



*The COVID-19 Pandemic:  
Impact on ASEAN Connectivity  
and Recovery Strategies*  
**Policy Insights**



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This document was developed by the Economic Research Institute for ASEAN and East Asia (ERIA) with the inputs of the OECD experts in 2020-21 as a contribution to the OECD Southeast Asia Regional Programme (SEARP). SEARP has been supporting the policy makers in the region in addressing their domestic priorities and regional integration efforts since 2014.

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## I. Introduction

Since the beginning of 2020, the outbreak of the coronavirus disease (COVID-19), which originated in Wuhan, China, has threatened global connectivity and supply chains. The global order, which was marked by the interdependence of nations, international trade, and the cross-border movement of people, came to a grinding halt. What started as disruptions in, and the breakdown of, supply chains soon became restrictions on the cross-border movement of people. These necessary protective measures have severely affected global economic activity. In 2020, the International Monetary Fund (IMF) had predicted that 'the global economy will experience its worst recession since the Great Depression, surpassing that seen during the global financial crisis a decade ago' (IMF, 2020).

However, in the World Economic Outlook (WEO) 2021, the IMF has a more realistic assessment of the global economy where 'global recovery continues, but the momentum has weakened and uncertainty has increased' (IMF, 2021). According to the WEO 2021, the fault lines opened up by COVID-19 are looking more persistent and near-term divergences are expected to leave lasting imprints on medium-term performance. Vaccine access and early policy support are the principal drivers of the gaps.

The IMF revised its projection on the growth rate of the world in 2020 from the original figure of 3.4% in October 2019 to -3.0% in the latest WEO released in April 2020 (Table 1). All countries and groups of countries are projected to suffer from severe adverse impacts. Emerging and developing Asian countries are no exception, but the negative shocks are relatively moderate here. In the IMF's projections for ASEAN, Thailand, Viet Nam, and Cambodia are projected to contract sharply, probably because of their relatively high dependence on the United States (US) and European countries, which are hardest hit by the pandemic. (Figure 1).

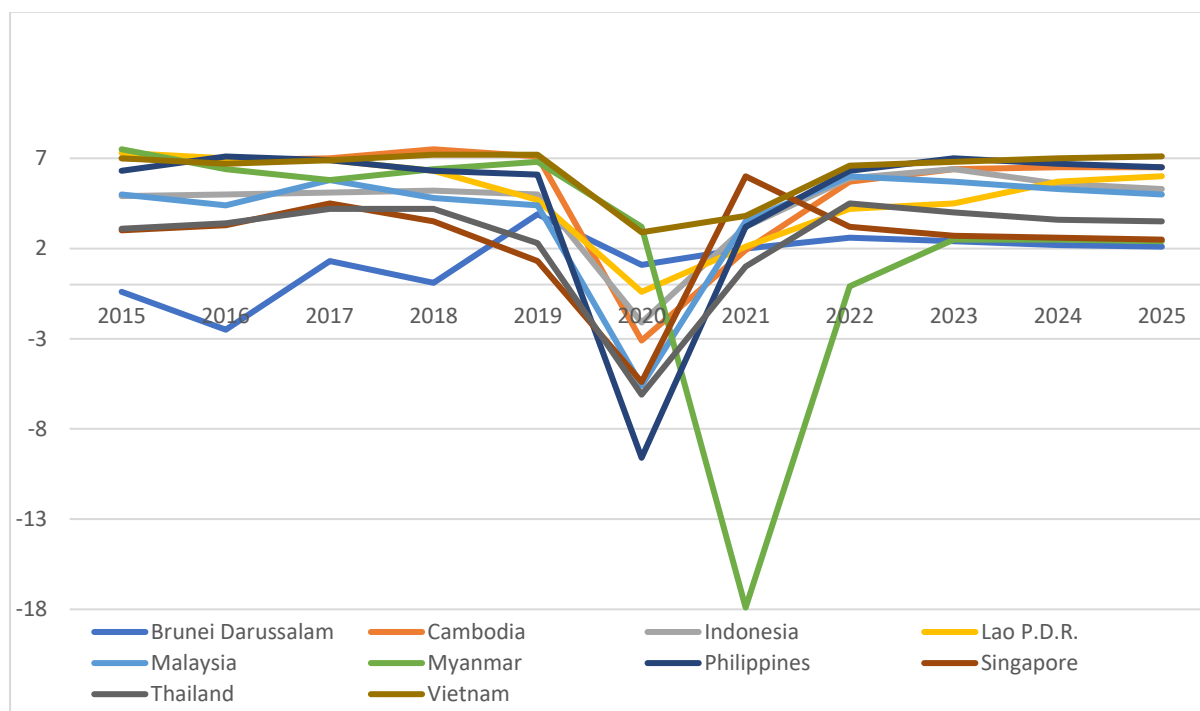
**Table 1: Impact of the COVID-19 Pandemic: Overview of the World Economic Outlook Projection (annual % change)**

(Real GDP, annual percentage change)	2020	2021	2022
<b>World Output</b>	<b>- 3.1</b>	<b>5.9</b>	<b>4.9</b>
<b>Advanced Economies</b>	<b>- 4.5</b>	<b>5.2</b>	<b>4.5</b>
United States	- 3.4	6.0	5.2
Euro Area	- 6.3	5.0	4.3
Germany	- 4.6	3.1	4.6
France	- 8.0	6.3	3.9
Italy	- 8.9	5.8	4.2
Spain	- 10.8	5.7	6.4
Japan	- 4.6	2.4	3.2
United Kingdom	- 9.8	6.8	5.0
Canada	- 5.3	5.7	4.9
Other Advanced Economies	- 1.9	4.6	3.7
<b>Emerging Markets and Developing Economies</b>	<b>- 2.1</b>	<b>6.4</b>	<b>5.1</b>
Emerging and Developing Asia	- 0.8	7.2	6.3
China	2.3	8.0	5.6
India	- 7.3	9.5	8.5
<b>ASEAN-5</b>	<b>- 3.4</b>	<b>2.9</b>	<b>5.8</b>
Emerging and Developing Europe	- 2.0	6.0	3.6
Russia	- 3.0	4.7	2.9
Latin America and the Caribbean	- 7.0	6.3	3.0
Brazil	- 4.1	5.2	1.5
Mexico	- 8.3	6.2	4.0
Middle East and Central Asia	- 2.8	4.1	4.1
Saudi Arabia	- 4.1	2.8	4.8
Sub-Saharan Africa	- 1.7	3.7	3.8
Nigeria	- 1.8	2.6	2.7
South Africa Memorandum	- 6.4	5.0	2.2
<b>Emerging Market and Middle-Income Economies</b>	<b>- 2.3</b>	<b>6.7</b>	<b>5.1</b>
<b>Low-Income Developing Countries</b>	<b>0.1</b>	<b>3.0</b>	<b>5.3</b>

GDP= Gross Domestic Product, IMF = International Monetary Fund

Source: IMF (October 2021)

**Figure 1: Impact of the COVID-19 Pandemic: Real GDP Growth Projection by the IMF in ASEAN Member States (annual % change)**



GDP= Gross Domestic Product, IMF = International Monetary Fund.

Source: IMF, 2021.

**Connectivity during the COVID-19 pandemic:** When the COVID-19 was declared a global pandemic in February 2020, the Association of Southeast Asian Nations (ASEAN) Economic Ministers recognised ‘the adverse impacts of the COVID-19 outbreak on the economy, particularly including but not limited to the travel and tourism, manufacturing, retail, and other services sectors as well as the disruption of supply chains and the financial markets’. ASEAN agreed to resolve to ‘strengthen a long-term supply chain resilience and sustainability, including through better transparency, agility, diversification and, in particular, the implementation of the Master Plan on ASEAN Connectivity (MPAC) 2025’. (AEM, 2020: 1–2).

All ASEAN trade partners recognised the importance of the ASEAN Economic Ministers (AEM) statement. The AEM further resolved to ‘remain committed in keeping the ASEAN market open for trade and investment ... and enhance economic cooperation with external and development partners to include initiatives aimed at strengthening regional supply chains to make them more resilient and less vulnerable to internal and external shocks’ (AEM, 2020: 2).

The world is still in the middle of the turbulence, and at the time of writing, there is no single expert opinion to forecast the future course of the pandemic and of the global economy. The

pandemic put global connectivity at risk like never before. ASEAN Member States (AMS) put in place some of the toughest restrictions on movement of goods and people during 2020 - 2021. The year 2022 is witnessing the easing of restrictions on connectivity and movement of people. Data shows that the ASEAN's manufacturing capacities have experienced a deep dent due to disruptions in connectivity, closure of borders but have yet proven to be resilient to the internal and external shocks. ASEAN recognises the prosperity that connectivity has brought to the region, and to the world. As the ASEAN Economic Ministers emphasised in their statement of 2020, it is time to reconsider the resilience and the sustainability of connectivity, instead of focusing too much on the efficiency and the effectiveness of connectivity, in which the economic aspect is the major criterion for evaluation. The assurance of physical connectivity has become a critical need and it shows in the renewed efforts for increased connectivity amongst ASEAN and between its regional partners.

### **People-to-people connectivity: Social, economic, and political costs**

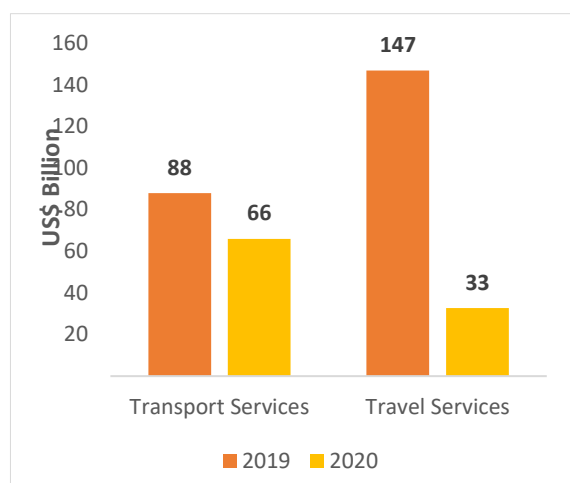
The most conspicuous and unpopular aspect of the pandemic was the restriction on human mobility within and across borders. In the hope of curbing COVID-19 transmissions, numerous national governments introduced social mobility and distancing measures. Some of the countries applied very restrictive policies for domestic and international travel, supplemented with complete or partial lockdown of workplaces and factories during 2020 and a greater part of 2021. Mobility restrictions, while necessary in many cases, have proven to be costly for economies.

