



**Asia-Pacific  
Economic Cooperation**

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

# Services to Support the Movement of Essential Goods Background Paper on Logistics Services

**APEC Group on Services**

September 2022





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Economic Cooperation**

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## Abbreviations for APEC Member Economies

Abbreviation	Economy
AUS	Australia
BD	Brunei Darussalam
CDA	Canada
CHL	Chile
PRC	People's Republic of China (China also acceptable)
HKC	Hong Kong, China
INA	Indonesia
JPN	Japan
ROK	Republic of Korea (Korea also acceptable)
MAS	Malaysia
MEX	Mexico
NZ	New Zealand
PNG	Papua New Guinea
PE	Peru
PH or PHL	The Republic of the Philippines (Philippines also acceptable)
RUS	The Russian Federation*
SGP	Singapore
CT	Chinese Taipei
THA	Thailand
US or USA	United States
VN	Viet Nam

\* The term 'The Russian Federation' is to be used for all APEC meetings at and above Ministerial level. The informal 'Russia' can be used for APEC meetings below that level and also for publications.

## Abbreviations and Acronyms used in the Paper

<b>3PL</b>	Third-party logistics	<b>LDCs</b>	Least-developed economies
<b>A2C2</b>	APEC Alliance for Supply Chain Connectivity	<b>LLDCs</b>	Landlocked developing economies
<b>AEO</b>	Authorized Economic Operator	<b>LPI</b>	Logistics Performance Index
<b>APEC</b>	Asia-Pacific Economic Cooperation	<b>MRT</b>	Ministers Responsible for Trade
<b>APMEN</b>	Asia Pacific Model E-Port Network	<b>NTMs</b>	Non-tariff measures
<b>ASCR</b>	APEC Services Competitiveness Roadmap	<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>ASYCUDA</b>	Automated System for Customs Data	<b>PECC</b>	Pacific Economic Cooperation Council
<b>CEPR</b>	Centre for Economic Policy Research	<b>PPD</b>	Public-Private Dialogue
<b>CPC</b>	Central Product Classification	<b>PPP</b>	Public-private partnership
<b>CPTA</b>	Cross-Border Paperless Trade in Asia and the Pacific	<b>PSU</b>	Policy Support Unit
<b>CTI</b>	Committee on Trade and Investment	<b>SCCP</b>	Sub-Committee on Customs Procedures
<b>DDA</b>	Doha Development Agenda	<b>SCFAP</b>	Supply Chain Connectivity Framework Action Plan
<b>EAASR</b>	Enhanced APEC Agenda for Structural Reform	<b>SGEPT</b>	St. Gallen Endowment for Prosperity through Trade
<b>EC</b>	Economic Committee	<b>SMEs</b>	Small and medium-sized enterprises
<b>ERIA</b>	Economic Research Institute for ASEAN and East Asia	<b>SPS</b>	Sanitary and phytosanitary
<b>ERSD</b>	Economic Research and Statistics Division	<b>STAR</b>	Services Trade Access Requirements
<b>G20</b>	Group of Twenty	<b>STRI</b>	Services Trade Restrictiveness Index
<b>GATS</b>	General Agreement on Trade in Services	<b>TFA</b>	Trade Facilitation Agreement
<b>GDP</b>	Gross domestic product	<b>TFAP</b>	Trade Facilitation Action Plans
<b>GDS</b>	Global Data Standards	<b>TFI</b>	Trade Facilitation Implementation
<b>GOS</b>	Group on Services	<b>TRP</b>	Trade Recovery Programme
<b>GTA</b>	Global Trade Alert	<b>UN/CEFACT</b>	The United Nations Centre for Trade Facilitation and Electronic Business
<b>GVCs</b>	Global Value Chains	<b>UNCTAD</b>	United Nations Conference on Trade and Development
<b>IATA</b>	International Air Transport Association	<b>United Nations</b>	UN
<b>ICT</b>	information and communication technology	<b>UNRCS</b>	United Nations Regional Commissions
<b>IFC</b>	International Finance Corporation	<b>WB</b>	World Bank
<b>IMO</b>	International Maritime Organisation	<b>WCO</b>	World Customs Organisation
<b>IoT</b>	Internet of Things	<b>WTO</b>	World Trade Organization
<b>ISIC</b>	International Standard Industrial Classification		

## Executive Summary<sup>1</sup>

Logistics has become a focal point of attention for trade officials in APEC, as elsewhere in the world, due to its vital role in moving goods across borders and through supply chains. The importance of efficient logistics has been highlighted by the Covid-19 pandemic, where bottlenecks and choke points have delayed shipments of essential goods, resulting in higher costs and the inability to reach those in need of vaccines and therapeutics in a timely fashion. The same constraints could manifest themselves in any future crisis that may have a disruptive impact on trade flows.

Though there is considerable attention on logistics at present, there is a lack of consensus on what it encompasses. This confusion is found both at the national as well as the international level. There is no one sector labeled “Logistics” in any international product classification system, and no definition in any trade agreement. The logistics sector covers a general nucleus of agreed activities, but these can vary widely, from core logistics services to logistics-related services more broadly, to the incorporation of supporting physical infrastructure as well. Such variation in the use of the “Logistics” term has spread confusion in the way that this area is treated by policy makers and complicated a coordinated response during the pandemic.

This study focuses on logistics and logistics-related services. It has been prepared in response to the mandate given by the APEC Ministers Responsible for Trade in their 2021 Statement on Services to Support the Movement of Essential Goods. This Statement committed APEC economies to enhance “.....coordination, efficiency and transparency around transport and logistical services” and to work to “ .....ensure the smooth and continued operation of the logistics networks that serve as the backbone of global supply chains”. In order to fulfill this mandate, it is necessary for APEC economies to have a better understanding of what comprises logistics and logistics-related services, how they operate, and the link between logistics policy and performance. That is the purpose of this detailed study.

The first part of the study is devoted to a discussion of how logistics has been defined, and how it has been approached from a trade policy and a business perspective. Challenges around the treatment of logistics in the literature and in the work of different organizations are evoked. The role that logistics activities play in all phases of supply chain operations is highlighted, underscoring why it is critical to have appropriate policies in place towards logistics to improve supply chain connectivity and ensure an effective response to a pandemic or other type of crisis. The link between policy and performance is manifest in this context. The study illustrates how better policies and reduced trade restrictions on logistics services can result in lowered trade costs, often significantly.

The second part of the study constitutes an overview of the work on logistics and logistics-related services by major international organizations and groupings. These include The World Bank’s Logistics Performance Index (LPI), the OECD’s Services Trade Restrictiveness Index (STRI), the United Nations Trade Facilitation Implementation

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<sup>1</sup> The background paper on Logistics Services to Support the Movement of Essential Goods is authored by Sherry Stephenson and Mia Mikic, consultants, with the assistance of Hoa Tran, who have carried out this work on behalf of the Department of Foreign Affairs and Trade of the Government of Australia. The authors wish to thank the members of the High-Level Advisory Group who have given generously of their time to comment and make suggestions on the context and scope of the analysis during the elaboration of the study, namely: Christopher Findlay (ANU), Eduardo Pedrosa (PECC), Pierre Sauve (World Bank), Akhmad Bayhaqi (APEC), John Drummond (OECD), Yann Duval (UN ESCAP), Fukunari Kimura (ERIA), Hikari Ishido (Chiba University), and Ruosi Zhang (WTO). The authors would also like to thank Simon Evenett (GTA) and Christina Wiederer (World Bank) for very useful comments provided on sections of the study.

(TFI), APEC's logistics work in various fora and the APEC Connectivity Index, the World Trade Organization's logistics work, and the logistics services interventions monitoring in the Global Trade Alert (GTA) database. This discussion sets out the definition given to logistics by each one and reviews relevant logistics work and publications, as well as quantitative indices.

The study carries out calculations of each of the relevant indices for APEC, applying the available logistics and logistics-related indicators both to the region as a whole as well as to individual APEC economies. Results of these calculations are presented in Figures and Charts in the Appendices and the outcomes for APEC are discussed in the text.

A set of comprehensive Recommendations on Logistics-related Services to Support the Movement of Essential Goods has been developed based on the analysis and findings of the study. These Recommendations have the objective of incorporating a clearly defined focus on logistics and logistics-related services within APEC, under the umbrella of the Group on Services (GOS) and the Committee on Trade and Investment (CTI). Implementing these Recommendations would allow for APEC to treat this area in a consistent and coherent manner and to draw together discussion of the numerous strands of logistics-related work being carried out across various APEC fora into a common framework. This would permit useful cross-cutting input as well as regular monitoring of logistics-related policy measures and their impact on logistics performance. Learning from the shortcomings of logistics policies and performance as manifested during the Covid-19 pandemic through adopting these Recommendations would put APEC in a much better situation to confront any future crisis that might disrupt trade in the region.

## Part I

### I. Introduction

A pandemic knows no borders. It is transmitted globally through the interconnection of people, trade and travel. The Covid-19 pandemic highlighted this interdependence, along with the need to find global and regional solutions to combat and deal with its deadly impacts on human lives.<sup>2</sup> The successive mutation of the Covid-19 virus into multiple variants is an indication that even though we are more than two years into the pandemic, it is far from running its course. Efforts are needed on the part of governments to coordinate their actions at the national level so as to be coherent on the regional and global scale. While the third wave of the Covid-19 pandemic may be receding, many economies around the world have only received limited doses of the life-saving vaccines, therapeutics and anti-viral pills broadly available to citizens in more advanced economies.

Trade plays a big role in the response to the pandemic. Moving vaccines and other medical goods and supplies across borders in a timely and efficient way from where they are produced to where they are needed to treat local populations is critical. Services that enable these critical trade flows should be deemed as ‘essential’.

The World Economic Forum has focused useful attention on the need for a shared understanding and definition of ‘essential services’ to help mitigate disruptions as the world tackles ongoing waves of the coronavirus.<sup>3</sup> Two years into the COVID crisis, the world appears no closer to a common definition of what essential services consist of and what policy steps are needed to ensure their full contribution to pandemic mitigation and recovery efforts.

Much recent empirical work has drawn attention to the high costs of restrictive barriers imposed on services linked to the movement of essential goods. Several services come to mind in this regard, starting with transportation (all modes) and distribution, as well as all those services auxiliary to the transport and distribution of goods across borders and those telecom services that allow for their operation. A recent WTO report suggests that trade policy barriers and regulatory differences across economies have imposed high cost burdens during the pandemic, accounting for at least 10 percent of trade costs in all sectors.<sup>4</sup> Early on during the pandemic, the Global Services Coalition called on governments for a response to address the “uncoordinated patchwork of economy lockdowns” to “avoid constricting the global supply of essential enabling services”.<sup>5</sup> The Coalition’s statement advocated making ICT services broadly available so that digital options could be leveraged to keep businesses afloat through activities online. The PECC also pointed out the importance of essential services (without however defining them) in its special 2020 State of the Region Report on the Impact of the Covid-19 Crisis.<sup>6</sup>

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<sup>2</sup> As of the end of January 2022, more than 5.6 million people have died worldwide from contracting Covid-19. <https://www.worldometers.info/coronavirus/coronavirus-death-toll/>. However, the real number is probably unknown, as many cases and deaths go unreported. At the end of 2021, around 60 percent of the world’s population had received at least one dose of the Covid vaccine, but just one dose is not the equivalent of being fully vaccinated. Most of the unvaccinated are in the developing regions of the world – Africa, and some members in Latin America and South and Southeast Asia. Less than 10 percent of people in low-income members have received at least one dose (<https://ourworldindata.org/covid-vaccinations>) in the Asia Pacific region, vaccination rates vary, but in many APEC economies they were still far from reaching high percentages of the population as this report was being written.

<sup>3</sup> Ennis, Erin and Sotelo, Jimena, World Economic Forum (2020), *What’s an ‘essential service’? Not knowing could block access to key digital services during COVID*, <https://www.weforum.org/agenda/2020/08/defining-essential-services-ensure-access-to-key-digital-services-during-covid/>

<sup>4</sup> WTO Information Note (2020). *Trade Costs in the Time of Global Pandemic*, 12 August 2020. [https://www.wto.org/english/tratop\\_e/covid19\\_e/trade\\_costs\\_report\\_e.pdf](https://www.wto.org/english/tratop_e/covid19_e/trade_costs_report_e.pdf)

<sup>5</sup> Global Services Coalition (2020). *Statement on Ensuring Resilience of Global Supply of Essential Services in Combating COVID-19*, April 2020 [https://www.wto.org/english/tratop\\_e/covid19\\_e/gsc\\_statement\\_e.pdf](https://www.wto.org/english/tratop_e/covid19_e/gsc_statement_e.pdf)

<sup>6</sup> Pacific Economic Cooperation Council (PECC) (2020). *Special State of the Region Report on the Impact of the Covid-19 Crisis*. <https://www.pecc.org/resources/covid-19/2659-state-of-the-region-report-impact-of-the-covid-19-crisis/file>

The literature suggests that the notion of essential services depicted above correlates well with what practitioners and policymakers generally consider as ‘Logistics services’<sup>7</sup>, which enable the efficient and timely movement of essential goods. Poor logistics services disrupt connectivity and hence the flows of trade, capital, information/data and people, all of which are critical during a pandemic. The IFC has estimated that the cost of logistics as a percentage of GDP can be up to 25 percent in some developing economies—as compared to 6–8 percent in OECD economies.<sup>8</sup> Thus both a higher cost as well as an increase in the cost of logistics can have a large impact on the functioning of domestic economies.

Transport costs for maritime and air have increased tremendously over the past two years. Both worker shortages and bottlenecks in shipping and port logistics have been big contributors to the current disruptions to supply chain operations around the world, leaving cargo ships waiting to be unloaded for weeks on end at major ports.<sup>9</sup> Crews on cargo ships have been stranded for months without being able to disembark. This has resulted in huge spikes in cost. Average port-to-port spot rates from Shanghai to Los Angeles rose from around \$1,500 per 40-foot container in early 2020 to \$9,631 in July 2021, an increase of over 500 percent.<sup>10</sup> Disruptions to air freight, the method by which many of the less bulky COVID vaccines and medications are delivered, have also been prevalent. Border closures in response to the pandemic have severely affected air transport and resulted in capacity shortages from reduced flying by passenger airlines.<sup>11</sup> IATA figures show air cargo capacity down 12.2% in the first half of 2021 versus the same period in 2019; quarantined crews and disruptions at airports have also accentuated the impact of long delivery times on air cargo volumes and caused an increase in the cost of air transport.<sup>12</sup>

Some of these increased maritime and air transport costs can be attributed to a lack of coordinated policy response between governments as to how to treat these critical services in times of crisis. Better efficiency and coordination of logistics policies can boost the timeliness and needed response to a pandemic such as Covid-19 and increase the resilience of supply chains.

Services necessary during a pandemic include the movement of people, both domestically and across borders. A recent OECD study has shown that restrictions on the movement of people across international borders, implemented following the COVID-19 pandemic, have increased services trade costs by an average of 12 percent of export values across sectors and economies.<sup>13</sup> Trade costs for professional services are found to have increased between 9-13 percent, although this number varies depending upon the profession and the pre-existing degree of openness. Barriers to the movement of doctors, nurses and other medical personnel, while not as critical as the movement of crews on ships and cargo flights, will nonetheless impede the pandemic response as well as the longer-term economic recovery and make both less efficient and less equitable.

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<sup>7</sup> Logistics services are defined further in the paper.

<sup>8</sup> International Finance Corporation (2020). *The Impact of Covid-19 on Logistics*. June 2020. [https://www.ifc.org/wps/wcm/connect/2d6ec419-41df-46c9-8b7b-96384cd36ab3/IFC-Covid19-Logistics-final\\_web.pdf?MOD=AJPERES&CVID=naqOED5](https://www.ifc.org/wps/wcm/connect/2d6ec419-41df-46c9-8b7b-96384cd36ab3/IFC-Covid19-Logistics-final_web.pdf?MOD=AJPERES&CVID=naqOED5)

<sup>9</sup> Wall Street Journal, 27 September 2021. *Supply-Chain Delays Worsen as Ports Struggle to Adapt*.

<https://www.bangkokpost.com/business/2188711/u-s-supply-chain-struggles-to-adapt-as-delays-worsen>

<sup>10</sup> Wolf Street (2021). *Container Freight Rates Spike to New Extremes, up 500% for Asia-US, Asia-EU since Early 2020. Worse Still Ahead*.

<https://wolfstreet.com/2021/07/09/container-freight-rates-hit-new-extremes-up-6x-asia-to-us-europe-peak-shipping-season-still-ahead/>

<sup>11</sup> This is because typically, about 45 percent to 50 percent of air freight is transported in the bellies of passenger planes. In April 2020, 75 percent of this air freight capacity was removed from the market due to a severe reduction in air travel, but at the same time, personal protective equipment (PPE) was in enormous demand all over the world. These two combined drastically reduced shipping capacities and pushed prices up for air freight transportation services. U.S. Bureau of Labor Statistics, *Inbound air freight prices go sky high in midst of pandemic*, June 2021, <https://www.bls.gov/opub/btn/volume-10/air-freight-prices.htm>

<sup>12</sup> IATA Economics Chart of the Week, 19 October 2021, *Long supplier delivery times could bring opportunities for air cargo*.

<https://www.iata.org/en/iata-repository/publications/economic-reports/long-supplier-delivery-times-could-bring-opportunities-for-air-cargo/>

<sup>13</sup> Benz, Sebastian., Gonzales, Frédéric and Mourougane, Annabelle (2020). *The Impact of COVID-19 international travel restrictions on services-trade costs*, OECD Trade Policy Papers, No. 237, OECD Publishing, Paris. <http://dx.doi.org/10.1787/e443fc6b-en>

APEC members have been active in their response to the Covid-19 pandemic, with various fora tackling the above policy challenges. The June 2020 *Declaration on Facilitating the Movement of Essential Goods* adopted by APEC Ministers Responsible for Trade is designed to encourage APEC members to keep open trade channels and functioning supply chains for the movement of essential vaccines, medicines and therapeutic equipment necessary to combat the COVID-19 pandemic.<sup>14</sup> The Declaration recognizes the need for trade facilitation measures to “expedite and facilitate the flow and transit of essential goods”, and notes ABAC’s recommendation to reduce or eliminate tariffs on essential medical supplies.

Complementing its 2020 *Declaration on Essential Goods*, APEC became the first regional grouping in the world to recognize the important role of services in responding to the pandemic when APEC Ministers Responsible for Trade (MRT) adopted a Statement in June 2021 on *Services to Support the Movement of Essential Goods* as an Annex to their Ministerial Declaration.<sup>15</sup>

Two major areas are highlighted in the APEC Statement on *Services to Support the Movement of Essential Goods*. One such area relates to barriers to trade in services where APEC economies are called upon to

***“.....prioritize identifying unnecessary barriers to trade in any relevant services that may hinder expediting and facilitating the movement of essential goods, and ensure consistency of any such barriers with their World Trade Organization (WTO) and preferential trade agreement obligations and commitments.”***

The second is that related to trade facilitation, where APEC economies are urged to

***“.....work to ensure the smooth and continued operation of the logistics networks that serve as the backbone of global supply chains. Building on the APEC Declaration on Facilitating the Movement of Essential Goods, we commit to enhancing coordination, efficiency and transparency around transport and logistical services, including those required for the border clearance of essential goods.”***

In their 2021 Statement, APEC MRTs further tasked officials to “.....update us on the progress of this work annually, as part of the review on the 2020 Declaration on Facilitating the Movement of Essential Goods.” The MRTs also look to the future in the context of their mandate on services, recognizing “.....the importance of providing predictability for service suppliers beyond the COVID-19 pandemic.” In their Statement, APEC MRTs agreed to prioritize this work to

***“.....identify and subsequently consider removing unnecessary barriers to trade in services, particularly those services that expedite and facilitate the flow of essential goods.”***

A key element of APEC’s response to the pandemic will thus be to focus on measures impeding trade and investment in those services most critical to facilitating the movement of essential goods with a view to lowering or removing them, as well as to develop a common policy framework on logistics services that are critical to maintaining connectivity through the operation of global supply chains.

Led by Australia with the support of Japan and New Zealand, the APEC Group on Services will implement the mandate contained in the 2021 MTR Statement through this project. Such work is carried out over a two-year period, from October 2021 to September 2023. Given the importance of logistical services for the timely and efficient movement of essential goods during the current (and future) pandemic(s), and the mandate of the MRT

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<sup>14</sup> APEC (2020). *Declaration on Facilitating the Movement of Essential Goods* by the APEC Ministers Responsible for Trade (MRT) [https://www.apec.org/Meeting-Papers/Sectoral-Ministerial-Meetings/Trade/2020\\_MRT/Annex-A](https://www.apec.org/Meeting-Papers/Sectoral-Ministerial-Meetings/Trade/2020_MRT/Annex-A)

<sup>15</sup> APEC (2021). *Statement on Services to Support the Movement of Essential Goods* by the APEC Ministers Responsible for Trade (MRT). [https://www.apec.org/Meeting-Papers/Sectoral-Ministerial-Meetings/Trade/2021\\_MRT/Annex-2](https://www.apec.org/Meeting-Papers/Sectoral-Ministerial-Meetings/Trade/2021_MRT/Annex-2)

2021 Statement to ensure the smooth operation of region-wide logistics networks, this project will focus on logistics services. It will aim to help APEC economies reach a better understanding of how logistics services have been defined along with a more precise sense of the magnitude of the barriers to logistics services and the cost reductions and efficiency gains likely to flow from their progressive dismantling or elimination. It will present options for trade facilitating measures in the logistics sector and address the need for a common policy framework on logistics services for the Asia Pacific region.

## II. Mandates

Besides APEC's MRT 2021 Statement on *Services to Support the Movement of Essential Goods*, the project is also anchored in other important APEC mandates. These include the Aotearoa Plan of Action, adopted to implement the Putrajaya Vision 2040 for APEC, one of whose four main objectives states "***We will promote seamless connectivity, resilient supply chains and responsible business conduct.***"<sup>16</sup>

As part of its collective Actions, the Aotearoa Plan of Action calls on APEC Economies to implement APEC's Connectivity Blueprint through strengthening connectivity and resilient supply chains within APEC, and to promote trade and investment facilitation for all, including by:

- **fully implementing the WTO Trade Facilitation Agreement, and seeking to build on it where appropriate;**
- **working towards digitalizing border processes through application of internationally recognized standards, strengthening customs cooperation and increasing port cooperation;**
- adopting and improving effective standards and conformance systems, encompassing standardization, accreditation, metrology, conformity assessment and market surveillance.

The Aotearoa Plan of Action also directs APEC economies to address key infrastructure gaps and enhance connectivity by creating transparent regulatory environments, promoting public-private dialogue and sharing best practices that enable quality infrastructure development and investment, including by:

- **improving digital connectivity throughout the region;**
- **promoting and cooperating on measures that facilitate the safe cross-border movement of people, particularly in the context of changing pandemic-related health and travel measures, so as to strengthen tourism, aviation, maritime and similarly affected sectors;**
- strengthening multi-stakeholder cooperation to promote responsible business conduct; and
- promoting capacity building to improve physical, institutional and people-to-people connectivity.

In their November 2021 Statement, APEC Ministers also agreed on a mandate for APEC's focus on services in the context of COVID-19 recovery efforts. In paragraphs 4 and 7 of the 32<sup>nd</sup> APEC Ministerial Meeting Joint Ministerial Statement, they underscore the importance of a timely pandemic response and of the role of services, highlighting the work of the GOS through this project to implement the 2021 MRT *Statement on Services*.<sup>17</sup>

***4. We will continue our work to accelerate equitable and timely access to safe, effective, quality-assured and affordable vaccines, diagnostics, therapeutics, and related goods and services.***

and.....

***7. We reiterate the vital role that services play in supporting the movement of essential goods, as well as the distribution of vaccines, which will remain critical to our region's recovery. We welcome***

<sup>16</sup> APEC (2021). *Aotearoa Plan of Action: A Plan for Implementing the Putrajaya Vision*, Annex to the APEC Leaders Statement. <https://www.apec.org/meeting-papers/leaders-declarations/2021/2021-leaders-declaration/annex-aotearoa-plan-of-action>

<sup>17</sup> APEC (2021). *Joint Ministerial Statement – 32nd APEC Ministerial Meeting 2021*. [http://mddb.apec.org/Documents/2021/MM/AMM/21\\_amm\\_jms.pdf](http://mddb.apec.org/Documents/2021/MM/AMM/21_amm_jms.pdf)

## ***economies' ongoing work to implement the 2021 MRT Statement on Services to Support the Movement of Essential Goods.***

This background paper is the first step in implementing the above mandates. Its goal is to provide APEC economies with a better understanding of the following:

- what is the definitional perimeter of logistics and logistics-related services and what challenges arise from addressing such a broad category of activities?
- how are logistics and logistics-related services defined by major international organizations<sup>18</sup> with an overview of the information on logistics that can be obtained from existing databases?
- what restrictive measures impede the cross-border supply of logistics and logistics-related services, and what costs arise from the maintenance of such barriers?

Because of the critical role that logistics play in supply chain connectivity, addressing the above questions can help underpin the development of a common policy framework within APEC, which could constitute an important part of a timely and appropriate response for the region to the Covid-19 pandemic and future pandemics. This background paper will serve as the basis for a discussion in the APEC GOS Workshop on Logistics, scheduled for March 23<sup>rd</sup> and 24<sup>th</sup> to consider the above issues, along with the questions set out in the last section of this paper.

### **III. Defining Logistics<sup>19</sup> and Logistics Services**

As with many words in the English language, the term “logistics” comes from Medieval Latin “*logisticus*”, meaning “pertaining to logic,” and from Greek “*logistikos*” meaning “skilled in calculating; endowed with reason”<sup>20</sup> Its ancient use was linked to military planning. Converting the term into civilian use allowed for its wider application and adaptability of definition to the specific purpose in question. The simplest everyday meaning of the term refers to “things that must be done to plan and organize a complicated activity or event that involves many people.”<sup>21</sup>

Perhaps the most widespread use of the term is in the business sector, where logistics refers to “how resources are handled and moved along the supply chain.”<sup>22</sup> The Council of Supply Chain Management Professionals provides a more detailed definition: “Logistics is a part of supply chain management that plans, implements and controls the efficient, effective forward and reverse flow and storage of goods, services and related information between the point of origin and the point of consumption in order to meet consumer requirements.”<sup>23</sup> With the advances in technology and degree of tradability of services themselves, the space that logistics services occupy is growing (Box 1).

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<sup>18</sup> The international and regional organizations included in this analysis are OECD, UN, World Bank, WTO and APEC, as well as the databases and work produced by the Global Trade Alert (GTA) database.

<sup>19</sup> An effort to define logistics invokes an anecdote about how the first encyclopaedia in Polish language from 1745 defined a horse by stating “Everyone knows what a horse is.” Today, when saying that “Everyone knows what a horse is” can be used to mean that “the concept is more obvious than it appears to be from its more technical definition” (Wikipedia, [https://en.wikipedia.org/wiki/Nowe\\_Ateny](https://en.wikipedia.org/wiki/Nowe_Ateny)). Many would claim that the same applies to the efforts to define Logistics.

<sup>20</sup> Based on Online Etymology Dictionary (<https://www.etymonline.com/word/logistic>). Encyclopaedia Britannica (<https://www.britannica.com/topic/logistics-military/Logistics-in-the-industrial-era>) provides a detailed account about the use of the term in a military context and describes how technology advances have impacted broadening of the term.

<sup>21</sup> Merriam-Webster online dictionary, <https://www.merriam-webster.com/dictionary/logistics>

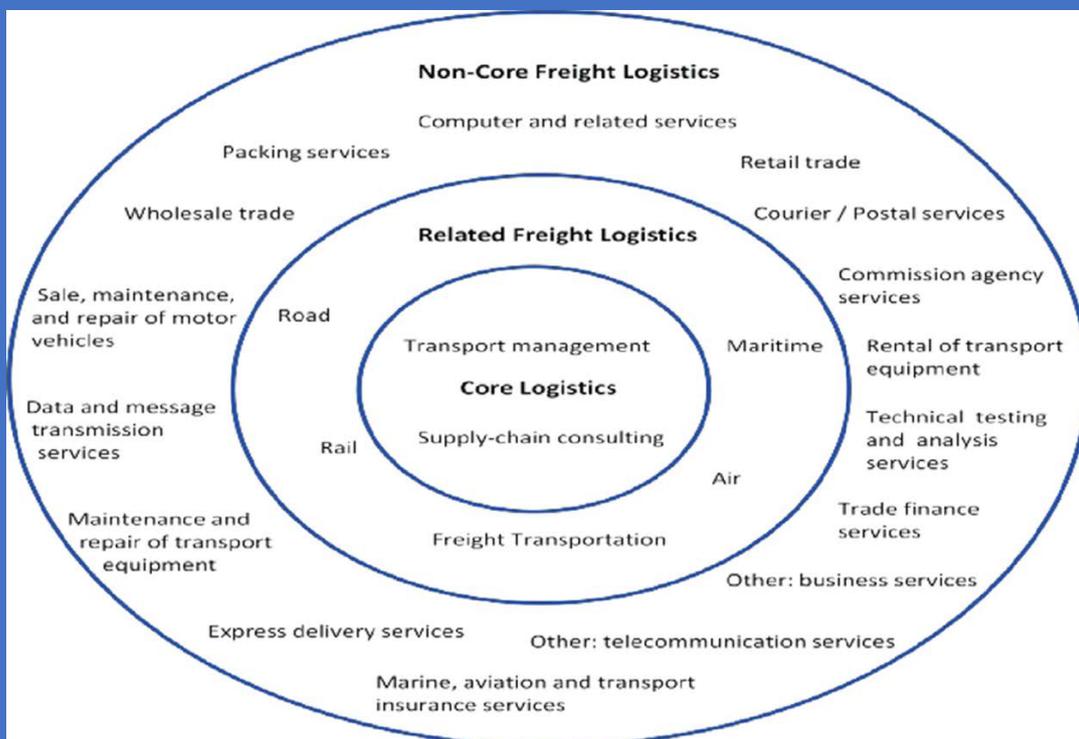
<sup>22</sup> Investopedia (by Will Kenton, updated 29 Dec 2020, reviewed by Margaret James); <https://www.investopedia.com/terms/l/logistics.asp>

<sup>23</sup> As cited in Lambert, Douglas M. and Cooper, Martha C. (2000). *Issues in Supply Chain Management*, Industrial Marketing Management 29, 65–83. <https://drdougslambert.com/wp-content/uploads/2020/05/Lambert-and-Cooper-Issues-in-Supply-Chain-Management-IMM-2000.pdf>

## Box 1 – Evolution of the logistics services sector\*

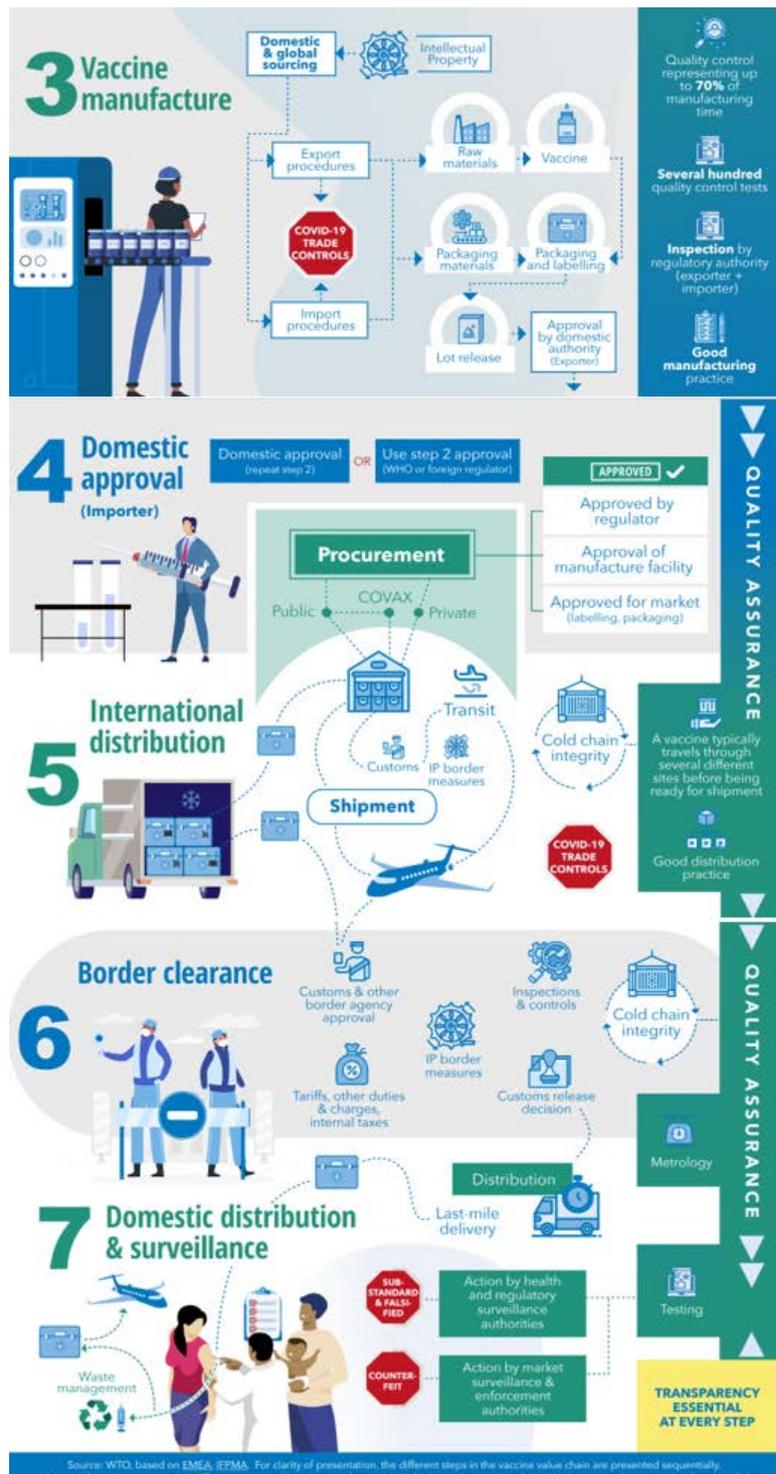
The logistics services industry encompasses several industries which are not always well integrated. The sector spans across a large set of activities which includes all modes of transportation services, all ancillary services related to these modes of transportation, distribution, packaging, warehousing services, transport management services, and supply chain consulting services, among others. In addition, logistics service providers require access to, and use of, critical physical infrastructure in a non-discriminatory manner such as port, airport, and road infrastructure, which they do not own or operate, but require access to, in order to perform their activities. This implies that in contrast to other services sectors, logistics services are essentially network industries that are however subject to multiple measures under the responsibility of different regulatory authorities, such as port (sea and air), maritime, or Customs and other border-related agencies, each with different regulatory objectives. Therefore, regulatory and institutional fragmentation and the lack of coordination can stand in the way of successfully formulating and implementing coherent logistics policies. As a result, fragmentation compromises the intrinsic qualities of the network and can contribute to increasing costs and thus reduce efficiency. In fact, fragmentation can be more disruptive in supply chains than just differences in direct costs of transportation.

Over the past three decades, logistics services have evolved as a complex bundle of interrelated service industries. Overtime, although some trends to convergence between the various traditional lines of business (freight forwarders, customs brokers, and postal services) have been observed, this has also added to the complexity of the regulatory environment. For instance, parcel business and air-freight business lines are dominated by express-carriers. Like freight forwarders, who typically move containers or truckloads, express carriers provide for parcels, seamless integrated door-to-door shipments, customs clearance, tracking and tracing capabilities, and express services, with a high level of reliability. Such enterprises can connect more than 90 percent of the world economy within 1-2 days.



Source: Kunaka, Charles; Mustra, Monica Alina; and Saez, Sebastian (2013), *Trade Dimensions of Logistics Services: A Proposal for Trade Agreements*, World Bank, Policy Research Working Paper 6332 (Figure 3: Logistics service activities, p.8) who adapted it from The World Bank (2010), and U.S. International Trade Commission (2005). *Logistic Services: An Overview of the Global Market and Potential Effects of Removing Trade Impediments* (Figure 1.1: Logistic service activities, p. 1-3) and the WTO's Logistics Checklist.

Figure III.1 Illustrating the complexity of vaccine supply chains



Source: Extracted from WTO (2020). *Developing & Delivering COVID-19 Vaccines Around the World* ([https://www.wto.org/english/tratop\\_e/covid19\\_e/vaccine\\_infographic\\_e.pdf](https://www.wto.org/english/tratop_e/covid19_e/vaccine_infographic_e.pdf))

A supply chain, in turn, is a collection of linked and coordinated steps needed to get products or services to the customer.<sup>24</sup> These chains can be limited to a domestic market (national), or more commonly involve linkages among companies from different markets, regionally or globally, leading to the terms regional or global value chains and supply chains. Global supply chains can be very complex (involving many suppliers) and long (spreading over many economies) depending on the product (or service) and the ability to fragment production into separate tasks (as illustrated in Figure III.1). It is important to note that logistics services are involved in every step of the production, approval, international transport and distribution, border clearance, and domestic distribution and surveillance characterizing vaccine supply chains. Even though this paper is focused solely on the international or cross-border portions of supply chain transactions, these can still involve numerous steps and processes.

When there are frictions along supply chains, one option is to shorten the chain and make it less complex. Indeed, the supply chain disruptions observed in the early months of the pandemic led to vocal calls (from governments, businesses and even the public) to ‘reshore’ or ‘nearshore’ production, distribution or both, at least for so-called essential goods. This idea entailed swapping the ‘just-in-time’ cost efficiency model for a ‘just-in-case’ risk-based supply chain model. However, as is becoming clearer, building a supply chain requires resources, skills, time and opportunities, and therefore their reconfiguration would be timely and expensive, and in many cases not viable.<sup>25</sup> Simply put, value chains are typically ‘sticky’ and challenging to relocate. As observed in Figure III.2, despite having the intention to change the existing footprint of operations and nearshore some of the operations or even the whole chain, “in practice, companies were much more likely to increase inventories, and much less likely either to diversify supply bases (with raw-material supply being a notable exception) or to implement nearshoring or regionalization strategies”.<sup>26</sup>

Another option for companies to maintain competitiveness if supply chains are to retain their current structure and length is to reduce trade costs through a focus on enhanced efficiency, including in the use of effective logistics services and procedures. Poor logistics can lead to late (or canceled) deliveries, failure to meet the demand and needs of consumers, and may ultimately result in market disruptions, as was witnessed at various times during the course of the pandemic with regard to vaccines and other essential medical products.

Experiences through the months of fighting the pandemic have shown that functional, end-to-end supply chain and logistics systems are crucial for the smooth operation of markets. As illustrated in Figure III.1, a functioning supply chain can ensure the effective - lab-to-job - delivery of vaccines: from their development, manufacturing, storage, distribution, and warehousing to their end usage. Equally critical are adequate logistics management information systems (WTO, 2020).

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<sup>24</sup> Frequently, value chain is used as a synonym to supply chain. There is, however, a difference when looking more closely. Value chain is seen as a process in which a company adds value to the inputs it uses through two or more stages of processing before the product is ready to be delivered to consumers. Thus, technically, value chains and supply chains are not identical, as the former uses a business management perspective and the latter an operations management perspective in handling the interconnected processes.

<sup>25</sup> Financial Times (2021) cites Moghadam, Hamid., chair of Prologis (a real estate investment trust that invests in logistics facilities) as saying that “The supply chain is like your car. If it runs, you don’t give it much thought. But when it breaks down, you sure know the difference.” <https://www.ft.com/content/8a7cdc0d-99aa-4ef6-ba9a-fd1a1180dc82>

<sup>26</sup> Alicke, Knut; Barriball, Ed and Trautwein, Vera (2021). *How Covid-19 is reshaping supply chains*, McKinsey, p. 2. <https://www.mckinsey.com/business-functions/operations/our-insights/how-covid-19-is-reshaping-supply-chains>

**Figure III.2 Plans to shorten supply chains may just remain plans**



Source: McKinsey (2021) *How Covid-19 is reshaping supply chains*. <https://www.mckinsey.com/business-functions/operations/our-insights/how-covid-19-is-reshaping-supply-chains> as reported by Financial Times (2021). *Supply chains: companies shift from 'just in time' to 'just in case'*, 20 December. <https://www.ft.com/content/8a7cdc0d-99aa-4ef6-ba9a-fd1a1180dc82>

#### IV. Why are Logistics Services Important in the Context of a Pandemic?

A story about the benefits from trade typically does not concern itself with how goods (and services) move from their places of production to the places of consumption. Indeed, it took some time to upgrade productivity-centric concepts of comparative advantage with even the simplest notion of additional trade costs – notably those stemming from transporting goods to destination.<sup>27</sup> However, once it sank in that traded goods do not magically appear in front of consumers, the study of trade costs and of their impacts on the welfare benefits and composition of trade grew exponentially in the empirical literature.<sup>28</sup>

In addition to transport costs (expressed in both monetary value and time), trade costs include many other components: policy barriers (tariffs and non-tariff barriers), information costs, contract enforcement costs, costs associated with the use of different currencies, legal and regulatory compliance costs as well as local distribution costs (wholesale and retail).<sup>29</sup> Such costs relate to various policies and procedures when goods and services cross

<sup>27</sup> Under standard comparative advantage paradigm, members would specialise in the industries in which they are relatively more productive. Trade costs alter that outcome and give rise to a different pattern of revealed competitiveness. It is illuminating to read Deardorff (2004, p.5) comments on the slow uptake (and consequences) of studying trade costs (<https://fordschool.umich.edu/rsie/workingpapers/Papers476-500/r500.pdf>).

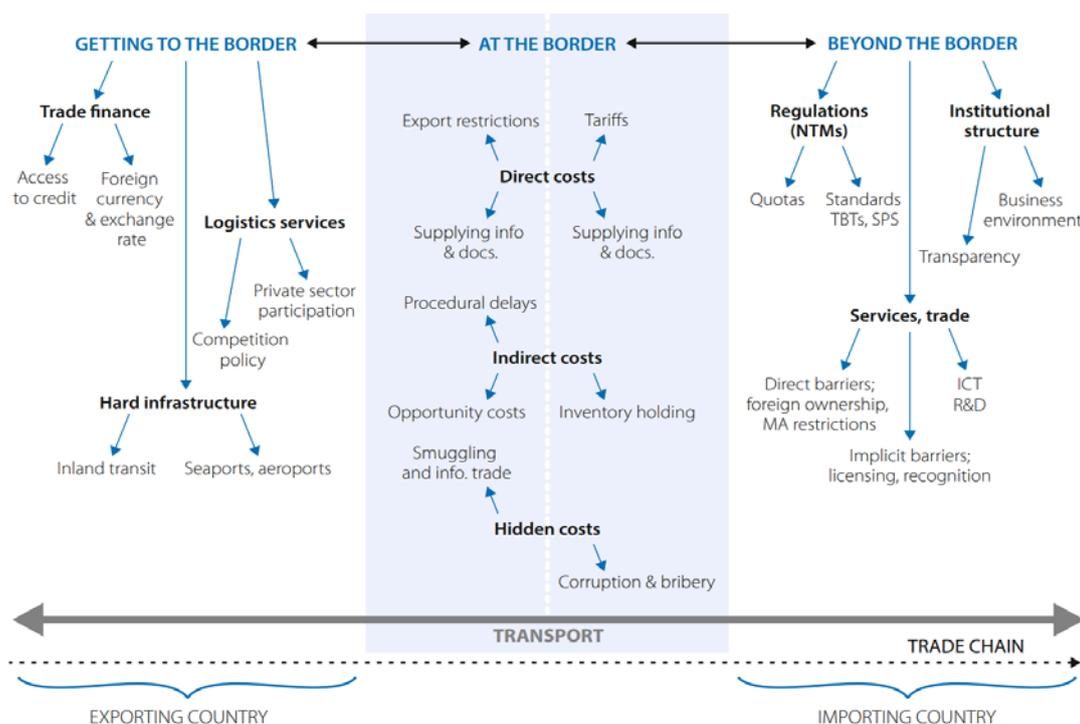
<sup>28</sup> See, for example, Egger, Peter H.; Larch, Mario; Nigai, Sergey and Yotov, Yoto V. (2021) *Trade Costs in the Global Economy: Measurement, Aggregation and Decomposition*, WTO Staff Working Paper ERSD-2021-2 [https://www.wto.org/english/res\\_e/reser\\_e/ersd202102\\_e.pdf](https://www.wto.org/english/res_e/reser_e/ersd202102_e.pdf) or the WTO (2015). *WTO Trade Report 2015 on Speeding up trade: benefits and challenges of implementing the WTO Trade Facilitation Agreement* [https://www.wto.org/english/res\\_e/publications\\_e/wtr15\\_e.htm](https://www.wto.org/english/res_e/publications_e/wtr15_e.htm)

<sup>29</sup>This structure is accredited to the influential paper by Anderson, James E. and Van Wincoop, Eric (2004). *Trade costs*. Journal of Economic Literature, Vol. 42, No. 3, pp. 691-751.

borders, as illustrated in Figure IV.1. For the purposes of this paper, logistics-related costs can be viewed as comprising trade costs other than those associated with tariff and policy-driven non-tariff measures (NTMs as catalogued in the international MAST classification).<sup>30</sup> Hard-core infrastructure costs and barriers to ICT services can also be seen as part of the cost of logistics services.

Through their impact in helping lower trade costs, logistics services have played a crucial role in the establishment and spread of cross-border production networks (so-called value chains). The reduction in transport and information costs through technological progress and cuts in border barriers as a result of various liberalization efforts, gave tailwinds to the hyper-globalization of the early 2000's.<sup>31</sup> According to Kimura and Obashi<sup>32</sup> a reduction of the cost of service links enabled producers in the Asia Pacific region to integrate into more complex value chains and quickly expand merchandise trade and economic prosperity. Additionally, services that underpinned the expansion of production networks and the adoption of "just-in-time" business models also evolved into tradable items themselves, creating opportunities for many economies to establish themselves as distribution hubs.

**Figure IV.1 Policies affecting trade costs in goods markets at all points in the supply chain**



Source: Moisé, Evdokia and Le Bris, Florian (2013) as cited in OECD-WTO (2015). *Aid for Trade at a Glance 2015: Reducing Trade Costs for Inclusive, Sustainable Growth* (Figure 1.8, p. 46)

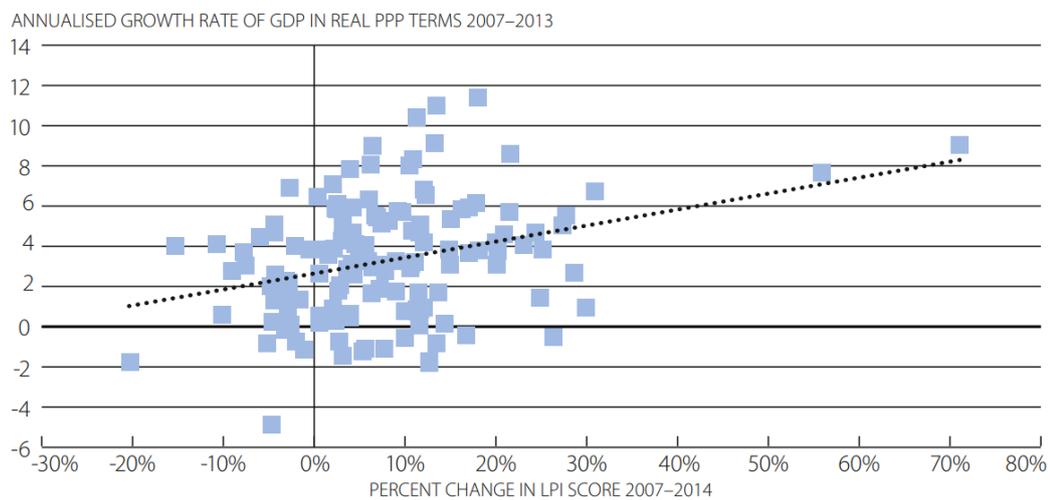
<sup>30</sup> Non-tariff measures (NTMs) as defined and classified by the MAST group ([International Classification of Non-tariff Measures - 2019 edition \(unctad.org\)](https://unctad.org)) encompass a long list of various measures (for example SPS and TBT measures) that affect both goods and services especially so-called 'trade services' (which help move goods across borders). It is however a complex empirical issue to detail how much they contribute to the overall logistics services costs. The authors are grateful to Ben Shepherd for his useful clarification related to this description.

<sup>31</sup> Baldwin, Richard (2018). *A long view of globalisation in short: The New Globalisation, Part 5 of 5*, Vox.eu CEPR Portal, <https://voxeu.org/content/long-view-globalisation-short-new-globalisation-part-5-5>

<sup>32</sup> Kimura, Fukunari and Obashi, Ayako (2011). *Production Networks in East Asia: What We Know So Far*. ADBI Working Paper 320. Tokyo: Asian Development Bank Institute. <https://www.adb.org/sites/default/files/publication/156175/adb-wp320.pdf> and Kimura, Fukunari (2021) *The Impact of COVID-19 and the US-China Confrontation on East Asian Production Networks*, Seoul Journal of Economics 2021, Vol. 34, No. 1, DOI: 10.22904/sje.2021.34.1.003, <http://www.sje.ac.kr/xml/28117/28117.pdf>

Pre-pandemic empirical literature has produced plenty of evidence that efficient logistics services can play a significant role in increasing competitiveness and facilitating trade, therefore contributing to economic development and integration into global and regional value chains. In general, economies that exhibit the greatest success in improving the efficiency of their logistics services industry tend to enjoy faster economic growth (Figure IV.2).

**Figure IV.2. Correlation between improvement in logistics performance and GDP growth rate**



Source: UNESCAP-World Bank Trade Costs Database; World Development Indicators.

StatLink  <http://dx.doi.org/10.1787/888933240715>

Source: OECD-WTO (2015). *Aid for Trade at a Glance 2015: Reducing Trade Costs for Inclusive, Sustainable Growth* (Figure 1.4, p. 39)

Conversely, inefficient logistics services raise the cost of crossing borders and reduce the potential for growth and international integration. This is especially burdensome for lower income and landlocked developing economies.<sup>33</sup> The trade bottlenecks illustrated in Figure IV.3 below that affect many developing (and other) economies include inefficient transport and border infrastructure, lagging standardization and harmonization initiatives, burdensome documentary processes, inadequate digital infrastructure, lack of human and other resources, and lack of arrangements for the mobility of needed service providers in key logistics sectors. Examination of these bottlenecks shows that many are linked to the underdeveloped provision of logistics services or to a lack of policy coherence.

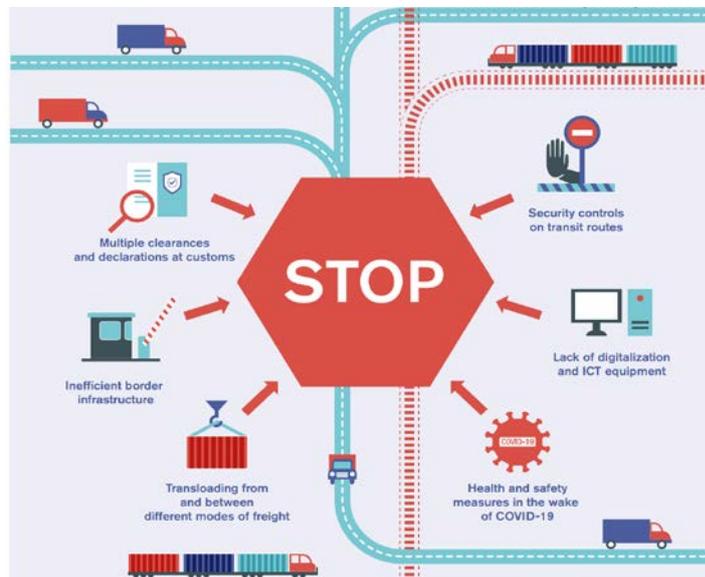
The COVID-19 pandemic has highlighted the central role of logistics services, which are widely understood today as “the ‘glue’ that hold value chains together”.<sup>34</sup> The WTO’s monitoring of global trade and key bottlenecks since the start of the pandemic demonstrates that in the first year of the pandemic, logistics services (transport, warehousing, distribution, delivery) were able to operate sufficiently well to help mitigate the contraction of goods trade (including of some essential medical supplies and food) in the early days of the pandemic. However, under the demand shock and additional burden of having to deal with vaccine and therapeutics distribution in the second year of the pandemic, logistics operations proved to be too weak at many tight points. These weaknesses and

<sup>33</sup> According to the latest UN Survey, these members show significantly lower overall trade facilitation and digital trade measures implementation rates (ranging between 48 and 56 percent) than the global average of 64.7 percent. By fully implementing all WTO TFA trade facilitation measures, the LDCs stand to benefit from a reduction of their trade costs by 16 percent, two percentage more than global gains. These gains would be much enlarged with more swiping trade and customs reforms.

<sup>34</sup> Gonzalez, Anabel (2021) in the opening remarks at the occasion of the webinar on “Digitalization and logistics resilience — lessons learned from COVID-19 and challenges ahead” held virtually on 15 October. [https://www.wto.org/english/news\\_e/news21\\_e/ddgag\\_18oct21\\_e.htm](https://www.wto.org/english/news_e/news21_e/ddgag_18oct21_e.htm)

inefficiencies have led to a fuller understanding and greater appreciation of the role of logistics services in getting vaccines and medical supplies where they are needed so that a global solution to the pandemic is found (see Figure III.1 in section III).

**Figure IV.3. Major trade bottlenecks**



Source: Extracted from Figure 1, WTO (2021) Easing Trade Bottlenecks in Landlocked Developing Members, [https://www.wto.org/english/res\\_e/booksp\\_e/00\\_landlocked2021\\_e.pdf](https://www.wto.org/english/res_e/booksp_e/00_landlocked2021_e.pdf)

The ‘Great Lockdown’ government response to the pandemic and resulting disruptions in many markets showed that availability of quality physical infrastructure - while necessary - is not sufficient for goods and services to reach destined consumers. Equally, or even more important is the existence of solid management of supply chains and logistics services with effective coordination, planning, risk foresight, transparency and suppliers’ visibility. The World Economic Forum recently highlighted how the issue of supply chain risk management has captured the top attention of chief executives in contrast to pre-pandemic times. Companies today report that supply chain turmoil ranks among the greatest threats to their growth and to the economies in which they operate.<sup>35</sup>

Another big shift that has occurred during the pandemic is with respect to attitudes towards digitisation. The emergence of the digital economy and the advantages of digitalisation were well known before the pandemic but in many economies, particularly in the developing world, there was lesser urgency among policymakers and businesses to invest in and absorb appropriate technologies and adjust the regulatory environment to enable the full potential of digitisation to be reaped. When it comes to trade and cross-border transactions, digitisation holds the potential to reduce trade costs and open new opportunities for businesses. Access to digital technologies and the ability to employ them to facilitate the movement of other services (i.e., healthcare), goods (i.e., essential medical products) and finance (i.e., trade finance and e-payments) have proven to be an important differentiating factor in how well economies have coped with the pandemic.

<sup>35</sup> World Economic Forum (2022)., *5 ways the COVID-19 pandemic has changed the supply chain*. Davos Agenda 2022, posted 14 January <https://www.weforum.org/agenda/2022/01/5-ways-the-covid-19-pandemic-has-changed-the-supply-chain>

It is today well understood that all digitally enabled services (e.g., those traded within and across borders) vastly improve the scope for maintaining economic activities, contributing to economic and social resilience and helping accelerate recovery prospects. While a number of governments chose to open their markets for digitally enabled transactions<sup>36</sup> (for example, electronic certification of origin) in the pandemic, there is no certainty that there will be no roll-back of such practices given a mixture of revenue, security, or simply ‘foreigner angst’ concerns. Furthermore, there is still a noticeable digital divide that prevents more equitable engagement in and distribution of gains from digitally driven activities, especially for SMEs. Therefore, greater attention should be paid to investment in technologies and infrastructure to close this gap. Another factor necessary for fully benefiting from expansion of digitalization is better coordination and cooperation between economies, especially when it comes to interoperability of their systems and regulatory heterogeneity.

The experience of the operation of supply chains in the pandemic is likely to be associated with a much higher level of digitalisation in the sector. Findlay and Roelfsema (2021) give examples of such digital adaptations related to better use of data and more efficient infrastructure management, which characterize the “servicification” process in manufacturing.<sup>37</sup> These include the application of blockchain technology which can cut the process of document exchange from hundreds of emails to transport a single container and days waiting in a port to a few hours, and the digitalization of air cargo booking systems to reduce booking times. Analysis of data can help to cut freight costs through better fleet management. Specialist operators like DHL and FedEx are moving rapidly to more digitised systems.

Despite these digital advances, the current supply side bottlenecks affecting global trade flows are forecast to last well into 2023. By now there are solid explanations and diagnosis of the genesis of these problems- starting with the supply shock, and then moving to demand shocks with the persisting uncertainty exacerbated by the lack of strong evidence in lessening trade tensions. Once again, one of the main things that has been missing is a consensus around action at the multilateral and regional levels, leading to assertive steps on the policy front.

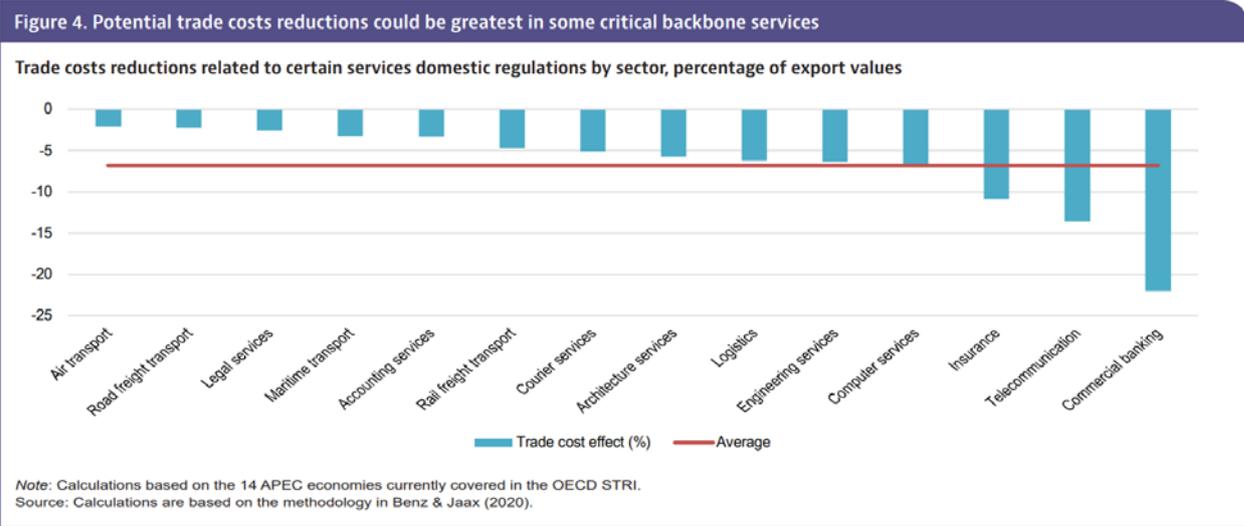
It is noteworthy that APEC members have produced strong statements in support of open markets and greater liberalization of regional and multilateral trade, especially in the context of supply chains and the role of services in enabling movement of essential goods. However, statements must be followed by actions that build upon a better understanding of the cost savings that more efficient logistics and logistics-related services could provide. Figure IV.4 below highlights the potential trade cost reductions for 14 APEC economies that could result from the implementation of the recently agreed plurilateral services domestic regulation outcome at the WTO in key backbone services sectors, many of which comprise logistics. Policy makers would also benefit from having greater clarity on the key challenges faced by the logistics sector, including obstacles to the digital transformation of logistics services, and how these could be addressed. To quote WTO DDG Anabel Gonzalez: “Many issues covered in ongoing trade negotiations within and outside of the WTO, such as paperless trading, market access, interoperability, digital platforms, etc. are all crucial for the future of the logistics industry”.

