



**Asia-Pacific
Economic Cooperation**

2022/SOM1/CTI/IS14

Agenda Item: -

**Final Review of the APEC Supply-Chain
Connectivity Framework Action Plan 2017-2020
(Endorsed, 15 Oct 2021)**

Purpose: Information

Submitted by: Policy Support Unit, APEC Secretariat



**First Committee on Trade and Investment
Meeting
18-22 February 2022**



**Asia-Pacific
Economic Cooperation**

Advancing Free Trade
for Asia-Pacific **Prosperity**

Final Review of the APEC Supply-Chain Connectivity Framework Action Plan 2017- 2020 (SCFAP-II)



APEC Policy Support Unit
September 2021

Prepared by:

Akhmad Bayhaqi, Satvinderjit Kaur Singh and Nathanael Lam Zhao Dian

Asia-Pacific Economic Cooperation Policy Support Unit

Asia-Pacific Economic Cooperation Secretariat

35 Heng Mui Keng Terrace

Singapore 119616

Tel: (65) 6891-9600 Fax: (65) 6891-9690

Email: psugroup@apec.org Website: www.apec.org

Produced for:

Asia-Pacific Economic Cooperation

Committee on Trade and Investment

APEC#221-SE-01.14



This work is licensed under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Singapore License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-sa/3.0/sg/>.

The views expressed in this paper are those of the authors and do not necessarily represent those of APEC Member Economies.

TABLE OF CONTENTS

List of figures	iii
List of tables	iii
List of boxes	iii
Executive summary	iv
1. Background	1
2. Methodology	3
2.1 Review of external indicators	3
2.2 Review of SCFAP-II-related activities	3
2.3 Review of case studies	3
3. Review of external indicators.....	5
3.1 Chokepoint 1: Lack of coordinated border management, and underdeveloped border clearance and procedures	5
3.2 Chokepoint 2: Inadequate quality and lack of access to transportation infrastructure and services	11
3.3 Chokepoint 3: Unreliable logistics services and high logistical costs	16
3.4 Chokepoint 4: Limited regulatory cooperation and best practices	23
3.5 Chokepoint 5: Underdeveloped policy and regulatory infrastructure for e-commerce	28
4. Stocktake of relevant APEC initiatives.....	33
4.1 Chokepoint 1: Lack of coordinated border management, and underdeveloped border clearance and procedures	33
4.2 Chokepoint 2: Inadequate quality and lack of access to transportation infrastructure and services	37
4.3 Chokepoint 3: Unreliable logistics services and high logistical costs	38
4.4 Chokepoint 4: Limited regulatory cooperation and best practices	39
4.5 Chokepoint 5: Underdeveloped policy and regulatory infrastructure for e-commerce	39
5. Global trade recovery	42
5.1 Trade costs	44
5.2 Trade costs at the sectoral level for several APEC economies	46
6. Conclusion	48
Bibliography	51
Appendix A: Case study submissions.....	57
A.1 Australia	57
A.2 China	60
A.3 Indonesia	65
A.4 Japan	69
A.5 Singapore	72
A.6 Chinese Taipei	76
A.8 United States	79
A.9 Viet Nam	85
Appendix B: Method for trade cost calculation	89

LIST OF FIGURES

Figure 3.1 Benchmarking Infrastructure Development: PPP legal scores for APEC economies	16
Figure 3.2 Adoption of digitalisation.....	29
Figure 5.1 RWI/ISL-Container Throughput Index.....	42
Figure 5.2 Average (ad-valorem equivalent) bilateral trade costs	45

LIST OF TABLES

Table 2.1 External indicators for the SCFAP-II review	4
Table 3.1 Performance of APEC economies on external indicators under Chokepoint 1	6
Table 3.2 Number of authorised economic operators (AEOs) in APEC economies.....	7
Table 3.3 Reforms by APEC economies that address Chokepoint 1	9
Table 3.4 Performance of APEC economies on external indicators under Chokepoint 2	12
Table 3.5 Performance of APEC economies on the external indicators under Chokepoint 3	17
Table 3.6 Measures and composition of logistics costs	17
Table 3.7 Performance of APEC economies on external indicators under Chokepoint 4	24
Table 3.8 Performance of APEC economies on external indicators under Chokepoint 5	28
Table 4.1 Implementation of WTO Trade Facilitation Agreement by APEC economies	36
Table 5.1 WTO Goods Trade Barometer, June 2019 to March 2021	43

LIST OF BOXES

Box 3.1 Integrating SMEs in authorised economic operator (AEO) certification: Improving SME participation in APEC secure trade.....	8
Box 3.2 Building resilience in APEC's global value chains.....	11
Box 3.3 Peer Review and Capacity Building on APEC Infrastructure Development and Investment.....	14
Box 3.4 Indonesia's National Logistics Ecosystem	19
Box 3.5 Digitalising the logistics industry	21
Box 3.6 Digitalisation of air freight logistics	22
Box 3.7 APMEN Visualisation of Sea Freight Logistics Project	24
Box 3.8 APEC Export Certificate Roadmap	27
Box 3.9 Technical assistance to Peru on publication of trade-related information	27
Box 3.10 Paperless solution for delivery and transportation in the postal sector.....	30
Box 3.11 Strengthening postal laws to prevent smuggling of contraband goods.....	32

EXECUTIVE SUMMARY

This report reviews the progress of the APEC Supply-Chain Connectivity Framework Action Plan II 2017–2020 (SCFAP-II). SCFAP II addresses five major chokepoints in supply chains: (1) lack of coordinated border management, and underdeveloped border clearance and procedures; (2) inadequate quality of, and lack of access to, transportation infrastructure and services; (3) unreliable logistics services and high logistical costs; (4) limited regulatory cooperation and best practices; and (5) underdeveloped policy and regulatory infrastructure for e-commerce.

The progress of the SCFAP is assessed through a review of relevant external indicators, stocktaking reports of relevant APEC initiatives and voluntary case studies submitted by APEC member economies. It is important to note that the collection and results arising from some of the external indicators may have been adversely affected by disruptions caused by the COVID-19 pandemic. Hence, discretion should be used when evaluating the performance of chokepoints based on the indicators.

Since the last assessment, various initiatives have been implemented to improve the quality and quantity of trade services and custom processes. These include the use of public–private partnerships (PPPs), single-window systems, and structural reforms.

As of 2019, APEC economies have generally performed well for chokepoints 1 and 2. Cost and time to import and export have fallen, connectivity has increased, and transparency has improved. Quality of transportation services and infrastructure under chokepoint 2 has also improved since 2016 both in terms of ensuring better shipping connectivity as well as a more stable environment for infrastructure investment.

Indicators used to measure chokepoint 3 were most affected by the lack of updates available. Of all the indicators used in chokepoint 3, only the DHL Connectedness Index was updated to reflect scores in 2019. Overall, performance for chokepoint 3 remains mixed; however, given the absence of updates for most indicators under this chokepoint, it is important to keep in mind that the overall assessment of logistics services is indicative. Based on the literature, the COVID-19 pandemic has worked against improvements in this area as warehouse capacity contracted and inventory costs shot up in 2020 and early 2021. Several APEC economies are leveraging on digital technologies to reduce costs and improve coordination and transparency in logistics services.

Alignment of processes and digitalisation of systems have facilitated sharing of information and cooperation. Conscious efforts have also been made to implement article 12 of the World Trade Organization (WTO) Trade Facilitation Agreement which encourages customs cooperation, particularly in facilitating the exchange of information between customs agencies. As a result, the performance of APEC economies on chokepoint 4 has been notably better since 2015.

Moreover, in line with the rise of e-commerce, there has been a greater focus on the digitalisation of operational processes and procedures to streamline workflow. Despite the greater focus, the performance of APEC economies on chokepoint 5 have been mixed. The performance of postal systems worsened as COVID-19 restrictions severed supply chains and placed undue pressure on postal services. Summaries of the findings for each of the five chokepoints are presented here.

Chokepoint 1: Lack of coordinated border management, and underdeveloped border clearance and procedures

The first chokepoint is uncoordinated or underdeveloped border clearance and procedures. In addressing this chokepoint, the focus has been on improving coordination through modernisation and harmonisation within border agencies.

Significant improvements in trade efficiency with regard to documentary compliance and border compliance have been found, as measured using five indicators from the World Bank Doing Business (DB) reports. The indicators reveal that both cost and time to import and export have decreased since 2016. DB cost to import and to export decreased by 4.6 and 4.3 percent respectively between 2016 to 2019, whereas DB time to import and to export decreased by 13.6 and 11.8 percent respectively over the same period. Furthermore, the Trading Across Borders score, which reflects regulatory performance, reported a 2.1 percentage improvement among APEC economies between 2016 and 2019.

Likewise, indicators from the World Bank Logistics Performance Index (LPI) generally reflect improvements since 2016. However, data are only available until 2018. With the exception of the percentage of physical and multiple inspection scores, all other indicators showed slight to strong improvements. Most notably, the clearance time with physical inspection had decreased by 7.1 percent and clearance time without physical inspection had declined by 15.8 percent, representing an average decrease in clearance time of 0.2 to 0.3 days.

These improvements come in part due to the various initiatives implemented by APEC. The initiatives addressing Chokepoint 1 could be categorised under the following areas: WTO Trade Facilitation Agreement (TFA); single window; authorised economic operator (AEO) and digital technology. Efforts under these areas have met with considerable success. In accordance with these initiatives, Chile and Chinese Taipei have collaborated to facilitate the integration of small- and medium-sized enterprises (SMEs) into the AEO certification framework by enhancing awareness and understanding of the opportunities and benefits for AEO operators. This comes as part of a series of two workshops, with the earlier focused on the expansion of mutual recognition agreements (MRAs) and inclusion of SMEs, and the latter on promoting AEO benefits and best practices. Several findings in line with APEC's previous research on AEO-related issues were discussed as part of these workshops.

Chokepoint 2: Inadequate quality and lack of access to transportation infrastructure and services

The second chokepoint is the performance of transportation services, specifically the quality and accessibility of transportation infrastructure and services. Indicators used to evaluate the performance of this chokepoint come from the LPI, UNCTADstat and Transparency International (TI) Corruption Perceptions Index databases. Since 2016, all three indicators have reported improvements in scores for APEC economies.

The TI Corruption Perceptions Index, which reflects the stability of an economy in terms of enforcing contracts and attracting investment, improved by 1.1 percent between the 2016 and 2020 reports. The LPI quality of trade and transport infrastructure improved by 0.4 percent. And, the United Nations Conference on Trade and Development (UNCTAD) Linear Shipping Connectivity Index, which measures maritime connectivity based on five components, has improved significantly, by 11.7 percent. The increase in indicator scores suggests that APEC

economies are on the right track, but there are concerns that financing gaps may constrain future progress.

To address these concerns, initiatives under APEC have focused on transportation infrastructure development and PPP facilitation. An example is the Peer Review and Capacity Building on APEC Infrastructure Development and Investment project, which has highlighted the importance of PPPs in this area. Another project is Promoting Quality Infrastructure Investment in Rapidly Urbanising APEC Region, which discussed quality infrastructure¹ investment and smart city development.

Chokepoint 3: Unreliable logistics services and high logistical costs

The third chokepoint relates to the inefficiencies brought about by unreliable logistics services and high logistical costs. The chokepoint is evaluated using both the DHL Connectedness Index and World Bank Logistics Performance Index (LPI) reports.

From 2016 to 2019, the DHL Connectedness Index, which evaluates the degree of globalisation based on international flows of trade, capital, information, and people, has improved by 1.4 percent for APEC economies. APEC has contributed to strengthening connectivity through initiatives such as the APEC Green Supply Chain Cooperation Network and structural reforms in logistics services. Through these initiatives, APEC intends to improve logistics services and lower costs while considering sustainability issues.

The LPI indicators, however, reflect mixed results. While there were improvements in quality of shipments, logistics services, as well as a reduction in lead time to import and export, there seems to be inefficiencies in handling shipments as reflected by the indicators that gauge the ability to track consignments, meet delivery schedules, and arrange competitively priced shipments. This may have caused the LPI overall index to fall by 0.6 percent in 2018 since the assessment in 2016.

To address these inefficiencies, APEC economies have been active in reforming logistics services by enabling digital platforms to facilitate collaboration among stakeholders. In 2020, Indonesia established the National Logistics Ecosystem (NLE), a digital platform connecting logistics communities, with the objective of harmonising the flow of goods and information across supply chains. Another initiative is Singapore's collaboration with the private sector to digitalise the whole logistics industry through Industry Transformation Maps, the National Trade Platform, and Digital Economy Agreements. Meanwhile, China has a two-phase digitalisation project to interconnect stakeholders in the air freight logistics chain. As a result of the project, Xiamen airport has already seen improvements in the efficiency of its logistics processes. The submitted case study highlights an 80 percent improvement in the handover efficiency of the cargo import operation and a 30 percent increase in average air import operation efficiency owing to digitalisation.

¹ The APEC Guidebook on Quality of Infrastructure Development and Investment identifies five elements as the principal elements that ensure the quality of infrastructure: (1) alignment with development strategy/openness/transparency/fiscal soundness; (2) stability/safety/resiliency; (3) economic and financial soundness; (4) social and environmental sustainability; (5) local high-quality development. See Ministry of Economy, Trade and Industry, Japan, "APEC Guidebook on Quality of Infrastructure Development and Investment (Revision)" (Singapore: APEC, 2018).

Chokepoint 4: Limited regulatory cooperation and best practices

The fourth chokepoint relates to cross-economy cooperation issues like regulations and information sharing. Efforts to address this chokepoint focus on promoting better regulatory coordination and cooperation among trade authorities and with private stakeholders.

Evaluation of this chokepoint is based on four indicators from the Organisation for Economic Co-operation and Development (OECD) Trade Facilitation Indicators (TFI) database. APEC economies performed significantly better relative to their performance in 2015. The TFI on information availability rose by 5.3 percent, revealing an improvement in access to information relevant to optimising and simplifying customs procedures. The TFI on involvement of trade community showed an improvement of 10.8 percent since 2015 as well. Specific to internal and external border agency cooperation, APEC economies had an increase of 12.8 and 7.0 percent respectively. Despite the improvements, APEC's average scores are lower than those of OECD economies particularly for external border agency cooperation.

APEC economies continue to strengthen their efforts to unblock this chokepoint by creating several networks and alliances. These include the Alliance for Supply Chain Connectivity (A2C2), collaborations under the Asia-Pacific Model E-Port Network (APMEN) and policy dialogues to showcase member economies' approaches to trade modernisation. Other initiatives include the United States' Export Certificate Roadmap which aims to streamline border processes and the technical assistance provided to Peru to improve publication of information for greater transparency.

Chokepoint 5: Underdeveloped policy and regulatory infrastructure for e-commerce

Efforts to address the fifth chokepoint aim to improve the e-commerce environment by streamlining procedures, improving supply chain visibility, and encouraging collaborations. Indicators from the Universal Postal Union (UPU) and UNCTAD are reviewed to evaluate the progress of APEC economies in this area.

Performance on this chokepoint has been mixed. While the UNCTAD Business-to-Consumer (B2C) E-Commerce Index improved by 5.8 percent between 2016 and 2019, the UPU Integrated Index for Postal Development decreased by 4.8 percent between 2016 and 2020. E-commerce hinges on improved postal and carrier services to ensure goods are delivered quickly and safely, given that, according to a Cross-Border E-Commerce Shopper Survey in 2018 by the International Post Corporation, a major part, or 71 percent, of e-commerce was delivered by postal companies, with 16 percent by other carriers.

Viet Nam is working on improving postal services by testing paperless documentation and strengthening postal security to address transportation of illegal goods. Despite some success, Viet Nam recognises that the benefits of these initiatives continue to be held back by the lack of communication and cooperation among the agencies involved. Hence, more needs to be done to ensure the safe delivery of goods, particularly ensuring last-mile connectivity in e-commerce.

As e-commerce continues to gain traction during the pandemic, more reforms are needed to keep up with the increased volumes of business. APEC economies have been successful in developing a basic legal framework for e-commerce and it continues to advocate for more awareness of existing e-commerce regulations through workshops and studies. Other initiatives to improve the online business environment include the workshop on APEC Cross Border E-

Commerce Training, and the Strengthening Economic Legal Infrastructure (SELI) initiative on Developing a Cooperative Online Dispute Resolution (ODR) Framework for Micro, Small and Medium Enterprises (MSMEs) in Business-to-Business (B2B) Transactions, which, among other things, aims to provide a platform for experience sharing.

Moving forward

The global economic and trade recovery will require more resilient and efficient supply chains. Resilient supply chains are crucial to the revitalisation of the manufacturing sector and the timely distribution of medical supplies related to the COVID-19 response which will form the necessary foundation to ensure a strong and sustainable recovery of trade. In implementing trade facilitation measures and strengthening cooperation among trade agencies, particular attention should be paid to ensuring secure and safe supply chains. Moving forward, APEC economies may consider targeting their efforts on the following issues: improving resilience to ensure greater certainty; keeping trade costs low; improving interoperability and cooperation; improving investment in digital technologies; advancing supply chain visibility; and maintaining environmental sustainability.

1. BACKGROUND

The goal of the second phase of the APEC Supply-Chain Connectivity Framework Action Plan (SCFAP-II) is ‘to reduce trade costs across supply chains and to improve supply chain reliability in supporting the competitiveness of business in the Asia Pacific region’.² It covers the period 2017–2020 and addresses five chokepoints that are essential to improving the performance of supply chains in the region:

- Lack of coordinated border management, and underdeveloped border clearance and procedures
- Inadequate quality and lack of access to transportation infrastructure and services
- Unreliable logistics services and high logistical costs
- Limited regulatory cooperation and best practices
- Underdeveloped policy and regulatory infrastructure for e-commerce.

The APEC Committee on Trade and Investment (CTI) developed a monitoring framework, outlining the key challenges, the stakeholders involved and the external indicators from the World Bank, the Organisation for Economic Co-operation and Development (OECD), the United Nations Conference on Trade and Development (UNCTAD) and other international organisations, to track the progress and achievements of this goal. Most of the external indicators are outcome-focused and are meant to describe how well APEC has achieved the SCFAP-II goal by addressing the five chokepoints. It is important to note that these indicators should be viewed as proxies for the actual progress of SCFAP-II since they are constructed from the aggregation of complex regulatory realities and dimensions, and are based on certain assumptions that may not be universally applicable. As such, the final review also gathers evidence of initiatives from APEC CTI stocktake reports as well as from case studies submitted by APEC member economies.

The APEC Policy Support Unit (PSU) completed the mid-term review of the external indicators to monitor progress of SCFAP-II in 2019. Results were mixed across the five chokepoints. The region’s performance on the first and second chokepoints relating to border management and clearance, and access to quality transportation infrastructure and services was positive with improvements recorded in most related indicators. Chokepoint 3 addressing logistics cost and services presented a mixed result with minimal positive or negative movements in the indicators. Similarly, chokepoint 5 on the regulatory environment for e-commerce noted an improvement in the business-to-consumer (B2C) e-commerce index but lower scores for postal development performance. On the other hand, most indicators attempting to measure changes in chokepoint 4 on regulatory cooperation recorded poorer scores³ compared to 2015, suggesting the need for greater regional cooperation on the matter.

The 2019 review also noted the following challenges in improving the region’s supply-chain connectivity: (1) slow adoption of automation; (2) lack of harmonisation of regulations and standards; (3) lack of logistics skills; (4) financial constraints; and (5) poor supply-chain

² APEC, “Monitoring Framework of APEC Supply-Chain Connectivity Framework Action Plan (SCFAP) II 2017–2020,” APEC, Singapore, 2017, <https://apec.org/-/media/Files/Groups/CTI/Monitoring-Framework-SCFAPII.pdf?la=en&hash=92D0A88843649EF9DB3EB99C0FBE63CE29586AB8>

³ This was based on an older version of the OECD Trade Facilitation Indicators (TFI) data.

resilience. The COVID-19 pandemic has further highlighted these existing challenges in supply chains. It has become ever more important for supply chains to incorporate resilience through digitisation, collaboration and training, and deeper economic integration in the region. Greater agility is also needed among businesses and governments for quicker response to similar shocks to the system.

2. METHODOLOGY

The final assessment of phase two of the APEC Supply-Chain Connectivity Framework Action Plan (SCFAP-II) examines APEC's progress and the outstanding gaps through a review of external indicators as well as findings from the stocktake reports and case studies. The report also complements the analysis with relevant literature and statistics where possible.

The final assessment involves:

- Showcasing the progress of APEC member economies through a review of external indicators⁴ and SCFAP-II stocktake reports⁵
- Distilling best practices and lessons learnt from the stocktake reports of the APEC Committee on Trade and Investment (CTI) and the voluntary case study submissions from member economies
- Synthesising the findings to evaluate APEC's progress and the outstanding gaps
- Identifying the way forward
- Presenting the key findings to APEC CTI members.

2.1 REVIEW OF EXTERNAL INDICATORS

Thirty external indicators were reviewed to assess progress across the five chokepoints (Table 2.1).⁶ At the time of writing the report, data for most indicators only covered up until 2018/2019.

2.2 REVIEW OF SCFAP-II-RELATED ACTIVITIES

Singapore has led the stocktake of SCFAP-II-related initiatives implemented by member economies. Reviewing these initiatives will provide a descriptive account of APEC's progress in addition to providing a clearer picture on how to move forward. The review is presented in Section 4 of this report.

2.3 REVIEW OF CASE STUDIES

To support the analysis, economies have submitted case studies that highlight and capture the practical impacts and achievements of relevant APEC initiatives that have contributed to the unblocking of the five chokepoints. A total of eleven case studies were submitted by eight economies. Insights from these case studies have been incorporated into Section 3 of this report.

⁴ See APEC, "Review of External Indicators to Monitor Progress for the APEC Supply-Chain Connectivity Framework Action Plan (SCFAP II)" (Singapore: APEC, 2017).

⁵ APEC, "2018 Stocktake: The APEC Supply-Chain Connectivity Framework Action Plan (SCFAP) II 2017–2020," in APEC, "APEC Committee on Trade and Investment 2018: Annual Report to Ministers" (Singapore: APEC, 2018), Appendix 7; APEC, "Monitoring Framework of APEC Supply-Chain Connectivity Framework Action Plan (SCFAP) II."

⁶ See APEC, "Monitoring Framework of APEC Supply-Chain Connectivity Framework Action Plan (SCFAP) II"; APEC, "Review of External Indicators."

Table 2.1 External indicators for the SCFAP-II review

Checkpoint/No.	Indicators	Latest data available
1.1	LPI declarations submitted and processed electronically and online (%)	2018
1.2	LPI physical inspection (%)	2018
1.3	LPI multiple inspection (%)	2018
1.4	LPI clearance time with physical inspection (days)	2018
1.5	LPI clearance time without physical inspection (days)	2018
1.6	LPI efficiency of customs clearance process	2018
1.7/1.8	DB cost to import (documentary and border compliance)	2019
1.9/1.10	DB time to import (documentary and border compliance)	2019
1.11/1.12	DB cost to export (documentary and border compliance)	2019
1.13/1.14	DB time to export (documentary and border compliance)	2019
1.15	Trading Across Borders Score	2019
2.1	LPI quality of trade and transport infrastructure	2018
2.2	UNCTAD Liner Shipping Connectivity Index	2020
2.3	TI Corruption Perceptions Index	2018-2020
3.1	LPI Overall Index	2018
3.2	DHL Connectedness Index	2019
3.3	LPI ease of arranging competitively priced shipments	2018
3.4	LPI competence and quality of logistics services	2018
3.5	LPI ability to track and trace consignments	2018
3.6	LPI timeliness of shipments in reaching destinations within the scheduled or expected delivery time	2018
3.7	LPI shipments meeting quality criteria (%)	2018
3.8	LPI lead time to import (days)	2018
3.9	LPI lead time to export (days)	2018
4.1	TFI on information availability	2019
4.2	TFI on involvement of trade community	2019
4.3	TFI on internal border agency cooperation	2019
4.4	TFI on external border agency cooperation	2019
5.1	UPU Integrated Index for Postal Development	2020
5.2	UNCTAD Availability of Legal and Regulatory Framework	2020
5.3	UNCTAD B2C E-Commerce Index	2019

DB=World Bank Doing Business; LPI=World Bank Logistics Performance Index; SCFAP-II=Phase Two of the APEC Supply-Chain Connectivity Framework Action Plan; TFI=Organisation for Economic Co-operation and Development (OECD) Trade Facilitation Indicator; TI=Transparency International; UNCTAD=United Nations Conference on Trade and Development; UPU=Universal Postal Union

Note: Data used to compute the 2020 TI Corruption Perceptions Index were collected from various sources over two years with the earliest being in 2018 and the latest in 2020.

3. REVIEW OF EXTERNAL INDICATORS

3.1 CHOKEPOINT 1: LACK OF COORDINATED BORDER MANAGEMENT, AND UNDERDEVELOPED BORDER CLEARANCE AND PROCEDURES

The first chokepoint is uncoordinated or underdeveloped border clearance and procedures. In addressing this chokepoint, the focus has been on improving coordination through modernisation and harmonisation within border agencies. Better coordination will allow for efficient processes and lower costs. This is important for trade as high trade costs invalidate comparative advantages and reduce the competitiveness of exports.⁷ Similarly, delays at the border reduce predictability of delivery times, prevent participation in time-sensitive logistic chains, induce higher transportation and warehousing costs, and disrupt overall supply chain efficiency.⁸

Indicators from the World Bank's Doing Business (DB) and Logistics Performance Index (LPI) reports are used to evaluate the time and costs involved in trading across borders (see Table 3.1). Data for LPI indicators are the same as in the previous review in 2019 due to lack of updates.

The lack of coordination and the underdevelopment in border clearance and procedures represent an inefficiency leading to delays in the movement of goods that could add as much as 15 percent to a producer's cost.⁹ In today's competitive markets, economies need to continue to stay competitive by streamlining and digitising trade processes and procedures. Doing so removes inefficiencies in border compliance procedures by increasing transparency and eliminating the need for manual processes.

Digitalisation of trade processes increases its scale, scope and speed by facilitating the movement of data, payments and documentation, and by enabling collaboration. The adoption of digital technologies in trade has increased in recent years given the significant benefits to be gained. According to a 2019 United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) survey, 16 of the 18 recorded APEC economies have fully implemented automated customs systems.¹⁰ The survey also found that, of the 18 recorded APEC economies, 15 have fully implemented electronic submission of customs declarations and 10 have fully implemented electronic single-window systems. Only one APEC economy has not yet implemented electronic single-window systems. The 2018 LPI figures also reflect improvements, albeit small, in declarations submitted and processed electronically and online, with the APEC average rising by 0.5 percent since 2016. Of the APEC economies involved,

⁷ World Trade Organization (WTO), "Why Trade Costs Matter for Inclusive, Sustainable Growth," in Organisation for Economic Co-operation and Development (OECD) and WTO, *Aid for Trade at a Glance 2015: Reducing Trade Costs for Inclusive, Sustainable Growth* (Geneva and Paris: WTO and OECD Publishing, 2015), 35-60, https://www.wto.org/english/res_e/booksp_e/aid4trade15_chap1_e.pdf

⁸ United Nations, "Trade Facilitation Implementation Guide – Overview: Border Crossing Delays," accessed on 10 May 2021, <http://tfig.unece.org/contents/borde-crossing-delays.htm>

⁹ B. Shumate, "Efficient Customs Procedures Critical to Competitive Success." *The Journal of Commerce Online*. 21 August 2017. https://www.joc.com/international-logistics/logistics-providers/efficient-customs-procedures-critical-competitive-success_20170821.html

¹⁰ United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), "Digital and Sustainable Trade Facilitation: Global Report 2019" (United Nations, 2019), <https://www.unescap.org/sites/default/d8files/knowledge-products/UNTfsurvey%20global%20report%202019.pdf>

Hong Kong, China; Mexico; and Viet Nam submitted and processed more declarations online in 2018 compared to 2016.

Table 3.1 Performance of APEC economies on external indicators under Chokepoint 1

No.	Indicator	APEC average 2015/16	APEC average 2019/20 or latest	% of improvement (% of change)	Remarks
1.1	LPI declarations submitted and processed electronically and online (%)	91.0%	91.4%	+0.5%	Slight improvement
1.2	LPI physical inspection (%)	9.1%	14.3%	+56.7%	Worsened
1.3	LPI multiple inspection (%)	2.7%	3.9%	+47.4%	Worsened
1.4	LPI clearance time with physical inspection (days)	2.8 days	2.6 days	-7.1%	Strong improvement
1.5	LPI clearance time without physical inspection (days)	1.6 days	1.3 days	-15.8%	Strong improvement
1.6	LPI efficiency of customs clearance process	3.2	3.2	+0.1%	Slight improvement
1.7/1.8	DB cost to import (documentary + border compliance)	USD 498.5 (90.4+408.0)	USD 475.5 (88.1+387.3)	-4.6%	Significant improvement
1.9/1.10	DB time to import (documentary + border compliance)	87.1 hours (39.9+47.2)	75.3 hours (31.0+44.3)	-13.6%	Significant improvement
1.11/1.12	DB cost to export (documentary + border compliance)	USD 440.8 (81.4+359.4)	USD 421.8 (80.8+341.0)	-4.3%	Significant improvement
1.13/1.14	DB time to export (documentary + border compliance)	66.3 hours (28.8+37.6)	58.5 hours (23.1+35.4)	-11.8%	Significant improvement
1.15	Trading Across Borders Score	78.3	80.0	+2.1%	Improved

DB=World Bank Doing Business; LPI=World Bank Logistics Performance Index.

Source: World Bank LPI, 2016 and 2018; World Bank Doing Business, 2017 (reflecting 2016 figures) and 2020 (reflecting 2019 figures).

The APEC Connectivity Blueprint 2015–2025 continues to push for the adoption of (interoperable) single-window systems and promote paperless trading. Over time, APEC economies have shown significant improvements in the adoption of technology as well as in the streamlining of border procedures. These improvements are consistent with other regional initiatives to adopt electronic single-window systems. For example, the Association of Southeast Asian Nations (ASEAN) has an initiative called ASEAN Single Windows (ASW) that seeks to integrate the single windows in its member economies to allow for the electronic exchange of regulatory documents. The ASW, which has been implemented gradually, has

helped to streamline bureaucratic procedures and reduce clearance times at the border.¹¹ Likewise, Chile; Colombia; Mexico; and Peru have embarked on Cadena Project V.1.0, an initiative to strengthen information exchange among their authorised economic operator (AEO) programmes. APEC economies have 18,769 AEOs but only a small number of SMEs are recognised (Table 3.2).¹² There is some work underway to support SME engagement in AEOs (Box 3.1). Additionally, Cadena Project V.1.0 utilises blockchain technology to facilitate the real-time exchange of information within the mutual recognition agreement (MRA) framework.¹³

Table 3.2 Number of authorised economic operators (AEOs) in APEC economies

	No. of AEOs	% of total	No. of SMEs certified as AEOs
Australia	325	1.73%	118
Canada	2,088	11.12%	1,512
Chile	2	0.01%	1
China	3,200	17.05%	
Hong Kong, China	38	0.20%	11
Japan	60	0.32%	
Malaysia	70	0.37%	2
Mexico	631	3.36%	
New Zealand	125	0.67%	
Peru	85	0.45%	3
Singapore	193	1.03%	45
Chinese Taipei	122	0.65%	
Thailand	182	0.97%	
USA	11,579	61.69%	
Viet Nam	69	0.37%	
Total	18,769		

Source: M.E.S Galindo and G.M.D. Rodriguez, “AEO in APEC Economies: Opportunities to Expand Mutual Recognition Agreements and the Inclusion of SMEs” (Inter-American Development Bank, February 2020), https://publications.iadb.org/publications/english/document/AEO_in_APEC_Economies_Opportunities_to_Expand_Mutual_Recognition_Agreements_and_The_Inclusion_of_SMEs.pdf

However, there are challenges to fully recognising the benefits of digitalisation in trade. According to the Cisco Global Digital Readiness Index 2019, APEC economies averaged 14.6 out of 25 in digital readiness scores, with only 7 out of 18 APEC economies classified in the highest tier of digital readiness (score of more than 15).¹⁴ This could be improved by investing

¹¹ S.B. Das, “ASEAN Single Window: Advancing Trade Facilitation for Regional Integration,” Perspective, ISEAS-Yusof Ishak Institute, Singapore, 21 September 2017, https://www.iseas.edu.sg/wp-content/uploads/2015/07/ISEAS_Perspective_2017_72.pdf

¹² The data cover 15 APEC economies. See M.E.S. Galindo, and G.M.D. Rodriguez, “AEO in APEC Economies: Opportunities to Expand Mutual Recognition Agreements and the Inclusion of SMEs” (Inter-American Development Bank, February 2020), https://publications.iadb.org/publications/english/document/AEO_in_APEC_Economies_Opportunities_to_Expand_Mutual_Recognition_Agreements_and_The_Inclusion_of_SMEs.pdf

¹³ APEC, “APEC Connectivity Blueprint: The 2020 Mid-Term Review” (Singapore: APEC, 2020), <https://www.apec.org/Publications/2020/11/APEC-Connectivity-Blueprint---The-2020-Mid-Term-Review>

¹⁴ Cisco, “Cisco Global Digital Readiness Index 2019,” 15 January 2020, https://www.cisco.com/c/dam/en_us/about/csr/reports/global-digital-readiness-index.pdf

in digital skills, encouraging innovation, enhancing business and government investment in infrastructure, and facilitating technology adoption.¹⁵ There are also numerous obstacles in implementing electronic single-window systems. According to Abeywickrama and Wickramaarachchi, the most critical of these challenges are lack of government support, lack of coordination, and general resistance to change.¹⁶ These could be addressed by clearer communication and by training the stakeholders.