Besides the social costs and mental health issues, restrictions on movement of people in ASEAN have negatively affected the tourism and hospitality industry since March 2020. Social distancing, entry and travel bans, quarantines, and movement controls has had a contagion effect on trade in services in ASEAN. According to a report from the United Nations World Tourism Organisation (UNWTO, 2020), between January and March 2020, travel restrictions were imposed for all worldwide destinations. In 2019, Association of Southeast Asian Nations (ASEAN) countries accounted for 70.1% of all travellers, with East Asia adding another 6% (Tourism Malaysia, 2019). ASEAN has been one of the hardest-hit areas by COVID-19, and the tourism economy in the region has come to a complete halt. The total number of visitor arrivals to ASEAN dropped sharply from 143.6 million in 2019 to only 26.2 million in 2020 (ASEAN, 2021a). Travel and movement restrictions put in place due to COVID-19 pandemic seems to have significantly impacted the number of visitor arrivals to ASEAN. Thailand experienced the highest number of visitor arrivals in 2020, with 6.7 million, followed by Malaysia and Indonesia, with around 4 million of visitor arrivals respectively. Meanwhile, other AMS recorded visitor arrivals below 4 million.

People-to-people connectivity has a major influence on ASEAN's economy. ASEAN's trade in services relies greatly on the travel and tourism sector. In 2018, 12% of ASEAN's GDP came from this sector. Travel accounted for 33% of ASEAN's total services exports in 2019.

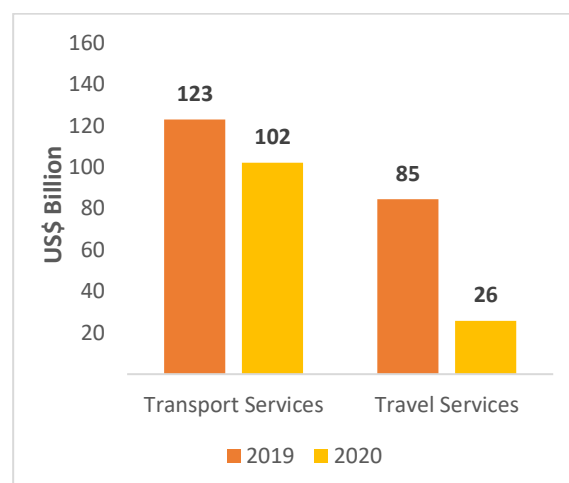
However, in 2020 the share of travel in total ASEAN exports of services was 10.3%, making it the fourth contributor of ASEAN exports of services. (ASEAN, *ibid.*). Further, travel contributed only 8.0% to the import of services in 2020, a huge drop from around 20% in previous years. (Figure 2.1 and 2.2).

**Figure 2.1: ASEAN's Exports of Transport and Travel Services, 2019-2020 (\$ Billion)**



Source: ASEAN (2021a, 2021b)

**Figure 2.2: ASEAN's Import of Transport and Travel Services, 2019-2020 (\$ Billion)**



Source: ASEAN (2021a, 2021b)

The World Travel and Tourism Council (WTTC, 2020) has reported that the tourism industry is likely to recover more slowly than other sectors of the economy, as it took more than 19 months to recover in the cases of previous pandemics. This will have a critical effect on economic growth and employment in ASEAN.

Apart from its negative impact on cross-border movement of people and international travel for leisure and business, the COVID-19 pandemic has greatly affected the international mobility of students. The ASEAN region has countries with student mobility ratios of less than one as these countries are net importers of education services. With international travel restrictions, students enrolled in overseas universities' study programmes had to transition to online learning. From the perspective of students looking to move overseas for education, the restrictions on travel have produced multiple challenges. (Palit, Murali, Jha, 2021). These challenges range from having to adjust to new modes of learning and lack of available capacities, to overseas education becoming a distant and inaccessible prospect. The student mobility issues will weigh upon the import of education services and human resource development in the medium and longer term.

**ASEAN Community Building and Virtually Simulated Connectivity:** The ASEAN community building process is carried out through year round sectoral meetings of officials and stakeholders, as well as through ministerial-level meetings for economy, defence, energy, and



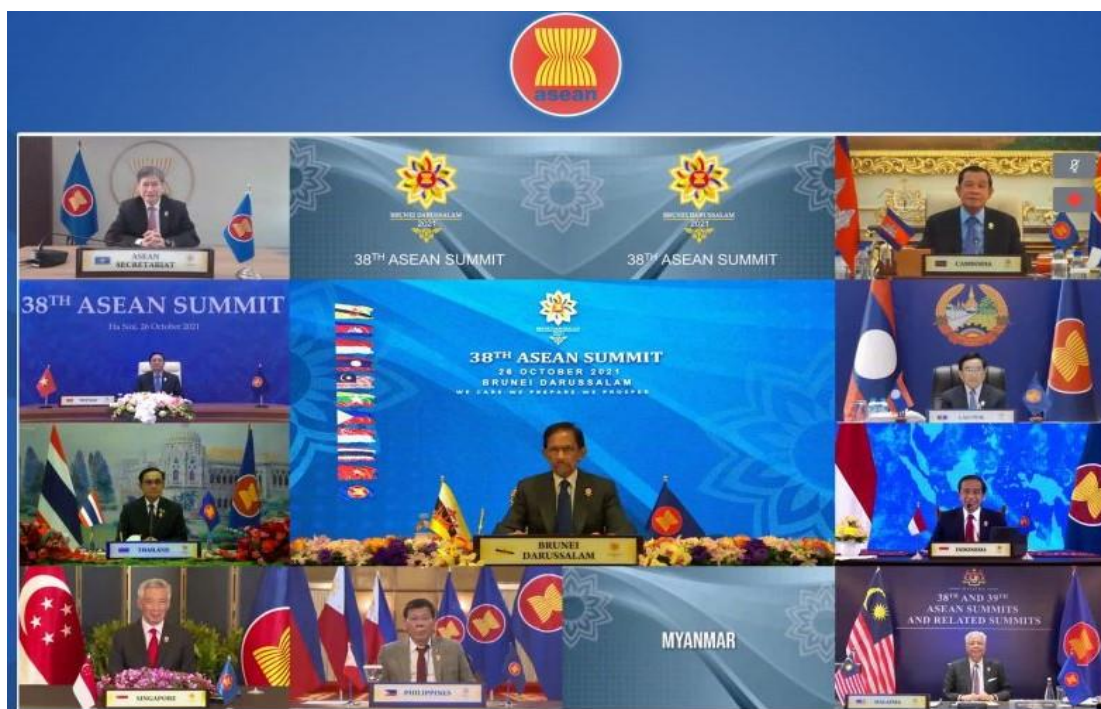
other important subjects. The ASEAN Summits and related summits with its dialogue partners, and the East Asia summit are the major milestones in the ASEAN community calendar, as these meetings deliberate upon the progress of the community building process and matters of regional and global importance to ASEAN and its dialogue partners.

At the onset of the pandemic in ASEAN in March 2020, Viet Nam, the then chair of ASEAN, responded quickly to the disruption of social and physical connectivity, addressing the breakdown in connectivity and supply chains and keeping the momentum of the ASEAN community building process intact through virtual meetings and summits all through the year. AEM adopted the 'Hanoi Plan of Action on Strengthening ASEAN Economic Cooperation and Supply Chain Connectivity in Response to the COVID-19 Pandemic' on 19 June 2020 (ASEAN, 2020a). The action plan includes cooperation on enabling the trade of important goods (food, medicines, medical equipment, and other related products), as well as assisting in the production of and improving access to COVID-19 medicines and vaccines through the strengthening of supply chain connectivity.

Viet Nam was able to steer the ASEAN community building processes despite the barriers to travel and assembly of people. Without losing the momentum, it led the AMSs through the initial shocks to the regional economy. The AEM statement and the Hanoi action plan underlined policy measures to keep the ASEAN supply chains resilient and provide a template to enhance the trade and economic cooperation mechanisms within ASEAN and with its Dialogue Partners during and in the post-COVID-19 recovery phase. The ASEAN Comprehensive Recovery Framework (ACRF), adopted at the 37th ASEAN Summit in Ha Noi, Viet Nam, serves as the consolidated exit strategy from the COVID-19 crisis (ASEAN, 2020b).

In 2021, Brunei Darussalam hosted and chaired the 38th and 39th ASEAN summit and related meetings in virtual mode. (Figure 3).

**Figure 3: 38th and 39th ASEAN Summit Meeting in Progress in Virtual Mode**



Source: ASEAN. <https://asean.org/chairmans-statement-of-the-38th-and-39th-asean-summits/> (accessed on 31 March 2022).

The virtual connectivity amongst leaders and officials helped in bringing out some important statements on ASEAN community building progress and the strategies for the post-pandemic recovery and rebuilding. The stress of year-long restrictions on mobility and several economic sectors was evident in the ASEAN processes. It is notable that the Chair's statement of 38th and 39th ASEAN summit dedicated eight paragraphs to underlining the importance of deeper relations with external partners as an indispensable element in the ASEAN community vision of 2025. (ASEAN, 2021c: 22–24). Understandably, the need for cooperation in restoring connectivity and growth was an important agenda for the ASEAN leaders.

The stress on physical connectivity has brought a renewed focus on assured infrastructure (both physical and institutional), supply-chains, and digital connectivity. The degree of openness and availability of the three factors determined productivity and growth during the pandemic, besides ensuring a minimum level of connectivity amongst people, economies, and regions during the first two years of pandemic.

This paper examines the performance and resiliency of physical connectivity (land and air transport), supply chains and trade, and the digital connectivity during the COVID-19 pandemic in the ASEAN region. The final section of the paper draws policy recommendations for the recovery and rebuilding strategies in ASEAN.

## **ASEAN's Economic Resilience in Response to the COVID-19 Outbreak: Infrastructure, Trade, and Digital Connectivity**

ASEAN responded early and swiftly in the face of the pandemic as shown in many statements or declarations issued and initiatives taken, first in health, defence, and foreign affairs meetings. Later, the discussion and co-ordination continued across affected sectors such as agriculture, education, labour, social welfare, tourism, MSMEs, trade, and transport. The relevant sectoral bodies committed to work together in the face of the pandemic and recognized the value of collective response and resilience. For example, in addition to the health sector responses, ASEAN agreed, as part of its immediate priorities, to keep markets open for trade and investment and to facilitate seamless flows of essential goods, including food, medicine, medical products and other essential products. (ASEAN, 2020b). Such early actions were reflected in the performance and resilience of connectivity infrastructure and trade, to varying degrees. Digital connectivity, on the other hand, was both the enabler of connectivity during the pandemic, as well as the measure of development gaps in the region.