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<sup>36</sup> See for example Guidelines for paperless trade issued by APEC (2021) ([https://www.apec.org/docs/default-source/publications/2021/11/guidelines-for-paperless-trade/221\\_sccp\\_guidelines-for-paperless-trade-doc.pdf?sfvrsn=fc955e27\\_2](https://www.apec.org/docs/default-source/publications/2021/11/guidelines-for-paperless-trade/221_sccp_guidelines-for-paperless-trade-doc.pdf?sfvrsn=fc955e27_2))

<sup>37</sup> Findlay, Christopher and Roelfsema, Hein (2021). *All I want for Christmas is supply chain resilience*, East Asia Forum, December 2021. <https://www.eastasiaforum.org/2021/12/16/all-i-want-for-christmas-is-supply-chain-resilience/>

**Figure IV.4 – Potential trade cost reductions following the implementation of the WTO JSI Outcome on Services Domestic Regulation**



Source: OECD (2021). *Lowering APEC trade costs through services domestic regulation reform*, Trade Policy Brief, 21 June, [https://www.wto.org/english/tratop\\_e/serv\\_e/oecd\\_apec.pdf](https://www.wto.org/english/tratop_e/serv_e/oecd_apec.pdf)

### V. Challenges of Examining Logistics Services

Numerous challenges exist when trying to examine and analyze logistics services. Though the term “logistics” is commonly used, the categories contained within it are anything but commonly understood. Examining the logistics sector is a challenging undertaking for several different reasons.

One of the challenges in dealing with logistics is the way that it continues to evolve.<sup>38</sup> Logistics can be viewed as a bundle of services, or a process involving many activities. At any particular point in time the process will have certain characteristics involving a specific set of inputs and value adding activities. But the production process can be fluid, even as it targets the same objective of delivering goods to consumer. As the context changes and new technology becomes available, the type and scope of service activities in the logistics process may change. Thus, the mix of services or the technology with which they are delivered, may change with time and circumstances.

Another aspect of logistics that makes it challenging to evaluate is the innovation that accompanies it. The components of logistics activity may change as each innovation occurs. Indices that are developed to track logistics performance must then be adapted to capture such innovation and adjust their measurement over time as the composition of logistic activities changes and evolves.

There is a strong interaction between the business model of the firms on the supply side and the role of logistics companies. Some logistics firms can be integrated back into the core business by larger manufacturers, for example, managing retailer relationships, while others are contracted out along the supply chain. The boundaries of the firm will determine which logistics are done in-house, and the business model will determine what is contracted out and where those logistics services are sourced. This means that the focus of logistics output can be both physical delivery of goods as well as value chain management more generally.

<sup>38</sup> The authors are grateful to Christopher Findlay for making these points about logistics as the evolution of a process or bundle of activities, constantly changing due to innovation, and a function of the business model used by the supplier and the logistics companies involved in the value chain.

Within and beyond APEC there has been a lack of clarity as to what comprises logistics services. The lack of definitional agreement has permeated all of APEC's work on logistics. One of these major programs with a logistics component has been the Supply-Chain Connectivity Framework Action Plan (SCFAP) which APEC has been implementing for a decade in two phases: Phase I (2010-2015) and Phase II (2017-2020). Logistics capacity is one of the eight choke points evaluated during Phase I, and unreliable logistics services and high logistical costs are among the five major chokepoints in supply chains evaluated in Phase II. However, in neither case does it appear that the various components of logistics services and logistics capacity are clearly defined. The final evaluation document for Phase II mentions that "*Logistics costs include all expenditures to make available a good or service to the market*" and states that this covers transportation and administrative and inventory costs, but without further detail.<sup>39</sup>

More broadly, and beyond APEC, no agreed definition of logistics or of logistics services appears to exist in the literature or in general trade negotiation usage. "Logistics" are not defined under the U.N. CPC.1 or the updated CPC.2 version, and there is no "logistics" category *per se*.<sup>40</sup> There are no commitments on "logistics services" *per se* in the Schedules of Services Commitments of WTO Members nor of parties to preferential trade agreements. Within the WTO GNS/120 classification list (1991), drawn from the CPC.1, logistics services may be viewed as spanning several sectors, including transport services (minus passenger transport), components of distribution, warehousing, courier services and components of telecommunication services.<sup>41</sup> Yet such services should also certainly encompass services auxiliary to all modes of transport, including cargo handling, storage and warehousing and freight transport agency services. Other services considered relevant for logistics are not included in the W/120 list, such as customs administration procedures. These various categories alone span no fewer than three major sectors. Additionally, services relevant to logistics may also encompass certain sub-sectors of business services for example software services linked to paperless customs clearance procedures. This wide-ranging set of services activities that may be considered relevant to "logistics" are nowhere defined in a generally agreed grouping.

The void created by a generally agreed definition<sup>42</sup> leads to another related challenge, common to many service sector activities, which is the lack of a consistent way in which statistics on logistics are collected that can enable evaluation of the performance of logistics services over time and across economies in a consistent and comparable manner. Various indices do exist, which will be examined in this paper, but they tend to cover different performance metrics which hinder comparative assessments. Yet the need is great for consistent measurement of the efficiency with which logistics services are responding to the demands that are being placed on them now more than ever, given their central role in providing for timely and efficient trade channels that can move essential goods during the Covid-19 pandemic and other crises.

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<sup>39</sup> See APEC (2021) *Final Review of the APEC Supply-Chain Connectivity Framework Action Plan 2017-2020 (SCFAP-II)* APEC Policy Support Unit, November 2021, page 17, at [https://www.apec.org/docs/default-source/publications/2021/11/final-review-of-the-apec-supply-chain-connectivity-framework-action-plan-2017-2020-\(scfap-ii\)/221\\_psu\\_final-review-of-scfap-ii.pdf?sfvrsn=9921e935\\_2](https://www.apec.org/docs/default-source/publications/2021/11/final-review-of-the-apec-supply-chain-connectivity-framework-action-plan-2017-2020-(scfap-ii)/221_psu_final-review-of-scfap-ii.pdf?sfvrsn=9921e935_2)

<sup>40</sup> The United Nations CPC classification system covers all goods and services and is a system of categories that are both exhaustive and mutually exclusive. This means that if a product does not fit into one CPC category, it must automatically fit into another. Consistent with the other principles used, homogeneity within categories is maximized. The CPC classifies products based on the physical properties and the intrinsic nature of the products as well as on the principle of industrial origin.

WTO Members used the CPC.1 classification system as the basis for the W/120 list of 1991, according to which their Schedules of Services Commitments were undertaken in 1994. Some WTO members have updated these commitments since that date to the 2015 CPC 2.1 version, but many have not. Neither the previous CPC 1.1 or the current CPC 2.1 version includes a classification of "logistics", which is one of the reasons for the challenge in examining this sector.

<https://unstats.un.org/unsd/classifications/unsdclassifications/cpcv21.pdf>

<sup>41</sup> See GATT Secretariat (1991) *Services Sectoral Classification List - Note by the Secretariat* (Restricted MTN.GNS/W/120, 10 July 1991) <https://docs.wto.org/gattdocs/g/UR/GNS/W120.PDF>

<sup>42</sup> See the discussion on definitional issues in Section III of this paper.

The lack of definitional clarity and consistency in the way the performance of logistics services is measured are central to the focus of this project, because such gaps complicate the policy response of governments, potentially lessening its effectiveness. Despite the considerable focus on logistics at present because of its well-understood key role in connectivity and supply chain operations, there is no agreed way in which governments should be approaching logistics services in times of crisis. A lack of coherence in this regard has meant a more confused, delayed and often incoherent set of policy responses across governments to the Covid pandemic. Examples of such policy incoherence include lack of coordinated schedules for the hours of port and airport operations during a crisis, non-standardized documents and procedures around cargo entry and distribution, the lack of uniform digital procedures for the submission and processing of customs documentation; the absence of agreed guidelines for the treatment of the temporary entry of maritime and air crews vital to maritime and air cargo shipments of essential goods during a pandemic; and the absence of a centralized contact point within governments to channel inquiries on logistics issues in times of crisis, among others.

The purpose of this project is to help APEC members to think through the question of logistics services - what they are, what definitions exist, what major institutions have done in this regard, what indices exist to evaluate logistics performance and how relevant these may be to APEC's needs - so as to better craft an appropriate policy framework for this critically important sector. Agreeing on a common understanding of what comprises logistics services and how best to measure them would allow APEC economies to develop a more coherent and effective policy response to this pandemic and to future ones.

As its outcome, this project, aims to provide a robust and pragmatic non-binding set of policy recommendations or guidelines to strengthen policies and procedures impacting the provision of logistics services that facilitate the cross-border movement of essential goods. For this purpose, the paper posits the following:

- a) Essential goods are to be defined as per the APEC MRT Statement on COVID-19 as “including medicines, medical supplies and equipment, agriculture and food products and other supplies”.<sup>43</sup>
- b) For this project, logistics services will be viewed from a business and trade perspective, namely through their role in supply chain connectivity. Services that are necessary to move essential goods across the borders of APEC economies and within the APEC regional space are defined as logistics services in a broad sense. As an example, this category includes customs and administrative procedures, organization and management of international shipment operations, tracking and tracing, transport services and information technology services.
- c) The purpose of agreeing on a definitional perimeter for this logistics is that one can then track and monitor policies and practices that may obstruct or otherwise enhance the performance of these services. In other words, one can improve on or design new measurement/impact indicators to capture restrictiveness metrics or to identify policies and practices especially likely to yield resilience enhancing, trade facilitating and cost reducing impacts, particularly in a crisis context (such as pandemic, natural disasters or climate change emergencies).
- d) The outcome of this work will be targeted to producing a set of shared (common) guidelines on best practices in the logistics related dimensions of supply chain management so as to maximize efficiency and minimize welfare costs in times of crisis.

In Part II of this paper, we examine several indicators and data collection initiatives that are currently available to inform APEC policymakers and other stakeholders about the performance (in terms of quantity and quality) of their logistics services.

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<sup>43</sup> See more details in APEC PSU (2021). *Non-Tariff Measures (NTMs) on Essential Goods during COVID-19 in the APEC Region*, APEC Committee on Trade and Investment, April. <https://www.apec.org/publications/2021/04/non-tariff-measures-on-essential-goods-during-covid-19-in-the-apec-region>

## VI. Link between Policy towards Logistics Services and Performance

Logistics services have played a crucial role during the Covid-19 pandemic and other previous crises. Empirical evidence confirms a strong causal link between policy and performance: when the cluster of logistics industries performs well, economies can demonstrate the resilience, flexibility and efficiency to respond to economic shocks, whatever their nature or origin. This section discusses the link between policy and performance of logistics services. It presents empirical evidence on this link from academic articles and studies. It then discusses the logistics performance by APEC economies, drawing upon the authors' calculations based on information from the World Bank's LPI and the OECD's STRI. Existing barriers to logistics services and their costs will be underscored.

From the perspective of this paper and this project, logistics are viewed as a series of essential economic activities that enable the operation of reliable supply chains and allow for the predictable transport, storage, and delivery of goods and services for businesses, both domestically and internationally. In this perspective logistics performance is key to APEC's commitment in promoting seamless connectivity, resilient supply chains and responsible business conduct as set out in its Putrajaya Vision 2040.<sup>44</sup>

Generally, APEC economies have developed a strong foundation to deal with the COVID-19 crisis, but more needs to be done to enhance their resiliency in global value chains, according to a recent policy brief by the APEC Policy Support Unit<sup>45</sup>. Policy reform and liberalization could have a significant impact on the economic recovery through various channels, from by facilitating regional investment/trade activities to enhancing individual economy logistics performance and supply chain resilience.

### ⇒ Evidence on the link between policy and performance in logistics

Trade costs – of which logistics is a major component - and their increased visibility have become a more important focus of discussion within trade policy and academic circles. In the context of rapid integration of the global economy and its significance for propelling growth, the imperative to reduce trade costs to become and remain competitive in the international and regional markets is well recognized.

Baldwin (2012) has written that factors other than traditional trade policies (tariffs, export restrictions, NTMs) can have a more significant impact on trade costs, including the efficiency of border management, the quality of transport and logistics services, the need to comply with a plethora of overlapping regulatory requirements, and so on.<sup>46</sup> Hoekman and Jackson (2013) have noted that even when tariffs are zero, if firms confront high and uncertain border costs and inefficient and unpredictable logistics, they will not be able to compete with firms elsewhere that benefit from operating in a more efficient economic environment.<sup>47</sup>

The World Economic Forum and World Bank's *Enabling Trade – Valuing Growth Opportunities Report* (2013) was one of the seminal studies to focus on the importance of logistics in the context of supply chain operation. The modelling carried out in the study showed that an improvement in two key logistics components of barriers to supply chain operation, namely border administration and transport and communication services and

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<sup>44</sup> APEC (2020). *APEC Putrajaya Vision 2040*. [https://www.apec.org/Meeting-Papers/Leaders-Declarations/2020/2020\\_aelm/Annex-A](https://www.apec.org/Meeting-Papers/Leaders-Declarations/2020/2020_aelm/Annex-A)

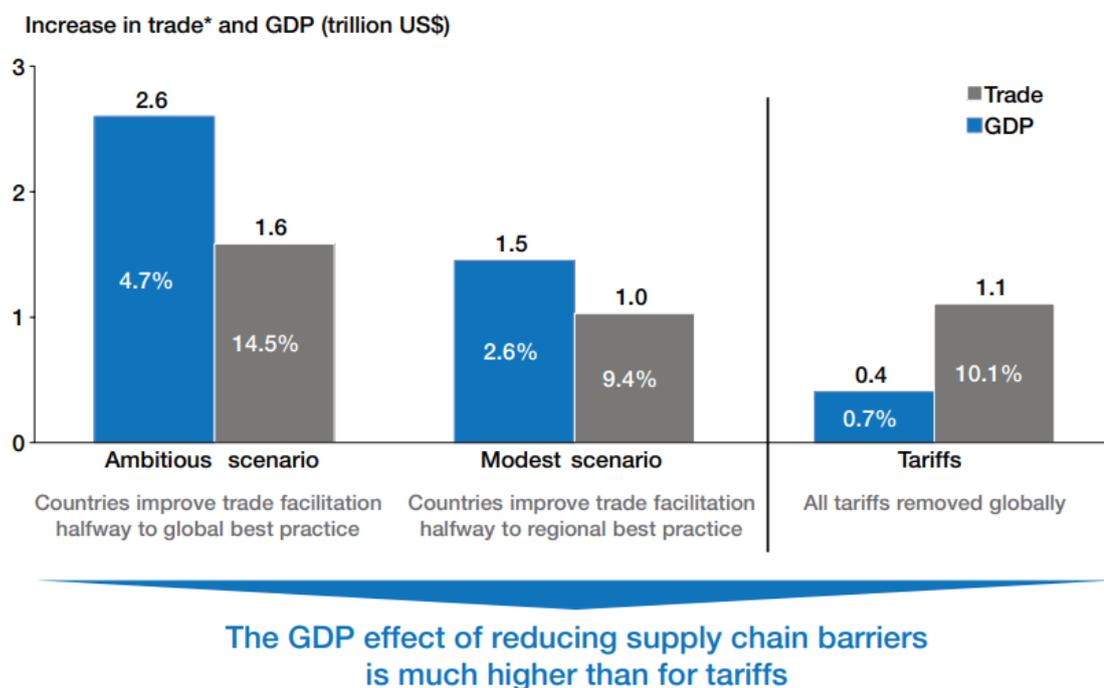
<sup>45</sup> APEC Policy Support Unit (2021). *Risk Management Key to Strengthening Global Value Chains Resiliency Study*. [https://www.apec.org/press/news-releases/2021/0129\\_gvc](https://www.apec.org/press/news-releases/2021/0129_gvc)

<sup>46</sup> Baldwin, Richard (2012). *WTO 2.0: Global governance of supply-chain trade*. Centre for Economic Policy Research (CEPR) Policy Insight, 64, December 2012. <http://www.iheal.univ-paris3.fr/sites/www.iheal.univ-paris3.fr/files/PolicyInsight64.pdf>

<sup>47</sup> Hoekman, Bernard and Jackson, Selina (2013). *Reinvigorating the trade policy agenda: Think supply chain!*. VOX<sup>EU</sup> CEPR, 23 January 2013. <https://voxeu.org/article/reinvigorating-trade-policy-agenda-think-supply-chain>

infrastructure, would lead to an increase of approximately 4.7 percent in global GDP and 14.5 percent in global exports. This is six times greater than the much lesser gains that would be derived for GDP from complete worldwide tariff elimination of only 0.7 percent in global GDP. Even a more modest scenario in which all economies improved their logistics performance in these areas halfway to regional best practices would lead to gains in global GDP and global exports that far outweighed those of tariff reduction.<sup>48</sup> The substantial difference in these impacts is due to the fact that the kind of efficiencies brought about by improvements in logistics are more powerful than those associated with tariff reduction. This is largely because improvements in logistics would eliminate much of the waste and inefficiency that weighs down on economic growth and trade.<sup>49</sup> Results from the simulations in the study are shown in Figure VI.1.

**Figure VI.1: Improving logistics components of supply chain operation would have a bigger impact than lowering tariffs**



\*Based on export value; includes only the effect of "Border Administration" and "Telecommunication and Transport Infrastructure".

Source: Ferrantino, Geiger and Tsigas, The Benefits of Trade Facilitation - A Modelling Exercise.

<sup>48</sup> World Economic Forum (2013). *Enabling Trade Valuing Growth Opportunities*, In collaboration with Bain & Company and the World Bank. [https://www3.weforum.org/docs/WEF\\_SCT\\_EnablingTrade\\_Report\\_2013.pdf](https://www3.weforum.org/docs/WEF_SCT_EnablingTrade_Report_2013.pdf)

The report makes five specific "Think Supply Chain" policy recommendations, as follows:

- (1) Create a national mechanism to set policy priorities for improving supply chain efficiency based on objective performance data and feedback loops between government and firms.
- (2) Create a focal point within government that has a mandate to coordinate and oversee all regulation that directly affects supply chain efficiency.
- (3) Ensure that SME interests are represented in the policy prioritization process and that solutions are designed to address specific constraints that disproportionately affect SMEs
- (4) Whether through multilateral or regional agreements, governments should agree to pursue a "whole of the supply chain" approach rather than pursuing negotiations in separate pillars or silos
- (5) Launch a global effort to pursue conversion of manual and paper-based documentation to electronic systems, using globally agreed data formats

<sup>49</sup> Gottfredson, Mark (2013). *Finding the hidden costs in broken supply chains*, Bain & Company, [https://media.bain.com/Images/BAIN\\_BRIEF\\_Finding\\_the\\_hidden\\_costs\\_in\\_broken\\_supply\\_chains.pdf](https://media.bain.com/Images/BAIN_BRIEF_Finding_the_hidden_costs_in_broken_supply_chains.pdf)

Several economists have emphasized the imperative nature of logistics to the business ecosystem and the importance of appropriate logistics policies as key to ensure that this sector can bolster an economy's competitive performance and enhance its integration in trade and supply chain networks.<sup>50</sup> According to Arvis et al. (2014), the performance of the logistics industry has a significant influence on the development of industrialisation and on an economy's ability to participate in international trade.<sup>51</sup>

OECD and WTO analysts have recognized the imperative for economies to reduce trade costs in order to become and remain competitive in international and regional markets. In their joint Aid for Trade report (2015), the two organizations singled out logistics as the most important component of potential cost reduction in trade and recognized that while lowering tariffs will stimulate trade, the impact will not be as significant for the economic growth as when logistics barriers to trade are reduced or eliminated.<sup>52</sup>

It is of note that APEC adopted two Trade Facilitation Action Plans (TFAP) that committed member economies to reduce trade costs by 10% over the 2002-2010 period. However, it seems that this objective was not explicitly pursued beyond 2010. Shepherd (2016) has suggested An APEC commitment to a numerical trade cost reduction target would provide a concrete focal point for both national action and international cooperation.<sup>53</sup> It would send an important signal to the international business community that leaders will pursue trade cost reduction initiatives. And importantly, it would raise the profile of logistics even further so that it would remain a focal point for policy actions.

Findlay and Roelfsema (2021) have emphasized supply chain resilience for APEC economies as they respond to the Covid-19 pandemic, with logistics figuring prominently in their analysis.<sup>54</sup> In responding to the higher costs and lower reliability of international freight transport which have been a problem since the start of the Covid-19 pandemic, the authors point to the major constraint in the area of logistics infrastructure and operations, particularly for ports and airports and connections to road and rail systems. They suggest that the way forward is for each economy to identify its top structural reforms in the logistics area and commit to dealing with them, and recommend closer regional cooperation in this process.

The APEC Policy Support Unit has underscored the need for the APEC region to consider strategies for greater resilience in response to the COVID-19 pandemic. Bayhaqi has stated that "Most of the concerns raised about supply chain resilience have been echoed by the business community, but more can be done to manage resilience at the policy level."<sup>55</sup> In the APEC Regional Trends Analysis report (2021), APEC governments were encouraged to avoid policy interventions that may disrupt the efficient configuration of global value chains and to consider the following areas for regional cooperation on supply chain resilience<sup>56</sup>

- *Promote digitalisation and supply chain visibility;*
- *Develop domestic competitiveness by improving the productivity of local enterprises;*

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<sup>50</sup> Çembercia, Murat; Emre Civeleka, Mustafa; and Canbolata, Neslihan (2015). *The Moderator Effect of Global Competitiveness Index on Dimensions of Logistics Performance Index*, Procedia - Social and Behavioral Sciences 195 (2015) 1514 – 1524

<sup>51</sup> Arvis, Jean-François; Saslavsky, Daniel; Ojala, Laur; Shepherd, Ben; Bush, Christina and Raj, Anasuya (2014). *Connecting to Compete 2014: Trade Logistics in the Global Economy--The Logistics Performance Index and Its Indicators*. 4th ed. Washington, DC: World Bank. <https://openknowledge.worldbank.org/handle/10986/20399>

<sup>52</sup> OECD/WTO (2015). *Aid for Trade at a Glance 2015: Reducing Trade Costs for Inclusive, Sustainable Growth*, OECD Publishing, Paris, [http://dx.doi.org/10.1787/aid\\_glance-2015-en](http://dx.doi.org/10.1787/aid_glance-2015-en)

<sup>53</sup> Shepherd, Ben (2016). *Did APEC's Trade Facilitation Action Plans deliver the goods?* Journal of Asian Economics, Elsevier, vol. 43(C), pages 1-11.

<sup>54</sup> Findlay, Christopher and Roelfsema, Hein (2021). *All I want for Christmas is supply chain resilience*, East Asia Forum, December 2021. <https://www.eastasiaforum.org/2021/12/16/all-i-want-for-christmas-is-supply-chain-resilience/>

<sup>55</sup> APEC PSU (2021). *APEC Could Play a Role in Bolstering Supply Chain Resiliency*. [https://www.apec.org/press/news-releases/2021/0529\\_arta](https://www.apec.org/press/news-releases/2021/0529_arta)

<sup>56</sup> APEC PSU (2021). *APEC Regional Trends Analysis, May 2021: Bolstering Supply Chains, Rebuilding Global Trade; Making Recovery Inclusive*. <https://www.apec.org/publications/2021/05/apec-regional-trends-analysis---may-2021>

- *Strengthen trade facilitation and structural reform efforts;*
- *Enhance regional cooperation on trade, connectivity and economic openness.*

⇒ **APEC economies LPI scoring and international ranking**

The Logistics Performance Index (LPI) created by World Bank is an assessment tool that allows for comparison of economies in the logistics areas. The definition of the components contained in the LPI and an explanation of how it is constructed can be found in Part II of this paper.

The LPI reflects a number of variables other than services and includes an assessment of the quality of infrastructure development along with the functioning of elements of the logistics chain. The calculation of the index is based on the systematization of information from international transport and logistics companies obtained through the surveys of a group of indicators including efficiency of customs and border clearance, infrastructure quality, international transport organization, logistic services quality, cargo tracking, timeliness of deliveries.<sup>57</sup> Tables VI.1 shows the scoring of the 21 APEC economies according to their overall LPI as well as the six components of the LPI indicator in 2018. Among all the indicators that make up the final LPI, the lowest score was recorded for the logistics quality and competence in Papua New Guinea (1.88 points), and the highest was for timeliness (on-time delivery) in Singapore (4.32). Two APEC economies, Japan and Singapore, were among the world's top ten in logistics performance efficiency. The average overall LPI for the APEC economies was 3.37 (out of a maximum of 5), thus leaving room for considerable improvement.

Table VI.2 shows the international rankings of the 21 APEC economies according to their overall LPI and their performance on the six components of the LPI indicator (2018). Seven of the 21 APEC economies are among the top 20 international performers on logistics, while six APEC economies fall below the top 50 international performers. Again, this leaves room for considerable improvement.

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<sup>57</sup> Wiederer, Christina K.; Arvis, Jean-François; Ojala, Lauri M.; Kiiski, Tuomas M.M. (2021). *The World Bank's Logistics Performance Index*, in: International Encyclopedia of Transportation. Elsevier, pp. 94-101. DOI: <https://doi.org/10.1016/B978-0-08-102671-7.10226-X>

**Table VI.1 Scoring of the 21 APEC Economies on the Overall LPI and the six LPI Component Indicators, 2018**

LPI Indicator	Japan	Singapore	Hong Kong, China	United States	New Zealand	Australia	Canada	Korea	China	Chinese Taipei	Thailand	Chile	Viet Nam	Malaysia	Indonesia	Mexico	Philippines	Russian Federation	Brunei Darussalam	Peru	Papua New Guinea
1. Overall LPI	4.03	4.00	3.92	3.89	3.88	3.75	3.73	3.61	3.61	3.60	3.41	3.32	3.27	3.22	3.15	3.05	2.90	2.76	2.71	2.69	2.17
2. LPI components																					
Customs	3.99	3.89	3.81	3.78	3.71	3.87	3.60	3.40	3.29	3.47	3.14	3.27	2.95	2.90	2.67	2.77	2.53	2.42	2.62	2.53	2.32
Infrastructure	4.25	4.06	3.97	4.05	3.99	3.97	3.75	3.73	3.75	3.72	3.14	3.21	3.01	3.15	2.89	2.85	2.73	2.78	2.46	2.28	1.97
International shipments	3.59	3.58	3.77	3.51	3.43	3.25	3.38	3.33	3.54	3.48	3.46	3.27	3.16	3.35	3.23	3.10	3.29	2.64	2.51	2.84	2.15
Logistics quality and competence	4.09	4.10	3.93	3.87	4.02	3.71	3.90	3.59	3.59	3.57	3.41	3.13	3.40	3.30	3.10	3.02	2.78	2.75	2.71	2.42	1.88
Tracking and tracing	4.05	4.08	3.92	4.09	3.92	3.82	3.81	3.75	3.65	3.67	3.47	3.20	3.45	3.15	3.30	3.00	3.06	2.65	2.75	2.55	2.26
Timeliness	4.25	4.32	4.14	4.08	4.26	3.98	3.96	3.92	3.84	3.72	3.81	3.80	3.67	3.46	3.67	3.53	2.98	3.31	3.17	3.45	2.44

1.00 5.00

Source: Authors' calculations based on the information in the WB LPI database.

**Table VI.2: International Ranking of the 21 APEC Economies by LPI and LPI Indicators, 2018**

LPI Indicator	Japan	Singapore	Hong Kong, China	United States	New Zealand	Australia	Canada	Korea	China	Chinese Taipei	Thailand	Chile	Viet Nam	Malaysia	Indonesia	Mexico	Philippines	Russian Federation	Brunei Darussalam	Peru	Papua New Guinea
1. Overall LPI	5	7	12	14	15	18	20	25	26	27	32	34	39	41	46	51	60	75	80	83	148
2. LPI components																					
Customs	3	6	9	10	13	7	18	25	31	22	36	32	41	43	62	53	85	97	73	86	116
Infrastructure	2	6	15	7	13	16	21	22	20	23	41	34	47	40	54	57	67	61	89	111	144
International shipments	14	15	8	23	27	40	30	33	18	24	25	38	49	32	42	51	37	96	113	65	150
Logistics quality and competence	4	3	12	16	8	21	14	28	27	30	32	43	33	36	44	52	69	71	77	110	160
Tracking and tracing	10	8	15	6	16	20	21	22	27	25	33	44	34	47	39	62	57	97	88	108	138
Timeliness	10	6	15	19	9	21	22	25	27	35	28	31	40	53	41	49	100	66	80	54	150

2 160

Source: Authors' calculations based on the information in the WB LPI database.

## ⇒ APEC economies STRI scoring and potential trade cost reduction with improved logistics

The Services Trade Restrictiveness Index (STRI) developed by the OECD and launched in 2014 is an assessment tool to enable policy makers to compare the services trade restrictiveness of different economies and sectors, or by policy areas in order to benchmark these relative to global best practice, and assess their likely effects<sup>58</sup>. It also assists policy makers to develop appropriate reform options. The STRI database contains information on trade restrictions and behind the border regulation and is collected in five policy areas: Restrictions on foreign ownership and other market entry conditions, Restrictions on the movement of people; Other discriminatory measures and international standards; Barriers to competition and public ownership and Regulatory transparency and administrative requirements<sup>59</sup>

The definition of the STRI and an explanation of how it is constructed can be found in Part II of this paper. Main components that the authors have grouped together for this paper under a “Logistics” category include those defined by the OECD (air, maritime, road and rail transport, cargo handling, freight forwarding, customs brokerage and storage and warehousing and courier services), as well as telecommunications. The STRI indices take values between zero and one, with zero representing a fully open activity and one representing a totally closed activity to foreign trade and investment.

Table VI.3 shows the STRI results per sector for 16 APEC economies in 2021. The lowest STRI score was recorded for storage and warehousing by Korea (0.1), followed by Japan with an STRI of 0.113 for road freight transport and 0.116 for customs brokerage. The highest STRI scores (value of one) were recorded for storage and warehousing and cargo-handling in Russia, customs brokerage in Mexico, and rail freight transport in Korea and Thailand.

Table VI.4 displays the results of the OECD’s estimates of how much trade costs would fall for each APEC economy by the various sectors of logistics activities if the STRI scores would be improved by closing the distance in the ranking by half (50 percent) between the best performing economy for a given logistics activity and the economy in question. The figures are the result of applying such a and a projected estimate of how much of a trade-cost-reduction each APEC economy could achieve through reducing its barriers to logistics services trade by this amount. The results in the table show that those APEC economies with the highest levels of restrictive services measures or interventions are those that would benefit the most from such improvements. Accordingly, the trade-cost-reduction was the greatest for Russia at 48.7% in storage and warehousing, 47.1% in rail freight transport and 46.1% in cargo-handling, followed by Mexico - 48.1% trade-cost-reduction in Logistics (customs brokerage), and 47.4% trade-cost-reduction in Rail freight transport for Korea and Thailand. Consequently, those economies with the highest STRI scores at present will be those where the costs will be cut the most if such a change is made. Achieving such potential cost reductions across the entire APEC region through a reduction in restrictions to logistics trade could provide a significant boost to trade performance and regional integration. This would be particularly important in times of a pandemic or crisis.

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<sup>58</sup> OECD (2022). *Services trade in the global economy*. <https://www.oecd.org/trade/topics/services-trade/>

<sup>59</sup> Sugie, Kazuhiro; Grosso, Massimo Geloso; Nordås, Hildegunn Kyvik; Miroudot, Sébastien; Gonzales, Frédéric; Rouzet, Dorothée (2015). *Services Trade Restrictiveness Index (STRI): Logistics Services*. OECD Trade Policy Papers, No. 183, OECD Publishing, Paris. <http://dx.doi.org/10.1787/5jrw9bwpbskk-en>

**Table VI.3: STRI for Logistics Activities for the 16 APEC economies, 2021**

Sector	Australia	Canada	Chile	China	Indonesia	Japan	Korea	Malaysia	Mexico	New Zealand	Peru	Russia	Singapore	Thailand	United States	Viet Nam
Air transport	0.32	0.38	0.15	0.41	0.54	0.38	0.49	0.50	0.38	0.37	0.35	0.58	0.44	0.60	0.53	0.49
Courier services	0.38	0.38	0.48	0.72	0.46	0.23	0.38	0.27	0.46	0.20	0.27	0.41	0.21	0.42	0.36	0.29
Logistics (cargo-handling)	0.22	0.22	0.20	0.30	0.44	0.17	0.16	0.29	0.34	0.29	0.34	1.00	0.32	0.47	0.23	0.40
Logistics (customs brokerage)	0.18	0.19	0.23	0.20	0.29	0.12	0.17	0.26	1.00	0.18	0.28	0.35	0.23	0.39	0.22	0.26
Logistics (freight forwarding)	0.18	0.15	0.16	0.19	0.35	0.16	0.16	0.26	0.28	0.18	0.29	0.30	0.24	0.40	0.21	0.24
Logistics (storage and warehouse)	0.17	0.16	0.16	0.23	0.39	0.13	0.10	0.23	0.28	0.22	0.32	1.00	0.29	0.50	0.20	0.29
Maritime transport	0.20	0.17	0.19	0.28	0.54	0.17	0.29	0.31	0.26	0.23	0.32	0.46	0.27	0.45	0.35	0.36
Rail freight transport	0.16	0.13	0.19	0.24	0.33	0.18	1.00	0.32	0.30	0.23	0.21	0.99		1.00	0.16	0.33
Road freight transport	0.15	0.16	0.12	0.21	0.46	0.11	0.18	0.35	0.62	0.19	0.23	0.34	0.19	0.48	0.18	0.33
Telecommunication	0.20	0.28	0.23	0.67	0.64	0.23	0.33	0.41	0.21	0.20	0.19	0.42	0.28	0.38	0.15	0.72

0.10 1.00

Source: Authors' calculations based on the information in the STRI database.

**Table VI.4: Potential Reduction of Trade Costs for 16 APEC economies with Improved Logistics Performance (percentage reductions 2021)**

Sector	Australia	Canada	Chile	China	Indonesia	Japan	Korea	Malaysia	Mexico	New Zealand	Peru	Russia	Singapore	Thailand	United States	Viet Nam
Air transport	-11.32	-15.72	0.00	-17.17	-24.89	-15.64	-21.83	-22.83	-15.26	-14.75	-13.52	-26.86	-18.97	-28.36	-24.51	-22.24
Courier services	-14.31	-13.97	-21.03	-35.68	-19.55	-2.52	-14.12	-5.93	-19.71	0.00	-5.67	-16.28	-0.77	-16.95	-13.07	-7.62
Logistics (cargo-handling)	-3.86	-3.94	-2.79	-9.40	-18.22	-0.67	0.00	-9.16	-12.03	-8.97	-12.11	-46.15	-11.05	-20.01	-5.02	-15.80
Logistics (customs brokerage)	-4.47	-5.34	-8.13	-6.26	-12.19	0.00	-3.98	-9.79	-48.06	-4.72	-11.59	-16.03	-8.36	-18.56	-7.54	-9.79
Logistics (freight forwarding)	-1.88	0.00	-0.41	-2.87	-13.24	-0.36	-0.28	-7.41	-8.76	-2.14	-9.28	-10.51	-5.92	-16.51	-3.74	-6.25
Logistics (storage and warehouse)	-5.09	-4.33	-4.49	-9.55	-19.07	-2.26	0.00	-9.22	-12.51	-8.82	-15.16	-48.70	-12.94	-25.76	-7.04	-12.92
Maritime transport	-2.43	-0.04	-1.45	-8.11	-23.88	0.00	-8.61	-9.88	-6.49	-4.21	-10.52	-19.42	-7.33	-18.47	-12.78	-13.42
Rail freight transport	-2.24	0.00	-4.40	-7.49	-13.33	-3.02	-47.37	-12.81	-11.51	-6.77	-5.35	-47.14		-47.37	-2.00	-13.58
Road freight transport	-2.69	-3.35	-0.45	-6.81	-22.66	0.00	-4.66	-16.06	-31.28	-5.31	-8.28	-15.49	-5.31	-23.71	-4.88	-14.52
Telecommunication	-3.91	-10.06	-6.28	-35.40	-33.84	-6.84	-14.12	-19.50	-4.85	-3.86	-3.27	-20.54	-10.05	-17.78	0.00	-38.01

-48.70 0.00

Source: Authors' calculations based on the information in the STRI database.

## ⇒ A focus on logistics in APEC

Improving upon logistics performance today involves the incorporation and use of "smart", digital technologies in the context of Industry 4.0 advancement.<sup>60</sup> As APEC faces the challenge of improving logistics services, the relevance of government policy is vital. APEC businesses are actively involved in incorporating digital processes in the transport and logistics space - from robotic loaders and "smart" vehicles to the construction of "smart" logistics infrastructure and the use of blockchain control technologies. This reinforces the importance of searching for best practices and identifying opportunities to adapt the experience of economies that have achieved more significant results to date. Without greater incorporation of digitalization into logistics operations, it is virtually impossible to increase the global competitiveness level of an economy at present.

According to Twinn et al. (2020) in the study on "The Impact of COVID-19 on Logistics", the recovery and long-term impact of the pandemic on logistics may be affected by the following factors going forward:<sup>61</sup>

- Increased dedicated air cargo capacity: The airline industry is already reallocating fleet to exclusively serve air cargo demand.
- Increased cargo inspections and cross border control protocols: Governments have responded to the crisis with temporary trade embargoes and export restrictions for sensitive cargo (such as medical supplies, pharmaceuticals). In the longer term, logistics costs may increase due to tighter cross-border processes and controls fuelled by concerns regarding the transmission of diseases.
- A technology driven revolution: Companies with robust digital capabilities that allow them to provide cargo visibility/traceability and do business online are at an advantage. Catching up will entail investments in technology, such as the Internet of Things (IoT), cloud computing, automation, and data analytics. In the longer term, the application of technological advances such as robotics, drones, and autonomous vehicles might reduce the exposure of logistics services providers to labour shortages.
- Reconfiguration of global value chains: The pandemic has exposed the vulnerability of extended and complex value chains to production disruptions, particularly in the East Asia Pacific region. As a reaction, many of these supply chains may shorten or diversify through reliance on alternative partners (for example, nearshoring) or intensified efforts to bring home (such as reshoring) strategic value chains. The shortening of supply chains may benefit economies with capable manufacturing sectors and beneficial exports' policy (for example, Colombia, India, and Mexico) to partially substitute China over the medium term. There may also be a trend towards placing additional warehousing capacity or dry ports near demand centers to shorten the time to get goods to market.
- Variable recovery prospects: As logistics is a diverse sector composed of numerous economic activities, recovery prospects will vary depending on the length of lockdowns and the duration of the subsequent economic crisis. Large companies with a diversified business (such as multiple clients, serving different sectors in various economies/states) will be better placed to weather the storm.

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<sup>60</sup> Vladimir P. Nekhoroshkova; Aroshidze, Alyona A.; Nekhoroshkova, Evgeniy V.; Yuchzhong, Kim; Avdokushin, Evgeniy F.; Kotenko, Aleksey G.; Timukhin, Kirill M. (2022), *Logistics Efficiency of APEC Economies: Diagnosis, Interconnections and Digital Experience for Russia*, Transportation Research Procedia 61 (2022) 118–124. <https://www.sciencedirect.com/science/article/pii/S2352146522000278>

<sup>61</sup> Twinn, Ian; Qureshi, Navaid; Conde, María López; Guinea, Carlos Garzón; Rojas, and Daniel Perea, Jiayuan (2020). *The Impact of COVID-19 on Logistics*. International Finance Corporation. Washington. [https://www.ifc.org/wps/wcm/connect/2d6ec419-41df-46c9-8b7b-96384cd36ab3/IFC-Covid19-Logistics-final\\_web.pdf?MOD=AJPERES&CVID=naqOED5](https://www.ifc.org/wps/wcm/connect/2d6ec419-41df-46c9-8b7b-96384cd36ab3/IFC-Covid19-Logistics-final_web.pdf?MOD=AJPERES&CVID=naqOED5)

## ⇒ Conclusion

The logistics performance of the APEC economies is significantly related to the region's economic growth and competitiveness in regional and global trade. APEC's performance in logistics has still room for improvement, as underscored by the discussion above. The LPI, STRI and Trade-Cost-Reduction results presented in this section are significant as indicators of which direction APEC governments should move to reap efficiency gains in the logistics area.

Focusing on logistics is particularly critical in times of a pandemic. The inefficiencies in logistics operations and resulting delays and cost increases have been a major limitation in moving essential goods across borders to effectively respond to the COVID-19 crisis.

The logistics area could benefit from policies to encourage both greater efficiency and better coordination. The adoption of a greater number of liberalizing measures affecting activities in the logistics sector during a pandemic or crisis should be one of the first areas to focus on in terms of a national and regional response. Better coordination of policies in areas critical to the functioning of transport, such as customs procedures, port operation and treatment of crew on cargo ships and cargo flights would go a long way towards improving the timely response of APEC economies in times of a pandemic or other crisis. The next section sets out specific recommendations for policy actions by APEC in the logistics area.

## VII. Recommendations for the Treatment of Logistics by APEC

The discussion in the background paper has served to highlight the need for APEC to reach a clearer understanding of what is meant by logistics-related services and to develop and maintain a consistent focus on this sector. The lack of such an understanding has arguably hampered APEC economies' effectiveness in responding to the Covid-19 pandemic and in designing appropriate response policies, resulting in bottlenecks at ports and other chokepoints in the supply chain, and confusion over the treatment of crews on maritime and air cargo shipments.

The recommendations set out below are intended to be incorporated as possible components of a Draft APEC Framework for the Treatment of Logistics-Related Services in a Pandemic. The development of such a Framework is posited as the ultimate outcome of this Group on Services (GOS) Project intended to implement the 2021 MRT Statement on *Services to Support the Movement of Essential Goods*. These draft recommendations are not exhaustive and may be complemented by others. They are submitted to APEC economies for comment and discussion at the Logistics Workshop on March 23-24.

In instances where a pandemic or any other emergency crisis such as a natural disaster, time is of the essence. The recommendations below include measures that would durably improve the ability of APEC economies to respond to crises with speed, by putting in place coordination and information channels that can fast-track responses alongside the prior adoption of non-binding Protocols and guidelines that can be implemented without delay in times of crisis. This is particularly the case for customs clearance procedures for essential goods where the type of shipments may vary in size according to the nature of the emergency. It is equally valid in terms of adopting procedures and protocols for the treatment of crew workers on maritime and air cargo vessels that are essential to the transport and delivery of essential goods. It is further critical that appropriate trade measures back up and reinforce these other pandemic and crisis responses.

In responding to future crises with greater effectiveness, it is recommended that APEC economies undertake the following measures:

**Recommendation #1: Hold regular discussions led by the GOS on the performance of logistics-related services in APEC economies to maintain a heightened awareness of this important area. For this purpose, agree on a definition of logistics-related services to be used by APEC to track the evolution of restrictive measures affecting the sector.**

1. **Adopt a common definition to be used by APEC to track the evolution of restrictive measures affecting logistics-related services.** The following grouping of 11 sectors is suggested for definitional purposes: customs clearance procedures; cargo handling; storage and warehousing; freight forwarding; courier services; distribution; air, maritime, rail, and road transport; and telecommunications services. [Note: this was the grouping of activities used in this paper to report on the Services Trade Restrictiveness Index (STRI) results for 16 APEC economies.]
2. **Track changes in logistics-related services measures with the assistance of the OECD, using its STRI monitoring of APEC economies.**
3. **Track the performance of logistics systems of APEC economies through a bi-annual update of The World Bank's Logistics Performance Index (LPI), in collaboration with The World Bank.** This task should be undertaken by the GOS as part of its ongoing work on services.
4. **Publish an "APEC Logistics Tracker"** collating information on STRI and LPI metrics for individual APEC economies using the agreed upon definition of logistics-related services. This task should be undertaken by the GOS and the outcomes reported annually to the Committee on Trade and Investment (CTI).
5. **Incorporate a focused discussion on Logistics into the annual review by the GOS of the APEC Services Competitiveness Roadmap (ASCR)** and a section reviewing Logistics-related Services into its report.
6. To deepen and broaden the understanding of logistics-related services performance and changes in policy measures, hold **regular joint sessions with other relevant APEC fora involved in logistics-related work**, including the CTI, the Sub-Committee on Customs Procedures (SCCP), and the Transport Working Group, among others.

The review of outcomes within the **"APEC Logistics Tracker"** through regular discussions with concerned APEC fora as well as within the annual review of the APEC Services Competitiveness Roadmap would allow for both the GOS and APEC more broadly to maintain a consistent focus on logistics-related services. Such efforts should continue beyond the Covid-19 pandemic.

**Recommendation #2: Ensure that trade measures directed at logistics-related services during a pandemic or other crises facilitate the cross-border movement of essential goods within the APEC region and task the GOS with monitoring such measures.**

7. Adopt a **Standstill on all Measures affecting the 11 Logistics-related Sectors outlined above during the pandemic or crisis period.** While a standstill would be voluntary in nature, it would be subject to monitoring by the APEC GOS, with the assistance of the WTO's Trade Monitoring Reports and the Global Trade Alerts database. A report on the results of the monitoring of the Standstill on Measures affecting Logistics-Related Sectors would be provided annually by the GOS to the CTI during the pandemic or crisis period.
8. **Reduce existing levels of restrictiveness for the 11 Logistics-related Sectors during the pandemic or crisis period, to the extent possible.** An analysis of the reduction in trade costs resulting from the reduction or elimination of restrictive logistics-related measures by APEC economies would be provided annually to the CTI by the GOS during the pandemic or crisis period, with the assistance of the OECD.

9. ***Incorporate greater digitalization into the operations of the Logistics-related Sectors***, so as to increase their efficiency and speed of operation. The GOS should review annually the process of greater digitalization in the logistics area in conjunction with the APEC Digital Economy Steering Group and in line with the key focus areas of the Digital Economy Roadmap.

**Recommendation #3: Implement the following improvements in Customs Clearance procedures within APEC to allow this component of logistics-related services sector to function more efficiently.**

10. ***Implement an interoperable single window for customs clearance and digitization of customs forms and procedures for the cross-border movement of essential goods within APEC economies.*** Establishing national single windows would only be useful to the extent that they are interoperable throughout the region through digital means..
11. ***Adopt the Toolkit for Trade Facilitation Measures finalized by the SCCP in 2021*** and implement it within each APEC economy for purposes of mitigating the trade-disruptive effects of the pandemic and future crises. This voluntary, non-binding, Toolkit includes recommended steps to accept electronic versions of trade documents and electronic payments, expedite clearance of essential goods via the pre-clearance of shipments, defer customs fees and taxes, and implement enhanced cargo risk management procedures.
12. ***Ensure around the clock operations where needed for the following logistics-related services throughout the pandemic or future crises:*** port operations, facilities for verification of customs clearance, transportation for essential goods, ICT support and coordination.

**Recommendation #4: Adopt common policies towards the treatment of crews working with maritime cargo and air cargo transport operations.**

13. ***Adopt and implement the findings of the Safe Passage Task Force developed during the Thailand APEC Year.*** This includes mutual recognition measures governing the interoperability of vaccination certificates, the establishment of an APEC Information Portal for Safe Passage in the Region, and a more inclusive APEC Business Travel Card, among others.
14. ***Consider the development of a future Non-binding Protocol for the Safe Passage of Crews and Essential Workers in the Maritime and Air Cargo Transport sectors*** that would specify conditions APEC economies could follow for the treatment of essential workers during the Covid-19 pandemic or future crises.

**Recommendation #5: Strengthen coordination channels between APEC governments on logistics-related issues during the pandemic and in future crises.**

15. ***Notify a contact person for each Logistics-related service sectors within each APEC economy*** who would act as a focal point for regional policy coordination. This might overlap with the list of contact persons under each APEC economies' National Trade Facilitation Committees.
16. ***Follow and lend active support to WTO-related initiatives on trade in essential goods with a view to sharing APEC best practices and ensuring that the role of logistics-related services is given its necessary focus and importance in the multilateral context.***

## Part II.

### A Review of how Logistics have been Addressed and the approaches to Measuring the Barriers to Logistics Services

This part of the paper prepared as part of the work to implement the 2021 MRT Statement on *Services to Support the Movement of Essential Goods* discusses the way in which logistics and logistics services have been addressed by six major institutions / groupings / and data bases and the definitions adopted by each for this purpose. They include the following: the World Bank Group's Logistics Performance Index (LPI); the OECD's Services Trade Restrictiveness Index (STRI); the U.N.'s Trade Facilitation Implementation (TFI); measures from the Global Trade Alert (GTA) database; as well as logistics-related work performed by the APEC and the WTO Secretariats. The scope and results of this work are instructive for APEC economies in formulating more coherent policy approaches to the logistics sector for the region.

#### A. The World Bank Logistics Performance Index (LPI)

##### ⇒ The Logistics Performance Index (LPI)

The Logistics Performance Index is an interactive cross-economy benchmarking tool created by The World Bank to help economies identify the challenges and opportunities they face in the **logistics sector** and what they can target to improve their performance<sup>62</sup>. The LPI provides an indicator of the logistics "friendliness" of the economies in which operators do business and those with which they trade, used by governments, analysts and private sector alike. The LPI indices are based on data collected over several years: 2007, 2010, 2012, 2014, 2016 and 2018<sup>63</sup>. This allows for study of the evolution of the LPI on an economy basis over more than a decade. The 2020 update of the LPI publication has been skipped by The World Bank due to the revision and updating of the manner in which the index is constructed and the redefinition of the components composing it. The next publication is expected at the end of 2022.

As a summary indicator of logistics sector performance, the LPI in 2018 offers profiles and insight into logistics friendliness across 160 economies<sup>64</sup> including all 21 APEC economies, based on a worldwide survey of global freight forwarders and express carriers.

##### ⇒ The Dimensions of Logistics Captured by the LPI

The LPI overall score reflects an evaluation of an economy's logistics based on six key dimensions that capture what The World Bank considers to be the most important aspects of the logistics environment<sup>65</sup>:

- 1) Efficiency of the customs clearance process (Customs). *It measures these procedures in terms of speed, simplicity and predictability when dealing with customs and other border agencies*

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<sup>62</sup> Arvis, Jean-Francois; Ojala, Lauri; Wiederer, Christina; Shepherd, Ben; Raj, Anasuya; Dairabayeva, Karlygash; and Kiiski, Tuomas (2018). *Connecting to Compete 2018: Trade Logistics in the Global Economy – The Logistics Performance Index and Its Indicators*. World Bank, Washington, DC. © World Bank, <https://openknowledge.worldbank.org/handle/10986/29971>

<sup>63</sup> The World Bank website <https://lpi.worldbank.org/>

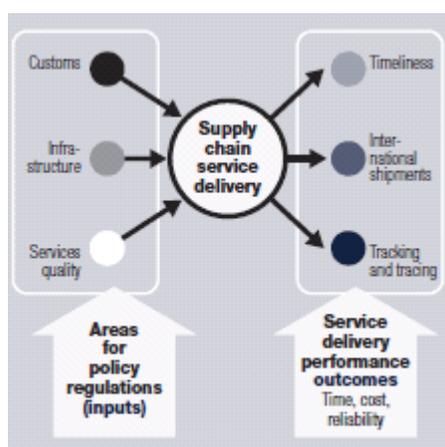
<sup>64</sup> The LPI World Bank website. *About LPI*. <https://lpi.worldbank.org/about>

<sup>65</sup> The methodology section is included in *Appendix 5 The LPI methodology* (pp. 59-62) of the WB LPI 2018 report, which can be downloaded at <https://openknowledge.worldbank.org/bitstream/handle/10986/29971/LPI2018.pdf>

- 2) Quality of trade and transport-related infrastructure (Infrastructure). *Infrastructure development is essential for assuring basic connectivity and access to gateways*
- 3) Ease of arranging competitively priced shipments (International Shipments). *It measures the competitiveness of prices for international shipments.*
- 4) Competence and quality of logistics services (Logistics Quality). *It measures the overall level of logistics services available in an economy and represents the quality of the logistics services and operational excellence of the transportation operations.*
- 5) Ability to track and trace consignments (Tracking and Tracing). *It is the result of the activity of the logistics sector, since all parties in the goods' supply chain are involved in this component*
- 6) Frequency with which shipments reach the consignee within the scheduled or expected time (Timeliness). *It measures how reliably shipments meet the promised delivery times.*

The **logistics services comprised within the dimension of “Logistics Quality”** (in 4 above) are evaluated on the basis of the excellence of the logistics services delivered by providers, and **include providers of road transport service, rail transport service, air transport service, and maritime transport service, warehousing/transloading and distribution operators, freight forwarders, customs agencies, and custom brokers**<sup>66</sup>. It is of note that one of the dimensions of the LPI is an evaluation of the quality of physical infrastructure. This is a unique feature of this index that goes beyond the services components. Another is the evaluation of timeliness, which in a similar manner, is a dimension that goes beyond services to reflect a standard of service. In a pattern seen across LPI editions, service quality differs substantially at similar levels of perceived infrastructure quality. The survey in 2016<sup>67</sup> and 2018<sup>68</sup> indicated that even high-quality hard infrastructure cannot substitute or replace operational excellence, which is based on the professional skills of service providers, well-functioning soft infrastructure, and smooth business and administrative processes.

**Figure A.1: Inputs and outcomes of the LPI indicators**



*Note: The figure maps the six LPI indicators onto two main important categories:*

- *Policy Regulation Areas, indicating key inputs to the supply chain (customs, infrastructure, and logistics services).*
- *National Infrastructure Quality and Internal Logistics Service Quality Delivery Performance Results or Supply Chain Performance Outcomes (corresponding to LPI indicators of time, cost, and reliability—timeliness, international shipments, and tracking and tracing)*

Source: Jean-Francois Arvis et al., (2018). *Connecting to Compete 2018: Trade Logistics in the Global Economy-- The Logistics Performance Index and Its Indicators*, The World Bank 2018 (Box 1.1: The six components of the international Logistics Performance Index, p.8)<sup>68</sup>

<sup>66</sup> The LPI World Bank (2018). *2018 LPI Questionnaire* [https://lpi.worldbank.org/sites/default/files/LPI\\_2018\\_Questionnaire.pdf](https://lpi.worldbank.org/sites/default/files/LPI_2018_Questionnaire.pdf)

<sup>67</sup> Arvis, Jean-Francois; Saslavsky, Daniel; Ojala, Lauri; Shepherd, Ben; Busch, Christina; Raj, Anasuya; and Naula, Tapio (2016). *Connecting to Compete 2016: Trade Logistics in the Global Economy-- The Logistics Performance Index and Its Indicators*. World Bank, Washington, DC. © World Bank, <https://openknowledge.worldbank.org/handle/10986/24598>

<sup>68</sup> Arvis, Jean-Francois; Ojala, Lauri; Wiederer, Christina; Shepherd, Ben; Raj, Anasuya; Dairabayeva, Karlygash; and Kiiski, Tuomas (2018). *Connecting to Compete 2018: Trade Logistics in the Global Economy – The Logistics Performance Index and Its Indicators*. World Bank, Washington, DC. © World Bank, <https://openknowledge.worldbank.org/handle/10986/29971>

## ⇒ Constructing the LPI Index

The LPI consists of both qualitative and quantitative measures. Together, these measure performance along the logistics supply chain within an economy and offer two different perspectives: international and domestic. The first perspective is captured by the International LPI that provides qualitative evaluations of an economy in six areas by logistics professionals working outside the economy in its trading partners. The second perspective is captured by the Domestic LPI that provides both qualitative and quantitative assessments of an economy by logistics professionals working inside it. It includes detailed information on the logistics environment, core logistics processes, institutions, and performance time and cost data<sup>69</sup>. It is important to note that the Domestic LPI results do not enter the ranking. The ranking only includes assessments of survey takers of the performance of economies other than their own economy of operation (this section is called the “International LPI”). In the Domestic LPI in contrast, survey respondents submit information about their own economy of operation.

The logistics performance of an economy in the LPI is assessed by operators based in other economies - mostly those with whom they trade. Each survey respondent rates eight overseas markets on six core components of logistics performance. The eight economies are chosen based on the most important export and import markets of the economy where the respondent is located, and—for landlocked economies—on neighboring economies that form

part of the land bridge connecting them with international markets. The method used to select the group of economies rated by each respondent varies according to the characteristics of the economy where the respondent is located and tries to ensure a broad geographical representation, including for small economies (Table A.1)<sup>70</sup>.

The LPI uses a structured online survey of logistics professionals located within multinational freight forwarders and the main express carriers. Each of the six-dimension components included in the survey are rated as “very low”, “low”, “average”, “high” and “very high”<sup>71</sup>. A score (weight) of 5, 4, 3, 2, and 1 is assigned to each of the six dimensions to calculate the implementation scores for individual components across economies.

The World Bank uses standard statistical techniques to aggregate the data into a single LPI indicator that can be used for cross-economy comparisons. This LPI indicator is given a value between 1 and 5, with 1 indicating the worst logistics performance and 5 the best logistics performance.