APEC has been active in improving overall border management through capacity-building projects. For instance, in 2020, APEC held a second workshop to assist AEO implementation, especially among SMEs (Box 3.1). The workshop included stakeholders from both the public and private sectors, and enabled them to exchange opinions on how to further increase the benefits from AEOs.¹⁷ Through these workshops, APEC aims to demonstrate members' experience in formalising and optimising the implementation of AEO arrangements to exporters, importers, and government agencies.

**Box 3.1 Integrating SMEs in authorised economic operator (AEO) certification:
Improving SME participation in APEC secure trade**

Chile and Chinese Taipei collaborated to facilitate the integration of small- and medium-sized enterprises (SMEs) into the authorised economic operator (AEO) certification framework. The objective of the project was to enhance awareness and understanding of opportunities and benefits for AEO operators with a focus on SMEs.

They hosted two workshops to achieve these objectives through discussions on best practices and dialogue among policymakers, customs officials and private sector entities. Three studies were undertaken to provide analytical evidence and support workshop discussions.

In the first workshop, discussions focused on opportunities to expand mutual recognition agreements (MRAs) and broaden the inclusion of SMEs to increase the number of AEO-certified enterprises. However, despite efforts by APEC economies to promote AEO programmes, the lack of convincing evaluation on the benefits of AEO MRAs makes it challenging to encourage higher participation in AEO certification. To address this issue, the second workshop sought to develop rubrics and best practices through an AEO Status Survey and a time release study (TRS) to measure AEO benefits.

Several key findings and recommendations were discussed throughout the two workshops and three studies: (1) AEO programmes must consider the differences in benefits of relevance to specific operators in order to provide appropriate incentives; (2) there is a need to train customs officers in AEO to make certification procedures faster and more comprehensible; (3) while customs administrations should not lower standards for SMEs, there should be greater flexibility in the evaluation of these companies; (4) governments must step up on efforts to promote the use of MRAs among AEOs. These findings are in line with APEC's previous research on AEO-related issues.

Source: Case study submitted by Chinese Taipei.

These efforts may have contributed to the slight improvement of 0.1 percent in the efficiency of customs clearance processes between 2016 and 2018. Clearance time with and without

¹⁵ Cisco, "Cisco Global Digital Readiness Index 2019."

¹⁶ M.H. Abeywickrama and W.A.D.N. Wickramaarachchi, "Study on the Challenges of Implementing Single Window Concept to Facilitate Trade in Sri Lanka: A Freight Forwarder Perspective," *Journal of Economics, Business and Management* 3, no. 9 (2015): 883–8.

¹⁸ World Bank, "Doing Business 2020" (Washington, DC: World Bank, 2020), <https://openknowledge.worldbank.org/bitstream/handle/10986/32436/9781464814402.pdf>

physical inspection also improved significantly in the same period: clearance time required for APEC economies decreased by 7.1 percent for physical inspection and 15.8 percent without physical inspection. This represents an average decrease in clearance time by about 0.2 to 0.3 days. The Trading across Borders score, which reflects the level of regulatory performance of economies, also reported a 2.1 percentage improvement among APEC economies from 2016 to 2019. Even when benchmarked against OECD economies, the performance of APEC economies still stands out. Within the same time frame, OECD economies recorded an improvement in the Trading across Borders score of 0.1 percent. Listed in Table 3.3 are some examples of relevant reforms by APEC economies since 2016.

Table 3.3 Reforms by APEC economies that address Chokepoint 1

APEC economy	Reforms
Brunei Darussalam	<ul style="list-style-type: none"> Expedited export and import processes by improving its domestic single-window and customs clearance processes.
China	<ul style="list-style-type: none"> Implemented advanced cargo declaration; upgraded port infrastructure; optimised customs administration and published fee schedules. Implemented single-window system, encouraging transparency and competition
Indonesia	<ul style="list-style-type: none"> Improved online processing of export customs declarations Reduced time to import by implementing an electronic single billing system Improved customs services and document submission functions of the single window
Malaysia	<ul style="list-style-type: none"> Introduced electronic forms; improved existing risk-based inspection systems, port operation systems, and infrastructure at Port Klang
Papua New Guinea	<ul style="list-style-type: none"> Implemented an automated customs data management system to facilitate trade across borders
Peru	<ul style="list-style-type: none"> Introduced electronic mandates for customs brokers and streamlined import custom clearances, reducing the time required for exports and imports
Russia	<ul style="list-style-type: none"> Optimised online customs clearance to facilitate trade across borders Opened a new deepwater port on the coast of the Gulf of Finland, reducing the cost of border compliance.
Singapore	<ul style="list-style-type: none"> Upgraded infrastructure and electronic equipment at port to facilitate export and imports.
Chinese Taipei	<ul style="list-style-type: none"> Expedited export processes by allowing organisations to electronically issue certificates of origin.
Thailand	<ul style="list-style-type: none"> Implemented an e-matching system for electronic cargo control, reducing the time required for border compliance
Viet Nam	<ul style="list-style-type: none"> Implemented automated cargo clearance systems to ease the flow of exports and imports.

Source: World Bank Doing Business, 2018, 2019 and 2020.

Improvements in trade facilitation achieved by APEC economies can also be seen in the UNESCAP trade facilitation scores that measure economies' performances on cross-border paperless trade, paperless trade, institutional arrangement and cooperation, formalities, and transparency. The score improved by 7.9 percentage points on average for APEC economies between 2017 and 2019. In addition, Doing Business indicators generally report strong improvements in time and cost measures pertaining to trade among APEC economies. Cost of imports and exports had fallen by 4–5 percent since 2016. And, most notably, there were significant improvements in time spent on documentary and border compliance for import and export, with a reduction of around 11–14 percent since 2016. Moreover, across cost and time to import/export indicators, APEC economies generally attained a stronger improvement than OECD economies.

While APEC has done remarkable work to improve border management, a number of challenges remain. APEC economies have been less successful in reducing the amount of pre-shipment inspections. LPI physical inspection scores (the percentage of shipments physically inspected by a border agency) and multiple inspection scores (the percentage of shipments subject to repeated inspections by multiple agencies) have worsened, by 56.7 and 47.4 percent respectively from 2016 to 2018. Moreover, in terms of the Trading across Borders indicator from Doing Business, the performance of 10 of the 21 APEC economies measured either declined or maintained the status quo; the bulk of the improvement is concentrated in a few economies. To facilitate trade efficiency, the Doing Business 2020 report emphasises the importance of training, communication and cooperation.¹⁸ More also needs to be done in terms of promoting efficiency in inspections and upgrading trade logistic infrastructure to facilitate modern approaches to regulatory compliance.¹⁹

COVID-19 has added another dimension to the issue of facilitating and streamlining border processes and procedures. As the virus continues to spread and affect normal economic functions, resilient international trade has become more important than ever to provide for essentials such as health supplies and food. However, the risk mitigation measures to contain the pandemic have caused delays in customs and port clearance.²⁰ Lockdowns, quarantines and closures further exacerbate the delays, leading to congestion and disruptions in supply chains.²¹

Hayakawa and Mukunoki, using a gravity equation to investigate and estimate the effects of COVID-19 on trade, have found significant negative effects on international trade in the short run.²² These effects had become insignificant by July 2020, implying that economies have been successful in adapting after the first wave of the pandemic. Notably, the negative effects for non-essential, durable products persisted, whereas positive effects in medical and pharmaceutical products were observed. The 2020 OECD report on tackling COVID-19 recommends clearer transparency on trade-related policy actions, prioritising movement of essentials, limiting unnecessary export restrictions, as well as considering long-term strategies to improve resiliency.²³

Australia funded a project to analyse the disruptions and transformations of global value chains (GVCs) in the region during the pandemic (Box 3.2). The recommendations arising from the project for improving GVC resilience included supporting the participation of SMEs in global supply chains and digitalisation; developing common data standards for trade; strengthening expertise on supply chain resilience and risk management; and implementing capacity-building programmes geared toward the unique challenges faced by women.

¹⁸ World Bank, “Doing Business 2020” (Washington, DC: World Bank, 2020), <https://openknowledge.worldbank.org/bitstream/handle/10986/32436/9781464814402.pdf>

¹⁹ J. Arvis et al., “Competing to Compete 2018: Trade Logistics in the Global Economy, The Logistics Performance Index and Its Indicators” (Washington, DC: World Bank, 2018), <https://openknowledge.worldbank.org/bitstream/handle/10986/29971/LPI2018.pdf>

²⁰ UNESCAP, “COVID-19 and Its Impact on Shipping and Port Sector in Asia and the Pacific: Transport and Trade Connectivity in the Age of Pandemics” (UNESCAP, 2020), <https://www.unescap.org/sites/default/d8files/knowledge-products/ShippingPolyBrief-16Oct2020-FINAL.pdf>

²¹ J. Ovcina, “COVID-19 Outbreak Hits Hong Kong Container Shipping Port,” Offshore Energy, 17 August 2020, <https://www.offshore-energy.biz/covid-19-outbreak-hits-hong-kong-container-shipping-port/>

²² K. Hayakawa, and H. Mukunoki, “The Impact of COVID-19 on International Trade: Evidence from the First Shock,” *Journal of the Japanese and International Economies* 60 (2021): 101135.

²³ OECD, “COVID-19 and International Trade: Issues and Actions,” 12 June 2020, <https://www.oecd.org/coronavirus/policy-responses/covid-19-and-international-trade-issues-and-actions-494da2fa/>

Box 3.2 Building resilience in APEC's global value chains

A self-funded project led jointly by Australia and the Global Trade Professionals Alliance – Building Resilient Supply Chains 2020: Survey and Analysis – was implemented to identify disruptions; examine the resilience and adaptability of supply chains; and provide accurate data to match businesses with government recovery programmes. The project was designed to support APEC's objective of building capacity in global value chains (GVCs), with emphasis on business resilience, small- and medium-sized enterprise (SME) participation, women-owned/led SMEs, and digital readiness.

A survey was conducted between 25 July and 30 November 2020. With a total of 1,511 responses, the survey offered insights on GVC transformations, GVC integrity standards (sustainability, ethical behaviour, security and inclusion), and adaptive trade leadership skills in business. These formed the basis for the following recommendations:

- Support SMEs by assisting them to participate in e-commerce and global supply chains through direct engagement that leads to embracing new opportunities created by the digital economy.
- Develop common data standards for trade facilitation, particularly to support single-window interoperability and authorised economic operator (AEO) programmes across APEC member economies.
- Provide capability and capacity-building programmes specifically geared toward women and the unique challenges they face in global business.
- Create incentives to gather more data on linkages between large businesses and SMEs to help better understand the differing impacts and the relationships between them.
- Seize the opportunity to turn change in global supply chains, the main source of economic growth and innovation in these complex ecosystems, into value.
- Harness the appetite of large enterprises to continue growing and innovating in order to benefit the overall economy and SMEs.
- Use harmonised global data standards to drive policies in global supply chains and build trust between large enterprises and SMEs.
- Strengthen the expertise of industry and government organisations on supply chain disruptions and risk management using APEC to lead this process regionally.

Source: Case study submitted by Australia.

3.2 CHOKEPOINT 2: INADEQUATE QUALITY AND LACK OF ACCESS TO TRANSPORTATION INFRASTRUCTURE AND SERVICES

The second chokepoint addresses the performance of transportation facilities, specifically the quality and accessibility of transportation infrastructure and services. The objective is to improve the quality of transportation infrastructure, including port facilities; promote multimodal transportation; ensure short transit times, reliable delivery schedules and reasonable trade costs; and encourage private participation and transparency related to

financing transportation infrastructure projects. To evaluate the chokepoint, indicators from the World Bank LPI, UNCTAD and Transparency International were used. The indicators involved measure the quality of trade-related infrastructure and public-private partnerships (PPPs) for infrastructure procurement.

Table 3.4 Performance of APEC economies on external indicators under Chokepoint 2

No.	Indicator	APEC average 2015/16	APEC average 2019/20 or latest	% of improvement (% of change)	Remarks
2.1	LPI quality of trade and transport infrastructure	3.3	3.3	+0.4%	Slight improvement
2.2	UNCTAD Liner Shipping Connectivity Index	56.6	63.3	+11.7%	Significant improvement
2.3	TI Corruption Perceptions Index	54.6	55.2	+1.1%	Improved

LPI=World Bank Logistics Performance Index; TI=Transparency International; UNCTAD=United Nations Conference on Trade and Development

Source: World Bank LPI, 2016 and 2018; UNCTADstat; and TI Corruption Perceptions Index 2020.

Access to quality transportation services and infrastructure is vital for trade promotion and global economic integration. Hoekman and Nicita argue that a 10 percent decrease in transportation costs is associated with a 6 percent increase in trade, while a 10 percent increase in overall infrastructure investment is expected to increase exports by 5 percent.²⁴ Likewise, lack of infrastructure increases costs, reduces profitability and causes delays in trade systems.²⁵ Trade networks continue to be held back by poor transportation infrastructure, even in developed economies. There is evidence that improvements in quality and availability of infrastructure are much needed to enhance trade efficiency.²⁶

According to the Global Infrastructure Index, respondents' dissatisfaction with their economy's infrastructure in road, rail, air networks, utilities and broadband has declined from 31 percent in 2016 to 25 percent in 2020,²⁷ but only less than half of the respondents were satisfied with the current infrastructure levels. In 2020, 68 percent of the respondents believed that infrastructure investment should be prioritised as part of the government's response to COVID-19 economic recovery. According to a UNESCAP study on a representative group of 24 developing economies, the infrastructure financing required comes to roughly 8.2 percent of GDP. However, current financing stands at only 3.2 percent, leaving a gap as large as 5 percent of GDP. These concerns hold true in the APEC region as well, which has an

²⁴ B. Hoekman, and A. Nicita, "Trade Policy, Trade Costs, and Developing Country Trade," *World Development* 39, no. 12 (2008): 2069–79.

²⁵ Y. Duval and C. Utotham, "Behind-the-border Trade Facilitation in Asia-Pacific: Cost of Trade, Credit Information, Contract Enforcement and Regulatory Coherence," Working paper 209, UNESCAP, Bangkok, 15 April 2009.

²⁶ F. Rehman, A. Noman, and Y. Ding, "Does Infrastructure Increase Exports and Reduce Trade Deficit? Evidence from Selected South Asian Countries Using a New Global Infrastructure Index," *Journal of Economic Structures* 9, no. 1 (2020).

²⁷ Ipsos, "Global Infrastructure: Public Satisfaction and Priorities," October 2016, https://www.ipsos.com/sites/default/files/2016-10/Global_Infrastructure.pdf; Ipsos, "Global Infrastructure Index: Public Satisfaction and Priorities – 2020," October 2020, https://www.ipsos.com/sites/default/files/ct/news/documents/2020-10/global-infrastructure-index-2020_0.pdf

infrastructure investment gap of USD 7.8 trillion and requires investments of about USD 55.7 trillion.²⁸

Some APEC initiatives do contribute to improvements in this area. The 2018 APEC Economic Policy Report (AEPR) provides an overview of infrastructure needs in the APEC region while highlighting challenges, sharing best practices, and recommending policy improvements.²⁹ The report highlights efforts by APEC member economies in promoting institutional reforms for infrastructure development, such as streamlining construction approval processes; establishing partnerships between different government levels; and improving flexibility in regulations to reduce barriers to competition and realise technological benefits. The APEC Connectivity Blueprint 2015–2025 emphasises APEC’s leading role in facilitating reliable infrastructure financing through PPPs and other means. And as part of the initiative titled Peer Review and Capacity Building on APEC Infrastructure Development and Investment, APEC has supported Indonesia; the Philippines; Viet Nam, and most recently, Papua New Guinea, in the development of quality infrastructure (Box 3.3). The peer review process has identified several issues that need to be addressed in developing PPP agreements in order to encourage higher private sector participation: (1) vulnerability of contracts to political changes; (2) need for further incentives such as allowing private entities to internalise gains; and (3) enforcement of contracts.³⁰

As a result of these initiatives and the objective shared by APEC economies of improving the quality and accessibility of infrastructure, there have been noteworthy improvements as recorded by several indicators. The score on the UNCTAD Liner Shipping Connectivity Index, which measures maritime connectivity based on five components (number of ships; total annual container-carrying capacity of those ships; maximum vessel size; number of services; number of companies that deploy container ships on services from and to an economy’s ports), has improved by 11.7 percent in 2020 since 2016. Moreover, in 2018, the LPI quality of trade and transportation infrastructure improved slightly by 0.4 percent when compared to 2016 scores. Other indicators like the Transparency International Corruption Perceptions Index,³¹ which would help determine the stability of the economy in terms of enforcing contracts and attracting investments, showed improvements as well, increasing by 1.1 percent from 2016 to 2020.

Nevertheless, improving quality and accessibility of transportation infrastructure and services remains challenging. Buitter and Rahbari project that global trade would increase from USD 37 trillion in 2010 to USD 122 trillion in 2030 (in constant 2010 USD), requiring even more enabling infrastructure.³² Furthermore, changes in demographics, particularly ageing populations in developed economies, are expected to transform consumption patterns to wealth-consuming rather than wealth-saving in the future. Therefore, continued efforts will be

²⁸ Global Infrastructure Hub, “Infrastructure Outlook,” accessed on 11 May 2021, <https://outlook.gihub.org/>

²⁹ APEC, “2018 APEC Economic Policy Report” (Singapore: APEC, 2018), <https://www.apec.org/Publications/2018/11/2018-APEC-Economic-Policy-Report>

³⁰ APEC, “Peer Review and Capacity Building on APEC Infrastructure Development and Investment: Indonesia” (Singapore: APEC, 2019), <https://www.apec.org/Publications/2019/11/Peer-Review-and-Capacity-Building-on-APEC-Infrastructure-Development-and-Investment-Indonesia>

³¹ Scores from the 2020 Transparency International Corruption Perceptions Index were calculated based on 13 different sources with data coverage from 2018 to 2020.

³² W. Buitter and E. Rahbari, “Trade Transformed: The Emerging New Corridors of Trade Power,” Citi GPS, October 2011, <https://www.citivelocity.com/citigps/trade-transformed/>

required to adapt to and keep up with the increasing trade volumes and changing industry dynamics.

Box 3.3 Peer Review and Capacity Building on APEC Infrastructure Development and Investment

The Peer Review and Capacity Building on APEC Infrastructure Development and Investment project is part of a follow-up initiative to promote quality infrastructure in APEC. Through peer reviews involving a reviewed economy and a facilitating economy, the project seeks to provide feedback on policies and practices relating to the planning, selection and implementation process of infrastructure projects as well as identify the capacity-building needs of the reviewed economy.

Japan has participated as a facilitating economy for four economies: the Philippines (2016–2017); Viet Nam (2017–2018); Indonesia (2018–2019); and Papua New Guinea (2020–2021). The process includes an initial peer review of the reviewed economy followed by a dispatch of experts to the reviewed economy for capacity building, and in some cases, an additional follow-up invitation programme.

The peer reviews of the four economies identify several common issues. First, there has to be a more pragmatic and flexible approach to PPP laws. With PPP markets and procurement processes continuing to evolve, a model that is adaptable and responsive rather than highly specific would be desirable, for example with regard to funding and risk management approaches. Guidelines and regulations could be used to introduce flexibility.³³ Second, there is a need for a standalone PPP law as well as more efforts to strengthen PPP contracts. And third, there is a need to improve efficiency in the bureaucracy and relevant regulations. In particular, improvements are needed in terms of government support and facilities.

To address these issues, Japan has identified the following capacity-building needs: (1) a cooperative approach between government agencies for promoting PPP projects; (2) PPP centre to review the PPP law; (3) understanding and application of value for money principles; (4) PPP modalities and financial contract structures; and (5) project funding strategies, and risk allocation between the government and investors. Moving forward, there are plans to implement this initiative in more economies to promote seamless supply-chain connectivity.

Source: Case study submitted by Japan.

Aside from the demand challenges, there is also the task of balancing environmental concerns. Multimodal transportation is a greener alternative that could help mitigate the need for further environmental regulation as well as reduce costs in transportation if supported by appropriate certification schemes.³⁴ APEC has supported several initiatives, such as the Expansion of Multimodal Transport (Korea–China Multimodal Freight Truck Transport Project; Korea–Japan Towed Trailer Mutual Cooperation Pilot Program) to establish efficient logistic systems and reduce logistic costs.³⁵

³³ This is suggested in the peer review on the Philippines. See APEC, “Peer Review and Capacity Building on APEC Infrastructure Development and Investment: The Philippines” (Singapore: APEC, 2017), <https://www.apec.org/Publications/2017/05/Peer-Review-and-Capacity-Building-on-APEC-Infrastructure-Development-and-Investment-The-Philippines>

³⁴ J. Rodrigue, “Efficiency and Sustainability in Multimodal Supply Chains. International Transport Forum Discussion Papers” (Paris: OECD Publishing, 17 October 2018), <https://www.itf-oecd.org/sites/default/files/docs/efficiency-sustainability-multimodal-supply-chains.pdf>

³⁵ APEC, “APEC Connectivity Blueprint: The 2020 Mid-Term Review.”

Financing gaps pose a challenge in pursuing quality infrastructure development. Empirical studies reveal that the problem is particularly severe in low- and middle-income economies.³⁶ Private investments could help bridge the financing gap, and are particularly essential for developing quality infrastructure in the APEC region. APEC economies have been active in the use of PPP to finance public infrastructure projects. Examples include the Port of Baltimore in the United States; airport privatisation in Mexico; Metro Line Rail 4 in China; and the Peninsular Link Project in Australia.³⁷ In general, projects with detailed planning, strong legal and regulatory frameworks, and proper risk allocation have been more successful.

Evidence-based regulatory reforms are key to creating an enabling environment for quality infrastructure projects. The Benchmarking Infrastructure Development 2020 report released by the World Bank provides assessments of regulatory frameworks with regard to preparation of PPPs, procurement of PPPs, and PPP contract management. Economies are scored on their compliance with relevant international good practices. The findings show that reforms by economies continue to rely on already widespread practices, while the adoption of a number of internationally recognised practices remains scarce. Seventy-four percent of the economies surveyed introduced regulatory changes to promote PPP but only 36 percent of economies introduced changes that directly influenced the measured benchmarks.³⁸

APEC's performance on the PPP legal scores from the World Bank's benchmarking exercise appears mixed (Figure 3.1). While PPP contract management scores in APEC improved from 59.6 in 2017 to 70.0 in 2020, a 17.4 percent increase, other metrics indicate a sluggish performance. APEC economies underperformed in preparation and procurement of PPP scores, deteriorating by 15.7 percent and 17.1 percent respectively in 2020, benchmarked against 2017 scores.

In general, the findings underscore the need for more flexibility in designing a procurement process that is suitable for each PPP project. It is also important for PPP stakeholders to identify the measures necessary to deal with potential changes in advance, and then implement them into their contract and contracting strategies, rather than acting reactively, which leads to inefficiencies and disrupts progress.³⁹

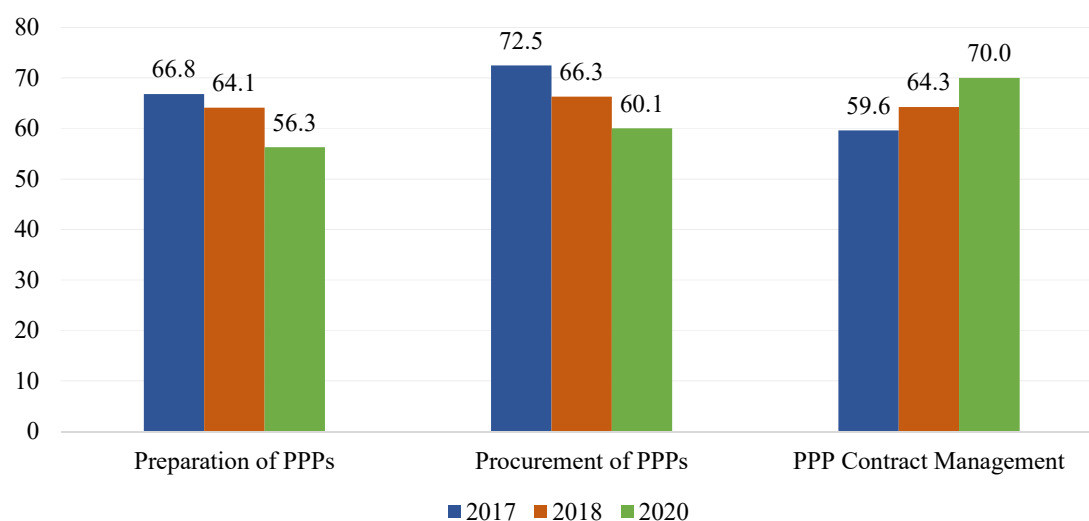
³⁶ World Bank, "Benchmarking 2020 Infrastructure Development" (Washington, DC: World Bank, 2020), <https://documents1.worldbank.org/curated/en/369621602050134332/pdf/Benchmarking-Infrastructure-Development-2020-Assessing-Regulatory-Quality-to-Prepare-Procure-and-Manage-PPPs-and-Traditional-Public-Investment-in-Infrastructure-Projects.pdf>

³⁷ APEC, "Public-Private Partnerships for Transportation in the APEC Region: An Analysis and Literature Review" (Singapore: APEC, 2017), <https://www.apec.org/Publications/2017/01/Public-Private-Partnerships-for-Transportation-in-the-APEC-Region-An-Analysis-and-Literature-Review>

³⁸ World Bank Group, "Benchmarking 2020 Infrastructure Development."

³⁹ H.C. Demirel et al., "Flexibility in PPP contracts – Dealing with Potential Change in the Pre-contract Phase of a Construction Project," *Construction Management and Economics* 35, no. 4 (2017): 196–206, DOI:10.1080/01446193.2016.1241414.

**Figure 3.1 Benchmarking Infrastructure Development:
PPP legal scores for APEC economies**



PPP=public-private partnership

Note: Data for Brunei Darussalam; Hong Kong, China; Japan; New Zealand; and Chinese Taipei are unavailable.

Source: World Bank, “Benchmarking Public-Private Partnerships Procurement 2017: Assessing Government Capability to Prepare, Procure, and Manage PPPs” (Washington, DC: World Bank, 2018); World Bank, “Procuring Infrastructure Public-Private Partnerships Report 2018: Assessing Government Capability To Prepare, Procure, and Manage PPPs” (Washington, DC: World Bank, 2018); World Bank, “Benchmarking 2020 Infrastructure Development” (Washington, DC: World Bank, 2020).

On the whole, APEC economies have seen improvements in indicators measuring the quality and accessibility of transport infrastructure and services. The increase in the scores suggests that APEC economies are headed in the right direction. However, they may need to speed up reforms in areas such as PPP laws to meet the increasing demand for trade. Opportunities for continued development include ensuring adequate multimodal transportation services and financing through PPPs. And, since infrastructure is still largely funded directly by the public sector, there is also a need to ensure that traditional public investments in infrastructure remain efficient.

3.3 CHOKEPOINT 3: UNRELIABLE LOGISTICS SERVICES AND HIGH LOGISTICAL COSTS

The third chokepoint relates to logistics services and the associated costs. In addressing this chokepoint, the objective is to improve the quality and options for logistics services through innovation and competition. Discussions of this chokepoint focus on the inefficiencies brought about by unreliable logistics services and high logistical costs. Indicators under this chokepoint are from the World Bank LPI and DHL Connectedness Index.

Table 3.5 Performance of APEC economies on the external indicators under Chokepoint 3

No.	Indicator	APEC average 2015/16	APEC average 2019/20 or latest	% of improvement (% of change)	Remarks
3.1	LPI Overall Index	3.4	3.4	-0.6%	Slightly worsened
3.2	DHL Connectedness Index	62.7	63.6	+1.4%	Improved
3.3	LPI ease of arranging competitively priced shipments	3.3	3.2	-1.9%	Worsened
3.4	LPI competence and quality of logistics services	3.3	3.4	+0.3%	Slight improvement
3.5	LPI ability to track and trace consignments	3.5	3.4	-1.1%	Worsened
3.6	LPI timeliness of shipments in reaching destinations within the scheduled or expected delivery time	3.7	3.7	-0.9%	Worsened
3.7	LPI shipments meeting quality criteria (%)	79.3%	83.9%	+5.7%	Strong improvement
3.8	LPI lead time to import (days)	3.4 days	3.3 days	-3.6%	Significant improvement
3.9	LPI lead time to export (days)	2.4 days	2.3 days	-2.8%	Significant improvement

LPI=World Bank Logistics Performance Index.

Source: World Bank LPI, 2016 and 2018; DHL Global Connectedness Index 2020.

Table 3.6 Measures and composition of logistics costs

	Year	Logistics costs	Components of logistics cost				
			Transportation	Warehousing	Inventory	Administration	Other
China	2016	14.90% ¹	n/a	n/a	n/a	n/a	n/a
Indonesia	2016	21.48% ²	✓	✓	✓	✓	–
Korea	2017	10.74% ¹	✓	✓	✓	✓	✓
The Philippines	2016	27.16% ²	✓	✓	✓	✓	–
Thailand	2013	8.00% ²	✓	✓	✓	✓	–
Thailand	2019	13.40% ¹	✓	✓	✓	✓	–
USA	2017	7.70% ¹	✓	✓	✓	✓	–
Viet Nam	2014	16.30% ²	✓	✓	✓	✓	–
Viet Nam	2016	20.80% ¹	n/a	n/a	n/a	n/a	n/a

Note: ¹ Logistics cost as % of GDP; ² Logistics cost as % of sales

Source: R. Banomyong, D.B. Grant, P. Varadejsatitwong, and P. Julagasigorn, “Developing and Validating a National Logistics Cost in Thailand,” *Transport Policy* (2021), <https://doi.org/10.1016/j.tranpol.2021.04.026>

Logistics costs include all expenditures to make available a good or service to the market. This includes transportation, administrative and inventory costs (Table 3.6). While transportation costs remain the dominant component (about half of total logistics costs), inventory holding costs are also significant (about 40 percent of total logistics costs).⁴⁰ Other costs could be

⁴⁰ Based on Thailand data. See National Economic and Social Development Council (NESDC), Thailand, “Thailand Logistic Report 2019” (NESDC, 2019), https://www.nesdc.go.th/nesdb_en/download/article/article_20201112144736.pdf

categorised as labour costs, which involve human handling of goods in the warehouse, delivery-related customer services, and administrative work. Labour costs may reach 20 to 22 percent of gross revenue of ports⁴¹ and are found to make up the largest expense in warehouse operations.⁴²

During the first half of 2020, inventory holding capabilities across the globe were tested by the COVID-19 pandemic. Lockdowns, closures and the surge in demand for specific items, such as medical supplies, made inventory management unpredictable. This led to delays in manufacturing and delivery, and in turn, raised the logistics costs associated with carrying inventory.

The number of indicators that measure logistics performance is limited. One that is relevant and available periodically is the Logistics Managers' Index (LMI).⁴³ LMI measures changes in logistics performance in the US using eight components: inventory levels, inventory capacity, warehouse capacity, warehouse utilisation, warehouse prices, transportation capacity, transportation utilisation, and transportation prices.

Warehouse capacity had been generally trending upwards the year before the pandemic.⁴⁴ When the lockdowns began, warehouse capacity contracted, reaching an all-time LMI low of 38.0 in November 2020. However, there is some optimism about the availability of warehouse and transportation capacity in the near future, according to LMI's July 2021 report.⁴⁵ The contraction in warehouse capacity is also reflective of rising inventory costs. LMI readings for inventory cost have risen significantly since the start of the pandemic, reaching a record high of 89.4 in June 2021, an all-time high for this metric.⁴⁶

Improving cooperation on addressing this chokepoint is key to bolstering supply chains and managing rising costs. Trade and investment officials from APEC economies affirmed their commitment to ensuring the smooth flow of supply chains and encouraging more work to boost supply chain resilience and transparency in 2020.⁴⁷ In addition, in the APEC Ministers Responsible for Trade Meeting Joint Statement 2021, APEC trade ministers recognised the importance of freight and logistics suppliers in recovering from the pandemic and encouraged prioritisation of work in this area, especially in facilitating the movement of essential goods.⁴⁸

⁴¹ United Nations Conference on Trade and Development (UNCTAD), "Review of Maritime Transport 2020" (New York: United Nations, 2020), https://unctad.org/system/files/official-document/rmt2020_en.pdf

⁴² Material Handling & Logistics, "Labor Productivity Can Be 50% of Warehouse Operating Cost," *Material Handling & Logistics*, 16 July 2009, <https://www.mhlnews.com/labor-management/article/22039898/labor-productivity-can-be-50-of-warehouse-operating-cost>

⁴³ For the methodology of the Logistic Managers' Index (LMI), see: Z.S. Rogers, D. Rogers, and R. Leuschner, "The Logistics Managers' Index," *Rutgers Business Review* (Spring 2018), <https://rbr.business.rutgers.edu/sites/default/files/documents/rbr-030102.pdf>

⁴⁴ LMI, "April 2021 Logistics Managers' Index," 4 May 2021, <http://www.the-lmi.com/april-2021-logistics-managers-index.html>

⁴⁵ LMI, "July 2021 Logistics Managers' Index," 2 August 2021, <http://www.the-lmi.com/july-2021-logistics-managers-index.html>

⁴⁶ LMI, "June 2021 Logistics Managers' Index", 16 July 2021, <http://www.the-lmi.com/june-2021-logistics-managers-index.html>

⁴⁷ APEC Committee on Trade and Investment, "APEC to Strengthen Supply Chains, Promote Digital Trade for Recovery," 30 June 2020, https://www.apec.org/Press/News-Releases/2020/0630_VECTI

⁴⁸ APEC, "APEC Ministers Responsible for Trade Meeting Joint Statement 2021," 5 June 2021, https://www.apec.org/Meeting-Papers/Sectoral-Ministerial-Meetings/Trade/2021_MRT

Prior to COVID, APEC had taken steps to improve the reliability of logistics services and reduce the costs associated with logistics operations. The APEC Occupational Standards Framework directly addresses these objectives by establishing a common understanding of skills required for specific occupations and promoting training in the logistics sector.⁴⁹ Through an agreed protocol on regional occupational standards, the Occupation Standards Framework seeks to align training to the skillsets required in various industries.