### **Infrastructure**

**Road Transport:** Road Transport is the lifeline of the international production networks (IPN) in ASEAN, as it links several production centres across the regions. When the pandemic affected the cross-border movement of goods and people, the AEM (AEM, 2020) emphasised the resilience and the sustainability of connectivity, instead of focusing too much on the efficiency and effectiveness of connectivity, in which the assurance of physical connectivity is equally if not more important than efficiency and economic aspect as the major criterion for evaluation. The economic ministers' statement emphasised that the implementation of the Master Plan on ASEAN Connectivity (MPAC) 2025 is crucial to 'strengthen a long-term supply chain resilience and sustainability.'

Transport has played a central role in the spread of the pandemic, as well as enabling frontline and essential workers to get to work. It will continue to represent an enabler in terms of supporting the different needs of the population throughout the different stages of recovery (ADB, 2020). The pandemic's impact on passenger and freight transport has been profound. Mobility restrictions in response to COVID-19 have resulted in drastic changes in travel behaviour (Table. 2).

**Table 2: Overview of Restrictions on Domestic Travel, Urban Public Transit, and International Transport in ASEAN Member States**

Transport COVID-19 Policy Status as of 10 June 2020			
Country	Domestic Travel	Urban Public Transit	International Transport
Brunei Darussalam	Recommended closing	None to limited measures	Total border closure
Cambodia	None to limited measures	None to limited measures	Quarantine arrivals
Indonesia	Recommended closing	None to limited measures	Total border closure
Lao PDR	None to limited measures	None to limited measures	Ban on high-risk region
Malaysia	None to limited measures	None to limited measures	Total border closure
Myanmar	Require closing	Require closing	Ban on high-risk region
Philippines	Recommended closing	Recommended closing	Total border closure
Singapore	None to limited measures	None to limited measures	Quarantine arrivals
Thailand	Recommended closing	Recommended closing	Ban on high-risk region
Viet Nam	Require closing	Recommended closing	Total border closure

ADB = Asian Development Bank, COVID-19 = coronavirus disease, ASEAN = Association of South East Asian Nations, Lao PDR = Lao People's Democratic Republic

Source: ADB (2020)

ASEAN witnessed a sharp decline in transport activity after lockdowns or other forms of restrictions were imposed in March 2020. Transport activity bottomed between mid-April and mid-May 2020. In 2020 and 2021, a series of relaxations and restrictions ensued due to the second and third wave of the pandemic. The travel restrictions in ASEAN, East Asia and Oceania have been in gradual decline in 2022, and a gradual return to pre-COVID-19 levels can be observed. The spread of vaccination and the policy choice to open the borders in order to restore economic activities are the primary reason for the changing scenario in road transport.

**Air Transport:** Imposition of travel restriction measures put in place by all AMS during the pandemic has seriously dented the performance of air transport. The number of international passengers dropped by 70.8% from 331.6 million in 2019 to 96.7 million in 2020. All AMS experienced a steep fall in number of domestic passengers that ranged from - 41.9% in Thailand to - 78.8% in Philippines. In 2021, the number of domestic air passengers in ASEAN dropped by 52.4% from the previous year.

International air cargo loaded and unloaded of ASEAN in 2020 declined by 28.7% and 35.7% respectively from the previous year. Social distancing, lockdown at workplaces and factories, and weaker exports and imports were responsible for the decline. Thailand, Singapore, and Malaysia air cargo services continued to play an important role in distribution of air cargo delivery in the region, even though the number of cargos loaded fell by 31.5%, 22.6% and 18.8%, while, cargo unloaded fell by 34.1%, 23.9% and 22.5% respectively compared to 2019. (ASEAN, 2021a).

Restrictions on the movement of flights across international borders due to the COVID-19 outbreak have implications for international trade. Although freight flights were allowed to operate as usual, a significant amount of merchandise is transported as cargo in passenger flights, and the decrease in passenger flights implies a significant rise in transport costs (Zhang et al, 2021). The regulatory restrictions on air travel implemented during the COVID-19 crisis include:

- suspension of e-visa and visa-on-arrival programmes and visa waiver/visa free entry
- suspension of the entry of foreign nationals
- suspension of international flights
- restrictions on the number of international flights; and
- physical distancing requirements for airlines to block seats on international flights.

These measures also have the effect of reducing the movement of people and at the same time, come with the effect of slowing the flow of air cargo and trade and disrupting supply chains.

The ASEAN Open Skies policy is intended to increase regional connectivity, integrate production networks, and enhance regional trade by allowing airlines from AMS to fly freely throughout the region via the liberalisation of air services under a single, unified air transport market. If the policy were successfully implemented (prior to the COVID-19 pandemic), the restrictive limits on air transport would have been more realistic and unified during the pandemic. Owing to the losses incurred during the pandemic and that the AMS will have unequal access to resources for subsidies to the national airlines, decades of progress on regional liberalisation could likely slide backwards.

**Infrastructure Plans:** The ASEAN infrastructure plans, as in the rest of the world, experienced a major slowdown during the pandemic. Of the five broad strategies in ACRF to navigate ASEAN's recovery and rebuilding process ahead, broad strategy 3 – maximizing the potential of intra-ASEAN market and broader economic integration – focuses on priorities that intensify intra-ASEAN trade and investment and establish ASEAN as a competitive market. In this, ASEAN has linked its infrastructure connectivity strategy with that of regional value chains. This trend is now apparent in the connectivity strategies of many important economies in Asia-Pacific such as Australia, Japan, and India.

The Asia Development Bank (ADB) has estimated that ASEAN's infrastructure investment needs would amount to US\$ 184 billion annually from 2016 to 2030 to meet the region's economic growth and support regional connectivity. However, the urgent needs in public health and the measures to mitigate the socio-economic impact, arising from the COVID-19 pandemic have led governments to re-evaluate infrastructure priorities. This has created the need to tap private resources, mobilising alternative financing mechanisms through public-private partnership (PPP) to address the infrastructure gaps in ASEAN. Through the Initial Rolling Priority Pipeline of ASEAN Infrastructure Projects under the Master Plan on ASEAN Connectivity (MPAC) 2025, ASEAN seeks to attract more sustainable infrastructure investments, including through the PPP mechanism (ASEAN, 2020b).

Liquidity infusion in larger economies over the prolonged pandemic will likely reverse the trend of investments in developing economies, including ASEAN. Rising interest rates in developed economies will add to the liquidity crunch and result in deceleration of infrastructure plans in the region. The pandemic has brought a temporary halt to the hegemonic behaviour amongst the promoters of competing connectivity plans in ASEAN and has accelerated the policy drive for infrastructure for new supply chain connectivities between new centres of production and for the consolidation of existing supply chains between trading partners.

Connectivity of production networks or supply chains is now under the policy watch of entire Asia, including ASEAN, to ensure resilient supply chains that do not fall prey to disruptions. This includes investments in alternative connectivity plans (Prakash, 2021). It also means that the connectivity plans are to be implemented not just as infrastructure plans but as the conduit of supply chains – for both goods and people. Some connectivity plans can provide alternative supply chains during a crisis like the current pandemic. The China centrality of the supply chains in Southeast and East Asia is also an important reason why new connectivity plans centred around supply chain networks are being put in place in Asia and other parts of the world. The US - China trade tensions are also an important influence on such plans and policies (ERIA, forthcoming 2022).

ASEAN, however, remains at the centre of several pan-regional connectivity initiatives. The MPAC, Belt and Road Initiative (BRI), The Trilateral Highway (TLH), Asia–Africa Growth Corridor (AAGC), The EU's Global Gateway, and the Asia–Europe Meeting (ASEM) – all connectivity plans – aim to deepen ASEAN's economic dynamism and extend it to trans-regional partners. Mega-regional integration initiatives like the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and the Regional Comprehensive Economic Partnership (RCEP) are also integral to this region. The European Union (EU) has put in place building blocks for an EU strategy on connecting Europe and Asia, with concrete policy proposals and initiatives, including through interoperable transport, energy, and digital networks. ASEAN-EU connectivity is pivotal to this plan. The ASEAN is also networked into the United States (US) initiative – the Infrastructure Transaction and Assistance Network (ITAN) – to improve capacities in partner countries' project evaluation

processes and project implementation, advisory services to support sustainable infrastructure, and coordinate US assistance support for infrastructure in the region. The Asia Reassurance Initiative Act, 2018 is an important part of US connectivity policy in the region.

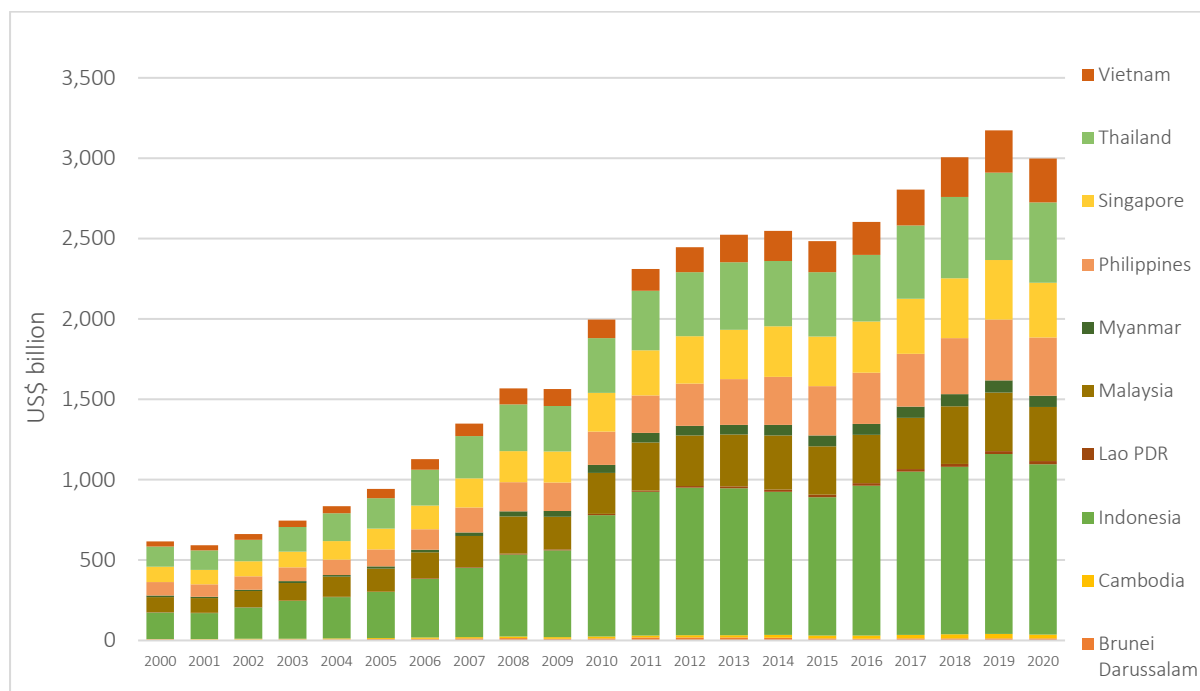
The Chairman's statement (ASEAN, 2021c) acknowledged the importance of partnerships in mobilising resources to implement the MPAC 2025 and promote greater synergies amongst various connectivity strategies, including through the 'Connecting the Connectivities' approach, which will be elaborated in the ASEAN Connectivity agenda beyond 2025, now under preparation. In this regard, ASEAN envisages the completion of its connectivity agenda with the active participation and support from Dialogue Partners and other external partners. The challenge ahead is how to ensure greater co-operation amongst the connectivity initiatives in the region, as these will aid the deepening of the supply chain networks in ASEAN, create new efficiencies for trade and movement of people, and help to construct the new economic architecture that is emerging in the Indo-Pacific.