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<sup>69</sup> The LPI World Bank website. *About LPI*. <https://lpi.worldbank.org/about>

<sup>70</sup> Arvis, Jean-Francois; Ojala, Lauri; Wiederer, Christina; Shepherd, Ben; Raj, Anasuya; Dairabayeva, Karlygash; and Kiiski, Tuomas (2018). *Connecting to Compete 2018: Trade Logistics in the Global Economy – The Logistics Performance Index and Its Indicators*. World Bank, Washington, DC. © World Bank, <https://openknowledge.worldbank.org/handle/10986/29971>

<sup>71</sup> The LPI World Bank (2018). *2018 LPI Questionnaire*. [https://lpi.worldbank.org/sites/default/files/LPI\\_2018\\_Questionnaire.pdf](https://lpi.worldbank.org/sites/default/files/LPI_2018_Questionnaire.pdf)

**Table A.1: Methodology for selecting economy groups for survey respondents<sup>72</sup>**

	<b>Respondents from low-income countries</b>	<b>Respondents from middle-income countries</b>	<b>Respondents from high-income countries</b>
<b>Respondents from coastal countries</b>	Five most important export partner countries + Three most important import partner countries	Three most important export partner countries + The most important import partner country + Four countries randomly, one from each country group: a. Africa b. East Asia and Central Asia c. Latin America d. Europe less Central Asia and OECD	Two countries randomly from a list of five most important export partner countries and five most important import partner countries + Four countries randomly, one from each country group: a. Africa b. East Asia and Central Asia c. Latin America d. Europe less Central Asia and OECD
<b>Respondents from landlocked countries</b>	Four most important export partner countries + Two most important import partner countries + Two land-bridge countries	Three most important export partner countries + The most important import partner country + Two land-bridge countries + Two countries randomly, one from each country group: a. Africa, East Asia and Central Asia, and Latin America b. Europe less Central Asia and OECD	Two countries randomly from the combined country groups a, b, c, and d

Source: Arvis, Jean-Francois; Ojala, Lauri; Wiederer, Christina; Shepherd, Ben; Raj, Anasuya; Dairabayeva, Karlygash; and Kiiski, Tuomas (2018). *Connecting to Compete 2018: Trade Logistics in the Global Economy – The Logistics Performance Index and Its Indicators*. World Bank, Washington, DC. © World Bank (Table A5.1, Appendix 5, p.59)

⇒ **Coverage and frequency of data collection**

As shown in Table VI-A.2, all 21 APEC economies are covered in the LPI index publications. Data are collected biannually for this purpose.

**Table A.2: APEC Economies included in the World Bank LPI Publications**

APEC Economies covered	21 (AUS, BD, CDA, CHL, PRC, HKC, INA, JPN, ROK, MAS, MEX, NZ, PNG, PE, RUS, SGP, CT, THA, USA, VN)
Period covered	2007 – 2018
Periodicity	Biannually

Source: Authors' data collection based on the information in the WTO LPI database <https://data.worldbank.org/>  
 Note: Data for Brunei Darussalam are only available for years 2016 and 2018.

<sup>72</sup> The methodology section is included in *Appendix 5 The LPI methodology* (pp. 59-62) of the WB LPI 2018 report, which can be downloaded at <https://openknowledge.worldbank.org/bitstream/handle/10986/29971/LPI2018.pdf>

## ⇒ Usefulness / Limitations of the LPI Indicator

According to The World Bank's 6<sup>th</sup> edition of *Connecting to Compete* and the 2018 edition of the LPI<sup>73</sup>, LPI findings have become standard reference material in:

- Measuring how well economies connect to international logistics networks and providing an interactive cross-economy benchmarking tool that can contribute to economic growth, diversification, sustainability, and poverty reduction.
- Promoting policies to improve logistics performance, such as strategic and sustained targeted interventions, mobilizing actors across traditional sector silos, and connecting the professional company members including senior executives, area and/or economy managers, department managers<sup>74</sup> in the private sector, enabling firms to improve their ability to trade competitively in international markets.
- Transforming government recognition of the importance of logistics-related policies in enhancing performance. Such policies include those related to trade facilitation, to removal of bottlenecks and delays at the border, and a robust connection between international and domestic logistics issues.

It should be noted that given the increasingly complex nature of logistics supply chains, and the fact that the LPI is based on a global survey of logistics experts which can possibly be biased towards a subjective view of different economies' logistics systems, this may lead to a potentially skewed ranking<sup>75</sup>. The World Bank 2022 methodological update of the LPI tries to address this issue.

Additionally, the LPI results are not externally verified by the governments of the economies it covers. The six World Bank editions of *Connecting to Compete: Trade Logistics in the Global Economy* from 2007 to 2018 present the LPI indicators based on the results of a worldwide survey of the global freight forwarders and express carriers who are the most active in international trade. The LPI score may reflect access problems outside the economy assessed, such as transit difficulties for landlocked economies and small-island states. A low rating for a landlocked economy might not adequately reflect its trade facilitation efforts, which depend on the workings of complex international transit systems over which it has no control. Landlocked economies cannot improve upon international transit inefficiencies with domestic reforms<sup>76</sup>.

According to a standard disclaimer placed at the end of most/all World Bank Group (WBG) publications, including the LPI/Connecting to Compete reports, the findings, interpretations etc. in the reports are those of the authors and not necessarily those of the Executive Directors of the International Bank for Reconstruction and Development/ The World Bank or the governments they represent. This qualification would apply to most/all other WBG reports, and is not specific to the LPI/Connecting to Compete report.

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<sup>73</sup> Arvis, Jean-Francois; Ojala, Lauri; Wiederer, Christina; Shepherd, Ben; Raj, Anasuya; Dairabayeva, Karlygash; and Kiiski, Tuomas (2018). *Connecting to Compete 2018: Trade Logistics in the Global Economy – The Logistics Performance Index and Its Indicators*. World Bank, Washington, DC. © World Bank, <https://openknowledge.worldbank.org/handle/10986/29971>

<sup>74</sup> Arvis, Jean-Francois; Mustra, Monica Alina; Ojala, Lauri; Shepherd, Ben; and Saslavsky, Daniel (2012). *Connecting to Compete 2012: Trade Logistics in the Global Economy-- The Logistics Performance Index and Its Indicators*. World Bank, Washington, DC. © World Bank", <https://openknowledge.worldbank.org/handle/10986/12689>

<sup>75</sup> Göçer, Aysu; Özpeynirci, Özgür; and Semiz, Meltem (2021). *Logistics performance index-driven policy development: An application to Turkey*. Transport Policy. <https://doi.org/10.1016/j.tranpol.2021.03.007>

<sup>76</sup> The methodology section is included in *Appendix 5 The LPI methodology* (pp. 59-62) of the WB LPI 2018 report, which can be downloaded at <https://openknowledge.worldbank.org/bitstream/handle/10986/29971/LPI2018.pdf>

## ⇒ LPI Outcomes for the APEC Economies

The LPI database covers consistently 20 out of 21 APEC economies over the 2007–2018 period. Brunei Darussalam was included as of 2016, allowing for a comprehensive picture of individual APEC logistics performance. The charts below present the LPI outcomes for the APEC economies in 2007 and 2018. They indicate both the LPI score as well as the LPI ranking for each.

**The LPI score** is aggregated as a weighted average of the six components of logistics performance: Customs, Infrastructure, International Shipments, Logistics Quality, Tracking and Tracing and Timeliness. The LPI score is evaluated on a scale from 1 (worst performing economy) to 5 (best performing economy). Peer group scores are read from the left-hand axis (1 = min; 5 = max), and economy rankings are read from the right-hand axis.

**The LPI indicator** then is employed for cross-economy comparisons. The LPI indicator shows the ranking for each of the 21 APEC economies based on the comparison of its overall LPI score with those across all 160 economies in the World Bank database. It is recommended that individual economy data, especially rank positions be considered in combination with scores, to provide a more accurate and better basis for comparison over time<sup>77</sup>.

Charts on the LPI performance of each individual APEC economy for each of the major components of the LPI indicator that have been calculated for this project can be found in Appendix A.

Figure A.2 shows the LPI scores and international rankings for the 21 individual APEC economies in 2007 and 2018. This allows for an evaluation of how individual scores and rankings have changed over time with most, but not all, APEC economies improving in their relative scores and international positions over this decade. [Please note that a better logistics performance is shown by a higher LPI score, but by a lower international ranking in the figure below.

In 2018, the gap appeared to widen between the top and the bottom APEC performers, with the highest LPI score attributed to Japan (4.03 on a scale from 1 to 5) and the lowest score for Papua New Guinea (PNG) (2.17 on a scale from 1 to 5). In terms of international logistics rankings, Japan and Singapore figured in the top 10 rankings occupied by higher-income economies in 2018 (out of 160 economies). These two APEC economies have traditionally shown great efficiency in performance of the supply chain. Five other APEC economies are seen to be in high-ranking positions in 2018, namely, Hong Kong China (12<sup>th</sup>), the United States (14<sup>th</sup>), New Zealand (15<sup>th</sup>), Australia (18<sup>th</sup>) and Canada (20<sup>th</sup>). Thus, APEC economies constituted around one-third of the top 20 international logistics performers in 2018 in the World Bank LPI rankings.

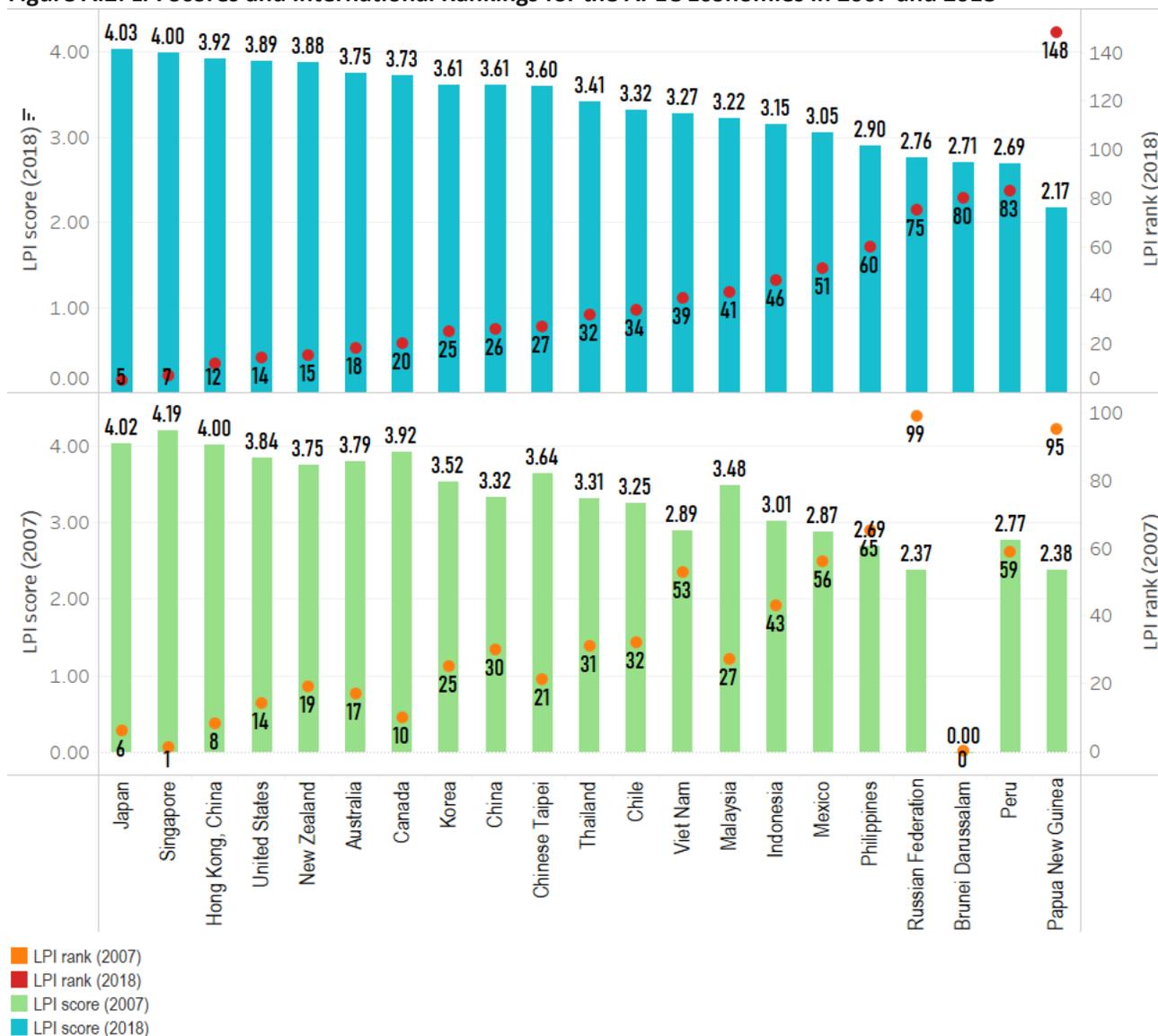
Among the lower-middle-income APEC economies, larger ones such as Viet Nam (ranked 39<sup>th</sup> with a score of 3.27) and Indonesia (ranked 46<sup>th</sup> with a score of 3.15) stand out among the top performers. The placement of the top-performing upper-middle-income APEC economies has changed only marginally over time, with China (ranked 26<sup>th</sup>

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<sup>77</sup> Arvis, Jean-Francois; Ojala, Lauri; Wiederer, Christina; Shepherd, Ben; Raj, Anasuya; Dairabayeva, Karlygash; and Kiiski, Tuomas (2018). *Connecting to Compete 2018: Trade Logistics in the Global Economy – The Logistics Performance Index and Its Indicators*. World Bank, Washington, DC. © World Bank, <https://openknowledge.worldbank.org/handle/10986/29971>

with a score of 3.61) and Thailand (ranked 32<sup>nd</sup> with a score of 3.41)<sup>78</sup> in the top 20 percent internationally of all economies evaluated for their logistics performance.

**Figure A.2: LPI Scores and International Rankings for the APEC Economies in 2007 and 2018**



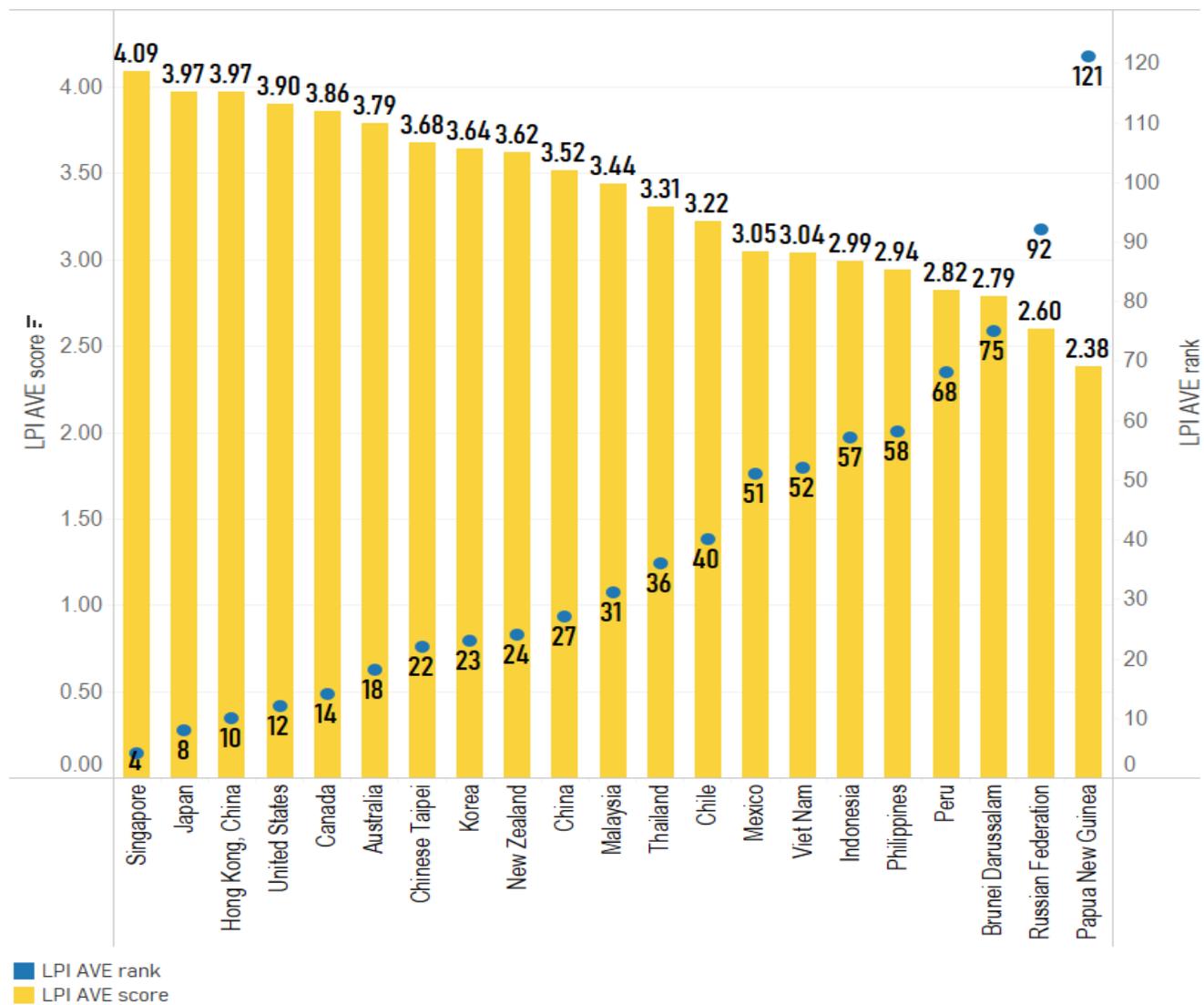
Source: Authors' calculations based on the information in the WB LPI database.

Note: The LPI scores/ranks have been calculated for the project based on unweighted averages across the group of APEC economies from 2007 – 2018. The LPI for Brunei Darussalam is for 2016 – 2018. Performance is evaluated on a scale from 1 (worst) to 5 (best) and the overall LPI is aggregated as a weighted average of the six core areas of logistics performance: Customs, Infrastructure, International Shipments, Logistics Quality, Tracking and Tracing and Timeliness. LPI scores (left-hand axis; 1 = min; 5 = max.) and member ranks (right-hand axis).

<sup>78</sup> Arvis, Jean-Francois; Ojala, Lauri; Wiederer, Christina; Shepherd, Ben; Raj, Anasuya; Dairabayeva, Karlygash; and Kiiski, Tuomas (2018). *Connecting to Compete 2018: Trade Logistics in the Global Economy – The Logistics Performance Index and Its Indicators*. World Bank, Washington, DC. © World Bank, <https://openknowledge.worldbank.org/handle/10986/29971>

Figure A.3 shows the unweighted average LPI scores and ranks for the 21 APEC economies over the period 2007 to 2018, ranging from the highest (Singapore) to the lowest performer (PNG). The average LPI indicators reflect the consistency of the top six APEC economies which remained among the 20 international logistics performers as in 2007 and 2018, namely Singapore (4<sup>th</sup>) Japan (8<sup>th</sup>), Hong Kong China (10<sup>th</sup>), the United States (12<sup>th</sup>), Canada (12<sup>th</sup>) and Australia (18<sup>th</sup>). The five lowest ranking APEC logistics performers also retained their relative placings, namely The Philippines (57<sup>th</sup>), Peru (68<sup>th</sup>), Brunei Darussalam (75<sup>th</sup>), Russia (92<sup>nd</sup>) and PNG (121<sup>st</sup>). The average LPI scores and ranks of other APEC economies varied only slightly in comparison with the scores obtained for 2007 and 2018. The gap between the top and the bottom APEC performers on the logistics index is considerable and will be shown to have an impact on their ability to participate in international trade and on trade outcomes.

**Figure A.3: Average LPI Scores/Ranks for the 21 APEC Economies, 2007 – 2018**



Source: Authors' calculations based on the information in the WB LPI database.

Note: The LPI scores/ranks are calculated based on unweighted averages across the group of APEC economies from 2007 – 2018 and LPI for Brunei Darussalam is for 2016 – 2018. Performance is evaluated on a scale from 1 (worst) to 5 (best) and the overall LPI is

## B. The OECD Services Trade Restrictiveness Index (STRI)

### ⇒ The Services Trade Restrictiveness Index (STRI) tool and project

The OECD STRI is a unique, evidence-based tool that analyzes and identifies regulatory policies currently in force and which may restrict trade in services. The information in the 2021 STRI database is based on measures affecting services trade in 22 major service sectors across 50 economies, including 16 APEC economies. The STRI results are verified by governments before they are published<sup>79</sup>.

Together, the economies and sectors in the STRI database represent over 80 percent of global trade in services.<sup>80</sup>

The STRI resources go beyond the publication of the STRI to encompass the following:

- An annual monitoring of the regulatory environment for services trade
- An easily accessible STRI database of laws and regulations in force, which is updated, verified and peer-reviewed by regulators and trade officials on an annual basis contributing to increased transparency of regulation in this area.
- Composite STRI indices for each economy and sector in the STRI that **quantify restrictions on foreign entry and the movement of people, barriers to competition, regulatory transparency and other discriminatory measures** that impact business environments (see economy and sector notes below).
- Composite STRI indices to measure the regulatory environment for **digitally enabled services** (Digital STRI) and the European Economic Area (intra-EEA STRI).
- Indices of regulatory heterogeneity that measure regulatory differences by economy pair, sector and year.
- Empirical analysis assessing the impact of services trade policies on economic performance and trade costs.

Short notes are also made available on the STRI website to highlight the results from each of the 22 services sectors. Interactive tools allow for a comparison of the STRI outcomes for individual economies as well as for a comparison of the regulatory outcomes across these economies. These also allow for simulations to be carried out on the impact of policy reforms.

### ⇒ The Dimensions of Logistics Captured by the STRI

The STRI database contains information on trade restrictions and behind the border regulation in the following major sectors and sub-sectors:

- Computer services

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<sup>79</sup> The most recent STRI database through end 2021 includes 16 APEC economies with full sectoral coverage for two new additional APEC economies - Singapore and Viet Nam - in addition to the 14 APEC economies that were already covered. Peru was included in 2020, Thailand in 2019 and Malaysia in 2018. The members in the STRI database cover all OECD member members as well as Brazil, the People's Republic of China, Costa Rica, India, Indonesia, Kazakhstan, Malaysia, Peru, the Russian Federation, South Africa, and Thailand.

The following APEC economies are a part of the STRI database: Australia, Canada, Chile, Japan, Korea, Mexico, New Zealand, the United States, Indonesia, China, Russia, Malaysia, Thailand, Peru, Singapore, and Viet Nam. For all recent additions, the regulatory data and indices have been backdated to 2014 to match the time coverage of the rest of the STRI.

<sup>80</sup> OECD (2022). *OECD Services Trade Restrictiveness Index: Policy Trends up to 2022*. [https://issuu.com/oecd.publishing/docs/oecd\\_stri\\_policy\\_trends\\_up\\_to\\_2022](https://issuu.com/oecd.publishing/docs/oecd_stri_policy_trends_up_to_2022)

There is also an [pilot APEC Index](https://issuu.com/oecd.publishing/docs/oecd_stri_policy_trends_up_to_2022) developed together with the GOS that includes also STRI compatible data for four APEC economies (e.g., Chinese Taipei, which is not covered in the OECD STRI) in a few services sectors including logistics and telecommunications [https://issuu.com/oecd.publishing/docs/oecd\\_stri\\_policy\\_trends\\_up\\_to\\_2022](https://issuu.com/oecd.publishing/docs/oecd_stri_policy_trends_up_to_2022)

- Construction
- Professional services (legal, accounting, engineering and architecture)
- Telecommunications
- Distribution
- Audiovisual services (broadcasting, motion pictures, sound recording)
- Transport (air, maritime, road freight and rail freight)
- Courier
- Financial services (commercial banking, insurance)
- Logistics services (cargo-handling, storage and warehouse, freight forwarding, customs brokerage)

**Logistics services are defined in both a narrow and a broader way within the STRI. The Logistics sub-group is defined as comprising the following: cargo-handling services (ISIC 5224); storage and warehousing services (ISIC 5210); freight forwarding agency services; and customs brokerage services (ISIC 5229), together with Courier services and Distribution services.<sup>81</sup> These six activities in the Logistics sub-group are then folded into a broader category of 11 Logistics-related sectors that are reported on for the STRI indicators, divided into 3 sub-groups:**

- (1) The **Logistics sub-group** is comprised of Courier services, Distribution services, Logistics (cargo-handling), Logistics (customs brokerage), Logistics (freight forwarding), and Logistics (storage and warehousing);
- (2) The **Transport sub-group** comprises Air transport, Maritime transport, Rail freight transport, and Road freight transport.
- (3) The **ICT sub-group** comprises Information and Communication Technology measures.

These 11 sectors will be labeled Logistics-related Services. As with other sectors in the STRI project, the broader index on logistics-related sectors should include information that is sufficiently specific yet detailed enough that it can inform trade negotiations and serve as a basis for undertaking regulatory reform.

Measures in the STRI database are collected in five policy areas, namely<sup>82</sup>:

- 1) Restrictions on foreign entry: *Measure contains barriers to foreign ownership and other impediments to market entry for logistics services providers*
- 2) Restrictions on movement of people: *Measure includes limitations on the temporary movement of people can hinder trade in services*
- 3) Other discriminatory measures: *Measure includes discriminatory taxes and other forms of subsidies further apply as important measures to include in the STRI*
- 4) Barriers to competition: *Measures that allow publicly controlled firms some types of exemption from the general competition law reduce competition in the sector.*
- 5) Regulatory transparency: *Measures concerning regulatory transparency and administrative procedures are also included in the STRI.*

<sup>81</sup> OECD Services Trade Restrictiveness Index (STRI) (2022). *Logistics Cargo-Handling Services 2021*. <https://www.oecd.org/trade/topics/services-trade/documents/oecd-stri-sector-note-logistics.pdf>

<sup>82</sup> Sugie, Kazuhiro; Grosso, Massimo Geloso; Nordås, Hildegunn Kyvik; Miroudot, Sébastien; Gonzales, Frédéric; and Rouzet, Dorothée (2015). *Services Trade Restrictiveness Index (STRI): Logistics Services*. OECD Trade Policy Papers, No. 183, OECD Publishing, Paris. <http://dx.doi.org/10.1787/5jrw9bwpskk-en>

The purpose of the STRI is to provide a snapshot of trade restrictiveness in an economy and sector at a particular point in time. The STRI indices give this snapshot while the STRI database provides the necessary details for those who want to go beyond the quick snapshot provided by the indicators

⇒ **Constructing the STRI**

The STRI is derived by aggregating regulations for a particular service sector that are potentially trade restricting into a composite measure of restrictiveness. The methodology is relatively simple in order to ensure transparency, while also taking into account the linkages between measures. The construction of the index involves decisions concerning three principal issues: scoring, weighting, and aggregation<sup>83</sup>:

- *Scoring relates to how regulatory measures are transformed from qualitative to quantitative information.*
- *Weighting captures the relative importance of impediments in terms of trade restrictiveness (the higher the weight the more restrictive a category of measures is considered relative to other categories).*
- *The aggregation method determines how weights are applied to scores for calculating the index number.*

The scoring and weighting system is based on a simple structure<sup>84</sup>:

- The individual policy measures are assigned a score of 0 (not restrictive) or 1 (restrictive).
- Under each of the five policy areas all measures are assigned the same weight.
- The five policy areas are weighted according to relative importance. Experts have distributed 100 points among the five policy areas according to how they see the relative importance for each sector. The weights applied use the results of this expert judgment exercise. Thus, the same policy area takes a different weight in different sectors.

The STRIs take a value between 0 and 1, where 0 means that the sub-sector is completely open to trade and investment while 1 means that it is completely closed to foreign services providers.<sup>85</sup> The STRI scoring methodology uses binary scores. Most measures in the STRI database have binary answers (yes/no) and binary scores are applied directly with a conversion of the regulatory barriers into binary numbers (0 and 1). To reconcile the complexity of services trade restrictions with binary scoring, non-binary measures are broken down to multiple thresholds; complementary measures are grouped and converted into binary numbers which is based on whether a regulation is restrictive (score 1) or non-restrictive (score 0)<sup>86</sup>. The scoring and weighting system tries to capture the restrictiveness of economies that may have few behind the border discriminatory regulations because they have high barriers to entry in the first place. If such an economy opens up to international trade by lowering entry barriers but introduces new behind the border measures in order to manage the transition to more open markets, this should be reflected by a lower STRI value

Examples of the weights allocated to each policy area by the experts are depicted in Table B.1

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<sup>83</sup> Sugie, Kazuhiro; Grosso, Massimo Geloso; Nordås, Hildegunn Kyvik; Miroudot, Sébastien; Gonzales, Frédéric; and Rouzet, Dorothée (2015). *Services Trade Restrictiveness Index (STRI): Logistics Services*. OECD Trade Policy Papers, No. 183, OECD Publishing, Paris. <http://dx.doi.org/10.1787/5jrw9bwpbskk-en>

<sup>84</sup> Grosso, Massimo Geloso; Gonzales, Frédéric; Miroudot, Sébastien; Nordås, Hildegunn Kyvik; Rouzet, Dorothée; and Ueno, Asako (2015). *Services Trade Restrictiveness Index (STRI): Scoring and Weighting Methodology*. OECD Trade Policy Papers, No. 177, OECD Publishing, Paris. <http://dx.doi.org/10.1787/5js7n8wbtk9r-en>

<sup>85</sup> OECD.Stat. (2022). *Services Trade Restrictiveness Index*. <https://stats.oecd.org/Index.aspx?DataSetCode=STRI>

<sup>86</sup> OECD. STRI Scoring Methodology. <https://www.oecd.org/trade/topics/services-trade/documents/oecd-stri-scoring-methodology.pdf>

**Table B.1: Expert judgement weights by policy and sector.**

Sector	Restrictions on foreign entry	Restrictions to movement of people	Other discriminatory measures	Barriers to competition	Regulatory transparency
Courier	27.20	12.20	19.20	21.00	20.40
Distribution	29.88	14.30	14.40	22.84	18.53
Air transport	24.50	14.00	23.75	20.00	17.75
Maritime transport	35.00	25.00	12.50	14.50	13.00
Rail transport	24.89	13.07	15.44	26.31	20.29
Road transport	35.00	15.00	25.00	20.00	5.00
Telecommunications	26.11	12.24	15.29	25.98	20.38

Source: Extracted from Geloso Grosso, M. et al. (2015). *Services Trade Restrictiveness Index (STRI): Scoring and Weighting Methodology*, OECD Trade Policy Papers (Table 4, page 34), with updates from OECD Secretariat.

Assigning a unique weight to each measure as shown in the Table VI-B.1 gives the flexibility to break the STRIs down in several ways. One is according to the five policy areas described above. Others are by sector and by economy. The STRIs are also presented with alternative classifications of measures that are of interest to policy makers.

⇒ **Coverage and Frequency of Data Collection for the STRI**

As shown in Table B.2, 16 APEC economies are currently covered in the OECD STRI database and publications.<sup>87</sup> Data are collected annually for this purpose.

**Table B.2: STRI Coverage of APEC Economies and Frequency of Data Collection**

APEC Economies covered	16 (AUS, CDA, CHL, PRC; INA, JPN, MAS, MEX, NZ, PE, RUS, ROK, SGP, THA, USA, VN)
Period covered	2014 – 2021
Data frequency update	Annually

Source: Authors’ data collection based on the information in the STRI database <https://www.oecd.org/trade/topics/services-trade/>

*Note:* The OECD STRI dataset is updated annually. OECD reports on the STRI have been published over the 2014 – 2021 period. The first “*OECD Services Trade Restrictiveness Index (STRI) Policy Brief in 2014*” was published to highlight the key results of OECD STRI for 40 economies across 18 sectors<sup>88</sup>. Since then, four reports on the STRI

<sup>87</sup> The OECD has indicated that there is a pilot project ongoing within the APEC GOS that would incorporate additional APEC economies into the STRI database. See APEC GOS (2000). *Pilot Program for Measuring the Regulatory Environment of Services Trade in the APEC Region*. <https://apecservicesindex.org/documents/report-pilot-%20measuring-regulatory-environment-services-trade%20-apec.pdf>

<sup>88</sup> OECD (2014). *OECD Services Trade Restrictiveness Index (STRI) Policy Brief 2014*. <https://www.oecd.org/mcm/MCM-2014-STRI-Policy-Brief.pdf>

have appeared in 2019, 2020, 2021 and 2022, the STRI update for 2018 covered 45 economies<sup>89</sup>, 46 economies for 2019<sup>90</sup>, 48 economies for 2020<sup>91</sup>, and 50 economies for 2022<sup>92</sup>, all across 22 key services sectors.

It is important to note that the STRI is based on factual information identifying regulations that are currently in force and, that this information is verified by national governments before it is officially published. The regulatory databases are shared with all respective economies in September every year for peer review and verification, and the respective governments have the opportunity to review and send comments and feedback to the OECD before finalization.

### ⇒ **Usefulness / Limitations of the STRI**

Since 2014, the OECD STRI has been a unique tool providing annual information on regulatory changes that affect trade in 22 key services sectors. The STRI toolkit can support policymakers to scope out reform options, benchmark them relative to global best practice, and assess their likely effects. For trade negotiators, these indicators help to clarify restrictions that most impede trade. For businesses, they aim to shed light on the requirements that traders must comply with when entering foreign markets in a transparent and accessible way. For academics, they provide a source of data for research on the drivers and impediments to services trade<sup>93</sup> and <sup>94</sup>.

For policy makers in particular, the usefulness of the OECD STRI is quite broad:

- It allows trade officials to benchmark the policies of their respective economies relative to global best practice, and to consider the likely impact of any reform options.
- The STRI helps trade negotiators identify restrictions and current bottlenecks that impede trade.
- The STRI methodology captures complementarity and hierarchy of measures where restrictions observed at a higher level would render those at a lower level irrelevant, essentially allowing policymakers to focus on regulations that matter most.
- Use of the STRI policy simulator enables policymakers and experts to directly observe how improvements in laws and regulations can lead to lower scores and better services outcomes, thus resulting in markets that are better functioning and more competitive<sup>95</sup>.
- The STRI transform the qualitative information contained in the database to numerical values that can be used for quantitative policy analysis, including impact assessment of policy reforms.

The aspects below are notable in analyzing the construction and application of the OECD STRI:

- The STRI captures most favored nation (MFN) restrictions and does not take into account those concessions made by economies in certain agreements, such as preferential trade agreements (PTAs)

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<sup>89</sup> OECD (2019). *OECD Services Trade Restrictiveness Index: Policy trends up to 2019*. <https://issuu.com/oecd.publishing/docs/stri-policy-trends-2019-web>

<sup>90</sup> OECD (2020). *OECD Services Trade Restrictiveness Index: Policy trends up to 2020*. <https://www.oecd.org/trade/topics/services-trade/documents/oecd-stri-policy-trends-up-to-2020.pdf>

<sup>91</sup> OECD (2021). *OECD Services Trade Restrictiveness Index: Policy trends up to 2021*. <https://www.oecd.org/trade/topics/services-trade/documents/oecd-stri-policy-trends-2021.pdf>

<sup>92</sup> OECD (2022). *OECD Services Trade Restrictiveness Index: Policy trends up to 2022*. [https://issuu.com/oecd.publishing/docs/oecd\\_stri\\_policy\\_trends\\_up\\_to\\_2022](https://issuu.com/oecd.publishing/docs/oecd_stri_policy_trends_up_to_2022)

<sup>93</sup> OECD (2022). *Services trade in the global economy*. <https://www.oecd.org/trade/topics/services-trade/>

<sup>94</sup> OECD (2020). *OECD Services Trade Restrictiveness Index: Policy Trends up to 2020*. <https://www.oecd.org/trade/topics/services-trade/documents/oecd-stri-policy-trends-up-to-2020.pdf>

<sup>95</sup> OECD (2022). *Services Trade Restrictiveness Index Simulator*. <https://sim.oecd.org/>

and mutual recognition agreements (MRAs)<sup>96</sup>. However, the STRI can also be adjusted to apply to specific PTAs or reflect specific regional frameworks.<sup>97</sup>

- The actual implementation of laws and regulations is not examined. This is a methodological choice by the OECD, as the assessment of implementation of regulations can be difficult and is often based on subjective assessments (e.g., business surveys, perceptions, etc.) that can lead to biased outcomes. The STRIs reflect what the evidence from laws and regulations provide. The framework is developed in a way that ensures comparability across economies or economies, so the only differences are based on the extent of restrictions that one jurisdiction may have compared to another.

### ⇒ STRIs Results for the APEC Economies

Based on the information contained in the OECD database, STRI were calculated for this paper for the 16 APEC economies over the 2014 – 2021 period. Figure B.1 compares the results of the STRI average of these 11 Logistics-related sectors (included within the Logistics, Transport and ICT sub-groups combined) for the 16 APEC economies and the OECD grouping over these eight years<sup>98</sup>. This provides a clear picture of both the magnitude of the STRI for the Logistics-related sectors, as well as an indication of how these scores have evolved over time for the two groupings.

The results of the STRI compilations in Figure B.1 show that the STRI scores for the 16 APEC economies are well above the average STRI scores for the OECD grouping for each of the eight years for the logistics-related sectors<sup>99</sup>. This difference has narrowed somewhat over this period but is still significant, indicating a greater degree of restrictive measures applied by APEC economies to sectors that are key for the operation of supply chains and regional connectivity. There has been a very slight improvement in APEC's performance in the Logistics-related sectors over the 2014 – 2021 period, declining modestly from 0.287 to 0.276, compared with the OECD average STRI score of around 0.196, which has remained fairly constant.

Figure B.2 compares the evolution of the average STRI scores for the 16 APEC economies in the three sub-categories of Logistics-related services (Logistics, Transport, and ICT) over the 2014 – 2021 period. The results show a downward trend in all of the three Logistics-related categories during these eight years, with the biggest decrease in restrictiveness shown for the area of logistics activities.

Appendix B sets out additional charts for the 16 individual APEC economies in the STRI database that compare the evolution of the STRI for each economy in the Logistics, Transport, and ICT sub-groups over the same 2014 – 2021 period. It also indicates that the overall average for APEC and the average STRI for the APEC economies in these groupings range steadily from 0.270 to 0.290, although fairly widely among the 16 APEC economies.

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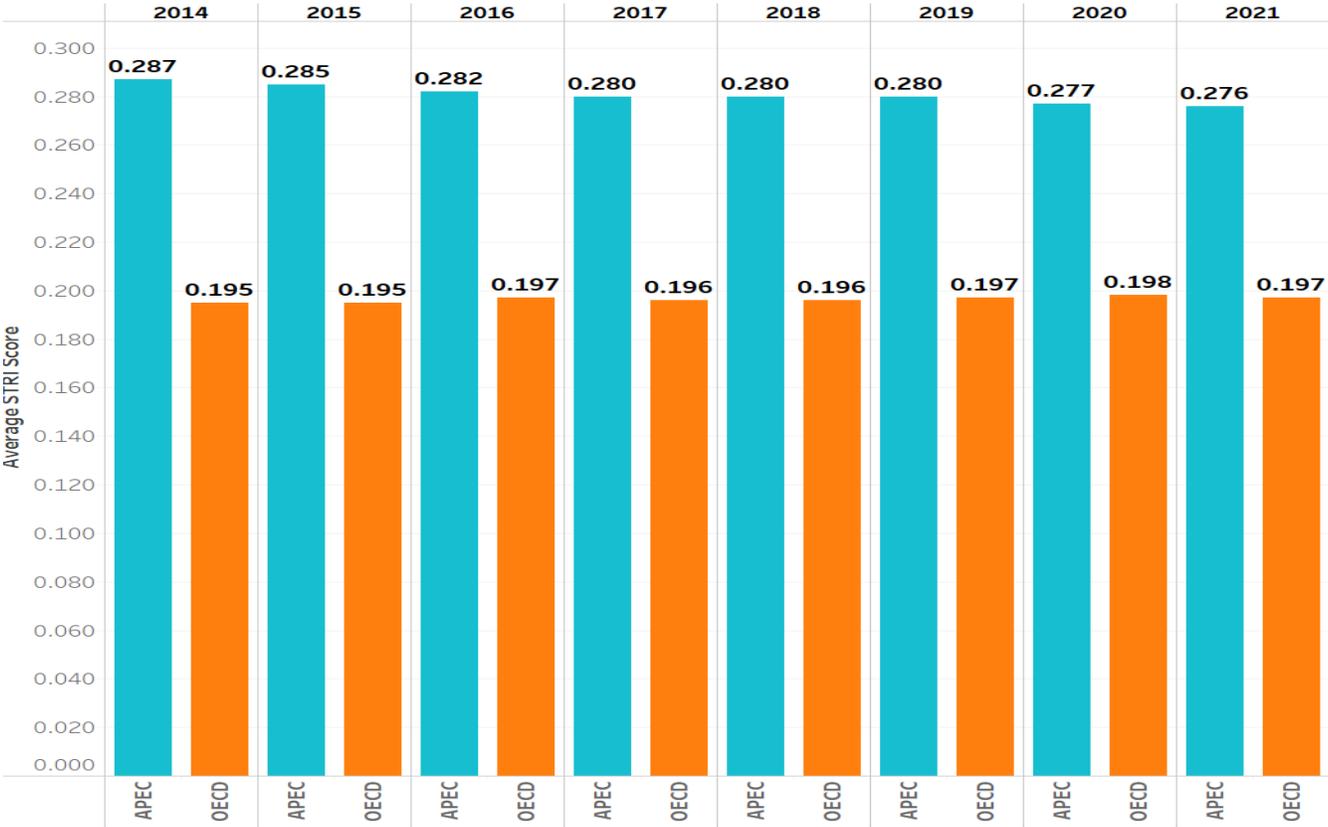
<sup>96</sup> APEC (2022). APEC Secretariat, APEC Policy Support Unit, Economic Committee (EC). Proposed Indicators for Monitoring APEC Collective Progress on EAASR. <https://www.apec.org/publications/2022/01/proposed-indicators-for-monitoring-apec-collective-progress-on-eaasr>

<sup>97</sup> This is taking place in the ongoing APEC Pilot Index Project being carried out in cooperation between the OECD and the APEC GOS. The construction of the APEC Index reflects the incorporation of APEC-specific preferential measures such as the APEC Business Travel Card which applies only towards another APEC economy rather than on an MFN basis.

<sup>98</sup> The 2021 STRI data were released in a publication by the OECD on February 1, 2022, allowing for this information to be as up to date as possible. See OECD (2022). *OECD Services Trade Restrictiveness Index: Policy Trends up to 2022*. [https://issuu.com/oecd.publishing/docs/oecd\\_stri\\_policy\\_trends\\_up\\_to\\_2022](https://issuu.com/oecd.publishing/docs/oecd_stri_policy_trends_up_to_2022)

<sup>99</sup> It is the case that there is an overlap in some of the economies that are included in both of these groupings. Eight APEC economies are also members of the OECD, namely Australia, Canada, Chile, Japan, Korea, Mexico, New Zealand, the United States.

**Figure B.1: Comparison of the average STRI for 11 Logistics-related Sectors for the APEC and OECD economies between 2014 and 2021**



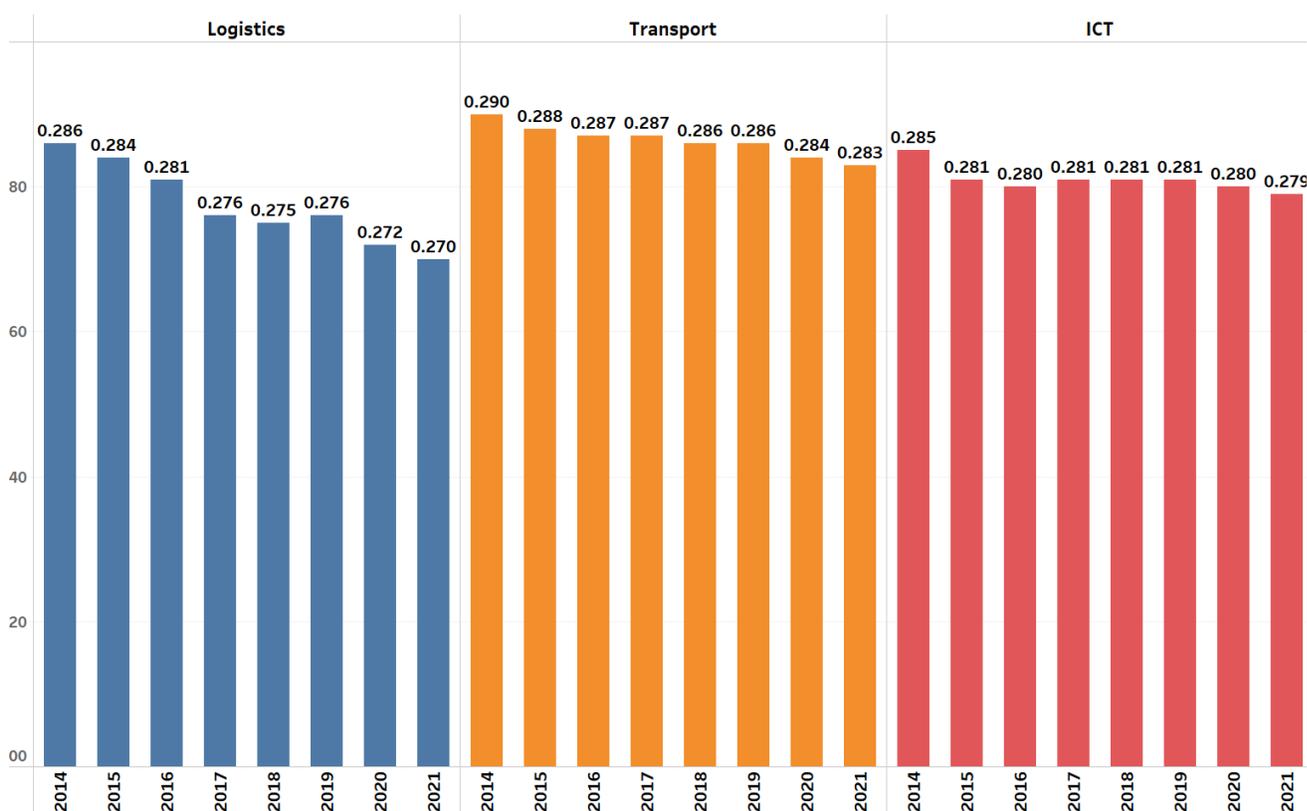
Source: Authors’ calculations based on the information in the OECD STRI database.

*Note: The average STRI scores are calculated based on 11 logistics-related sectors, including Air transport, Courier services, Distribution services, Logistics (cargo-handling), Logistics (customs brokerage), Logistics (freight forwarding), Logistics (storage and warehouse), Maritime transport, Rail freight transport, Road freight transport and Telecommunication. **The STRI indices take values between zero and one, one being the most restrictive.** They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.*

According to the recent report on *OECD Services Trade Restrictiveness Index: Policy Trends up to 2022*<sup>100</sup>, China and Indonesia are signaled as the two of the leading reformers in the Logistics-related sectors. Both recorded significant decreases in the STRI (See Figure B.14 and B.8 of Appendix B) as a result of progressive liberalization of foreign direct investment regulations. Chile has been cited for liberalizing changes across logistics sectors by revising its customs regulation, introducing an Authorized Economic Operators Scheme open to foreign firms and authorizing the release of goods before the determination and payment of duties (See Figure B.7, Appendix B).

<sup>100</sup> OECD (2020). *OECD Services Trade Restrictiveness Index: Policy Trends up to 2020*. <https://www.oecd.org/trade/topics/services-trade/documents/oecd-stri-policy-trends-up-to-2020.pdf>

**Figure B.2: Average STRI Score for the 16 APEC Economies in the Logistics, Transport and ICT Sectors between 2014 and 2021**



Source: Authors' calculations based on the information in the OECD STRI database.

*Note: The average STRI scores are calculated based on 11 logistics-related sectors, including Air transport, Courier services, Distribution services, Logistics (cargo-handling), Logistics (customs brokerage), Logistics (freight forwarding), Logistics (storage and warehouse), Maritime transport, Rail freight transport, Road freight transport and Telecommunication. **The STRI indices take values between zero and one, one being the most restrictive.** They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.*

Japan abolished the previous requirement for the domestic company registration as well as the economic need tests for authorizing business licenses (Figure B.9, Appendix B). Viet Nam was cited for its substantial reduction in the STRI between 2014 to 2021 for logistics (Figure B.20, Appendix B), as well as a new Investment Law in 2020 with a negative list approach for market access. More details of the main policy changes identified in the annual STRI update for other APEC economies are contained in the recent OECD 2022 report. All of these recent policy changes, along with others where relevant, can be seen reflected in the movement of the STRI indicators for the individual APEC economies in the charts in Appendix B.

## C. UN Global Survey on Digital and Sustainable Trade Facilitation Implementation (TFI)

### ⇒ United Nations Global Survey on Digital and Sustainable Trade Facilitation

To help benchmarking and reducing the time and cost of trading across borders, the United Nations Regional Commissions (UNRCs)<sup>101</sup> have jointly conducted the UN Global Survey on Digital and Sustainable Trade Facilitation (the Survey henceforth) since 2015. The Survey currently covers 144 economies, including 18 APEC members, and 58 measures related to the World Trade Organization's Trade Facilitation Agreement (TFA), as well as emerging regional and global initiatives on paperless trade or e-trade, such as the recent Framework Agreement on Facilitation of Cross-Border Paperless Trade in Asia and the Pacific (CPTA), in force since 2021. The collected information is processed and then disseminated<sup>102</sup> through two channels: 1) Global Report<sup>102</sup> and Regional Reports<sup>103</sup> which are produced every two years starting in 2015, and 2) an interactive database (<https://www.untfsurvey.org/>) which allows for cross-economy, economy groups<sup>104</sup> and overtime comparisons with respect to implementation of trade facilitation measures. Jointly these knowledge products provide insightful information for policymakers and trade practitioners enabling them to reduce time and cost of administrative trade procedures, increase predictability for trade and thus benefit participation in current or restructured GVCs especially for small businesses. The inclusion of crisis-specific aspects of trade facilitation into the Survey after the onset of the pandemic in 2020, positioned this Survey well and in a timely fashion as one of the important tools for addressing challenges of supply chain connectivity in times of crisis. Furthermore, it provides a tool to monitor which policy changes in the range of trade facilitation contributes most to making trade an engine of growth and an effective driver of efforts to meeting the Sustainable Development Goals.

The Survey, in contrast to the World Bank Logistics Performance Index and the OECD Services Trade Restrictiveness Index, does not produce an index, but it measures trade performance by calculating a Trade Facilitation Implementation Score which is available for each tracked economy and clusters of measures over the 2015-2021 period.

### ⇒ The Dimensions of Logistics Services Captured by the UN Global Survey

The 58 common trade facilitation measures are classified into four groups and 11 subgroups (see also Table VI.C.1) as follows:

- 1) **“General Trade Facilitation”** combines 22 measures classified in the following subgroups: ‘Transparency’, ‘Formalities’, ‘Institutional Arrangement and Cooperation’ and ‘Transit Facilitation’.
- 2) **“Digital Trade Facilitation”** combines 16 measures fitting into the subgroups: ‘Paperless Trade’ and ‘Cross-Border Paperless Trade’.
- 3) **“Sustainable Trade Facilitation”** combines 12 measures fitting into the subgroups: ‘Trade Facilitation for SMEs’, ‘Agricultural Trade Facilitation’ and ‘Women in Trade Facilitation’.

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<sup>101</sup> These UNRCs are the Economic Commission for Africa, the Economic Commission for Europe, the Economic Commission for Latin America and the Caribbean, the Economic and Social Commission for Asia and the Pacific and the Economic and Social Commission for Western Asia.

<sup>102</sup> The most recent is Digital and Sustainable Trade Facilitation: Global Report 2021, United Nations, 2022 <https://unescap.org/kp/2022/untf-survey-2021-global?ref=untfsurvey.org>

<sup>103</sup> Regional reports covering member States of each of the UNRC are regularly published (<https://www.untfsurvey.org/report>). In addition, data can be downloaded for several member groupings: ASEAN, APTA, CAREC, CPTPP, SPECA, etc. (<https://www.untfsurvey.org/group>).

<sup>104</sup> Data can be downloaded for several member groupings: ASEAN, APTA, CAREC, CPTPP, SPECA, etc. (<https://www.untfsurvey.org/group>).

- 4) “**Other Trade Facilitation**” includes 12 measures sourced from ‘Trade Finance Facilitation’<sup>105</sup> and ‘Trade Facilitation in Times of Crisis’<sup>106</sup> subgroups.

The overall scope of the survey goes beyond the measures included in the WTO TFA. For instance, most paperless trade measures, particularly for crossborder paperless trade, are not specifically featured in the WTO TFA. However, their inclusion in many cases would support better implementation of the TFA in general and especially promote faster digitization. Similarly, most “Sustainable Trade Facilitation” group measures are not specifically included in the WTO TFA, except for some of the ‘Agricultural Trade Facilitation’ measures. The “Other Trade Facilitation” measures are the latest addition to the Survey. The role of trade finance in facilitating trade flows has come into focus with the Global Financial Crisis in 2008 and continued to be one of the major concerns especially from the inclusivity perspective, and of course in the context of responding to crisis. The Survey 2021 added five specific measures deemed as necessary to manage the current crisis and to support resilient post-pandemic recovery. “To ‘build back better’, sustainable and resilient recovery practices are required in order to avoid future systemic vulnerabilities. In this context, immediate emergency responses and long-term action plans for trade facilitation in response to pandemics and crises have been incorporated into the 2021 survey.”<sup>107</sup>

At a first glance, the link between trade facilitation as covered in the WTO TFA and logistics services might appear somewhat tenuous. WTO TFA is preoccupied with improving efficiency in trade of goods, and does not extend to trade in services. Nevertheless, measures and practices stipulated by the WTO TFA as trade facilitating belong directly and indirectly into the domain of logistic services. As mentioned several times throughout this paper, goods cannot cross national borders without logistics services like transport, warehousing, storage, freight forwarding, financial and information services.<sup>108</sup>

All these services are essential for movements of goods, in particular those produced and traded through value chains and relying on ‘just-in-time’ delivery. This perspective of a supply chain is used as a reference model in designing the Survey so to reflect groupings of trade facilitation measures aligned with sub-clusters of logistics services. The fact that the Survey goes beyond the WTO TFA requirements allows it to inform about the progress in easing the cross-border transactions more holistically (please refer back to the Box 1 in section III of this paper).

In fact, while there is no one-to-one correspondence between the logistics services covered in LPI or logistics services included in the STRI, there is a significant overlap of components in those indices with the measures that are incorporated in the TFI scores. Several components of the ‘Logistics subgroup’ of the STRI, ‘efficiency of customs clearance’ of the LPI and ‘Formalities’ and ‘Cross-border paperless trade’ in TFI provide similar or same information: that improvement in such a component or measure leads to lower cost, reduced time and/or more efficient trade.

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<sup>105</sup> Trade finance facilitation subgroup of measures was developed in cooperation with the International Chamber of Commerce and was an optional subgroup in the 2019 Survey and three regional commissions, i.e., ESCAP, Economic and Social Commission for Western Asia, and Economic Commission for Europe used this optional subgroup. In 2021, this subgroup is updated and surveyed across all regions.

<sup>106</sup> Measures in the subgroup ‘Trade facilitation in times of crisis’ were introduced for the first time in the 2021 Survey.

<sup>107</sup> United Nations (2022). *Digital and Sustainable Trade Facilitation: Global Report 2021*, p. 3., <https://unescap.org/sites/default/d8files/knowledge-products/UNTF-Global%20Report-web%2B.pdf>

<sup>108</sup> The literature offers a mix of views on differentiation of trade facilitation measures and services. For example, Czapnik, Ben and Saeed, Mohammad (2016) argue that “The TFA does not address logistics services. This is not surprising as the TFA is a trade in goods agreement and, in any case, many members consider logistics services to be a private sector activity. However, from the point of view of business, additional costs or delays linked to the inefficient provision of logistics services can be just as significant as those linked to areas where government is more directly involved, such as border procedures or infrastructure” in “Trade Facilitation: Making Trade More Efficient” in *Asia–Europe Connectivity Vision 2025 Challenges and Opportunities*, ERIA, pp. 97-109, [https://www.eria.org/Asia\\_Europe\\_Connectivity\\_Vision\\_2025.pdf](https://www.eria.org/Asia_Europe_Connectivity_Vision_2025.pdf).

**Table C.1 Grouping of trade facilitation measures and correspondence with WTO TFA articles**

Groups	Subgroups	Measures	Relevant TFA Articles
General Trade Facilitation	Transparency (5 measures)	Publication of existing import–export regulations on the internet	1.2
		Stakeholders’ consultation on new draft regulations (prior to their finalization)	2.2
		Advance publication/notification of new trade-related regulations before their implementation (e.g., 30 days prior)	2.1
		Advance ruling on tariff classification and origin of imported goods	3
		Independent appeal mechanism (for traders to appeal customs rulings and the rulings of other relevant trade control agencies)	4
	Formalities (8 measures)	Risk management (for deciding whether a shipment will be physically inspected)	7.4
		Pre-arrival processing	7.1
		Post-clearance audits	7.5
		Separation of release from final determination of customs duties, taxes, fees, and charges	7.3
		Establishment and publication of average release times	7.6
		Trade facilitation measures for authorized operators	7.7
		Expedited shipments	7.8
		Acceptance of copies of original supporting documents required for import, export, or transit formalities	10.2.1
	Institutional arrangement and cooperation (5 measures)	Establishment of a national trade facilitation committee or similar body	23
		National legislative framework and/or institutional arrangements for border agencies cooperation	8
		Government agencies delegating border controls to customs authorities	
		Alignment of working days and hours with neighboring countries at border crossings	8.2(a)
		Alignment of formalities and procedures with neighboring countries at border crossings	8.2(b)
	Transit facilitation (4 measures)	Transit facilitation agreement(s) with neighboring country(ies)	
		Customs authorities limit the physical inspections of transit goods and use risk assessment	10.5
		Supporting pre-arrival processing for transit facilitation	11.9
		Cooperation between agencies of countries involved in transit	11.16
	Digital Trade Facilitation	Paperless trade (10 measures)	Automated Customs System (e.g., ASYCUDA)
Internet connection available to customs and other trade control agencies at border crossings			
Electronic single window system			10.4
Electronic submission of customs declarations			
Electronic application and issuance of import and export permits			
Electronic submission of sea cargo manifests			
Electronic submission of air cargo manifests			
Electronic application and issuance of Preferential Certificate of Origin			
E-payment of customs duties and fees			7.2
Electronic Application for Customs Refunds			

*continued next page*

Groups	Subgroups	Measures	Relevant TFA Articles
Digital Trade Facilitation	Cross-border paperless trade (6 measures)	Laws and regulations for electronic transactions are in place (e.g., e-commerce law, e-transaction law)	
		Recognized certification authority issuing digital certificates to traders to conduct electronic transactions	
		Electronic exchange of customs declaration	
		Electronic exchange of Certificate of Origin	
		Electronic exchange of Sanitary and Phyto-Sanitary (SPS) Certificate	
		Paperless collection of payment from a documentary letter of credit	
Sustainable Trade Facilitation	Trade facilitation for SMEs (5 measures)	Trade-related information measures for small and medium-sized enterprises (SMEs)	
		SMEs in Authorized Economic Operators (AEO) scheme (i.e., government has developed specific measures that enable SMEs to more easily benefit from the AEO scheme)	
		SMEs access single window (i.e., government has taken actions to make single windows more easily accessible to SMEs, e.g., by providing technical consultation and training services to SMEs on registering and using the facility.)	
		SMEs in a national trade facilitation committee (i.e., government has taken actions to ensure that SMEs are well-represented and made key members of national trade facilitation committees)	
		Other special measures for SMEs	
	Agricultural trade facilitation (4 measures)	Testing and laboratory facilities available to meet SPS standards of main trading partners	
		National standards and accreditation bodies are established to facilitate compliance with SPS standards	
		Electronic application and issuance of SPS certificates	
		Special treatment for perishable goods at border crossings	7.9
	Women in trade facilitation (3 measures)	Trade facilitation policy/strategy to increase women's participation in trade	
		Trade facilitation measures to benefit women involved in trade	
		Women membership in the national trade facilitation committee or similar bodies	
	Other Trade Facilitation	Trade finance facilitation (3 measures)	Single window facilitates traders' access to finance
Authorities engaged in blockchain-based supply chain project covering trade finance			
Variety of trade finance services available			
Trade facilitation in times of crisis (5 measures)		Agency in place to manage trade facilitation in times of crises and emergencies	
		Online publication of emergency trade facilitation measures	
		Coordination between countries on emergency trade facilitation measures	
		Additional trade facilitation measures to facilitate trade in times of emergencies	
		Plan in place to facilitate trade during future crises	

Source: UN ESCAP (2021). *Digital and Sustainable Trade Facilitation in the Asia-Pacific Regional Report 2021*, Table 2, pp.2-5. <https://www.unescap.org/kp/2021/untf-survey-2021-regional>.