Box 3.4 Indonesia's National Logistics Ecosystem

The cost and performance of logistics services increasingly play a pivotal role in international trade relations. According to a survey conducted by the World Bank in collaboration with the Bandung Institute of Technology (ITB), Indonesia has been struggling with high logistics costs, which amounted to 23 percent of GDP in 2016. Indonesia has since recognised the importance of seamless end-to-end digital connectivity across sectors and established the National Logistics Ecosystem (NLE) in 2020. Implementation of the NLE is expected to reduce logistics costs to 17 percent of GDP.⁵⁰

The NLE is a logistics ecosystem that harmonises the flow of goods and information across different points in the supply chain. The platform, supported by technology and information systems, encourages collaboration between government agencies and the private sector through data exchange, process simplification, and reduction of process repetition/duplication. NLE aims to create a logistics ecosystem that is efficient, standardised, easily accessible, low cost, transparent, and acts as a digital platform connecting logistics communities.

Indonesia also launched the Batam Logistics Ecosystem (BLE) as part of the NLE initiative in March 2021. The BLE will help to tidy and simplify business processes with integrated services. By allowing single submission through a unified platform, BLE reduces the complexity and time needed in business processes. This helps to address the problem of intermodal effectiveness in transportation as well as supports interconnection between port infrastructures.

However, Indonesia encountered several challenges in the implementation of NLE, especially in terms of coordination and meeting regulatory requirements. It was necessary to ensure that there was sufficient collaboration among the various stakeholders during the development and implementation process. Indonesia also recognised the challenge of making regulatory adjustments when simplifying and integrating business processes between ministries and agencies. Several such adjustments have been made by the Directorate of Customs and Excise (DCGE) to accommodate the implementation of the NLE.

Through these reforms, Indonesia has been able to provide convenience and transparency to service users. The NLE is expected to be able to shorten clearance time by 35 to 56 percent (or 0.6 to 2.1 days) and reduce clearance costs by 50 to 68 percent. Furthermore, the BLE is expected to reduce ship-to-ship/floating storage unit service time by up to 70 percent, a reduction to a day from three days. The NLE will continue to be developed in stages with the aim of economy-wide implementation by 2024.

⁴⁹ APEC, "APEC Occupational Standards Framework," January 2016, [https://aimp2.apec.org/sites/PDB/Supporting%20Docs/2722/Proposal%20Attachments%20\(if%20any\)/Occupational%20Standards%20Framework_DRAFT_Feb16.pdf](https://aimp2.apec.org/sites/PDB/Supporting%20Docs/2722/Proposal%20Attachments%20(if%20any)/Occupational%20Standards%20Framework_DRAFT_Feb16.pdf)

⁵⁰ "NLE Implementation Projected to Slash Logistics Costs to 17 Percent," *Antaranews.com*, 24 September 2020, <https://en.antaranews.com/news/157405/nle-implementation-projected-to-slash-logistics-costs-to-17-percent>

Source: Case study submitted by Indonesia.

Other significant initiatives include the APEC Multi-Stakeholder Dialogue on Structural Reform in Logistics Services.⁵¹ The dialogue was initiated by Viet Nam and co-sponsored by China; Malaysia; New Zealand; Peru; and Chinese Taipei with the objective of discussing best practices and structural reforms in logistics services. During the dialogue, the following recommendations were made: (1) manage and harmonise conventional trade and e-commerce in logistics; (2) identify barriers to improving logistics services; (3) focus on logistics services through trade agreements; (4) develop new infrastructure; and (5) formulate legal frameworks to ensure logistics service development. In order to promote coherence and connectivity in the logistics services sector, issues pertaining to trade barriers and logistics investment were also addressed. Indonesia's National Logistics Ecosystem serves as an example of the benefits derived from improved connectivity in the logistics sector (Box 3.4).

Measures taken by APEC economies to improve efficiency have contributed to reductions in import and export lead times, by 3.6 percent and 2.8 percent, respectively, from 2016 to 2018 (based on LPI scores; see Table 3.5). These reductions amount to an increase in the efficiency of logistics services by roughly 0.1 days. Improvements have also been noted in other external indicators. The LPI competence and quality of logistics services indicator improved slightly, by 0.3 percent; and the percentage of shipments meeting quality criteria improved by 5.7 percent, from 79.3 percent in 2016 to 83.9 percent in 2018. However, despite these improvements, the overall logistics performance index for APEC has dipped slightly, by 0.6 percent. This could be attributed to inefficiencies in handling shipments as reflected by the indicators that gauge the ability to track consignments, meet delivery schedules, and arrange competitively priced shipments. These three indicators have all worsened between 2016 and 2018, decreasing by 1.1 percent, 0.9 percent, and 1.9 percent, respectively.

Notwithstanding the initiatives described earlier, the logistics industry still lags in developing and supporting a digital environment. A 2016 report by PwC emphasises that the lack of a digital culture and training are the biggest challenges faced by transportation and logistics businesses.⁵² This calls for more efforts to better address the gap in the adoption of technology. Singapore has rolled out various initiatives to enhance innovation and digitalisation in the logistics industry, which have improved productivity and lowered costs (Box 3.5). Digitalisation of air freight logistics in China has also resulted in efficiency gains and serves as a learning experience for the region (Box 3.6).

⁵¹ APEC, "APEC Multi-Stakeholder Dialogue on Structural Reform in Logistic Services," APEC Committee on Trade and Investment, April 2019, <https://www.apec.org/Publications/2019/04/APEC-Multi-Stakeholder-Dialogue-on-Structural-Reform-in-Logistic-Services>

⁵² PwC, "Shifting Patterns: The Future of the Logistics Industry" (PwC, 2016), <https://www.pwc.com/sg/en/publications/assets/future-of-the-logistics-industry.pdf>

Box 3.5 Digitalising the logistics industry

The logistics industry is a key component of Singapore's economy due to its role in facilitating the domestic and international flow of goods. In 2019 alone, the logistics industry contributed 1.4 percent of Singapore's GDP. Much of this demand is fuelled by the growth in e-commerce over the last decade. A report from Colliers International states that Singapore's e-commerce sector is expected to expand by 48 percent to SGD 10.15 billion by 2022.⁵³ The report also acknowledges the role of technology in reshaping the Asian logistics sector, placing pressure on the logistics industry to deliver quality services at low costs. To capitalise on the growing demand for e-commerce services, reforms are needed in the logistics industry to increase handling capacity and meet delivery expectations.

The Singapore government, in collaboration with private-sector entities, has rolled out various initiatives focused on innovation and digitalisation to enhance productivity: (1) Industry Transformation Maps; (2) National Trade Platform; and (3) digital economy agreements.

The Industry Transformation Maps, part of a SGD 4.5 billion programme, identified opportunities for the logistics industry that are in line with global trends and provides assistance to drive the deployment of advanced technologies. In addition, plans have been made to establish innovation centres to bolster the logistics innovation ecosystem in Singapore.

Singapore launched the National Trade Platform in 2018 as a one-stop trade and logistics ecosystem that enables cost reduction and operation optimisation through digitalisation of cross-border regulatory processes. The platform allows sharing of digital trade data between businesses and the Singapore government as well as between governments. Singapore Customs has worked actively with ASEAN to implement the live exchange of the ASEAN Customs Declaration Document along with four other ASEAN members via the ASEAN Single Window and is looking to establish similar digital connectivity with other trading partners. By enabling the connections, the National Trade Platform acts as a key gateway for digital trade connectivity.

Lastly, Singapore is looking to develop international frameworks that support the interoperability of standards and systems through international agreements known as digital economy agreements, or DEAs. These agreements are known to enable trusted data flows and build trust in digital systems. To date, Singapore has finalised two such agreements: the Singapore, Chile, and New Zealand Digital Economy Partnership Agreement (DEPA) and the Singapore–Australia Digital Economy Agreement (SADEA).

Several companies have been able to benefit from these initiatives. For example, SATS, a Singapore-based ground handler, launched its eCommerce Airhub, and reduced turnaround time by 50 percent by automating mail sorting and integrating supply chain operations. As a result of Singapore's efforts, several takeaways have been identified that could be relevant to APEC economies: (1) prioritise policy planning and internal coordination; (2) build strong partnerships with private stakeholders; and (3) anticipate trends and implement innovations.

Source: Case study submitted by Singapore.

⁵³ Colliers, "Glimpsing the Road Ahead: Reshaping the Logistics Market," Colliers Radar, 17 June 2019, <https://www.colliers.com/en-in/research/glimpsing-the-road-ahead-reshaping-the-logistics-market>

Box 3.6 Digitalisation of air freight logistics

Digitalisation is important to ensure competitiveness and connectivity in today's fast-changing world. Recognising this, China has implemented the Digitalisation of Air Freight Logistics Pilot Project at Xiamen airport. This initiative aims to establish information interconnections among stakeholders in the air freight logistics chain. The project is jointly administered by the Asia-Pacific Model E-Port Network (APMEN) and the Administration of the Xiamen Area of China (Fujian) Pilot Free Trade Zone on the basis of the Xiamen International Trade Single Window Platform. The main objectives of the project include: (1) transitioning to a paperless transportation process for air freight import and export; (2) connecting systems of the parties involved and enabling electronic sharing of operation process information; and (3) acting as a proof of concept for future industry collaboration.

The project was undertaken in two phases. In phase one, officially launched in November 2019, the electronic air waybill (e-AWB) was implemented for import air freight. Phase two, officially launched in December 2020, saw the e-freight implementation for export air freight. Handover efficiency of cargo import operation has since increased by 80 percent, with overall handover time reduced from 2.5 hours to 0.5 hours. There has also been an improvement in data quality and accuracy through data validation, data monitoring, and enhanced security systems. In addition, average air import operation efficiency has increased by at least 30 percent.

Accuracy, integrity and timeliness of data transmission is key in the implementation of the project. However, several challenges, such as the lack of efficient data exchange between some airlines and ground handling agencies as well as the lack of uniformity between system interfaces, have hindered its implementation. Despite these setbacks, the project has been successful in improving logistics efficiency and reducing the need for paper documents through system connection and data aggregation. Customer satisfaction has also improved due to the increased transparency in customs release and shipment status. Cooperation and collaboration between government agencies and the relevant industry stakeholders will be needed to address the challenges in future phases and in subsequent e-freight implementation in other airports.

Source: Case study submitted by China.

Poor logistics services disrupt connectivity, and hence the flow of trade, capital, information and people. The DHL Global Connectedness Index evaluates the degree of globalisation based on international flows across its four pillars: trade, capital, information, and people. The index scores for APEC economies improved by 1.4 percent between 2016 and 2019. Fourteen APEC economies improved their scores while the remaining declined only slightly. Similarly, OECD economies report an improvement of 1.3 percent since 2016. However, COVID-19 disruptions make it unlikely that similar improvements would be seen in 2020. Projections in the 2020 DHL report nevertheless seem optimistic.

The DHL report notes that while trade and capital flow decreased at the start of the pandemic, they have held up well and have already started to recover.⁵⁴ Trade flows contracted sharply in March and April 2020, but more than 75 percent of the decrease was already recovered by August 2020. However, trade flows are projected to stay below 2019 levels in 2020. Digital information flows have surged as economies and firms alike increase their online presence to stay operational and competitive. Not surprisingly, the flow of people continues to remain negatively affected by borders closures across several economies. The combined impact across

⁵⁴ S.A. Altman and P. Bastian, "DHL Global Connectedness Index 2020: The State of Globalization in a Distancing World" (DHL, 2020), <https://www.dhl.com/content/dam/dhl/global/dhl-spotlight/documents/pdf/spotlight-g04-global-connectedness-index-2020.pdf>

the four pillars suggests that the proportion of global output crossing economies would decline but only modestly in 2020. Even though the pandemic has disrupted trade across the globe, it has not severed the fundamental links that connect borders. The results here indicate the willingness and drive to continue with business despite the disturbance.

The International Finance Corporation (IFC) has noted the following adaptations in logistics on the path to recovery from the COVID-19 pandemic:⁵⁵

- Increasing dedicated air cargo capacity through reallocation of airline fleets.
- Leveraging new technologies, such as the Internet of Things (IoT), cloud computing, automation, and data analytics, to provide cargo visibility and traceability.
- Reconfiguring GVCs by diversifying through relying on alternative trade partners and placing additional warehousing capacity

All in all, APEC's performance in providing quality logistics services has been mixed. While APEC economies generally performed well on the DHL Global Connectedness Index, LPI indicators portray both improving and worsening performances. Moreover, the progress made by APEC economies in this area has been masked by the negative effects of the pandemic, especially with regard to trade and people flows. Additionally, COVID-19 has resulted in high inventory costs due to increasing uncertainties. These changes reinforce the concern that external threats to supply chain resilience could have significant long-lasting global effects. Further work on supply chain resilience within APEC could focus on identifying the underlying risks involved and subsequently enable the formation of more resilient trade networks.

Improved quality and reliability in logistics services will support the development of a resilient trade network that allow supply chains to recover quickly from disruptions, or prevent disruptions from happening in the first place. For example, better visibility through mapping supply-chain networks has allowed certain firms to be better prepared to cope with the pandemic.⁵⁶ There are options for firms in selecting the most efficient way to improve supply chain resilience; and a combination of different strategies could be a good starting point. For example, firms could combine just-in-time lean manufacturing with measures to improve visibility and rebalance suppliers.⁵⁷

3.4 CHOKEPOINT 4: LIMITED REGULATORY COOPERATION AND BEST PRACTICES

The fourth chokepoint relates to cross-economy cooperation issues like regulations and information sharing. Addressing this chokepoint requires promoting better regulatory coordination and cooperation among trade authorities and with private stakeholders. The OECD Trade Facilitation Indicators (TFI) are used to evaluate these objectives. The indicators

⁵⁵ I. Twinn et al., "The Impact of COVID-19 on Logistics," International Finance Corporation, June 2020, https://www.ifc.org/wps/wcm/connect/2d6ec419-41df-46c9-8b7b-96384cd36ab3/IFC-Covid19-Logistics-final_web.pdf?MOD=AJPERES&CVID=naqOED5

⁵⁶ T.Y. Choi, D. Rogers, and B. Vakil, "Coronavirus Is a Wake-Up Call for Supply Chain Management," *Harvard Business Review*, 27 March 2020, https://hbr.org/2020/03/coronavirus-is-a-wake-up-call-for-supply-chain-management?utm_source=pocket-chrome-recs

⁵⁷ APEC, "APEC Regional Trends Analysis: Bolstering Supply Chains, Rebuilding Global Trade; Making Recovery Inclusive" (Singapore: APEC, 2021), <https://www.apec.org/Publications/2021/05/APEC-Regional-Trends-Analysis---May-2021>

look at four areas of cooperation, namely, information availability, trade community involvement, and internal and external border agency cooperation.

Table 3.7 Performance of APEC economies on external indicators under Chokepoint 4

No.	Indicator	APEC average 2015/16	APEC average 2019/20 or latest	% of improvement (% of change)	Remarks
4.1	TFI on information availability	1.7	1.8	+5.3%	Significantly improved
4.2	TFI on involvement of trade community	1.5	1.7	+10.8%	Significantly improved
4.3	TFI on internal border agency cooperation	1.6	1.8	+12.8%	Significantly improved
4.4	TFI on external border agency cooperation	1.5	1.6	+7.0%	Significantly improved

TFI=OECD Trade Facilitation Indicator.

Source: OECD TFI.

The TFI on information availability captures the accessibility of information relevant to optimising and simplifying customs procedures. This includes information on import and export procedures, customs procedures, regulatory frameworks, rate of duties, and transparency mechanisms.⁵⁸ APEC economies generally performed well in this area, having increased 5.3 percent on average compared to 2015 (Table 3.7). OECD economies performed far better with an increase of 17.0 percent in their score. The average score of OECD economies slightly exceeded APEC's average in 2019 with an average of 1.79 compared to APEC's 1.77.

APEC has taken several steps to increase the availability of information, and this has resulted in the improvements seen. All APEC economies except for two have fully implemented article 1 of the WTO Trade Facilitation Agreement, which relays provisions concerning information availability.⁵⁹ The remaining two economies are receiving support for the necessary capacity building. Another significant area of improvement is the increased adoption of single-window systems in APEC economies, which allows for sharing of information through cloud platforms. Some APEC economies have also improved information sharing through the Asia-Pacific Model E-Port Network (APMEN) logistics initiative (Box 3.7).

Box 3.7 APMEN Visualisation of Sea Freight Logistics Project

The Asia-Pacific Model E-Port Network (APMEN) Visualisation of Sea Freight Logistics project was implemented to improve visibility, integrity and transparency of cross-border trade through the facilitated exchange of data between APMEN members. The project will help to develop comprehensive data standards to support the exchange of critical sea freight data and provide recommendations regarding the use and implementation of data standards for e-port visibility.

⁵⁸ OECD, "Trade Facilitation Indicators: The Potential Impact of Trade Facilitation on Developing Countries' Trade," 12 November 2012, http://oecd.org/dac/aft/TradeFacilitationIndicators_ImpactDevelopingCountries.pdf

⁵⁹ WTO, "Trade Facilitation Agreement Database: Notifications List," accessed 11 May 2021, <https://tfadatabase.org/notifications/list>

Currently, two phases of the project have been conducted with the active participation of Australia; China; Hong Kong, China; and Singapore.

The project aims to bring about improved data exchange and transmission, which includes the following benefits: (1) optimise operational and port procedures; (2) lower latency, improve scalability and increase reliability for users through a decentralised and automated system architecture; (3) reduce cost and increase the efficiency of point-to-point service provided by ports; (4) transition to a paperless business process.

There are several identified risks to data exchange and transmission that the project seeks to address. At present, the lack of unity in operating standards, processes, and information development poses a risk to business processes and may slow down operations. Furthermore, differences in networks between economies and overseas access restrictions hamper the normal use of the data exchange platforms, leaving businesses vulnerable to disruptions in routine operations. The project has attempted to address the problems of inconsistent information standards and un-exchangeable information in port logistics through technical methods, thereby increasing the efficiency of port logistics.

Looking forward, the project will continue to promote sea freight information exchange to improve cross-border connectivity as well as trade facilitation, and build on a foundation of strengthening cooperation among Asia-Pacific ports in this area. There are also plans to include more APMEN members in the project in alignment with the priorities of the APEC Committee on Trade and Investment (CTI). This will foster increased efficiencies among ports as well as further the implementation of automatic data sharing.

Source: Case study submitted by China.

The TFI on involvement of trade community refers to the degree to which trade communities are involved in the design and everyday operation of border-related policies and procedures. In particular, it captures the scope, content and outcomes of consultations between traders and government agencies. Higher scores are reflective of more sharing of information and power among stakeholders.

APEC economies have improved significantly in measures of trade community involvement, improving by 10.8 percent from 2015 to 2019. The performance of OECD economies improved as well but by a smaller extent; an improvement of 7.6 percent over the same period. However, OECD's average (at 1.71) was higher than APEC's (at 1.66) in 2019.

Lastly, we consider measures of internal and external border agency cooperation. Internal border agency cooperation is critical to allow for consolidation of documentation and inspections in a single location, whereas external border agency cooperation facilitates the exchange of information across borders.⁶⁰ The significant correlation between integrity and border agency cooperation highlights the importance of promoting transparency and predictability by taking an all-inclusive approach when dealing in border processes.⁶¹ Improvements in internal and external border agency cooperation could result in as much as 2.4 percent reduction in trade costs.⁶²

⁶⁰ E.Moïsé, T. Orliac, and P. Minor, "Trade Facilitation Indicators: The Impact on Trade Costs," OECD Trade Policy Papers, OECD Publishing, Paris, 2011, https://www.oecd-ilibrary.org/trade/trade-facilitation-indicators_5kg6nk654hmr-en

⁶¹ OECD, "Exploring the Role of Trade Facilitation in Supporting Integrity in Trade," 15 April 2019, [https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=TAD/TC/WP\(2019\)1/FINAL&docLanguage=En](https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=TAD/TC/WP(2019)1/FINAL&docLanguage=En)

⁶² WTO, "Trade Facilitation", accessed 5 August 2021, https://www.wto.org/english/news_e/brief_tradefa_e.htm

APEC economies have fared well on the TFI indicators for internal as well as external border agency cooperation. APEC economies recorded on average a 12.8 percent increase for internal border agency cooperation, and a smaller but significant 7.0 percent increase for external border agency cooperation between 2015 and 2019. While the scores have notably improved, APEC economies continue to have lower scores than OECD economies, especially in external border agency cooperation. The OECD average in external border agency cooperation stands at 1.8 while APEC economies recorded a score of 1.6 in 2019. For internal border agency cooperation, APEC and OECD had similar scores of around 1.8 (in 2019). Article 8 of the WTO Trade Facilitation Agreement has provisions to further support internal and external border agency cooperation, which all but three APEC economies have implemented.⁶³ Two of the remaining economies are receiving capacity-building support while the third is expected to implement all the prescribed provisions by February 2022.

According to the United Nations Economic Commission for Europe (UNECE), advancing border agency cooperation necessitates efforts on many fronts: legal reforms to increase the transparency of legal frameworks; understanding of the needs of different stakeholders; electronic exchange of information; and increase in the compatibility of government and business processes.⁶⁴ Such cooperation, although challenging, could help streamline processes and ensure smoother trade (Box 3.8). An inclusive approach that integrates all border-related agencies and not just customs will allow for more streamlined and coordinated border operations. The pandemic has highlighted the importance of an inclusive approach and has accelerated the implementation of facilitating measures in Asia and the Pacific, including improved transparency, simplified customs procedures, and digitisation of procedures.⁶⁵ For example, Peru, with the assistance of the United States is working on improving cooperation and coordination between its trade-related agencies through a trade information portal to eliminate trade inefficiencies (Box 3.9).

Furthermore, APEC economies have implemented a range of provisions prescribed under article 12 of the WTO Trade Facilitation Agreement, which encourages customs cooperation, particularly in facilitating the exchange of information between customs agencies to allow accurate verification of declarations in identified cases where there are grounds for doubt.⁶⁶ The APEC Policy Support Unit highlights four factors that are key to the successful implementation of article 12: (1) trust among customs agencies; (2) confidentiality of information; (3) improving understanding on procedures for exchanging information; and (4) strengthening regional cooperation.⁶⁷

Overall, APEC economies performed well on this chokepoint. The APEC average for all four TFI indicators improved between 2015 and 2019; however, the OECD's scores exceed those of APEC economies, especially on external border agency cooperation. More efforts are needed to improve APEC's rankings relative to the OECD's. APEC economies have been

⁶³ WTO, "Trade Facilitation Agreement Database," accessed on 11 May 2021.

⁶⁴ Standing Committee for Economic and Commercial Cooperation of the Organization of Islamic Cooperation (COMCEC), "Improving the Border Agency Cooperation among the OIC Member States for Facilitating Trade" (Ankara: COMCEC, 2016),

<http://iccia.com/sites/default/files/library/files/Improving%20the%20Border%20Agency%20Cooperation%202016.pdf>

⁶⁵ UNESCAP, "Regional Cooperation for Trade and Transport Connectivity in the Age of Pandemics in Asia and the Pacific" (United Nations, 2020), https://www.unescap.org/sites/default/d8files/knowledge-products/Trade_Transport%20Connectivity_ForWeb.pdf

⁶⁶ A. Bayhaqi, S.K. Singh, and LM. Espinoza, "Customs Cooperation in APEC: Strengthening Regional Cooperation," Policy Brief 27, July 2019, <https://www.apec.org/Publications/2019/08/Customs-Cooperation-in-APEC--Strengthening-Regional-Cooperation>

⁶⁷ Bayhaqi, Singh, and Espinoza, "Customs Cooperation in APEC."

active in implementing single-window systems and adopting cloud technology to allow the propagation and exchange of information. APEC itself also acts as a platform to encourage discussion and sharing of best practices to further improve cooperation within and across borders.

Box 3.8 APEC Export Certificate Roadmap

With food safety being a critical concern, the number and complexity of certification requirements for imported food have grown, affecting the ability of economies to comply with the requirements. While certain certifications are necessary to verify food safety, others are less so and constitute a waste of resources. According to a study commissioned by the APEC Business Advisory Council, certification is among the measures most frequently mentioned by those in the agriculture and food trade as ‘most burdensome’ for businesses.⁶⁸

In 2007, APEC Leaders agreed on the need to develop a more robust approach to strengthening food safety standards and practices in the region. In line with this stance, the United States developed a roadmap in 2013 to reduce unnecessary certification requirements and harmonise international certification standards. Since then, several workshops have been held with the objective of (1) eliminating the use of certificates for no-risk or low-risk food products; (2) harmonising certificate requirements under Codex guidelines where possible; (3) agreeing on a model export certificate for key sectors, and encouraging adoption among APEC economies; (4) encouraging the use of electronic certification. The initiative also involved establishing a Food Safety Cooperation Forum electronic working group to discuss concerns related to export certificates and to consider the use of electronic certification.

Despite these initiatives, the United States acknowledges the difficulty in gaining support for across-the-board changes to export certification. Coordination between food safety regulatory authorities and border agencies remains an issue. As a result, some elements in the roadmap were not achieved in the timeframe (by 2020). Other areas of implementation have had more success. For example, the APEC Wine Regulatory Forum was successful in creating a model wine certificate; and the certificate has been adopted for use among several economies. While progress is possible, it remains greatly constrained by the disconnect between different stakeholders. More time and collaborative efforts are needed to garner high-level commitment on harmonising certification requirements.

Source: Case study submitted by the United States.

Box 3.9 Technical assistance to Peru on publication of trade-related information

Over the last decade, Peru has taken strong steps to increase the overall transparency of governance. As part of initiatives to improve regulatory cooperation and best practices, Peru explored the possibility of including a trade information portal within Peru’s National Single Window of Foreign Trade (*Ventanilla Única de Comercio Exterior*, or VUCE). This initiative aimed to support Peru’s implementation of article 1.1 (on publication) of the World Trade Organization (WTO) Trade Facilitation Agreement by ensuring prompt publication of general trade-related information.

However, the lack of coordination, collaboration and cooperation between trade-related agencies restricted progress. There was also evidence that the various agencies were not updating and harmonising

⁶⁸ APEC Business Advisory Council, “Non-Tariff Barriers in Agriculture and Food Trade in APEC: Business Perspectives on Impacts and Solutions,” University of Southern California, Marshall School of Business, November 2016, 22, <https://www2.abaonline.org/content/download/22613384>

trade-related information regularly. These challenges represent inefficiencies in trade networks, costing traders both time and money.

Using funds provided by APEC and the United States under the APEC Supply-Chain Connectivity Framework Action Plan (SCFAP) sub-fund, the United States government provided assistance to Peru to address the abovementioned challenges. The support was provided in two phases. Phase 1 involved deep legal/regulatory analysis of administrative procedures, assessment of publication models for the strengthened VUCE, inventorying trade-related practical guides, and development of performance metrics. Phase 2 expanded on the recommendations from Phase 1. In particular, phase 2 explored how information can be integrated within VUCE to reduce time and cost for traders.

Although the trade information portal is yet to be established, its implementation is expected to improve access to information and also facilitate the exchange of information. This will help to strengthen regulatory transparency and provide timely information to traders. Furthermore, the accessibility and accuracy of information will empower traders, particularly small and medium-sized enterprises (SMEs), with greater leverage to hold border agencies accountable and reduce informal payments.

The trade information portal reflects Peru's commitment to providing ready access to trade-related information. The COVID-19 pandemic has highlighted the need for more of such initiatives. Clear and accurate information is also required as economies import vaccines, medical equipment and personal protective equipment for pandemic response.

Source: Case study submitted by the United States.

3.5 CHOKEPOINT 5: UNDERDEVELOPED POLICY AND REGULATORY INFRASTRUCTURE FOR E-COMMERCE

COVID-19 has slowed down economic activity but triggered unprecedented growth in the e-commerce sector. People all over the world are increasingly going digital for school, work and entertainment purposes during the lockdowns. The need to improve policy and regulatory infrastructure around e-commerce has never been as urgent as it is now. Addressing the fifth chokepoint requires improving the e-commerce environment by streamlining procedures, improving supply chain visibility and encouraging collaborations. Three indicators from the Universal Postal Union (UPU) and UNCTAD are considered to evaluate the progress APEC economies have made in this area.

Table 3.8 Performance of APEC economies on external indicators under Chokepoint 5

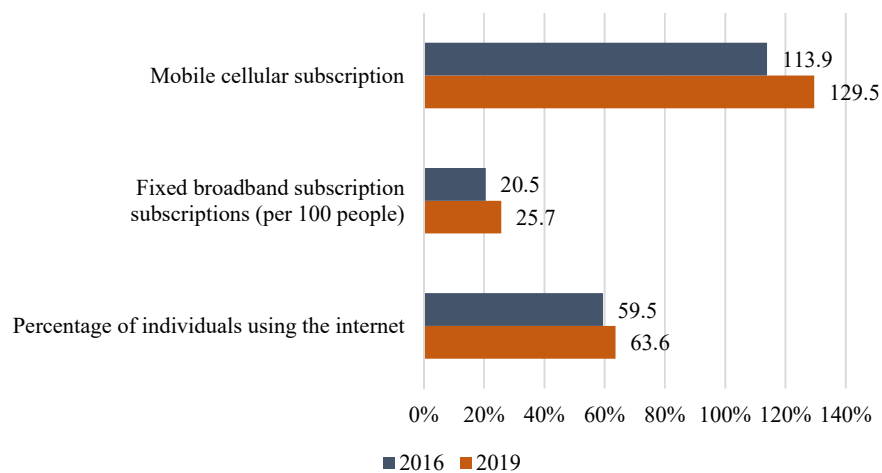
No.	Indicator	APEC average 2015/16	APEC average 2019/20 or latest	% of improvement (% of change)	Remarks
5.1	UPU Integrated Index for Postal Development	56.9	54.2	-4.8%	Significantly worsened
5.2	UNCTAD Global Cyberlaw Tracker	All APEC economies have at least one cyberlaw legislation			
5.3	UNCTAD B2C E-Commerce Index	71.3	75.4	+5.8%	Significant improvement

UNCTAD=United Nations Conference on Trade and Development; UPU=Universal Postal Union

Source: UPU Integrated Index for Postal Development, 2016 and 2020; UNCTAD Global Cyberlaw Tracker database (includes data for 19 APEC economies); UNCTAD B2C E-Commerce Index 2017 (reflects 2016 data) and 2020 (reflects 2019 data).

E-commerce was already thriving pre-COVID as more and more of the world went online owing to better digital infrastructure, growing digital opportunities, and convenience. In the APEC region, the proportion of the population having fixed broadband subscriptions increased from 21 percent in 2016 to 26 percent in 2019 while the mobile subscription rate grew by 16 percentage points since 2016 to 130 percent in 2019 (Figure 3.2). About 64 percent of the APEC population was on the Internet in 2019 compared to 59 percent in 2016.

Figure 3.2 Adoption of digitalisation



Source: APEC Policy Support Unit (PSU) staff calculation; World Bank, World Development Indicators database; International Telecommunication Union, online statistical data.

Increased online presence also increased the number of shoppers online. In 2019, 27 percent of the world’s population aged 15 years and older shopped online.⁶⁹ The global B2C e-commerce sales in the same year amounted to USD 4.9 trillion, an 11 percent increase since 2018.⁷⁰ E-commerce is growing in the APEC region as well: five of the top ten economies for e-commerce sales in 2019 were APEC economies.⁷¹

COVID-19 has further magnified these trends. According to an IBM report, the pandemic has accelerated the shift away from physical stores and toward digital shopping by about five years.⁷² Lockdowns have forced consumers to switch to online means of purchasing their essentials and non-essentials. According to UNCTAD, the e-commerce share of global retail trade jumped from 16 percent to 19 percent in 2020.⁷³ While e-commerce will continue to grow

⁶⁹ UNCTAD, “The UNCTAD B2C E-commerce Index 2020: Spotlight on Latin America and the Caribbean,” UNCTAD Technical Notes on ICT for Development 17, 17 February 2021, https://unctad.org/system/files/official-document/tn_unctad_ict4d17_en.pdf

⁷⁰ UNCTAD, “Estimates of Global E-commerce 2019 and Preliminary Assessment of COVID-19 Impact on Online Retail 2020,” UNCTAD Technical Notes on ICT for Development 18, 3 May 2021, https://unctad.org/system/files/official-document/tn_unctad_ict4d18_en.pdf

⁷¹ UNCTAD, “Estimates of Global E-commerce 2019.”