### **Trade and Supply Chain Resilience during COVID-19**

**Trade:** ASEAN economies are generally very integrated into global movements of goods, services, ideas, people, and capital. As such, the reduction in consumer spending in most high-income countries has had an effect through the channel of reduced demand for exports, which has in turn put pressure on companies' cash reserves and led to some shedding of labour, with the attendant social costs from unemployment and lost income (Shepherd and Prakash, 2021). Think tanks and multilateral development banks have released positive forecasts for most ASEAN economies in 2022, but institutional information on the economic effects of the COVID-19 pandemic is still highly incomplete, as the situation is continuously evolving.

Before the outbreak of COVID-19, ASEAN economies experienced overall growth of 4.7% in 2019. In 2020, the region's economy contracted by 3.3% – the first economic contraction in 22 years. (ASEAN, 2021b). Figure 4 indicates the diversity in economic size amongst ASEAN Member States (AMS) – and their performance in 2020 – with Indonesia as the largest, accounting for 35.3% of the region's gross domestic product (GDP) in 2020, followed by Thailand (16.7%), the Philippines (12.1%), and Singapore (11.3%) (ASEAN, 2021a). All economies, except Viet Nam, experienced negative growth in 2020.

**Figure 4: Total GDP Growth in ASEAN Member States, 2000–2020 (\$ billion)**



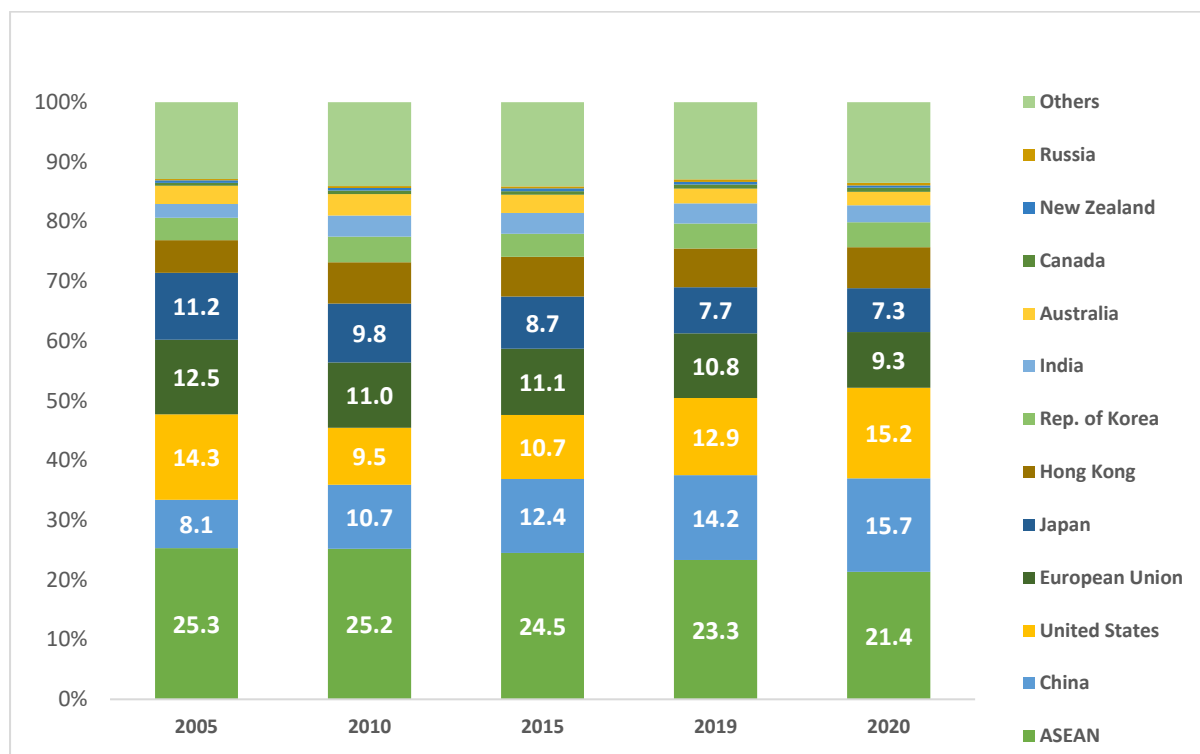
ASEAN = Association of Southeast Asian Nations, GDP = gross domestic product, Lao PDR = Lao People's Democratic Republic.

Source: ASEAN (2021b).

Intra-ASEAN trade has continuously accounted for the largest share of ASEAN total trade. In 2019, the year preceding the pandemic, intra-ASEAN trade accounted for 22.5% of total merchandise trade in the region – constituting 23.4% of ASEAN's total merchandise exports and 21.5% of its imports. However, the share of intra-ASEAN trade in 2019 (22.5%) was lower than in 2018 (23.0%). The shares of ASEAN trading partners also indicated a slight decline in 2019 from the previous year, except for China (18.0% in 2019 from 17.1% in 2018) and the US (10.5% in 2019, from 9.3% in 2018). In 2019, the largest external markets for ASEAN exports were China (14.2%), the US (12.9%), the EU (10.8%), and Japan (7.7%) (Figure 5).

Remarkably, in 2020, ASEAN slightly improved its exports to China, EU, and the US, though its overall exports to other partners and rest of the world declined marginally. While the increase is small, it confirms that ASEAN continued to remain the supplier of manufactured goods to important markets during 2019-2020. Singapore was the largest exporter in the region in 2020, with a share of 27.6% of the ASEAN total exports, followed by Viet Nam (20.7%), Malaysia (17.2%), and Thailand (14.2 %).

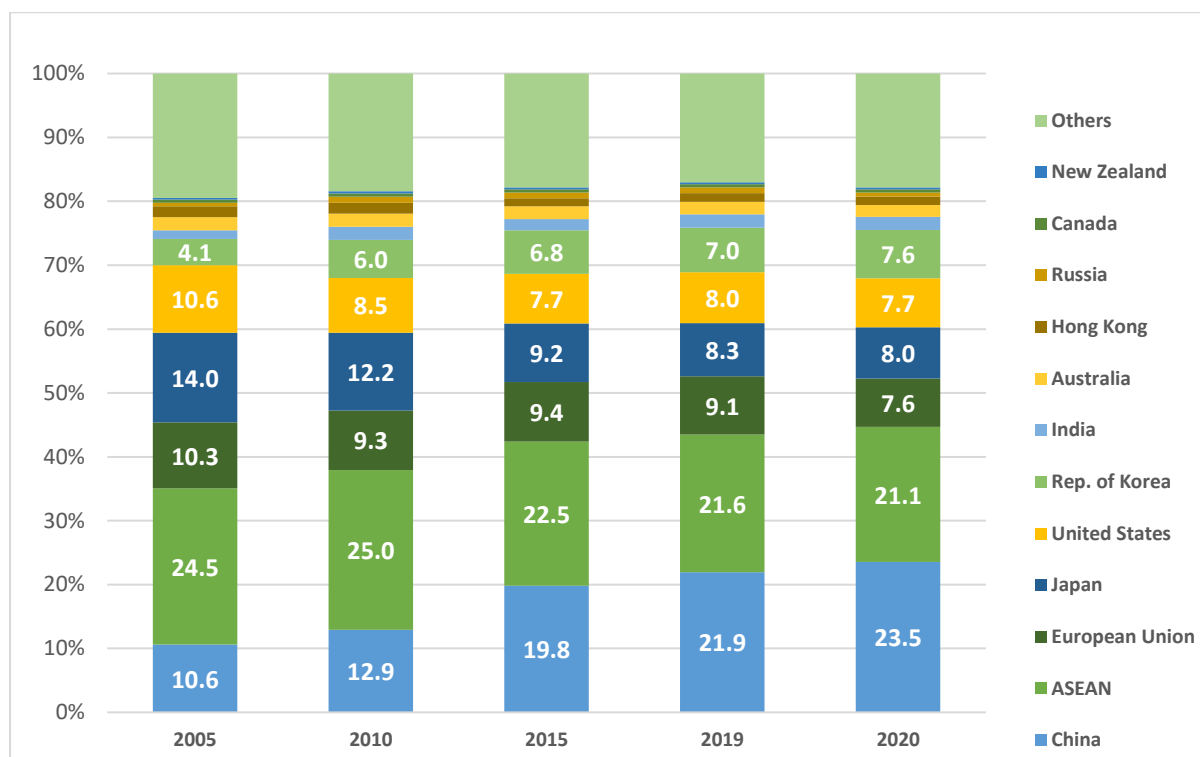


**Figure 5: Share of Merchandise Exports to Top 5 Trading Partners, 2005–2020 (%)**

ASEAN = Association of Southeast Asian Nations.

Source: ASEAN (2021b).

Similarly, Singapore was the largest importer in 2020 with a share of 26.7% of ASEAN total imports, followed by Viet Nam (21.2%), Malaysia (15.4%) and Thailand (13.7%) (Figure 6). This makes Viet Nam the second largest of exporter and importer after Singapore, a jump from the 5th position in 2010. It was also the only economy in ASEAN to register positive growth in 2020. (ASEAN, 2021b).

**Figure 6: Share of Merchandise Imports of the Top 6 Trading Partners, 2005–2020 (%)**

ASEAN = Association of Southeast Asian Nations.