The Trade Facilitation Implementation Scores are meant to be used as markers of areas where further work is needed to simplify and harmonize customs and other trading formalities, procedures, and the related exchange of information and documents between the various partners in the supply chains in order to make trade across borders faster, cheaper, more predictable whilst ensuring safety and security. In that sense it has been included in this background paper as one of the indicators providing insights about the performance of logistics sector in the economies tracked.

Importantly, a strong positive relationship is observed between logistics performance and trade facilitation implementation (Figure C.1). Economies which are strong performers in logistics as measured by the LPI (data in 2018) tend to be also scoring close to full or full implementation of trade facilitation measures from the WTO TFA. Conversely, the economies which have not implemented more than half of the WTO TFA measures also show very poor logistics performance. The nature of this visualization is such that it does not establish a causation between these two variables. However, one can confidently argue that there is inter-dependency in a positive direction between the changes in the policies and measures in trade facilitation and those that impact quality and efficiency of logistics services. These two clusters of measures support each other. As we have discussed in section VI of this paper, strong performance in LPI and TFI are linked to lower trade costs too, thus benefiting competitiveness of producers/traders and overall gains from trade.

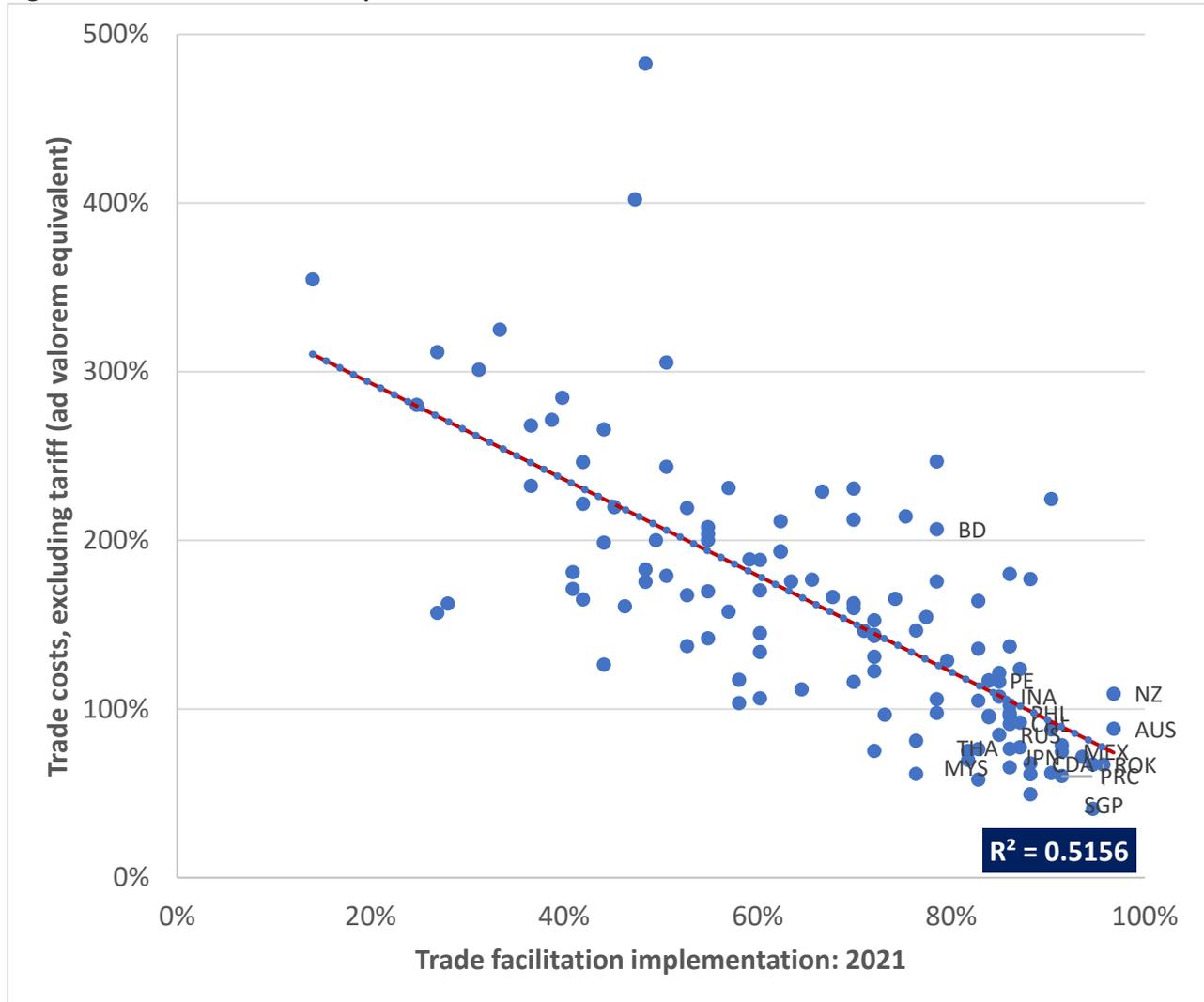
**Figure C.1. Trade facilitation implementation and logistics performance**



Source: World Bank Logistics Performance Index (2018) and the UN Global Survey on Digital and Sustainable Trade Facilitation (2021). Available at [untfsurvey.org](http://untfsurvey.org)

Similarly, Figure C.2 confirms the strong negative relationship between international trade costs (excluding tariffs) on one hand and the implementation of general and digital trade facilitation measures on another. In principle, low trade facilitation implementation score seems to be penalized with relatively higher levels of trade costs as expressed in ad valorem equivalents.<sup>109</sup>

**Figure C.2. Trade facilitation implementation and Trade Cost**



Source: World Bank Logistics Performance Index (2018) and the UN Global Survey on Digital and Sustainable Trade Facilitation (2021). Available at [unfssurvey.org](https://unfssurvey.org)

⇒ **Constructing the Trade Facilitation Implementation Score**

The methodology for a collection and validation of data for the dataset follows a three-step approach: (1) Data submission by experts; (2) Data verification by the United Nations Regional Commissions (UNRCs) Secretariat; and (3) Data validation by national governments.<sup>110</sup>

<sup>109</sup> See also Figure C.4 in the Appendix C for the estimation of the impact of implementation of separate clusters of trade facilitation measures on the trade costs of APEC economies.  
<sup>110</sup> See more details in United Nations (2021). *2021 UN Global Survey on Digital and Sustainable Trade Facilitation – Methodology*, <https://www.unfssurvey.org/files/documents/2021-Survey-Methodology.pdf> and Box 1 in United Nations (2022). *Digital and Sustainable Trade Facilitation: Global Report 2021*, p.6. <https://unescap.org/sites/default/d8files/knowledge-products/UNTF-Global%20Report-web%2B.pdf>

Scoring of each of the trade facilitation measures included in the Survey involves four levels of implementation and assignment of four different scores: score 3 for “fully implemented”, score 2 for “partially implemented”, score 1 for “pilot state”, score 0 for “not implemented” or “don’t know”.

Definitions for each level of implementations are as follows:<sup>111</sup>

- Full implementation: The trade facilitation measure implemented is in full compliance with commonly-accepted international standards, recommendations and conventions such as the Revised Kyoto Convention, UN/CEFACT Recommendations, or the WTO TFA; it is implemented in law and practice; it is available to essentially all relevant stakeholders nationwide, and supported by adequate legal and institutional frameworks as well as adequate infrastructure and financial and human resources. A TFA provision included in the commitments given under Notifications of Category A may generally be considered as a measure that is fully implemented by the economy, with a caveat that the provision will be implemented by a Least-Developed Economy member within one year of the TFA agreement coming into force. If an economy registers a positive response for all sub-questions concerning a given trade facilitation measure, that measure should be considered fully implemented.
- Partial implementation: A measure is considered to be partially implemented if at least one of the following is true: (1) the trade facilitation measure is in partial – but not in full – compliance with commonly-accepted international standards, recommendations and conventions; (2) the economy is still in the process of rolling out the implementation of the measure; (3) the measure is being used but on an unsustainable, short-term or ad-hoc basis; (4) the measure is implemented in some – but not all – targeted locations (such as key border crossing stations); or (5) some – but not all – targeted stakeholders are fully involved.
- Pilot stage of implementation: A measure is considered to be at the pilot stage of implementation if, in addition to meeting the general attributes of partial implementation, it is available only to a very small portion of the intended stakeholder group (or at a certain location), and/or is being implemented on a trial basis. When a new trade facilitation measure is at the pilot stage of implementation, the old measure is often continuously used in parallel to ensure that the service is still provided even when there has been a disruption with the new measure. This stage of implementation also includes relevant rehearsals and preparation for the full implementation.
- Not implemented: A measure has not been implemented at this stage. However, this stage may still include initiatives or efforts towards implementation of the measure. For example, under this stage, (pre)feasibility studies or planning for the implementation can be carried out; and consultation with stakeholders on the implementation may be arranged.

The overall rate of trade facilitation implementation (TFI) as well as the group or sub-group rates of implementation are calculated using simple averages of the implementation rate for each relevant individual measure.

The TFI is calculated using measures from five sub-groups (*k*): (1) transparency, (2) formalities, (3) institutional arrangements and cooperation, (4) paperless trade and (5) cross-border paperless trade. Note that there are in total 34 measures (*m*) in these five sub-groups (in the survey). However, 3 measures are excluded from the calculation of implementation rates as they are not relevant/applicable to all economies – these are: measures related to questions no. 33 and 34, classified under Institutional arrangement and cooperation, and question no.

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<sup>111</sup> These are taken from Annex 1 of the United Nations (2022), *Digital and Sustainable Trade Facilitation: Global Report 2021*, p. 48. <https://unescap.org/sites/default/d8files/knowledge-products/UNTF-Global%20Report-web%2B.pdf>

20 under paperless trade. Therefore, there are only 31 measures used for the calculation of TFI. All DK and NA responses of these 31 measures are treated as “no implementation” (score of 0). The formula below summarizes this process of calculating the rate for implementation of each sub-group k:

$$IMP\_RATE_k = \sum_{n \in S} \frac{Q_n}{3 \times m_k}$$

where

$$S \in \{S_1, S_2, S_3, \dots, S_9\}$$

$m_k$  = total number of measures included in group k

$Q_n$  = scores of question number n, which follows the definition in the table below.

Table: Sub-group  $S_i$ , corresponding question numbers (n) and sub-group name for TFI

$S_i$	n (question number related to each measure included)	$m_k$ (number of measures)	TFI/sub-group (k)
$S_1$	2, 3, 4, 5, 9	5	Transparency (TRANSPARENCY)
$S_2$	6, 7, 8, 10, 11, 12, 13, 14	8	Formalities (FORMALITIES)
$S_3$	1, 31, 32	3	Institutional arrangement and cooperation (INSTITUTION)
$S_4$	15, 16, 17, 18, 19, 21, 22, 23, 24	9	Paperless trade (PAPERLESS)
$S_5$	25, 26, 27, 28, 29, 30	6	Cross-border paperless trade (CROSS_BORDER)
$S_{TFI}$	$\forall n \in \{S_1, S_2, \dots, S_5\}$	31	Overall trade facilitation implementation (TFI)
$S_7$	39, 40, 41, 42, 43	5	Trade facilitation for SMEs (SMEs)
$S_8$	44, 45, 46, 47	4	Agricultural trade facilitation (AGRI)
$S_9$	48, 49, 50	3	Women in trade facilitation (WOMEN)

Source: United Nations (2021). *2021 UN Global Survey on Digital and Sustainable Trade Facilitation – Methodology*.<sup>112</sup>

### ⇒ Coverage and Frequency of Data Collection for the Trade Facilitation Implementation Scores

As shown in Table C-3, 18 APEC economies are covered in the TFI scores. The data collected are for the period 2015- 2021. Publication of the TFI is done every two years.

**Table VI.C.3: TFI Scores Coverage of APEC Economies and Frequency of Data Collection**

APEC Economies covered	18 (AUS, BD, CDA, CHL, PRC, INA, JPN, ROK, MAS, MEX, NZ, PNG, PE, PHL, RUS, SGP, THA, VN)
Period covered	2015 – 2021
Data frequency	Every two years.

Source: <https://www.untsurvey.org/>

<sup>112</sup> These are taken from United Nations (2021). *2021 UN Global Survey on Digital and Sustainable Trade Facilitation – Methodology*. <https://www.untsurvey.org/files/documents/2021-Survey-Methodology.pdf>

## ⇒ Usefulness / Limitations of the Trade Facilitation Implementation Scores

### Usefulness

- The objective of the Survey is to enable economies to better understand and monitor progress on implementation of trade facilitation measures, including those related to digital trade across borders.
- The information in the database is factual and not based on perceptions. Importantly, it is verified by national governments before publication.
- The process of collection and validation of data reveals some of the weaknesses at national level and flags the areas in need for more capacity building and higher technical assistance needs.
- The existence of consistently and reliably collected and analyzed data directly contributes towards evidence-based policymaking as well as further empirical research especially in understanding how improvements in implementation of trade facilitation impact trade costs.
- The scores of Trade Facilitation Implementation can be used by both governments and business as benchmarks and indicators for necessary investment into hard and soft trade facilitation infrastructure.
- The Survey results help to create a reliable, fast and cost-effective trade environment that benefits all economies and businesses, especially small and medium-sized enterprises (SMEs).
- The TFI indicators represent a collaborative effort by governments and traders to cut the costs of doing trade, reduce delays at borders, and make public agencies dealing with trade more efficiently by pointing to processes requesting multiple information and documents.

### Limitations

- The TFI indicator is based on WTO TFA measures and therefore the link to logistics services is only partial and often indirect.
- Because of the collaborative approach to data collection, it is a slow process and it is underfunded.

## ⇒ Trade Facilitation Implementation Scores for the APEC Economies

Figure C. 3 shows the average rates of implementation of trade facilitation measures in the 18 APEC economies covered by the dataset. The implementation rates are calculated based on 31 trade facilitation measures relevant to all 144 economies included in the survey.<sup>113</sup> The global average TFI rate stands at 64.7 percent. APEC economies as a group scored the highest rate of TFI implementation at 85.36 percent, compared to all developed economies achieving a rate of 81.8 percent. At the other extreme, the Pacific Islands have the lowest TFI implementation rate (40.1 percent). Variations among APEC economies is also wide, ranging from 44.1 percent for Papua New Guinea to 96.8 percent for Australia and New Zealand. The figure breaks down the implementation scores for the TFI into the four categories of Transparency; Formalities; Institutional Arrangement and Cooperation; Paperless Trade; and Cross-border Paperless Trade. Most of the logistics and logistics-related categories fall under the second, fourth and fifth categories, as mentioned above, but it is not easy to attribute how much of the progress in those categories have contributed to the overall score change. However, the estimates run on the impact of the progress made in trade facilitation measures implementations on the overall trade costs (Appendix C Figure C.4) indicate

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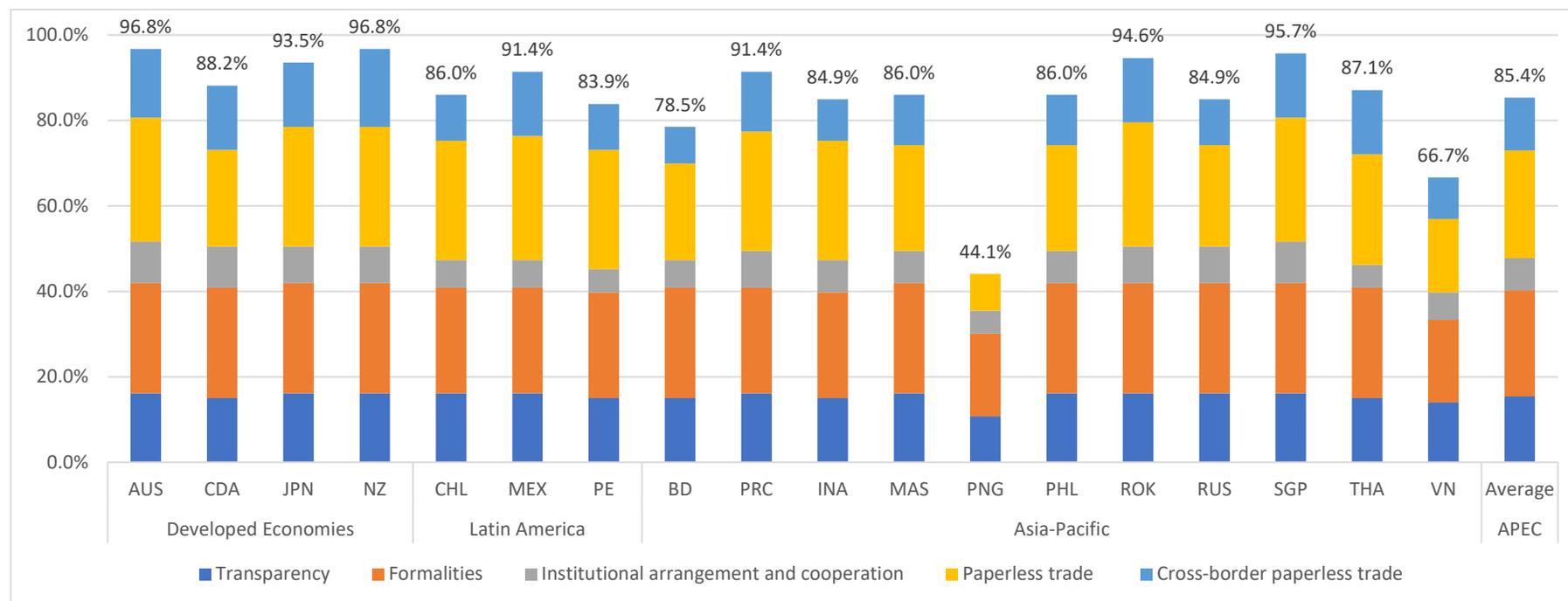
<sup>113</sup> Out of 58 measures surveyed across UNRCs, three measures including Electronic Submission of Sea Cargo Manifests, Alignment of Working Days and Hours with Neighboring Members at Border Crossings and Alignment of Formalities and Procedures with Neighboring Members at Border Crossings are excluded when calculating the overall score as they are not relevant to all members surveyed. Four Transit Facilitation measures are also excluded for the same reason. In addition, Sustainable Trade Facilitation and Other Trade Facilitation are excluded, as these are newly-added groups of measures not included in the original Survey.

that there is a significant potential savings in trade costs. The estimate is based on three scenarios. One scenario takes into account only the measures that are WTO TFA binding and they may cut the trade costs on average by less than 1 percent (from zero in Japan and Republic of Korea to 1.23 percent in Peru). The second scenario bases the estimate on implementation of both binding and non-binding WTO TFA measures. This increases the potential for cost cuts by about another 2 percent on average per the economy. The third scenario combines implementation of all measures, including digital implementation of TFA measures and cross-border paperless trade. Not surprisingly, this opens potential for significant trade cost cuts up to 7.5 per cent per economy. This is indicative of the potential for improving efficiency of logistics in APEC economies, especially in the crisis situations.

Figure C.4 shows the evolution of the TFI scores for the 18 APEC economies across time, over the period 2015-2021. The average implementation rate increased by approximately 17 percentage points from 68 percent in 2015 to 85 percent in 2021 for the 18 APEC economies, including Canada with data available from Survey 2017 onward. The most progress is recorded by Brunei Darussalam, whose implementation rate increased by 29 percentage points (from 49 percent in 2015 to 78 percent in 2021, average rate increase was 7.26 percent per year), followed by Russia, an increase of 27 percentage points (from 58 percent in 2015 to 85 percent in 2021, average rate increase was 6.72 per cent per year). Three other economies made a significant progress of over 20 percentage points over the 2015 – 2021 period: Indonesia (an upward move of 24 percentage point) Mexico (22 percentage points), Peru and Philippines (20 percentage points). The economies which were high achievers in 2021, that is, with a completed implementation rate of over 90 percent in that year in fact did not have to cover much distance as they were already good implementers in 2015. In other words, they added less than 13 percentage points on average: Australia (12 percentage points), Japan (16 percentage points), New Zealand (18 percentage points), China (13 percentage points), Republic of Korea (9 percentage points), and Singapore (8 percentage points). On the other hand, Papua New Guinea whose implementation rate was low in 2015 moved up by only 10 percentage points by 2021 with still no measures implemented in a category of “Cross-border paperless trade”.

In summary, there is an improvement in the adoption of trade facilitation measures over these six years for all 18 APEC economies, which is quite significant for many. This is a positive evolution in itself. Appendix D provides more details and a breakdown of the contributions of individual clusters of trade facilitations measures.

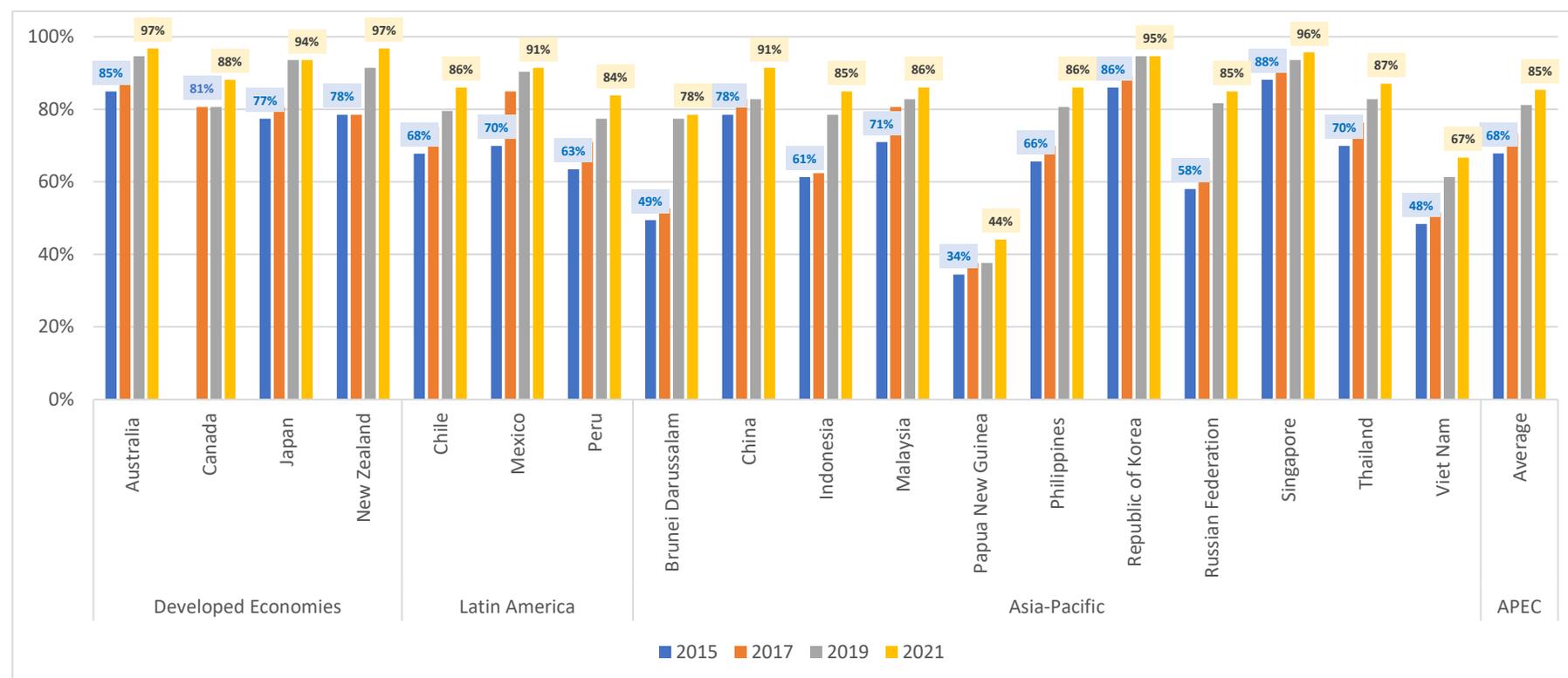
**Figure C.3: The 18 APEC Economies in the 2021 Trade Facilitation Implementation**



Source: Authors' calculations based on the information in the UN TFI database.

Note: The figure shows the cumulative trade facilitation implementation scores of APEC economies for 5 common trade facilitation measures included in the survey (1) transparency, (2) formalities, (3) institutional arrangements and cooperation, (4) paperless trade and (5) cross-border paperless trade. Full implementation of all measures = 100.

**Figure C.4: TFI for the 18 APEC Economies 2015 – 2021**



Source: Authors' calculations based on the information in the UN TFI database.

Note: Canada data is available from Survey 2017 onward. The figure shows the cumulative trade facilitation implementation scores of APEC economies for 5 common trade facilitation measures included in the survey (1) transparency, (2) formalities, (3) institutional arrangements and cooperation, (4) paperless trade and (5) cross-border paperless trade. Full implementation of all measures =100

## D. APEC's Work on Logistics and the APEC Connectivity Index

Logistics has figured in APEC's work in various forms for the past 15 years. Logistics was one of the main components of the APEC Supply Chain Connectivity Framework Action Plan, which APEC economies carried out in two phases for over a decade (2010-2020) under the umbrella of the Committee on Trade and Investment (CTI). It was an initial focus of the GOS work during the 2017 Viet Nam APEC Year. Aspects of logistics figure as part of the ongoing APEC Connectivity Blueprint (2015-2025) work and are also present in several of the objectives of the Aotearoa Plan of Action to implement the Putrajaya Vision for APEC. Additionally, several other areas of APEC's work have targeted logistics in various ways. An overview of the main areas of this work will be discussed below.

### ⇒ Logistics Focus in APEC's Trade Recovery Programme (TRP) Pilot Exercise 2010

The APEC Counter Terrorism Task Force was set up by a group of ten APEC economies in response to APEC Leaders' approval of the APEC TRP Guidelines in September 2007. The Pilot Project that was undertaken examined the best ways for APEC to respond to a terrorist attack on the global supply chain that could have debilitating impacts on the global and regional economy, and how best to minimize this impact on the flow of international cargo and to achieve trade recovery. The recommendations from this work could be seen to have direct relevance to the impact on trade and supply chains resulting from the Covid-19 pandemic.

The Guidelines largely leverage on existing international frameworks and arrangements such as those from the World Customs Organisation (WCO) and the International Maritime Organisation (IMO). They advocate a risk-based, total supply chain security approach which involves all stakeholders in the supply chain and the building of trusted relationships between Economies to facilitate the sharing of information, including that which enhances risk assessments. The Pilot Project affirmed the relevance of the APEC TRP Guidelines and made the following recommendations aimed to encourage APEC economies to:

- i) *develop and/or broaden their respective AEO programmes in alignment with the WCO SAFE Framework of Standards*
- ii) *explore establishing trusted relationships based on the WCO SAFE Framework and IMO concepts which the APEC TRP Guidelines incorporates, in order to improve risk assessment and mitigation, and thereby expedite clearance and movement of cargo along the supply chain*
- iii) *be ready to embark on a trade recovery programme to develop Economy-to-Economy as well as Public-Private sector communications mechanisms with relevant partners to operationalise the APEC TRP.*
- iv) *organize capacity building initiatives such as training programmes, symposiums and workshops on best practices in relation to the APEC TRP.*<sup>114</sup>

In addition, the report noted that participants in the Pilot Programme:

- *Agreed that a risk-based, total supply chain security approach was an effective means to facilitate trade recovery by focusing on identifying and facilitating the movement of low risk shipments while allowing limited Government resources to be used to target the high-risk shipments*
- *Acknowledged that some aspects of the TRP principles and guidelines could be relevant and appropriate in assisting to minimise the possible impacts caused by other types of disruptions to trade flows.*

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<sup>114</sup> APEC (2010). *Report on the APEC Trade Recovery Programme Pilot Exercise* of the APEC Counter-terrorism Task Force, April 2010, [https://www.apec.org/docs/default-source/publications/2010/4/report-on-the-apec-trade-recovery-programme-pilot-exercise-april-2010/210\\_cttf\\_trp\\_pilot.pdf?sfvrsn=5de901a7\\_1](https://www.apec.org/docs/default-source/publications/2010/4/report-on-the-apec-trade-recovery-programme-pilot-exercise-april-2010/210_cttf_trp_pilot.pdf?sfvrsn=5de901a7_1)

Although logistics are not mentioned 'per se', they are clearly involved in recommendation iii) above, designed to maintain and expedite movement of cargo along the supply chain in times of a terrorist attack or other types of disruptions to trade flows.

⇒ **Logistics in APEC's Supply Chain Connectivity Framework Action Plan-Phase I 2010-2015**

In 2009, the APEC Supply-chain Connectivity Framework was first endorsed by the APEC Ministerial Meeting in Singapore. It identified eight chokepoints in regional supply chains.<sup>115</sup> Subsequently the Supply Chain Connectivity Framework Action Plan (SCFAP) was adopted and carried out to address these chokepoints. The first phase of work under the SCFAP took place from 2010 to 2015, with a final assessment in November 2016 of the outcome and stocktaking.<sup>116</sup>

The APEC SCFAP I (2010–2015) set a target of 10 percent reduction in time, cost and uncertainty by 2015 through improvement in the performance of APEC in the following areas, including logistics capacity:

- i) Transparency: Lack of transparency/ awareness of the full scope of regulatory issues affecting logistics; lack of awareness and coordination among government agencies on policies affecting the logistics sector; absence of a single contact point or champion agency on logistics matters.
- ii) Infrastructure: Inefficient or inadequate transport infrastructure; lack of cross-border physical linkages such as roads and bridges.
- iii) Logistics capacity: Lack of capacity among local/regional logistics sub-providers.
- iv) Clearance: Inefficient clearance of goods at the border; lack of coordination among border agencies, especially relating to clearance of regulated goods 'at the border'.
- v) Documentation: Burdensome procedures for customs documentation and other procedures (including for preferential trade).
- vi) Multimodal connectivity: Underdeveloped multimodal transport capabilities; inefficient air, land and multimodal connectivity.
- vii) Regulations and standards: Variations in cross-border standards and regulations for movements of goods, services and business travelers.
- viii) Transit: Lack of regional cross-border customs / transit arrangements.

Logistics services and costs are examined through the lens of various of the World Bank's LPI indicators.

In the evaluation of Phase I, the report states that high logistics costs continue to be an issue and that these can arise from a variety of factors including poor quality transportation infrastructure, informal (corrupt) payments, and differing levels of efficiency for compulsory warehousing and pre-shipment inspection. It suggests that improving the quality of logistics services would be particularly significant for supply chain connectivity.

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<sup>115</sup> Bayhaqi, Akhmad and Lai, Luna Ge (2022). *A Decade of Supply Chain Initiatives: Opportunities and Challenges in Post-COVID-19 Recovery*, APEC Policy Support Unit POLICY BRIEF No. 42 January 2022. [https://www.apec.org/docs/default-source/publications/2022/1/a-decade-of-supply-chain-initiatives-opportunities-and-challenges-in-post-covid-19-recovery/222\\_psu\\_a-decade-of-supply-chain-initiatives.pdf?sfvrsn=4a241f9c\\_2](https://www.apec.org/docs/default-source/publications/2022/1/a-decade-of-supply-chain-initiatives-opportunities-and-challenges-in-post-covid-19-recovery/222_psu_a-decade-of-supply-chain-initiatives.pdf?sfvrsn=4a241f9c_2)

<sup>116</sup> APEC (2016). *APEC Supply Chain Connectivity Framework Action Plan 2010–2015: Final Assessment*, APEC Policy Support Unit, November 2016, [https://www.apec.org/docs/default-source/publications/2016/11/apec-supply-chain-connectivity-framework-action-plan-2010-2015-final-assessment/scfap-final-assessment-report\\_final.pdf?sfvrsn=11d333b8\\_1#:~:text=The%20APEC%20Supply%20Chain%20Connectivity,cost%20and%20uncertainty%20by%202015](https://www.apec.org/docs/default-source/publications/2016/11/apec-supply-chain-connectivity-framework-action-plan-2010-2015-final-assessment/scfap-final-assessment-report_final.pdf?sfvrsn=11d333b8_1#:~:text=The%20APEC%20Supply%20Chain%20Connectivity,cost%20and%20uncertainty%20by%202015).

It is of note that logistics per se are not defined in the APEC SCFAP I, so it is not clear exactly what this category covers. There is likewise no definition provided as to what constitutes “logistics capacity”. This renders the recommendation for improvement of logistics capacity difficult to implement in practice. Notable however, is the mention of the “.....lack of awareness and coordination among government agencies on policies affecting the logistics sector” in the first chokepoint above, which remains valid to the present and which this project will also address. It is also worth underlining that the focus of APEC’s work under these two Action Plans has been on overall supply chain connectivity, of which logistics capacity and logistics services were considered to be just one component.<sup>117</sup>

⇒ **Logistics Workshops carried out under the SCFAP- 1 by APEC Fora 2011-2015**

During the period 2011 to 2015, several projects and workshops were carried out by the GOS, CTI and by the APEC Transportation Working Group that addressed issues of logistics. Please note that this may not be a comprehensive listing. These included:

- i) Programme for Enhancing the Capacity of APEC Local /Regional Logistics Sub-Providers – 2011 One of the key findings of this project was an identification of “**....the need for better cross-economy understanding logistics and procedures metrics; an improvement that would benefit the application of results from surveys such as this one.**”<sup>118</sup>
- ii) Project on Transborder Control and Optimal Transborder Logistics – 2011 The project discussed the “.....development of APEC principles of transborder logistic optimization including methods and tools to optimize logistic services .....in order to facilitate seamless transport flows in the APEC region.....”<sup>119</sup>
- iii) Forum on The Last Mile of Supply Chain- Third Party Logistics – 2012 – Recommendations were made to establish a more environmentally suitable model for the third-party logistics (3PL) services industry<sup>120</sup>
- iv) Project on Information on Logistics Services – 2014 One of the key findings of this project was the need to “**.....develop an integrated policy framework to achieve broader socio-economic objectives [for logistics] in a broader and more co-ordinated context**, with co-operation and collaboration among private corporations, governments and international organizations.”<sup>121</sup>
- v) Training Course on Common Principles for Shipping Policy – 2014 Among the key findings of this training were recommendations to: privatise / commercialize ports and services in order to increase competition in shipping; revisit existing laws to address shipping concerns effectively; identify barriers on intermodal access in the supply chain; and improve port governance.<sup>122</sup>
- vi) Promoting Public-Private Partnership (PPP) to Develop Dry Ports and Logistics Parks in order to Enhance APEC’s Supply Chain Connectivity – 2015 The recommendations from the case studies and expert discussions in the resulting workshop focused, among other, on the need to have a common

<sup>117</sup> Bayhaqi, Akhmad and Lai, Luna Ge (2022). *A Decade of Supply Chain Initiatives: Opportunities and Challenges in Post-COVID-19 Recovery*, APEC Policy Support Unit POLICY BRIEF No. 42 January 2022. [https://www.apec.org/docs/default-source/publications/2022/1/a-decade-of-supply-chain-initiatives-opportunities-and-challenges-in-post-covid-19-recovery/222\\_psu\\_a-decade-of-supply-chain-initiatives.pdf?sfvrsn=4a241f9c\\_2](https://www.apec.org/docs/default-source/publications/2022/1/a-decade-of-supply-chain-initiatives-opportunities-and-challenges-in-post-covid-19-recovery/222_psu_a-decade-of-supply-chain-initiatives.pdf?sfvrsn=4a241f9c_2)

<sup>118</sup> APEC (2011). CTI Project Completion Report, CTI 02 2011T – *Programme for Enhancing the Capacity of APEC Local / Regional Logistics Sub-Providers*, 2011.

<sup>119</sup> APEC (2010). *Transborder Control and Optimal Transborder Logistics Final Report*, Transportation Working Group Project Completion Report TPT06/2010. <https://www.apec.org/Publications/2011/12/Transborder-Control-and-Optimal-Transborder-Logistics-Final-Report>

<sup>120</sup> APEC (2013). Transportation Working Group Project Completion Report TPT 01 2013T – *The Last Mile of Supply Chain- Third Party Logistics Forum*, 2012

<sup>121</sup> APEC (2014). GOS Project Completion Report, CTI 17 2012T- *Information Sharing on Logistics Services*, 2014

<sup>122</sup> APEC (2014). Transportation Working Group Project Completion Report TPT 01 2013T – *Training Course on Common Principles for Shipping Policy*, 2014

understanding of PPP, dry ports and logistics parks in order and develop a clearly defined legal framework.<sup>123</sup>

While these various projects and training sessions dealt with aspects of logistics, particularly its role in supply chain connectivity, it does not seem that the composition of “logistics” was clearly specified, although the need to have a common understanding of logistics and metrics, as well as an integrated policy framework, was highlighted several times. This is the objective of the current project.

#### ⇒ **Logistics in APEC’s Supply Chain Connectivity Framework Action Plan-Phase II 2017-2020**

The second phase of the SCFAP took place from 2017 to 2020, with a final assessment in November 2021. The stated goal of the second phase of the SCFAP-II was to “...reduce trade costs across supply chains and to improve supply chain reliability in supporting the competitiveness of business in the Asia Pacific region”.

Phase II of the SCFAP examined the five major chokepoints in supply chains below, which include logistics services and logistics costs:

- (1) lack of coordinated border management, and underdeveloped border clearance;
- (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.<sup>124</sup>

The progress of the SCFAP-II was assessed by the CTI through a review of relevant external indicators, stocktaking reports of relevant APEC initiatives and voluntary case studies submitted by APEC member economies. In carrying out this work, the APEC CTI developed a monitoring framework and selected 30 indicators to examine within the above chokepoints. Three-fourths of the indicators were drawn from The World Bank’s LPI indicators, with the remainder from the OECD, the UNCTAD, and a few other bodies.<sup>125</sup> These were used to track progress towards the improvement of performance under each chokepoint and evaluate how well APEC was able to achieve the SCFAP-II objectives.

Each section of the SCFAP-II report assesses the progress (or lack of) that APEC economies have made under the five chokepoints during the period under examination. Most evaluations cover all APEC economies taken together. However, the report also includes case studies of individual APEC economy actions that have been carried out to improve the situation in the specific area and highlights individual reforms that address each chokepoint.

The third chokepoint above identified in the SCFAP-II relates to logistics services and associated costs. Indicators used to evaluate APEC’s performance in this area are drawn from the World Bank’s LPI and the DHL Connectedness Index. With respect this chokepoint, the SCFAP-II report indicates that logistics costs include:

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<sup>123</sup> APEC (2015). Transportation Working Group Project Completion Report TPT 08 2013A: *Promoting Public-Private Partnership (PPP) to Develop Dry Ports and Logistics Parks in order to Enhance APEC’s Supply Chain Connectivity*, 2015

<sup>124</sup> It should be noted that the first three chokepoints examined in the SCFAP-II are identical to three of the six areas included in the World Bank’s set of indicators used to construct the LPI, namely efficiency of border clearance and procedures; quality of transport-related infrastructure (although APEC also includes transportation services which are not present in the WB indicator); and quality of logistics services and high logistics costs. The chokepoints (4) and (5) on regulatory cooperation and policy included by APEC in its examination are not a part of the WB’s LPI.

<sup>125</sup> The SCFAP-II sets out the list of 30 indicators used in its assessment on page 4 of the report. Of these, 15 were drawn from the World Bank’s Logistics Performance Indicators and 4 from its Doing Business Report (now discontinued). Another 4 were drawn from the OECD’s Trade Facilitation Indicator, 3 from various UNCTAD indices, 1 from DHL, 1 from the United Postal Union and 1 from Transparency International. The latest data are from 2018 – 2020. [https://www.apec.org/publications/2021/11/final-review-of-the-apec-supply-chain-connectivity-framework-action-plan-2017-2020-\(scfap-ii\)](https://www.apec.org/publications/2021/11/final-review-of-the-apec-supply-chain-connectivity-framework-action-plan-2017-2020-(scfap-ii))

*“.....all expenditures to make available a good or service to the market. This includes transportation, administrative and inventory costs. 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). Other costs could be 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 ports and are found to make up the largest expense in warehouse operations.”<sup>126</sup>*

The report does not indicate however, which activities (other than transportation, administrative and inventory costs) are included in the logistics category. This continues to be problematic, because it does not allow APEC economies to have a clear understanding of what is being covered within the logistics framework and therefore how these bottlenecks can be specifically targeted

Evaluating APEC’s performance on logistics costs according to the final assessment of SCFAP-II shows a mixed outcome with not much improvement or change overall in this area. For most indicators there were no updates post-Covid. The report notes that the results may have been adversely affected by disruptions caused by the COVID-19 pandemic, which it states was especially the case for logistics services and costs and notes that the pandemic has *“...worked against improvements in this area as warehouse capacity contracted and inventory costs shot up in 2020 and early 2021.”<sup>127</sup>* Moreover, the report states that *“....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,”* and indicates that these impacts on supply chains could have significant, long-lasting global effects. The assessment underlines the importance of leveraging digital technologies to reduce costs and improve coordination and transparency in logistics services and provides some examples of steps individual APEC economies have taken in this regard.

#### ⇒ **The APEC STAR Database 2014-2016**

The GOS spearheaded the construction of the APEC Services Trade Access Requirements (STAR) Database, an online, business friendly tool designed to provide easy access to market access information about cross border trading and regulation for eight selected services sectors in all APEC 21 economies. This database was launched in 2010 and jointly funded by Australia and the GOS. Information on regulatory measures that it contains was maintained throughout the period September 2014 through December 2016. In the Final Report on the STAR Database it states that *“The data was used to inform the baseline studies of ..... services workshops on good policy and regulatory practices within the services sectors. This work was compiled into a comprehensive compendium that formed the APEC GOS’ contribution to the APEC Services Competitiveness Roadmap (ASCR)...”<sup>128</sup>* The STAR Database was archived in March 2017.

The regulatory requirements which were canvassed in the database include the following:

- i) Restrictions on type of legal entity
- ii) Limits on foreign investment
- iii) Nationality requirements

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<sup>126</sup> APEC (2021). *Final Review of the APEC Supply Chain Connectivity Framework Action Plan 2017–2020 (SCFAP-II)*, APEC Policy Support Unit, November 2021, [https://www.apec.org/publications/2021/11/final-review-of-the-apec-supply-chain-connectivity-framework-action-plan-2017-2020-\(scfap-ii\)](https://www.apec.org/publications/2021/11/final-review-of-the-apec-supply-chain-connectivity-framework-action-plan-2017-2020-(scfap-ii)) pages 17 and 18.

<sup>127</sup> This highlights once again the definitional challenge of logistics, since for other indices (such as the OECD’s STRI), the area of “logistics services” is considered to encompass all forms of transportation as well as customs clearance procedures along with distribution and courier services, but to exclude actual transportation infrastructure.

<sup>128</sup> APEC (2016). *APEC Services Trade Access Requirements (STAR) Database Final Report from the CTI and the GOS*, December 2016. [https://www.apec.org/docs/default-source/Publications/2017/4/APEC-Services-Trade-Access-Requirements-STAR-Database/217\\_PPWE\\_APEC-STAR-Database-Phase-4---Final.pdf](https://www.apec.org/docs/default-source/Publications/2017/4/APEC-Services-Trade-Access-Requirements-STAR-Database/217_PPWE_APEC-STAR-Database-Phase-4---Final.pdf)

- iv) Licensing and approval procedures
- v) Restrictions on the scope of service
- vi) Other requirements

One of the eight services sectors included in the STAR Database is “transportation and logistics services”. However, it is not clear from the database website how this category is defined and what sub-sectors are included within it.<sup>129</sup> Thus, the definitional issue around logistics arises again.

⇒ **Logistics focus in the GOS work and PPD during the Viet Nam APEC Year 2017**

During the Viet Nam 2017 APEC Year there was an initial emphasis placed on logistics work within the GOS. A Public Private Dialogue on Logistics services was held in February 2017, with a focus on logistics services, transport services, and distribution services. In the Summary Report of this PPD submitted by the GOS to the CTI, it was suggested that APEC should continue this examination of logistics, in particular for the three sectors in question. A number of important recommendations for future work on logistics in APEC and intra-APEC cooperation appear in the report on the PPD outcome. These include:

- Create APEC-wide discussions on logistics services (with the participation of the Transportation Working Group, Economic Committee, Committee on Trade and Investment/GOS/Sub-Committee on Customs Procedures, Health Working Group, Senior Finance Officials Meeting, Tourism Working Group, APEC Alliance for Supply Chain Connectivity (A2C2), Asia Pacific Model E-Port Network (APMEN) etc.) in implementing ASCR as well as to tackle impediments that businesses face;
- Establish a framework for competitive logistics within APEC, adopting a comprehensive and interdisciplinary approach;
- Initiate capacity building programs on workforce retraining and upgrading in economies to help develop modern logistics, transport and distribution services;
- Share best practices to develop logistics, transport and distribution services;
- Strengthen collaboration among economies, companies, with public – private partnerships;
- Establish monitoring process to make sure that arising issues will be addressed without delay;
- Create a regular platform where the private sector can raise their concerns and suggest policy recommendations on services.

Subsequent to the PPD and its salient recommendations above, there is nothing in the report from the following meeting of the GOS in August 2017 to indicate that there was a follow-up to these suggestions. Logistics were not mentioned in the annual report of the CTI to Ministers. Nor was there any mention of logistics in the 2017 APEC Joint Ministerial Statement in the section on “Global Value Chains and Supply Chain Connectivity”.<sup>130</sup> It would therefore appear that the focus of the GOS on logistics in early 2017 has not been carried forward, although many of the recommendations above would appear to still be pertinent and will be addressed in the context of this project.

<sup>129</sup> The eight services sectors covered in the STAR Database are: Distribution Services; Educational Services; Financial Services; ICT Services; Mining and Energy Services; Professional Services; Telecommunications Services; and Transportation and Logistics Services. See <http://www.servicestradeforum.org/Home.aspx>

<sup>130</sup> APEC (2017). *2017 APEC Ministerial Meeting, Joint Ministerial Statement*, [https://www.apec.org/meeting-papers/annual-ministerial-meetings/2017/2017\\_amm](https://www.apec.org/meeting-papers/annual-ministerial-meetings/2017/2017_amm)

⇒ **Logistics (digital connectivity) in the APEC Connectivity Blueprint 2015-2025**

The APEC Connectivity Blueprint 2015-2025 aims to achieve a seamless and comprehensively connected and integrated Asia Pacific in three pillars:

- Physical connectivity
- Institutional connectivity
- People-to-people connectivity.

Recommendations for APEC from the CTI’s annual report on work in this area in 2021 cover aspects of logistics, in particular the use of digital connectivity to “.....support cross-border connectivity and the opening of infrastructure such as port and airports, services such as maritime and aviation and digital infrastructure to support free flow of trade in goods and services during and post pandemic.....”<sup>131</sup>

⇒ **Construction of an APEC “Connectivity Index” 2020**

APEC does not seem to have developed its own indicator specifically targeted at logistics performance for the region. However, other attempts to produce something similar have taken place. The PSU developed a “Connectivity Index” as part of its 2020 Mid-term Review of the APEC Connectivity Blueprint.<sup>132</sup> The purpose of this Connectivity Index is to measure the region’s connectedness based on the concept of connectivity across the three pillars of the Blueprint. This is shown in the table D.1 below, which reproduces the elements examined for this exercise.

**Table D.1: Indicators used in the construction of the APEC Connectivity Index**

Element	Indicator	Sub-pillar
<b>Physical Connectivity</b>		
Infrastructure development and investment	Infrastructure score (LPI)	Quality of Infrastructure, Transportation, Public-private Partnership
Trade and transportation networks	Air freight (WDI)	Transportation
	Liner shipping connectivity index	Transportation
	Foreign value added - Global value chain	Supply chain performance
Broadband	Percentage of individuals using internet	ICT Infrastructure Development
<b>Institutional Connectivity</b>		
Modernisation of customs/trade-related agencies	Customs score (LPI)	Customs and Border Administration
Structural Reforms	Aggregate time required to import - transformed (DB)	Supply chain performance
	Business impact of rules on FDI (WEF)	Public-private Partnership
Regulations	Regulatory quality (WGI)	Regulatory Coherence and Cooperation & Good Regulatory

<sup>131</sup> APEC (2021). APEC Committee on Trade and Investment *Annual Report to Ministers November 2021*, Section IV, pages 18-22. [https://www.apec.org/docs/default-source/publications/2021/11/2021-cti-annual-report-to-ministers/2021-cti-annual-report-to-ministers---main-report.pdf?sfvrsn=82fc5d80\\_2](https://www.apec.org/docs/default-source/publications/2021/11/2021-cti-annual-report-to-ministers/2021-cti-annual-report-to-ministers---main-report.pdf?sfvrsn=82fc5d80_2)

<sup>132</sup> APEC (2020). *APEC Policy Support Unit, APEC Connectivity Blueprint Mid-term Review 2020*, [https://www.apec.org/docs/default-source/publications/2020/11/apec-connectivity-blueprint---the-2020-mid-term-review/220\\_psu\\_apec-connectivity-blueprint\\_rev-210721.pdf?sfvrsn=71972e0a\\_1](https://www.apec.org/docs/default-source/publications/2020/11/apec-connectivity-blueprint---the-2020-mid-term-review/220_psu_apec-connectivity-blueprint_rev-210721.pdf?sfvrsn=71972e0a_1)

		Practices; Structural Reforms
	Regional trade agreements count	Trade Facilitation
E-commerce	Number of secure servers	Structural Reforms
<b>People-to-People Connectivity</b>		
Cross-border education, science, technology and innovation, and services	Inbound mobility	Cross-border Education Exchange
	International migrant stock	Business Travel Facilitation. Professional and Labour Mobility
Tourists, businesspeople, professionals and workers, women and youth	International tourist arrivals (% of population)	Tourism Facilitation

Source: APEC Policy Support Unit (2020). *APEC Connectivity Blueprint Mid-term Review 2020*. (Table 4.1, p. 94)

The PSU Mid-term Review describes how the Connectivity Index is calculated, and what weights are assigned to each of the components for this purpose. Those indicators that are assigned the highest shares in the connectivity index are: regulatory quality (13.54%), LPI customs score (12.48%), LPI infrastructure score (12.12%), and percentage of individuals using the internet (11.37%).

The connectivity index scores are provided for the APEC economies for two years - 2014 and 2018. Table D.2 sets out these scores, allowing for a comparison of how this indicator has evolved over this period for each APEC economy. The top APEC performers in terms of overall connectivity are shown to remain basically the same. There is a significant gap between the top performers and the lowest ones.

**Table D.2: Connectivity Index (CI) scores for APEC economies, 2014 and 2018**

Economy	CI 2014	CI 2018
Australia	0.62	0.65
Brunei Darussalam	0.35	0.37
Canada	0.61	0.62
Chile	0.43	0.47
China	0.34	0.40
Hong Kong, China	0.68	0.72
Indonesia	0.21	0.24
Japan	0.54	0.58
Korea	0.53	0.53
Malaysia	0.49	0.48
Mexico	0.34	0.36
New Zealand	0.61	0.64
Papua New Guinea	0.12	0.11
Peru	0.27	0.28
The Philippines	0.28	0.27
Russia	0.26	0.30
Singapore	0.75	0.77
Chinese Taipei	0.50	0.51
Thailand	0.38	0.38
United States	0.56	0.62
Viet Nam	0.25	0.31

Source: APEC Policy Support Unit (2020), *APEC Connectivity Blueprint Mid-term Review 2020* (Table 4.4, p. 97 and Table 4.6, p.98)

Overall, the APEC average Connectivity score for all 21 economies for 2018 is 0.46, which can be compared with the average score for the OECD (37 economies) of 0.57. In comparison with similar indicators, the Mid-term Review report states that the results of the Connectivity Index are relatively similar to and strongly correlated with those of other international indices such as the WB Logistics Performance Index, the Doing Business Index (now discontinued), and the DHL Global Connectedness Index.<sup>133</sup>

⇒ **Logistics in the PECC “Index of Economic Connectivity in the Asia Pacific” 2019**

The PECC has constructed and published an “**Index of Economic Connectivity in the Asia Pacific**” in its State of the Region Report for 2019.<sup>134</sup> This index is also built around three different components of connectivity across physical connectivity, institutional connectivity and people-to-people connectivity and includes several logistics-related activities, including transport, ICT, border administration supply chain performance and travel mobility. But the elements within each component are not the same as those selected for the APEC Connectivity Index and several additional elements have been included. The elements are set out in Table D.3.

**Table D.3: Elements of the Components of the PECC Index of Economic Connectivity**

APEC Connectivity Pillars	Physical	Institutional	People to People
Sub-Index	Infrastructure	Trade Facilitation	Travel Mobility
	Transport	Border Administration	Educational Mobility
	ICT	Supply Chain Performance	Tourism
	Energy	Financial Infrastructure	Labor Exchange
		Intellectual Property Receipts	Migration
			Social Media Penetration

Source: PECC State of the Region Report (2019). *Index of Economic Connectivity in the Asia-Pacific*, (Tables 3.2, 3.3 and 3.4)

The physical connectivity pillar covers 4 sub-indices: infrastructure; transport; information and communications technology; and energy. In turn, these are composed of a total of 16 indicators. Each sub-index was been weighted equally at 25 percent each. The *institutional connectivity pillar* covers 5 sub-indices: trade facilitation; border administration; supply chain performance; financial infrastructure; and intellectual property receipts, each weighted at 20 percent. Again, these sub-indices are in turn composed of several indicators. The *people to people pillar* covers 6 sub-indices: travel mobility; educational mobility; tourism; labor exchange; migration and social media penetration, each weighted at 16.7 percent. All of the indicators used to evaluate each of the three sub-indices within the three broad pillars are set out in the list of data sources. The conceptual framework is similar to the three components of the APEC Connectivity Index discussed previously.

The resulting connectivity scores for the APEC region are divided into an overall connectivity result, as well as the scores for each of the three pillars and their component sub-indices. For the region, physical connectivity accounts

<sup>133</sup> See Table 4.7 on the Connectivity Index Correlation Coefficients with other similar indices of the APEC Connectivity Blueprint Mid-term Review 2020, Op. cit., page 99. [https://www.apec.org/docs/default-source/Publications/2020/11/APEC-Connectivity-Blueprint--The-2020-Mid-Term-Review/220\\_PSU\\_APEC-Connectivity-Blueprint\\_rev.pdf](https://www.apec.org/docs/default-source/Publications/2020/11/APEC-Connectivity-Blueprint--The-2020-Mid-Term-Review/220_PSU_APEC-Connectivity-Blueprint_rev.pdf)

<sup>134</sup> Pacific Economic Cooperation Council (PECC) (2019). PECC, State of the Region Report 2019, Chapter 3 on Index of Connectivity in the Asia Pacific, at <https://www.pecc.org/state-of-the-region-reports/282-2019-2020/841-chapter-3-index-of-economic-connectivity-in-the-asia-pacific>

for 41 percent of connectedness followed by institutional at 35 percent and people to people at 24 percent. The report notes that although there are some differences at the level of individual economies, the same pattern is fairly common across all APEC economies no matter the level of development.

It is to be noted that logistics form only a part of the overall Connectivity Indices developed by the APEC PSU and the PECC. Various (but not all) of what may be considered logistics components are divided in these two sets of outcomes between the physical connectivity and the institutional connectivity pillars, making it difficult to isolate the role that logistics plays in supply chain operations. A specific focus on logistics by APEC, as suggested in this background paper, could provide a useful complement to the more comprehensive measurements of connectivity that have been developed for the APEC region.

#### ⇒ **APEC Alliance for Supply Chain Connectivity (A2C2)**

The APEC Alliance for Supply Chain Connectivity was established in 2014 as an advisory group of interested experts from individual economies, multilateral institutions, and companies, including ABAC representatives, and associations interested in APEC's long-term work on supply chain connectivity and performance improvements. Its aim is to bring together stakeholders to discuss solutions to the ongoing challenges with supply chain operation in the region. The A2C2 met for the 12<sup>th</sup> and 13<sup>th</sup> time in 2021 and focused on reinventing supply chains in a post Covid-19 world, with a discussion on the challenges with vaccine distribution. It does not appear that the role of logistics is an explicit focus of the A2C2 grouping, although implementation of the APEC MRT *Declaration on Facilitating the Movement of Essential Goods* is mentioned as part of its work.<sup>135</sup>

#### ⇒ **APEC Guidelines and Best Practices for the Adoption of Global Data Standards (GDS) 2020**

Another examples of business involvement in APEC's work on logistics beyond the A2C2 is the development of the APEC Guidelines and Best Practices for the Adoption of Global Data Standards (GDS).<sup>136</sup> As pointed out in Part I of this study, logistics increasingly involves flows of data/information in addition to flows of goods. Common data standards facilitate the operation of logistics activities in supply chain networks. The GDS Guidelines are designed to provide useful reference materials to assist customs agencies and traders in APEC member economies with improving their overall supply chain performance and risk management through the adoption and implementation of GDS. The publication outlines the steps for the planning and implementation of GDS, the current state of GDS applications in the APEC region as well as potential areas where further applications can be envisaged, including those that would help to implement the WTO Trade Facilitation Agreement.