⁷² K. Haller, J. Lee, and J. Cheung, “Meet the 2020 Consumers Driving Change” (Armonk, NY: IBM, 2020), <https://www.ibm.com/thought-leadership/institute-business-value/report/consumer-2020>

⁷³ UNCTAD, “Estimates of Global E-commerce 2019.”

in 2021, the rate is expected to be lower than in 2020 at about 14.3 percent since traditional shopping is expected to rebound.⁷⁴

The shift toward e-commerce is also being supported by better online safety. Secure servers are pertinent to tackling cybercrime as they offer security for online transactions or web hosting by preventing information from being accessed by unauthorised people or viruses.⁷⁵ The number of secure servers serving the APEC region has grown in the recent years. On average APEC economies had about 1,828 secure servers per million people in 2016; this figure has increased about eight times since then to 17,448 secure servers per million people in 2019.⁷⁶ According to the UNCTAD Global Cyberlaw Tracker –which tracks the adoption of laws on e-transactions, data protection/privacy, cybercrime, and consumer protection – all APEC economies (where data are available) have at least one cyberlaw legislation in place.⁷⁷

Apart from the need for cyber legislation, e-commerce is heavily dependent on postal services to ensure goods are delivered in a safe manner. Postal services have become more important as customers increasingly expect doorstep deliveries.⁷⁸ According to a 2018 survey by the International Post Corporation (IPC), around 71 percent of cross-border e-commerce was delivered by postal companies and another 16 percent by other carriers.⁷⁹

The UPU Integrated Index for Postal Development captures the reliability, reach, relevance and resilience of postal services to provide a balanced view of postal development in any particular region. The average performance of APEC economies on this indicator deteriorated. The average index score decreased from 56.9 in 2016 to 54.2 in 2020. A majority of APEC economies (58 percent) experienced a decrease in their postal development scores. The pandemic put an additional strain on postal services. Lockdowns reduced the speed and predictability of delivery, hence weakening the reliability of the postal network.⁸⁰ More efforts are required to improve postal services across APEC economies. Viet Nam is working on improving postal services by testing paperless documentation and strengthening postal security to address transportation of illegal goods (Boxes 3.10 and 3.11).

Box 3.10 Paperless solution for delivery and transportation in the postal sector

Viet Nam has introduced a paperless solution for delivery and transportation, transforming international delivery and transportation processes. The solution comes as part of a collaboration between Vietnam Post, Post Danmark, PostNord Group AB and Qatar Airways to optimise border clearance procedures through coordinated mail dispatches between participants. The initiative

⁷⁴ E. Cramer-Flood, “Global Ecommerce Update 2021,” eMarketer, 13 January 2021, <https://www.emarketer.com/content/global-ecommerce-update-2021>

⁷⁵ APEC, “APEC Connectivity Blueprint: The 2020 Mid-Term Review.”

⁷⁶ World Bank data.

⁷⁷ The data cover 19 APEC economies. The dataset does not include information on Hong Kong, China; Papua New Guinea; and Chinese Taipei. See UNCTAD, “Cybercrime Legislation Worldwide,” accessed 16 September 2021, <https://unctad.org/page/cybercrime-legislation-worldwide>

⁷⁸ B. Sargent, “As E-commerce Booms, Transportation Logistics Are Shifting to Meet Demand,” Gensler, 12 October 2020, <https://www.gensler.com/blog/as-e-commerce-booms-transportation-logistics-are-shifting>

⁷⁹ Thirteen percent of consumers did not know who delivered their parcel. See International Post Corporation (IPC), “Cross-Border E-Commerce Shopper Survey 2018: Key Findings” (Brussels: IPC, 2019), <https://www.ipc.be/-/media/documents/public/markets/2019/ipc-cross-border-e-commerce-shopper-survey2018.pdf>

⁸⁰ Universal Postal Union (UPU), “Postal Development Report 2020: Achieving Higher Performance amid a Major Crisis” (UPU, October 2020), <https://www.upu.int/UPU/media/upu/publications/2020-Postal-Development-Report.pdf>

ensures full implementation of electronic data interchange in line with Universal Postal Union's (UPU) requirements.

The paperless solution was tested from January 2021 to March 2021 and was successful in reducing handling time and costs, and eliminating the need for paper resources. Viet Nam also saw a reduction in the time needed to deliver inbound mail bags. The exchange of pre-advance of consignment (PRECON) data also allows for more effective planning of labour and vehicle resources, thus increasing productivity.

However, several issues still need to be addressed. While current information systems allow mail dispatches to be displayed in advance, the display of information on transit mail bags remains a challenge. Furthermore, the transmission of data in advance of mail bags is not optimised in certain areas. These areas have been identified by Vietnam Post, and functions to address these issues have been proposed to UPU. There are also concerns of scalability and whether larger volumes of delivery may result in lags. Viet Nam recognises the need for closer cooperation between the parties involved to address potential issues that may arise.

Source: Case study submitted by Viet Nam.

The UNCTAD B2C E-commerce Index captures the factors determining an economy's ability to support online commerce in a single value. The index considers access to internet, financial account ownership, postal reliability and secure connectivity. APEC economies have improved significantly on this indicator since 2016. The APEC average index score increased from 71.3 in 2016 to 75.4 in 2019; by comparison, the average index score for OECD economies decreased by 0.2 percent with the latest score in 2019 reaching 84.5. Participation in e-commerce activities is expected to continue to increase in the future, given the facilitating e-commerce environment in the region.

To further support cross-border e-commerce, APEC has undertaken several initiatives, including the APEC Cross-border E-Commerce Facilitation Framework, the APEC Internet and Digital Economy Roadmap and the APEC Action Agenda for the Digital Economy. Work is also being conducted to ensure greater inclusivity in exploiting e-commerce opportunities by ensuring the participation of micro, small and medium enterprises (MSMEs). Initiatives focusing on this include a cross-border e-commerce workshop aiming to enable SMEs to access to global markets held in Beijing in 2019,⁸¹ and a study on current regulations and policies on e-commerce for MSMEs to identify gaps, enable sharing of best practices, and guide future work.⁸²

COVID-19 has pushed APEC economies to quickly embrace digital commerce and address regulatory gaps in the area. While APEC economies have performed relatively well in implementing the necessary legislation and building a supportive e-commerce environment, it fell short in improving postal services. The disparity in the UPU index score across the region is also wide, ranging from 5.2 to 90.5. More connected, secure and reliable services are needed, especially in the economies with lower scores, to reduce the postal development divide.

⁸¹ APEC, "APEC Cross-Border E-Commerce Training (CBET) Workshop: Enabling APEC SMEs to Access Global Market" (Singapore: APEC, April 2020), <https://www.apec.org/Publications/2020/04/APEC-Cross-Border-E-Commerce-Training-Workshop>

⁸² APEC, "Regulations, Policies and Initiatives on E-Commerce and Digital Economy for APEC MSMEs' Participation in the Region" (Singapore: APEC, March 2020), <https://www.apec.org/Publications/2020/03/Regulations-Policies-and-Initiatives-on-E-Commerce-and-Digital-Economy>

Box 3.11 Strengthening postal laws to prevent smuggling of contraband goods

The smuggling of contraband goods negatively affects economies. It represents a loss of funds from unpaid duties and often disrupts price signals in markets. Despite efforts to curb smuggling activities, the threat persists in many economies. To respond to new smuggling mechanisms, organisations need to stay vigilant and actively work towards eliminating flaws in current systems. This requires the collective and coordinated efforts of various agencies to control the transportation of smuggled goods.

In Viet Nam, the transportation of smuggled and banned goods by post is a complicated issue and adversely affects its socioeconomic stability. The situation has been exacerbated by the sudden growth in e-commerce, which has led to large volumes of goods being delivered through postal services, making it increasingly difficult to prevent smuggling activities.

To address these concerns, Viet Nam has strengthened its postal law to improve postal safety and security, and enhance its effectiveness at preventing and combating the acceptance, transportation and delivery of contraband and banned goods by post. The relevant laws are: (1) the Post Law, specifically, articles 7, 12, 13 and 14, and paragraph 8 of article 29; (2) Decree no. 15/2020/ND-CP (3 February 2020), specifically, article 10, which provides for the sanctioning of administrative violations in post and telecommunications, radio frequency, information technology and electronic delivery; and (3) Decree 98/2020/ND-CP (26 August 2020) on sanctioning of administrative violations in the production and trading of counterfeit goods and banned goods, and on protection of consumer rights.

Viet Nam also hosted a workshop to increase awareness of contraband laws among postal service providers, with the objective of combating the acceptance, transportation and delivery of contraband goods by post. The workshop resulted in several recommendations to deter smuggling activities: (1) develop a coordination mechanism among government agencies to regularly update information on security protocols for postal businesses; (2) ensure that postal businesses stay informed about best practices for dealing with contraband; and (3) conduct research and develop regulations to combat the threat of smuggling. Separate mechanisms for customs clearance of e-commerce merchandise are also under consideration.

Source: Case study submitted by Viet Nam.

4. STOCKTAKE OF RELEVANT APEC INITIATIVES

4.1 CHOKEPOINT 1: LACK OF COORDINATED BORDER MANAGEMENT, AND UNDERDEVELOPED BORDER CLEARANCE AND PROCEDURES

The completed projects under Chokepoint 1 could be categorised as follows: single window, authorised economic operator (AEO), digital technology adoption, and implementation of the WTO Trade Facilitation Agreement.

4.1.1 Single window

Efforts to promote and facilitate APEC single-window interoperability have been implemented successfully through the APEC Committee on Trade and Investment (CTI) and the Sub-Committee on Customs Procedures (SCCP). A 2018 CTI study on single-window interoperability led by Peru was conducted around the same time as the final drafting of the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) Recommendation no. 36 on the same topic.

To strengthen the basis of the CTI study, a rapid survey was conducted among SCCP members, who were asked to perform a self-assessment related to Recommendation no. 36. The resulting study introduced ten principles for single window system international interoperability (SWSII): (1) autonomy; (2) responsiveness; (3) agreement; (4) consensus; (5) connectivity; (6) data flow, security, privacy and confidentiality; (7) data harmonisation and standardisation; (8) terminology; (9) upgrading IT infrastructure; and (10) adoption of open standards.⁸³

The SCCP survey reveals that economies were at various stages of implementing a single-window system and that SWSII solutions would have to be architected to inculcate a climate of trust based on the aforementioned principles. The study underscored the need for ongoing collaboration between economies. It also highlighted the need to establish a pragmatic working definition of interoperability, determine how interoperability can be achieved and sustained, and ensure that progress is evaluated based on a pre-defined set of performance criteria.

In 2019, Chile led the Compendium of Best Practice Technology Solutions for Single Window Interoperability project. The project reviewed the state of single-window systems in APEC economies focusing on: use of the World Customs Organization (WCO) Data Model and/or use of international standards; messaging technology used; governance; public-private partnership (PPP); IT infrastructure; openness to adopting international interoperability; responsiveness of the receiving national single window (NSW) to requests from another NSW; NSW autonomy; service level agreements; sustainability; and features/functionality. The study concluded that, to move the APEC Regional Single Window initiative forward, the following should be considered as the starting point for achieving quick wins: standardising certificates of origin and phytosanitary certificates; collaborating with private enterprises; and leveraging new technologies like blockchain.

⁸³ APEC, “Study on Single Window Systems’ International Interoperability: Key Issues for Its Implementation” (Singapore: APEC, 2018), <https://www.apec.org/Publications/2018/08/Study-on-Single-Window-Systems-International-Interoperability>

4.1.2 Authorised economic operators

A study on ‘AEO in APEC Economies: Opportunities to Expand Mutual Recognition Agreements and the Inclusion of SMEs’ was conducted with the support of the National Customs Service of Chile. The study reviewed the status of AEOs in APEC economies in order to compile best practices, evaluate overall progress, and identify challenges and opportunities.⁸⁴ It explored key issues such as convergence and divergence areas; SME participation; application of digital technology; interoperability of AEOs; and implementation of mutual recognition agreements (MRAs).

The resulting report suggests ways to improve APEC AEO convergence in accordance with international standards and expand the APEC AEO network. It also highlights the need to introduce paperless and technology-based systems. Additionally, the report recommends a programme tailored to the needs of SMEs, to enable the initial integration of SMEs into the secure trade initiative with a focus on the interoperability of IT systems used by customs authorities in different APEC economies.

Another project on AEOs titled ‘Integrating SMEs in Authorized Economic Operator Certification: Improving SME Participation in APEC Secure Trade’ (under CTI and SCCP) identifies the following key challenges in getting SMEs involved in AEO programmes:⁸⁵

- SMEs do not have a culture of supply chain security, which means they may not implement any procedures.
- SMEs have limited access to financing and resources, constraining their ability to meet AEO requirements and implement the programme.
- Lack of small-business-specific criteria makes the certification unattractive for SMEs.

In addition, the report notes that as the e-commerce industry grows and supply chains reorganise, customs and other government agencies (OGAs) could strengthen their collaboration to identify high-risk goods and allow legitimate commerce to pass through borders, thus facilitating trade and promoting safety. Furthermore, the report acknowledges that COVID-19 has disrupted supply chains, and that post-pandemic, this could affect APEC’s promotion of AEO programmes and AEO MRAs, particularly to address the emerging need for more resilient and sustainable supply chains.

CTI and SCCP have prepared a Manual of Best Practices based on the AEO Benefits Survey in 2020. The manual highlights major benefits to AEOs from OGA practices: (1) recognising the contribution of AEO standards in simplifying work and eliminating duplication and re-examination of the same areas and operations; and (2) reducing the number of physical export inspections and priority treatments or reducing fees for permits and authorisations.⁸⁶ However,

⁸⁴ M.E.S. Galindo, and G.M.D. Rodriguez, “AEO in APEC Economies: Opportunities to Expand Mutual Recognition Agreements and the Inclusion of SMEs” (Inter-American Development Bank, February 2020), https://publications.iadb.org/publications/english/document/AEO_in_APEC_Economies_Opportunities_to_Expand_Mutual_Recognition_Agreements_and_The_Inclusion_of_SMEs.pdf

⁸⁵ APEC, “Integrating SMEs in Authorized Economic Operator Certification: Improving SME Participation in APEC Secure Trade” (Singapore: APEC, 2021), <https://www.apec.org/Publications/2021/02/Integrating-SMEs-in-Authorized-Economic-Operator-Certification>

⁸⁶ APEC, “Manual of Best Practices according to the AEO Benefits Survey under Pillar 3 WCO SAFE Framework”(Singapore: APEC, 2020), <https://www.apec.org/Publications/2020/12/Manual-of-Best-Practices-according-to-the-AEO-Benefits-Survey>

OGAs have several challenges in providing benefits to AEOs since they are bound by their own laws and regulations.

4.1.3 Digital technology

Several initiatives under the Supply-Chain Connectivity Framework Action Plan (SCFAP) focus on applying technological solutions to improve supply chain operations. The APEC global data standard (GDS) initiative, begun during the first phase of SCFAP and continued through to the earlier part of the second phase, is one such example. In essence, GDS provides a common language to identify, capture and share supply chain data with stakeholders along the supply chain through the use of various data standards included in barcodes and RFID tags.

The pilot projects on GDS examined how applying the standard could improve supply-chain performance in terms of efficiency, visibility/traceability, risk management/integrity, responsiveness, collaboration and innovation. GDS implementation could also enhance consumer safety by, among other measures, regulating temperatures (during transportation of food), reducing the risk of counterfeit products, and providing traceability. There was a workshop on the Application of Global Data Standards in 2017, which included sessions on applying GDS to improve APEC supply-chain connectivity; sharing experience on pilot project outcomes; sharing information on facilitation of the use of GDS; and promoting wider adoption of GDS.⁸⁷

Other APEC initiatives on digital supply chains are the ‘Asia-Pacific Model E-Port Network (APMEN) Review on the Regulations and Policies for E-Port and Single Window in APEC Economies’⁸⁸ and the ‘Practices on Using ICT Infrastructure for Cross-border Trade and Supply Chain Connectivity by APEC Economies’.⁸⁹ The former initiative reviewed existing laws and policies and provided recommendations from international organisations on single-window implementation. The latter study reviewed the developments and achievements of 15 APEC economies in improving ICT infrastructure for trade and highlighted case studies to distil best practices.⁹⁰

4.1.4 WTO Trade Facilitation Agreement

Singapore has been tabling periodic review reports to monitor the implementation of the WTO Trade Facilitation Agreement in APEC. The report dated 30 September 2021 shows good progress among APEC economies in implementing the provisions of the agreement. Only a few APEC economies have provided notifications regarding additional implementation time and resources. Table 4.1 shows the number of APEC economies that have provided either Category B notifications (economies will need additional time to implement the measure) or Category C notifications (economies will need additional time and capacity building support to implement the measure), by article or sub-article of the Agreement.

⁸⁷ APEC, “Study on the Application of Global Data Standards for Supply Chain Connectivity (Phase 2)” (Singapore: APEC, 2017), <https://www.apec.org/Publications/2017/11/Study-on-the-Application-of-GDS-for-Supply-Chain-Connectivity-Phase-2>

⁸⁸ Asia-Pacific Model E-Port Network (APMEN) Operational Center, “Review on Regulations and Policies for E-Port and Single Window in APEC Economies,” APMEN, December 2017.

⁸⁹ APMEN Operational Center, “Practices of Using ICT Infrastructure for Cross-border Trade and Supply Chain Connectivity by APEC Economies,” APMEN, December 2017.

⁹⁰ APEC, “Annex 3 – Finalized Review Report on Asia-Pacific Model E-Port Network,” 2018/SOM3/CTI/034, APEC, Singapore, 2018.

Table 4.1 Implementation of WTO Trade Facilitation Agreement by APEC economies

Article	Description	No. of economies notifying this article (or sub-article) in category B or C
1.1	Publication	2
1.2	Information available through Internet	2
1.3	Enquiry points	1
1.4	Notification	1
2.1	Opportunity to comment and information before entry into force	1
2.2	Consultations	1
3	Advance rulings	3
4	Procedures for appeal or review	3
5.1	Notifications for enhanced controls or inspections	5
5.2	Detention	2
5.3	Test procedures	3
6.1	General disciplines on fees and charges imposed on or in connection with importation and exportation	1
6.3	Penalty disciplines	2
7.1	Pre-arrival processing	3
7.2	Electronic payment	2
7.3	Separation of release from final determination of customs duties, taxes, fees and charges	1
7.4	Risk management	3
7.5	Post-clearance audit	1
7.6	Establishment and publication of average release times	2
7.7	Trade facilitation measures for authorised operators	3
7.8	Expedited shipments	1
7.9	Perishable goods	2
8	Border agency cooperation	4
10.1	Formalities and documentation requirements	1
10.2	Acceptance of copies	1
10.3	Use of international standards	2
10.4	Single window	4
10.8	Rejected goods	2
10.9	Temporary admission of goods, and inward and outward processing	1
11	Freedom of transit	4
12	Customs cooperation	2
12.2 and 12.6.1	Exchange of Information; provision of information	1

Source: Compiled by APEC PSU based on the APEC Committee on Trade and Investment (CTI) table on APEC economies' progress in implementing the World Trade Organization (WTO) Trade Facilitation Agreement.

APEC economies have initiated workshops to share experiences and knowledge on the implementation of the Trade Facilitation Agreement. An SCCP workshop led by Viet Nam highlighted the importance of the role of National Trade Facilitation Committees (NTFCs), particularly as fora for the public and private sector to effectively engage on the implementation of the Agreement, including on resolving bottlenecks and promoting reforms. The workshop also identified challenges, noting specifically the less than optimal involvement of OGAs as they view the Agreement as 'just a Customs issue'. The workshop also observed the benefits

of the application of pre-arrival declarations and advance rulings in reducing time and cost to trade. The pivotal role of the single-window facility was also mentioned.

A workshop by Papua New Guinea held in 2018 highlighted the importance of modernisation of customs agencies and single-window systems (as seen in New Zealand and Singapore), since customs agencies need to continuously adapt to the changing business and technological landscape. Additionally, the rise of e-commerce brings new challenges in border management, particularly in handling low-value shipment volumes.

Finally, several lessons emerged as a result of capacity-building activities on advance rulings and border agency cooperation:⁹¹

- Alignment with domestic priorities is important.
- Consistent engagement on the ground will support sustainable reforms, despite the challenges associated with stakeholder coordination.
- Engagement of the private sector improves the effectiveness of capacity building.

4.2 CHOKEPOINT 2: INADEQUATE QUALITY AND LACK OF ACCESS TO TRANSPORTATION INFRASTRUCTURE AND SERVICES

For chokepoint 2, APEC initiatives revolve around transportation infrastructure development and PPP facilitation.

The 2018 APEC Economic Policy Report (AEPR) notes that 75 percent of global infrastructure assets are publicly owned and that the efficiency of public investment can be strengthened to maximise its financial return and economic impact. To facilitate private-sector investment, APEC economies have been making progress in implementing reforms to legal frameworks and government procurement practices.

Moving forward, the 2018 AEPR report suggests a number of areas where APEC could continue to play a role with regard to structural reform and infrastructure: (1) expanding or deepening APEC's role in sharing knowledge and best practices; working with the private sector; and promoting harmonisation of standards; and (2) strengthening capacity-building initiatives to improve institutional capacity relevant for the region.

APEC also convened the conference on Promoting Quality Infrastructure Investment in Rapidly Urbanizing APEC Region, which discussed quality infrastructure (QI) investment and smart city development.⁹² The QI concept includes elements such as resiliency and sustainability, with real-time monitoring and early warning systems to support smarter disaster prevention. PPP is a good framework to attract QI investments globally and enable the adoption of Internet of Things (IoT) technologies. The conference noted that major challenges in developing smart cities are gaps in transportation and e-government systems, and the challenge of ensuring a competitive environment and security/privacy of data.

⁹¹ APEC, "APEC Supply Chain Capacity Building Projects: What Has the Impact Been?" (2018/SOM3/CTI/A2C2/004, Submitted by the United States at the *Eighth APEC Alliance for Supply Chain Connectivity Meeting*, Port Moresby, Papua New Guinea, 14 August 2018).

⁹² APEC, "Promoting Quality Infrastructure Investment in Rapidly Urbanizing APEC Region," June 2019, <https://www.apec.org/Publications/2019/06/Promoting-Quality-Infrastructure-Investment-in-Rapidly-Urbanizing-APEC-Region>

Another significant APEC initiative relevant to Chokepoint 2 is the Peer Review and Capacity Building on APEC Infrastructure Development and Investment project. So far, four APEC economies have undergone the review. The reviews suggest the importance of PPP in infrastructure development and investment, and the need for wider adoption of life-cycle costing, value for money and value engineering in the procurement of infrastructure projects. Having well-defined, practical laws governing PPPs is also key to accommodating the circumstances of PPP investors, including having standardised PPP contracts. Greater private participation also requires dealing with issues such as delays in land acquisition due to land disputes and slow administrative processing; lack of interest among foreign investors; and poor risk mitigation strategies.

4.3 CHOKEPOINT 3: UNRELIABLE LOGISTICS SERVICES AND HIGH LOGISTICAL COSTS

At least two APEC initiatives contribute toward chokepoint 3 in the stocktake, namely, a network for cooperating on green supply chains, and structural reforms in logistics services. The APEC Cooperation Network on Green Supply Chain established in 2014 encourages economies to develop green supply-chain pilot centres, and to boost cooperation in the area of green supply chain, green production and consumption, and green trade. The first pilot centre was established in Tianjin, China; since then, more pilot centres have opened, in Australia; Chile; and Korea. An expert group was also set up to discuss operational and management issues related to green supply chains. The network's plans for 2020 include expanding the pilot centres and developing a platform for information sharing.⁹³ In addition to reducing pollution and waste in logistics networks, green supply-chain networks also aim to reduce business costs and improve operational efficiencies, which will in turn improve the sustainability of logistics services and lower costs.⁹⁴

Another initiative undertaken to address chokepoint 3 is structural reform in logistics services, both to improve the services provided and lower costs. A multi-stakeholder dialogue attended by policymakers, regulators, businesses and related associations was conducted in Viet Nam in 2018 to exchange information on structural reforms.⁹⁵ Economies discussed barriers in the area of logistics services and the need for regulatory coherence to reduce time and cost. Some economies cited difficult geographical terrain as a factor contributing to high logistics costs. Lack of logistics skills and slow IT adoption were also highlighted as barriers to improving logistics services. Emerging areas of work identified for the future include developing an APEC index of services to benchmark progress, creating a master plan for logistics services, and coordinating on infrastructure and technology connectivity.

⁹³ APEC, "Singapore's Update on Supply Chain Framework Action Plan Phase II (SCFAP II)" (2020/SOM1/MAG/005, Submitted by Singapore to the *58th Market Access Group Meeting*, Putrajaya, Malaysia, 15 February 2020), http://mddb.apec.org/Documents/2020/MAG/MAG1/20_mag1_005.pdf; APEC, "Work Undertaken by APEC as regards to Green Growth and Sustainable Development" (Annex to the 2017 APEC SME Ministerial Statement, *APEC Small and Medium Enterprises Ministerial Meeting*, Ho Chi Minh City, 15 September 2017), <https://www.apec.org/-/media/files/ministerialstatements/sme/annexstocktake-green2c-sustainable-and-innovative-msmes.pdf>

⁹⁴ APEC, "Green Trade Boosted as Network Takes Shape," Media release, 4 September 2015, https://www.apec.org/Press/News-Releases/2015/0904_green.aspx

⁹⁵ APEC, "APEC Multi-Stakeholder Dialogue on Structural Reform in Logistic Services" (Singapore: APEC, 2019), <https://www.apec.org/Publications/2019/04/APEC-Multi-Stakeholder-Dialogue-on-Structural-Reform-in-Logistic-Services>

4.4 CHOKEPOINT 4: LIMITED REGULATORY COOPERATION AND BEST PRACTICES

APEC economies have created several networks and alliances to address chokepoint 4 on limited regulatory cooperation and best practices. The Alliance for Supply Chain Connectivity (A2C2) contributes to work in this area by drawing public and private stakeholders to provide guidance and technical inputs on capacity-building programmes and providing future direction on supply-chain work in APEC. The 11th A2C2 meeting in October 2020 focused on COVID-led supply chain disruptions and stressed the importance of resilience and regulatory cooperation to mitigate the supply chain impacts and strengthen connectivity. In the area of life sciences, it was emphasised that greater efficiency and better care can be achieved through enhancing cooperation and adopting standards among APEC members.

Collaboration under APMEN also supports regulatory work. Three APMEN pilot programmes on digital systems – Electronic Certificate of Origin; Global Quality Traceability system; and FTA Application system – were promoted to improve regulatory cooperation in border processes and reduce the cost and time spent.⁹⁶ As of August 2021, APMEN has 24 members from 14 APEC economies, the latest being the Port Authority of Thailand.

An SCCP policy dialogue on the Future of Trade and Implications for the Border was held in 2020 to discuss reforms in border management for digitally enabled trade. The dialogue led to plans to develop a digital dashboard that will showcase member economies' approaches to trade modernisation and the implementation of building blocks across three dimensions: policy and regulation; technology and ICT; and industry and supply chains.⁹⁷ The dashboard will also include information on efforts to address COVID-19 impacts and recovery, and identify capacity-building needs.

4.5 CHOKEPOINT 5: UNDERDEVELOPED POLICY AND REGULATORY INFRASTRUCTURE FOR E-COMMERCE

APEC has held several workshops to increase the understanding of existing e-commerce regulations in the region and to study their impact on the regional supply chains and institutional connectivity. Sharing experiences at these workshops helps APEC economies improve their regulatory infrastructure for e-commerce.

The APEC Strengthening Economic Legal Infrastructure (SELI) project on Developing a Cooperative Online Dispute Resolution (ODR) Framework for MSMEs in B2B Transactions and Use of Modern Technology for Dispute Resolution and Electronic Agreement Management aims to improve the online business environment by raising awareness on the application of modern technology and digital contract management, especially among MSMEs. This project follows from a survey in 2017 that found time and cost to be major barriers for MSMEs in addressing cross-border disputes, and that greater sharing of knowledge on ODR

⁹⁶ APEC, "Overall Progress Report of the Asia-Pacific Model E-Port Network 2015–2018" (2018/SOM3/CTI/036, Submitted by China to the *Third Committee on Trade and Investment Meeting*, Port Moresby, Papua New Guinea, 15–16 August 2018, http://mddb.apec.org/Documents/2018/CTI/CTI3/18_cti3_036.pdf

⁹⁷ APEC, "APEC Committee on Trade and Investment 2020: Annual Report to Ministers" (Singapore: APEC, 2020), <https://www.apec.org/Publications/2020/11/2020-CTI-Annual-Report-to-Ministers>

and its value would have a significant impact.⁹⁸ The workshop in 2018 provided the opportunity for sharing experiences and lessons learnt on the matter.⁹⁹

Following those deliberations, a collaborative framework for cross-border dispute resolution was endorsed by APEC in 2019.¹⁰⁰ This ODR framework aims to help global businesses (especially MSMEs) resolve B2B cross-border disputes, with a focus on low-value disputes. It is designed to promote cross-border confidence among businesses by providing quick electronic resolution and enforcement of disputes across borders, languages and legal jurisdictions. Using the framework, businesses can provide technology-assisted dispute resolution for B2B disputes through arbitration, mediation and negotiation. A business may use the framework to file a cross-border complaint online against other businesses in another participating economy when both parties agree to use this mechanism for resolving such disputes. The ODR framework is designed to be affordable for MSMEs and allows flexibility for partner ODR providers to create and manage, while still requiring compliance with the framework.

In addition, as part of an initiative to increase awareness and understanding of the technical aspects of cross-border e-commerce, the APEC Policy Support Unit conducted a study titled ‘Assessment of Capacity Building Needs to Support WTO Negotiation on Trade Related Aspects of E-commerce’ in 2020. The project assessed the Internet and related technologies, as well as the technical design of the Internet and its interactions with the economic environment.

From the assessment exercise, the study identified five capacity-building activities: (1) adopting of international standards, practices, guidelines and recommendations in member economies’ laws and regulations; (2) improving mutual recognition and interoperability among the laws, regulations and initiatives; (3) strengthening international cooperation with regard to specific aspects of e-commerce; (4) instituting new approaches to regulations, including the use of technology to facilitate processes; and (5) ensuring that laws, regulations and initiatives are practical, reasonable and can be operationalised efficiently.¹⁰¹ The project report also provided a snapshot of where APEC economies are in relation to the wide spectrum of economy laws and regulations affecting e-commerce, to help facilitate discussions, information sharing and capacity building.

Other initiatives were more focused on improving inclusivity in e-commerce.¹⁰² For example, the workshop on APEC Cross Border E-Commerce Training aimed to improve awareness of the skills needed to enable MSMEs, especially women-led enterprises, to participate in e-commerce and to adjust policies to help facilitate this. Similarly, the Building Blocks for Facilitating Digital Trade initiative seeks to examine barriers to digital trade and create a list of best practices and guidance to facilitate domestic and international digital trade that will

⁹⁸ J. Ding, “Online Dispute Resolution under APEC” (Presented at the *Twenty-first In-House Congress*, Hong Kong, China, 3 October 2019), https://www.doj.gov.hk/en/community_engagement/speeches/pdf/lo20191003e1.pdf

⁹⁹ APEC, “APEC Project Database: Workshop for Developing a Collaborative Framework for Online Dispute Resolution,” modified 5 February 2020, <https://aimp2.apec.org/sites/PDB/Lists/Proposals/DispForm.aspx?ID=2265>

¹⁰⁰ APEC, “Annex B – APEC Collaborative Framework for Online Dispute Resolution of Cross-Border Business to Business Disputes” (2019/CSOM/012anxb, Submitted by Economic Committee Chair at the *Concluding Senior Officials’ Meeting*, Singapore, 7 December 2019), http://mddb.apec.org/Documents/2019/SOM/CSOM/19_csom_012anxb.pdf

¹⁰¹ APEC, “Assessment of Capacity Building Needs to Support WTO Negotiation on Trade Related Aspects of E-commerce” (Singapore: APEC, 2020), <https://www.apec.org/Publications/2020/12/Assessment-of-Capacity-Building-Needs-to-Support-WTO-Negotiation>

¹⁰² APEC, “APEC Committee on Trade and Investment 2019: Annual Report to Ministers” (Singapore: APEC, 2019), <https://www.apec.org/Publications/2019/12/2019-CTI-Annual-Report-to-Ministers>

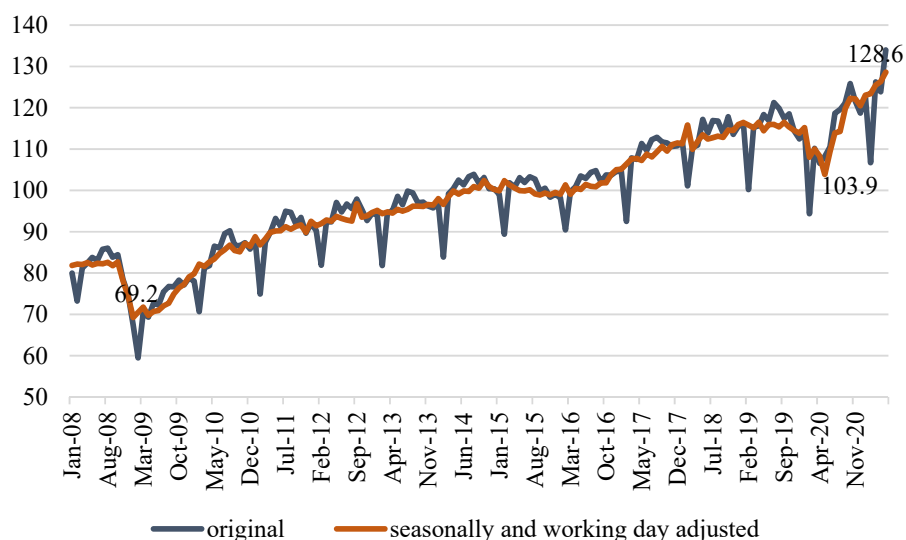
promote inclusive and sustainable growth. Some of the building blocks for facilitating digital trade that have been identified include modernisation of customs and logistics procedures, development of digital infrastructure and achievement of universal broadband access, and creation of a transparent and predictable regulatory environment.

