefit more people in the region in the digital era.

It is desirable to wait for COVID-19 treatments and vaccines to be developed in the near future. However, to avoid similar risks that could occur in the future, APT countries should cooperate together and take concrete actions as soon as possible, particularly countries living and working together in the same region and the same economic activity area. To this end, it is necessary to implement the policies recommended in this report.

In the long run, the APT region has mature and large-scale manufacturing systems, strong industrial support capabilities and huge consumer markets. This supply chain, based on highly specialized division of labor and broad collaboration, has strong resilience and unique



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advantages in cushioning the impact of global public emergencies. Although there are a lot of uncertainties to COVID-19 and other possible challenges in the future, the APT region will keep the competitive advantage position in global industrial and supply chain networks and remain as the most dynamic region in the world, if the APT countries work together to jointly improve SCC. Thereby, it will make greater contributions to the connectivity of GSC and global economic growth.

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