#### ⇒ **Toolkit for Trade Facilitation Measures (SCCP) 2021**

The APEC Sub-Committee on Customs Procedures has developed a Toolkit for Trade Facilitation Measures in 2021 as part of a response to mitigate trade disruptions arising from the Covid-19 pandemic border closures which included congested ports and restricted airfreight services. The SCCP report highlights the innovative response of customs officials to mitigate these impacts, such as accepting electronic versions of trade documents/paperless

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<sup>135</sup> APEC (2020). APEC Alliance for Supply Chain Connectivity A2C2, Revised Terms of Reference, CTI Meeting September 2020, [http://mddb.apec.org/Documents/2020/CTI/CTI2/20\\_cti2\\_008.pdf](http://mddb.apec.org/Documents/2020/CTI/CTI2/20_cti2_008.pdf)

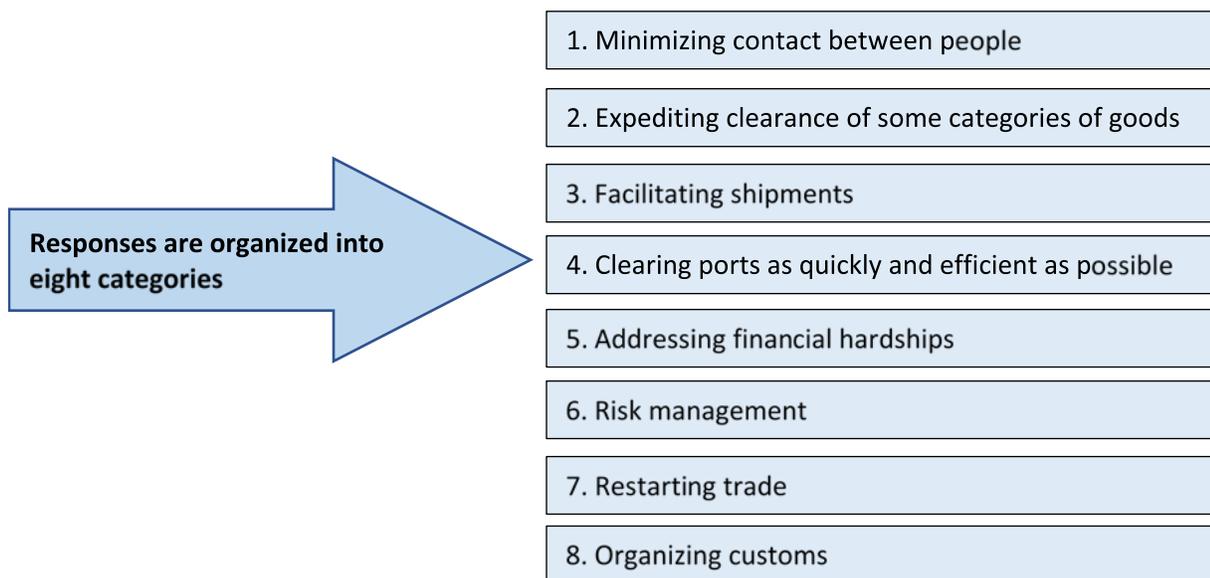
<sup>136</sup> APEC (2020). *APEC Guidelines and Best Practices for the Adoption of Global Data Standards*, APEC Committee on Trade and Investment, March 2020, [https://www.apec.org/docs/default-source/publications/2020/3/apec-guidelines-and-best-practices-for-the-adoption-of-global-data-standards/220\\_cti\\_apec-guidelines-and-best-practice-for-the-adoption-of-gds.pdf?sfvrsn=fb304fc6\\_1](https://www.apec.org/docs/default-source/publications/2020/3/apec-guidelines-and-best-practices-for-the-adoption-of-global-data-standards/220_cti_apec-guidelines-and-best-practice-for-the-adoption-of-gds.pdf?sfvrsn=fb304fc6_1)

trading, accepting electronic payments, expedited clearance of essential goods via pre-clearance of shipments, deferral of customs fees and taxes, introducing new ways of risk managing cargoes, among others.<sup>137</sup>

These lessons learnt from the pandemic have been incorporated into a Toolkit which sets out a comprehensive set of best practices that can be adopted by Customs administrations to facilitate trade and expedite cargo in times of a crisis. Most interesting is that the report states that the measures in the Toolkit are not meant to apply only to the Covid-19 pandemic, but to any situation that can cause a major disruption in trade.<sup>138</sup> As for all of APEC's work, the Toolkit is a voluntary, non-binding document.

The measures set out in the Toolkit are divided between those that can be adopted permanently and those that will need a longer time to prepare and implement.<sup>139</sup> These are discussed within eight categories as shown in the Figure D.1.

**Figure D.1: Categories of responses to tackle the effects of the COVID-19 pandemic within the SCCP Toolkit for Trade Facilitation Measures**



Source: APEC Subcommittee on Customs Procedures (2021), *Trade Facilitation Measures to Mitigate Trade Disruptions: COVID-19 Lessons and Response Toolkit* (Figure 1, p.16)

<sup>137</sup> APEC (2021). *Trade Facilitation Measures to Mitigate Trade Disruptions: COVID-19 Lessons and Response Toolkit*, APEC Subcommittee on Customs Procedures November 2021, at [https://www.apec.org/docs/default-source/publications/2021/11/trade-facilitation-measures-to-mitigate-trade-disruptions/221\\_sccp\\_trade-facilitation-measures-to-mitigate-trade-disruptions.pdf?sfvrsn=d83aa3f6\\_2](https://www.apec.org/docs/default-source/publications/2021/11/trade-facilitation-measures-to-mitigate-trade-disruptions/221_sccp_trade-facilitation-measures-to-mitigate-trade-disruptions.pdf?sfvrsn=d83aa3f6_2)

<sup>138</sup> According to the SCCP report, major disruptions to trade can result from a variety of causes including: pandemics; terrorist or security incidents (eg. Cyber-attacks, human error, bombings); natural disasters (e.g. earthquakes, floods); financial shocks; staff shortages and industrial action; and supply chain / logistics failures. See the report on *Trade Facilitation Measures to Mitigate Trade Disruptions: COVID-19 Lessons and Response Toolkit*, *Ibid*, pages 10 and 11.

<sup>139</sup> Examples of measures which can be applied permanently include Paperless Trade; Single Window portals; Pre-clearance of shipments; 24-hour contact teams and support centres to address border delays; Plan of action; Enhanced communications with traders; and Improved Interagency coordination at the border. Examples of measures that will need a longer time to prepare and implement include Recognition of e-versions of documents in legislation; Allowing for adjustment of risk management approaches; Establishing better communication channels with the private sector; Ensuring suitable workforce flexibility, so staff are able and ready to be redeployed; Moving towards IT changes, especially those that enable online submission of documents, contactless trading and preclearance; and Instituting regulatory discretion over timeframes, documentary requirements and application of penalties.

It is of note that these customs clearance measures procedures form a part of the Logistics components of all of the other indicators examined in Part II of this paper (namely the World Bank's LPI, the OECD's STRI, the UN's TFI and APEC's own Connectivity Index). The Toolkit is therefore a useful component of the broader approach to the role and efficiency of logistics in supply chain operations. However, it covers only a part of the broader logistics spectrum.

⇒ **Logistics in the Aotearoa Plan of Action / Putrajaya Vision for APEC 2040**

As mentioned in the earlier section of this paper on mandates supporting this project, aspects of logistics figure as part of the initiatives set out in the Aotearoa Plan of Action adopted in 2021 to implement the Putrajaya Vision for APEC 2040 Under the Trade and Investment area, with regard to the objective to "...promote seamless connectivity, resilient supply chains and responsible business conduct", APEC economies collectively are to (among other):

- Implement APEC's Connectivity Blueprint;
- Implement the WTO's Trade Facilitation Agreement;
- Work towards digitalizing border processes..... strengthening customs cooperation and increasing port cooperation;
- Enhance connectivity through transparent regulatory environments;
- Improve digital connectivity in the region;
- Promote and cooperate on measures that facilitate the safe cross-border movement of people, particularly in the context of the changing pandemic health and travel measures...

Under the objective: *"To ensure that the Asia-Pacific remains the world's most dynamic and interconnected regional economy, we acknowledge the importance of, and will continue to work together to deliver, a free, open, fair, non-discriminatory, transparent and predictable trade and investment environment"* the Aotearoa Plan of Action states that APEC economies are to:

- Progress services liberalisation, facilitation and cooperation, including by implementing the APEC Services Competitiveness Roadmap;

⇒ **Transportation Logistics in the APEC Services Competitiveness Roadmap (ASCR)**

Some of the individual APEC-wide actions identified for the ASCR include specific steps that fall under the pursuit of the objective of promoting seamless connectivity. These include:

- Supporting APEC's work on developing air, maritime and land transportation, in line with the APEC Connectivity Blueprint 2015-2025.
- Supporting APEC's work on developing the travel and tourism sector for sustainable and inclusive growth, building on the work of the APEC Tourism Strategic Plan.
- Enhancing ICT infrastructure and services to support economic growth.

Transportation services (one of the components of Logistics-related services) comprise Action 11 of the ASCR. This action focuses on supporting APEC's work on developing air, sea and land transportation in line with the APEC Connectivity Blueprint 2015-2025. The responsible APEC forum is the Transportation Working Group. The Mid-term Review report of the ASCR highlights commends the many advantages of an efficient transportation network, including improved connectivity to international markets, reduced logistics cost, and enhanced participation in

GVCs. It draws upon the OECD STRI to evaluate the progress that APEC economies have made in the transportation sector and states:<sup>140</sup>

- APEC has undertaken several activities to improve the efficiency of the transportation sector, including workshops and studies aimed at helping economies to appreciate the investment decision of private investors and developers on transportation infrastructure projects; and enhancing economies' understanding of the interface between transportation and technology.
- Improvements in OECD STRI scores serve as a testament that some of these efforts are bearing fruits. Maritime transport has become less restrictive in 2020 than in 2016. Over the same period, however, air transport, road freight transport, and rail freight transport have seen increased restrictions, such as through restrictions on foreign equity share, licensing quotas, and cross-border data flow restrictions.

To date, however, the ASCR has not covered the logistics area more widely or with a specific focus. This study will recommend that APEC broaden its coverage of logistics under the ASCR and include a logistics-related services category based on an agreed APEC definition as a regular area of evaluation.

## E. The Global Trade Alert Database and Logistics Measures

### ⇒ **The Global Trade Alert**

The Global Trade Alert (GTA) was founded by Simon Evenett with support from the Centre for Economic Policy Research (CEPR) at the peak of the Global Financial Crisis 2008-09 with the task to document use of trade policy interventions amongst the fear of escalating protectionism.<sup>141</sup> The initiative teamed up with independent research institutes from around the world to collect and validate ever-increasing number of a broad range of public policy interventions that affect domestic commercial interests vis-à-vis their relevant foreign rivals.<sup>142</sup> Since 2009, the GTA team has published 28 biannual reports on the state of protectionism and interventionism and provided analyses for numerous globally influential entities such as the G20. The GTA has become a widely used and trusted input for analysis and decision-making by policy analysts and researchers in academia, corporate sector, media, governments and international organizations. After a decade of being housed in the University of St. Gallen, the GTA transferred into a newly established charitable foundation, the St. Gallen Endowment for Prosperity through Trade (SGEPT) from January 2021.

According to Simon Evenett (2021),<sup>143</sup> the purpose of the GTA database, as a trusted and impartial source of data on public policy, is to enable better management of globalization for the benefit of all. It strives to meet it by reconceiving the measurement of and democratizing the access to information on government policy so that more effective policies can be identified and policy initiatives advanced towards making international commerce a stronger engine of human progress in the decades to come.

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<sup>140</sup> APEC (2021). *APEC Services Competitiveness Roadmap*, APEC Policy Support Unit, October 2021, [https://www.apec.org/docs/default-source/publications/2021/10/apec-services-competitiveness-roadmap-mid-term-review/221\\_psu\\_apec-services-competitiveness-roadmap-mid-term-review.pdf?sfvrsn=861e0b45\\_1](https://www.apec.org/docs/default-source/publications/2021/10/apec-services-competitiveness-roadmap-mid-term-review/221_psu_apec-services-competitiveness-roadmap-mid-term-review.pdf?sfvrsn=861e0b45_1)

<sup>141</sup> Global Trade Alert (2008). *Broken Promises: A G-20 Summit Report*, edited by Simon J. Evenett. <https://www.globaltradealert.org/reports/38>

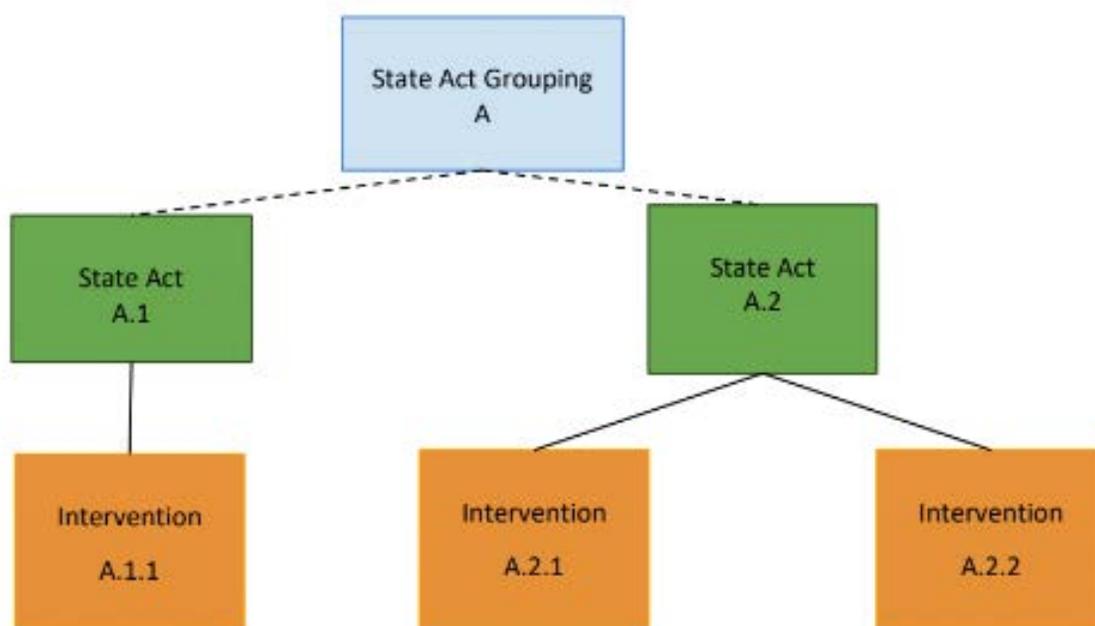
<sup>142</sup> Global Trade Alert (2009). *Global Trade Alert 1st Report*, 8 July 2009. <https://www.globaltradealert.org/reports/39>.

<sup>143</sup> Evenett, Simon (2021). *Using Global Trade Alert Database- A Guide to Finding the Policies that Matter*, A training session at the Geneva Trade Week, Geneva Trade Platform, 29 September, <https://www.youtube.com/watch?v=nm-YqdvsTGg>

## ⇒ Constructing of the GTA Database

The GTA database includes various forms of government interventions affecting trade in goods and services, foreign investment and labour force migration from national legislation to the contract terms of individual state agencies. The base year for the database is 2008. According to the GTA latest Handbook,<sup>144</sup> the interventions posted in the database document beneficial as well as harmful based on an objective assessment of changes in the relative treatment of foreign versus domestic commercial interests. Each GTA database entry provides information about the direction of the change (harmful or liberalizing), the announced policy instrument, its announcement date and, where available, implementation date as well as the sectors and products targeted by the statement. The database entry includes the potentially affected trading partners which are identified based on official trade statistics. Each database entry is documented through the official statement by the acting institution wherever possible. In fact over 97 per cent of around 43,000 interventions that the database accounts for are documented through the official sources or from legally mandated declarations by companies. For cases where an official statement cannot be located, press clippings from multiple original sources are analyzed for their consistency. All database entries undergo a two-stage review process before publication in the database (see also Figure E.2).

**Figure E.1: Stylized database structure**



Source: Evenett, Simon J. and Fritz, Johannes (2020). *The Global Trade Alert database handbook*. Manuscript, 14 July 2020 (Figure 1, p. 2)

Figure E.1 shows GTA's stylized database structure<sup>145</sup> which includes State Act Grouping, State Act and Intervention. A state act is equivalent to an announcement by a government body and each announcement documented by the GTA team includes at least one new and credible indication of change in market conditions at home or abroad. Each state act in the GTA database consists of one or more interventions and the interventions represent the policy instrument implemented plus the direction of the induced change (liberalizing or harmful).

<sup>144</sup> Evenett, Simon J. and Fritz, Johannes (2020). *The Global Trade Alert database handbook*. Manuscript, 14 July 2020. <https://www.dropbox.com/s/i5hnf27nnnz21nq/GTA%20handbook.pdf?dl=0>

<sup>145</sup> Evenett, Simon J. and Fritz, Johannes (2020). *The Global Trade Alert database handbook*. Manuscript, 14 July 2020. <https://www.dropbox.com/s/i5hnf27nnnz21nq/GTA%20handbook.pdf?dl=0>

The GTA team splits state acts into multiple interventions in two cases. First, state acts are split into multiple interventions when various policy instruments are described within a single announcement. Second, measures are split into multiple interventions when one policy instrument is used to simultaneously improve and worsen trade conditions with a foreign market. The groupings in the GTA database connect two or more state acts for expositional purposes. State acts can be associated with zero, one or more groupings at a time.

In the GTA system, all information is entered in the database at both the State Act and the individual public policy intervention level. The required fields for each database entry include:

- Announcement date and source – collected at the State Act Level, and
- Intervention type and GTA evaluation – collected at the intervention level.

More precisely, the only pieces of information collected at the State Act level are the announcement date and the source. Only these two pieces of information are constant across the possibly many interventions included in an individual state act. All others may differ from intervention to intervention. To disentangle the different policy instruments used, the directions of the change as well as the different affected products and sectors, the GTA database stores this and more information at the policy intervention level. No additional information is collected on the groupings of State Acts level. The groupings are an editorial tool to aggregate and visualize the statistics of related State Acts. The GTA team may add summarising text to guide the readers, but no additional information is stored that has not already been collected in the associated State Acts and interventions.<sup>146</sup>

As already mentioned, the GTA team's investigations seek to verify whether a given state intervention implementation will have different effects on the treatment extended to the relevant domestic and foreign parties. An intervention (or also called a measure) is an announcement by a government of an actual or intended policy change, such as a change in the level of tariff on a single product or a revamp of the whole tariff schedule. The process through which each measure is identified, investigated, evaluated, and ultimately published in the dataset is presented in Figure E.2.<sup>147</sup>

In cases where evidence is available, it may be possible to assess whether there is an asymmetric effect on domestic and foreign parties. Each investigation results in a color-coded assessment for a measure, following a consistent evaluation scheme (see Table E.1 below).<sup>148</sup>

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<sup>146</sup> Evenett, Simon J. and Fritz, Johannes (2020). *The Global Trade Alert database handbook*. Manuscript, 14 July 2020.

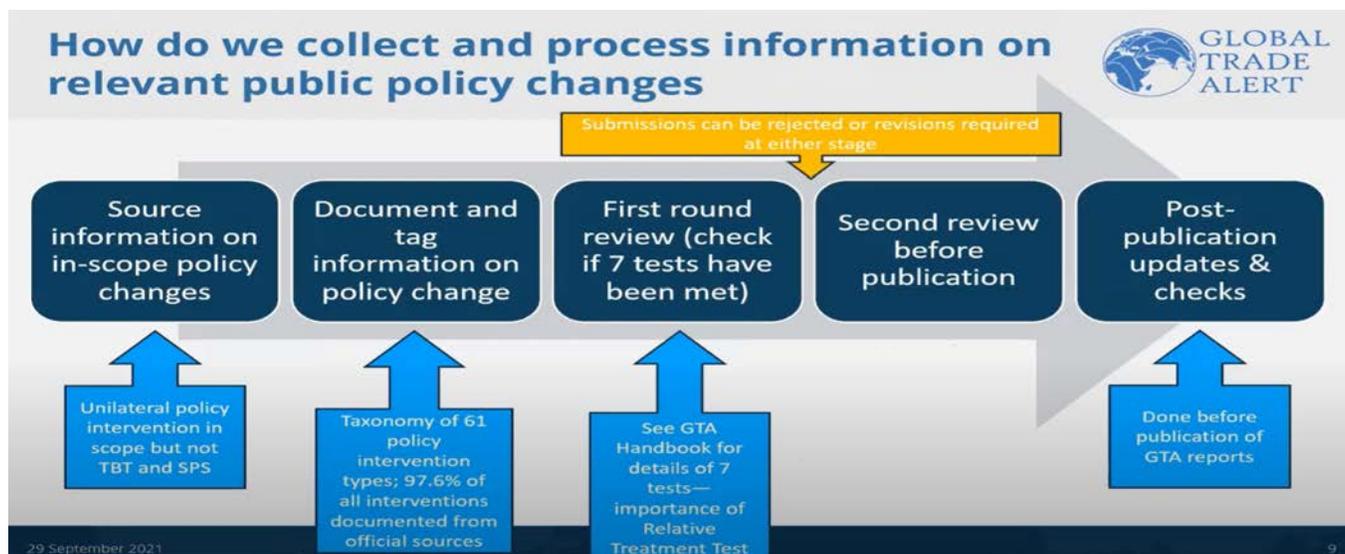
<https://www.dropbox.com/s/i5hnf27nnnz21ng/GTA%20handbook.pdf?dl=0>

<sup>147</sup> Evenett, Simon, and Fritz, Johannes (2015). *Throwing Sand in the Wheels: How Trade Distortions Slowed LDC Export-Led Growth*.

<https://voxeu.org/content/throwing-sand-wheels-how-foreign-trade-distortions-slowed-ldc-export-led-growth>

<sup>148</sup> Global Trade Alert (2009). *Global Trade Alert 1st Report*, 8 July 2009. <https://www.globaltradealert.org/reports/39>.

Figure E.2. The process used by the Global Trade Alert to investigate trade policy changes



Source: Simon Evenett (2021). *Using Global Trade Alert Database- A Guide to Finding the Policies that Matter*, A training session at the Geneva Trade Week, Geneva Trade Platform, 29 September. <https://www.youtube.com/watch?v=nm-YqdvstGg>

Table E.1: How the Global Trade Alert database colour codes state measures

Color Code	Criteria
▲	(i) The measure has been implemented and almost certainly discriminates against foreign commercial interests.
▲	(i) The measure has been implemented and may involve discrimination against foreign commercial interests; OR (ii) The measure has been announced or is under consideration and would (if implemented) almost certainly involve discrimination against foreign commercial interests.
▲	(i) The measure has been announced and involves liberalisation on a non-discriminatory (i.e., most favoured nation) basis; OR (ii) The measure has been implemented and is found (upon investigation) not to be discriminatory; OR (iii) The measure has been implemented, involves no further discrimination, and improves the transparency of a jurisdiction’s trade-related policies.

Source: Global Trade Alert (2009). *Global Trade Alert 1st Report, 8 July 2009* (Box 1, p. 2)

Even though the GTA dataset has a traffic set coding of three categories of evaluation (Green, Amber and Red), GTA team divides the measures between harmful or trade restrictive (Red and Amber) and liberalizing or trade facilitating (Green) in their analysis.<sup>149</sup>

<sup>149</sup> Details about trade restrictive and trade facilitating interventions can be found at <https://www.globaltradealert.org/>

⇒ **Types of logistics-related policy interventions covered by the GTA Database for APEC economies**

Because GTA database does not monitor separately the logistics sector, in consultation with the Project team, two clusters of logistics-related services were identified according to the three-digit CPC codes (CPC2.1Rev) presented in table E.2.<sup>150</sup>

**Table E.2. CPC codes included in a logistics category, drawn from the GTA database**

CPC2.0	Description
<b>"Logistics +"</b>	
651	Land transport services of freight
652	Water transport services of freight
653	Air and space transport services of freight
660	Rental services of transport vehicles with operators
671	Cargo handling services
672	Storage and warehousing services
673	Supporting services for railway transport
674	Supporting services for road transport
675	Supporting services for water transport
676	Supporting services for air or space transport
679	Other supporting transport services
680	Postal and courier services
822	Accounting, auditing and bookkeeping services
831	Management consulting and management services; information technology services
<b>Telecommunications</b>	
841	Telephony and other telecommunications services
842	Internet telecommunications services

Source: Based on United Nations, Department of Economic and Social Affairs (2015). *Central Product Classification (CPC) Version 2.1*, details from the Table "Detailed structure and correspondences", Part III, p. 112 – 114, p. 120 – 123)

Based on that definition of the logistic sector, the type of interventions affecting the sector have been extracted for the APEC economies (Table E.3 below) following the standard GTA taxonomy of interventions and supported with data on international flows of goods, services, migration and investment. The APEC-specific dataset from the GTA database includes 1,268 policy interventions in which some policy interventions affect multiple trading partners. Both the types of policy interventions as well as the numbers accounted for by APEC economies over the period 2008-2021 are set out in Table E.3 below.

<sup>150</sup> United Nations Department of Economic and Social Affairs (2015). *Central Product Classification (CPC) Version 2.1*. <https://unstats.un.org/unsd/classifications/unsdclassifications/cpcv21.pdf>

**Table E.3: Types of interventions by APEC economies in the GTA database for measures affecting logistics-related services (2008-2021)**

	<b>Intervention Type</b>	<b>Count (Harmful)</b>	<b>Count (Liberalising)</b>	<b>Total</b>
1	Capital injection and equity stakes (including bailouts)	35	0	35
2	Controls on commercial transactions and investment instruments	4	0	4
3	Export ban	1	0	1
4	Export licensing requirement	1	1	2
5	Export subsidy	2	0	2
6	Export-related non-tariff measure, nes	1	0	1
7	FDI: Entry and ownership rule	48	47	95
8	FDI: Financial incentive	1	10	11
9	FDI: Treatment and operations, nes	4	5	9
10	Financial assistance in foreign market	61	0	61
11	Financial grant	547	0	547
12	Import ban	4	2	6
13	Import licensing requirement	2	0	2
14	Import tariff	3	2	5
15	Import-related non-tariff measure, nes	5	8	13
16	In-kind grant	5	0	5
17	Instrument unclear	16	2	18
18	Interest payment subsidy	13	0	13
19	Internal taxation of imports	0	7	7
20	Labour market access	4	0	4
21	Loan guarantee	23	6	29
22	Local operations	24	0	24
23	Local sourcing	5	1	6
24	Localisation incentive	4	0	4
25	Other export incentive	2	0	2
26	Production subsidy	7	1	8
27	Public procurement access	3	0	3
28	Public procurement localisation	13	0	13
29	Public procurement preference margin	1	0	1
30	Public procurement, nes	2	0	2
31	State aid, nes	3	0	3
32	State aid, unspecified	11	0	11
33	State loan	134	13	147
34	Tax or social insurance relief	83	0	83

35	Tax-based export incentive	8	0	8
36	Trade finance	80	3	83
	Total	<b>1160</b>	<b>108</b>	<b>1268</b>

Source: Authors' data collection based on the information in the GTA database <https://www.globaltradealert.org/>

The Table E.3 shows a total of 1268 policy interventions covering 36 intervention types and affecting logistics-related services have been implemented since 2008, and of that total, only 108 liberalize logistics-related services trade (8.5%). Further breakdown of these interventions is provided in the section below and in the Appendix F in the paper.

#### ⇒ Coverage and frequency of data collection

Of the 21 APEC economies 19 are covered in the GTA database. Data are collected continually and are published in the regular updates of the database online (Table E.4).

**Table E.4: APEC economies included in the GTA Database**

APEC Economies covered	19 (AUS, CDA, CHL, PRC, CT, HKC, INA, JPN, MAS, MEX, NZ, PE, PHL, ROK, RUS, SGP, THA, USA, VN)
Period covered	2008 – 2021
Periodicity	Biannually

Source: Authors' data collection based on the information in the GTA database <https://www.globaltradealert.org/>

The Global Trade Alert publishes reports twice a year. Every GTA report, in addition to an up-date on the status of use of trade policy measures from the database, focuses on a new and current topic in international trade and presents original research on the topic. For instance, the GTA issued a Methodological Note in May 2020 to respond to the COVID-19 Pandemic, the purpose of which was to explain the collection of information on changes in trade policy towards export and imports of medical and food products. This covered the documentation of trade policies on goods essential to the pandemic response since the beginning of 2020<sup>151</sup>. On October 2021, in addition to GTA's traditional reporting on the policy interventions undertaken by G20 members, the 28th Global Trade Alert Report was issued in advance of the G20 Leaders' Summit in Rome with a special focus on the subsidies awarded by China, the European Union, and the United States since the Global Financial Crisis.<sup>152</sup> In March 2022 the GTA released the latest data on policy interventions affecting essential goods, citing 49 new measures affecting food trade, 30 of which distort or restrict cross-border shipments.<sup>153</sup>

<sup>151</sup> Global Trade Alert (2020). *The COVID-19 Pandemic: 21st century approaches to tracking trade policy responses in real-time Methodological Note*. <https://globalgovernanceprogramme.eui.eu/wp-content/uploads/2020/05/Methodologynote050420.pdf>

<sup>152</sup> Evenett, Simon J. and Fritz, Johannes (2021). *Subsidies and Market Access: Towards an Inventory of Corporate Subsidies by China, the European Union and the United States, The 28th Global Trade Alert Report*. <https://www.globaltradealert.org/reports/gta-28-report>

<sup>153</sup> St.Gallen Endowment for Prosperity through Trade (SGEPT), (2022). *Essential Good Initiative March 2022 data release*. Essential Goods Monitoring Initiative.

## ⇒ Usefulness / Limitations of the GTA

Although initially conceived as a trade policy monitoring initiative, the GTA, as proven independent source of reference, has grown into an indispensable tool for analysts, researchers and decision-makers alike. The GTA has become a repository of public policy intervention instruments in the period of globalization when hyperglobalization turned into slowbalization and when open breaches of multilateral rules became norm. It is noteworthy that the International Monetary Fund stated in 2016, that the GTA “has the most comprehensive coverage of all types of trade-discriminatory and trade liberalizing measures”.<sup>154</sup> Thus the most significant contribution of the GTA database demonstrated so far is towards closing the information deficit in terms of completeness and availability of information on public policy interventions related to international flows of goods, services, capital and people. It has done so in converting often non-transparent official documentation into transparent, searchable and systematized database.

More specifically, the GTA website has been designed in such a way as to allow users to search and sort the ever-growing database of reported interventions by implementing jurisdiction, trading partners affected, type of intervention, and sector. The GTA team relies practically exclusively on information collected from official government sources to provide accuracy, completeness, and timeliness of government notifications on any policy interventions. This means that governments, industry, export associations, researchers, the media, civil society, and other interested parties can check:<sup>155</sup>

- which trading partners’ interventions are likely to be affecting certain commercial interests;
- which measures are being used; and
- if those measures have yet to be implemented (possibly opening the door for consultations with the trading partner or partners in question).

In January 2021 the Global Trade Alert started to build a public, independent, comprehensive and searchable record of policy changes that affect cross-border digital commerce and on 15 April 2021, GTA launched their early warning system for policy changes by the G20 members which provides up-to-date information on developments in legislatures and the executive branch.<sup>156</sup>

Despite the obvious benefits of the GTA database of covering all types of trade-discriminatory and trade liberalizing measures, it remains a complex task to assess an impact of the collected number and type of measures on trade (investment, financial, etc.) flows. Even more complex is to attempt to assess sectoral impacts, for instance, on logistics-related services. The GTA database is not accompanied by any type of index measure of performance or restrictiveness at a sectoral or an economy level.

## ⇒ GTA Outcomes for the APEC Economies

The GTA database covers consistently 19 out of 21 APEC economies over the 2008–2021 period. Based on definition of the logistics sector (Table E.2 above) data were extracted on interventions associated to the logistics-related services from 2008-2021 for the individual APEC economies. This has allowed for a broad picture of

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<sup>154</sup> Global Trade Alert (2022). *Independent Monitoring of Policies that Affect World Commerce – About Global Trade Alert*, <https://www.globaltradealert.org/about>

<sup>155</sup> Details about GTA database can be found at <https://www.globaltradealert.org/>

<sup>156</sup> Details about Digital Policy Alert can be found at <https://www.globaltradealert.org/digital>

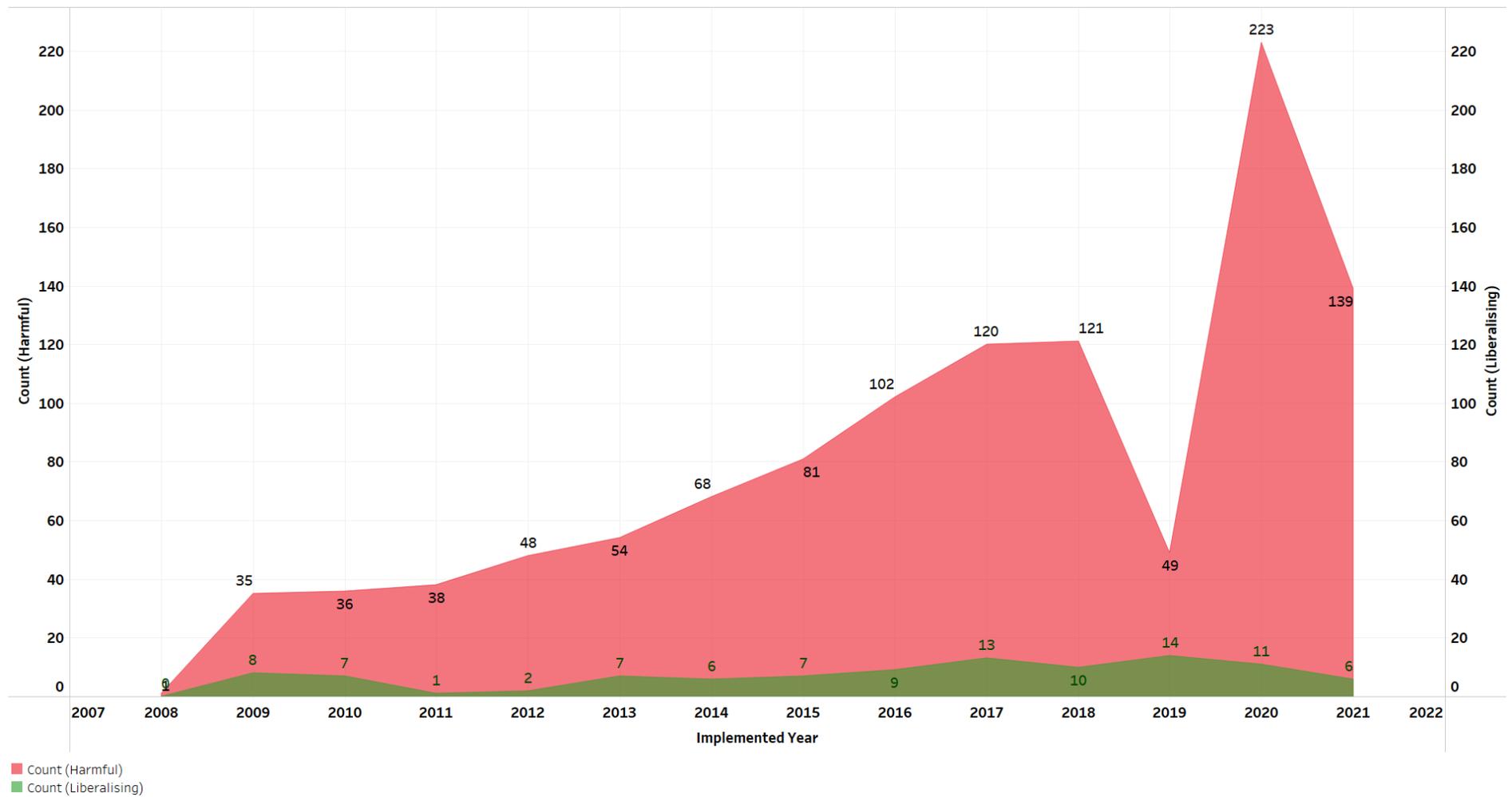
individual APEC economies' policy intervention implementation to be drawn in the logistics-related services areas. Figures E.5 and E.6 below present the breakdown on harmful and liberalizing implemented interventions for the APEC economies during the period in question.

Figure E.5 shows the overall number of interventions each year for the 2008 – 2021 period. Of the 1268 policy interventions, 143 of these corresponded to new policy interventions in 2021. It is notable that the overwhelming percentage of new interventions on logistics-related services were restrictive in nature (140 out of the total), with only 6 new interventions that liberalized logistics-related services trade.

The Figure E.6 illustrates in detail the number of trade restrictive (harmful) and trade facilitating (liberalizing) policy interventions affecting logistics-related services for the 2008–2021 period. During this period, the sector most affected by harmful interventions was telecommunications, particularly IT services and internet services. The logistics-related sectors less affected by harmful interventions were other supporting transport services and courier services.

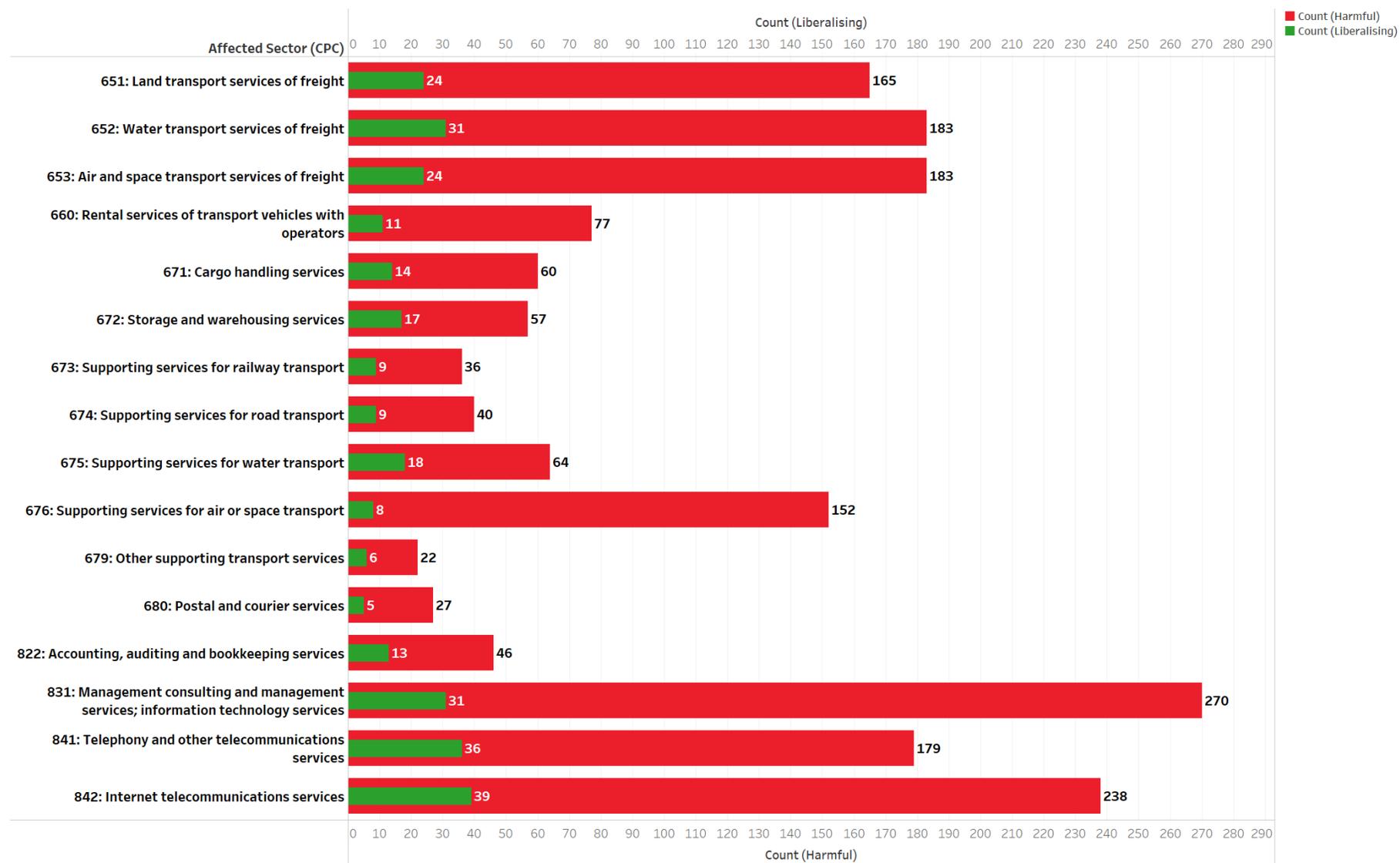
Appendix E sets out additional charts for the 19 individual APEC economies in the GTA database that implemented trade restrictive and/or facilitating policy interventions affecting logistics-related services over the same 2008 – 2021 period.

Figure E.5: Number of APEC Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Year, 2008 – 2021



Source: Authors' calculations based on the information in the GTA database.

**Figure E.6: Number of APEC Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Sector, 2008 – 2021**



Source: Authors' calculations based on the information in the GTA database.

## F. WTO's Work on Logistics and the Trade Cost Index

Logistics services have featured in WTO's work in various forms almost since its establishment. While it is a simplification to group this very rich work and its outputs into two streams, at the same time it allows for its presentation in a comparable fashion to the work of other institutions. These two work streams are:

- Work related to the Council for Trade in Services
- Work related to the development of the WTO Trade Cost Index

Both streams include activities undertaken by Members themselves (in the form of individual or group proposals or other initiatives) and work of the WTO Secretariat (under its own responsibility in the form of notes and analysis, as well as in support of Members' negotiations and capacity building). Both streams have been energized by the need to respond to challenges of the COVID-19 pandemic. An overview of the main areas of this work will be discussed below.

### ⇒ **Logistics Services Focus in WTO's Council for Trade in Services**

#### i) WTO Members' activities

The W/120 services classification system used by WTO Members under the General Agreement on Trade in Services (GATS) for the purpose of inscribing their services commitments in individual schedules does not explicitly include a sector called 'logistics' or 'logistics-related services'.<sup>157</sup> In fact, "a search by key word in the Uruguay Round archives shows that 'logistics' was "...not considered to be a separate sector by negotiators at that time, and was not the subject of discussions as such".<sup>158</sup> Negotiations on services to expand and deepen the Schedules of Commitments began in 2000 as part of the built-in agenda of the GATS, but were subsequently folded into the Doha Development Agenda (DDA) negotiations that were launched in 2001. The initial proposals made under the continued GATS negotiations were absorbed in the talks under DDA.

During the decade of the DDA negotiations (2001 – 2011<sup>159</sup>) several negotiating proposals from WTO Members were put forward that attempted to define, for the first time, the concept and industry definition of logistics services.<sup>160</sup> In a 2010 note the WTO Secretariat noted the diverging definitions of logistics in these submissions, stating that "..... *logistics in the GATS sphere came later and its definition varies according to the various proposals in which it is mentioned*".<sup>161</sup> In June 2004 a small group of WTO Members (Australia; Hong Kong, China; Liechtenstein; Mauritius; New Zealand; Nicaragua; Switzerland and Chinese Taipei) submitted a concrete proposal and checklist for the undertaking of specific commitments in sectors which would contribute to the liberalization of logistics services.<sup>162</sup> The group proposed a "Freight Logistics Checklist" including core and related core logistics services and non-core services (see also Box 1 in section III of this paper). In 2005, a larger group of members, called "Friends of Logistics Services" emphasized the importance of supply chain efficiency for trade, growth and development, and proposed to broaden negotiations so to cover multimodal transport

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<sup>157</sup> GATT document MTN.GNS/W/120 covers the following 12 sectors: Business Services, Communication Services, Construction and Related Engineering Services, Distribution Services, Educational Services, Environmental Services, Financial Services, Health Related and Social Services, Tourism and Travel Related Services, Transport Services, and Other Services Not Included Elsewhere. This is based on the Central Product Classification (CPC), which was developed by the United Nations and covers both goods and services. At present we work with CPC2.1Rev list.

<sup>158</sup> WTO (2010) *Logistics Services*, A note by the Secretariat, S/C/W/317, page 1, footnote 2.

<sup>159</sup> There is no officially agreed date of the de-facto end of the DDA negotiations.

<sup>160</sup> For example, by Hong Kong, China who presented its initial ideas for liberalization in logistics and related services in S/CSS/W/68 in March 2001 and by Switzerland who made proposals on multimodal transport in S/CSS/W/78 in May 2001.

<sup>161</sup> WTO (2010) op. cit. Footnote 2 on p.1.

<sup>162</sup> WTO (2004) *Logistics Services*, Council for Trade in Services, Special Session (TN/S/W/20).

and logistics services. They urged “all Members to participate actively in the negotiations with a view to achieving substantial liberalization commitments in logistics services.”<sup>163</sup>

In accordance with the DDA mode of negotiation, based on bilateral “requests and offers” and complemented by plurilateral negotiations, in 2006 Australia; Chile; Hong Kong, China; Japan; New Zealand; Switzerland and Chinese Taipei presented a collective request covering logistics services together with identification of the scope of the commitments they were seeking. The targeted group comprised 33 WTO Members, 26 of which were developing economies.

This was one of several efforts to try and provide impulsion to the negotiations on logistics services. While the WTO Ministerial Conference in Cancun in 2003 turned WTO Members’ attention to RTAs, and the backlash to globalization in the aftermath of the Global Financial Crisis changed priorities of some WTO Members with respect to multilateral liberalization of trade, discussions around the liberalization of logistics services continued. One striking submission by Australia in 2010 proposed a new approach to building onto the existing plurilateral and bilateral request-offer modalities. This new approach was described as ‘clustering’ and it involved “looking at all the elements of existing plurilateral requests and grouping related services together.”<sup>164</sup> The communication advocated the adoption of the ‘clustering’ approach to simplify the services negotiations by “.....focusing on key outcomes, and by making it easier to promote the benefits of the GATS to government and private sector decision makers. A package of commitments that responds to the requirements of services providers in all WTO Members would be a powerful tool to promote the ongoing work on services in the WTO.” Australia provided a concept note proposing a cluster of logistics and supply chain services as an example in this regard.<sup>165</sup>

The demise of the DDA talks also meant a pause in the logistics-related services negotiations. According to an online search of the WTO documents, there were no submitted proposals on the logistics-related services from 2010 to 2018. After that time two or three proposals on logistics services have been made by individual WTO members and a small group in the context of the exploratory discussions around market access at the Special Session of the Council for Trade in Services meetings. These proposals are still classified as restricted and thus cannot be elaborated in detail at present.

As noted in Part I of this paper, the ongoing Covid-19 pandemic has highlighted the critical role of logistics-related services in moving goods across borders. WTO Members sent signals early on in the pandemic that there was a need to hasten and broaden the organization’s work on logistics services, making this also one of the ways WTO would ensure its being fit for purpose.

In the context of the ongoing plurilateral Joint Statement Initiative discussions on Electronic Commerce which began in 2018 after the WTO 11<sup>th</sup> Ministerial Conference, proposals have been made on logistics services in connection with their role in digital trade flows (for instance, by New Zealand on paperless trading and logistics,<sup>166</sup> and by China on logistics services<sup>167</sup>).

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<sup>163</sup> Joint statement on Liberalization of Logistics Services from a group of Members contained in document TN/SW/34 dated 18 February 2005. The co-sponsors included Australia; Canada; Chile; Djibouti; the European Communities; Hong Kong, China; Iceland; Japan; Korea; Liechtenstein; Mauritius; New Zealand; Nicaragua; Norway; Panama; Peru; Singapore; Switzerland; Chinese Taipei; and the United States.

<sup>164</sup> In the document JOB/SERV/33 (restricted) dated 2 November 2010 submitted to the Council for trade in services, Special Session with a title Focusing plurilateral request-offer negotiations: ideas on “clustering”.

<sup>165</sup> Ibid.

<sup>166</sup> WTO (2019) *Joint Statement on Electronic Commerce – Communication from New Zealand*, [INF/ECOM/36 \(wto.org\)](https://www.wto.org/Trade_E_C/EC/infocomm/36/infocomm36.pdf)

<sup>167</sup> WTO (2019) *Joint Statement on Electronic Commerce – Communication from China*, [INF/ECOM/40 \(wto.org\)](https://www.wto.org/Trade_E_C/EC/infocomm/40/infocomm40.pdf)

According to the Report by the Chairperson to the WTO Trade Negotiations Committee the delegation of China circulated a proposal entitled "Exploratory Discussions on Market Access: Logistics Services" in 2020.<sup>168</sup> The communication noted the role of the logistics sector in connecting to global markets, as well as its role in enhancing resilience during the pandemic. It aimed to "promote interactions among Members so as to help them share information on the latest developments and best practices in this sector, and exchange views on interests and aspirations regarding possible improvements to Members' specific commitments under the GATS".<sup>169</sup> The Chairperson also stated that during 2020 "a number of delegations emphasized how reduced barriers and better performance of logistics services could help to facilitate goods trade, integrate within supply chains, and support e-commerce. The sector's role in helping ensure resilience during the pandemic was also mentioned. Different views were expressed as regards the scope of the services most relevant for logistics."<sup>170</sup>

With the worsening of the disruptions around supply chains in 2021, Mongolia, a land-locked developing economy, submitted a proposal to the Council for Trade in Services for WTO Members to discuss the issue of container shortage with a view to "putting in place a policy to ensure better circulation of containers".<sup>171</sup> Turkey has recently submitted a proposal to the GATS Committee on Specific Commitments on the implementation of commitments with respect to cross-border supply of road transport.<sup>172</sup> In its paper Turkey highlights the role of road freight transport in international logistics.

While there have been exploratory and other (mostly virtual) meetings throughout the pandemic, the first opportunity for a formal outcome in this area will be the WTO 12<sup>th</sup> Ministerial Conference. Postponed in December 2021 due to COVID-19 related travel and mobility restrictions, the Ministerial Conference has been rescheduled for the week of 13th June 2022. It could conceivably result in a negotiated outcome for market access improvements on services, but that is still unclear. In preparing for the 12<sup>th</sup> Ministerial Conference, WTO Members are also working on a "WTO Response to the COVID-19 Pandemic" which underlines the critical role of services in ensuring resilience during the pandemic, in particular logistics and freight transport services.

ii) WTO Secretariat's work<sup>173</sup>

The WTO Secretariat has also been actively engaged in work on logistics services in recent years. In the context of sectoral discussions at the Council for Trade in Services in 2010-2012, the WTO Secretariat presented a paper on logistics services (S/C/W/317). Technical discussions on classification issues related to logistics services took place in the Committee on Specific Commitments. Unfortunately, after the DDA lost momentum, the WTO work on logistics services, like that in other areas, was stalled. Nevertheless, the importance of logistics services for trade and in particular its critical role in economic development, including for the least developed economies (LDCs), has been widely recognized by WTO Members as evidenced in various initiatives such as Aid-for-Trade.

As part of a pandemic response, the WTO Secretariat has intensified its work on logistics services as evident from the following activities:

- In October 2021, the WTO Secretariat organized a webinar on "Logistics Resilience and Digitalization" which brought together experts from the logistics industry including express delivery, freight forwarding, e-commerce logistics, and port operation, digital standards to share experiences

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<sup>168</sup> WTO (2020) *Communication by China – Exploratory discussions on market access: logistics services*, Council for Trade in Services Special Session, JOB/SERV/301, 23 July.

<sup>169</sup> WTO (2021) *Report by the Chairperson, H.E. Ambassador Zhanar Aitzhanova to the Trade Negotiations Committee*, Council for Trade in Services Special Session, TN/S/42, 19 November, p.1.

<sup>170</sup> WTO (2021) *Report by the Chairperson, H.E. Ambassador Zhanar Aitzhanova to the Trade Negotiations Committee*, Council for Trade in Services Special Session, TN/S/42, 19 November, p.5.

<sup>171</sup> The meeting report is contained in WTO document S/C/M/147.

<sup>172</sup> WTO document S/CSC/W/73 (dated 7 March 2022, to be derestricted two months after the circulation.)

<sup>173</sup> This section is based on information provided by Ms. Ruosi Zhang, member of the Services Division of the WTO Secretariat.

and exchange views on what lessons have been learned from COVID-19, what challenges lie ahead, and what kind of policies can help address those challenges. The private sector practitioners highlighted the importance of trade facilitation for logistics services, trends toward paperless trading and further digitalization, and the relevance of WTO rules for the logistics industry, including services domestic regulation, market access, and the TFA.

- In light of the shipping disruptions resulting from the Covid-19 pandemic, the Secretariat organized a webinar in November 2021 for the purpose of examining the factors leading to the surge of shipping rates and sharing experiences to mitigate trade impacts of shipping disruptions.
- On 21 March 2022 a supply chain conference organized by the Secretariat will take place where stakeholders will share perspectives on the underlying causes and trajectory of continued supply chain disruptions. The conference will also collectively identify the resources, interventions and innovations needed to ease crippling disruptions, logjams and price hikes. The aim is to harness the WTO's convening power to build the first complete picture of the challenges and opportunities facing supply chain partners of all regions, sectors and sizes, and to begin the work of shaping sustainable, inclusive solutions.
- A recent WTO Secretariat publication "Mapping Trade Bottlenecks for LLDCs" examines transport/logistics connectivity constraints facing LLDCs, including the particular challenges for these economies during the pandemic.<sup>174</sup>
- In a joint research project on trade and health by the WTO Secretariat and The World Bank which is ongoing, the role of transport and logistics services is also addressed. A joint paper by the WTO and the World Bank Group issued in January 2022, on *The Role of Trade in Developing Economies Road to Recovery*<sup>175</sup> highlighted the role of logistics in reducing trade costs and enabling developing economies to embark on a path to recovery.

⇒ **WTO Trade Cost Index** <sup>176</sup>

One of the functions of the WTO is to promote transparency and monitor Members' trade policies. In principle, this can be achieved by providing information on Members' use of individual trade policy instruments (for instance, tariffs and various non-tariff measures).<sup>177</sup> Such information, in turn, can be used to infer the impacts of such instruments on trade flows. Alternatively, one can estimate the impact of such policies at the economy or sectoral level. Such aggregate measures are known as trade costs. They comprise several components: trade policy at and behind the border, transportation, ICT, and other costs that occur when moving a good or service from a foreign producer to a final user in the domestic economy. Logistics-related services are a component of such costs. It would be ideal if information and data were such to allow bottom-up aggregation of all monetary equivalents for all these components for a compilation of time series records of product-level trade costs in the form of tariff equivalents. Unfortunately, the amount of data necessary for such an endeavour makes it impossible, especially when covering multiple economies.

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<sup>174</sup> WTO (2021) *Easing Trade Bottlenecks in Landlocked Developing Countries* [https://www.wto.org/english/res\\_e/booksp\\_e/00\\_landlocked2021\\_e.pdf](https://www.wto.org/english/res_e/booksp_e/00_landlocked2021_e.pdf)

<sup>175</sup> WTO (2022) *The Role of Trade in Developing Countries Road to Recovery* [https://www.wto.org/english/tratop\\_e/devel\\_e/joint\\_policy\\_note\\_jan22.pdf](https://www.wto.org/english/tratop_e/devel_e/joint_policy_note_jan22.pdf)

<sup>176</sup> This section presents recent work of the WTO Secretariat on the construction of the WTO Trade Cost Index. It should not be seen as a comprehensive review of work on trade costs. Information included in this discussion is drawn from the WTO website available at <http://tradedcosts.wto.org/> and it focuses on trade costs of selected services which are relevant for movement of goods across borders.

<sup>177</sup> The main channels are national *Trade Policy Reviews* ([https://www.wto.org/english/tratop\\_e/tpr\\_e/tpr\\_e.htm](https://www.wto.org/english/tratop_e/tpr_e/tpr_e.htm)) and *biannual Trade Monitoring Reports* ([https://www.wto.org/english/tratop\\_e/tpr\\_e/trade\\_monitoring\\_e.htm](https://www.wto.org/english/tratop_e/tpr_e/trade_monitoring_e.htm)).

However, another approach allows inferring trade costs by comparing international and domestic trade flows and expressing trade costs as costs of trading internationally relative to trading domestically.<sup>178</sup> This is the approach adopted by the WTO Secretariat in its construction of the WTO Trade Cost Index.

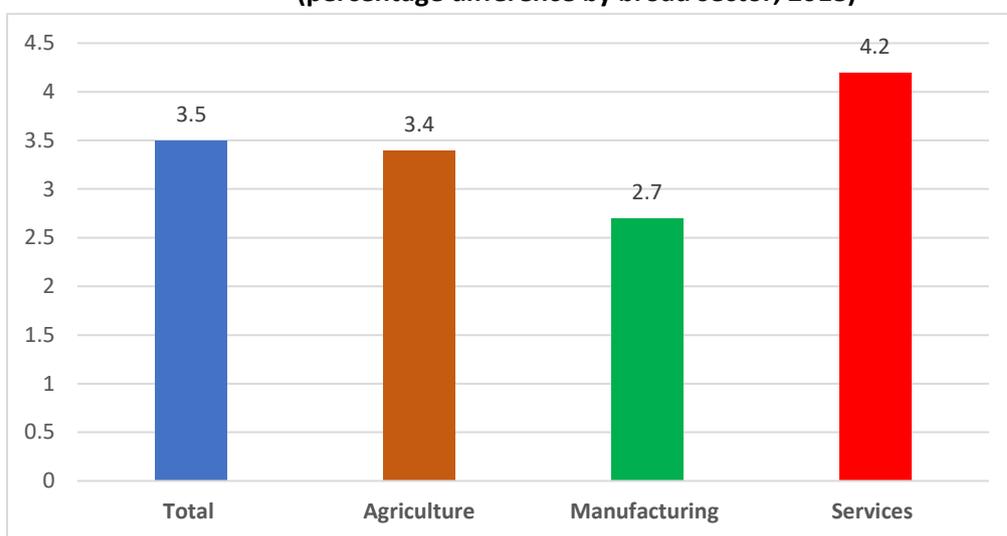
The WTO Secretariat has been providing insights on trade costs to its Members for some time, including monitoring trends in trade during the Covid-19 pandemic.<sup>179</sup> In April 2021 the WTO launched a Trade Cost Index platform, designed as a centralized place to access datasets and present analytical work on trade costs.<sup>180</sup> The purpose of the newly-launched Trade Cost Index is threefold:

- 1) to become a tool for monitoring the evolution of global trade costs;
- 2) to enhance understanding of the main components of trade costs; and
- 3) to identify which parts of the economy face the largest trade costs.