Source: ASEAN (2021b)

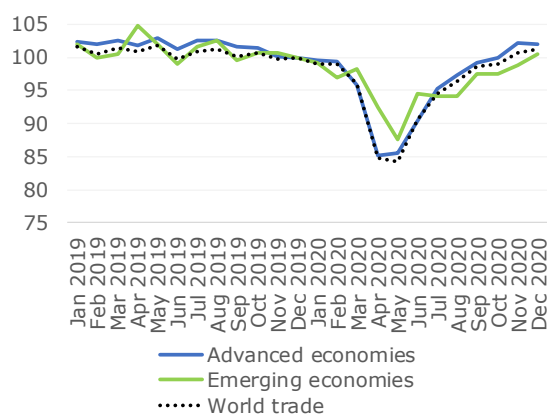
### Supply Chains Performance and Resilience in ASEAN during the COVID-19

COVID-19 has disrupted livelihoods around the world – and ASEAN has not been spared. In 2020, the region's economy contracted by 3.3% – the first economic contraction in 22 years (ASEAN, 2020c, 2021b). However, the quick restoration of supply chain activities after the first few months of negative supply shocks has ensured that the ASEAN region regained positive growth in 2021 and is forecast to do so in 2022.

Driven by value chain disruptions, supply shortages, mobility restrictions, and population lockdowns (Baldwin and Freeman, 2020), world trade fell by 15% in volume terms between February and April 2020 following the COVID-19 outbreak, and previous levels were only recovered in the last quarter of 2020 (Figures 7.1 and 7.2).

The fall in trade flows was more intense for advanced economies than for emerging economies, reflecting the overall largest impact of the aforementioned driving factors. Value chain disruptions seem to have played a more relevant role for advanced economies, given the much more negative developments on their export side (Figure 7.2).

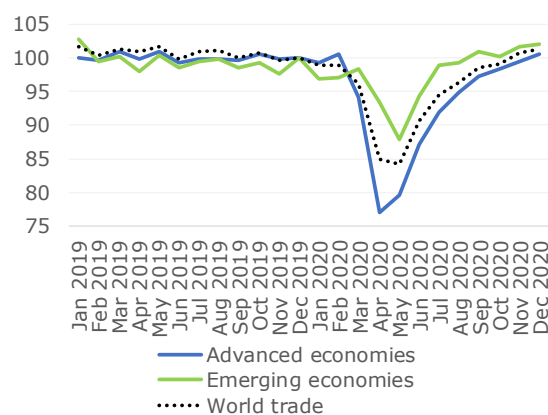
**Figure 7.1: World Trade and Imports by Economic Area**  
(index 100 = December 2019)



Note: Based on seasonally adjusted volume.

Source: CPB Netherlands Bureau for Economic Policy Analysis (2021).

**Figure 7.2: World Trade and Exports by Economic Area**  
(index 100 = December 2019)



Note: Based on seasonally adjusted volume.

Source: CPB Netherlands Bureau for Economic Policy Analysis (2021).

The ASEAN economies have experienced three types of economic shocks caused by the COVID-19 pandemic (Oikawa et al., 2021). The first type is negative supply shocks to international production networks (e.g. the Great East Japan Earthquake) where disruptions or damage in one place, including reduced production or closing of businesses, cause indirect damages to companies in other places through supply chains. If production is disrupted in company X in one country, the output production of customer company Y (which uses the parts produced by company X) in another country will also stop or decline. The negative supply shock is greater if the parts are difficult to replace. Moreover, supplier company Z's production will also suffer because of the reduced demand from company X. In January and February 2020, the AMS economies experienced and responded to a shortage of intermediate inputs originating from China (Kimura, 2020). Thus, at the beginning of the COVID-19 pandemic, the impact was in the form of negative supply shocks.

The second type is negative demand shocks to the macro economy (e.g. the global financial crisis in 2007–2009). The global financial crisis started in the US and spread to other advanced economies, followed by its negative impact on emerging economies (Kose et al., 2012). The subprime mortgage problem affected the soundness of financial institutions. The financial sector's vulnerability affected the real economy through negative wealth effects (sharp drops in housing and stock prices), low consumer confidence, and a credit crunch. Small open economies faced decreases in demand for exports. Together, these constituted negative demand shocks on the macro economy. In the case of COVID-19, negative supply shocks caused by lockdown measures brought about a demand shortage and created negative demand shocks. Economies that could contain COVID-19 still faced negative demand shocks for exports generated by economies struggling with the containment of the disease. COVID-

19 spread globally in March 2020 and has continued to suppress economic activities throughout the world. As such, the AMS economies have experienced negative demand shocks since the global spread of COVID-19.

The third type is positive demand shocks to the goods and services supplied in response to the demands from the COVID-19 pandemic. The spread of COVID-19 led to a significant surge in demand for critical supplies and personal protective equipment. The demand spikes created widespread shortages of these goods and stressed the health care supply chains. Social distancing and work-from-home requirements resulted in a rise in demand for information and communication technology (ICT) equipment and internet-based services (De et al., 2020). These positive demand shocks are pressures on the current production network and service suppliers but at the same time are also opportunities for firms to grow now and after the COVID-19 pandemic.

The AMS initially perceived COVID-19 as the source of a supply shock in January and February 2020, due to disruptions in the supply of certain intermediate products originating in China. Then the disease spread in March and a substantial share of production activities halted across the world. Production was stopped mainly to implement health policy, i.e. social distancing, which halts both supply and demand (Kimura, 2020). ASEAN's production facilities and networks are still there – almost intact. It may be useful for ASEAN to plan for a scenario when the virus is brought largely under control and production can be resumed if demand returns, where ASEAN must prepare to confront demand shocks as persistent low demand could decay its supply chains in the long term.

### **Impact of the COVID-19 pandemic on Business and Supply Chain Activity**

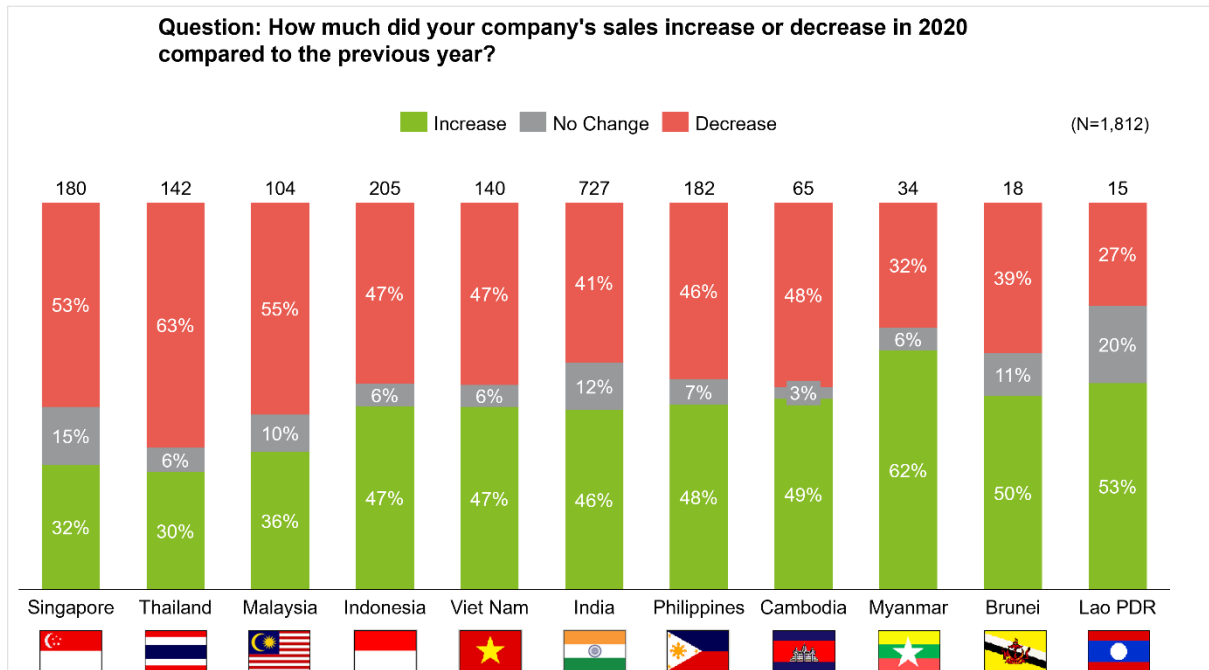
ERIA conducted a questionnaire survey between October 2020–January 2021 amongst local and foreign companies in ASEAN and India to understand the impact of COVID-19 on corporate activities and supply chains, with the objective of utilising the results for policy recommendations to national governments and international organisations. These survey results help improve understanding of the shocks to the supply chains, and general resilience and adaptation of firms' customer and supplier side features. The findings are important for ASEAN's trading partners for planning and investing in the post-COVID-19 supply chain structures and markets in the region.

The survey has highlighted the effect of COVID-19 on the participation of micro, small, and medium-sized enterprises in overall economic activities; and revealed the conditions necessary for their continued participation in the regional supply chains and production networks in the recovery years.

Firms in smaller economies (e.g. Brunei, Myanmar, and Lao PDR) experienced better sales in 2020 than those in larger economies (e.g. Singapore, Malaysia, and Thailand) (Figure 8). Singapore, Malaysia, and Thailand are more mature economies with greater international

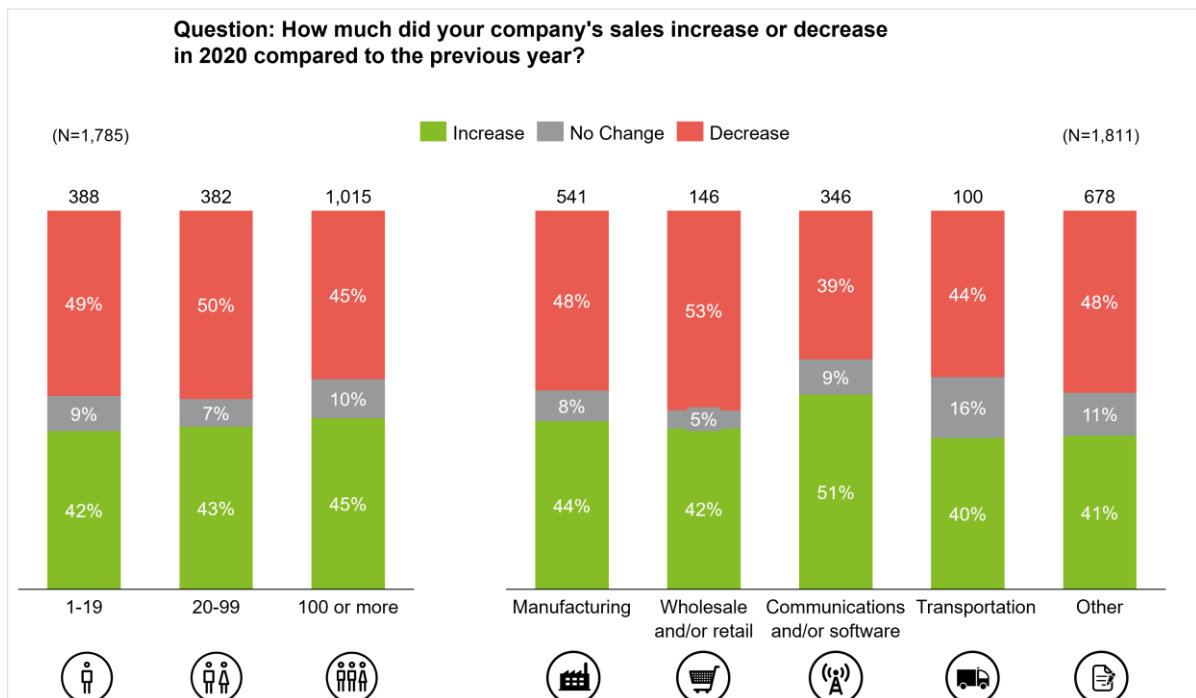
linkages and higher GDP per capita. Their mix of firm type, size, and backward and forward supply chain linkages is more varied than that of the smaller ASEAN economies.