5. GLOBAL TRADE RECOVERY

The global pandemic has had devastating impacts on global trade. Recovery seems to be progressing in a robust manner, but significant uncertainty and risks continue to linger. While a V-shaped recovery is evident in some economies, there is also indication that the pace has slowed down.¹⁰³ Trade recovery at the sectoral level grew strongly and steadily in some sectors such as textiles and electronic goods¹⁰⁴ despite several disruptions in the global semiconductor market.¹⁰⁵ Electronic goods including computers saw steady growth of 12 percent in the second half of 2020, fuelled by the switch to remote working.

The Container Throughput Index of the RWI–Leibniz Institute for Economic Research and the Institute of Shipping Economics and Logistics (ISL), which measures container transshipment or port traffic in 82 international ports (covering around 60 percent of global container handling), rose slightly in seasonally adjusted terms, from 126.3 to 128.6 between April and May 2021 (Figure 5.1). This reflects a significant recovery since the seasonally adjusted index dropped to 103.9 in May 2020. A similar steep decline was seen during the global financial crisis, when the seasonal adjusted index dropped to 69.2 in January 2009, a 14 percent drop from September 2008.

Figure 5.1 RWI/ISL-Container Throughput Index



Source: Data are from Institute of Shipping Economics and Logistics, “Container Throughput Index,” accessed 5 August 2021, <https://www.isl.org/en/containerindex>

Similarly, the World Trade Organization (WTO) Goods Trade Barometer, which highlights turning points in global merchandise trade and the future trajectory, remained strong (above

¹⁰³ “China’s Slowing V-Shaped Economic Recovery Sends Global Warning,” *Bloomberg*, 12 July 2021, https://www.bloomberg.com/news/articles/2021-07-11/china-s-fading-first-in-first-out-rebound-sends-global-warning?utm_source=pocket-chrome-recs

¹⁰⁴ V. Masterson, “The Future of Global Trade – In 7 charts”, World Economic Forum, 26 April 2021, https://www.weforum.org/agenda/2021/04/global-trade-statistics-covid-19-wto/?utm_source=pocket_mylist

¹⁰⁵ B. Vakili, and T. Linton, “Why We’re in the Midst of a Global Semiconductor Shortage,” *Harvard Business Review*, 26 February 2021, <https://hbr.org/2021/02/why-were-in-the-midst-of-a-global-semiconductor-shortage>

trend) in March 2021, indicating a robust trade recovery following the collapse of global trade in the first half of 2020.¹⁰⁶ This continued trend of recovery is supported by strong growth in the following elements of the barometer as of March 2021: export orders, air freight and trade in electronic components.¹⁰⁷

Table 5.1 WTO Goods Trade Barometer, June 2019 to March 2021

	Mar-21	Dec-20	Sep-20	Jun-20	Mar-20	Dec-19	Sep-19	Jun-19
Goods Trade Barometer	109.7	103.9	100.7	84.5	87.6	95.5	96.6	95.7
Export orders	114.8	103.4	113.5	88.4	83.3	98.5	97.5	97.5
Automotive products	105.5	99.8	99.2	71.8	79.7	100	99.8	93.5
Container shipping	106.7	107.3	102	86.9	88.5	94.8	100.8	99
Air freight (IATA)	111.1	99.4	88.5	76.5	88	94.6	93	91.4
Electronic components	115.2	105.1	94.6	92.8	94	92.8	88.2	90.7
Raw materials	105.4	106.9	103.6	92.5	95.7	90.9	91.4	97.1

Source: World Trade Organization (WTO), “WTO trade barometers: Goods Trade Barometer,” accessed 8 August 2021, https://www.wto.org/english/res_e/statis_e/wtoi_e.htm

Despite the notable progress in recovery, certain risks remain in the background. Global ocean shipping costs as indicated by several maritime indices are sharply rising due to supply bottlenecks. For instance, the average composite index of the World Container Index reached USD 6,090 per 40ft container in July 2021 which is USD 3,957 higher than the five-year average of USD 2,133 per 40ft container.¹⁰⁸

According to the United Nations Conference on Trade and Development (UNCTAD), freight rates reached historical highs at the end of 2020 and early 2021, highlighting the need for authorities to monitor the nature of competition in maritime transport.¹⁰⁹ Further analysis by the European Central Bank (ECB) notes that while transportation costs have risen, market adjustments may allow freight costs to decline again, and that while these bottlenecks could cause delays, they should not derail global recovery.¹¹⁰ Nonetheless, economies should pay close attention to possible surges in shipping costs that may be caused by tight shipping capacity, container supply imbalance, and congestion – which may slow down the recovery

¹⁰⁶ WTO, “Trade Falls Steeply in First Half of 2020,” Media release, 22 June 2020, https://www.wto.org/english/news_e/pres20_e/pr858_e.htm

¹⁰⁷ For the methodology of the WTO Goods Trade Barometer, see: WTO, “WTO Goods Trade Barometer Methodology,” 17 August 2020, https://www.wto.org/english/news_e/news20_e/methodology_wtoi_19aug20_e.pdf

¹⁰⁸ Drewry, “World Container Index,” accessed 5 August 2021, <https://www.drewry.co.uk/supply-chain-advisors/supply-chain-expertise/world-container-index-assessed-by-drewry>

¹⁰⁹ UNCTAD, “Container Shipping in Times of COVID-19: Why Freight Rate Have Surged and Implications for Policymakers,” Policy Brief 84, United Nations, Geneva, April 2021, https://unctad.org/system/files/official-document/presspb2021d2_en.pdf

¹¹⁰ M.G. Attinasi, A. Bobasu, and R. Gerinovic, “What Is Driving the Recent Surge in Shipping Costs?” ECB Economic Bulletin, no. 3/2021, European Central Bank, March 2021, https://www.ecb.europa.eu/pub/economic-bulletin/focus/2021/html/ecb.ebbox202103_01~8ecbf2b17c.en.html

process.¹¹¹ The increasing costs and bottlenecks are caused by several factors, such as shortage of shipping containers, congestion at ports, shortage of truck drivers, or insufficient warehouse capacity – each with its own unique challenges.¹¹² Companies anticipate that supply chain problems will likely continue into 2022.¹¹³ Additionally, the movement and wellbeing of transport workers are severely affected by travel bans and other restrictions due to COVID-19 containment policies enacted by governments.¹¹⁴

While freight cost is an important component of overall trade cost, other factors also play a role. The WTO, using the bilateral trade cost concept, has estimated the determinants of overall trade cost: (1) transport and travel cost (22–29%); (2) trade policy and regulatory differences (15–24%); (3) information and transaction cost (13–19%); (4) governance quality (11–14%); and (5) other (17–27%).¹¹⁵ The implementation of the WTO Trade Facilitation Agreement has significantly reduced trade costs through instruments such as Single Window and authorised economic operators (AEOs), as well as efforts in improving regulatory transparency and border agency cooperation. In the next section, we will explore the issues of trade cost in more detail.

5.1 TRADE COSTS

The seminal study by Anderson and van Wincoop considers trade cost to be impacted by policy costs (tariffs, quotas), environmental costs (transportation, insurance, time costs) and other costs associated with moving products.¹¹⁶ The study finds that, even in highly integrated economies, these costs are large. According to Anderson and van Wincoop, the tax equivalent of ‘representative’ trade costs for industrialised economies is roughly 170 percent, which breaks down to 21 percent transportation costs, 44 percent border-related trade barriers, and 55 percent retail and wholesale costs.

Novy’s computation of trade costs was used to construct the ESCAP–World Bank Trade Costs Database. Novy’s computation of ad-valorem equivalent bilateral trade cost includes all costs associated with conducting business across borders, including direct and indirect costs associated with fulfilling legal requirements, differences in currencies, languages and cultures, as well as geographical distance.¹¹⁷ Added to these are the costs associated with imports and exports, including domestic and international shipping and logistics. In essence, this bilateral measurement of trade costs represents international trade costs between two economies relative to domestic trade costs within each economy. The methodology suggests that economic activities are more costly when domestic trade is more prevalent than international trade.

¹¹¹ ASEAN+3 Macroeconomic Research Office (AMRO), “Covid Congestion and Trade Fever in the ASEAN+3: A Prognosis with the Shipping ‘Crystal Ball’” (AMRO, July 2021), <https://www.amro-asia.org/covid-congestion-and-trade-fever-in-the-asean3-a-prognosis-with-the-shipping-crystal-ball/>

¹¹² G. Friesen, “No End in Sight for the COVID-Led Global Supply Chain Disruption,” *Forbes*, 3 September 2021, <https://www.forbes.com/sites/garthfriesen/2021/09/03/no-end-in-sight-for-the-covid-led-global-supply-chain-disruption/?sh=e84d9923491f>

¹¹³ M. Arnold, “Supply Bottlenecks Create Record Backlogs at Eurozone Manufacturers,” *Financial Times*, 1 September 2021, <https://www.ft.com/content/f0f1caf2-6e4f-4c7b-91f4-9b12e2294786>

¹¹⁴ H. Ziady, “The Workers Who Keep Global Supply Chains Moving Are Warning of a ‘System Collapse,’” *CNN Business*, 29 September 2021, <https://edition.cnn.com/2021/09/29/business/supply-chain-workers/index.html>

¹¹⁵ WTO, “WTO Trade Cost Index: Evolution, Incidence and Determinants,” Background note, 24 March 2021, http://tradecosts.wto.org/docs/Trade_Cost_Index_Background_Note_24-03-2021.pdf

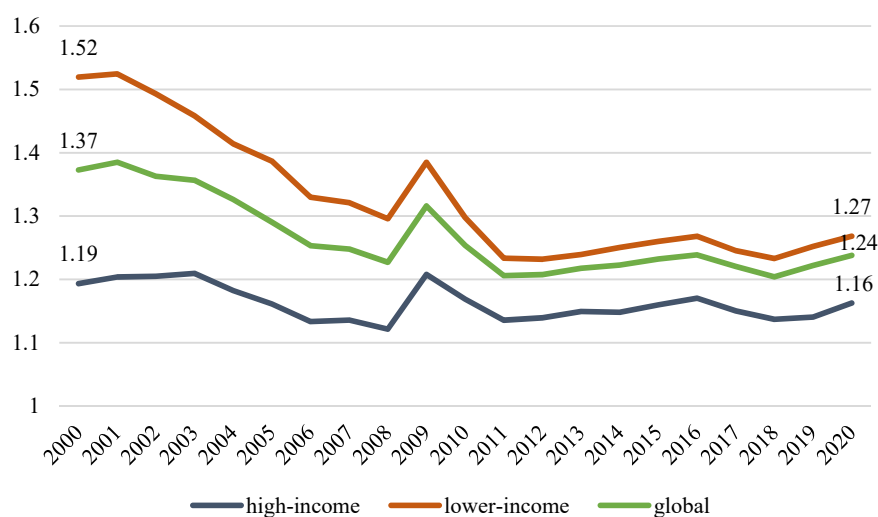
¹¹⁶ J.E. Anderson, and E. van Wincoop, “Trade Costs,” *Journal of Economic Literature* 42, no. 3 (2004): 691–751, DOI: 10.1257/0022051042177649

¹¹⁷ D. Novy, “Gravity Redux: Measuring International Trade Costs with Panel Data,” *Economic Inquiry* 51, no. 1 (2013): 101–21, <https://doi.org/10.1111/j.1465-7295.2011.00439.x>

Based on methodologies used by Novy and Arvis et. al.,¹¹⁸ the APEC Policy Support Unit calculated the average bilateral trade cost between 43 economies and selected trading partners: China; France; Germany; India; Italy; Japan; Korea; the Netherlands; United Kingdom; and the United States. The selected trading partners were the largest ten importers worldwide in 2018/2019 and represent a broad geographical and economic spectrum of global commerce. Arvis et. al note that while trade costs with respect to the largest ten importers may represent a useful indicator of an economy’s performance vis-a-vis the world as a whole, the figures should only be treated as indicative.¹¹⁹

The preliminary calculations show that global trade costs fell by almost 11 percent between 2000 and 2019. Lower income economies experienced the largest fall of about 18 percent while trade costs in high income economies fell by 4 percent. However, in 2020, trade costs increased by 1–2 percent. This is in line with the findings of a study by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). According to the study, international trade costs in the Asia Pacific region rose by an estimated 7 percent on average in 2020.¹²⁰ Trade costs are expected to decline to some extent in 2021 but will remain higher than before the COVID-19 crisis. Looking at the historical time series, the global financial crisis in 2009 also caused an increase in trade costs of about 7–8 percent (Figure 5.2). Furthermore, the rise in trade costs varies between high- and low-income economies: as figure 5.2 shows, trade costs are higher for lower income economies.

Figure 5.2 Average (ad-valorem equivalent) bilateral trade costs



Note: APEC PSU staff calculations, preliminary results (data source and method are provided in the appendix).

¹¹⁸ Novy, “Gravity Redux”; J. Arvis et al., “Trade Costs in the Developing World: 1995–2010,” ARTNeT Working Paper 121, December 2012.

¹¹⁹ Arvis et al., “Trade Costs in the Developing World: 1995–2010.”

¹²⁰ Y. Duval, “Offsetting Seven Per Cent Rise in Trade Costs Requires Political Will,” Blog, ESCAP, 2 December 2020, <https://www.unescap.org/blog/offsetting-seven-cent-rise-trade-costs-requires-political-will>

5.2 TRADE COSTS AT THE SECTORAL LEVEL FOR SEVERAL APEC ECONOMIES

Trade costs vary across sectors and over time. In the manufacturing sector, the lowest trade costs are found among electrical equipment and chemical products, while the highest are found in the food and petroleum sectors.¹²¹ Table 5.2 shows the changes in trade costs between 2000 and 2018 for selected manufacturing sectors that are particularly important in the global value chain.¹²²

Trade costs for transport equipment fell by 20.8 percent in China and 11.5 percent in Korea. Similarly, the cost of trade for electrical components in China has fallen by 13 percent since 2000. These changes may have been caused by the improved physical infrastructure between Asian economies.¹²³

Table 5.2 Change in trade costs in selected manufacturing sectors, 2000–2018

Economy	Electrical and optical equipment (% change)	Transport equipment (% change)	Textiles; leather products and footwear (% change)
Australia	9.3	2.3	7.5
Canada	13.8	14.5	15.9
China	-13	-20.8	4.5
Indonesia	-0.8	-0.4	7.5
Japan	-3.3	-5.7	1.2
Korea	-0.5	-11.5	23.3
Mexico	-33.5	-3.7	-1.4
Russia	-9.6	-16.2	-21.3
USA	1.3	-7.4	-0.3

Note: Based on WTO Trade Cost Index. A negative change implies that trade costs in 2018 were lower than in 2000.

Source: World Trade Organization (WTO), “Trade Cost Index,” accessed 8 August 2021, <http://tradedcosts.wto.org/>

Likewise, Mexico experienced a 33.5 percent decrease in trade costs for electrical and optical equipment. This fall in trade costs could be related to the drastic reductions in transport and communications costs for electrical and optical equipment in Mexico.¹²⁴ Russia also experienced a 21.3 percent reduction in trade costs for textiles, leather products, and footwear. From 2005 to 2011, the apparel import market in Russia grew by 713 percent compared to the world average of 54 percent in the same period.¹²⁵ Based on figures from McKinsey FashionScope, Russia’s clothing market is the ninth largest in the world and worth close to USD 30 billion annually.¹²⁶

¹²¹ WTO, “WTO Trade Cost Index.”

¹²² WTO, “WTO Trade Cost Index”, <http://tradedcosts.wto.org/>

¹²³ D.H. Brooks and D. Hummels, eds, *Infrastructure’s Role in Lowering Asia’s Trade Costs* (Cheltenham: Asian Development Bank Institute and Edward Elgar, 2009), <https://www.adb.org/publications/infrastructures-role-lowering-asias-trade-costs-building-trade>

¹²⁴ J.C. Castillo and A. Szirmai, “Mexican Manufacturing and Its Integration into Global Value Chains,” Working Paper, United Nations Industrial Development Organization (UNIDO), Vienna, 2016, https://www.unido.org/sites/default/files/2016-03/Final_draft_Mexico_in_GVC_30-12-15_WP_3_final_0.pdf

¹²⁵ T. Fukunishi, K. Goto, and T. Yamagata, “Aid for Trade and Value Chains in Textiles and Apparel” (WTO, 2013), https://www.oecd.org/dac/aft/AidforTrade_SectorStudy_Textiles.pdf

¹²⁶ Business of Fashion (BoF) and McKinsey & Company, “The State of Fashion 2020: Coronavirus Update” (BoF, 2020), <https://www.businessoffashion.com/articles/global-markets/the-state-of-fashion-2020-coronavirus-update-download-the-report>

The increasing trade cost in textiles, leather products and footwear for economies such as China and Indonesia may reflect the impact of high labour wages in the manufacturing sector. Zhang et al. have examined how the clothing industry in China has undergone massive dynamic changes in the last few decades.¹²⁷ While clothing exports in global markets have expanded since 2000, their share in China's exports have fallen. This is a consequence of structural transformations in the economy with movement into capital, real estate and high technology industries. While Indonesia is still a major player in the global footwear trade (in 2016, Indonesia was the world's sixth-largest footwear exporter and accounted for 3.4 percent of global exports, up from 2.2 percent a decade ago), it is also facing the challenge of increasing labour costs.¹²⁸

In summary, there have been strong reductions in global trade costs up until 2019 (before the global pandemic), supported by favourable trade policies, efficient transportation systems, and lower information costs. The WTO notes that the pandemic has resulted in an increase in trade costs in 2020, due to travel restrictions, border closures, and disruptions to freight transport. Increased uncertainty may also magnify the impact of trade costs on international trade.¹²⁹ The next phase of the APEC supply chain initiative may focus on these issues to support a more robust trade recovery.

¹²⁷ M. Zhang, X.X. Kong, and S.C. Ramu, "The Transformation of the Clothing Industry in China," Discussion paper, Economic Research Institute for ASEAN and East Asia (ERIA), February 2015, <https://www.eria.org/ERIA-DP-2015-12.pdf>

¹²⁸ The Conference Board of Canada, "An Analysis of the Global Value Chain for Indonesian Footwear Exports" (China–Trade and Private Sector Assistance (TPSA) Project, 2018), <https://www.iccc.or.id/wp-content/uploads/2020/08/An-Analysis-of-the-Global-Value-Chain-for-Indonesian-Footwear-Exports-February-2018.pdf>

¹²⁹ WTO, "Trade Costs in the Time of Global Pandemic", Information note, 12 August 2020, https://www.wto.org/english/tratop_e/covid19_e/trade_costs_report_e.pdf

6. CONCLUSION

Disruptions owing to COVID-19 have overturned some of the progress APEC economies have made in improving supply chain facilitation. COVID-19 outbreaks in factories and ports have slowed down manufacturing and transportation. Risk mitigation measures have caused delays in customs processes. However, the lags in data collection for some external indicators have resulted in lack of data covering 2019 and 2020, preventing a comprehensive assessment of COVID-19's impact on supply chain facilitation efforts. To provide a more thorough assessment, alternative data have been used wherever possible.

Based on the data available, APEC economies performed well on chokepoints 1 and 2. Cost to import and export reduced significantly between 2016 and 2019. Among other initiatives, APEC economies introduced reforms to improve customs processes through digital technologies like single-window platforms and through implementation of authorised economic operator (AEO) arrangements. Quality of transportation services and infrastructure under chokepoint 2 have improved since 2016, in terms of better shipping connectivity as well as a more stable environment for infrastructure investment. Work to encourage public-private partnerships (PPPs) and seamless transportation development has continued in APEC.

Indicators used to measure chokepoint 3 reflect mixed progress for the region. However, the majority of the indicators used were last updated in 2018. There was only one indicator, the DHL Connectedness Index, with data covering 2020, and it logged an improvement in the region. Given the absence of updates for most indicators under this chokepoint, the overall assessment was supported by other qualitative and quantitative measures.

On the other hand, all indicators attempting to measure changes in chokepoint 4 on regulatory cooperation recorded significantly better scores compared to 2015. The largest improvement in score of 12.8 percent was noted for the TFI on internal border agency cooperation. Despite the improvements, APEC's average scores are poorer than the OECD's and there is scope for enhancement especially in external border agency cooperation. The implementation of the World Trade Organization (WTO) Trade Facilitation Agreement, and its articles, will further support progress under this chokepoint.

Chokepoint 5 recorded a mixed performance. Regulatory support for e-commerce has become stronger, as economies have introduced new laws to tackle online dispute resolution, improve access for SMEs and adopt digital solutions wherever possible. However, the performance of postal services continues to lag behind. Disruptions caused by COVID-19 further hampered improvements in postal services. There is scope for greater regional cooperation on this chokepoint especially given the vulnerability of global supply chains.

The global economic and trade recovery will require more resilient and efficient supply chains. Resilient supply chains are crucial to the revitalisation of the manufacturing sector and the timely distribution of medical supplies related to the COVID-19 response will form the necessary foundation to ensure a strong and sustainable recovery of trade. For an economy to recover, comprehensive handling of the COVID-19 global pandemic is required. 'You can't be safe until everyone is safe' continues to be the mantra in resolving COVID-19. The implementation of trade facilitation measures and the strengthening of cooperation among trade agencies should pay particular attention to ensuring secure and safe supply chain.

Moving forward, the following issues could be considered:

1. As economies focus on building back better post-pandemic, **improving resilience** has popped up as a common theme across all sectors. Costly disruptions to supply chains have highlighted the need to build supply chains that are robust and can withstand shocks; agile in embracing recovery; flexible to leverage on alternatives; and able to build surplus capacity. Such resilient supply chains will ensure greater certainty and attract more investments, hence enhancing growth.
2. Recovery needs to pay attention to rising **trade costs**. The ultimate goal is to achieve a strong supply chain and keep trade costs low at the same time. Congestion and delayed shipments are a reality and will continue to challenge business supply chains in the post-COVID-19 era.¹³⁰ Adapting to disruptions and resiliency challenges requires upgrading of supply chains while keeping a keen eye on associated costs.¹³¹ Additionally, the continued and accelerated implementation of the provisions of the WTO Trade Facilitation Agreement will play a key role in keeping trade costs low, such as by strengthening border agency cooperation.
3. To promote broader and stronger connectivity, **interoperability issues** need to be addressed more aggressively. Support for single-window interoperability and the expansion of AEO mutual recognition agreements (MRAs), for instance, will increase supply chain visibility and efficiency, and reduce trade costs. However, to achieve this, cooperation between customs authorities will need to be rooted in trust, protection of information and mutually beneficial objectives.
4. It is imperative that APEC economies improve their investment in digital technologies and enhance PPP environments in order to close the digital divide and be more competitive. In response to the growing demand for **quality infrastructure**, APEC economies should prioritise PPP regulatory reforms and multimodal transportation services.
5. E-commerce requires reliable **logistics services** to sustain its growth. The full realisation of the potential of e-commerce will be compromised by poor last-mile connectivity. Advanced supply chain visibility can help enable seamless and integrated logistics services and improved connectivity, but is hindered by lack of logistics skills and slow adoption of IT.
6. Achieving an efficient and green supply chain may address the challenge of balancing growth and environmental sustainability. **Sustainability and inclusiveness** in supply chain trade are important components of recovery. A more diversified transportation network and wider adoption of multimodal transportation may increase supply chain efficiency and provide greener options for businesses. With global e-commerce on the rise, more small and medium-sized businesses may be able to participate in global trade through reduced trade costs and trade complexity, hence promoting inclusivity.

¹³⁰ M. Hand, "Growing Delays on Container Trades from China Threaten Global Supply Chains," Seatrade Maritime News, 11 August 2021, https://www.seatrade-maritime.com/containers/growing-delays-container-trades-china-threaten-global-supply-chains?utm_source=pocket_mylist

¹³¹ M. Forde, "Electronics Supply Chains Are Stuck between a Pandemic and a Trade War. Where Do They Go from Here?," Supply Chain Dive, 23 July 2020, <https://www.supplychaindive.com/news/electronics-supply-chains-coronavirus-pandemic-trade-war-tariffs/582130/>

7. Improvements to **regulatory reforms** affecting digital trade will also contribute to a stronger recovery. Logistics is not just about seamless flows of goods, but also about seamless flows of information. Adequate policies to protect data privacy, promote data sharing and streamline cross-border data flows should be introduced in order to further reduce trade costs.

BIBLIOGRAPHY

- Abeywickrama, M.H. and W.A.D.N. Wickramaarachchi. "Study on the Challenges of Implementing Single Window Concept to Facilitate Trade in Sri Lanka: A Freight Forwarder Perspective." *Journal of Economics, Business and Management* 3, no. 9 (2015): 883–8.
- Altman, S.A. and P. Bastian. "DHL Global Connectedness Index 2020: The State of Globalization in a Distancing World." DHL, 2020. <https://www.dhl.com/content/dam/dhl/global/dhl-spotlight/documents/pdf/spotlight-g04-global-connectedness-index-2020.pdf>
- Anderson, J.E. and E. van Wincoop. "Trade Costs." *Journal of Economic Literature* 42, no. 3 (2004): 691–751. DOI: 10.1257/0022051042177649
- Antaraneews.com. "NLE Implementation Projected to Slash Logistics Costs to 17 Percent." *Antaraneews.com*, 24 September 2020. <https://en.antaraneews.com/news/157405/nle-implementation-projected-to-slash-logistics-costs-to-17-percent>
- APEC. 2018. APEC Economic Policy Report." Singapore: APEC, 2018. <https://www.apec.org/Publications/2018/11/2018-APEC-Economic-Policy-Report>
- . "2018 Stocktake: The APEC Supply-Chain Connectivity Framework Action Plan (SCFAP) II 2017–2020." In APEC, "APEC Committee on Trade and Investment 2018: Annual Report to Ministers," Appendix 7. Singapore: APEC, 2018.
- . "Annex 3 – Finalized Review Report on Asia-Pacific Model E-Port Network." 2018/SOM3/CTI/034, APEC, Singapore, 2018.
- . "Annex B – APEC Collaborative Framework for Online Dispute Resolution of Cross-Border Business to Business Disputes." 2019/CSOM/012anxb, Submitted by Economic Committee Chair at the *Concluding Senior Officials' Meeting*, Singapore, 7 December 2019. http://mddb.apec.org/Documents/2019/SOM/CSOM/19_csom_012anxb.pdf
- . "APEC Committee on Trade and Investment 2019: Annual Report to Ministers." Singapore: APEC, 2019. <https://www.apec.org/Publications/2019/12/2019-CTI-Annual-Report-to-Ministers>
- . "APEC Committee on Trade and Investment 2020: Annual Report to Ministers." Singapore: APEC, 2020. <https://www.apec.org/Publications/2020/11/2020-CTI-Annual-Report-to-Ministers>
- . "APEC Connectivity Blueprint: The 2020 Mid-Term Review." Singapore: APEC, 2020. <https://www.apec.org/Publications/2020/11/APEC-Connectivity-Blueprint---The-2020-Mid-Term-Review>
- . "APEC Cross-Border E-Commerce Training (CBET) Workshop: Enabling APEC SMEs to Access Global Market" (Singapore: APEC, 2020), <https://www.apec.org/Publications/2020/04/APEC-Cross-Border-E-Commerce-Training-Workshop>
- . "APEC Ministers Responsible for Trade Meeting Joint Statement 2021." 5 June 2021. https://www.apec.org/Meeting-Papers/Sectoral-Ministerial-Meetings/Trade/2021_MRT
- . "APEC Multi-Stakeholder Dialogue on Structural Reform in Logistic Services." APEC Committee on Trade and Investment, April 2019. <https://www.apec.org/Publications/2019/04/APEC-Multi-Stakeholder-Dialogue-on-Structural-Reform-in-Logistic-Services>
- . "APEC Occupational Standards Framework." January 2016. [https://aimp2.apec.org/sites/PDB/Supporting%20Docs/2722/Proposal%20Attachments%20\(if%20any\)/Occupational%20Standards%20Framework_DRAFT_Feb16.pdf](https://aimp2.apec.org/sites/PDB/Supporting%20Docs/2722/Proposal%20Attachments%20(if%20any)/Occupational%20Standards%20Framework_DRAFT_Feb16.pdf)
- . "APEC Project Database: Workshop for Developing a Collaborative Framework for Online Dispute Resolution." Modified 5 February 2020. <https://aimp2.apec.org/sites/PDB/Lists/Proposals/DispForm.aspx?ID=2265>
- . "APEC Regional Trends Analysis: Bolstering Supply Chains, Rebuilding Global Trade; Making Recovery Inclusive." Singapore: APEC, 2021. <https://www.apec.org/Publications/2021/05/APEC-Regional-Trends-Analysis---May-2021>
- . "APEC Supply Chain Capacity Building Projects: What Has the Impact Been?" 2018/SOM3/CTI/A2C2/004, Submitted by the United States at the *Eighth APEC Alliance for Supply Chain Connectivity Meeting*, Port Moresby, Papua New Guinea, 14 August 2018.
- . "APEC Supply-Chain Connectivity Framework Action Plan 2017–2020: Interim Review of External Indicators." Singapore: APEC, 2019. <https://www.apec.org/Publications/2019/10/APEC-Supply-Chain-Connectivity-Framework-Action-Plan-2017-2020>
- . "Assessment of Capacity Building Needs to Support WTO Negotiation on Trade Related Aspects of E-commerce." Singapore: APEC, December 2020. <https://www.apec.org/Publications/2020/12/Assessment-of-Capacity-Building-Needs-to-Support-WTO-Negotiation>

- . “Green Trade Boosted as Network Takes Shape.” Media release, 4 September 2015. https://www.apec.org/Press/News-Releases/2015/0904_green.aspx
- . “Integrating SMEs in Authorized Economic Operator Certification: Improving SME Participation in APEC Secure Trade.” Singapore: APEC, 2021. <https://www.apec.org/Publications/2021/02/Integrating-SMEs-in-Authorized-Economic-Operator-Certification>
- . “Manual of Best Practices according to the AEO Benefits Survey under Pillar 3 WCO SAFE Framework.” Singapore: APEC, 2020. <https://www.apec.org/Publications/2020/12/Manual-of-Best-Practices-according-to-the-AEO-Benefits-Survey>
- . “Monitoring Framework of APEC Supply-Chain Connectivity Framework Action Plan (SCFAP) II 2017–2020.” APEC, Singapore, 2017. <https://apec.org/-/media/Files/Groups/CTI/Monitoring-Framework-SCFAPII.pdf?la=en&hash=92D0A88843649EF9DB3EB99C0FBE63CE29586AB8>
- . “Overall Progress Report of the Asia-Pacific Model E-Port Network 2015–2018.” 2018/SOM3/CTI/036, Submitted by China to the *Third Committee on Trade and Investment Meeting*, Port Moresby, Papua New Guinea, 15–16 August 2018. http://mddb.apec.org/Documents/2018/CTI/CTI3/18_cti3_036.pdf
- . “Peer Review and Capacity Building on APEC Infrastructure Development and Investment: Indonesia.” Singapore: APEC, 2019. <https://www.apec.org/Publications/2019/11/Peer-Review-and-Capacity-Building-on-APEC-Infrastructure-Development-and-Investment-Indonesia>
- . “Peer Review and Capacity Building on APEC Infrastructure Development and Investment: The Philippines.” Singapore: APEC, 2017. <https://www.apec.org/Publications/2017/05/Peer-Review-and-Capacity-Building-on-APEC-Infrastructure-Development-and-Investment-The-Philippines>
- . “Promoting Quality Infrastructure Investment in Rapidly Urbanizing APEC Region.” June 2019. <https://www.apec.org/Publications/2019/06/Promoting-Quality-Infrastructure-Investment-in-Rapidly-Urbanizing-APEC-Region>
- . “Public-Private Partnerships for Transportation in the APEC Region: An Analysis and Literature Review.” Singapore: APEC, 2017. <https://www.apec.org/Publications/2017/01/Public-Private-Partnerships-for-Transportation-in-the-APEC-Region-An-Analysis-and-Literature-Review>
- . “Regulations, Policies and Initiatives on E-Commerce and Digital Economy for APEC MSMEs’ Participation in the Region.” Singapore: APEC, 2020. <https://www.apec.org/Publications/2020/03/Regulations-Policies-and-Initiatives-on-E-Commerce-and-Digital-Economy>
- . “Review of External Indicators to Monitor Progress for the APEC Supply-Chain Connectivity Framework Action Plan (SCFAP) II.” Singapore: APEC, 2017.
- . “Singapore’s Update on Supply Chain Framework Action Plan Phase II (SCFAP II).” 2020/SOM1/MAG/005, Submitted by Singapore to the *58th Market Access Group Meeting*, Putrajaya, Malaysia, 15 February 2020. http://mddb.apec.org/Documents/2020/MAG/MAG1/20_mag1_005.pdf
- . “Study on Single Window Systems’ International Interoperability: Key Issues for Its Implementation.” Singapore: APEC, 2018. <https://www.apec.org/Publications/2018/08/Study-on-Single-Window-Systems-International-Interoperability>
- . “Study on the Application of Global Data Standards for Supply Chain Connectivity (Phase 2).” Singapore: APEC, 2017. <https://www.apec.org/Publications/2017/11/Study-on-the-Application-of-GDS-for-Supply-Chain-Connectivity-Phase-2>
- . “Work Undertaken by APEC as regards to Green Growth and Sustainable Development.” Annex to the 2017 APEC SME Ministerial Statement, *APEC Small and Medium Enterprises Ministerial Meeting*, Ho Chi Minh City, 15 September 2017. <https://www.apec.org/-/media/files/ministerialstatements/sme/annexstocktakegreen2c-sustainable-and-innovative-msmes.pdf>
- APEC Business Advisory Council (ABAC). “Non-Tariff Barriers in Agriculture and Food Trade in APEC: Business Perspectives on Impacts and Solutions.” University of Southern California, Marshall School of Business, November 2016. <https://www2.abaonline.org/content/download/22613384>
- APEC Committee on Trade and Investment (CTI). “APEC to Strengthen Supply Chains, Promote Digital Trade for Recovery.” 30 June 2020. https://www.apec.org/Press/News-Releases/2020/0630_VECTI
- Arnold, M. “Supply Bottlenecks Create Record Backlogs at Eurozone Manufacturers.” *Financial Times*, 1 September 2021. <https://www.ft.com/content/f0f1caf2-6e4f-4c7b-91f4-9b12e2294786>
- Arvis, J., Y. Duval, B. Shepherd, and C. Utoktham. “Trade Costs in the Developing World: 1995–2010.” ARTNeT Working Paper 121, December 2012.
- Arvis, J., L. Ojala, C. Wiederer, B. Shepherd, A. Raj, K. Dairabayeva, and T. Kiiski. “Competing to Compete 2018: Trade Logistics in the Global Economy, The Logistics Performance Index and Its Indicators.” Washington, DC: World Bank, 2018. <https://openknowledge.worldbank.org/bitstream/handle/10986/29971/LPI2018.pdf>
- ASEAN+3 Macroeconomic Research Office (AMRO). “Covid Congestion and Trade Fever in the ASEAN+3: A Prognosis with the Shipping ‘Crystal Ball.’” AMRO, July 2021. <https://www.amro-asia.org/covid-congestion-and-trade-fever-in-the-asean3-a-prognosis-with-the-shipping-crystal-ball/>