As goods and services cross borders, trade is exposed to many more frictions relative to domestic trade. Thus trade costs obtained by this methodology are regularly multiple of costs in domestic trade. Understanding which components contribute the most to the overall trade cost level – for instance, transportation costs or some of the NTMs – can provide insights for policymakers to decide on the actions needed to adequately address the problems. Often, but not always, the major contributor to high trade costs is policy and regulations. This is especially important for services trade which consistently is determined to face higher trade costs than goods trade.<sup>181</sup>

Consistent with this, Figure F.1 shows the costs of international trade in 2018 as 3.5 times larger than those of domestic trade. Furthermore, out of the three economic sectors, services trade costs are the highest, more than four times domestic costs.

**Figure F.1. Global Trade Costs as compared to Domestic Trade Costs in the Trade Cost Index (percentage difference by broad sector, 2018)**



Source: Extracted from WTO (2021) *WTO Trade Cost Index: Evolution, Incidence and Determinants, Background Note*, March 24, 2021 (Figures 1 and 2, page 6).

<sup>178</sup> The body of literature on this topic is vast. One of the most influential articles is James E. Anderson and Eric van Wincoop (2004) Trade Cost, *Journal of Economic Literature*, Vol. XLII, September, pp.691-751. The methodology that underpins the WTO Secretariat's recent work is Peter H. Egger, Mario Larch, Sergey Nigai and Yoto V. Yotov (2021) Trade costs in the global economy: measurement, aggregation and decomposition, Staff Working Paper ERSD-2021-2, 11 January.

<sup>179</sup> For example, WTO (2019) *World Trade Report 2019: The Future of Services Trade* (Chapter 4) [https://www.wto.org/english/res\\_e/booksp\\_e/00\\_wtr19\\_e.pdf](https://www.wto.org/english/res_e/booksp_e/00_wtr19_e.pdf); WTO (2020) *Trade Costs in the Time of Global Pandemic* - Information Note, 12 August [https://www.wto.org/english/tratop\\_e/covid19\\_e/trade\\_costs\\_report\\_e.pdf](https://www.wto.org/english/tratop_e/covid19_e/trade_costs_report_e.pdf)

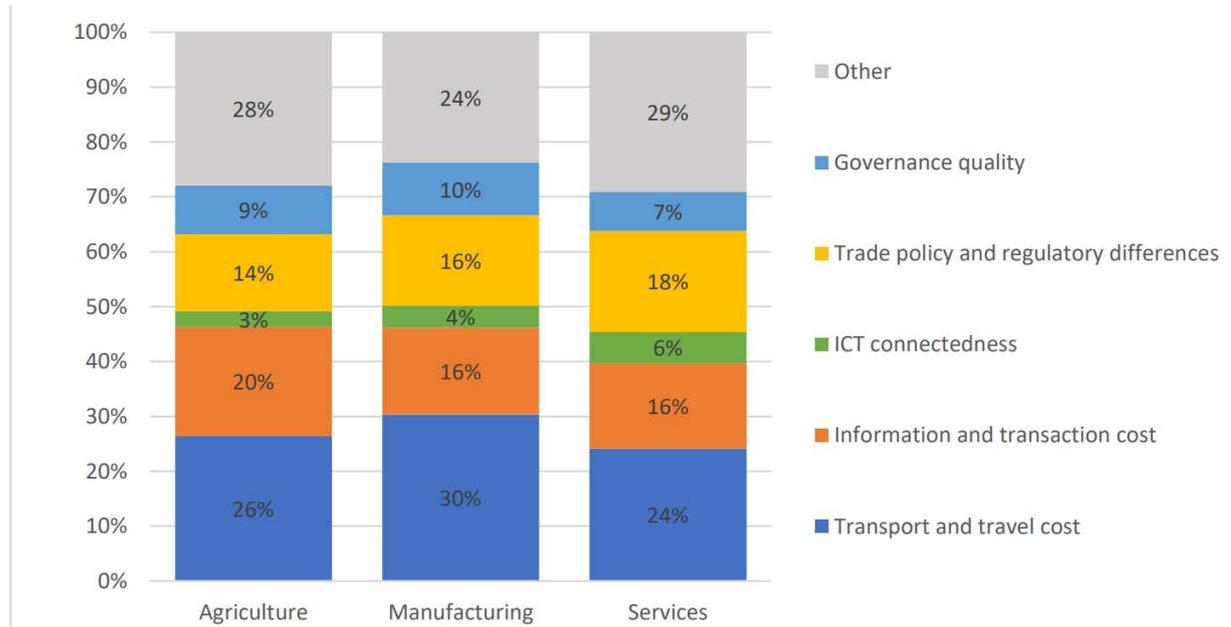
<sup>180</sup> <http://tradecosts.wto.org/>

<sup>181</sup> See an easy-to-read summary of the reasons behind this in Shepherd, Ben (2019). *Are Trade Costs in Services Really So High?* <https://www.linkedin.com/pulse/trade-costs-services-really-so-high-ben-shepherd/>

For the purpose of constructing the WTO Trade Cost Index, the services sector is defined as composed of 16 services activities (according to the ISIC Rev 3.1 classification), seven of which can be considered as logistics-related services. These include: wholesale trade and commission trade; inland transport; air transport, maritime transport; post and telecommunications; and financial intermediation, and logistics and travel agencies -a category put together for the purpose of constructing the index which does not appear as such in the ISIC Rev. 3.1.<sup>182</sup>

The WTO Trade Cost Index can be decomposed into five main groups of underlying determinants which are shown in Figure F.2. Transport and travel costs reflecting distance and infrastructure quality are estimated to contribute the most to trade costs, followed by trade policy and regulations. Policy and regulations play a larger role in services than in the other economic sectors, consistent with the outcomes of the OECD Services Trade Restrictiveness Index (STRI). Access to information and communication technology also plays a more significant role for services sector than for other economic activities, highlighting the role that digital delivery plays in this sector.

**Figure F.2. Determinants of Global Trade Costs in the WTO Trade Cost Index**



Source: Extracted from WTO (2021) *WTO Trade Cost Index: Evolution, Incidence and Determinants, Background Note*, March 24, 2021 (Figure 21, p.18)

*Note: This decomposition shows to what extent various factors contribute to explaining the variation in bilateral trade costs. That is, factors that explain why export costs from a member vary across importers and why import costs to a member vary across exporters. "Other" is the part of trade costs that remains unexplained by observable trade costs determinants. The underlying regressions are based on data for the year 2016. See the Annex 1 and Rubínová and Sebtí (2021) for more details.*

The WTO Trade Cost Index uses estimates of bilateral trade costs for 43 economies (plus 'rest of the world') and 31 sectors in the period between 2000 and 2018 to illustrate the evolution of trade costs over time. At present however, the model leaves almost 30 per cent of the costs unexplained.

<sup>182</sup> While the ISIC Rev 3.1 classification of activities does not include any specific category labeled "logistics", in the published result for the Trade Cost Index several auxiliary services to transport and travel were given title 'logistic services and travel agencies' which may lead to some confusion. For the purposes of this paper, this activity is added to six other logistics-related services as part of a subset of logistic-related services within the "services" sector.

## ⇒ Constructing of the WTO Trade Cost Index

The WTO Trade Cost Index is built from the top down. The construction starts from an indirect estimation of overall trade frictions, which are then broken down into specific trade cost components (such as transportation costs, trade policy barriers, costs to comply with foreign regulations, communication costs, transaction costs or information costs). The trade costs are inferred by comparing international to domestic trade flows. Hence the measure of trade costs reflects the cost of trading internationally relative to trading domestically.

According to the WTO,<sup>183</sup> among the novelties of this index are sector-specific elasticities of trade flows to trade costs for both goods and services. Furthermore the methodology estimates directional trade costs, making a useful differentiation between export and import costs. For example, it is well known that the cost of shipping a good from A to B may not be the same as shipping it from B to A. The reason for this lies not only in possible differing customs duties and transactional costs but also in transport costs that may differ for the same route going in different directions. This is of particular importance for assessing the efficiency of logistics services which include transport costs as an important component. If a large container ship is not full on its return trip from B to A, shipping prices fall in moving goods back. Last but not least, beyond offering more realistic estimates of trade costs, directional trade costs also allow the estimation of the burden of trade costs on different groups of consumers and producers, different income groups, gender or skill groups.

In terms of data requirements, this index makes use of international input-output data, socio-economic accounts for employment by sectors and skill groups, gender disaggregated employment data and data on firms. Table F.1 describes the sources of data used.

**Table F.1. Data sources used in the Construction of the WTO Trade Cost Index**

Variables	Source
Population-weighted distance, having common border, being landlocked, having common ethnic language, having common religion, having common legal origin, previously being in a colonial relationship, previously being the same country	Centre d'études prospectives et d'informations internationales (CEPII)
Quality of transport and trade-related infrastructure	World Bank, World Development Indicators
Bilateral stock of migrants in 1970	World Bank, Global Bilateral Migration Database
Broadband coverage per capita and mobile phone subscriptions per capita	International Telecommunications Union
Having a regional trade agreement, being part of the European Union and having common currency	Mario Larch's Regional Trade Agreements Database from Egger and Larch (2008), 2018 update
Services Trade Restrictiveness Index (STRI) and STRI heterogeneity	Organization for Economic Cooperation and Development (OECD)
Applied bilateral tariffs	World Integrated Trade Solution (WITS)
SPS and TBT specific trade concerns	World Trade Organization, Integrated Trade Intelligence Portal (I-TIP) and WIIW, <a href="https://wiiw.ac.at/wiiw-ntm-data-ds-2.html">https://wiiw.ac.at/wiiw-ntm-data-ds-2.html</a> <sup>18</sup>
Control of corruption	World Bank, Worldwide Governance Indicators (WGI)

Source: Extracted from WTO (2021) *WTO Trade Cost Index: Evolution, Incidence and Determinants, Background Note*, March 24, 2021 (Table 2, p. 25) [http://tradedcosts.wto.org/docs/Trade\\_Cost\\_Index\\_Background\\_Note\\_24-03-2021.pdf](http://tradedcosts.wto.org/docs/Trade_Cost_Index_Background_Note_24-03-2021.pdf)

<sup>183</sup> Compared to previous studies, this methodology introduces several improvements as summarized here. For more details see the technical note [http://tradedcosts.wto.org/docs/Trade\\_Cost\\_Index\\_Background\\_Note\\_24-03-2021.pdf](http://tradedcosts.wto.org/docs/Trade_Cost_Index_Background_Note_24-03-2021.pdf).

⇒ **Coverage and Frequency of Data Collection**

Currently only ten APEC economies (Australia, Canada, China, Indonesia, Mexico, Republic of Korea, Russia, United States and Chinese Taipei) are covered in this WTO dataset, and there is no indication if and when the remainder of APEC economies will be included. Likewise, it is not clear how often the estimation of trade cost indices will be done so it is not possible to state periodicity for the dataset.

**Table F.2. Data sources used in the Construction of the WTO Trade Cost Index**

APEC Economies covered	10 (AUS, CDA, PRC, INA, JPN, MEX, ROK, RUS, USA, CT)
Period covered	2000 – 2018
Periodicity	Not known

Source: WTO, Trade Cost Index <http://tradedcosts.wto.org/>

Most of the data used for the calculation (see Table F.1) are available for the 2000-2018 period. However, in order to obtain disaggregated estimates of trade costs by gender, skill level and firm size, additional data need to be used and these were not available for the entire period. Therefore the estimates of trade costs by household income, skill group, gender and firm size cover a shorter time-period, mostly up to 2014. The intention of the WTO Secretariat is to continue to improve upon the model and its resulting trade cost estimates and to expand coverage in order to group economies not only by income level, but also by region.

S

Below is the comparative table of main features of institutional databases on logistics services

## Overview of the main features of institutional databases on logistics services (comparative table)

Features Institutions	Services covered within Logistics Definition	Information collected on measures affecting Logistics Services	Calculates an index (for ranking of economies)	No of APEC (total) economies covered	Period covered and data frequency	Index validated by Governments  Yes / No	Format of online dissemination
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>World Bank</b>	Logistics quality (1 out of 6 LPI components) <ul style="list-style-type: none"> <li>▪ Transport (Air, Maritime, Road &amp; Rail)</li> <li>▪ Warehousing/distribution; freight forwarders; customs agencies; customs brokers</li> </ul>	Yes <sup>i-3</sup>	Yes <sup>i-4</sup>	21 (160)	Since 2013 every two years, latest 2018	No	<a href="#">Database</a> and research papers
<b>OECD- STRI</b>	<ul style="list-style-type: none"> <li>▪ Logistics (Cargo handling, Storage and warehouse, Freight forwarding and customs brokerage)</li> <li>▪ Transport (Air, Maritime, Road freight and Rail freight)</li> <li>▪ Telecommunication</li> <li>▪ Courier</li> </ul>	Yes <sup>ii-3</sup>	Yes <sup>ii-4</sup>	16 (50)	2014 – 2021 Yearly	Yes	<a href="#">Interactive database</a> and research papers
<b>United Nations TFI</b>	<ul style="list-style-type: none"> <li>▪ Paperless trade; cross-border paperless trade</li> <li>▪ Formalities</li> </ul>	Yes <sup>iii-3</sup>	Yes <sup>iii-4</sup>	18 (144)	2015 – 2021 Every two years	Yes	<a href="#">Interactive platform</a> Reports by regions, by economy
<b>APEC - PSU</b>	<ul style="list-style-type: none"> <li>▪ Telecommunication</li> <li>▪ Distribution</li> </ul>	Yes <sup>iv-3</sup>	2014-2018 Yes <sup>iv-4</sup>	21	2014 – 2018 Yearly	Yes (indirectly via CTI meetings)	Reports by PSU and CTI/SCCP

	<ul style="list-style-type: none"> <li>Logistics services (storage and warehousing)</li> </ul>						
<b>GTA</b>	<ul style="list-style-type: none"> <li>Logistics (Cargo handling, Storage and warehouse, Freight forwarding and customs brokerage)</li> <li>Transport (Air, Maritime, Road freight and Rail freight)</li> <li>Telecommunication</li> <li>Courier</li> </ul>	Yes <sup>v-3</sup>	No, but economies ranked using different metric	Those which enacted measures (19)	2008 – 2021 Yearly	Yes	<a href="#">Interactive database and reports</a>
<b>WTO</b>	<ul style="list-style-type: none"> <li>WTO Members' proposals include elements for logistics definition</li> <li>WTO Trade Cost Index (TCI) Includes services (ISIC 3.1)</li> </ul>	Notification process for measures Yes <sup>vi-3</sup>	Trade Cost Index- Yes <sup>vi-4</sup>	10	Since 2000	TCI -Estimated	<a href="#">Documents Online Trade Cost Index platform</a>

## Footnotes

### Column (3)

i-3 [https://lpi.worldbank.org/sites/default/files/LPI\\_2018\\_Questionnaire.pdf](https://lpi.worldbank.org/sites/default/files/LPI_2018_Questionnaire.pdf). The overall LPI is aggregated as a weighted average of the six core areas of logistics performance: Customs, Infrastructure, International Shipments, Logistics Quality, Tracking and Tracing and Timeliness.

ii-3 <https://www.oecd.org/trade/topics/services-trade/documents/oecd-stri-scoring-methodology.pdf>. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.

iii-3 <https://unescap.org/sites/default/d8files/event-documents/UNTFSurvey2021.pdf>. Trade Facilitation Implementation score, covering 5 common trade facilitation measures including (1) transparency, (2) formalities, (3) institutional arrangements and cooperation, (4) paperless trade and (5) cross-border paperless trade.

iv-3 <https://apecservicesindex.org/documents/report-pilot-%20measuring-regulatory-environment-services-trade%20-apec.pdf>.

Building on existing indices, particularly on the OECD Services Trade Restrictiveness Index (STRI), the **pilot APEC Index** is comprised of regulatory information on barriers affecting services and composite indices that quantify these in a comparable manner. The pilot APEC Index also takes into account regional initiatives and APEC specific elements, such as the *APEC Business Travel Card*, to reflect relevant APEC-wide efforts to liberalise trade. The baseline regulatory databases are organised under five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.

v-3 **GTA** systematically tracks news of government announcements on literally hundreds of governments and other official websites. From this information **GTA compute counts of the total number of measures that distort or liberalise commerce**. Retrieved from *Global Trade Alert*. 2016. “*Global Trade Plateaus The 19th Global Trade Alert Report*”, Simon J. Evenett and Johannes Fritz (Box 6.1, Page 26)

vi-3 As part of reporting on WTO Members' response to the pandemic, WTO Secretariat collects and publishes information on trade bottlenecks including transport/logistics connectivity constraints [https://www.wto.org/english/tratop\\_e/covid19\\_e/bottlenecks\\_report\\_e.pdf](https://www.wto.org/english/tratop_e/covid19_e/bottlenecks_report_e.pdf) and updated Oct 2021 [https://www.wto.org/english/tratop\\_e/covid19\\_e/bottlenecks\\_update\\_oct21\\_e.pdf](https://www.wto.org/english/tratop_e/covid19_e/bottlenecks_update_oct21_e.pdf)

### Column (4)

i-4 <https://openknowledge.worldbank.org/bitstream/handle/10986/29971/LPI2018.pdf?sequence=1&isAllowed=y>. Performance is evaluated on a scale from 1 (worst) to 5 (best)

ii-4 <https://www.oecd.org/trade/topics/services-trade/documents/oecd-stri-policy-trends-2021.pdf>. The STRI indices take values between zero and one, one being the most restrictive.

iii-4 <https://www.unescap.org/sites/default/d8files/knowledge-products/ASEAN%20report%202021%20FINAL-web.pdf>. TF implementation score take values between 0 and 100, full implementation of all measures = 100%.

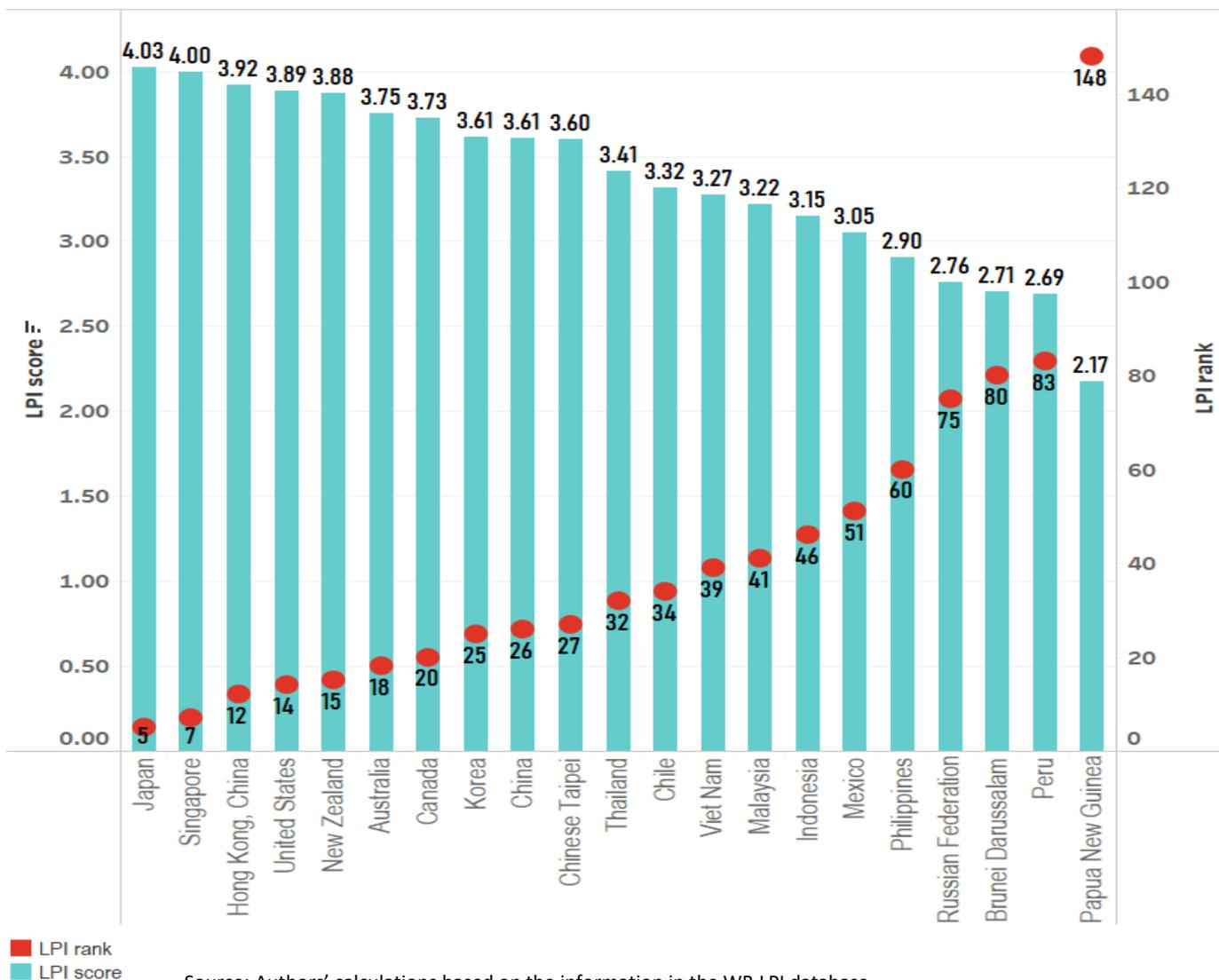
iv-4 <https://apecservicesindex.org/> The indices take values between zero and one, one being the most restrictive.

vi-4 <http://tradecosts.wto.org/>

## Appendices

## Appendix A: LPI Performance of Individual APEC Economy for Each of the Major Components of the LPI (2018)

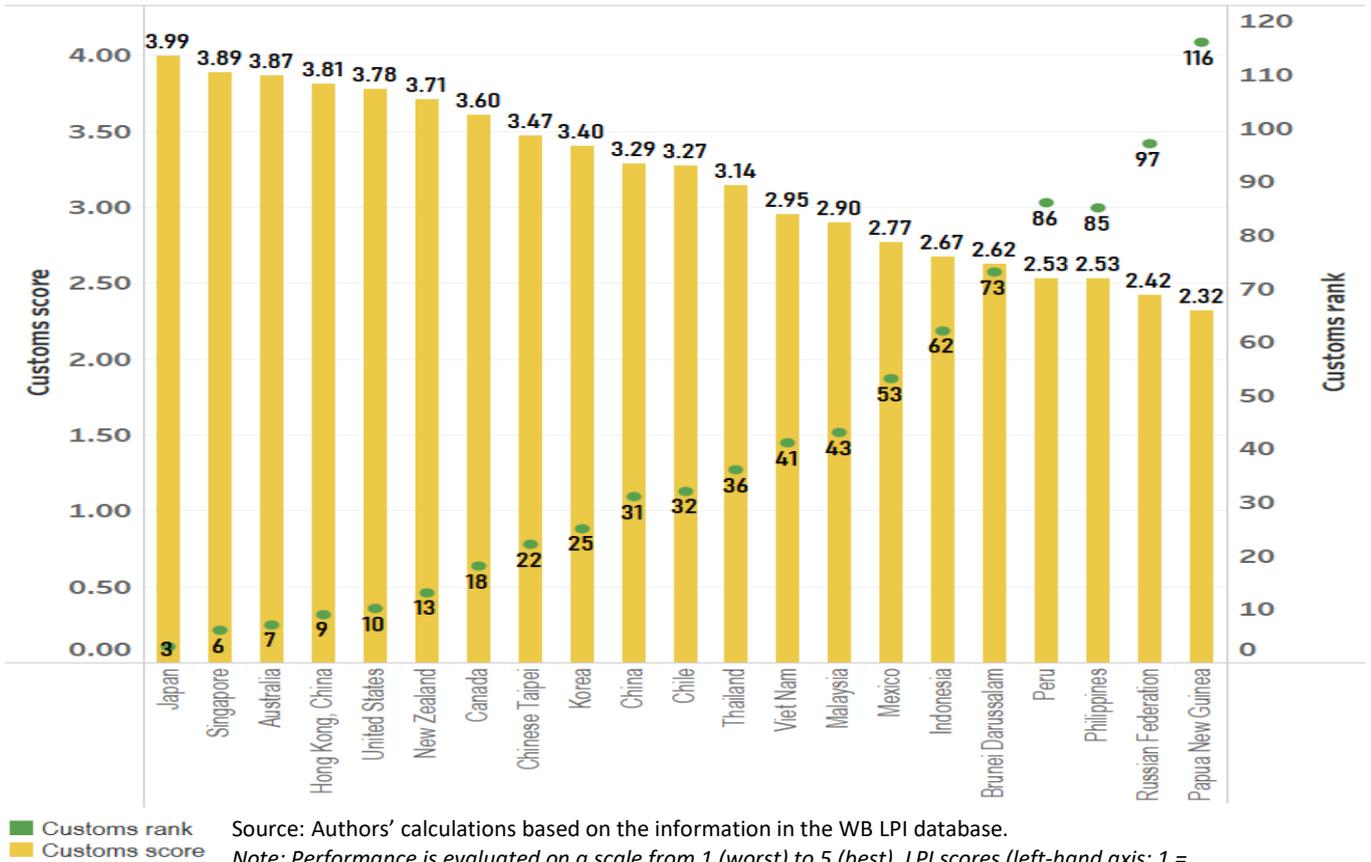
Figure A.1: LPI Scores/Ranks for the 21 APEC Economies, 2018



Source: Authors' calculations based on the information in the WB LPI database.

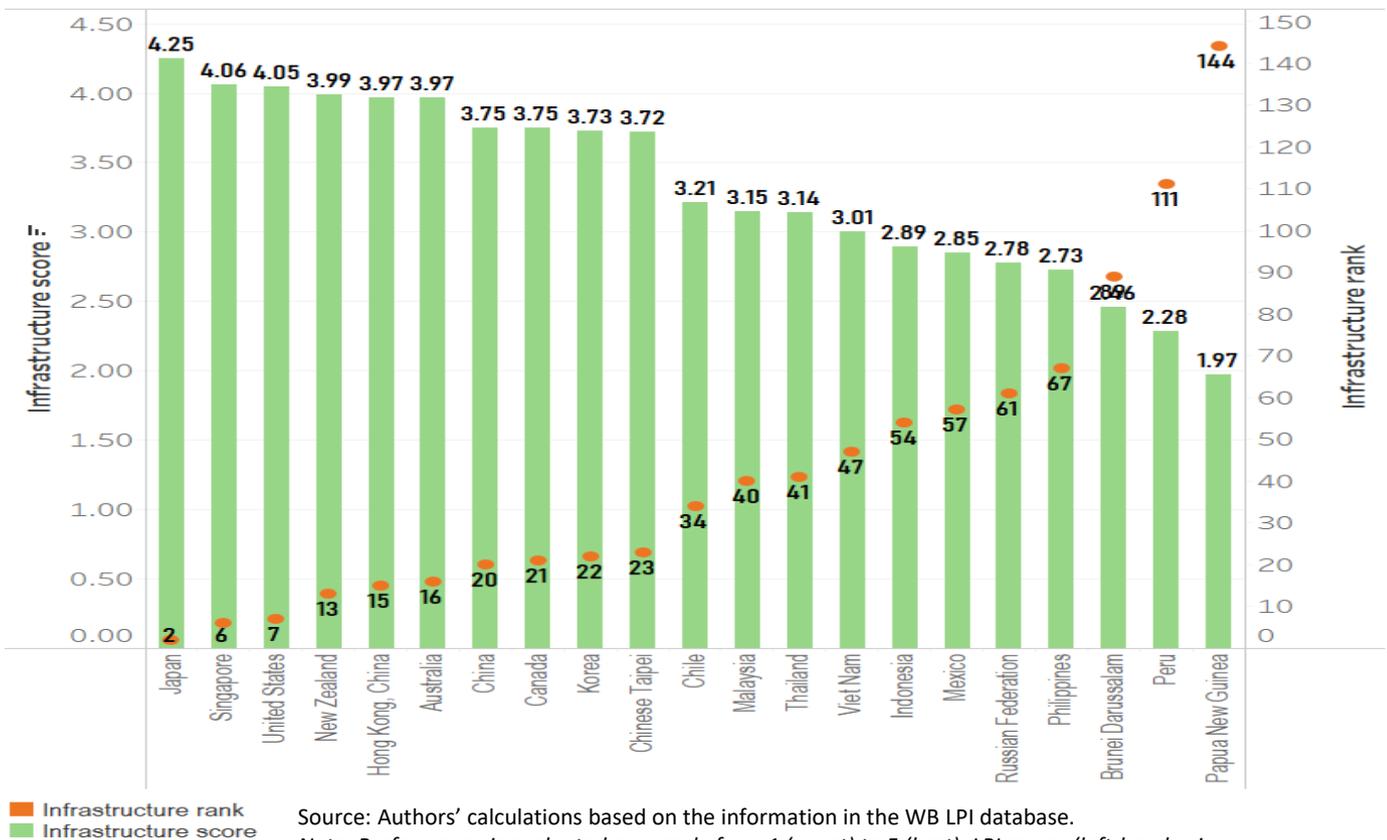
Note: Performance is evaluated on a scale from 1 (worst) to 5 (best). LPI scores (left-hand axis; 1 = min; 5 = max.) and member ranks (right-hand axis).

Figure A.2: Efficiency of Customs and Border Clearance (Customs) for the 21 APEC Economies, 2018



Source: Authors' calculations based on the information in the WB LPI database.  
 Note: Performance is evaluated on a scale from 1 (worst) to 5 (best). LPI scores (left-hand axis; 1 = min; 5 = max.) and member ranks (right-hand axis).

Figure A.3: Quality of trade and transport-related infrastructure (Infrastructure) for the 21 APEC Economies, 2018



Source: Authors' calculations based on the information in the WB LPI database.  
 Note: Performance is evaluated on a scale from 1 (worst) to 5 (best). LPI scores (left-hand axis; 1 = min; 5 = max.) and member ranks (right-hand axis).

Figure A.4: Ease of arranging competitively priced shipments (International Shipments) for the 21 APEC Economies, 2018

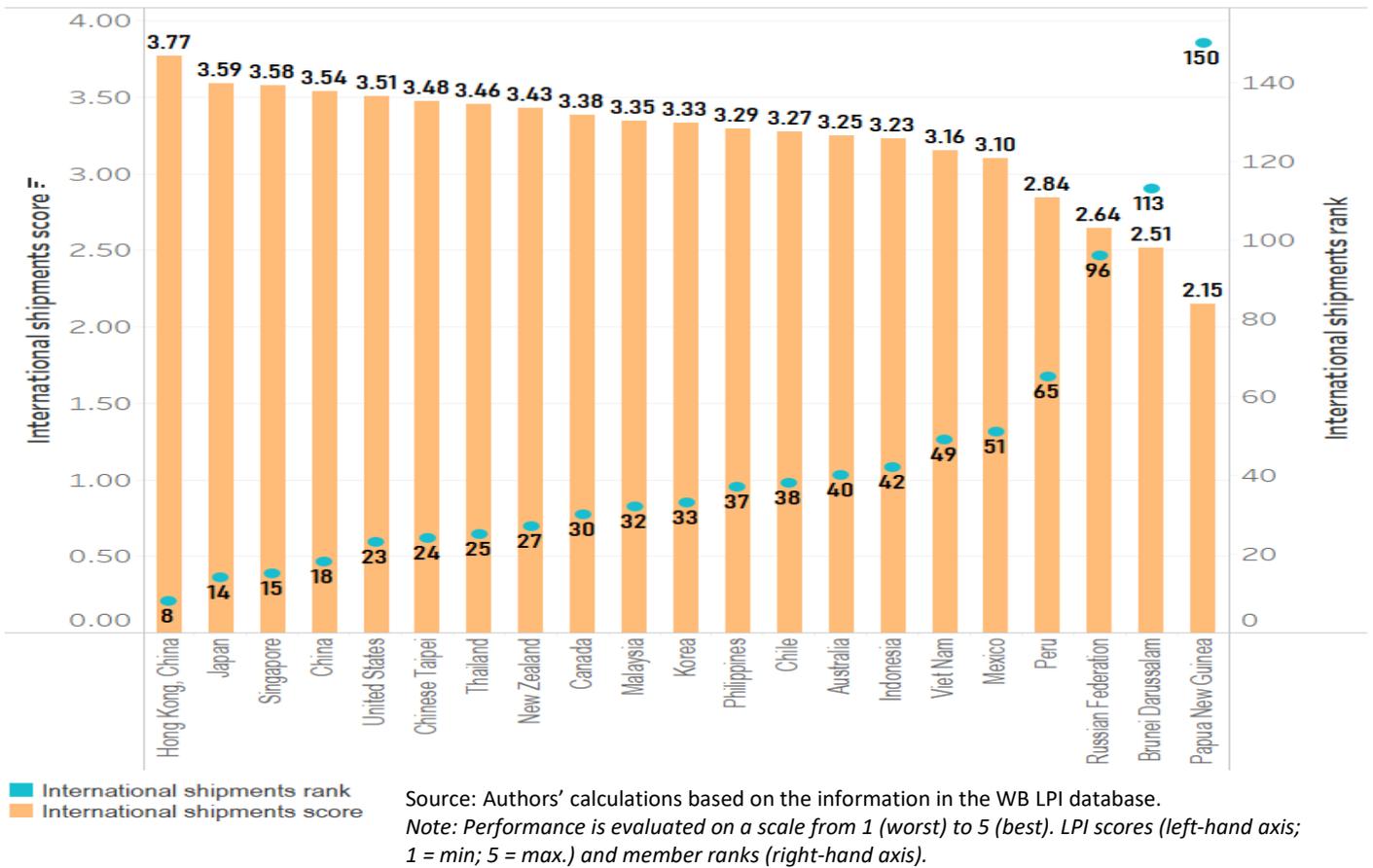


Figure A.5: Competence and quality of logistics services (Logistics Quality) for the 21 APEC Economies, 2018

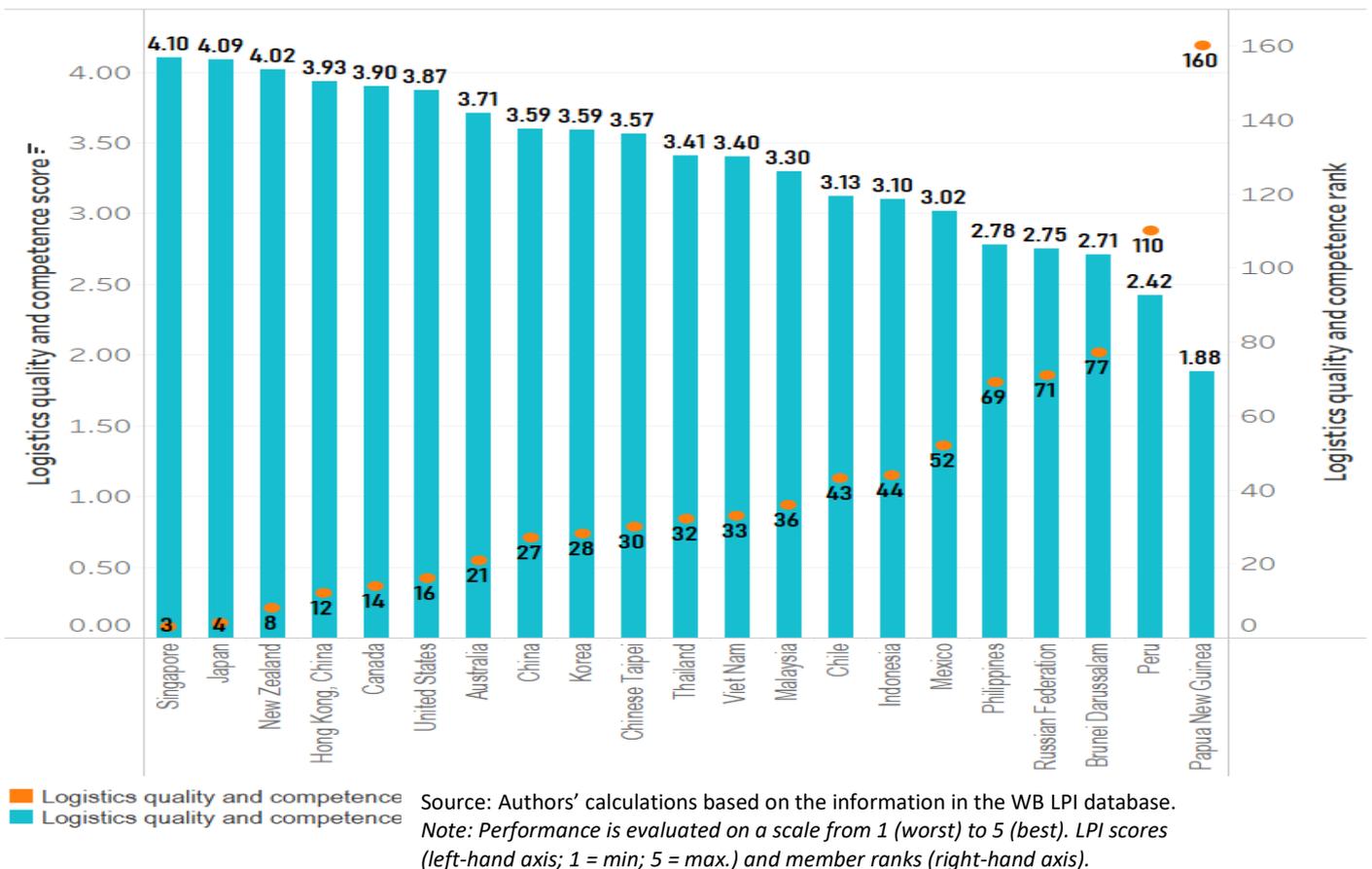
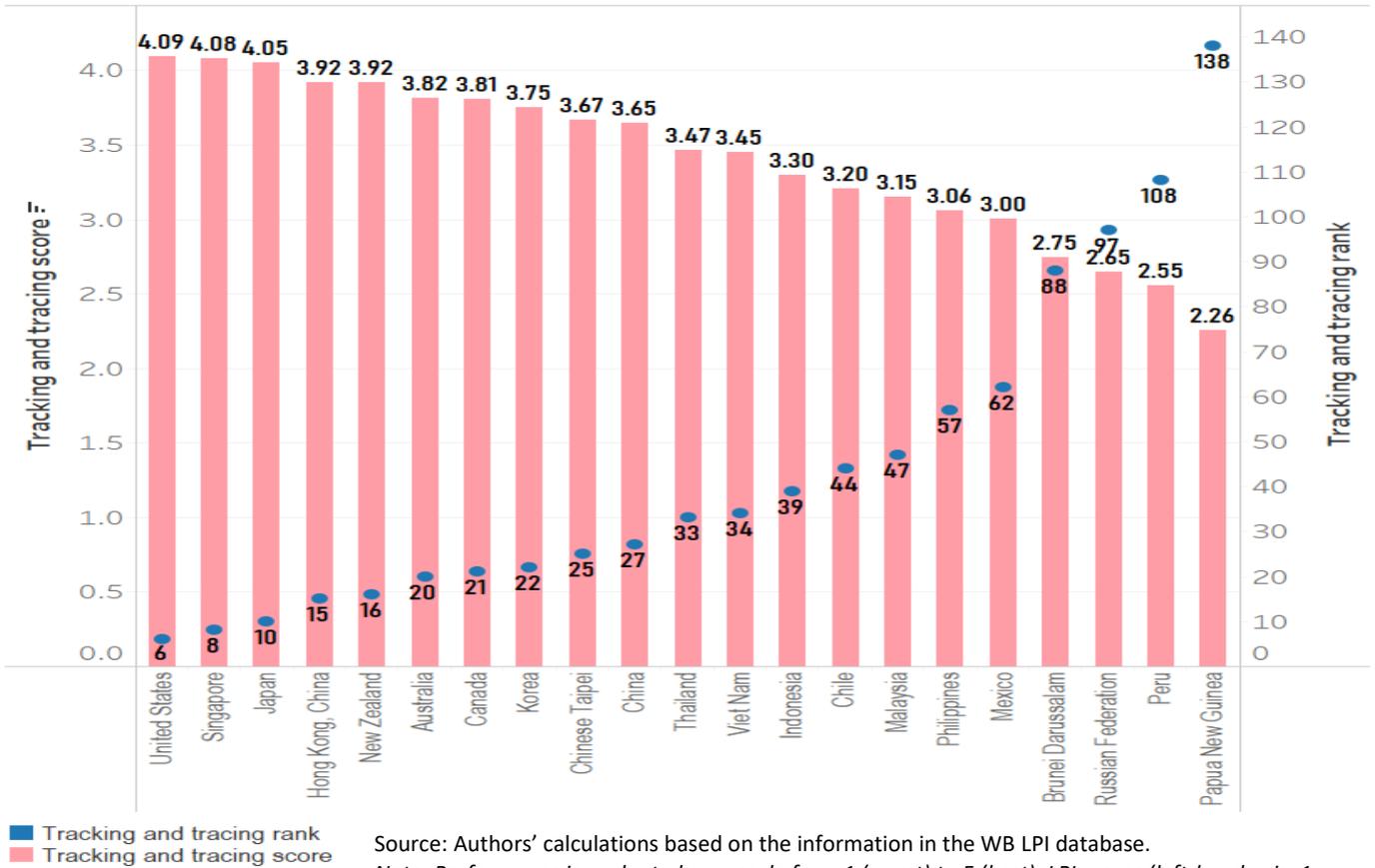
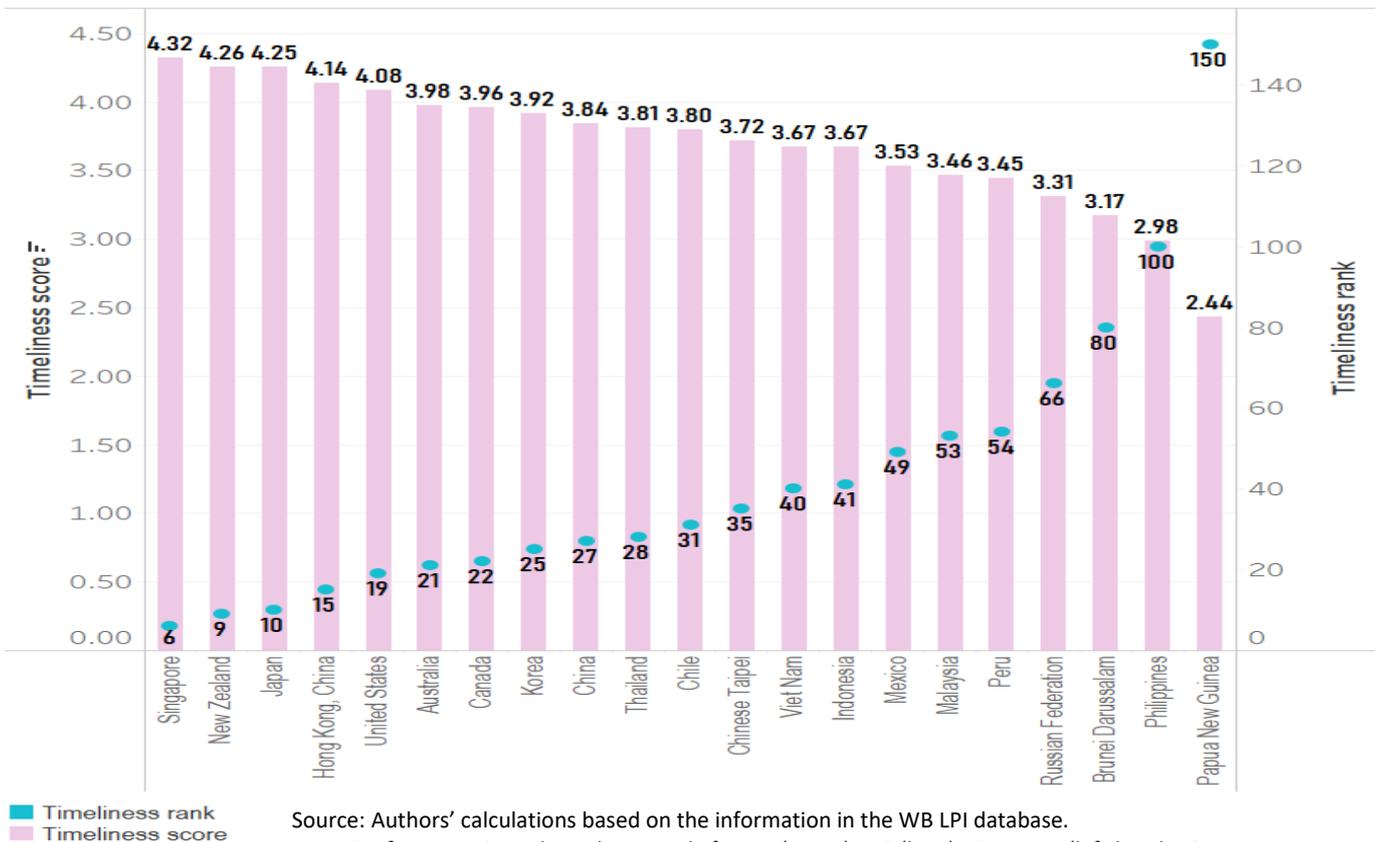


Figure A.6: Ability to track and trace consignments (Tracking and Tracing) for the 21 APEC Economies, 2018



Source: Authors' calculations based on the information in the WB LPI database.  
 Note: Performance is evaluated on a scale from 1 (worst) to 5 (best). LPI scores (left-hand axis; 1 = min; 5 = max.) and member ranks (right-hand axis).

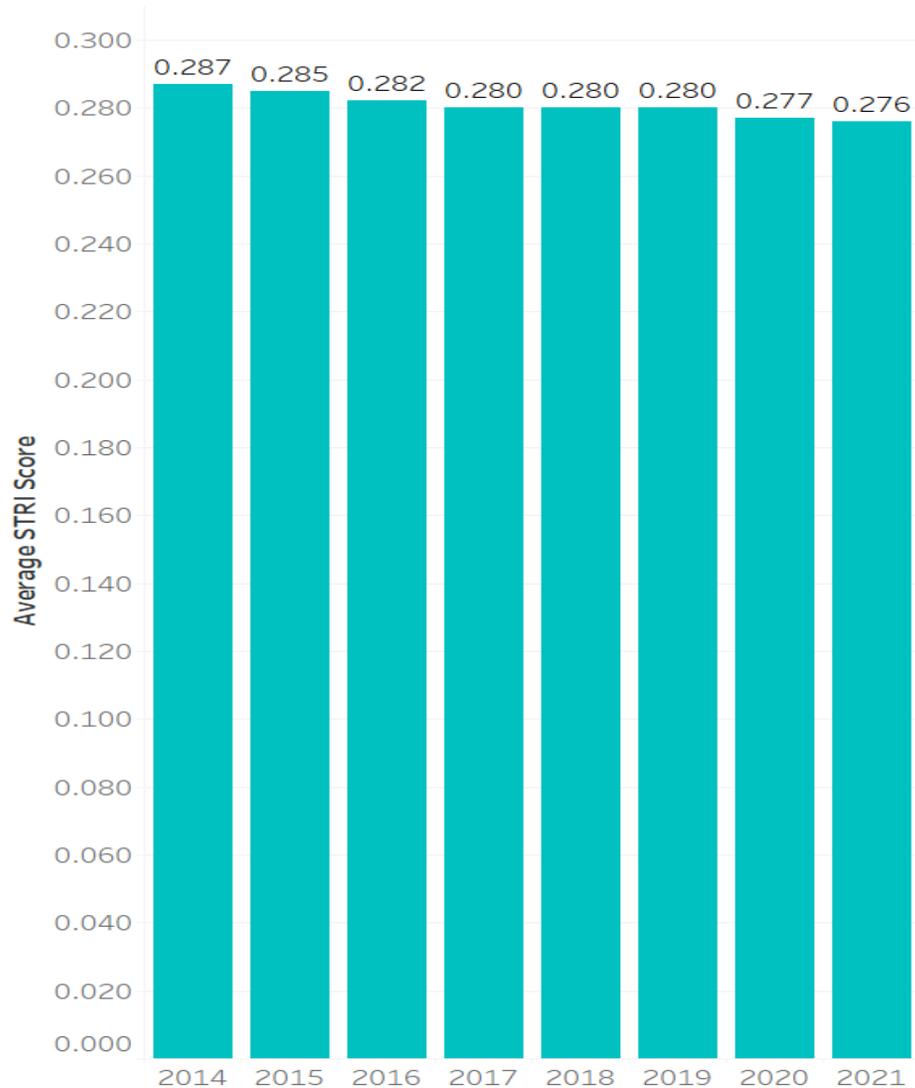
Figure A.7: Frequency with which shipments reach the consignee within the scheduled or expected time (Timeliness) for the 21 APEC Economies, 2018



Source: Authors' calculations based on the information in the WB LPI database.  
 Note: Performance is evaluated on a scale from 1 (worst) to 5 (best). LPI scores (left-hand axis; 1 = min; 5 = max.) and member ranks (right-hand axis).

## Appendix B: STRI Scores per Economy/Sector (2014 – 2021)

Figure B.1: Average STRI Scores for the 16 APEC Economies, 2014 – 2021

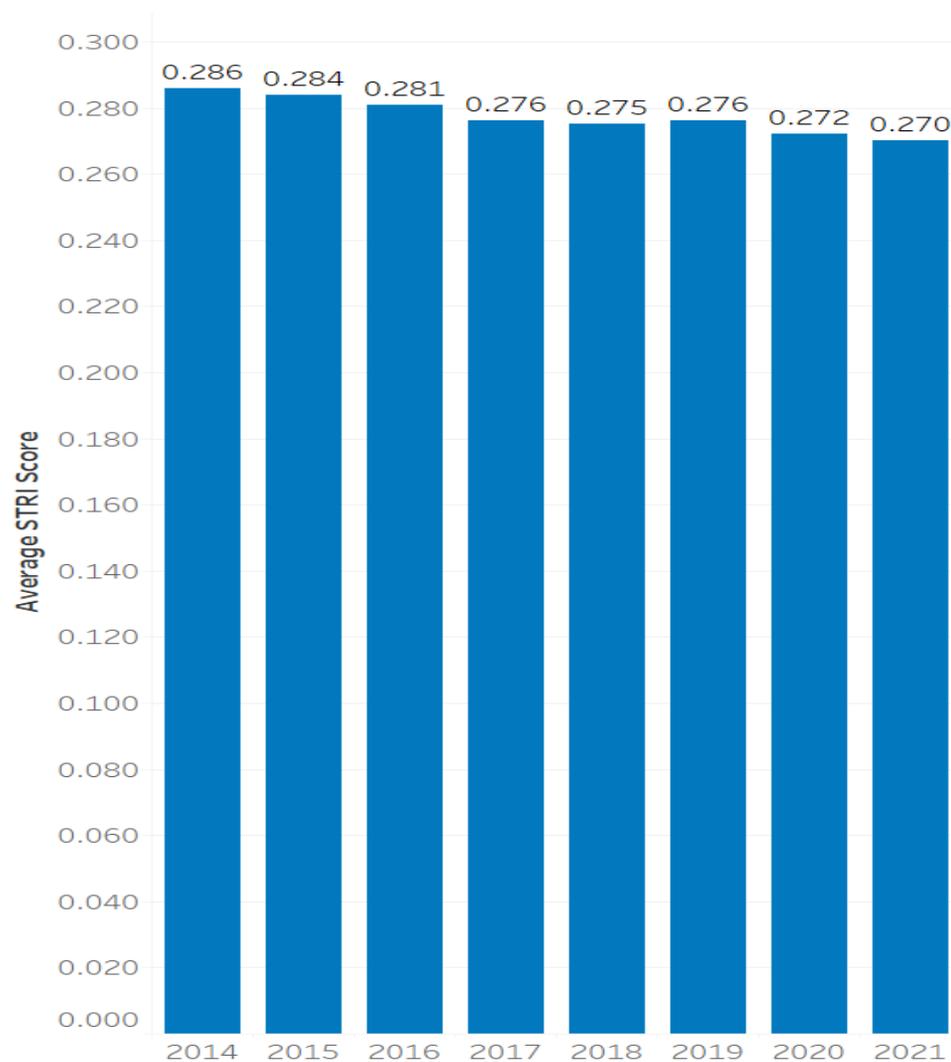


Source: Authors' calculations based on the information in the OECD STRI database.

*Note: The average STRI scores are calculated based on 11 logistics-related sectors, including Air transport, Courier services, Distribution services, Logistics (cargo-handling), Logistics (customs brokerage), Logistics (freight forwarding), Logistics (storage and warehouse), Maritime transport, Rail freight transport, Road freight transport and Telecommunication.*

*The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.*

Figure B.2: Average STRI Scores for the 16 APEC Economies in the Logistics Sector, 2014 – 2021

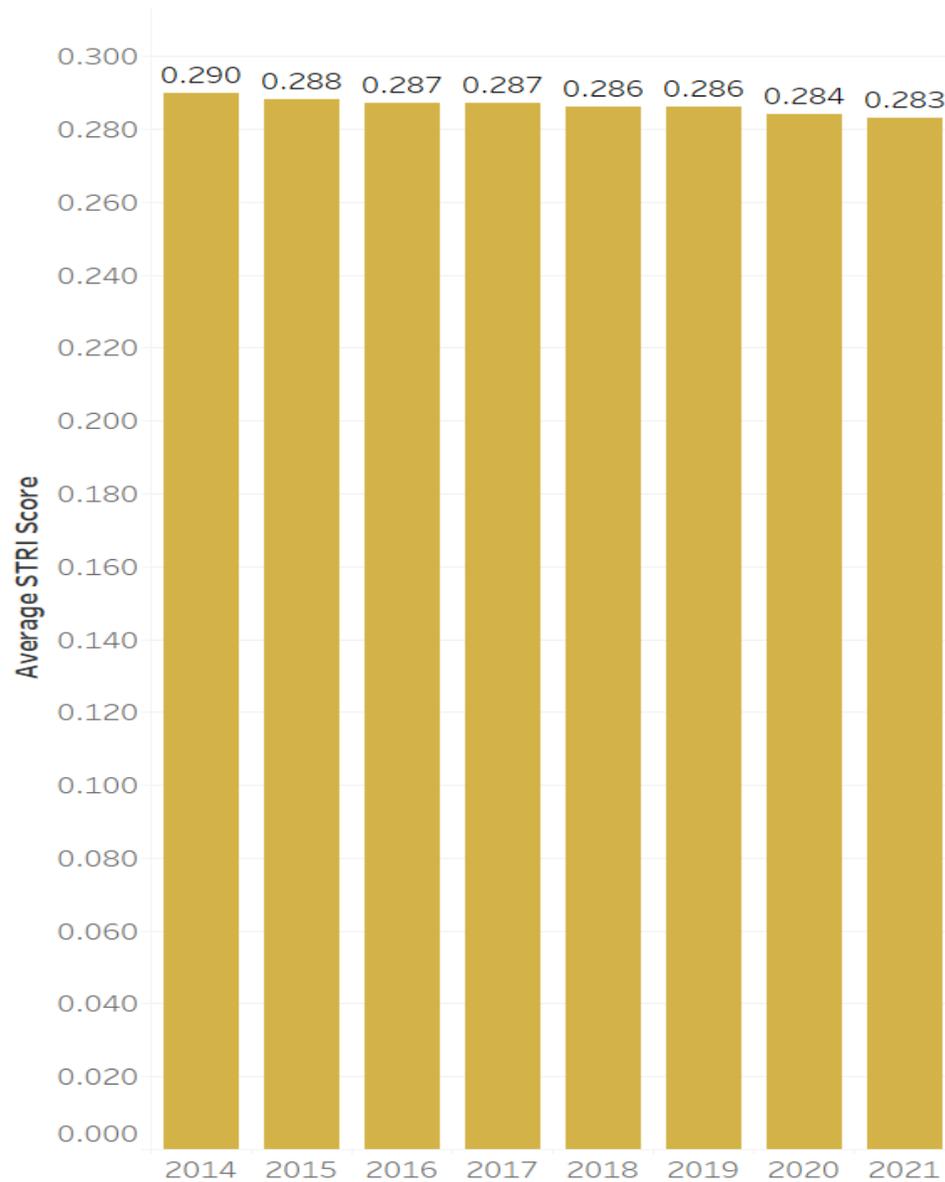


Source: Authors' calculations based on the information in the OECD STRI database.

*Note: The average STRI scores are calculated based on 11 logistics-related sectors, including Air transport, Courier services, Distribution services, Logistics (cargo-handling), Logistics (customs brokerage), Logistics (freight forwarding), Logistics (storage and warehouse), Maritime transport, Rail freight transport, Road freight transport and Telecommunication.*

*The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.*

Figure B.3: Average STRI Score for the 16 APEC Economies in the Transport Sector, 2014 – 2021



Source: Authors' calculations based on the information in the OECD STRI database.