**Figure 8: Sales Performance of Firms in ASEAN**



ASEAN = Association of Southeast Asian Nations, Lao PDR = Lao People’s Democratic Republic.  
Source: ERIA (2021)

**Figure 9: Sales Performance, by Company Size and Industry Type**



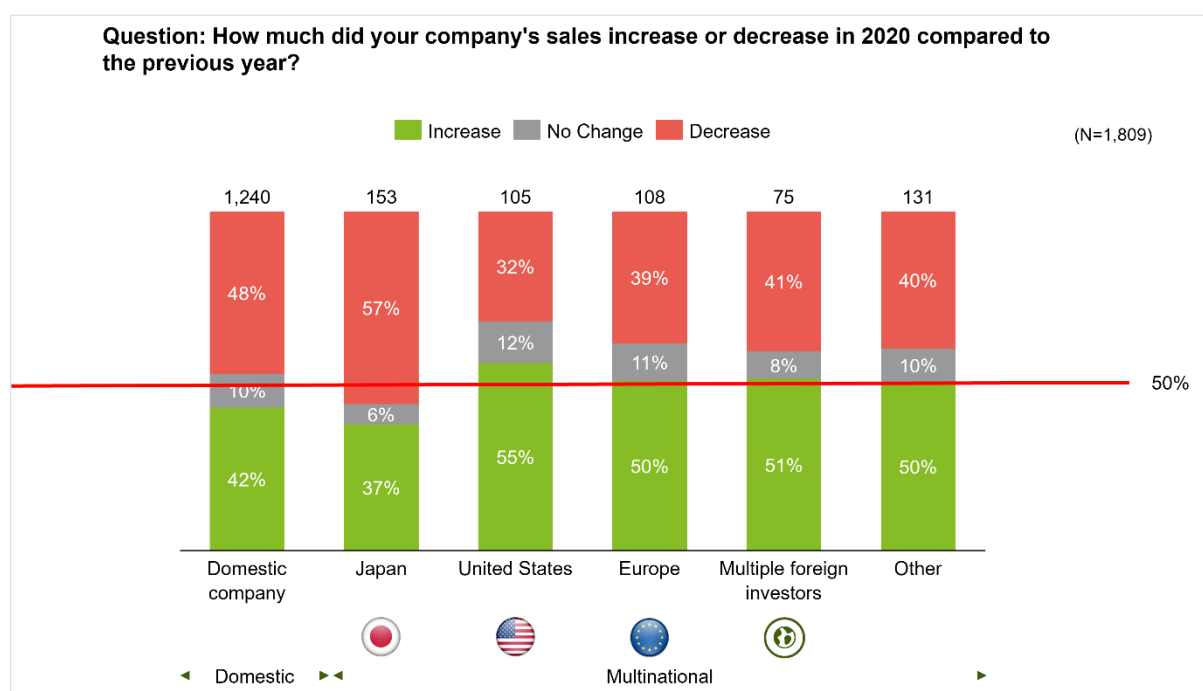
Source: ERIA (2021)

The larger economies also faced greater negative supply and negative demand shocks to their supply chains than the smaller economies. Amongst industry types, manufacturing, ICT, and business services firms showed better performance than the 'other' industry category (Figure 9). This is due to the positive demand shocks generated for goods and services unique to COVID-19 measures and needs. Negative demand shocks are seen in decreased sales in the retail and wholesale sector.

The survey results also show that more than half of the foreign-affiliated firms (except for Japan) experienced increased sales in exports in 2020. Comparatively, domestic firms experienced lower sales from exports than foreign-affiliated firms (Figure 10).

These results show that COVID-19 has negatively affected business performance in the ASEAN region. However, there were significant differences amongst the firms in terms of the vectors of COVID-19 impacts, and the majority of firms have been able to withstand the demand and supply shocks with optimism for business plans in 2021 (Oikawa et al., 2021).

**Figure 10: Profits Amongst Foreign-Affiliated Firms in ASEAN**



Source: ERIA (2021)

Most companies in all countries experienced changes in supplier relationships due to COVID-19 (Table 3). The majority of the firms changed or planned to change customer or supplier relationships in response to the COVID-19 shock. About 70% of firms have reviewed their customer relationships, and about 60% have already undertaken and/or plan to undertake changes in supplier relationships. The number of surveyed firms that had no plan to change their supplier relationships is somewhat larger, but changes in supplier relationships were identified by firms as a major step in meeting the negative supply shocks as well as meeting

production demand. Supplier relationship changes also helped in meeting positive demand shocks in the manufacturing, ICT, and transport sectors.

**Table 3: When (Row) and to What Degree (Column) Supplier Change Is Made**

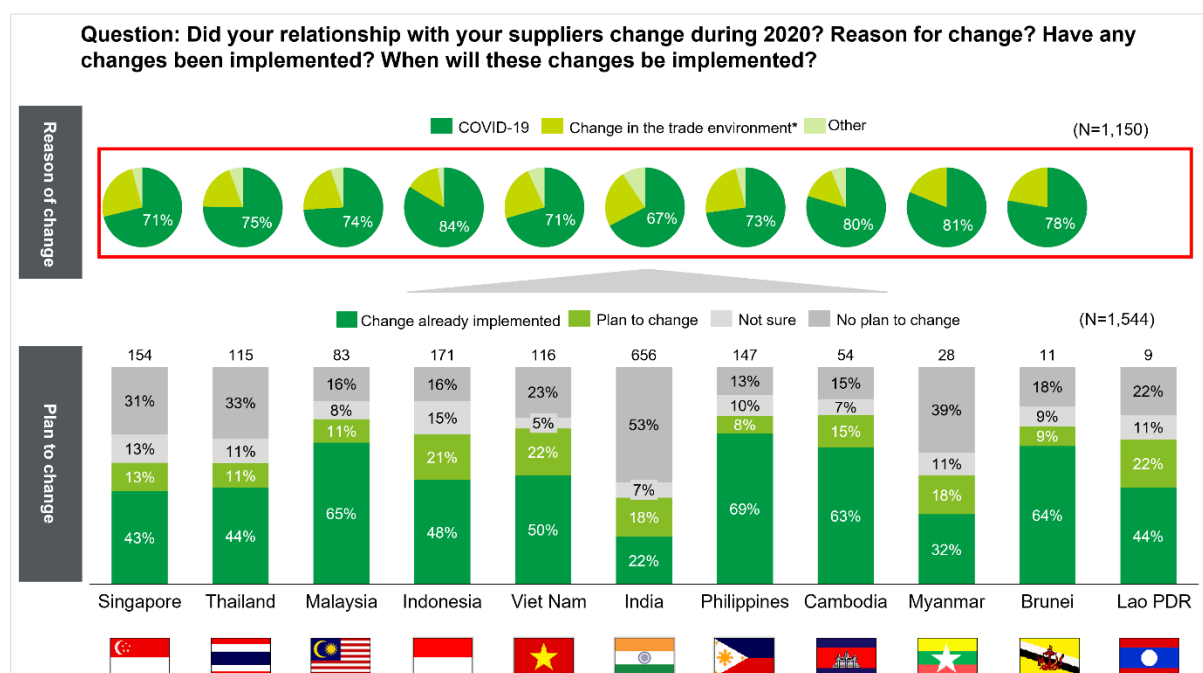
When?	To What Degree?					Total
	No plan	1%–9%	10%–29%	30%–99%	100%	
No plan	39.0	0.0	0.0	0.0	0.0	<b>39.0</b>
By 2020	0.0	13.8	17.1	9.3	3.8	<b>44.0</b>
2021, 1st half	0.0	4.0	5.5	1.6	0.7	<b>11.8</b>
2021, 2nd half	0.0	0.8	1.5	1.5	0.4	<b>4.1</b>
2022 or beyond	0.0	0.2	0.4	0.4	0.1	<b>1.1</b>
<b>Total</b>	<b>39.0</b>	<b>18.8</b>	<b>24.4</b>	<b>12.9</b>	<b>4.9</b>	<b>100.0</b>

Notes: Survey size – 1,305 firms. Each cell's value stands for the ratio of the number of respondents that reported the corresponding row and column category choices to the grand total. Percentages may not sum to 100% due to rounding.

Source: Oikawa et al. (2021)

Manufacturing firms have remained relatively stable, and only about 40% of them reconstructed or planned to reconstruct their supply chains. Most supply chain rearrangements by firms were implemented during the first year of the pandemic. Most firms have changed or are expected to change their supply chains by 10% or more, but less than 30% in terms of trade or production value. The majority of the firms that rearranged their supply chains, or plan to change, have done this in a medium or long-term perspective. (Figure 11). These findings imply that firms in the ASEAN region responded quickly to the COVID-19 shock and reconstructed their supply chains to a certain degree. Furthermore, many of the changes implemented in supply chains are unlikely to return to the pre-COVID-19 status.

**Figure 11: Changes Implemented or Planned in Supplier Relationships**



COVID-19 = coronavirus disease, Lao PDR = Lao People's Democratic Republic.