- Asia-Pacific Model E-Port Network (APMEN) Operational Center. "Practices of Using ICT Infrastructure for Cross-border Trade and Supply Chain Connectivity by APEC Economies." APMEN, December 2017.
- . "Review on Regulations and Policies for E-Port and Single Window in APEC Economies." APMEN, December 2017.
- Attinasi, M.G., A. Bobasu, and R. Gerinovic. "What Is Driving the Recent Surge in Shipping Costs?" ECB Economic Bulletin, no. 3/2021, European Central Bank, March 2021. https://www.ecb.europa.eu/pub/economic-bulletin/focus/2021/html/ecb.ebbox202103_01~8ecbf2b17c.en.html
- Banomyong, R., D.B. Grant, P. Varadejsatitwong, and P. Julagasigorn. "Developing and Validating a National Logistics Cost in Thailand." *Transport Policy* (2021). <https://doi.org/10.1016/j.tranpol.2021.04.026>
- Bayhaqi, A., S.K. Singh, and LM. Espinoza. "Customs Cooperation in APEC: Strengthening Regional Cooperation." Policy Brief 27, July 2019. <https://www.apec.org/Publications/2019/08/Customs-Cooperation-in-APEC--Strengthening-Regional-Cooperation>
- Bloomberg. "China's Slowing V-Shaped Economic Recovery Sends Global Warning." *Bloomberg*, 12 July 2021. https://www.bloomberg.com/news/articles/2021-07-11/china-s-fading-first-in-first-out-rebound-sends-global-warning?utm_source=pocket-chrome-recs
- Brooks, D.H. and D. Hummels, eds. *Infrastructure's Role in Lowering Asia's Trade Costs*. Cheltenham: Asian Development Bank Institute and Edward Elgar, 2009. <https://www.adb.org/publications/infrastructures-role-lowering-asias-trade-costs-building-trade>
- Buiter, W. and E. Rahbari. "Trade Transformed: The Emerging New Corridors of Trade Power." Citi GPS, October 2011. <https://www.citivelocity.com/citigps/trade-transformed/>
- Business of Fashion (BoF) and McKinsey & Company. "The State of Fashion 2020: Coronavirus Update." BoF, 2020. <https://www.businessoffashion.com/articles/global-markets/the-state-of-fashion-2020-coronavirus-update-download-the-report>
- Castillo, J.C. and A. Szirmai. "Mexican Manufacturing and Its Integration into Global Value Chains." Working Paper, United Nations Industrial Development Organization (UNIDO), Vienna, 2016. https://www.unido.org/sites/default/files/2016-03/Final_draft_Mexico_in_GVC_30-12-15_WP_3_final_0.pdf
- Choi, T.Y., D. Rogers, and B. Vakil. "Coronavirus Is a Wake-Up Call for Supply Chain Management." *Harvard Business Review*, 27 March 2020. https://hbr.org/2020/03/coronavirus-is-a-wake-up-call-for-supply-chain-management?utm_source=pocket-chrome-recs
- Cisco. "Cisco Global Digital Readiness Index 2019." 15 January 2020. https://www.cisco.com/c/dam/en_us/about/csr/reports/global-digital-readiness-index.pdf
- Colliers. "Glimpsing the Road Ahead: Reshaping the Logistics Market." Colliers Radar, 17 June 2019. <https://www.colliers.com/en-in/research/glimpsing-the-road-ahead-reshaping-the-logistics-market>
- COMCEC. *See* Standing Committee for Economic and Commercial Cooperation of the Organization of Islamic Cooperation (COMCEC).
- Cramer-Flood, E. "Global Ecommerce Update 2021." eMarketer, 13 January 2021. <https://www.emarketer.com/content/global-ecommerce-update-2021>
- Das, S.B. "ASEAN Single Window: Advancing Trade Facilitation for Regional Integration." Perspective, ISEAS-Yusof Ishak Institute, Singapore, 21 September 2017. https://www.iseas.edu.sg/wp-content/uploads/2015/07/ISEAS_Perspective_2017_72.pdf
- Demirel, H.C., W. Leendertse, L. Volker, and M. Hertogh. "Flexibility in PPP Contracts – Dealing with Potential Change in the Pre-contract Phase of a Construction Project." *Construction Management and Economics* 35, no. 4 (2017): 196–206. DOI:10.1080/01446193.2016.1241414.
- Ding, J. "Online Dispute Resolution under APEC." Presented at the *Twenty-first In-House Congress*, Hong Kong, China, 3 October 2019. https://www.doj.gov.hk/en/community_engagement/speeches/pdf/lo20191003e1.pdf
- Drewry. "World Container Index." Accessed 5 August 2021. <https://www.drewry.co.uk/supply-chain-advisors/supply-chain-expertise/world-container-index-assessed-by-drewry>
- Duval, Y. "Offsetting Seven Per Cent Rise in Trade Costs Requires Political Will." Blog, ESCAP, 2 December 2020. <https://www.unescap.org/blog/offsetting-seven-cent-rise-trade-costs-requires-political-will>
- Duval, Y. and C. Utoktham. "Behind-the-border Trade Facilitation in Asia-Pacific: Cost of Trade, Credit Information, Contract Enforcement and Regulatory Coherence." Working Paper 209, UNESCAP, Bangkok, 15 April 2009.
- . "Intraregional Trade Costs in Asia: A Primer," *Asia-Pacific Development Journal* 18, no. 2 (2011).
- ESCAP. *See* United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP).
- Forde, M. "Electronics Supply Chains Are Stuck between a Pandemic and a Trade War. Where Do They Go from Here?" Supply Chain Dive, 23 July 2020. <https://www.supplychaindive.com/news/electronics-supply-chains-coronavirus-pandemic-trade-war-tariffs/582130/>

- Friesen, G. “No End in Sight for the COVID-Led Global Supply Chain Disruption.” *Forbes*, 3 September 2021. <https://www.forbes.com/sites/garthfriesen/2021/09/03/no-end-in-sight-for-the-covid-led-global-supply-chain-disruption/?sh=e84d9923491f>
- Fukunishi, T., K. Goto, and T. Yamagata. “Aid for Trade and Value Chains in Textiles and Apparel.” WTO, 2013. https://www.oecd.org/dac/aft/AidforTrade_SectorStudy_Textiles.pdf
- Galindo, M.E.S. and G.M.D. Rodriguez. “AEO in APEC Economies: Opportunities to Expand Mutual Recognition Agreements and the Inclusion of SMEs.” Inter-American Development Bank, February 2020. https://publications.iadb.org/publications/english/document/AEO_in_APEC_Economies_Opportunities_to_Expand_Mutual_Recognition_Agreements_and_The_Inclusion_of_SMEs.pdf
- Global Infrastructure Hub. “Infrastructure Outlook.” Accessed 11 May 2021. <https://outlook.gihub.org/>
- Haller, K., J. Lee, and J. Cheung. “Meet the 2020 Consumers Driving Change.” Armonk, NY: IBM, 2020. <https://www.ibm.com/thought-leadership/institute-business-value/report/consumer-2020>
- Hand, M. “Growing Delays on Container Trades from China Threaten Global Supply Chains.” *Seatrade Maritime News*, 11 August 2021. https://www.seatrade-maritime.com/containers/growing-delays-container-trades-china-threaten-global-supply-chains?utm_source=pocket_mylist
- Hayakawa, K. and H. Mukunoki. “The Impact of COVID-19 on International Trade: Evidence from the First Shock.” *Journal of the Japanese and International Economies* 60 (2021): 101135.
- Hoekman, B. and A. Nicita. “Trade Policy, Trade Costs, and Developing Country Trade.” *World Development* 39, no. 12 (2008): 2069–79.
- International Post Corporation (IPC). “Cross-Border E-Commerce Shopper Survey 2018: Key Findings.” Brussels: IPC, 2019. <https://www.ipc.be/-/media/documents/public/markets/2019/ipc-cross-border-e-commerce-shopper-survey2018.pdf>
- Ipsos. “Global Infrastructure: Public Satisfaction and Priorities.” October 2016. https://www.ipsos.com/sites/default/files/2016-10/Global_Infrastructure.pdf.
 ———. “Global Infrastructure Index: Public Satisfaction and Priorities – 2020.” October 2020. https://www.ipsos.com/sites/default/files/ct/news/documents/2020-10/global-infrastructure-index-2020_0.pdf
- Jacks, D. C.M. Meissner, and D. Novy. “Trade Booms, Trade Busts, and Trade Costs.” *Journal of International Economics* 83, no. 2 (2011): 185–201.
- Logistics Managers’ Index (LMI). “April 2021 Logistics Managers’ Index.” 4 May 2021. <http://www.the-lmi.com/april-2021-logistics-managers-index.html>
 ———. “June 2021 Logistics Managers’ Index.” 16 July 2021. <http://www.the-lmi.com/june-2021-logistics-managers-index.html>
 ———. “July 2021 Logistics Managers’ Index.” 2 August 2021. <http://www.the-lmi.com/july-2021-logistics-managers-index.html>
- Masterson, V. “The Future of Global Trade – In 7 charts.” World Economic Forum, 26 April 2021. https://www.weforum.org/agenda/2021/04/global-trade-statistics-covid-19-wto/?utm_source=pocket_mylist
- Material Handling & Logistics. “Labor Productivity Can Be 50% of Warehouse Operating Cost.” *Material Handling & Logistics*, 16 July 2009. <https://www.mhlnews.com/labor-management/article/22039898/labor-productivity-can-be-50-of-warehouse-operating-cost>
- Ministry of Economy, Trade and Industry, Japan. “APEC Guidebook on Quality of Infrastructure Development and Investment (Revision).” Singapore: APEC, 2018.
- Moisé, E., T. Orliac, and P. Minor. “Trade Facilitation Indicators: The Impact on Trade Costs.” OECD Trade Policy Papers, OECD Publishing, Paris, 2011. https://www.oecd-ilibrary.org/trade/trade-facilitation-indicators_5kg6nk654hmr-en
- National Economic and Social Development Council (NESDC), Thailand. “Thailand Logistic Report 2019.” NESDC, 2019. https://www.nesdc.go.th/nesdb_en/download/article/article_20201112144736.pdf
- Novy, D. “Gravity Redux: Measuring International Trade Costs with Panel Data.” *Economic Inquiry* 51, no. 1 (2013): 101–21. <https://doi.org/10.1111/j.1465-7295.2011.00439.x>
- Organisation for Economic Co-operation and Development (OECD). “COVID-19 and International Trade: Issues and Actions.” 12 June 2020. <https://www.oecd.org/coronavirus/policy-responses/covid-19-and-international-trade-issues-and-actions-494da2fa/>
 ———. “Exploring the Role of Trade Facilitation in Supporting Integrity in Trade.” 15 April 2019, [https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=TAD/TC/WP\(2019\)1/FINAL&docLanguage=En](https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=TAD/TC/WP(2019)1/FINAL&docLanguage=En)
 ———. “Trade Facilitation.” Accessed 5 August 2021. https://www.wto.org/english/news_e/brief_tradefa_e.htm
 ———. “Trade Facilitation Agreement Database.” Accessed 11 May 2021.

- . “Trade Facilitation Indicators: The Potential Impact of Trade Facilitation on Developing Countries’ Trade.” 12 November 2012. http://oecd.org/dac/aft/TradeFacilitationIndicators_ImpactDevelopingCountries.pdf
- Ovcina, J. “COVID-19 Outbreak Hits Hong Kong Container Shipping Port.” *Offshore Energy*. 17 August 2020. <https://www.offshore-energy.biz/covid-19-outbreak-hits-hong-kong-container-shipping-port/>
- PwC. “Shifting Patterns: The Future of the Logistics Industry.” PwC, 2016. <https://www.pwc.com/sg/en/publications/assets/future-of-the-logistics-industry.pdf>
- Rehman, F., A. Noman, and Y. Ding. “Does Infrastructure Increase Exports and Reduce Trade Deficit? Evidence from Selected South Asian Countries Using a New Global Infrastructure Index.” *Journal of Economic Structures* 9, no. 1 (2020).
- Rodrigue, J. “Efficiency and Sustainability in Multimodal Supply Chains. International Transport Forum Discussion Papers.” Paris: OECD Publishing, 17 October 2018. <https://www.itf-oecd.org/sites/default/files/docs/efficiency-sustainability-multimodal-supply-chains.pdf>
- Rogers, Z.S., D. Rogers, and R. Leuschner. “The Logistics Managers’ Index.” *Rutgers Business Review* (Spring 2018). <https://rbr.business.rutgers.edu/sites/default/files/documents/rbr-030102.pdf>
- Sargent, B. “As E-commerce Booms, Transportation Logistics Are Shifting to Meet Demand.” Gensler, 12 October 2020. <https://www.gensler.com/blog/as-e-commerce-booms-transportation-logistics-are-shifting>
- Shumate, B. “Efficient Customs Procedures Critical to Competitive Success.” *The Journal of Commerce Online*. 21 August 2017. https://www.joc.com/international-logistics/logistics-providers/efficient-customs-procedures-critical-competitive-success_20170821.html
- Standing Committee for Economic and Commercial Cooperation of the Organization of Islamic Cooperation (COMCEC). “Improving the Border Agency Cooperation among the OIC Member States for Facilitating Trade.” Ankara: COMCEC, 2016. <http://iccia.com/sites/default/files/library/files/Improving%20the%20Border%20Agency%20Cooperation%20016.pdf>
- The Conference Board of Canada. “An Analysis of the Global Value Chain for Indonesian Footwear Exports.” China–Trade and Private Sector Assistance (TPSA) Project, 2018. <https://www.iccc.or.id/wp-content/uploads/2020/08/An-Analysis-of-the-Global-Value-Chain-for-Indonesian-Footwear-Exports-February-2018.pdf>
- Twinn, I., N. Qureshi, M.L. Conde, C.G. Guinea, and D.P. Rojas. “The Impact of COVID-19 on Logistics.” International Finance Corporation, June 2020. https://www.ifc.org/wps/wcm/connect/2d6ec419-41df-46c9-8b7b-96384cd36ab3/IFC-Covid19-Logistics-final_web.pdf?MOD=AJPERES&CVID=naqOED5
- United Nations. “Trade Facilitation Implementation Guide – Overview: Border Crossing Delays.” Accessed on 10 May 2021. <http://tfig.unece.org/contents/borde-crossing-delays.htm>
- United Nations Conference on Trade and Development (UNCTAD). “Cybercrime Legislation Worldwide.” Accessed 16 September 2021. <https://unctad.org/page/cybercrime-legislation-worldwide>
- . “Container Shipping in Times of COVID-19: Why Freight Rate Have Surged and Implications for Policymakers.” Policy Brief 84, United Nations, Geneva, April 2021. https://unctad.org/system/files/official-document/presspb2021d2_en.pdf
- . “Estimates of Global E-commerce 2019 and Preliminary Assessment of COVID-19 Impact on Online Retail 2020.” Technical Notes on ICT for Development 18. UNCTAD, 3 May 2021. https://unctad.org/system/files/official-document/tn_unctad_ict4d18_en.pdf
- . “Review of Maritime Transport 2020.” New York: United Nations, 2020. https://unctad.org/system/files/official-document/rmt2020_en.pdf
- . “The UNCTAD B2C E-commerce Index 2020: Spotlight on Latin America and the Caribbean.” Technical Notes on ICT for Development 17, UNCTAD, 17 February 2021. https://unctad.org/system/files/official-document/tn_unctad_ict4d17_en.pdf
- United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). “COVID-19 and Its Impact on Shipping and Port Sector in Asia and the Pacific: Transport and Trade Connectivity in the Age of Pandemics.” UNESCAP, 2020. <https://www.unescap.org/sites/default/d8files/knowledge-products/ShippingPolyBrief-16Oct2020-FINAL.pdf>
- . “Digital and Sustainable Trade Facilitation: Global Report 2019.” United Nations, 2019. <https://www.unescap.org/sites/default/d8files/knowledge-products/UNtfsurvey%20global%20report%202019.pdf>
- . “Regional Cooperation for Trade and Transport Connectivity in the Age of Pandemics in Asia and the Pacific.” United Nations, 2020. https://www.unescap.org/sites/default/d8files/knowledge-products/Trade_Transport%20Connectivity_ForWeb.pdf
- Universal Postal Union (UPU). “Postal Development Report 2020: Achieving Higher Performance amid a Major Crisis.” UPU, October 2020. <https://www.upu.int/UPU/media/upu/publications/2020-Postal-Development-Report.pdf>

- Universal Postal Union (UPU), International Air Transport Association (IATA), and International Post Corporation (IPC). “EDI: The Key to Post-Airline Supply Chain Integration.” UPU, IATA and IPC, undated. <https://www.iata.org/contentassets/1f5e024735384c8888617a1f6f01bd28/edi-brochure.pdf>
- Vakil, B. and T. Linton. “Why We’re in the Midst of a Global Semiconductor Shortage.” *Harvard Business Review*, 26 February 2021. <https://hbr.org/2021/02/why-were-in-the-midst-of-a-global-semiconductor-shortage>
- World Bank. “Benchmarking 2020 Infrastructure Development.” Washington, DC: World Bank, 2020. <https://documents1.worldbank.org/curated/en/369621602050134332/pdf/Benchmarking-Infrastructure-Development-2020-Assessing-Regulatory-Quality-to-Prepare-Procure-and-Manage-PPPs-and-Traditional-Public-Investment-in-Infrastructure-Projects.pdf>
- . “Doing Business 2020.” Washington, DC: World Bank, 2020. <https://openknowledge.worldbank.org/bitstream/handle/10986/32436/9781464814402.pdf>
- World Trade Organization (WTO). “Trade Costs in the Time of Global Pandemic.” Information note, 12 August 2020. https://www.wto.org/english/tratop_e/covid19_e/trade_costs_report_e.pdf
- . “Trade Facilitation Agreement Database: Notifications List.” Accessed 11 May 2021. <https://tfadatabase.org/notifications/list>
- . “Trade Falls Steeply in First Half of 2020.” Media release, 22 June 2020. https://www.wto.org/english/news_e/pr20_e/pr858_e.htm
- . “WTO Trade Cost Index: Evolution, Incidence and Determinants.” Background note, 24 March 2021. http://tradecosts.wto.org/docs/Trade_Cost_Index_Background_Note_24-03-2021.pdf
- . “WTO Trade Cost Index.” Accessed 8 August 2021. <http://tradecosts.wto.org/>
- . “Why Trade Costs Matter for Inclusive, Sustainable Growth.” In Organisation for Economic Co-operation and Development (OECD) and WTO. *Aid for Trade at a Glance 2015: Reducing Trade Costs for Inclusive, Sustainable Growth*. Geneva and Paris: WTO and OECD Publishing, 2015. https://www.wto.org/english/res_e/booksp_e/aid4trade15_chap1_e.pdf
- . “WTO Goods Trade Barometer Methodology.” 17 August 2020. https://www.wto.org/english/news_e/news20_e/methodology_wtoi_19aug20_e.pdf
- Zhang, M., X.X. Kong, and S.C. Ramu. “The Transformation of the Clothing Industry in China.” Discussion paper, Economic Research Institute for ASEAN and East Asia (ERIA), February 2015. <https://www.eria.org/ERIA-DP-2015-12.pdf>
- Ziady, H. “The Workers Who Keep Global Supply Chains Moving Are Warning of a ‘System Collapse.’” *CNN Business*, 29 September 2021. <https://edition.cnn.com/2021/09/29/business/supply-chain-workers/index.html>

APPENDIX A: CASE STUDY SUBMISSIONS

A.1 AUSTRALIA

Title of the initiative: Building Resilience in APEC's Global Value Chains (GVCs) 2020–2021

Chokepoint: Lack of coordinated border management and underdeveloped border clearance and procedures; unreliable logistics services and high logistical costs; limited regulatory cooperation and best practices

- I. Introduction: provide a summary of relevant regulatory, policy and socioeconomic context/background.

Today, more than two-thirds of world trade occurs through GVCs. With the world economy facing multiple disruptions, including slow economic growth, climate change, and more recently the COVID-19 pandemic, GVCs have been transforming rapidly, even more so now than at the beginning of 2020.

While past decades fostered an expansion and enlargement of GVCs, more recently some have also shortened and become more localised, a trend which is likely to increase in the coming years as multinational corporations (MNCs) and small- and medium-sized enterprises (SMEs) reconfigure their operations due to the pandemic and the eager adoption of digital technologies.

The self-funded project, 'Building Resilient Supply Chains 2020: Survey and Analysis', led by Australia and the Global Trade Professionals Alliance (GTPA), sought to identify and analyse the nature and extent of this rapid transformation of GVCs in the APEC region, with a particular emphasis on businesses' resilience, SMEs' participation, women-owned/led SMEs, and digital readiness. The project was undertaken through a survey on global supply chains to better understand the needs of SMEs in APEC economies after the COVID-19 pandemic. The survey also examined services in GVCs, since SMEs are primarily clustered in services and 75 percent of all services exported directly are intermediate inputs in production of goods or other services.

The survey results offer insights on GVCs' transformations due to other salient structural factors such as climate change. From a commercial perspective, the survey also examined levels of adaptive trade leadership skills in business and of integrity standards in GVCs (sustainability, ethical behaviour, security, and inclusion).

The first four reports are now publicly available:

- APEC Global Supply Chains Resiliency Survey: Key Highlights and Policy Recommendations
- Key Trends Report: APEC Global Supply Chains Resiliency Survey – Small to Medium Enterprises
- Key Trends Report: APEC Global Supply Chains Resiliency Survey – Large Business Survey

Each report provides policy recommendations to assist APEC member economies to respond to the changes facing global trade recovery and global value chain resilience.

The project included two workshops to address issues such as the law of comparative advantage, transparency and digitisation in GVCs, as well as ideas on how to support businesses, maintain healthy supply chains, and build resilient teams for trade. Examples of agility in global supply chains during the COVID-19 pandemic were also discussed.


<p>II. Key issues/problems or objectives</p> <p>The objectives of the project were:</p> <ul style="list-style-type: none"> • Identify the levels of disruption, resilience, and adaptability of supply chains under the current COVID-19 pandemic and beyond • Provide informed and pertinent data analysis on how to better pair the needs of businesses in supply chains with government’s policies and recovery programmes. <p>The project was developed to leverage APEC’s capacity-building goals of attaining sustainable growth and equitable development, reducing economic disparities amongst its economies, improving the region’s socioeconomic wellbeing, and deepening the spirit of community. To that end, the survey has provided data to map GVCs’ transformation by surveying businesses directly, alongside relevant stakeholders such as industry bodies and government organisations. While the COVID-19 pandemic has been affecting all types of businesses across the world, it is expected that some regions and business sectors will undergo different short- and long-term transformations.</p> <p>The project also supported APEC’s objectives of building capacity in an area relevant to achieve long-term economic goals, such as GVCs, and of helping its members to participate more fully in the trade and investment liberalisation and facilitation process, by providing accurate data to design new business recovery policies to support MNCs and SMEs participating in GVCs. The project reports offer a clear map to allocate future resources – both human and economic – in a more efficient way in the years to come.</p>
<p>III. Implementation of the initiative</p> <p>The survey was conducted between 25 July and 30 November 2020. A total of 1,511 responses were received, divided into 911 for the SME survey, 188 for the Large Businesses survey, and 312 for the Industry and Government organisations survey. A further 106 respondents do not participate in global trade. Additionally, two workshops with over 200 attendees were held in July and November 2020.</p>
<p>IV. Key challenges and impact</p> <p>A core challenge in implementing the global survey was to overcome survey fatigue and ensure that a large number of businesses completed a large number of data points. Incentivising businesses to engage with the survey was critical. The GTPA provided the following incentives to businesses:</p> <ul style="list-style-type: none"> • Free use of GTPA’s Global Business Diagnostic Tool, eCommerce Diagnostic Tool, and access to a network of certified suppliers • Access for organisations to apply for certification as a Globally Trading Business based on ISO/IEC 17065 – with free certification for up to 1,000 SMEs • Discounted access to our online capability and capacity-building programmes for micro, small and medium enterprises (MSMEs).
<p>V. Lesson learned</p> <p>The intersect between trade facilitation and GVCs and the need to look at advancing the World Trade Organization (WTO) Trade Facilitation Agreement (TFA) further, particularly on digitisation. For example, rules of origin, as found in reciprocal and unilateral preferential trade agreements, domestic non-preferential origin systems and their respective administrative regimes, represent a variety of intimidating challenges to all participants in global value networks, and SMEs in particular. Under the current systems, meeting the rules of origin requirements is a considerable administrative and cost burden on SMEs. These challenges are growing daily with the rapid proliferation of free trade agreements, ‘regional and plurilateral’ agreements along with trade wars and protectionist policies.</p>

VI. Way forward

Based on survey results and findings, the project made the following recommendations for APEC to consider:

1. Support SMEs to participate in e-commerce and global supply chains through direct engagement that leads to embracing new opportunities created by the digital economy.
2. Support SMEs to become integrated into global supply chains and promoting access to information regarding trade opportunities and regulatory requirements through help desks, intensive workshops, direct peer to peer introductions, and access to resources.
3. Develop common data standards to for trade facilitation, particularly to support single window interoperability and authorised economic operator (AEO) programmes across APEC members, is needed to harmonise regulations and procedures.
4. Develop an APEC plan to develop the structural policies and targeted projects to support SMEs' access to finance, technology, and training to facilitate export.
5. Provide capability and capacity-building programmes specifically geared towards women and the unique challenges they face in global business.
6. Create incentives to gather more data on large business/SME linkages to help better understand the differing impacts and relationships between them.
7. Seize the opportunity to turn change in global supply chains into value, which is the main source of economic growth and innovation in these complex ecosystems.
8. Harness large enterprises' appetite to continue growing and innovating in order to benefit the overall economy and SMEs.
9. Use harmonised global data standards to drive policies in global supply chains and build trust between large enterprises and SMEs.
10. Strengthen the expertise of industry and government organisations on supply-chain disruptions and risks management using APEC to lead this process regionally.
11. Focus on providing support for business to access opportunities in supply chains as well as lowering barriers to supply chains.
12. Continuing and renewing efforts to facilitate trade, connect business with potential international business opportunities and reduce barriers to trade, including through the participation in the respective work at the WTO.

A.2 CHINA

<p>Title of the initiative: APMEN Visualisation of Sea Freight Logistics project</p> <p>Chokepoint: Limited regulatory cooperation and best practices</p>
<p>I. Introduction: provide a summary of relevant regulatory, policy and socioeconomic context/background.</p> <p>The Asia-Pacific Model E-Port Network (APMEN) Visualisation of Sea Freight Logistics project was commissioned to improve the visibility, integrity and transparency of cross-border trade in the Asia-Pacific region by the exchange of sea freight data between APMEN members. Two phases of this project have been conducted with the support and active participation from APMEN members and GS1 since 2018.</p>
<p>II. Key issues/problems or objectives</p> <p>Develop comprehensive data standards to support the exchange of critical sea freight data between ports and other key process stakeholders.</p> <p>Based on successful pilot outcomes, to develop recommendations regarding the use and implementation of data standards for e-Port visibility.</p>
<p>III. Implementation of the initiative</p> <p>The following steps and methodology were used for this project:</p> 

The difference between project phases 1 and 2 are shown below:

	Phase 1	Phase 2
Structure		
Participants	<p><u>Ports:</u> China: Shanghai e-Port, Xiamen e-Port Australia: New South Wales (NSW) Ports</p> <p><u>Technical support:</u> GS1 Hong Kong, GS1 Australia, GS1 China</p>	<p><u>Ports:</u> China: Shanghai e-Port, Xiamen e-Port, Hong Kong OnePort Australia: 1-Stop Connections Singapore: Global eTrade Services (GeTS)</p> <p><u>Technical support:</u> GS1 China, GS1 Hong Kong, GS1 Australia</p>
Electronic Product Code Information Services (EPCIS) platform	<p><u>Single platform:</u> ezTRACK</p>	<p><u>Multiple platforms:</u> (1) Distributed EPCIS platforms in Shanghai (2) Distributed EPCIS platforms in Xiamen (3) ezTRACK in Hong Kong</p>
Data transmission method	Data capture by manual process, each piece of data needs to be manually input.	Automated data capture based on unified EPCIS standard and data interfaces among participants.
Data format	None (manual)	XML, JSON
Data sovereignty and security	All data passes through the platform without achieving data secrecy and security.	With the distributed platforms application, participants' data is stored in their own servers. A set of data is accessible only to the sender and receiver, guaranteeing data secrecy and security.

IV. Key challenges and impact

At present, the supervision and operation standards of various ports are not unified; the development of information level is not unified; and the operation process of port business is not unified. Once a participant has incompatibility problems or it is difficult to develop interfaces, the entirety of the business processes will be at lower speed.

The network between different economies and overseas access restrictions will affect the normal use of the data exchange platforms; this leads to the possibility not to be able to guarantee normal operation all the time

V. Lesson learned

- There are opportunities to optimise the operation procedures and procedures between ports according to the mode of data transmission.
- Decentralised and automated system architecture provides low latency, scalability and reliability for users.
- Promoting the point-to-point service of ports at both ends, helping achieve the goal of reducing cost and increasing efficiency, while promoting an improved business environment.
- Responding to the call for international paperless business processes.

VI. Way forward

Through the APMEN Visualisation of Sea Freight Logistics project, the problems of inconsistent information standards and un-exchangeable information in port logistics have been addressed by technical methods, increasing the efficiency of port logistics.

In the future, the project will promote sea freight information exchanges to better cross-border connectivity as well as trade facilitation, and build on a foundation for reinforcing and deepening cooperation among Asia-Pacific ports in the field of sea freight information exchanges.

The next step is to invite and encourage more APMEN members to join this project in alignment with APEC Committee on Trade and Investment (CTI) priorities, work together on increased efficiencies and implementation of automatic data sharing.

Title of the initiative: Digitalisation of Air Freight Logistics at Xiamen airport

Chokepoint: Unreliable logistics services and high logistical costs

I. Introduction: provide a summary of relevant regulatory, policy and socioeconomic context/background.

With the development of the paperless clearance of goods, the air cargo industry is urged to expedite optimisation of the operation process to improve visibility and transparency. The Asia-Pacific Model E-Port Network (APMEN) Digitalisation of Air Freight Logistics Pilot Project aimed to remove paper documents for both the air import and export process through system connection and data exchange between the involved industry stakeholders in compliance with International Air Transport Association (IATA)-recommended business process and message standards.

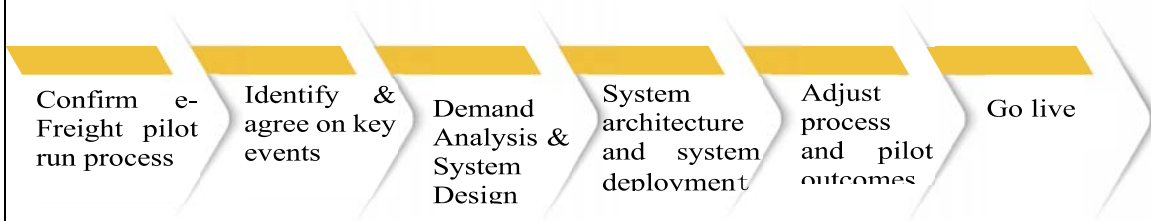
The implementation of the Digitalisation of Air Freight Logistics Pilot Project at Xiamen airport is a cooperation between APMEN and the Administration of the Xiamen Area of China (Fujian) Pilot Free Trade Zone on the basis of the Xiamen International Trade Single Window platform operated by Xiamen Pilot Free Trade Zone E-Port Co., Ltd., to realise the information interconnection of all participants in the air freight logistics chain.