*Note: The average STRI scores are calculated based on 11 logistics-related sectors, including Air transport, Courier services, Distribution services, Logistics (cargo-handling), Logistics (customs brokerage), Logistics (freight forwarding), Logistics (storage and warehouse), Maritime transport, Rail freight transport, Road freight transport and Telecommunication.*

*The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.*

Figure B.4: Average STRI Score for the 16 APEC Economies in the ICT Sector, 2014 – 2021

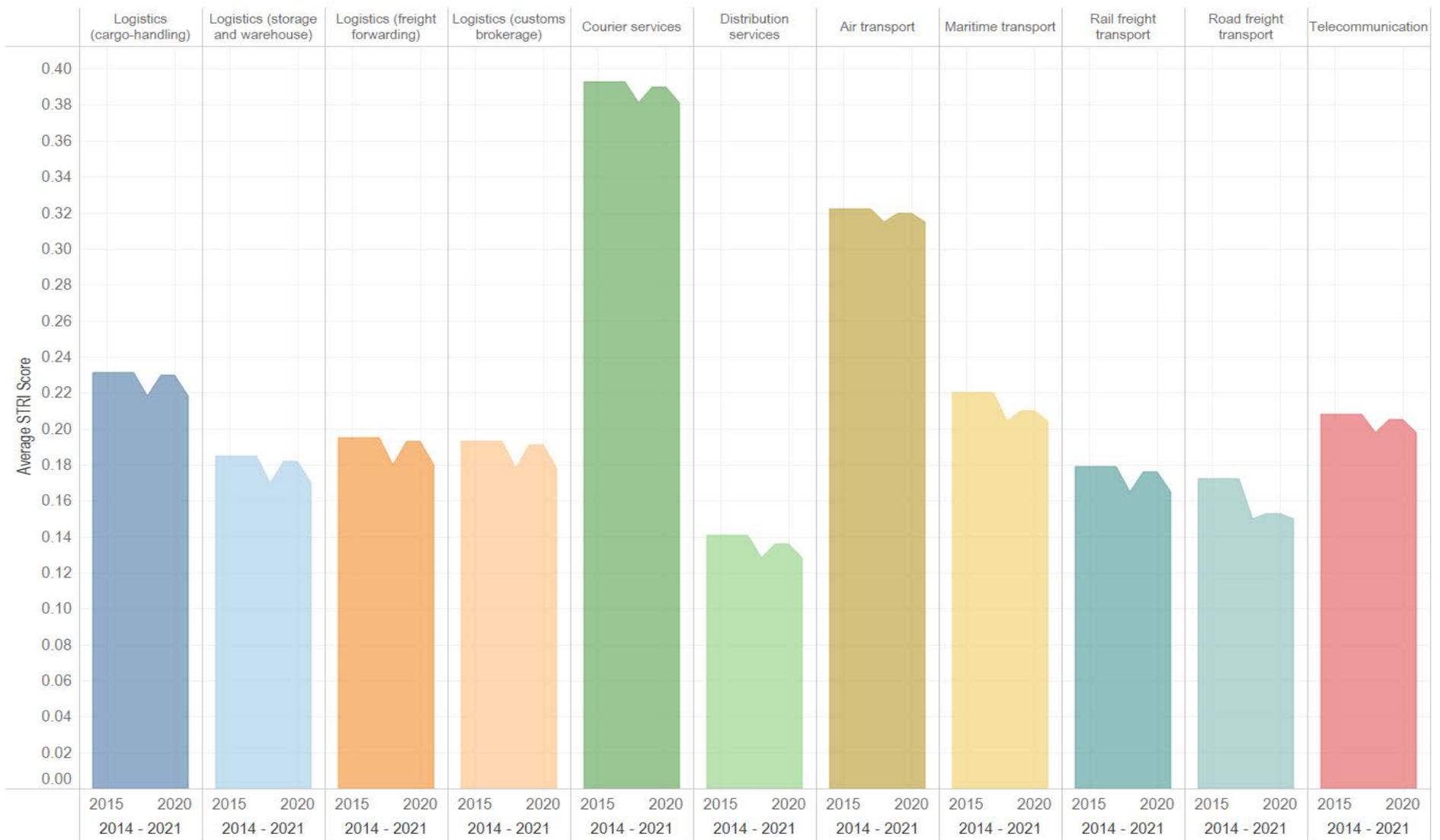


Source: Authors' calculations based on the information in the OECD STRI database.

*Note: The average STRI scores are calculated based on 11 logistics-related sectors, including Air transport, Courier services, Distribution services, Logistics (cargo-handling), Logistics (customs brokerage), Logistics (freight forwarding), Logistics (storage and warehouse), Maritime transport, Rail freight transport, Road freight transport and Telecommunication.*

*The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.*

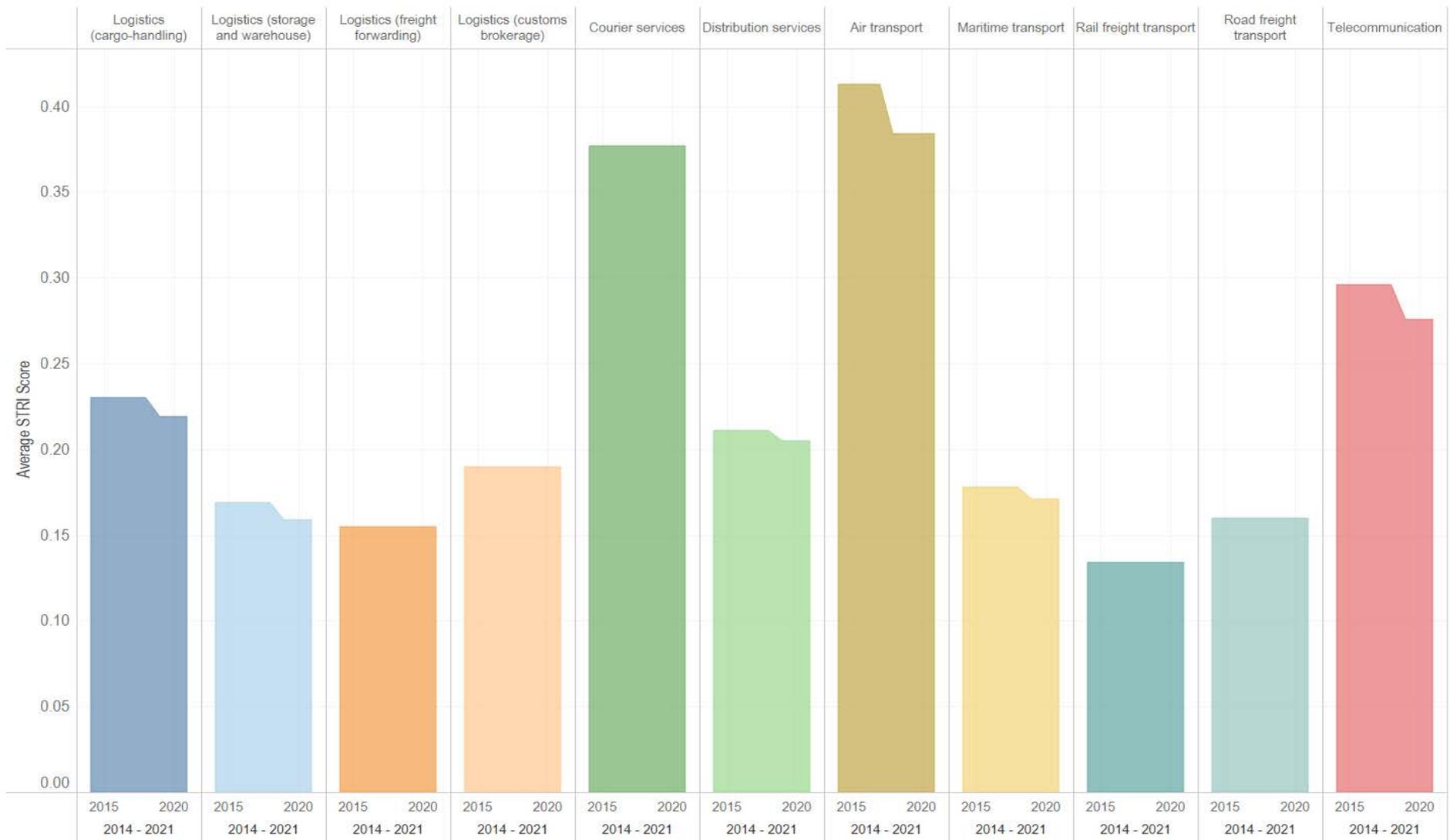
Figure B.5: STRI for Australia in Logistics, Transport, and ICT Sectors, 2014 – 2021



Source: Authors' calculations based on the information in the OECD STRI database.

Note: The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.

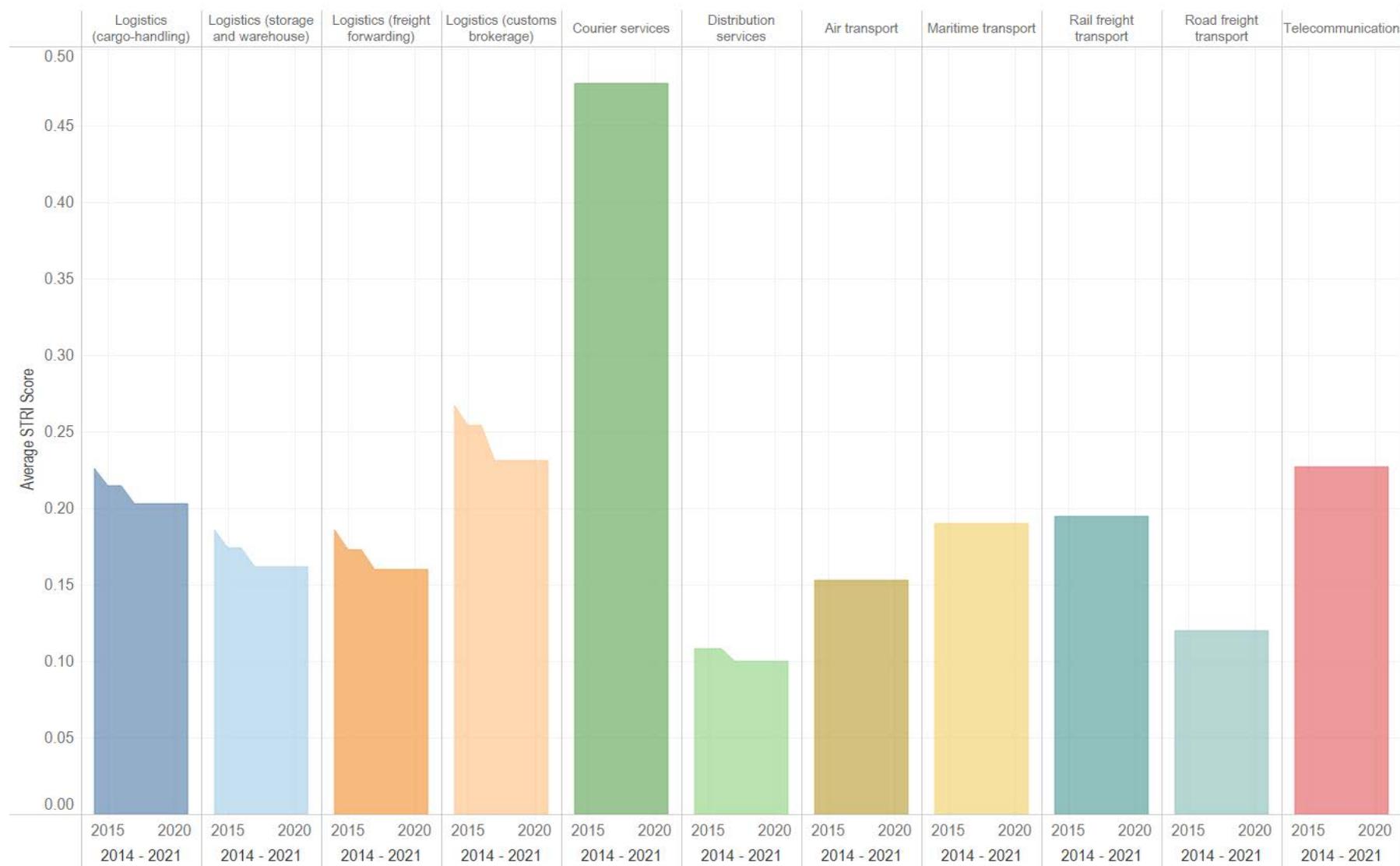
Figure B.6: STRI for Canada in Logistics, Transport, and ICT Sectors, 2014 – 2021



Source: Authors' calculations based on the information in the OECD STRI database.

Note: The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.

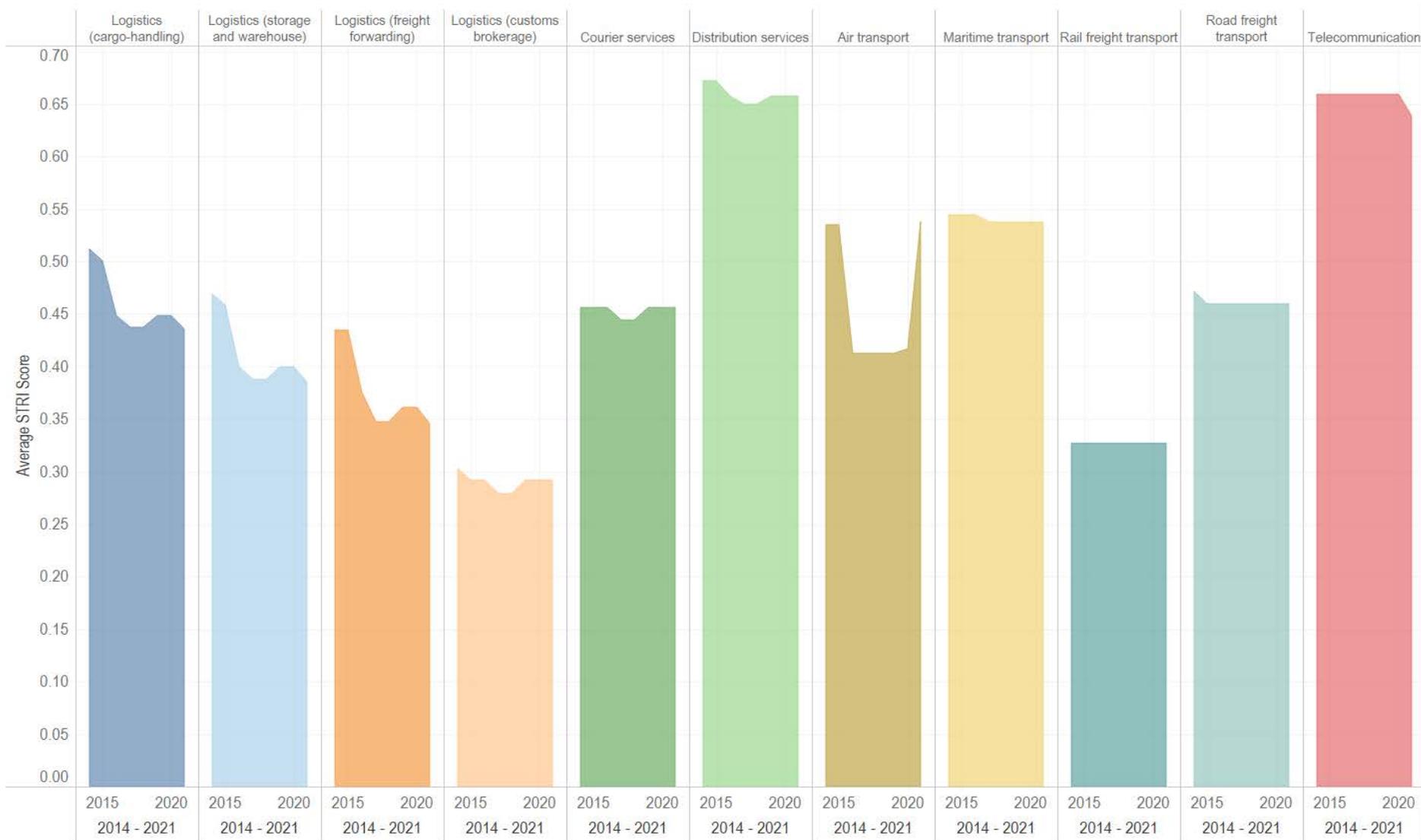
Figure B.7: STRI for Chile in Logistics, Transport, and ICT Sectors, 2014 – 2021



Source: Authors' calculations based on the information in the OECD STRI database.

Note: The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.

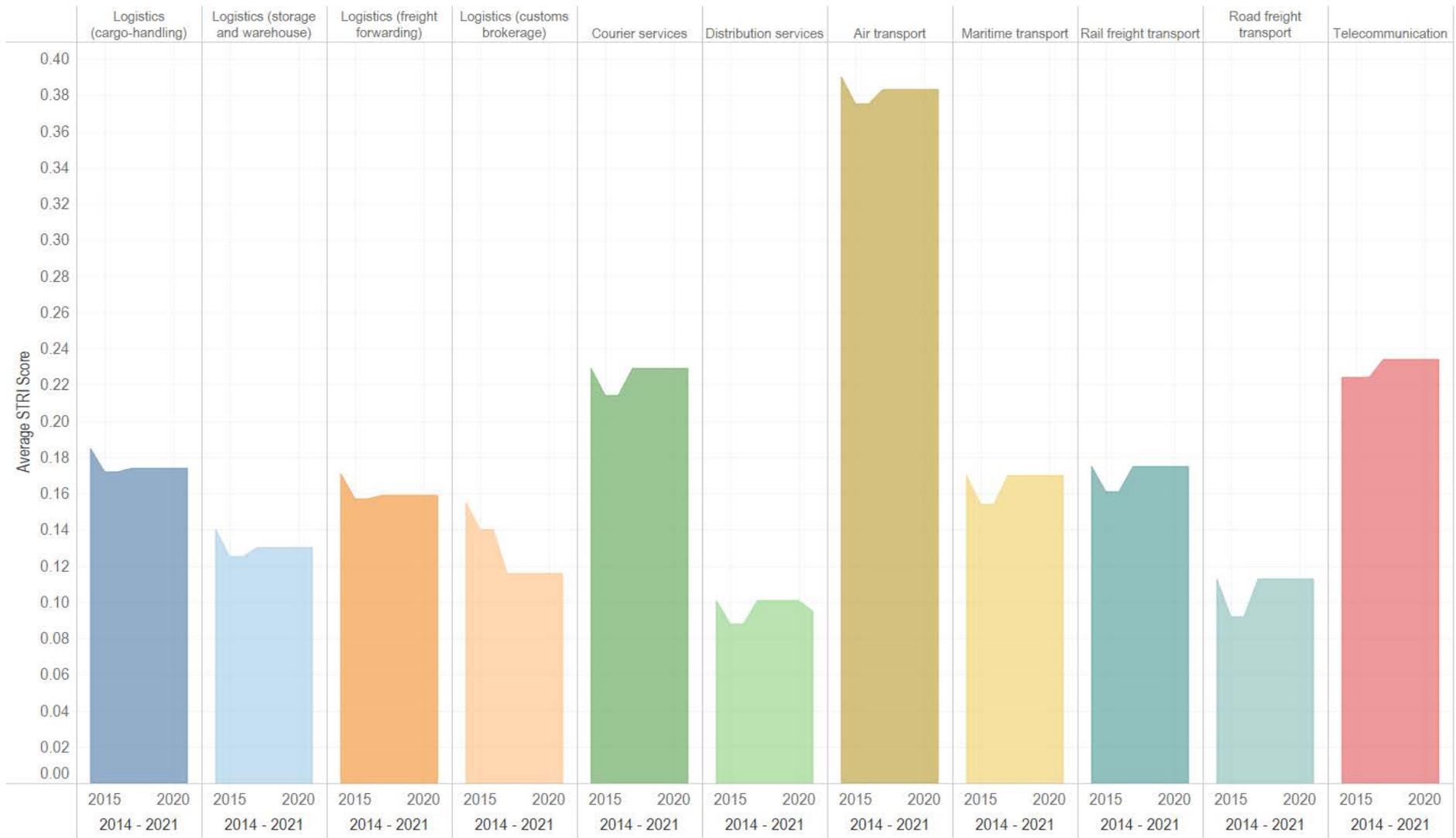
Figure B.8: STRI for Indonesia in Logistics, Transport, and ICT Sectors, 2014 – 2021



Source: Authors' calculations based on the information in the OECD STRI database.

Note: The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.

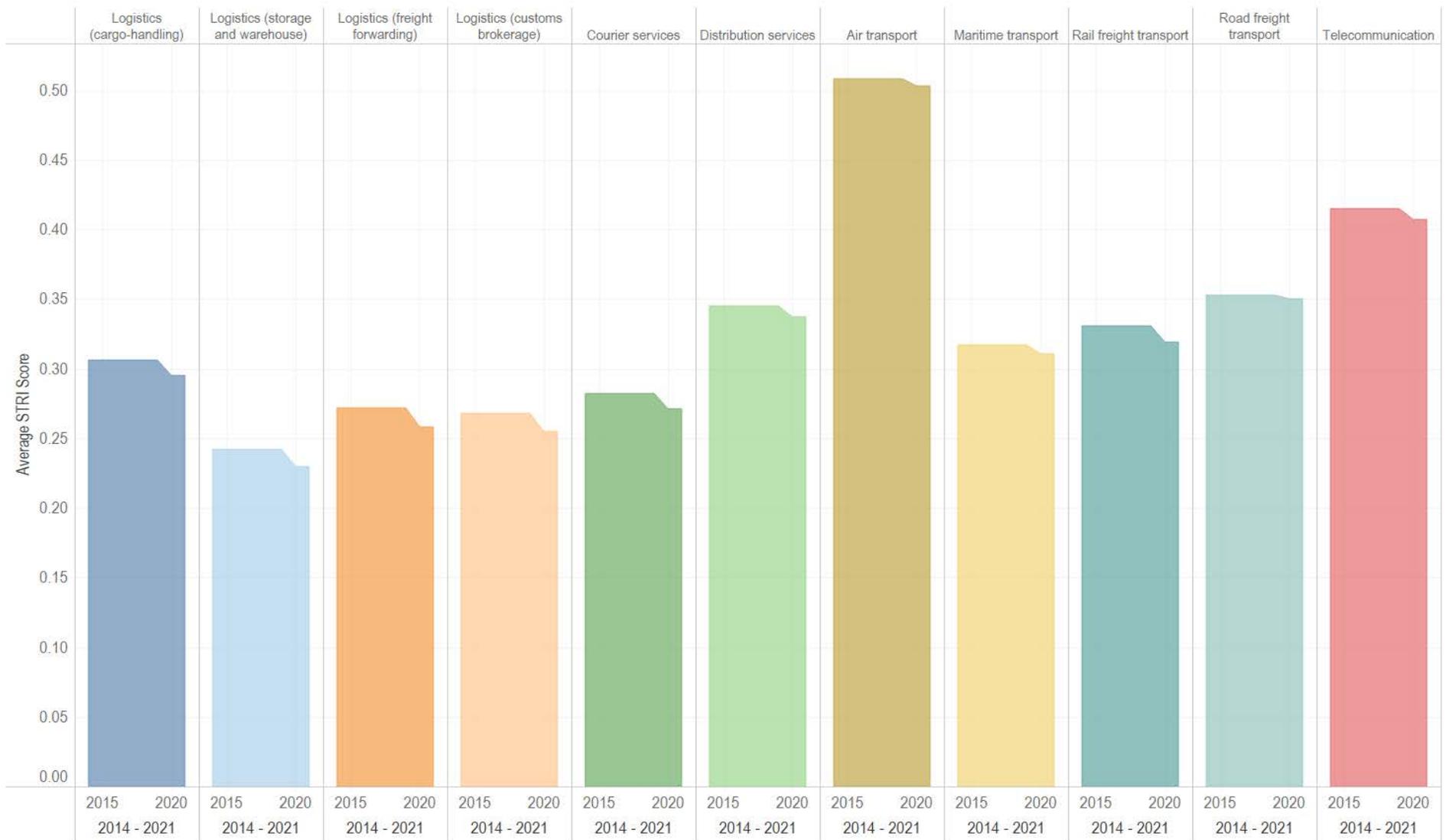
Figure B.9: STRI for Japan in Logistics, Transport, and ICT Sectors, 2014 – 2021



Source: Authors' calculations based on the information in the OECD STRI database.

Note: The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.

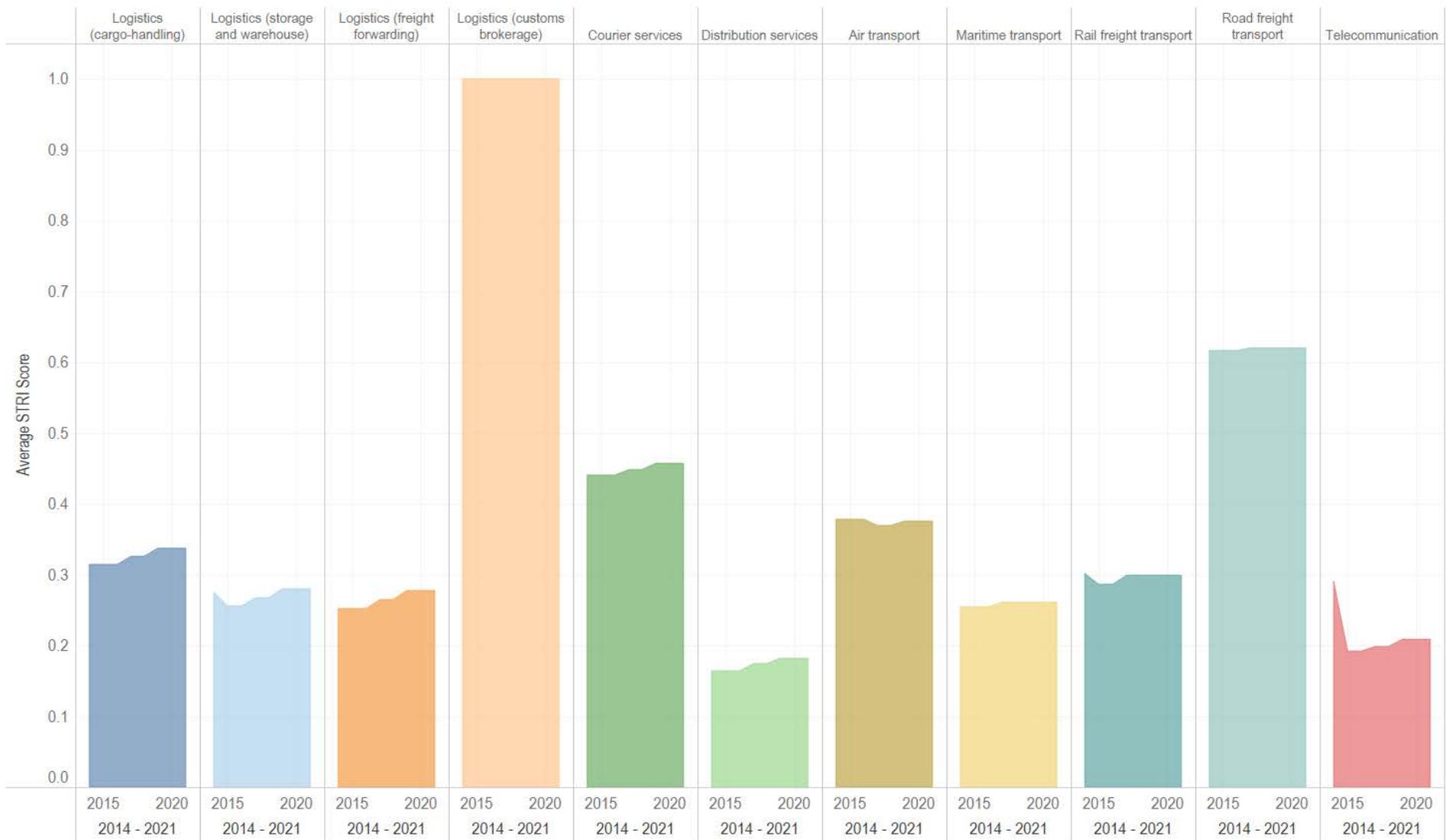
Figure B.10: STRI for Malaysia in Logistics, Transport, and ICT Sectors, 2014 – 2021



Source: Authors' calculations based on the information in the OECD STRI database.

Note: The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.

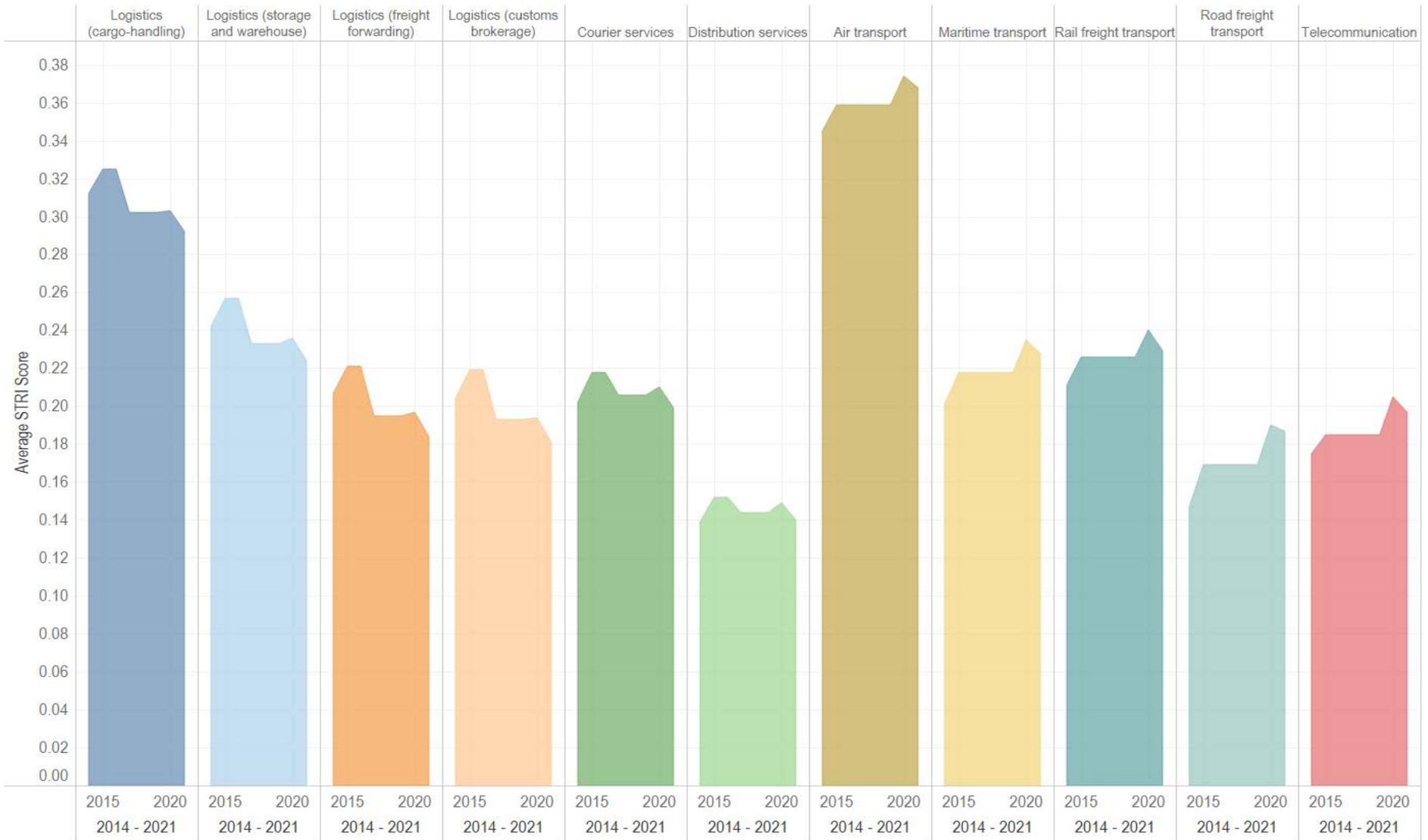
Figure B.11: STRI for Mexico in Logistics, Transport, and ICT Sectors, 2014 – 2021



Source: Authors' calculations based on the information in the OECD STRI database.

Note: The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.

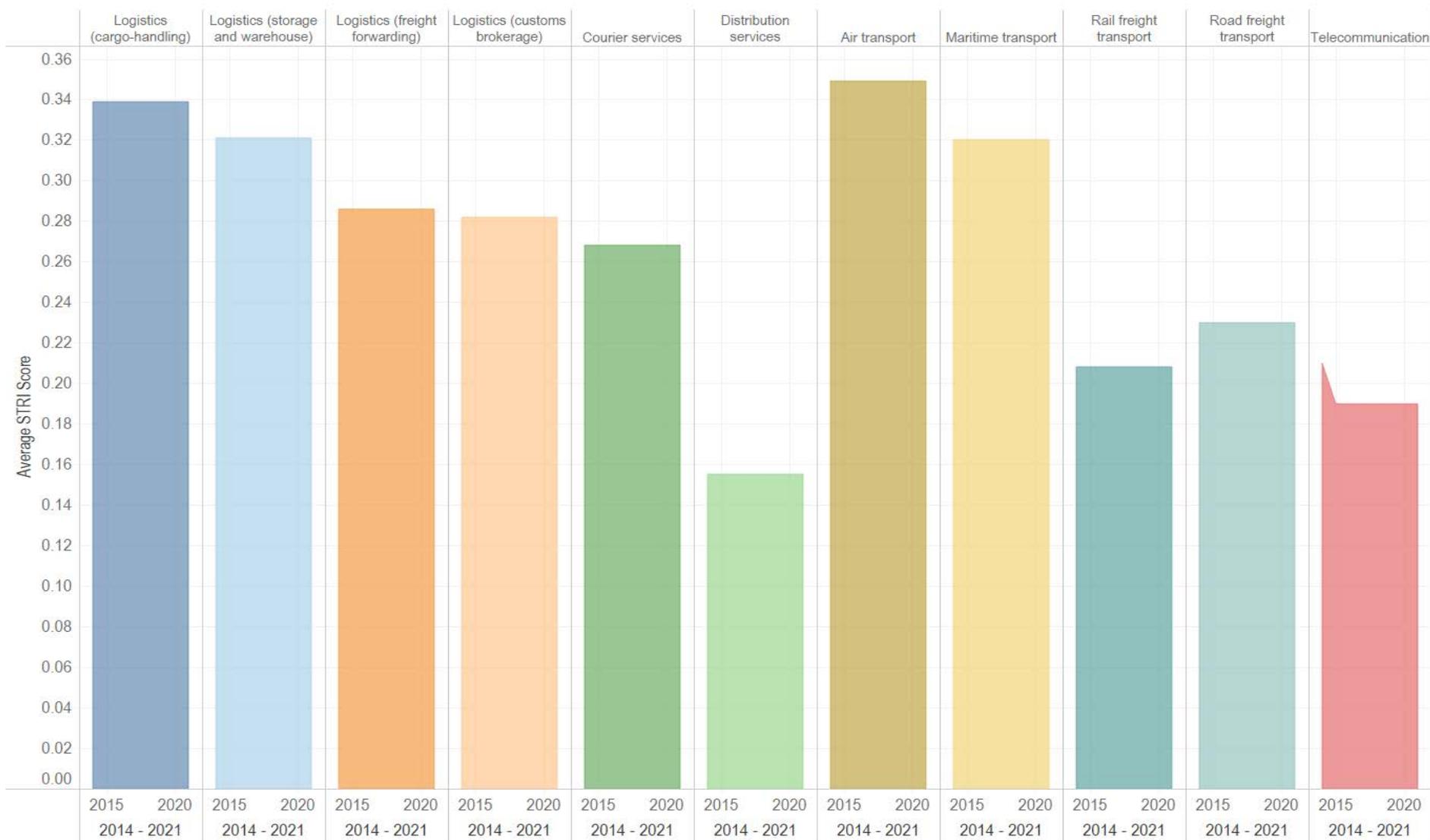
Figure B.12: STRI for New Zealand in Logistics, Transport, and ICT Sectors, 2014 – 2021



Source: Authors' calculations based on the information in the OECD STRI database.

Note: The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.

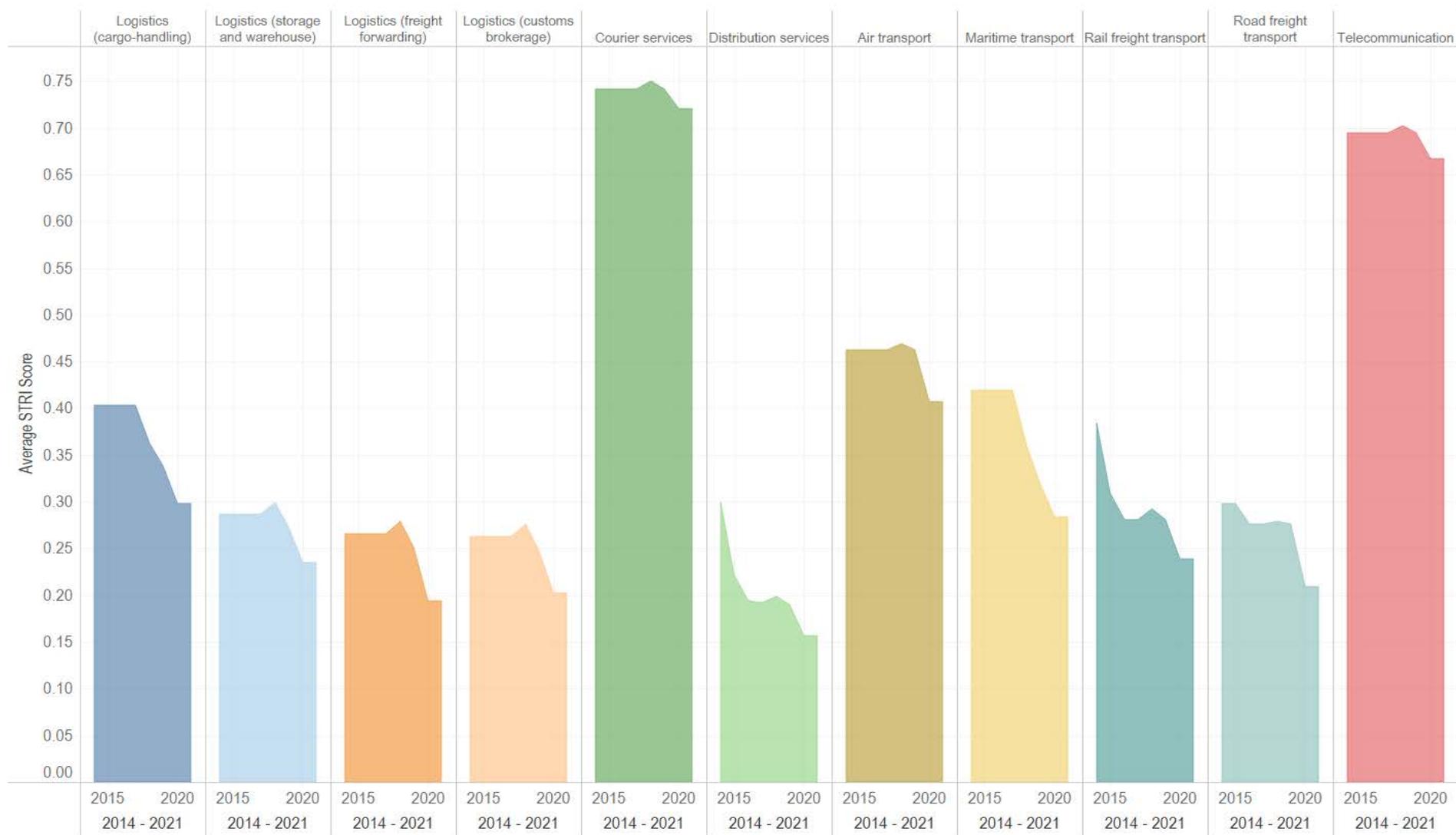
Figure B.13: STRI for Peru in Logistics, Transport, and ICT Sectors, 2014 – 2021



Source: Authors' calculations based on the information in the OECD STRI database.

Note: The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.

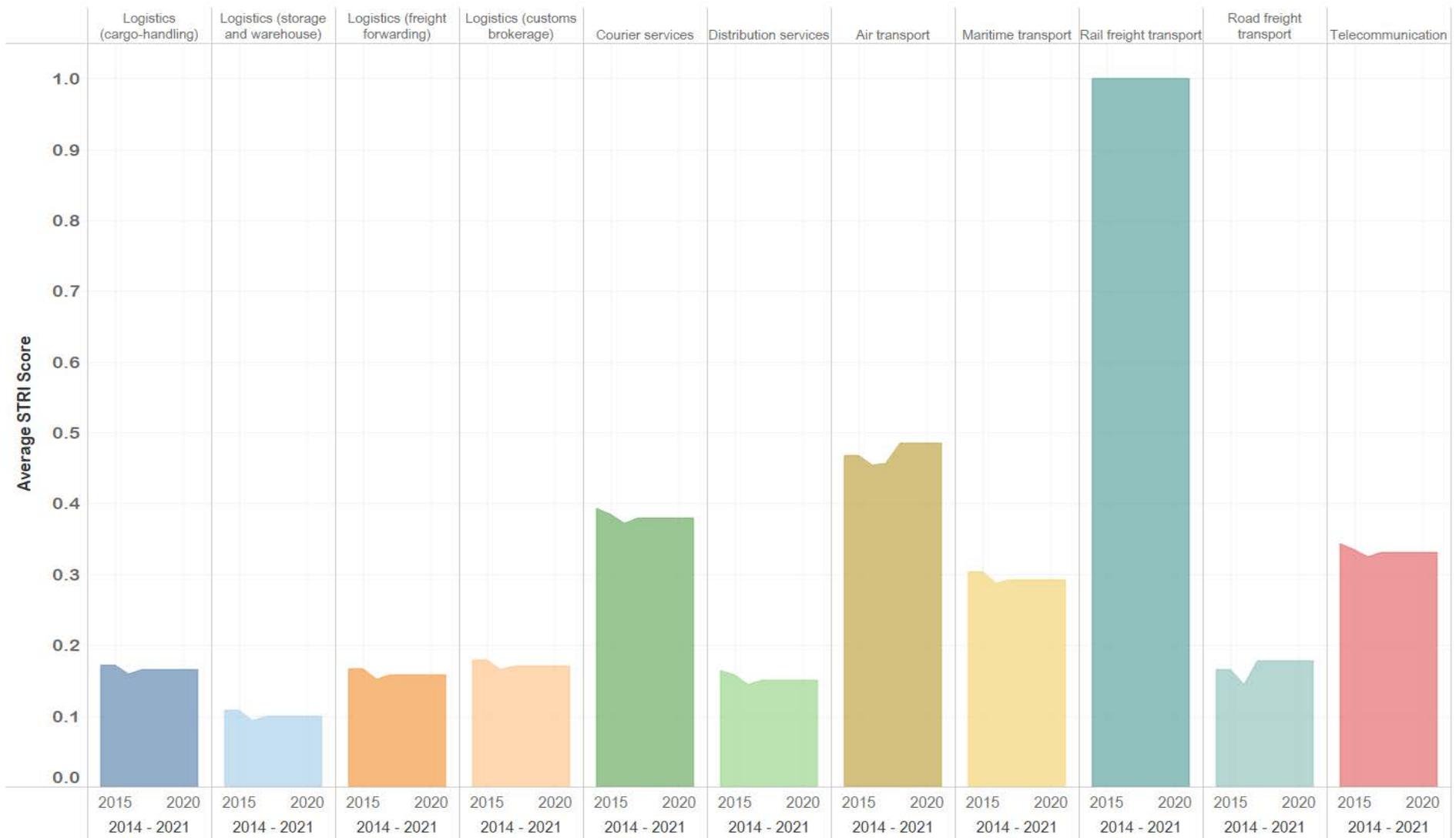
Figure B.14: STRI for China in Logistics, Transport, and ICT Sectors, 2014 – 2021



Source: Authors' calculations based on the information in the OECD STRI database.

Note: The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.

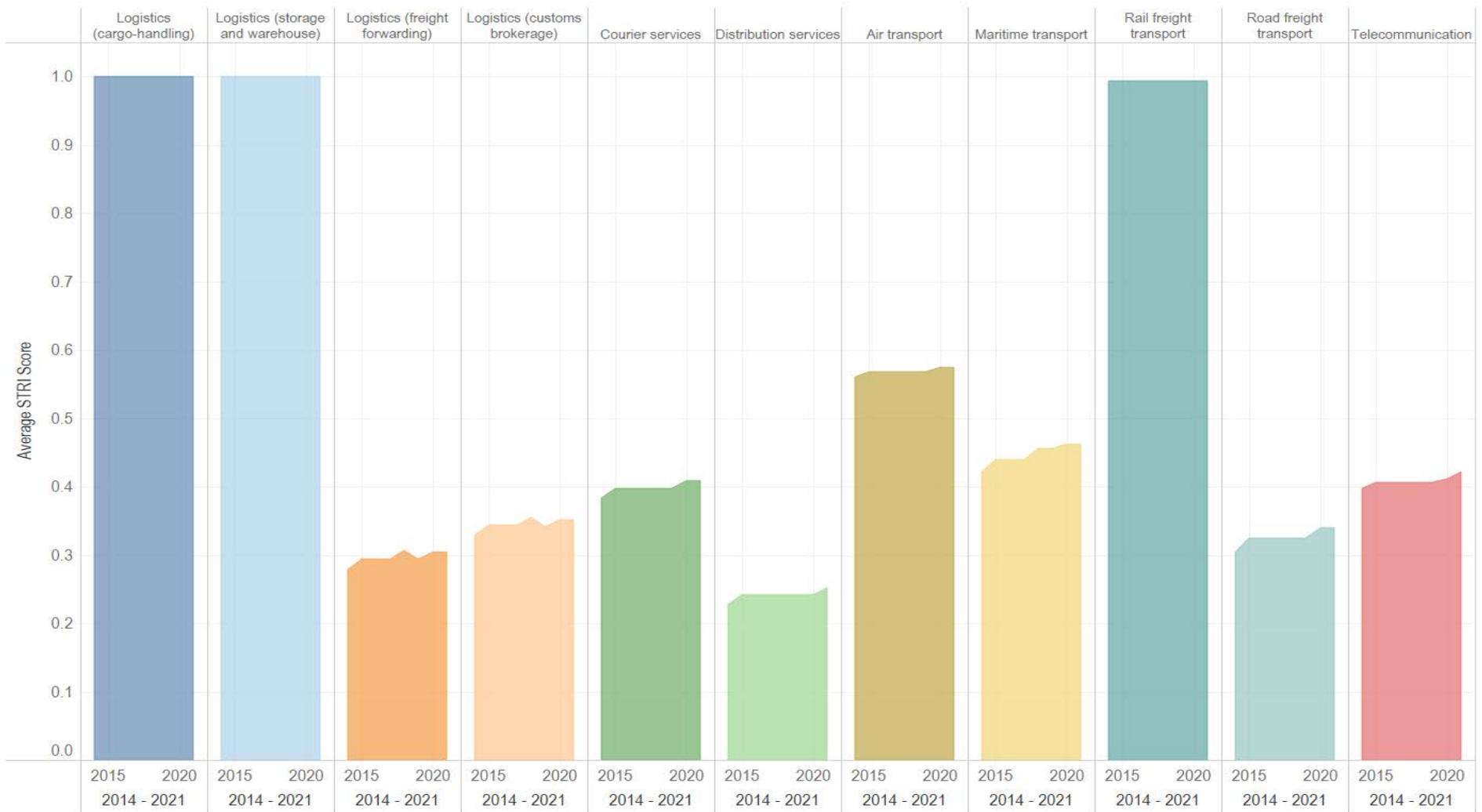
Figure B.15: STRI for Korea in Logistics, Transport, and ICT Sectors, 2014 – 2021



Source: Authors' calculations based on the information in the OECD STRI database.

Note: The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.

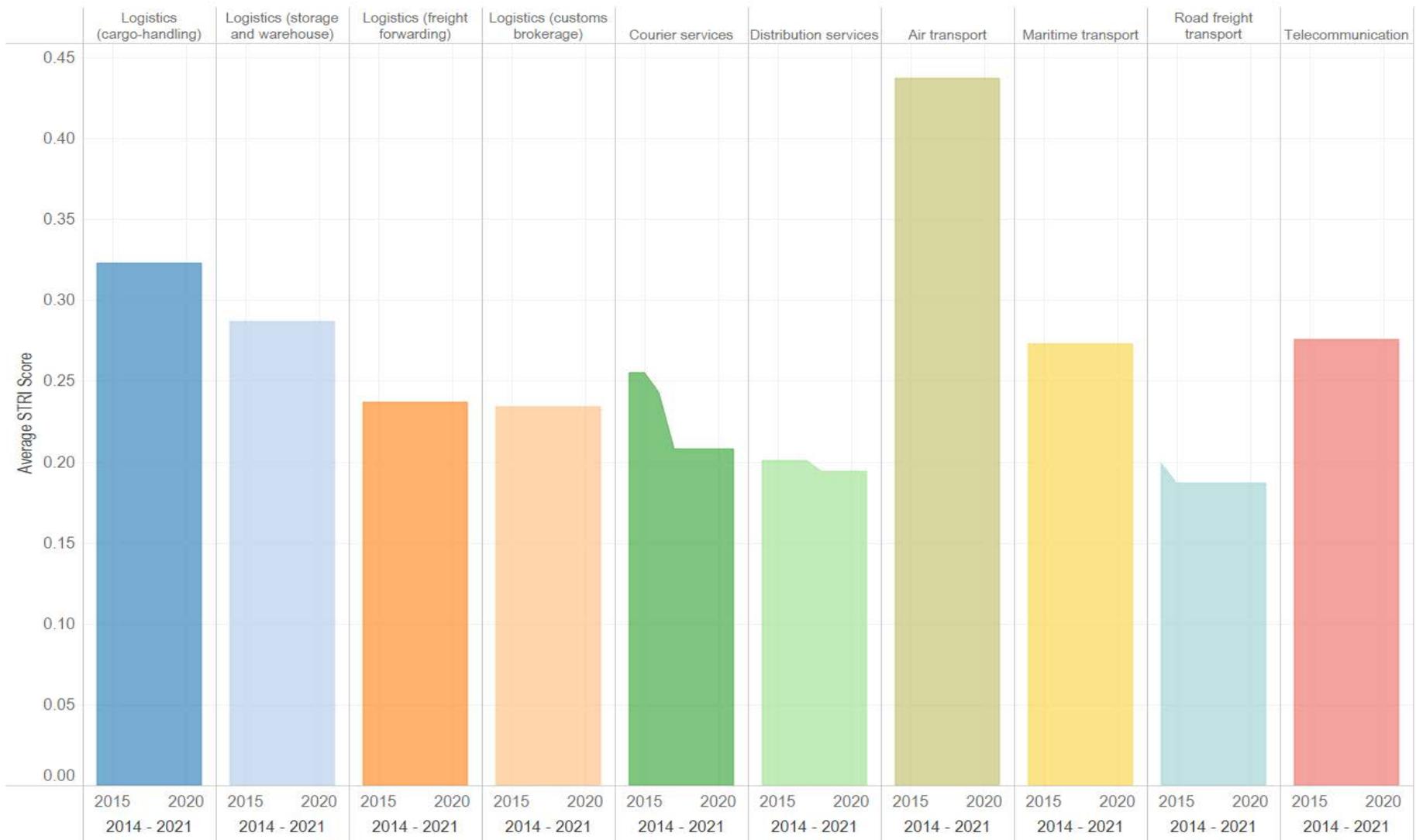
Figure B.16: STRI for Russia in Logistics, Transport, and ICT Sectors, 2014 – 2021



Source: Authors' calculations based on the information in the OECD STRI database.

Note: The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.

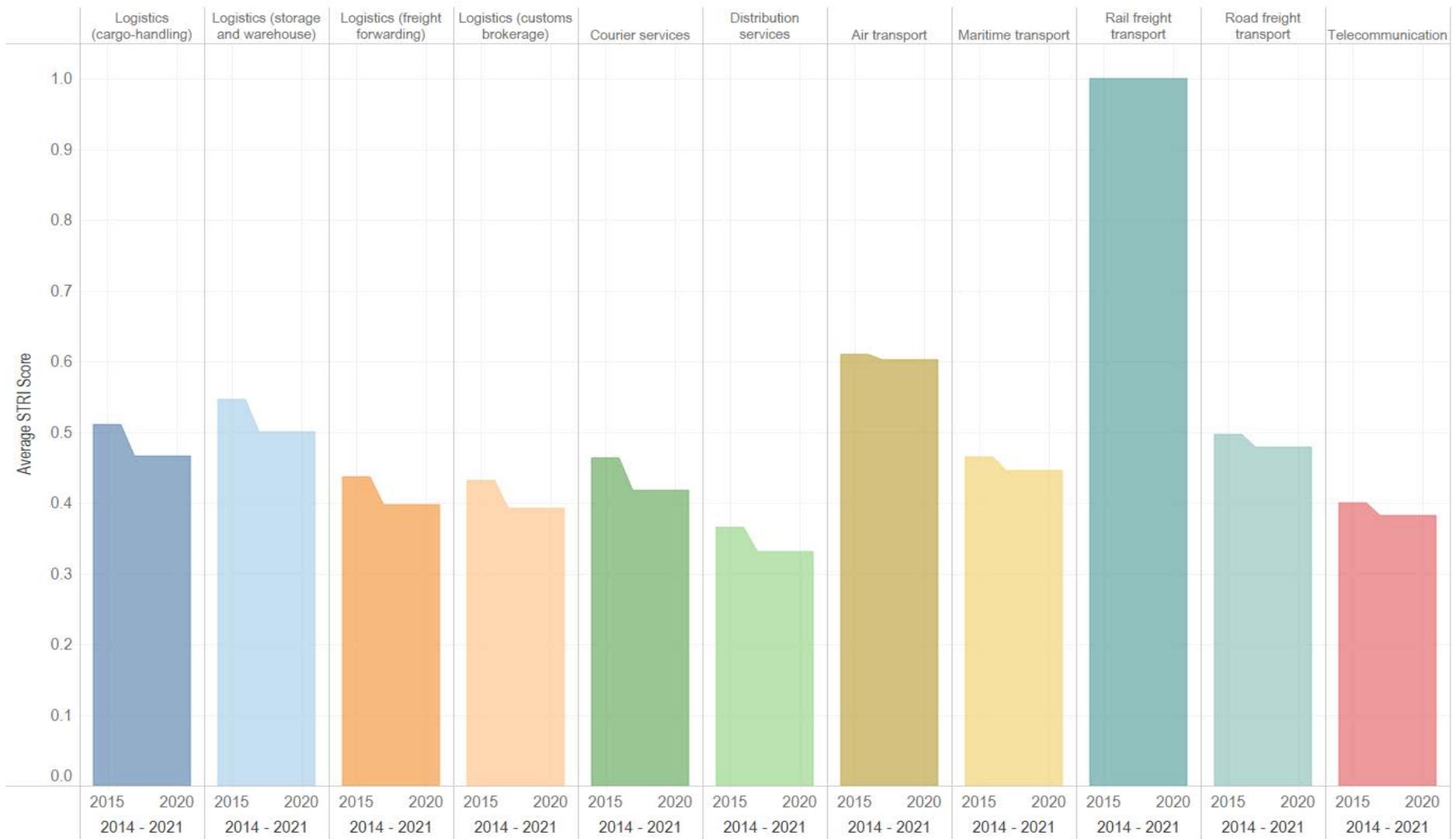
Figure B.17: STRI for Singapore in Logistics, Transport, and ICT Sectors, 2014 – 2021



Source: Authors' calculations based on the information in the OECD STRI database.

Note: The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.

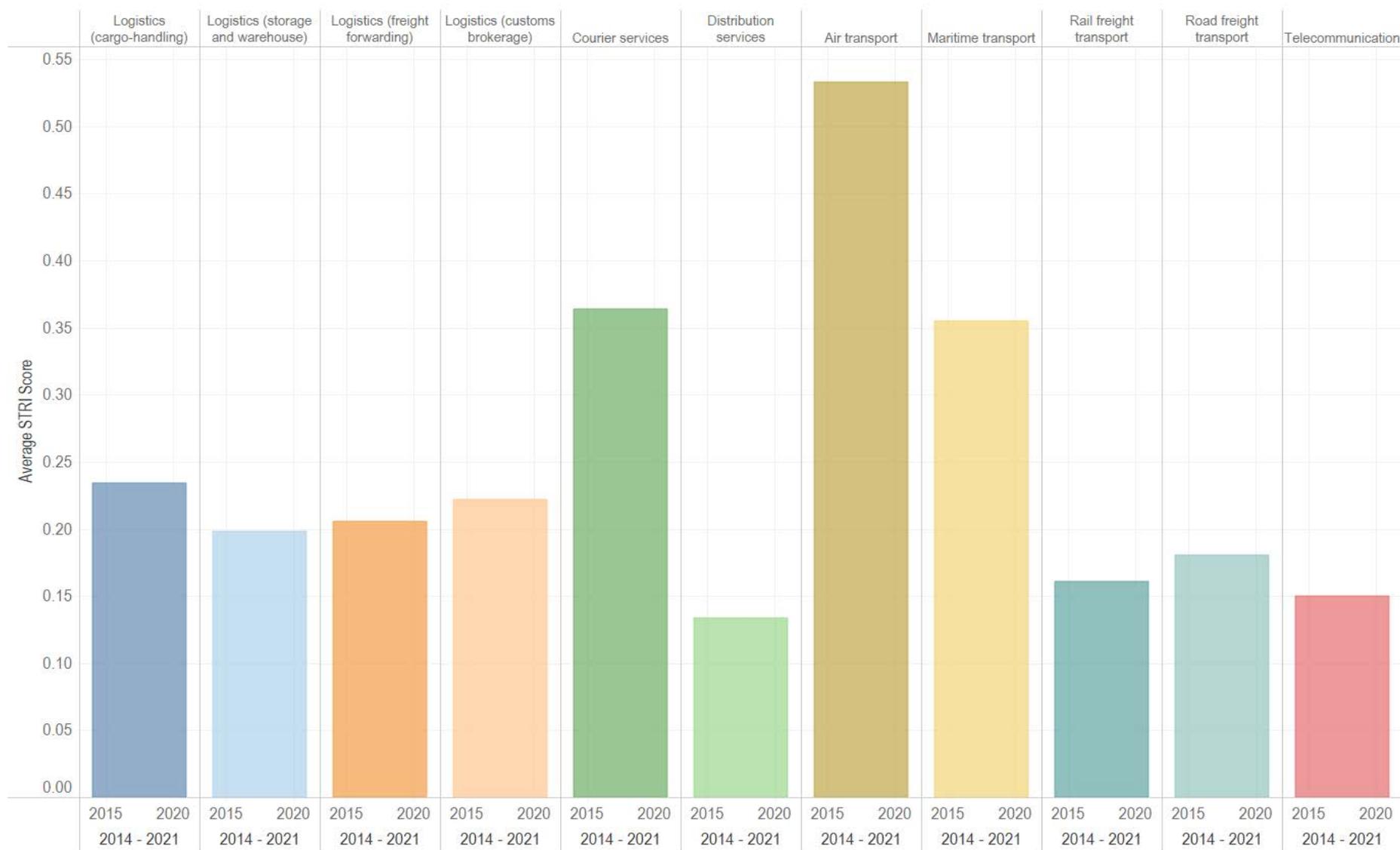
Figure B.18: STRI for Thailand in Logistics, Transport, and ICT Sectors, 2014 – 2021



Source: Authors' calculations based on the information in the OECD STRI database.

Note: The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.