\* = e.g., imposition of additional customs duties, US–China trade discord

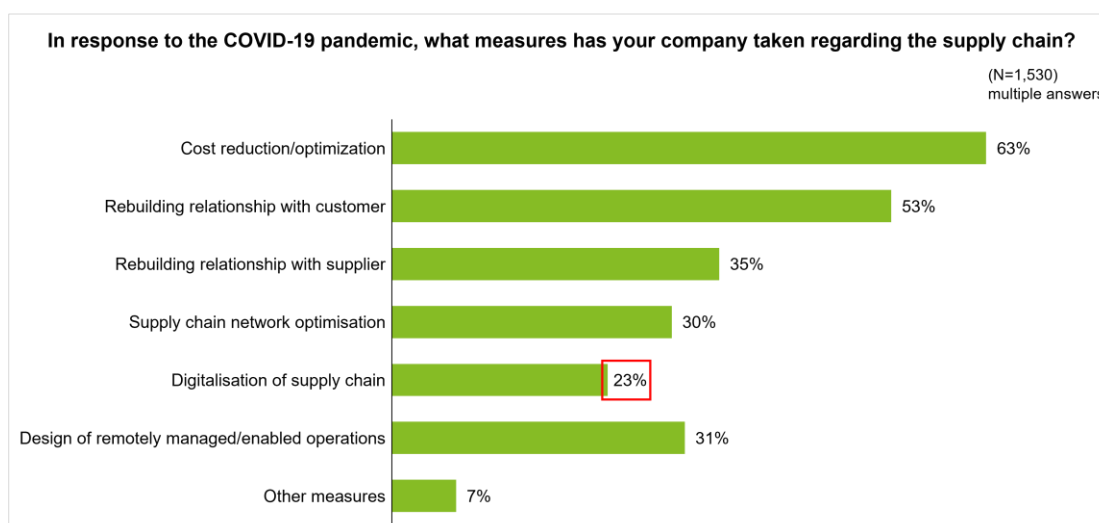
Source: ERIA (2021).

### Supply chain measures against COVID-19

The most prevalent supply chain measure in the response to COVID-19 is cost reduction and/or optimisation (Figure 12). Some 63% of the respondents adopted this measure. Notably, only 23% of the responding firms adopted supply chain digitalisation (inter-firm digitalisation). Moreover, only about 31% of the respondents adopted remotely manageable operations (intra-firm digitalisation). The firms that implemented supply chain digitalisation tend to have implemented both supply chain optimisation and remote operations. If a firm is large or young, or has internationally diversified customers, it is more likely to adopt the supply chain digitalisation measure. The remote operations measure tends to be taken by firms that are foreign-affiliated or located in countries with a relatively high internet penetration rate. Rebuilding relationships with customers and suppliers is the next most preferred measure to deal with the COVID-19 shocks. The supply chain network optimisation measure allows a firm to improve its efficiency in the whole supply chain. However, larger firms employ this measure regularly so it may not be specific to the COVID-19 pandemic.

About two-thirds of respondents reported the cost reduction and/or optimisation measure in response to the COVID-19 pandemic. Significantly, digitalisation and remote management of operations was the least preferred measure amongst the respondent firms. This will have important implications for policy inputs for the digital economy supply chains in the region.



**Figure 12: Measures Undertaken by Firms to Reduce the COVID-19 Impact**

Source: ERIA (2021).

The COVID-19 pandemic significantly impacted manufacturing and non-manufacturing firms in the AMS. While the impact was negative on average, most of the firms were able to quickly adjust trade with their customers and suppliers across countries and globally. Manufacturing firms showed better performance than other industries in 2020, which suggests that IPNs in the region have been relatively robust to negative supply shocks. Additionally, ICT services firms experienced better business outcomes and are more likely to expand their businesses and to hire more than other industries. This suggests that positive demand shocks have benefitted the ICT industry and its growth will continue.

While the results of the survey depict the supply chain activities of national and international firms, the findings have an important bearing on the post-COVID-19 economic recovery. Both ASEAN and its partner countries with extensive production networks can draw out the focus areas for policy support to bilateral trade and investment, for deepening the production networks and improving the overall business environment.

### **Digital Connectivity in COVID-19 and its Role in Recovery and Rebuilding in ASEAN**

The drive towards digital societies – where everyday life, including work and politics, is facilitated by information and communications technology (ICT) – has been accelerated by the global pandemic. The pandemic has led to the widespread adoption of digital technology across all aspects of life. Telecommuting has become a feature of work in ASEAN. Small businesses, teaching institutes, and interactive services now see it as an imperative for operational functions and future growth. For digital connectivity in ASEAN, ‘the pandemic has created a “structural break with the past” that made many existing patterns of behaviour obsolete but also point to a way forward for society’ (Rumelt, 2008).

The ASEAN Digital Masterplan (ADM) 2025 envisions ASEAN as a leading digital community and economic bloc, powered by secure and transformative digital services, technologies, and ecosystem. The pandemic period has accelerated this vision and digital connectivity

supported the vast majority of people in their personal and economic pursuits. Broadly, the digital connectivity facilitated not only e-commerce, but also businesses using digital technology, communications, and related services in the areas of manufacturing, retail, education, healthcare, transportation, finance, tourism, media, and entertainment. Economic success stories in ASEAN and other parts of the world seem to have some shared factors, including integration into the global economy by participating in GVCs. Thus, the development of e-commerce and ASEAN's GVC participation mutually reinforced each other. Improved digital connectivity in future will positively affect not only e-commerce but also overall economic performance, and therefore has deep implications for ASEAN's development. This is because the development of information technology (IT) and communications technology (CT) not only has the potential to enhance existing globalisation through international trade and global value chains (GVCs), but also leads to ASEAN's greater participation in the ICT-led international division of labour or 'the third unbundling'.

While data are still awaited, it can be safely stated that the use of digital technology for production and supply chain management in ASEAN has accelerated due to the pandemic. COVID-19 instigated a beta test for ASEAN for integration into the digital economy value chains and spotlighted a need for increased investments in digital connectivity and human capital for ASEAN's continued participation in production networks. Equally, the pandemic has exposed the digital divide in ASEAN and underlined the need for accelerated implementation of ASEAN Digital Integration Framework Action Plan (DIFAP) 2019 - 2025.

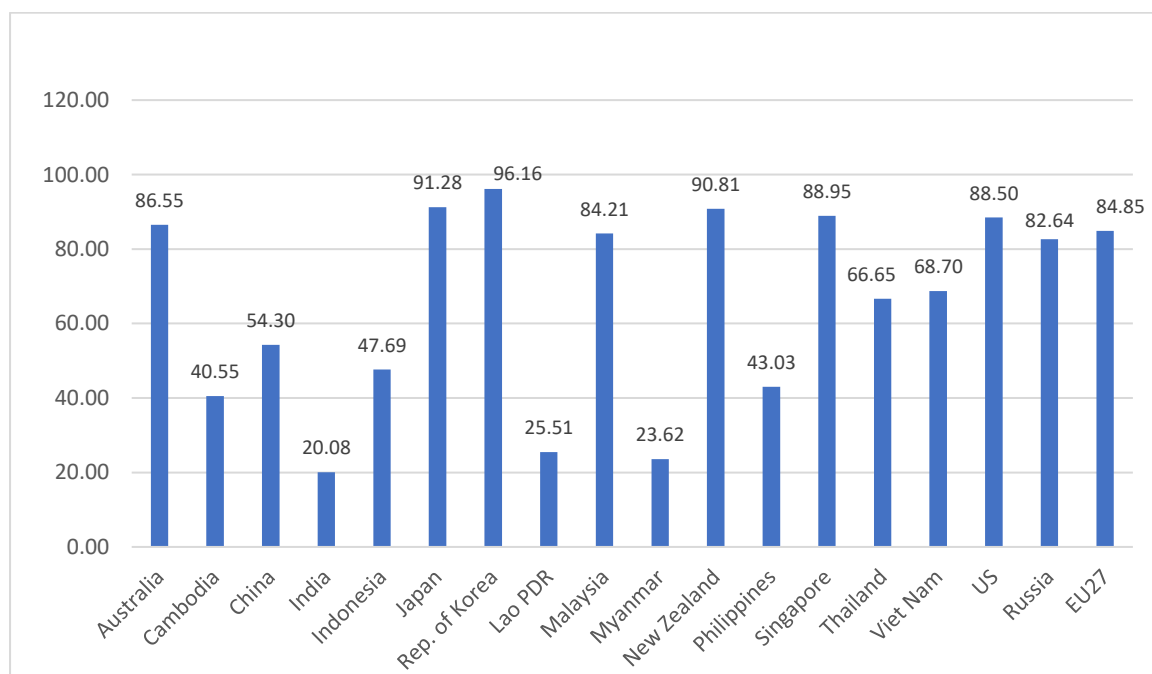
**Physical Infrastructure:** Overall, ASEAN's Internet infrastructure performed satisfactorily during the pandemic when compared to the global scenario. However, the development of ICT-related infrastructure is uneven with large development gaps between and within countries. Typically, five factors should be considered in improving data-related infrastructure: (i) network coverage, (ii) speed of Internet connection, (iii) affordability, (iv) contents, and (v) cybersecurity.

- i. Coverage: Network coverage, measured by Internet penetration, is very uneven, ranging from 81% in Singapore to 22% in Lao PDR, meaning that a large number of people in ASEAN are without Internet activity. Development of 4G networks and access to electricity are still critical issues, especially in the CLM countries (Cambodia, Lao PDR, and Myanmar).
- ii. Speed: Average Internet connection speeds also range widely in ASEAN where fixed-line connections in Singapore are on average 15 to 16 times faster than in Myanmar.
- iii. Affordability: Poorer people are spending much larger percentages of their income on data.
- iv. Content and Services: How well the Internet can attract users depends on the information and services it can provide. In general, there is no significant variance between ASEAN countries except that some ASEAN members have highly developed fintech and e-health while others do not. This discrepancy is reflected in the online environment. The CLM countries also lag behind in terms of e-commerce and e-government. (Chen and Ruddy, 2020).

**Trust:** Free flow of data with trust is the cornerstone of a digital economy. Regarding ASEAN data governance, the policy regime is still underdeveloped and fragmented across countries. Despite the broad strategy on accelerating inclusive digital transformation in the ACRF, ASEAN countries have not evolved a common position on regulating cross-border data flows and some are far more advanced in domestic rule-setting. Indonesia, Malaysia, the Philippines, and Singapore have recently passed new laws; Thailand is considering such rules; and Brunei Darussalam and the CLM countries have no personal data protection laws or regulations. Because of the differences of the 10 ASEAN Member States' positions and paces in the related rule settings, the 2018 ASEAN Agreement on E-commerce had to leave room for member states to develop their own frameworks to regulate the use of computing facilities and ensure the safety of communications. Reaching consensus on data governance to facilitate ASEAN digital connectivity is difficult, but not impossible (Chen and Ruddy, *ibid*).