II. Key issues/problems or objectives.

- Paperless transportation process for air freight import and export in Xiamen airport
- System connection between involved industry parties and visualisation of operation process information can be shared electronically
- Proof of concept for industry collaboration.

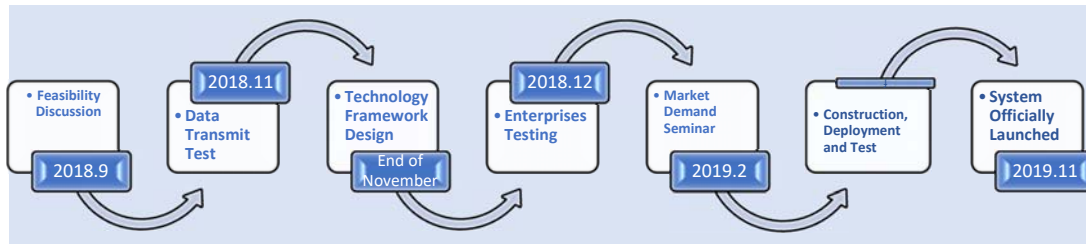
III. Implementation of the initiative

The methodology adopted for the project started from identifying the pain points during the current as-is process and then streamlining the e-freight pilot run process for import and export through discussion and research internally with the project team and externally with the industry stakeholders as well.

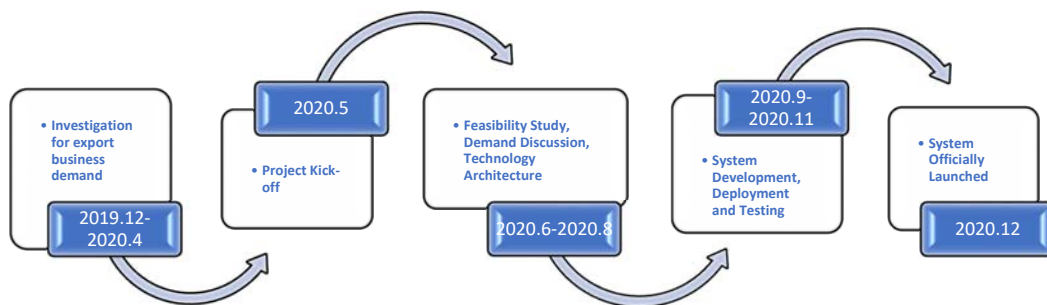


The project was undertaken in two phases:

Phase 1: Electronic air waybill (e-AWB) Implementation on Import Air Freight at Xiamen Airport



Phase 2: E-freight Implementation for Export Air Freight at Xiamen Airport



IV. Key challenges and impact

- Lack of efficient data exchange between some airlines and their ground handling agencies
- The application program interfaces (APIs) of systems are not uniform

- Missing special cargo handling data might bring mishandling of this sort of special cargo. Therefore, the accuracy, integrity and timeliness of data transmission are the key element for implementation.

V. Lesson learned

- **Operational efficiency:** The handover efficiency of cargo import operation increased 80 percent with overall handover time reduced from 2.5 hours to 0.5 hours.
- **Regulatory compliance:** This project is in compliance with the advance declaration requirement by government regulators for cargo information, and improves the efficiency of customs clearance at Xiamen airport.
- **Data quality:** This project improves data quality and accuracy. Data redundancy has been avoided. Measures such as automatic data validation, an upgrade of the security system, and data monitoring and analysis have greatly improved data quality.
- **Innovation:** Industry collaboration and system interconnection are realised through the Single Window + Air Freight Logistics model.
- **Sustainability:** This project provides a successful experience for digital air cargo adoption which can be reproduced and widely used in other airports.



VI. Way forward

The project successfully removed some paper documents which have long been traditionally used in the industry through system connection and data aggregation; shared the key events in the import and export process for customs release status and shipment status, which improved customer experience; and implemented the security e-release authentication mark to replace the security stamp being put on paper documents, which is the essential step for the e-freight export process. This means that the objectives of this two-phase pilot project have been achieved successfully.

The success of the project relied on the cooperation and collaboration between the government agency and the industry stakeholders. It pioneered the innovative model of Single Window + Air Freight Logistics in China, which can be considered to be a significant demonstration and can be promoted as a best practice under the free trade zone scheme for future phases and subsequent e-freight implementation in other airports.

A.3 INDONESIA

<p>Title of the initiative: National Logistics Ecosystem (NLE) for Efficient Logistic Service</p> <p>Chokepoint: Unreliable logistics services and high logistical costs</p>	
<p>I. Introduction: provide a summary of relevant regulatory, policy and socioeconomic context/background.</p>	<p>Indonesia continuously makes efforts to create logistics efficiency through several actions, namely, cutting the red tape, improving the service time, and reducing the logistic costs both at the international and domestic level. Those efforts are conducted in order to tackle several problems, such as Indonesia's logistics performance which has been stagnant in the last four years; in fact, the speed of logistics movement and logistics costs are indicators of the ease of the business climate in Indonesia.</p> <p>According to a survey in research conducted by The World Bank in collaboration with Bandung Institute of Technology (ITB) in 2013, Indonesia's logistics costs are at 24.64 percent of gross domestic product (GDP) which is considered quite high. The same survey in 2016 conducted by Indonesian Logistics and Forwarders Association also showed that Indonesia's logistic costs are still around 23 percent of GDP. This figure is still very high when compared to several neighbouring economies, such as Viet Nam; Malaysia; and Thailand. This shows that the government still has a lot to do, to increase the reliability and timeliness of logistics services.</p> <p>Based on the explanation which has been elaborated on in the previous paragraph, Indonesia recognises the importance of seamless end-to-end digital connectivity without manual process intervention and also a collaborative approach to ensure that inter-sector integration can be established without shutting down or eliminating existing systems in each sector. In 2020, Indonesia has issued President Instructions Number 5 Year 2020 regarding the establishment of the NLE.</p>
<p>II. Key issues/problems or objectives</p>	<p>The NLE is a logistics ecosystem which harmonises the flow of goods and flow of documents from the arrival of means of transport until the goods are discharged from the ports and arrive at the warehouse. The system also promotes the collaboration between government and private sector through data exchange, business process simplification, process repetition, and duplication reduction. The platform is also supported by technology and an information system which covers all logistic processes as well as connects to the existing logistics systems.</p> <p>The main objective of the NLE is to create a logistics ecosystem that is efficient, standardised, easy-to-access, low cost, and transparent, and also provides a digitised platform that connects the supply and demand of logistics communities.</p> <p>Several ministries and institutions in Indonesia already have various logistics-related service systems; however, they are not yet integrated with each other, especially with the private sector, making them prone to duplication of processes and creating a high-cost economy. The NLE was created to solve this problem.</p>
<p>III. Implementation of the initiative</p>	<p>There are three main strategies of NLE implementation, namely:</p> <ol style="list-style-type: none"> 1. Introducing efficient regulation and excellent service standard by implementing simplification through the reduction of repetition and duplication of business processes. 2. Creating the platform which will enable collaboration between government services and logistics businesses

3. Creating logistics ecosystem management supported by technology and an information system which is able to digitise all the logistic processes, from bill of lading clearance, customs clearance, licensing document, customs clearance approval certificate (SPPB), trucking service, to warehousing, in a single platform.

Figure 1. Scope of NLE



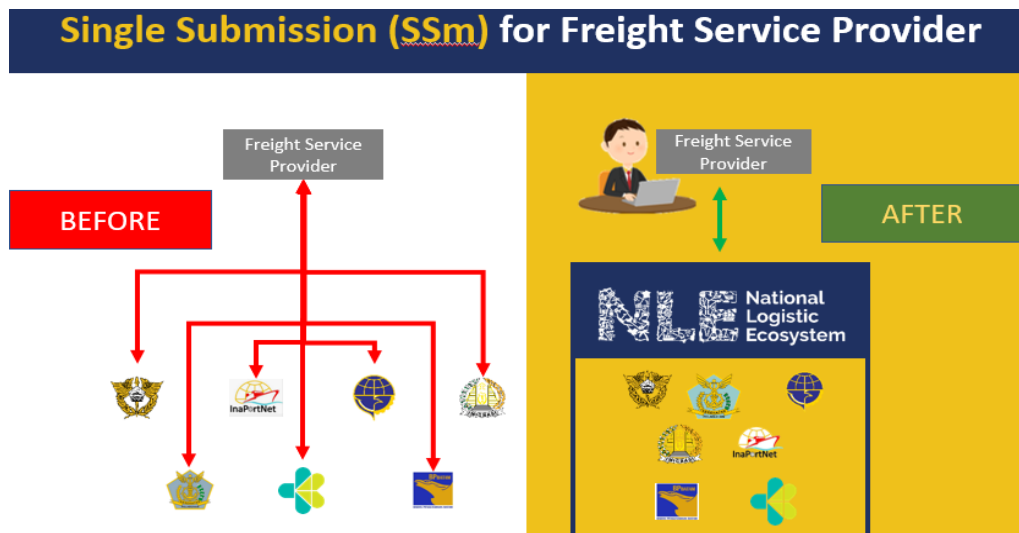
The NLE platform brings together the logistics community in the demand sector that now exists in the Customs Excise Information System and Automation (CEISA), namely importers/exporters, with the logistics community in the supply sector, namely, logistics service providers. It is expected that the implementation of the NLE will facilitate and reduce domestic logistics costs.

IV. Key challenges and impact

The NLE system aims to reduce logistics costs by about 6 percent, mainly derived from efficiency in the transportation and trucking sectors, which currently contribute around 10 percent of domestic logistics costs. Moreover, efficiency is also expected to come from delivery orders clearance and customs clearance approval certificate (SP2) of cargo. If logistics costs can be reduced by about 6 to 7 percent, the domestic logistics burden can be reduced by 17 percent of GDP from the current 24 percent.

Indonesia has conducted several initial research efforts in order to examine how the NLE could contribute to efficient, low cost and reliable logistic business process.

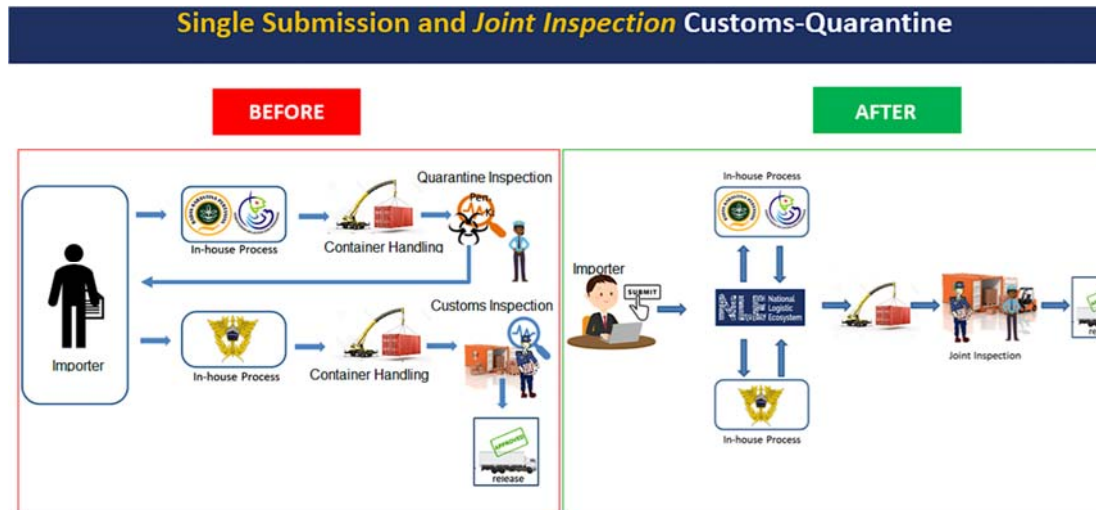
Figure 2. SSm mechanism



The research indicates that prior to implementation of the NLE, freight service providers have to submit permit applications to seven different agencies and institutions as well as for the licensing/permit fees regulated by each agency. This causes duplication and repetition because the submitted application data for the permit is not much different.

After implementing the NLE, it has been estimated that the business process will be simplified and expedited. Freight service providers only need to submit an application once through the NLE which will then be distributed to seven agencies/institutions. The research also revealed that there will be cost-efficiency savings estimated at IDR 60 billion or around USD 4.1 million.

Figure 3. Joint inspection customs-quarantine



The research also explains that prior to the implementation of the NLE, importers in terms of requesting goods inspection must go through a business process which is quite time-consuming and inefficient. First, the importer must submit a request for inspection of goods to Quarantine and if the inspection by Quarantine do not find any violations, the importer will then submit a request for inspection of goods to Customs. If no violation is found, Customs will issue an approval letter for releasing the goods.

However, after the NLE is implemented, the importer only needs to submit a request for inspection of goods through the NLE and later the application will be sent to Customs and Quarantine. After receiving the request, Customs and Quarantine will carry out a Joint Inspection; if no violation is found, Customs will issue an approval letter for releasing the goods.

NLE pilot projects have been carried out at three major ports in Indonesia. The results of the study reveal that business processes through NLE could shorten Clearance Time by 35–56 percent (or 0.6–2.1 days) and also reduce Clearance Costs by 50–68 percent.

The research also revealed that there will be cost-efficiency savings estimated at IDR 85 billion or around USD 5.8 million.

On 18 March 2021, the Batam Logistics Ecosystem (BLE) was launched. It is part of the NLE initiative in the Batam Free Trade Zone region. The implementation of BLE will be able to tidy up and simplify business processes with integrated services by implementing a single submission through one platform. The BLE is an effort to address the problem of intermodal effectiveness in transportation and the interconnection between port infrastructure. The BLE allows a reduction in ship to ship/floating storage unit service time by up to 70 percent. The business process will be reduced to one day (which previously took three days).

V. Lesson learned

The NLE involves many parties in the development and implementation process. The first is, of course, from the government sectors. All related ministries/agencies have coordinated well to synchronise their business processes and service systems. With this collaboration, the government will be able to provide convenience and transparency of services to service users.

The NLE also involves logistics service providers. Ministries and agencies ask for inputs from logistics service providers and users about the business processes, the current obstacles, and together, they find the most appropriate solutions.

Simplification and integration of business processes between ministries/agencies requires a variety of regulatory adjustments, i.e., Directorate of Customs and Excise (DGCE) has made changes and issued several Minister of Finance Regulations to support NLE implementation. All ministries/agencies are also making adjustments to their regulations in order to be able to support the NLE in increasing logistics efficiency.

This initiative is also aligned with Indonesia's commitment under the World Trade Organization (WTO) Trade Facilitation Agreement (TFA) Article 8 – Border Agency Collaboration and Cooperation, which stipulates that the domestic border authorities/agencies shall cooperate and coordinate border controls and procedures to facilitate trade. In this case, the border agencies and authorities in Indonesia are collaborating through the NLE.

VI. Way forward

This initiative will contribute to tackling one of the chokepoints in the APEC Supply-Chain Connectivity Framework Action Plan II 2017–2020 (SCFAP-II), which is unreliable logistics services and high logistical costs. Some APEC economies have implemented a similar logistics system and if the implementation could be encouraged by APEC members, it will strengthen supply-chain connectivity and regional economic integration in the Asia-Pacific area.

As for the NLE, it is not specifically designed as a supervisory tool in the customs and excise sector. But as a service system that is required to provide speed and convenience, of course it is equipped with an adequate supervisory pattern. All NLE features will be based on the application of risk management.

The data available in the NLE will be more thorough because it contains data that only other ministries/agencies have so far. With the availability of more complete data, DGCE will be able to do a lot of information gathering, so that later it will get insights that will facilitate supervisory activities in the customs sector.

NLE development will be carried out in stages. Until next year, the development of the NLE will focus on building information technology systems to simplify and integrate logistics-related services of ministries and government agencies. In line with that, DGCE encourages the arrangement of ports to ensure efficient spatial planning, as well as the provision of supporting logistics infrastructure outside the ports. Within four years, until 2024, it is expected that the NLE can be implemented economy-wide.

A.4 JAPAN

<p>Title of the initiative: Peer Review and Capacity Building on APEC Infrastructure Development and Investment</p>	
<p>Chokepoint: Inadequate quality and lack of access to transportation infrastructure and services</p>	
<p>I. Introduction: provide a summary of relevant regulatory, policy and socioeconomic context/background.</p>	<p>As a contribution to the implementation of the APEC Multi-Year Plan on Infrastructure Development and Investment and APEC Connectivity Blueprint 2015–2025, the APEC Committee on Trade and Investment (CTI) in 2015 endorsed a proposal titled ‘Peer Review and Capacity Building to Advance Cross-Sectoral Issues on Physical Connectivity’. Later in the year, APEC Ministers welcomed the reference guide (titled Reference Guide for Peer Review and Capacity Building on APEC Infrastructure Development and Investment), which had been developed to implement the peer review and capacity-building mechanism.</p> <p>The reference guide emphasises the importance of Quality of Infrastructure Development and Investment by making a strong reference to the APEC Guidebook on Quality of Infrastructure Development and Investment. The guidebook, revised in 2019, highlighted that there are five key elements of quality infrastructure: 1) Alignment with Development Strategy, Openness, Transparency, Fiscal Soundness; 2) Economic and Financial Soundness: Cost-effectiveness including lifecycle cost (LCC) and utilisation of markets; 3) Local High-Quality Development: Job creation, capacity building and transfer of technologies; 4) Social and Environmental Sustainability; and 5) Stability, Safety, Resiliency. Focusing on these five key elements will secure the quality of service throughout the life of the subject infrastructure, starting from the designing stage to the end of the maintenance and operation stage.</p>
<p>II. Key issues/problems or objectives</p>	<p>The objectives of the Peer Review and Capacity Building on APEC Infrastructure Development and Investment Project are to: 1) conduct the peer review on policies and practices relating to the planning, selection and implementation process of infrastructure projects; and 2) identify the capacity-building needs of the reviewed economy through peer review and provide suggested capacity-building activities based on the identified needs.</p>
<p>III. Implementation of the initiative</p>	<p>i) Announcement that the Philippines would participate in the peer review as the reviewed economy and Japan would participate as the facilitating economy at the first meeting of the CTI (CTI1) in 2016.</p> <p>The review work was completed in 2017 and the final report was finalised at the 2nd CTI meeting (CTI2) in 2017. Japan provided an exclusive capacity-building programme in the Philippines in 2017 (expert dispatch) and in Japan in 2018 (invitation programme).</p> <p>ii) Announcement that Viet Nam would participate in the peer review as the reviewed economy and Japan would participate as the facilitating economy at CTI1 in 2017. The review work was completed in 2018 and final report was finalised at CTI2 in 2018. Japan provided an exclusive capacity-building programme to Vietnam in 2018 (expert dispatch) and conducted an online workshop in 2021.</p> <p>iii) Announcement that Indonesia would participate in the peer review as the reviewed economy and Japan would participate as the facilitating economy at CTI2 in 2018. The review work was completed and final report was finalised in 2019.</p>

iv) Announcement that Papua New Guinea would participate in the peer review as the reviewed economy and Australia; Japan; and the United States would participate as facilitating economies at CTI1 in 2020. The PNG peer review report was published in 2021.

Benefit for the Reviewed Economy



IV. Key challenges and impact

i) Peer review

- Identify points to be improved in institutional and legal frameworks in specified infrastructure areas (needs of capacity building).
- Increase awareness of related ministries and organisations that are in charge of institutional and legal frameworks.
- Learn from benchmark economies' examples by comparative analysis.

ii) Capacity building

- Improve human resource development, such as building knowledge and skills of officials in related ministries and organisations in the reviewed economy through experts' lectures, workshops, and visitation of infrastructure projects in Japan.
- Improve infrastructure investment circumstance, such as improvement or formulation of laws, regulations and guidelines, which contribute to increase of infrastructure investments and promotion of resilient infrastructure.

V. Lesson learned

i) The peer reviews specified some problems, such as:

- To adopt a more pragmatic and flexible approach to PPP Law, rather than a highly specific one.
- The need to improve efficiency in bureaucracy and regulation.
- Further acceleration in government support and facilities.
- Need for a standalone PPP law.
- The need to strengthen the PPP contract.

ii) Based on the above specified problems, we identified the capacity-building needs, such as:

- A cooperative approach between government agencies for promoting PPP projects.
- Capacity building for the PPP Center on reviewing the PPP Law.
- Capacity building on value for money
- PPP modalities and financial contract structures
- Project funding strategies, and risk allocation between the government and investors

VI. Way forward

The outcome of implemented peer review and capacity-building activities will contribute to mutual learning among APEC economies of: quality of infrastructure; people-centered investment; good practices and principles; as well as PPP.

The implemented peer review and capacity-building activities are focused on the road and maritime sectors, mainly. However, the importance of responding to environmental issues such as climate change is increasing, and we should focus on not only road and maritime infrastructure, but also other areas such as energy or smart city.

Also, this initiative will be implemented in more economies to realise seamless supply-chain connectivity in the region.

A.5 SINGAPORE

<p>Title of the initiative: Digitalising the Logistics Industry</p> <p>Chokepoint: Unreliable logistics services and high logistical costs</p>	
<p>I.</p>	<p>Introduction: provide a summary of relevant regulatory, policy and socioeconomic context/background.</p> <p>Undertaking the necessary digital transformation to sustain a reliable logistics industry has underpinned Singapore's supply chains management. This transformation has taken on added importance in the context of the COVID-19 pandemic, which has further accelerated the growth and adoption of e-commerce.</p>
<p>II.</p>	<p>Key issues/problems or objectives</p> <ul style="list-style-type: none"> • Logistics as a key pillar of Singapore's economy <p>The logistics industry is a critical enabler for major segments of Singapore's economy, including manufacturing and wholesale trade, as it facilitates the domestic and international flow of goods. The logistics industry contributed SGD 6.8 billion or 1.4 percent of Singapore's gross domestic product (GDP) in 2019. It employs over 86,000 workers across more than 5,300 enterprises. It comprises three main sub-sectors: contract logistics, freight forwarding and land transportation.</p> <ul style="list-style-type: none"> • Growth of e-commerce and its impact on the logistics industry <p>The regional e-commerce boom accelerated the digitalisation and diversification of global supply chains.</p> <p>Even before the COVID-19 pandemic, in 2019, Colliers International reported that third-party logistics (3PL) and logistics companies were the top occupiers of warehouse space in Singapore, taking up 44 percent of available warehouse space. This suggests that Singapore has been an attractive base for logistics companies looking to establish their footprints when entering the region. The subsequent e-commerce boom also led to a positive spillover to the 3PL and logistics sector in Singapore.</p> <p>The COVID-19 pandemic accelerated the adoption of e-commerce. In Singapore, the average e-commerce adoption has risen to 14.3 percent in 2020, compared to 5.8 percent in 2019. User penetration in Singapore was expected to reach 74 percent, with about 3.86 million online users by the end of 2020. Colliers International's report on <i>Glimpsing the Road Ahead: Reshaping the Logistics Market</i> stated that Singapore's e-commerce sector is expected to expand by 48 percent to SGD 10.15 billion by 2022 at a compound annual growth rate of 7 percent. The report observed that technologies and new business models are reshaping the Asian logistics sector, putting the industry under pressure to deliver higher quality services at the lowest possible costs. According to a report conducted by Google, Temasek, and Bain & Company, Singapore's e-commerce industry is set to be valued at USD 22 billion by 2025, from its current USD 9 billion estimation.</p> <p>With a growing middle class and rising internet penetration, ASEAN has emerged as a booming market for e-commerce. Based on a report by Google and Temasek Holdings, Southeast Asia's digital market could exceed USD 200 billion (SGD 273 billion) by 2025. E-commerce in ASEAN is projected to reach a double-digit average growth rate, with Indonesia being the largest and fastest-growing market. Malaysia; Singapore; and Thailand also own double-digit market shares, and the markets are expected to follow a positive growth trajectory in the coming years. Between 2018 to 2023, the annual growth of e-commerce revenue in the Association of Southeast Asian Nations (ASEAN) is projected to be four times as much as that of its regional GDP, and by 2023, the total e-commerce revenue in ASEAN is expected to increase by almost 200 percent.</p>

Notwithstanding the above, Southeast Asia has unique last-mile delivery challenges, with limited connectivity to rural areas and archipelagos that present unique logistical constraints that need to be overcome. Given the potential of e-commerce in the region, there remains many untapped opportunities for growth not only in e-commerce as an online service provider, but in transport infrastructure and logistical services that will continue to facilitate the e-commerce wave.

- Meeting rising demand and changing consumer behaviours

The rise of e-commerce and the digital marketplace has changed consumer buying behaviour and expectations, as consumers now expect fast, free shipping. In order to capitalise on the growth of e-commerce, the logistics industry will need to manage increased volumes and delivery expectations. Importantly, logistics companies are required to adjust their strategies to provide low-cost and on-demand delivery services, with speed being key.

This situation presents an opportunity for Singapore to leverage on digital initiatives and solutions to improve processes in the logistics industry, as the industry looks to keep pace with the growth in e-commerce and changing consumer expectations.

III. Implementation of the initiative

In collaboration with the private sector, the Singapore government rolled out various initiatives focused on innovation and digitalisation to enhance productivity. Initiatives relevant to the logistics industry included the: (i) Industry Transformation Maps (ITMs); (ii) Networked Trade Platform (NTP) and; (iii) digital economy agreements (DEAs).

- Industry Transformation Maps (ITMs)

Under the SGD 4.5 billion programme, roadmaps were developed for 23 industries to address issues within each industry and deepen partnerships between government, firms, industries, trade associations and chambers. For logistics, the roadmap identified opportunities that the industry could tap on as a result of global trends, such as the advent of new technologies.

Implementation assistance is made available to enterprises that adopt impactful productive technologies that are new to Singapore or the industry, to drive the deployment of advanced technologies by operators and improve overall collaboration of the industry to derive productivity savings. In addition, the government will also help to build differentiating capabilities through the establishment of Centres of Innovation and Centres of Excellence in Singapore. To bolster the logistics innovation ecosystem in Singapore, the government will work with research institutions and universities to develop world-class capabilities in the logistics and supply chain management domains. In terms of long-term growth, the ITM would support the adoption of technology and deepen sector specialisation through the development of focused logistics handling capabilities. Enterprises would also be supported in their market expansion efforts to secure trade flows and increase international presence.

- Networked Trade Platform (NTP)

In 2018, Singapore launched the NTP that is owned and operated by Singapore Customs. The NTP is a one-stop trade and logistics ecosystem that helps traders digitalise and connect, and also acts as a key gateway for digital trade connectivity to the rest of the world. The NTP enables the sharing of digital trade data between businesses and the Singapore government, as well as between governments. With this, the NTP facilitates trade by digitalising cross-border regulatory processes, reducing the costs and inefficiencies associated with manual trade document exchange. Singapore Customs has worked with ASEAN to implement the live exchange of the ASEAN Customs Declaration Document with four other ASEAN members via the ASEAN Single Window. Singapore Customs is also working on establishing digital trade

connectivity with Singapore's trading partners, for example, exploring the exchange of import and export permit data with Australia; Chile; Indonesia; the Netherlands; and the US.

- Digital economy agreements (DEAs)

Singapore commenced negotiation of DEAs, which are international agreements that establish digital trade rules and digital economy collaborations between two or more economies. Through the DEAs, Singapore seeks to develop international frameworks that foster interoperability of standards and systems and support businesses, especially SMEs, engaging in digital trade and e-commerce. This would ultimately lower the costs of operation, increase business efficiency and create more seamless and easier access to overseas markets for companies in the digital trading space.

The key features of the DEAs include: (i) facilitating end-to-end digital trade, (ii) enabling trusted data flows; and (iii) building trust in digital systems and facilitating opportunities for participation in the digital economy.

To date, Singapore has concluded two DEAs – the Singapore, Chile and New Zealand Digital Economy Partnership Agreement (DEPA), and the Singapore–Australia Digital Economy Agreement (SADEA) – both of which have entered into force. Their conclusion and signing in 2020 was opportune, with the pandemic accelerating the pace of digital transformation globally. The DEPA and SADEA also address emerging digital issues, such as digital identities, fintech, artificial intelligence and digital inclusivity.

IV. Lesson learned

Singapore's efforts to embrace innovation and digitalisation helped its logistics industry to ride the e-commerce wave. Some of the potential takeaways that could be useful for APEC economies would be to:

- Prioritise policy planning and internal coordination. For instance, there are economic benefits to developing a comprehensive domestic logistics strategy that covers both infrastructure and policy, and all links within the logistics chain – road, rail, maritime transport, aviation, logistics centres, and customs. An integrated strategy can help coordinate action across relevant ministries, such as transport, industry, trade and regulatory agencies, etc., resulting in more seamless supply chains. A holistic strategy also needs to factor in the private sector, whose role is instrumental in providing logistics services, to complement infrastructure and policy.
- Build strong partnerships with private stakeholders. The successful implementation of a domestic logistics strategy requires strong partnerships between the government, logistics associations, the private sector, academia and the workforce. Each is a key stakeholder playing mutually reinforcing roles. In that regard, Singapore's ITMs were produced after extensive consultations.
- Anticipate trends and implement innovations. There is often a lot to gain from anticipating the future trends that are likely to impact each economy and their immediate region the most. For example, the growth of the middle class in many emerging markets will likely bring a boost to areas like e-commerce and healthcare logistics, and this could require investments in self-collection e-commerce stations, cold chain centres, and many other innovative solutions. Trends such as automation, asset-sharing, and the Internet of Things are changing the world and transforming supply chains. By preparing the workforce and investing in innovation today, economies can jump ahead of the curve.

IV. Way forward

Further digitalisation of supply chains would be key to strengthening their resilience. Disruptions like COVID-19 directly impact, inter alia, the supply and demand of certain products, accessibility of raw

materials, and manufacturing costs. Combined with the quick-moving e-commerce market, vulnerabilities in the supply chain are more easily exposed and would lead to costly consequences.

As businesses seek to increase efficiency and productivity by fortifying their supply chains, the use of real-time data has become increasingly important and desirous. Real-time data provide businesses with clear and immediate information on various matters, such as consumer trends, demand forecasts, inventory and delivery status. This is especially crucial in the context of e-commerce, where demand and supply can quickly shift.

Singapore is working on this through the Alliance for Action (AfA) on Supply Chain Digitalisation initiative that was set up in June 2020 to create a digital utility for the supply-chain ecosystem to share data in a trusted, secure and inclusive way. Together with industry stakeholders, the AfA arrived at the need for a common data infrastructure to resolve critical pain points in the ecosystem. This led to the creation of the Singapore Trade Data Exchange (SGTraDex) to facilitate trusted and secure sharing of data between supply chain ecosystem partners. SGTraDex represents a new type of public digital infrastructure in the digital era that allows for data connections to be made to a wide range of data contributors and data users locally in Singapore and across the world. It will augment existing data sharing systems and platforms by connecting the supply chain end-to-end, creating visibility and transparency, linking importers/exporters, shipping companies and financial institutions. This will provide both large and small companies with access to exchange data in an efficient, trusted and secured way.

A.6 CHINESE TAIPEI

Title of the initiative: Integrating SMEs in Authorised Economic Operator Certification: Improving SME Participation in APEC Secure Trade

Chokepoint: Lack of coordinated border management and underdeveloped border clearance and procedures

- I. Introduction: provide a summary of relevant regulatory, policy and socioeconomic context/background.

APEC member economies began to discuss the authorised economic operator (AEO) concept in 2005 to promote regional economic integration and enhance supply-chain connectivity. The number of AEO mutual recognition arrangements/agreements (MRAs) signed during the past years has increased considerably. There are also dozens of MRAs currently being negotiated. In addition, APEC's Sub-Committee on Customs Procedures (SCCP) included the APEC Framework based on the World Customs Organization (WCO) SAFE Framework in its Collective Action Plan, and in 2011 further included a section on AEOs and MRAs, aiming to encourage the signing of AEO MRAs between and among interested APEC member economies. Against this backdrop, under the SCCP, Chile and Chinese Taipei collaborated on the two-year project, Integrating SMEs in Authorised Economic Operator Certification (Project: SCCP 01 2019A), to examine AEO programmes within APEC and focus on AEO and AEO MRA benefits for businesses, especially SMEs.

- II. Key issues/problems or objectives.

The overall objective of this project is to enhance the awareness and understanding of the opportunities and benefits for AEO operators, including SMEs, when they are certified as AEOs in APEC member economies, customs procedures and inspections, as well as benefits that are also applied to other border agencies other than customs.

- III. Implementation of the initiative.

This overall objective was achieved through information sharing, best practices exchange, stocktaking studies, and dialogue interaction among policymakers, customs officials and the private sector. Chile and Chinese Taipei hosted a total of two workshops and published three studies.

In the first-year workshop and study conducted by the Inter-American Development Bank (IDB), Chile found that 30 percent of AEO-certified importers/exporters determined that goods were released faster when exporting to or importing from an MRA counterpart economy. In addition, opportunities to expand MRAs and broaden the inclusion of SMEs increased the number of AEO-certified enterprises in the APEC region from 17,409 in 2018 to 18,183 in 2019, or an increase of 4.45 percent. Moreover, there was an increase in the number of AEO MRAs signed and implemented by APEC member economies, according to information provided in the WCO's AEO Compendium 2019. However, though member economies have endeavoured to promote their AEO programmes and MRAs, challenges still remain regarding effective evaluations and convincing assessments of MRA benefits for AEOs or economic operators in general, particularly for SMEs. It is widely regarded that the lack of convincing impact evaluation makes it challenging for international institutions or customs authorities to provide quantitative assessments or 'hard evidence' that present the benefits of AEO MRAs to the business community or other government agencies (OGAs) not directly involved in customs procedures.

The Phase 2 project aimed to develop guidelines and best practices applicable across APEC-AEO programs through an AEO Status Survey and a time release study (TRS) to measure the implementation of AEO benefits. A second workshop was held in Chinese Taipei to disseminate the results of the study and involve stakeholders from both the public and private sector to exchange views on how to take the AEO to the next level. Chinese Taipei's study, based on and extended from Chile's findings, involved a structured quantitative survey on more AEO MRAs between APEC member economies. The results provided in this

study are expected to complement APEC's previous research on AEO-related issues and aim to demonstrate members' on-the-ground experience in formalising and optimising the implementation of AEO MRAs for the benefit of not just government agencies but also exporters, importers and other players in supply chains within the APEC region.

IV. Key challenges and impact

The primary beneficiaries of this project are the personnel in APEC customs administrations in charge of developing the rules, laws and main regulations of the AEO programmes, since, in the short term, they have these outputs as a guide to enhance customs regulations related to the programme and expand the benefits and importance for the implementation of trade facilitation domestically. Other primary beneficiaries are the private sector, especially company representatives (AEO and non-AEO) who participated in the two workshops, where they would have been able to express opinions and concerns about the implementation of AEO programmes and trade facilitation benefits that they can access with AEO certification.

V. Lesson learned

AEO MRAs are not only considered as essential for real cooperation between the customs agencies involved, but are also very conducive to reaching trade facilitation objectives and removing some typical non-tariff barriers for trade. Thus, through the two workshops and three studies, several strategic suggestions were made for future negotiations on trade facilitation disciplines in the region, making it more likely to have a common basis on customs procedures for a future regional negotiation on a trade agreement in the APEC Region.

First, it is important that the AEO programmes consider differences regarding the benefits that each type of operator seeks when certifying as an AEO. For example, some exporters and importers seek benefits that reduce clearance times, controls and costs, while other operators in the supply chain seek to consolidate a 'market preference'. Therefore, different operators may have different incentives to become certified AEOs. Second, with regard to training, results from the project show that if the AEO programmes are to effectively contribute to facilitation, it is very important that customs officers operating at borders be trained in AEO and understand how to provide the benefits to operators. In addition, AEO programmes must undertake greater efforts in making the certification procedures faster and more understandable.

Besides training, it is also important to provide support in other ways. For example, while customs administrations should not lower their standards for SMEs, their evaluation of these companies should be more flexible. Although certification is free of charge in most AEO programmes in the APEC region, customs administrations should be aware that incorporation of SMEs into the AEO certification system may require a provision for external financing for implementation. In addition to financial support, customs administrations must work hard to improve the security of information exchange systems and share the certified operator's status to ensure that such operators will receive the expected benefits upon arrival in the economies with MRAs.

Lastly, governments must strongly promote the use of MRAs among AEOs because not everyone knows about them. In fact, 75 percent of the enterprises say that there is no information on MRAs available on the websites of customs agencies. Therefore, it is recommended that member economies make further progress on this issue, especially by informing AEOs via websites how they can get access to the benefits of MRA. In addition, customs administrations must work with greater enthusiasm to incorporate other government agencies into AEO programmes because such alliances among organisations can directly benefit SMEs.

VI. Way forward

Due to the COVID-19 pandemic, economies have implemented lockdowns and border controls which have disrupted trade flows and global supply chains. This has highlighted the importance of coordinated border

management and efficient border clearance procedures. The project therefore provides several steps to address such issues and improve supply chain connectivity.

Step 1: In order to establish much more inclusive and sustainable AEO programmes, customs should incorporate key policy indicators (KPI) into the programme that focus on SMEs, such as participation rates, number of operators, use of benefits, among others.

Step 2: In addition to setting up KPI indicators, customs could also involve OGAs in the AEO programme with clear roadmaps to improve relations through joint meetings/offices and inspection schemes; form customs–OGA partnerships based on mutual trust and mutually beneficial purposes; and adopt OGA-proposed AEO accreditation criteria.

Step 3: In order to extend AEO programmes to e-commerce, a robust customs–business partnership is essential, especially one with e-commerce platform operators, which is vital to optimising e-commerce clearance.

Step 4: Research and studies should be expanded concerning the effects that the benefits of the programmes generate in clearance times and costs, as well as how implementation of MRAs further boosts SME confidence in joining the programmes.

A.8 UNITED STATES

<p>Title of the initiative: Export Certificate Roadmap</p> <p>Chokepoint: Limited regulatory cooperation and best practices</p>	
<p>I.</p>	<p>Introduction: provide a summary of relevant regulatory, policy and socioeconomic context/background.</p> <p>APEC economies account for approximately 48 percent of global trade, with agricultural trade being central. Concerns about food safety in the Asia-Pacific region spurred a high level, collective mandate from APEC Leaders to improve food safety standards and practices. In 2007, after the establishment of the APEC Food Safety Cooperation Forum (FSCF), an APEC Sub-Committee on Standards and Conformance (SCSC) project, APEC Leaders agreed on the need to develop a more robust approach to strengthening food safety standards and practices in the region, encourage use of scientific risk-based approaches, encourage reliance on science-based international standards and best practices consistent with World Trade Organization (WTO) members' rights and obligations under both the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) and the Agreement on Technical Barriers to Trade (TBT Agreement), and to not create unnecessary impediments to trade.</p> <p>But as economies increasingly focused on food safety, the number and complexity of certificate requirements for imported foods expanded. While some science-based certificate requirements may be necessary to verify the safety of imported foods, the proliferation of certificate requirements has strained both economies' and companies' ability to comply with and enforce certificate requirements. Approximately 53 percent of those surveyed in a report commissioned by the APEC Business Advisory Council (ABAC) view certification as the most burdensome sanitary and phytosanitary (SPS) measure. Consistent, transparent, risk-based application of requirements would more efficiently protect public health and also facilitate trade in safe food products.</p> <p>This APEC initiative focused on streamlining export certificates in response to APEC Leaders call in 2011 for, in particular, the reduction of 'unnecessary requirements in official export certificates for agricultural products'. That Leaders Statement also called for eliminating 'requirements that are not based on science and essential to ensuring food safety'.</p>
<p>II.</p>	<p>Key issues/problems or objectives</p> <p>Key objectives were: (1) Eliminate the use of certificates for no-risk or low-risk food products; (2) Harmonise certificate requirements, taking CODEX guidelines into consideration where possible; (3) Agree on a model export certificate for key sectors, and encourage its adoption by APEC economies; (4) Encourage use of electronic certification.</p> <p>A survey carried out as part of the initiative found that more than 80 different official certificates were being used in the APEC region, inhibiting the efficient movement of food between APEC economies. Certificate requirements impact virtually all commodity sectors. Any process or procedure change can result in increasing costs and burden on regulators in both the importing and exporting economies as well as to the impacted foreign and domestic industry sectors. Such changes often create a ripple effect on the entire supply chain resulting in delays and in businesses needing to modify their internal and external processes and procedures to adjust to a new regulatory climate.</p>
<p>III.</p>	<p>Implementation of the initiative</p> <p>Building on two U.S. self-funded workshops on export certificates in 2010 and 2012, the FSCF Action Plan to Implement the APEC Regulatory Cooperation Implementation Plan, was endorsed in 2013. The action plan identified export certificates as one area for concerted cooperation. Subsequently, a roadmap was</p>

endorsed in 2013, laying out a plan to harmonise the use and application of export certificates with international standards.

The initiative also involved establishing an FSCF Export Certificate Electronic Working Group in 2013 to discuss export certificate concerns and consider electronic certification issues. In 2015, an APEC eCert Compendium of Export Certificate Requirements by APEC Economies was developed and approved to support work on electronic certification referenced in the Roadmap.

Implementation of the Roadmap involved an export certificate workshop in May 2017, attended by 80 participants. It covered principles of certification, fundamental good regulatory practices, use of risk-based criteria for products, and model certificate options. This workshop was followed by a half-day session on dairy certification. Also in May 2017, a brochure on export certification requirements in APEC was published and posted on the FSCF's Partnership Training Institute Network (PTIN) website (see <http://fscf-ptin.apec.org>) with various resources for regulators.

A 2018 workshop focused on increasing understanding of the legitimate basis for establishing new export certificate requirements based on obligations and guidance in the SPS Agreement and the TBT Agreement, the Codex Alimentarius, and the Trade Facilitation Agreement.

A 2019 workshop in Chile was attended by 10 APEC economies and representatives from international organisations. The workshop provided an overview of the ten years of export certificate work to date in APEC under the FSCF Export Certificate Roadmap and updates to the APEC export certificate survey. Economies identified ways to streamline export certificate requirements, including eliminating duplication and ensuring the requirements are based on science and consistent with international guidance and commitments. Members agreed that certificate issues remain a concern in the region and more intersessional work is needed. Given the slow APEC-wide progress in reducing certificate requirements, the United States considered moving forward with work involving pilot economies but could not come to consensus on target economies for this programme. As a result, the effort did not advance. Because 2020 marks the end of the export certificate roadmap timeframe, at the 2021 FSCF meeting, there will be an assessment by the project overseer regarding progress made towards streamlining of export certificate requirements.

IV. Key challenges and impact

An independent review of the export certificate initiative, carried out as part of a larger FSCF review, reported that the 2017 workshop resulted in concrete, if limited, changes to policy and practices in member economies to adopt international good practices in this area. Of the respondents to a follow-up survey, 14 of 17 stated that they had applied what they learned in their work one year later, and three respondents stated that the training helped their economy adopt international good practice. Concrete changes cited by respondents included the following statements: '[We] revised existing regulations and guideline in order to comply with international regulation and facilitate the trade. Many articles of regulation have been revised.' '[We] used some of lessons learned to develop [the] new food law.' 'Chile implemented the export certificate for wine, based on FCSF work recommendations In order to implement the APEC model wine certificate, our agency must modify the internal procedures to apply the use of the certificate, where the direct use of the skills gained during the training was of great help.'

The 2018 workshop on export certificates, attended by 41 participants from 16 economies, was also successful at increasing capacity; 86 percent of respondents stated they increased their level of knowledge on the topic matter (based on a 64 percent response rate). A large majority (90 percent) stated that the training was relevant to their job responsibilities, and 55 percent stated they will use the information frequently. Furthermore, 73 percent stated that it is an important priority to their economy with another 17 percent stating it is a top priority.

Overall, it proved difficult to get traction on across-the-board changes to export certificates. As a result, supply-chain chokepoints remain given the multiple certificate documentation requirements at the border. It proved difficult to achieve consensus on actions that could be addressed in a 3–5 year timeframe.

Coordination challenges between food safety regulatory authorities and border agencies persist. A bigger challenge for this and other APEC initiatives continues to be translating agreement during APEC events into action back at the capital with domestic adoption of best practices.

V. Lesson learned

A number of elements in the Roadmap were not achieved in this timeframe. Certain goals, such as eliminating certificates or increasing use of electronic certification, while clearly preferential for trade facilitation, remain a long way off. This seems to be a challenge for some APEC initiatives. Sustainable funding has not been available since multi-year projects were discontinued and project ambitions are often greater than the time and resources (both funding and sustained leadership) to implement reform measures. And it is very difficult to work bilaterally in the APEC construct.

Limited time during meetings is also a challenge. The electronic working group, while enabling intersessional progress, did not meet regularly.

While the Wine Regulatory Forum (WRF) achieved success in creating a model wine certificate, and subsequently several economies are using it in trade, FSCF sector-specific certificate work faltered under this initiative in part because it was challenging to reach consensus on a commonly produced product that would be supported by a number of APEC-producing economies, and the initiative lacked wide industry engagement. The WRF also benefited from the existence and convening power of an established forum.

VI. Way forward

Supply-chain connectivity is a critical challenge. Focused and sustained work in a targeted area is necessary to achieve progress. Gaining economy buy-in as to the benefits of eliminating burdensome chokepoints requires sustained economy-specific engagement to garner high-level commitment. While this has occurred in some APEC work areas, progress appears to be constrained by the disconnect between group-level technical activities and high-level ministerial and leader ambitions.

Title of the initiative: Peru Technical Assistance on Publication (WTO TFA Article 1)

Chokepoint: Limited regulatory cooperation and best practices

I. Introduction: provide a summary of relevant regulatory, policy and socioeconomic context/background.

Over the past decade, the Republic of Peru has taken steady steps to increase its overall transparency of governance. The principle of transparency is addressed throughout Peru's domestic legal framework, notably in the Political Constitution of Peru. Peru has also enacted legislation and regulations calling for the advance publication of draft laws and regulations for public comment; the publication (in hard copy and online) of enacted/passed laws and regulations in Peru's gazette (*El Peruano*); the publication of government administrative procedures and fees/charges through Single Texts of Administrative Procedures (*Texto Unico de Procedimientos Administrativos* or TUPAs); and the development of whole-of-government online portals dedicated to transparency and predictability.

Peru has also committed to trade-related transparency in multilateral, regional and bilateral free trade agreements and arrangements, including the World Trade Organization (WTO) Trade Facilitation Agreement (TFA). Peru has notified (27 November 2018) the WTO Committee on Trade Facilitation of the online location of trade-related laws and regulations, as required by Article 1.1 (a) through (j). Peru has also notified, per Article 1.2, the location of practical guides to import, export and transit. Peru notified

WTO TFA Article 1 as Category A; however, the government expressed ambitions to go beyond mere compliance with the article and enhance implementation to ‘compliance plus’.

For example, though Peru is technically compliant with the WTO Trade Facilitation Agreement Article 1 provisions, the Ministry of Foreign Trade and Tourism (MINCETUR) was interested in enhancing the economy’s compliance to prepare for the launch of an improved version of the economy’s National Single Window of Foreign Trade (*Ventanilla Única de Comercio Exterior*, or VUCE) This entailed focusing specifically on how information from customs authorities and other trade-related ministries (e.g., agriculture and public health ministries) is shared in trade information portals and single window.

II. Key issues/problems or objectives

Peru’s VUCE centralises the required procedures for the import and export of goods and manages the administrative procedures electronically. VUCE is administered by MINCETUR. Because VUCE deals with trade information required by various government agencies (e.g., agriculture, health), it is in a strategic position to centralise trade-related information as defined by the WTO Trade Facilitation Agreement Article 1 (Publication). Building off the strengthening of VUCE governed by Law no. 30860 (Law on Strengthening of the Single Window of Foreign Trade), the government of Peru hoped to explore the possibility of including a trade information portal module within VUCE. The trade information portal would be developed based on international best practices promoted by the World Bank, the World Customs Organization (WCO) and others.

Peru faced several challenges in taking this decision. These challenges are consistent with those defined by APEC Supply-Chain Connectivity Framework Action Plan (SCFAP) chokepoint 4 (limited regulatory cooperation and best practices). The first was a lack of coordination, collaboration and cooperation between trade-related agencies. In 2019, more than 75 percent of VUCE transactions involved requirements from three trade-related agencies: the National Agricultural Health Service (*Servicio Nacional de Sanidad Agraria* or SENASA), the National Fisheries Health Agency (*Organismo Nacional de Sanidad Pesquera* or SANIPES), and the General Directorate of Environmental Health and Food Safety (*Dirección General de Salud Ambiental e Inocuidad Alimentaria* or DIGESA).

However, import/export requirements, licensing requirements and other trade-related information were still dispersed across these three agencies, MINCETUR and Peruvian Customs (SUNAT). There was also evidence that the various agencies were not updating and harmonising trade-related information regularly. These challenges – which cost traders both time and money – were validated through consultations with prominent private trade-related associations such as the Chamber of Commerce in Lima (*Cámara de Comercio de Lima* or CCL). There was a clear need to improve strategic communication among the different agencies implicated in VUCE, to improve access to/exchange of trade-related information and learn from international best practices as Peru began the process of implementing VUCE 2.0.

III. Implementation of the initiative

Using funds provided by APEC and the United States government under the APEC Supply-Chain Connectivity Framework Action Plan (SCFAP) sub-fund, the United States government provided economy-level assistance to MINCETUR to address publication challenges related to APEC SCFAP Chokepoint 4. This assistance was provided by the United States government, working closely with Peruvian partner, the Institute for Trade Facilitation (*Instituto de Facilitación del Comercio* or IFCOM).

As defined by APEC SCFAP-II, a key metric for success in alleviating challenges posed by Chokepoint 4 is the fulfilment of all commitments in WTO Trade Facilitation Agreement Articles 1.2 (information available through Internet) and 1.3 (enquiry points). To establish baselines for WTO Trade Facilitation Agreement Article 1 ‘compliance plus’, the US government and IFCOM conducted a rapid assessment consisting of a legal/regulatory and literature review, held semi-structured interviews with public and private sector stakeholders; and distributed an online survey to members of the Lima Chamber of Commerce (CCL). This baseline assessment comprised Phase I of the economy-level technical assistance.

Recommendations from this analysis included a deeper legal/regulatory analysis of ministry, department and agency TUPAs; inventorying trade-related practical guides for import/export within key sectors (agriculture, pharmaceuticals); assessing publication models for the strengthened VUCE; and developing performance metrics for enquiry points at MINCETUR and other trade-related agencies.

After internal deliberations, MINCETUR requested a Phase II report expanding upon two of the Phase I recommendations: VUCE-related analysis and developing a practical import/export guide. MINCETUR was specifically interested in the clarity, relevance and timeliness of trade-related information provided by SENASA, SANIPES and DIGESA and how that information could be successfully integrated/centralised within VUCE to save traders time and money.

MINCETUR also sought international best practices from APEC (e.g., Australia; Canada; Singapore; United States; Viet Nam) and non-APEC economies (Jamaica, Kenya) on developing trade information portals. This compendium of best practices and approaches is consistent with suggested performance/progress metrics from APEC SCFAP Chokepoint 4. Another MINCETUR priority was better understanding of the potential benefits of including a trade information portal as a module within a broader National Single Window. IFCOM also agreed to provide an outline for a simple and practical guidebook (a suggested tool from WTO Trade Facilitation Agreement Article 1.2) for the trade of agricultural goods to/from Peru.

Based on the analysis, the Phase II report provided a set of recommendations based on the best practices identified and Peru's progress and vision to improve transparency. These recommendations aim to improve the quality and thoroughness of information and are accompanied by tools for conveying such information, such as specific services for small businesses. The report also provides more tailored recommendations to improve VUCE and to upgrade and harmonise the websites of DIGESA, SENASA and SANIPES. The import/export guidebook for agricultural products addressed key requirements and considerations, with the goal of generating broader public-private dialogue to validate the guidebook, increase compliance with WTO Trade Facilitation Agreement Article 1.2, and reduce challenges associated with APEC SCFAP Chokepoint 4.

IV. Key challenges

The Phase II report's examination of the trade information portal/WTO Trade Facilitation Agreement Article 1.2 best practices directly affected MINCETUR's decision-making process on the configuration of the trade information portal within VUCE. The analysis illustrated specific features that economies have included to make accessing trade-related information more user-friendly, including the provision of links to customs and other trade-related regulatory agencies; structured and indexed legislation; tariff identifiers; smart search engine for merchandise classification and subsequent tariff treatment; automated response and user guidance systems (e.g., chatbots); and services specifically tailored to small- and medium-sized enterprises (SMEs.). According to Peruvian partner IFCOM, the Phase II analysis directly led to MINCETUR'S inclusion of specific language on trade information portal configuration implementing the Regulation of Strengthening of the Single Window of Foreign Trade Law (Articles 96–98), approved by Supreme Decree no. 008-2020-MINCETUR and published in *El Peruano* on 3 August 2020.

Though the trade information portal has yet to be launched at the time of this writing, the centralisation of trade-related information (as defined by WTO Trade Facilitation Agreement Article 1.1) will improve information access and exchange; strengthen regulatory transparency; and provide timely information that will save traders time and money. Armed with readily accessible, accurate and updated information, traders – particularly SMEs – will also have greater leverage to hold border agencies accountable and reduce informal payments.

V. Lesson learned

Peru's commitment to transparency has extended to providing ready access to trade-related information; the desire to centralise this information through a dedicated trade information portal within VUCE reflects

this and is consistent with international and regional best practices. Nonetheless, individual trade-related ministries, departments and agencies – proud of their respective websites and tools– may prove reluctant to ‘feed’ and update a trade information portal at the expense of their own proprietary sites and portals. As noted above, the Phase II assessment team recommended several ways that trade-related information presented on the SENASA, SANIPES and DIGESA websites could be made more user-friendly. However, encouraging these agencies to make these changes may transcend MINCETUR’s authority as a coordinating body.

As Peru moves forward, the government may wish to frame (at least initially) VUCE 2.0 and its accompanying trade portal as a complement to, rather than a replacement for, pre-existing portals and tools. This will require a systemised means of updating these several portals/sites to avoid presenting outdated or contradictory information that could confuse traders. This may be achieved through regular National Committee on Trade Facilitation meetings and/or transparency working group meetings. There may be lessons that Peru can share with other APEC economies in the process of balancing the need to centralise trade-related information with the desire of other agencies to maintain autonomy over their own websites and proprietary tools.

Peru may also wish to consider expanding private-sector surveys, as was done at the end of Phase I assistance through the Lima Chamber of Commerce (CCL). Traders are ultimately the end users for these trade-related information tools. The government should adopt a customer-based orientation to the development of the trade information portal and VUCE itself, as the degree of trader uptake and use of the tools will ultimately determine their viability and sustainability.

VI. Way forward

The importance of reliable, timely and accurate information – presented online – has become all the more important during the regional and global response to the COVID-19 pandemic, which accelerated the need for touchless and paperless clearance of goods. The results and lessons of this case study have immediate relevance to reducing challenges of Chokepoint 4, and also Chokepoint 1.

These chokepoints should be considered in tandem as economies like Peru adapt policies, regulations and procedures to accommodate public health concerns around the border clearance of goods. Clear and accurate information will also be required as economies import vaccines, medical equipment and personal protective equipment (PPE) for pandemic response. Through the next iteration of SCFAP, APEC can continue to incubate new ideas and disseminate economy-level best practices to not only reduce the time and cost of trade but also to reduce the spread of harmful diseases and pathogens.

A.9 VIET NAM

<p>Title of the initiative: Agreement on testing paperless delivery and transportation (without using airway bill CN38) between Vietnam Post and other DOs and airlines.</p> <p>Chokepoint: Lack of coordinated border management and underdeveloped border clearance and procedures</p>	
<p>I. Introduction: provide a summary of relevant regulatory, policy and socioeconomic context/background.</p>	<p>As required by the Universal Postal Union (UPU), designated postal operators (DOs) have to use CN38 during international mail dispatch. This requires many different steps/processes, which takes much time in the mail handling process, reduces labour productivity, and increases CN38 printing costs and other related expenses; UPU standards on electronic data interchange (EDI) transmission are not ensured; mail dispatch data transmitted between DOs and airlines are not effective, affecting the exchange of mail dispatches.</p> <p>Stakeholders involved: Vietnam Post, Post Danmark (Denmark), PostNord Group AB (Sweden) and Qatar Airways.</p>
<p>II. Key issues/problems or objectives</p>	<p>This initiative is conducted by Vietnam Post to innovate the delivery and transportation process of international mail dispatches as planned by the UPU (Committee 1 – Transportation) as a trial to prove this paperless solution is possible and to propose spreading the successful testing result among other DOs and airlines in the future (starting from Quarter 2/2021).</p> <p>In the past, there was no effort to conduct the same solution among UPU members.</p>
<p>III. Implementation of the initiative</p>	<ul style="list-style-type: none"> • Vietnam Post cooperated with Post Danmark (Denmark), PostNord Group AB (Sweden) and Qatar Airways to sign the agreement to test this paperless solution for delivery and transport of inbound and outbound mail bags based on the plan made by UPU (with the support and coordination of Committee 1 – Transportation, UPU) • Pilot time: from January 2021 to March 2021. <ul style="list-style-type: none"> - Inbound mail dispatches (from Denmark/Sweden to Viet Nam): from 12 January 2021 - Outbound mail dispatches (from Viet Nam to Denmark/Sweden) - Volume of inbound mail bags (mail, parcel and Express Mail Service (EMS) items) from Denmark/Sweden to Viet Nam from 12 January – 15 March: 608. - Volume of outbound mail bags (mail, parcel) from Viet Nam to Denmark/Sweden: 170. <p>Process:</p> <ul style="list-style-type: none"> • Inbound mail dispatches: All mail, parcel and EMS bags from Denmark and Sweden arriving in Viet Nam are transported by Qatar Airways. The Office of Exchange (OE) in Viet Nam receives inbound mail dispatches at the airline store by checking and filtering data in advance of dispatches from Denmark and Sweden to Viet Nam in the form of EDI data sent from PostNord, weigh and check the status of mail bags, check real weight based on advance data. CN46 is made by Qatar Airways and its stores. Mail bags are imported to the OE store and processed as required by Vietnam Post regulation. • Outbound mail dispatches: Mail, parcels and EMS bags from Viet Nam to Denmark and Sweden are transported by Qatar Airways. OE exchanges outbound mail dispatches: close mail dispatches,

make CN38 as required, does not print out CN38 to hand over to airlines and destination economy (DO) but prints out CN38 to make customs declaration and use as document handed to ITL Corporation for checking, accounting and inquiry settlement.

Results:

- Operations process: Reduce printing of CN38, reduce time handling mail bags, increase productivity; save CN38 printing cost; reduce time delivering inbound mail bags by checking mail bags using CN46 made by airlines instead of CN38 made by DOs; The International Mail sorting centres can arrange effectively their labour and vehicles thanks to pre-advice of consignment (PRECON) data in order to receive mail dispatch at airline store; collect information on mail bags with EDI data in advance to cooperate with airline store and related units to settle any arising issues.
- EDI transmission: Ensure the transmission of EDI (PRECON/RESCON, PREDES/RESDES, CARDIT/RESBIT)¹³² for all mail and parcel services as required by UPU; EDI data transmitted effectively between DOs and airlines; accurate and sufficient ITMATT¹³³ transmission as a basis to implement electronic customs clearance (one-door customs clearance project) of Vietnam Post.

IV. Key challenges and impact

- The International Postal System (IPS) software function for display of transit mail dispatch PRECON data allows display of mail dispatches in advance that is input by the origin economy but does not allow display of transit mail bags. Viet Nam Post cannot receive data on mail dispatches in advance for mail bags from origin economies that transit via Denmark and Sweden. Vietnam Post has already proposed to UPU to add this function to the IPS to allow destination economies to filter and receive PRECON data of transit mail bags via a third economy.
- Stability of IPS system, accurate and sufficient of data for transmission as the basis for checking, accounting and inquiry settlement instead of CN38.
- Process of official implementation with bigger volume of mail, parcels and with different DOs and airlines, it takes more time and arising issues in spreading this model.

V. Lesson learned

- Close cooperation models/process should be conducted among DOs, Customs, Airlines with the support of UPU (Committee 1-Transportation). Possible model or steps: (i) test/trial; (ii) evaluation steps; (iii) settlement of arising issues; (iv) office operation.

¹³² PRECON: PRE-advice of CONsignment; RESCON: RESponse to CONsignment pre-advice; PREDES: PREadvice of DESpatch; RESDES: RESponse to DESpatch pre-advice; CARDIT: CARrier/Documents International Transport advice; RESBIT: RESponse to Documents International Transport advice. See: Universal Postal Union (UPU), International Air Transport Association (IATA), and International Post Corporation (IPC), "EDI: The Key to Post-Airline Supply Chain Integration," UPU, IATA and IPC, undated, <https://www.iata.org/contentassets/1f5e024735384c8888617a1f6f01bd28/edi-brochure.pdf>

¹³³ ITMATT: ITeM ATtributed pre-advice. See UPU, IATA, and IPC, "EDI: The Key to Post-Airline Supply Chain Integration."

<p>Title of the initiative: Workshop on disseminating the law to postal service providers about strengthening and ensuring safety, security and improving effectiveness in preventing and combating the acceptance, transportation and delivery of contraband and banned goods by post.</p> <p><i>[The workshop was organised by the Ministry of Information and Communication, coordinated with the Ministry of Public Security, the Ministry of Industry and Trade (the General Department of Market Management) and the Ministry of Finance]</i></p> <p>Chokepoint: Limited regulatory cooperation and best practices</p>
<p>I. Introduction: provide a summary of relevant regulatory, policy and socioeconomic context/background.</p> <p>Legal context:</p> <ul style="list-style-type: none"> Articles 7, 12, 13, 14 and Paragraph 8, Article 29 of the Post Law; Article 10 of the Government's Decree No. 15/2020/ND-CP dated 3 February 2020, providing for the sanctioning of administrative violations in the fields of post and telecommunications, radio frequency, information technology and electronic delivery Decree No. 98/2020/ND-CP dated 26 August 2020 of the Government on sanctioning of administrative violations in trading, production and trading of counterfeit goods, banned goods and protection Consumer rights <p>Socioeconomic context:</p> <p>Currently, the transportation of smuggled and banned goods by post is complicated and affecting the security and socioeconomic stability.</p>
<p>II. Key issues/problems or objectives.</p> <p>Objectives of the policy: Strengthen safety and security and improve effectiveness in preventing and combating the acceptance, transportation and delivery of contraband and banned goods by post.</p> <p>The urgency of the problem:</p> <ul style="list-style-type: none"> The number of goods transferred through the postal network is numerous and constantly increasing due to the development of e-commerce. The object of transporting of contraband and banned goods works with many tricks. Knowledge and awareness of enterprises in ensuring safety and security, the recognition of contraband and banned goods is still limited. Meanwhile, it is not feasible to ask businesses to check 100 percent of the contents of the parcel as a package of goods.
<p>III. Implementation of the initiative</p> <p>Why the initiative is chosen:</p> <ul style="list-style-type: none"> Due to the complicated reality of transporting contraband and banned goods through the postal network <p>Difficulties in implementing the initiative:</p> <ul style="list-style-type: none"> Funding for organising training workshops Difficulty in convening all businesses and participants as required <p>Solutions:</p> <ul style="list-style-type: none"> Instead of a face-to-face seminar, online seminars or via text, media, social networks can be communicated to postal businesses.

<p>IV. Key challenges and impact</p> <ul style="list-style-type: none"> - The main beneficiaries of the initiative: Postal enterprises - Innovative benefits: Raising awareness among businesses in preventing and combating illegal transportation of goods by post - Qualitative and quantitative criteria related to the initiative: <ul style="list-style-type: none"> • Number of postal enterprises with internal regulations guiding workers to ensure safety and security in postal activities • Number of postal enterprises to be sanctioned for transporting contraband and banned goods • Number of cases detected transporting contraband goods, prohibited goods by post
<p>V. Lesson learned</p> <ul style="list-style-type: none"> - There should be a coordination mechanism among government agencies (memorandum of understanding (MOU)) regularly to update and share useful information related to the safety and security of postal services for postal businesses. - Postal businesses need to regularly study and update the application of measures and solutions to identify contraband and banned goods. - State agencies need to continue researching and updating new policies, especially considering having more specific instructions on proving the origin of e-commerce goods.
<p>VI. Way forward</p> <p>Customs in the APEC members should consider (1) to have a separate customs clearance mechanism for e-commerce goods; (2) study to consider increasing the value of duty-free goods for imported goods sent via postal services.</p>

APPENDIX B: METHOD FOR TRADE COST CALCULATION

The (bilateral) trade costs are calculated using the following formula:

$$\tau_{ij} = \left(\frac{t_{ij} t_{ji}}{t_{ii} t_{jj}} \right)^{\frac{1}{2}} - 1 = \left(\frac{x_{ii} x_{jj}}{x_{ij} x_{ji}} \right)^{\frac{1}{2(\sigma-1)}} - 1$$

where τ_{ij} denotes trade costs between economy i and economy j ; t_{ij} denotes international trade costs from economy i to economy j ; t_{ji} denotes international trade costs from economy j to economy i ; t_{ii} denotes intranational trade costs of economy i ; t_{jj} denotes intranational trade costs of economy j ; x_{ij} denotes international trade flows from economy i to economy j ; x_{ji} denotes international trade flows from economy j to economy i ; x_{ii} denotes intranational trade of economy i ; x_{jj} denotes intranational trade of economy j ; and σ denotes elasticity of substitution.

Bilateral trade costs are expressed as a tariff equivalent measure.¹³⁴ Several choices of data will affect the results of a calculation. Trade data are taken from the International Monetary Fund (IMF) Direction of Trade Statistics (DOTS) and denominated in US dollars. Data for intranational trade x_{ii} are not directly available but can be expressed as total income (GDP) minus total exports, $x_{ii} = y_i - x_i$. GDP (nominal) data are taken from the IMF World Economic Outlook database.

In the data used for calculation, following WTO (2021),¹³⁵ lower-income economies are represented by Brazil, Bulgaria, China, Croatia, the Czech Republic, Estonia, Hungary, India, Indonesia, Latvia, Lithuania, Korea, Malta, Mexico, Russia, Turkey, Romania, Poland and Slovakia. High-income economies are Australia, Canada, Chinese Taipei, Cyprus, EU-15 economies, Japan, Norway, Slovenia, Switzerland and the United States.

¹³⁴ D. Jacks, C.M. Meissner, and D. Novy, "Trade Booms, Trade Busts, and Trade Costs," *Journal of International Economics* 83, no. 2 (2011): 185–201; Y. Duval and C. Utkatham, "Intraregional Trade Costs in Asia: A Primer," *Asia-Pacific Development Journal* 18, no. 2 (2011); D. Novy, "Gravity Redux: Measuring International Trade Costs with Panel Data," *Economic Inquiry* 51, no. 1 (2013): 101–21, <https://doi.org/10.1111/j.1465-7295.2011.00439.x>

¹³⁵ WTO, "WTO Trade Cost Index", <http://tradecosts.wto.org/>