**The Visible Gaps in Digital Connectivity:** As ASEAN comes out of the pandemic, its recovery strategy needs countries to pay more attention to the development of infrastructure-related services. ASEAN economies are still far behind the regional and global benchmarks for internet usage. (Figure 13). This has implications for e-commerce where the role of services is vital to both physical and cyber connectivity to support e-commerce. Improving services is at least as important as building infrastructure in many aspects – from speed and accuracy to transparency and reliability. As for e-commerce, service efficiency will save trade costs, increase credibility and reliability, and therefore promote online business activities.

**Figure 13: Individuals Using the Internet in ASEAN and Its Selected Partners, % of Population**



Source: IMF (2021)

Without financial connectivity, e-commerce cannot thrive. In 2018, digital payments in ASEAN reached US\$73 billion. The size is expected to double by 2023 (Chen and Ruddy, *ibid*). For e-commerce to succeed, there must be an online means of payment for goods and services,

regardless of whether the money transactions are conducted on or off line. Currently, various payment solutions for online business co-exist in the Asian market, such as cash on delivery, prepaid, credit cards, debit cards, e-banking, mobile payment, smartcard, e-wallets, etc. By 2023, about two-thirds of all users will make digital payments. However, in ASEAN there are wide gaps between countries' readiness to adopt and use e-payment systems, due mainly to differences in regulatory and policy environments and of innovative products and services. Ensuring a strong future for e-commerce must address several interrelated challenges with e-payment systems including security, privacy, creditability, reliability, and efficiency. Building and maintaining e-payment systems is a resource-intensive project, which could be a challenge for countries whose domestic banking and financial sectors are still at the early stages of development. ASEAN has an indispensable task of establishing industrial standards and harmonising regulations to utilise fully the potential of digital connectivity in the recovery and rebuilding phase.

### **ASEAN's Framework for Resilience and Rebuilding Measures of Supply Chains in the Post-COVID-19 Recovery**

Given the scale and impact of the pandemic, ASEAN recognises that addressing the crisis requires coordinated actions within the region as well as cooperation with its partners. While the immediate priority for the region is to overcome the pandemic, ASEAN has concurrently planned its collective and long-term socio-economic recovery strategy. Thus, the ASEAN Comprehensive Recovery Framework (ACRF), adopted at the 37th ASEAN Summit in Ha Noi, Viet Nam, serves as the consolidated exit strategy from the COVID-19 crisis (ASEAN, 2020a).

The ACRF published in 2021 focuses on five broad strategies that are deemed most impactful to take the region through the recovery process and its aftermath (ASEAN, 2021). The broad strategies will be pursued through several key priorities. The five broad strategies are:

1. Enhancing health systems
2. Strengthening human security
3. Maximising the potential of the intra-ASEAN market and broader economic integration
4. Accelerating inclusive digital transformation
5. Advancing towards a more sustainable and resilient future

Given the unprecedented nature of the current health and economic crisis, the ACRF and its implementation plan (ASEAN, 2020b) identified several cross-cutting enabling factors: (i) policy measures and responses, (ii) financing and resource mobilisation, (iii) institutions and governance mechanisms, (iv) stakeholder engagement and partnership, and (v) effective monitoring.

Optimal utilisation of resources and effective cooperation with partners will determine the progress on these fronts and the shape of the recovery. Internal cooperation and international partnership would be an important element for the successful implementation of the ACRF.

### **Broad Strategy 3: Maximising the Potential of Intra-ASEAN Market and Broader Economic Integration**

Broad Strategy 3 – maximizing the potential of intra-ASEAN market and broader economic integration – focuses on priorities that intensify intra-ASEAN trade and investment and establish ASEAN as competitive and contestable markets. Given the importance of trade in ASEAN, the post-pandemic recovery will definitely require more, not less, trade.

Ten key priority areas have been identified for ASEAN’s recovery and rebuilding of economy during and after the pandemic. ASEAN is committed to keeping markets open for trade and investment as exemplified in the ASEAN Economic Ministers (AEM) statement of March 2020. The commitment was further reaffirmed in the Ha Noi Plan of Action of Strengthening Economic Cooperation and Supply Chain Connectivity in Response to COVID-19 Pandemic. Keeping the ASEAN market open for trade (goods and services) and investment will require effective implementation of the three core agreements: (i) ASEAN Trade in Goods Agreement (ATIGA); (ii) ASEAN Framework Agreement on Services (AFAS), which will subsequently be superseded by the ASEAN Trade in Services Agreement (ATISA); and (iii) ASEAN Comprehensive Investment Agreement (ACIA).

Effective utilisation of ASEAN’s free trade agreements (FTA) and comprehensive economic partnership (CEP) agreements with major trading partners will be indispensable for market expansion and attracting foreign direct investments (FDI). These FTAs could strengthen economic resilience and regional supply chain connectivity.

Strengthening supply chain connectivity and resilience are needed to rejuvenate the vital trade and investment links that were subject to disruptions by the pandemic. In this regard, ASEAN should be responsive to the new supply chains emerging in the region – such as Australia–Japan–India, the Mekong sub-region, and India–Myanmar–Thailand – as all these will assuredly function via ASEAN. Enhanced trade facilitation is needed at all times, and even more so in the recovery and rebuilding phase. Leveraging the digital and financial technologies for movement of goods, customs procedures, and payments could facilitate cross-border trade and promote cross-border transactions by MSMEs.

### **Broad Strategy 4: Accelerating Inclusive Digital Transformation**

The ACRF strategy for digital transformation leverages on the momentum and imperative of digital transformation and seizes the enormous opportunities presented by digital technologies to boost economy and improve society in the post-COVID-19 world. Promoting e-commerce and the digital economy is crucial to revitalising demand for goods and services that has drastically shrunk during the pandemic. The ACRF estimates that digital integration could uplift the region’s GDP by US\$1 trillion by 2025.

As the master plan for the development of e-commerce and digital economy of the region, the ASEAN Digital Integration Framework Action Plan (DIFAP) is the main reference for collective actions by ASEAN in this regard. Along with the development of the DIFAP, the ASEAN Digital Integration Index (ADII) was adopted by ASEAN Economic Ministers in August 2020, to measure the policy and infrastructure readiness of AMS for the implementation of

DIFAP. With the entry into force of the ASEAN Agreement on E-commerce in December 2021, ASEAN will be able to explore new and bold measures to promote e-commerce and digital economy in a broader sense as part of the recovery plan. An important element is mainstreaming digitalisation in the healthcare sector to strengthen health related supply chains such as health equipment, consumables, and medicines including vaccines, both during the recovery from pandemic as well as to ensure better health service delivery in the future.

Enhancing connectivity is the basic element for the digital transformation. It provides secure and affordable network access to all people and empower the entire population with a means to improve their livelihood. The effective operationalisation of ASEAN Framework International Mobile Roaming, the development of the next generation Universal Service Obligation (USO 2.0), and development of the Fifth Generation Mobile Technology (5G) ecosystem would contribute to the success of the digital transformation.

The education sector was hardest hit during the pandemic. It was also the largest user of ICT services for providing online education during the pandemic. Promoting ICT in education is a priority under the ASEAN Work Plan on Youth 2016 – 2020. Digital technology brings a great alternative solution to support the continuity of learning and the reshaping of educational systems.

Strengthening data governance and cybersecurity are prerequisite conditions for sustainable development of the digital economy. The ASEAN Framework on Digital Data Governance, ASEAN Framework on Personal Data Protection, and the ASEAN Cybersecurity Cooperation Strategy have for many years remained the guide for regional cooperation. Given that the acceleration of the pace of digital transformation, catalysed by the COVID-19 pandemic, increases cyber dependency, the uneven capacities of cybersecurity infrastructure in the region poses wider threats to governments, businesses, and society. In this regard, the decisive measures recommended by the ACRF to raise public awareness, and upgrade AMS' policy, technical and legal capacity to effectively address cybersecurity issues are extremely important to ensure a reliable and secure digital environment.

### **The Road Ahead for Recovery and ASEAN**

Two years have elapsed since the onset of the pandemic-led economic and health crises. During this time, there has been increasing policy convergence and a more unified regional response to the twin crises. The Hanoi Plan of Action on Strengthening ASEAN Economic Cooperation and Supply Chain Connectivity in Response to the COVID-19 Pandemic adopted by the ASEAN Heads of State/Government at a Special ASEAN Summit on 14 April 2020 provided the mandate to implement the ASEAN Economic Ministers' Statement on Strengthening ASEAN's Economic Resilience in Response to the Outbreak of COVID-19, issued on 10 March 2020, and to explore a temporary arrangement to preserve supply chain connectivity during the coronavirus disease (COVID-19) pandemic.

Since then, more policy convergence has been facilitated and response mechanisms have been put in place in ASEAN and in other parts of the world. The ASEAN Economic Community, ASEAN's Dialogue Partners, and international organisations have worked together to understand and respond to the twin crises over the past 2 years. While the crises have not

abated in Southeast Asia, or globally, several policy responses and business activities reaffirm the value of international cooperation and bring into focus the underlying strength of ASEAN and its partnership with Dialogue Partners. ASEAN's resilience during the twin crises will also strengthen its central role in the emerging economic architecture of the Indo-Pacific.

Supply chains in ASEAN are likely to remain intact in the post-COVID-19 period. It is still too early to say to what extent GVC integration has been affected by the COVID-19 pandemic, as rigorous data will only be released after a delay of some years (Shepherd and Prakash, 2021). However, the available trade data show that there has been a major drop in trade, particularly in services requiring personal contact. It is still unclear why the recovery is occurring at radically different rates in different countries. The ERIA survey of domestic and international firms in ASEAN and India largely confirms that supply chains have been affected to some degree across the sectors, but the business outlook amongst firms remains cautiously optimistic.

The ASEAN region has shown, so far, that supply chains have been fairly able to withstand the supply and demand shocks. From a supply chain integration standpoint, technology (digital, robotics, and automation) has the potential to move production closer to the location of final consumption, but existing production locations are still preferred. The pandemic experience will likely lead to a reassessment of the risks associated with dispersed production and just-in-time management practices, but anecdotal evidence and surveys suggest that businesses resolved those problems rapidly and retooled to meet increased short-term demand for pandemic-related products. The implications of the pandemic are more macroeconomic in nature, with some difference across sectors (Shepherd and Prakash, *ibid*). So far, Southeast Asia has shown that it is particularly well placed to take advantage of improved global demand later in 2022. However, in the case of a prolonged pandemic, gaps in health services, non-availability of vaccines, lack of social security mechanisms, social distancing measures, and reinforcement of restrictions on mobility of people across borders may still cause lasting damage to economic activities.

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