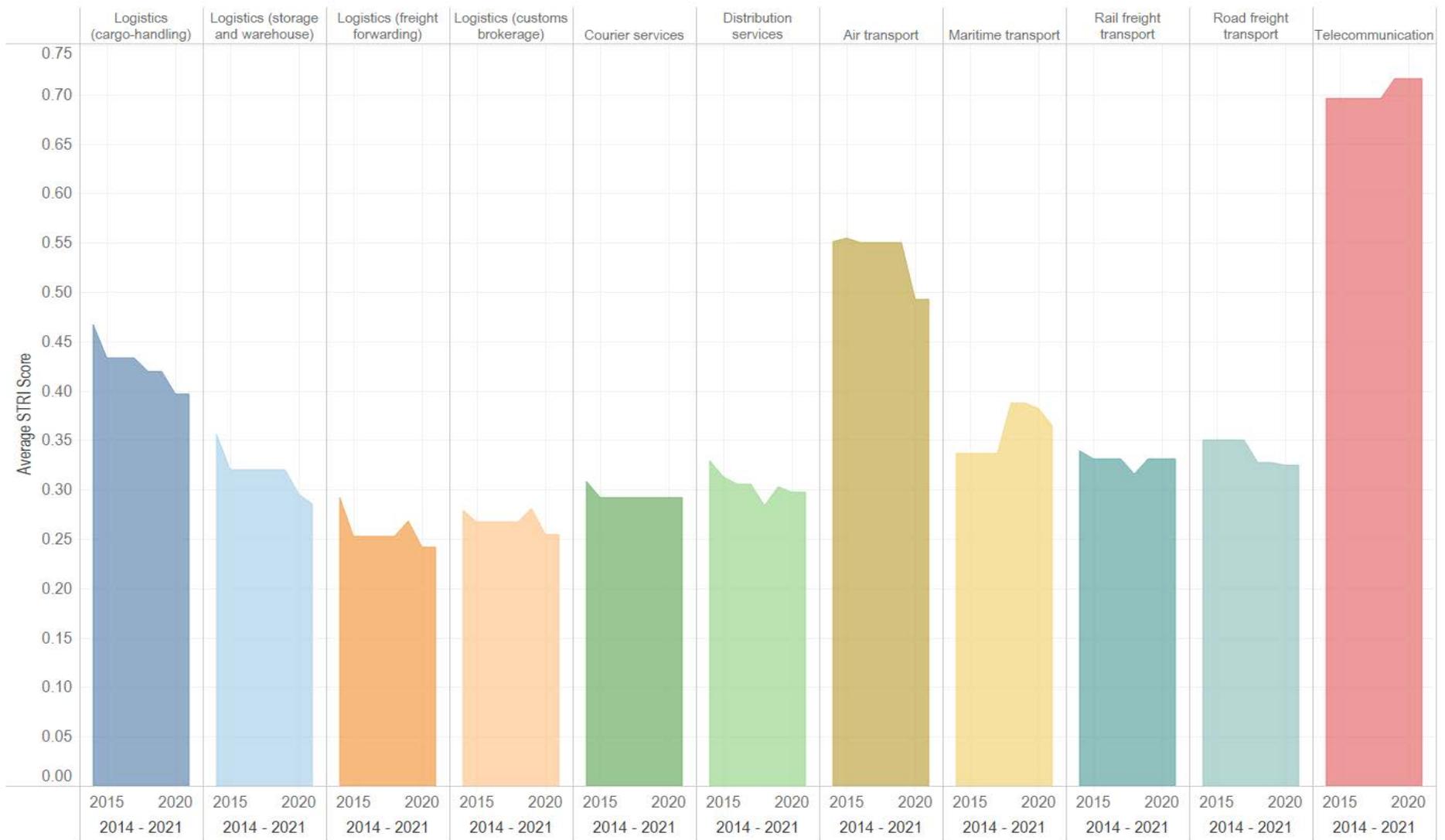
Figure B.19: STRI for United States in Logistics, Transport, and ICT Sectors, 2014 – 2021



Source: Authors' calculations based on the information in the OECD STRI database.

Note: The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.

Figure B.20: STRI for Viet Nam in Logistics, Transport, and ICT Sectors, 2014 – 2021

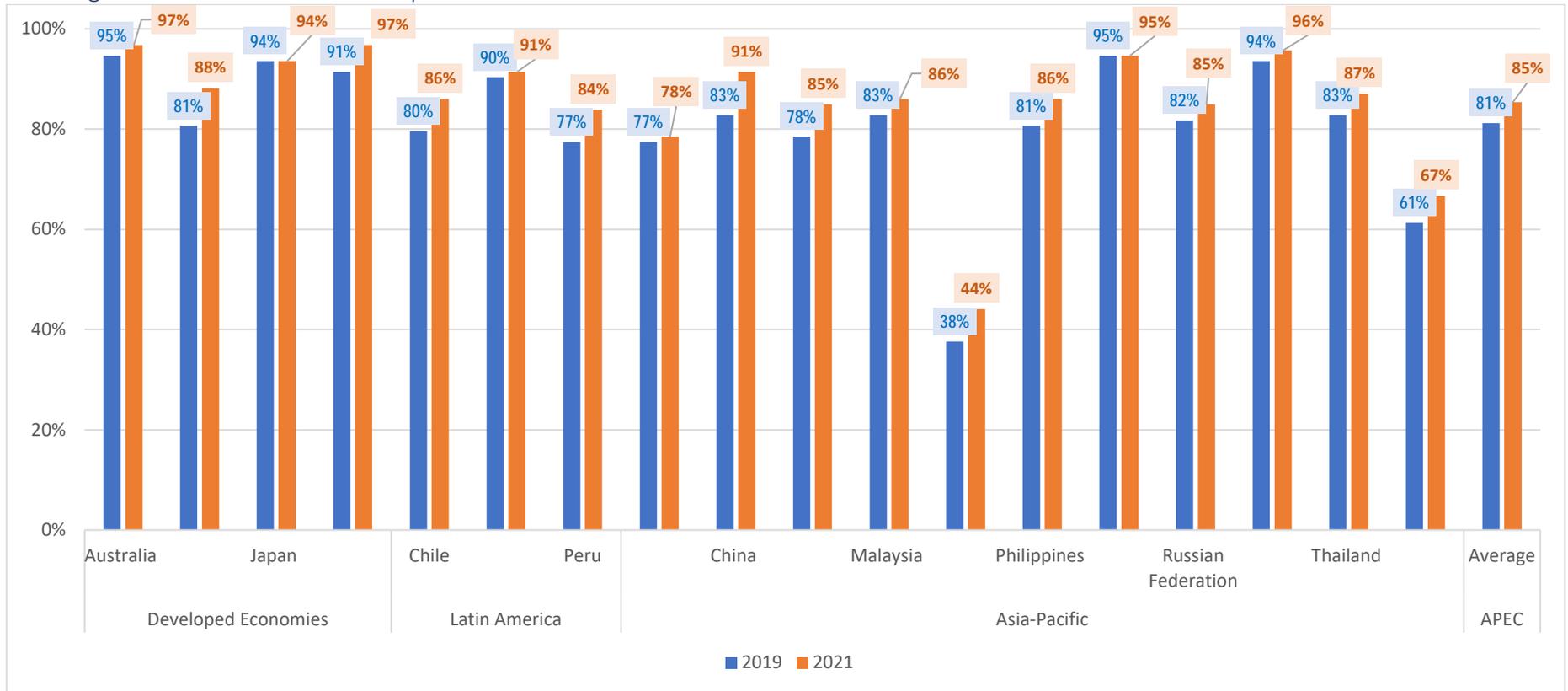


Source: Authors' calculations based on the information in the OECD STRI database.

Note: The STRI indices take values between zero and one, one being the most restrictive. They are calculated on the basis of the STRI regulatory database which records measures on a Most Favoured Nations basis. Preferential trade agreements are not taken into account. The measures in the STRI database consist of five policy areas: Restrictions on foreign entry, Barriers to competition, Regulatory transparency, Other discriminatory measure and Restrictions to the movement of people.

## Appendix C: UN Global Survey on Digital and Sustainable Trade – Trade Facilitation Implementation Scores (2015-2021)

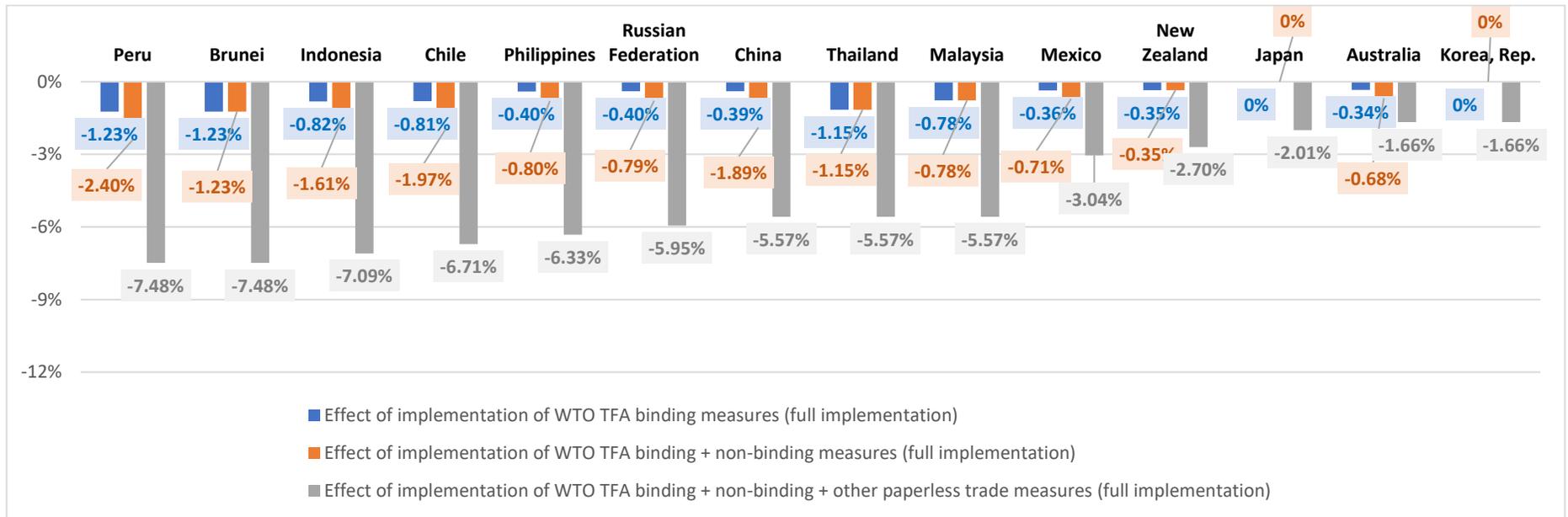
Figure C.1: Trade Facilitation Implementation for the 18 APEC economies 2019 – 2021



Source: Authors' calculations based on the information in the UN Global Survey on Digital and Sustainable Trade Facilitation database. <https://www.untfsurvey.org/>

Note: The figure shows the cumulative trade facilitation implementation scores of APEC economies for 5 common trade facilitation measures included in the survey (1) transparency, (2) formalities, (3) institutional arrangements and cooperation, (4) paperless trade and (5) cross-border paperless trade. Full implementation of all measures = 100.

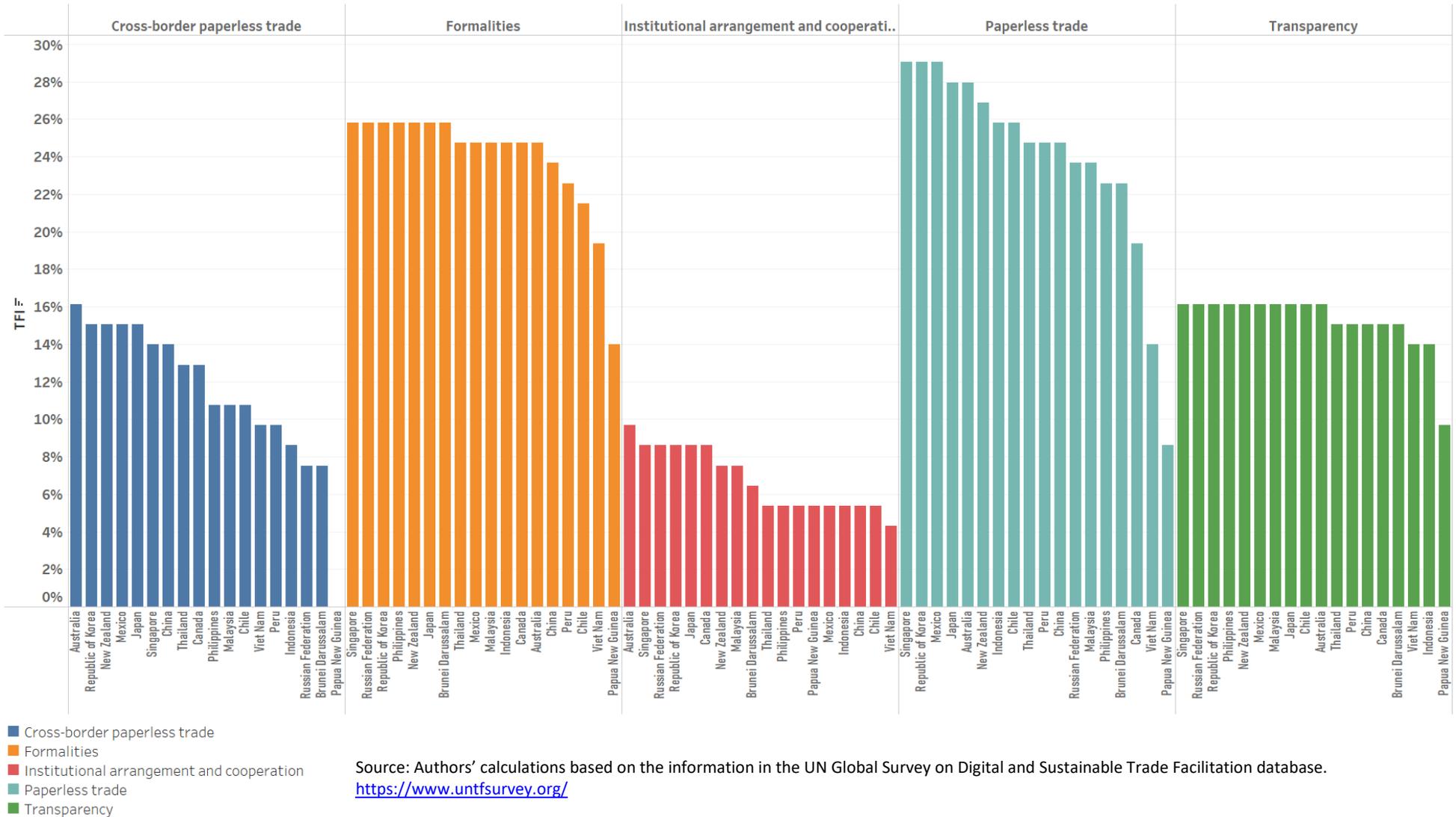
Figure C.2: Impact on trade costs for the 18 APEC economies in 2019



Source: Authors' calculations based on the information in the UN Global Survey on Digital and Sustainable Trade Facilitation database. <https://www.unftsurvey.org/>

Note: The figure shows the cumulative trade facilitation implementation scores of APEC economies for 5 common trade facilitation measures included in the survey (1) transparency, (2) formalities, (3) institutional arrangements and cooperation, (4) paperless trade and (5) cross-border paperless trade. Full implementation of all measures = 100.

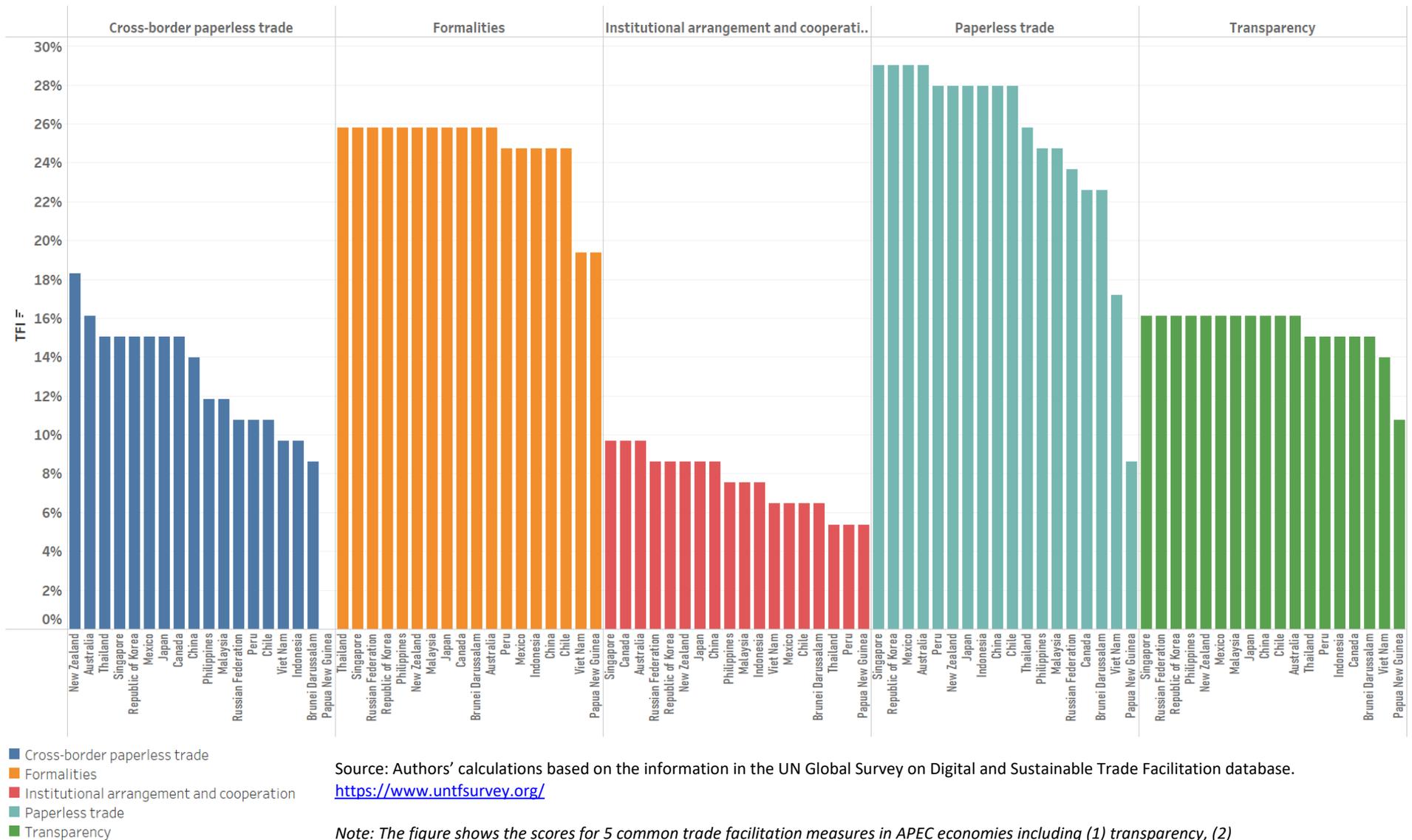
Figure C.3: The Trade Facilitation Implementation measures of 5 sub-groups for the 18 APEC economies in 2019



Source: Authors' calculations based on the information in the UN Global Survey on Digital and Sustainable Trade Facilitation database. <https://www.untfsurvey.org/>

Note: The figure shows the scores for 5 common trade facilitation measures in APEC economies including (1) transparency, (2) formalities, (3) institutional arrangements and cooperation, (4) paperless trade and (5) cross-border paperless trade. Full implementation of all measures per economy = 100 (not shown in the figure)

Figure C.4: The Trade Facilitation Implementation measures of 5 sub-groups for the 18 APEC economies in 2021

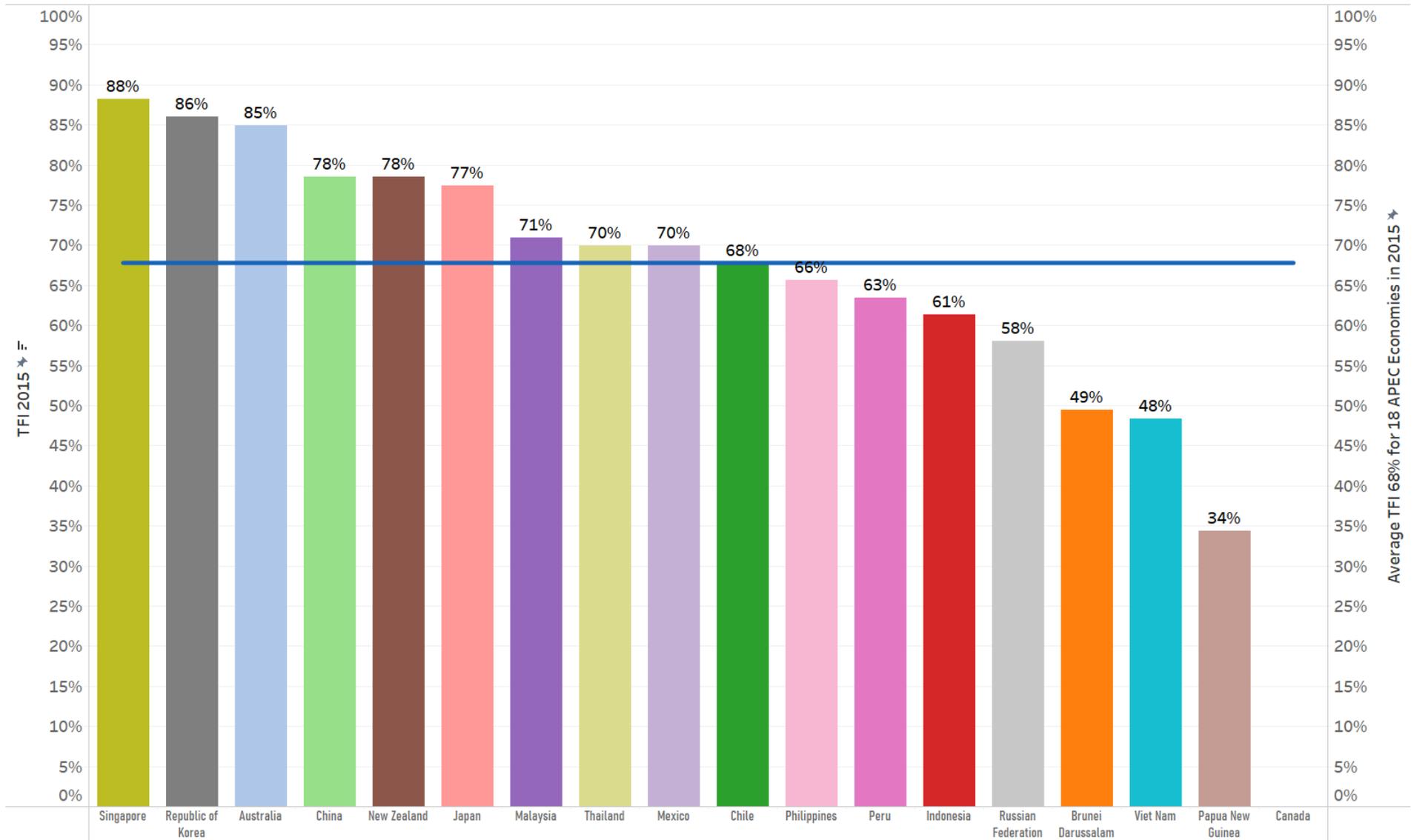


Source: Authors' calculations based on the information in the UN Global Survey on Digital and Sustainable Trade Facilitation database.

<https://www.untfsurvey.org/>

Note: The figure shows the scores for 5 common trade facilitation measures in APEC economies including (1) transparency, (2) formalities, (3) institutional arrangements and cooperation, (4) paperless trade and (5) cross-border paperless trade. Full implementation of all measures per economy = 100 (not shown in the figure)

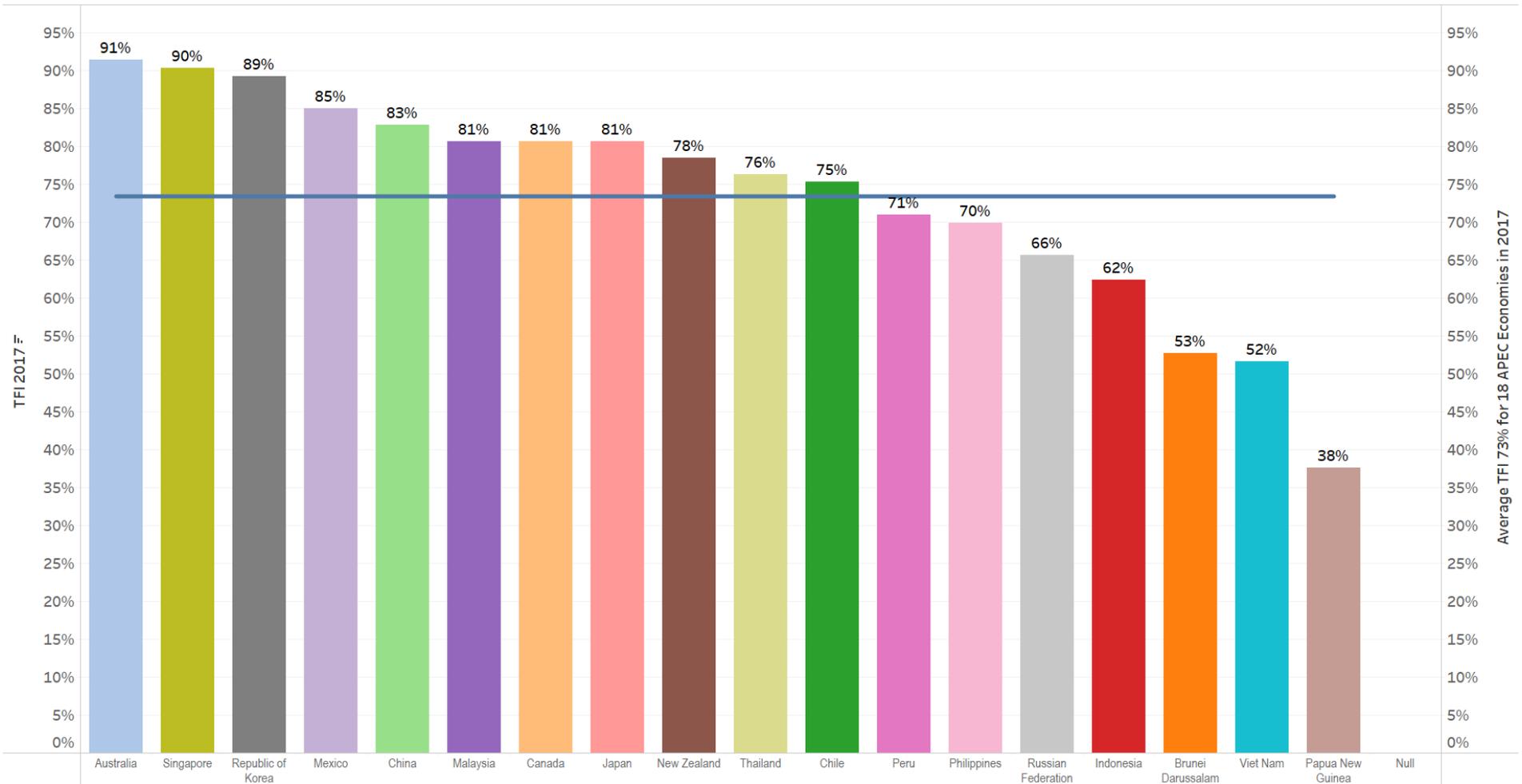
Figure C.5: The Trade Facilitation Implementation for the 18 APEC economies in 2015



Source: Authors' calculations based on the information in the UN Global Survey on Digital and Sustainable Trade Facilitation database. <https://www.untsurvey.org/>

Note: The figure shows the cumulative trade facilitation implementation scores for APEC economies for 5 common trade facilitation measures included in the survey (1) transparency, (2) formalities, (3) institutional arrangements and cooperation, (4) paperless trade and (5) cross-border paperless trade. Full implementation of all measures = 100.

Figure C.6: The Trade Facilitation Implementation for the 18 APEC economies in 2017



Source: Authors' calculations based on the information in the UN Global Survey on Digital and Sustainable Trade Facilitation database. <https://www.untfsurvey.org/>

Note: The figure shows the cumulative trade facilitation implementation scores for APEC economies for 5 common trade facilitation measures included in the survey (1) transparency, (2) formalities, (3) institutional arrangements and cooperation, (4) paperless trade and (5) cross-border paperless trade. Full implementation of all measures = 100.

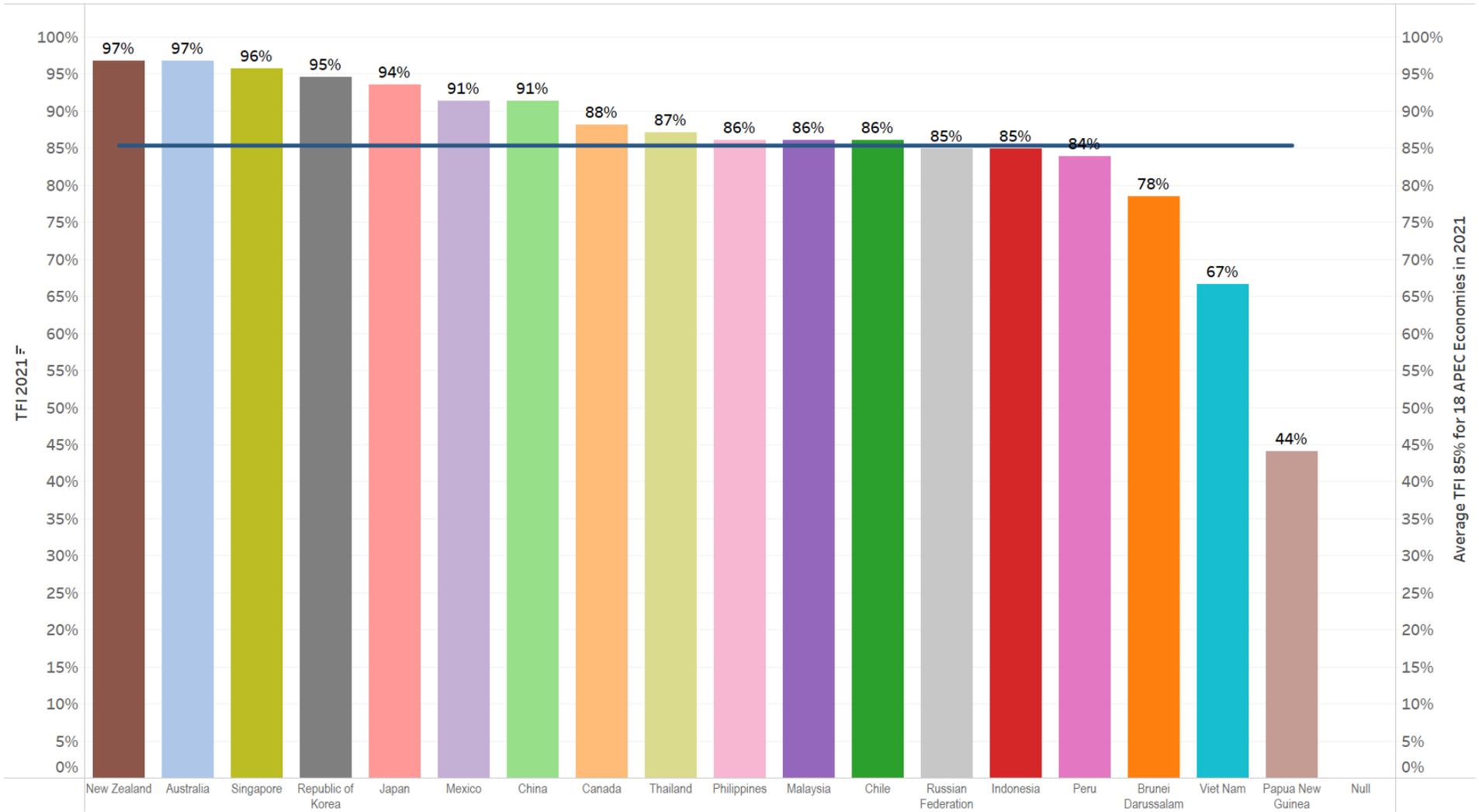
Figure C.7: The Trade Facilitation Implementation for the 18 APEC economies in 2019



Source: Authors' calculations based on the information in the UN Global Survey on Digital and Sustainable Trade Facilitation database. <https://www.untsurvey.org/>

Note: The figure shows the cumulative trade facilitation implementation scores for APEC economies for 5 common trade facilitation measures included in the survey (1) transparency, (2) formalities, (3) institutional arrangements and cooperation, (4) paperless trade and (5) cross-border paperless trade. Full implementation of all measures = 100.

Figure C.8: The Trade Facilitation Implementation for the 18 APEC economies in 2021



Source: Authors' calculations based on the information in the UN Global Survey on Digital and Sustainable Trade Facilitation database. <https://www.untfsurvey.org/>

Note: The figure shows the cumulative trade facilitation implementation scores for APEC economies for 5 common trade facilitation measures included in the survey (1) transparency, (2) formalities, (3) institutional arrangements and cooperation, (4) paperless trade and (5) cross-border paperless trade. Full implementation of all measures = 100.

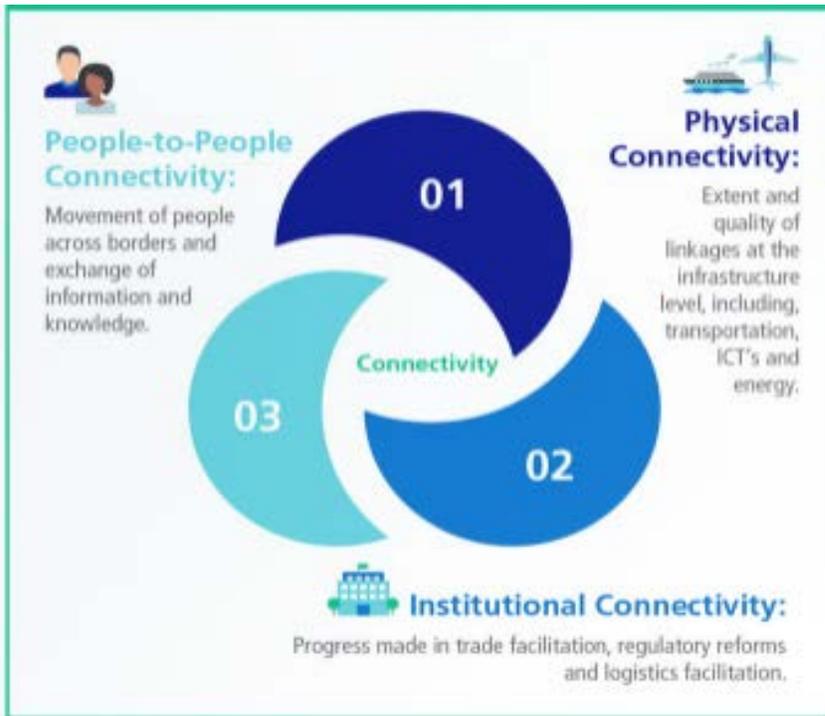
## Appendix D: Connectivity Index for APEC Economies

Table D.1: Connectivity Index Scores for APEC Economies, 2014 and 2018

<b>Economy</b>	<b>CI 2014</b>	<b>CI 2018</b>
Australia	0.62	0.65
Brunei Darussalam	0.35	0.37
Canada	0.61	0.62
Chile	0.43	0.47
China	0.34	0.40
Hong Kong, China	0.68	0.72
Indonesia	0.21	0.24
Japan	0.54	0.58
Korea	0.53	0.53
Malaysia	0.49	0.48
Mexico	0.34	0.36
New Zealand	0.61	0.64
Papua New Guinea	0.12	0.11
Peru	0.27	0.28
The Philippines	0.28	0.27
Russia	0.26	0.30
Singapore	0.75	0.77
Chinese Taipei	0.50	0.51
Thailand	0.38	0.38
United States	0.56	0.62
Viet Nam	0.25	0.31

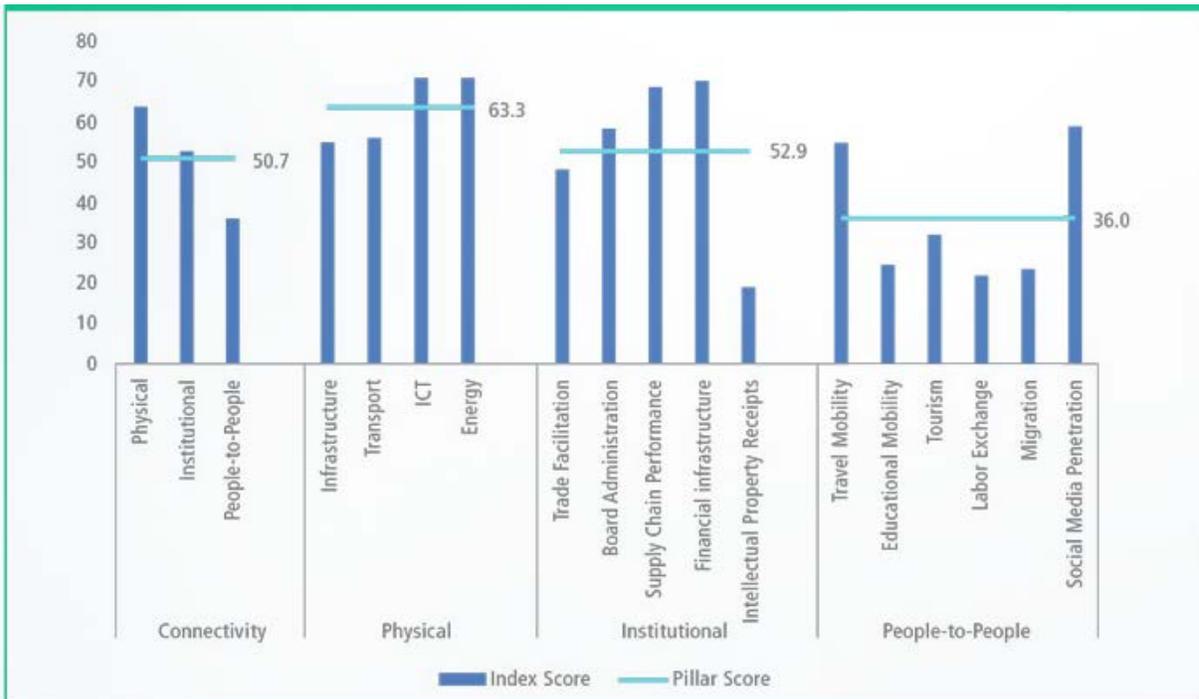
Source: APEC Policy Support Unit, APEC Connectivity Blueprint Mid-term Review 2020 (pages 97 and 98)

Figure D.1: Conceptual Framework for the Index of Economic Connectivity



Source: PECC State of the Region Report 2019, Index of Economic Connectivity in the Asia-Pacific (Figure 3.1)

Figure D.2: Economic Connectivity Scores for the Asia-Pacific Region



Source: Chapter 3 – Index of Economic Connectivity in the Asia-Pacific, PECC SOTR report 2019

## Appendix E: Global Trade Alert – Trade Restrictive and Trade Facilitating Interventions for Logistics-Related Sectors by APEC economies (2008 – 2021)

Figure E.1: Number of APEC Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions for Transport Services Sector, 2008 – 2021

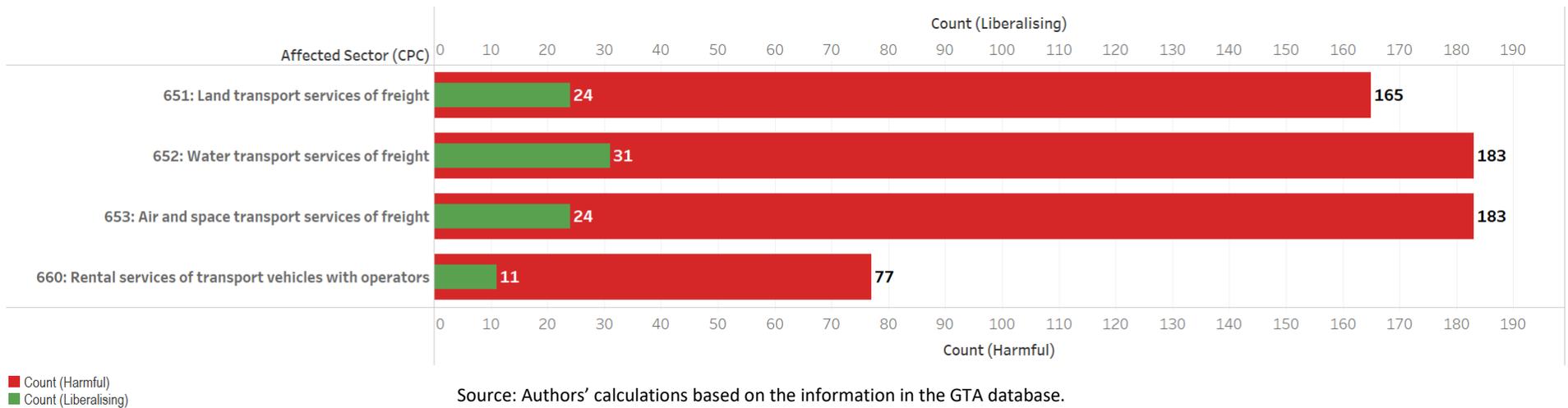


Figure E.2: Number of APEC Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions for Management Consulting and ITC Services Sector, 2008 – 2021

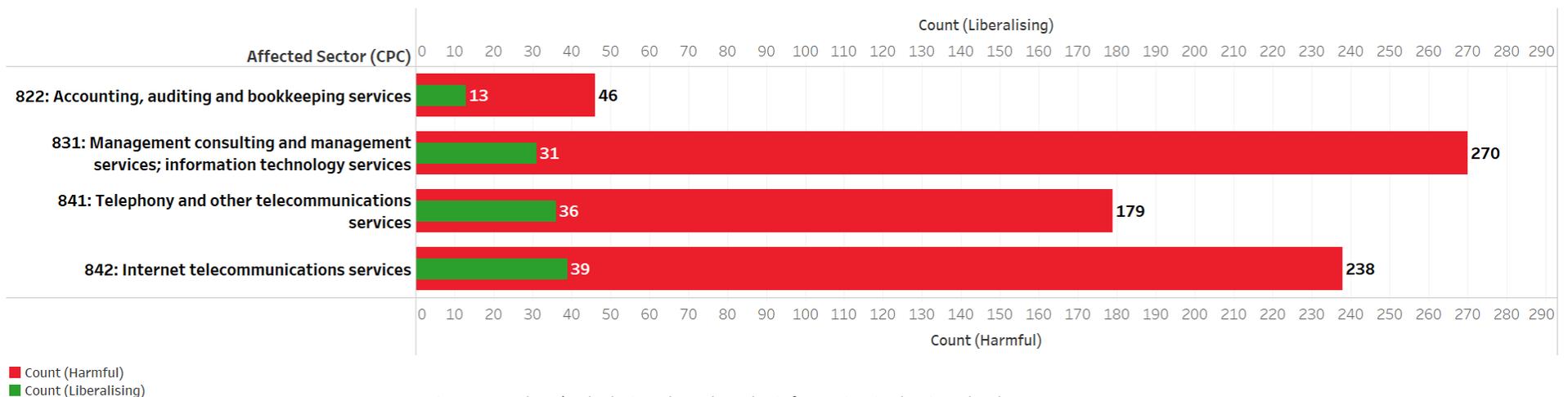


Figure E.3: Number of APEC Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions for Logistics Services Sector, 2008 – 2021

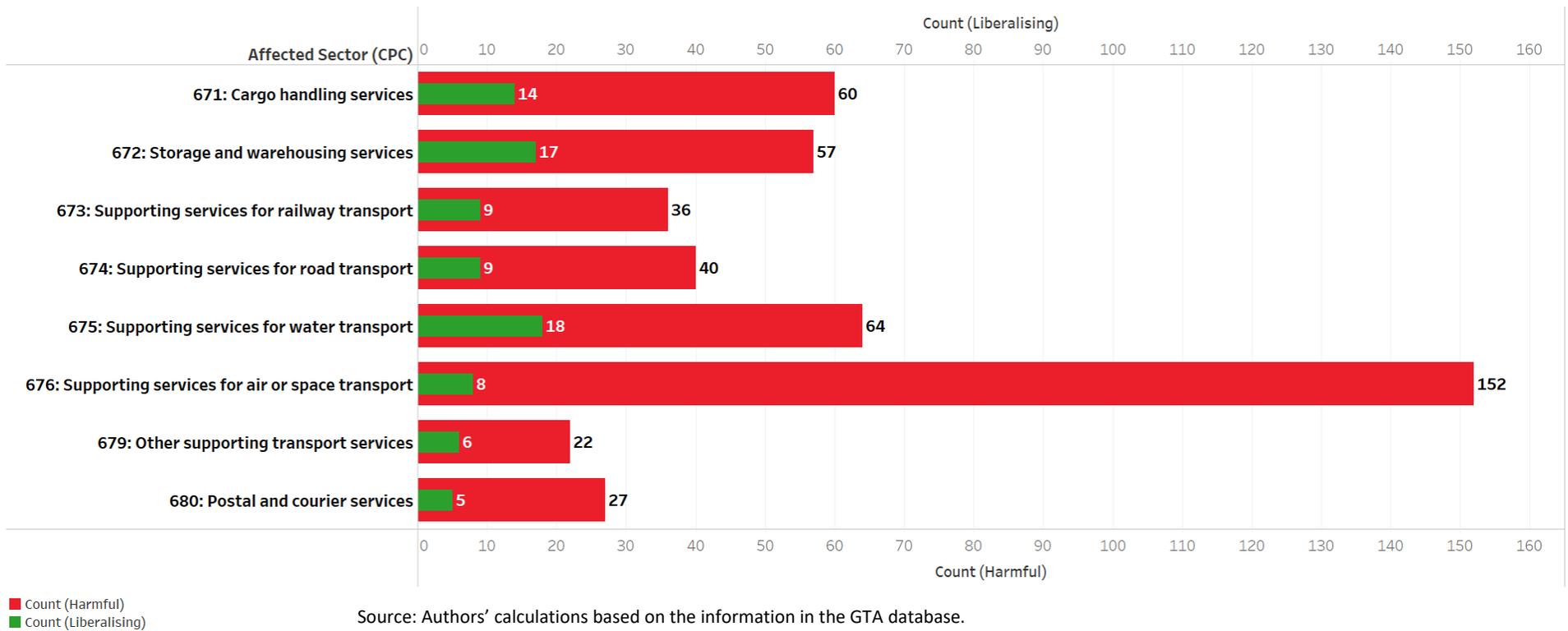


Figure E.4: Number of APEC Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Economy, 2008 – 2021

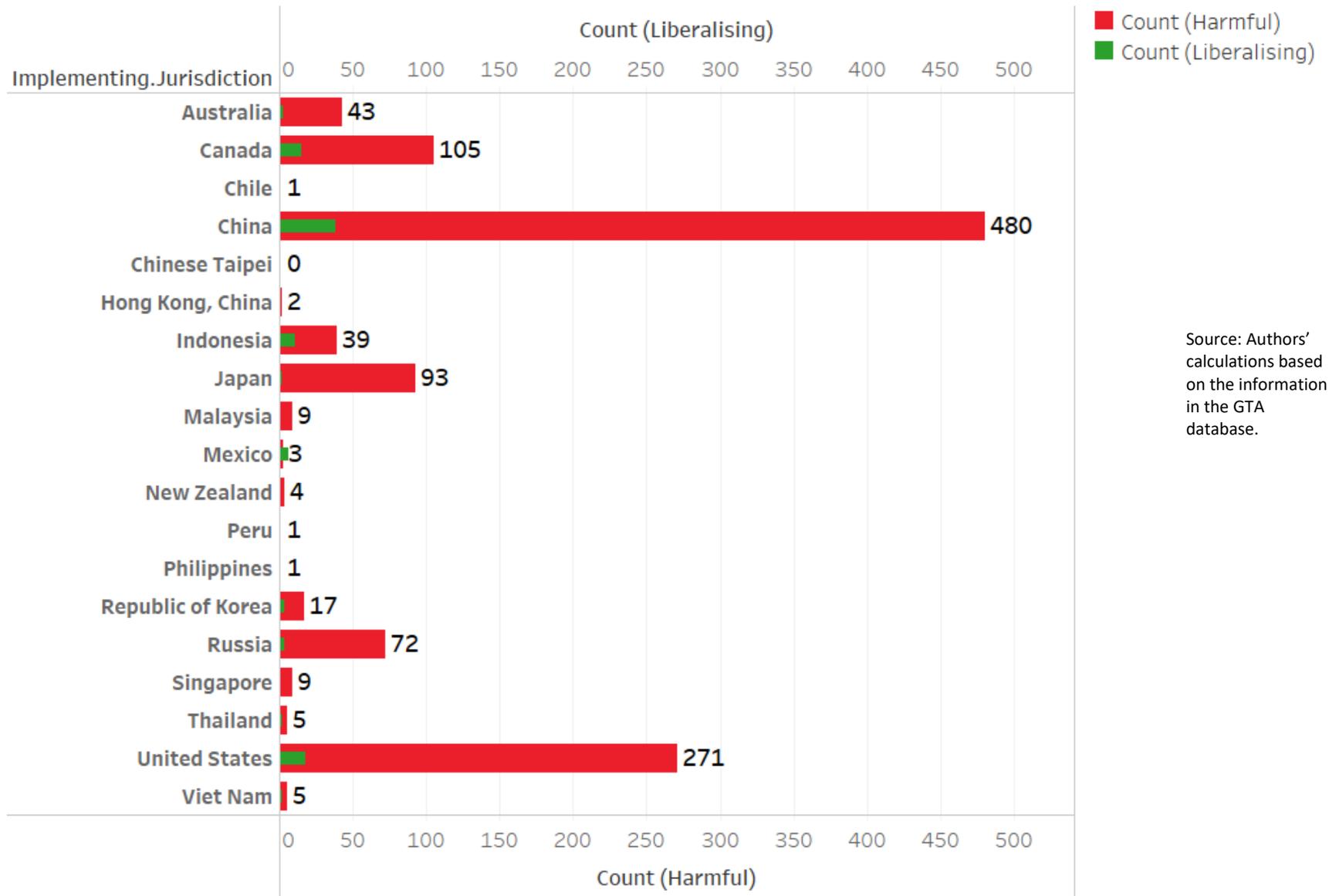
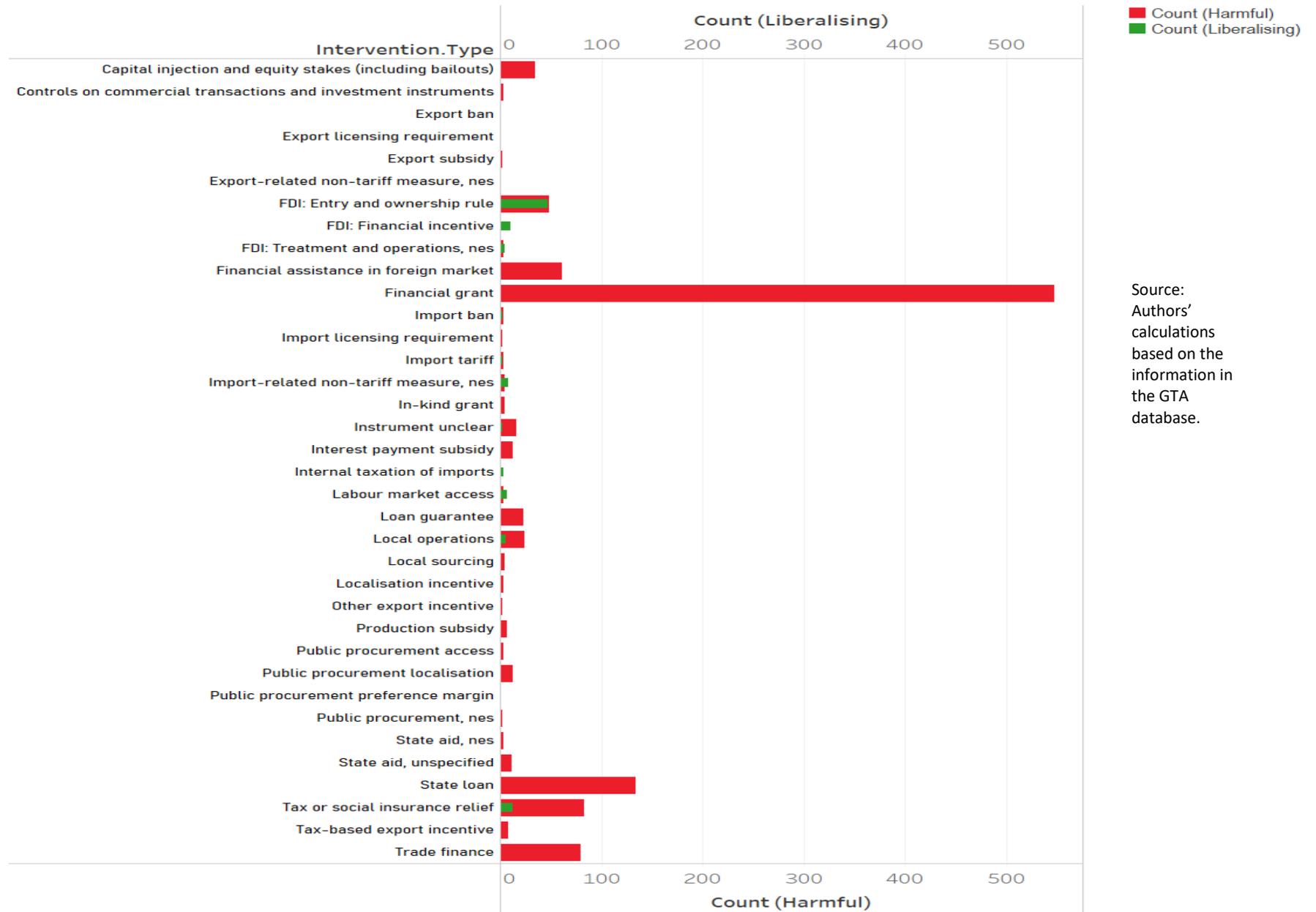
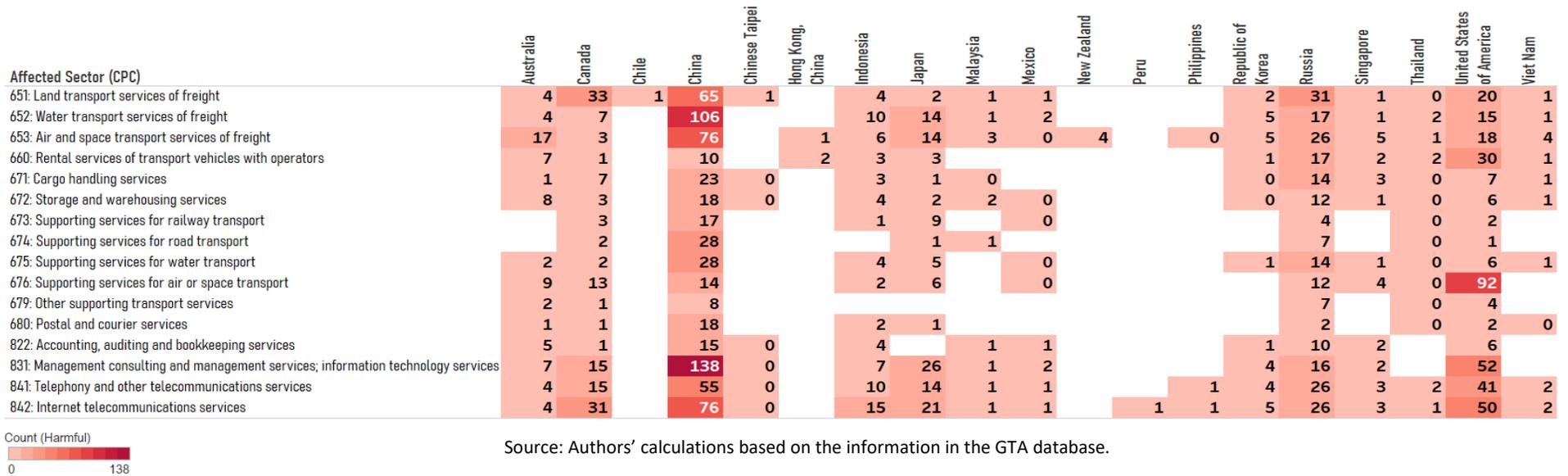


Figure E.5: Number of APEC Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Policy Instrument, 2008 – 2021



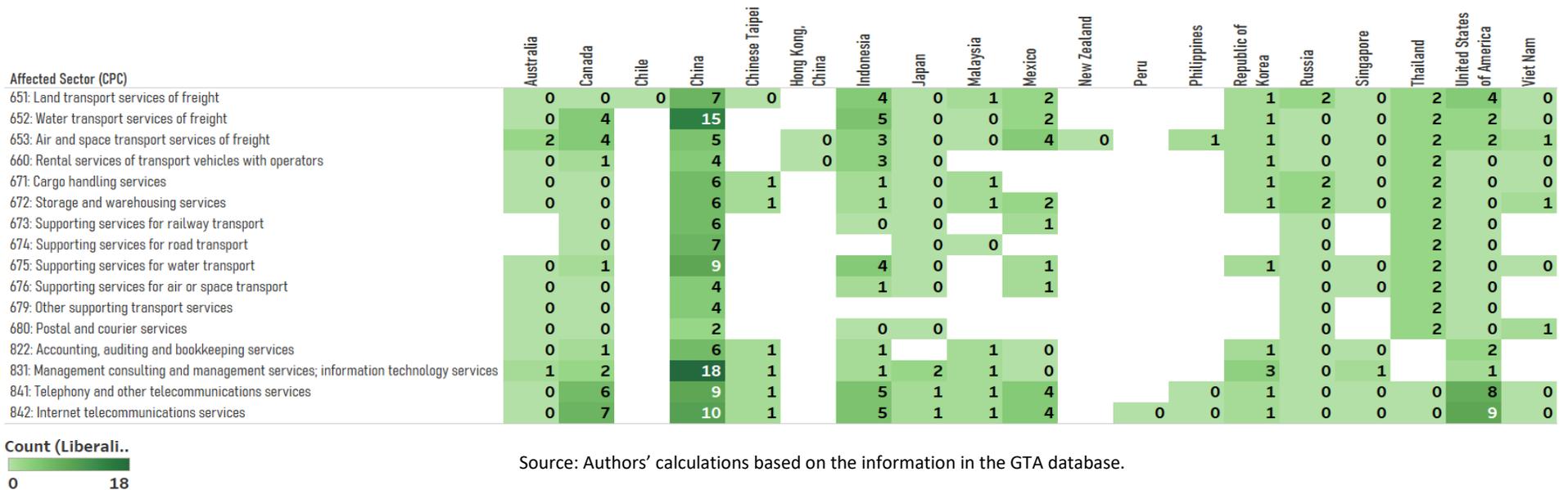
Source:  
 Authors' calculations based on the information in the GTA database.

Figure E.6: Number of Trade Restrictive (Harmful) Interventions by Economy and Sector, 2008 – 2021



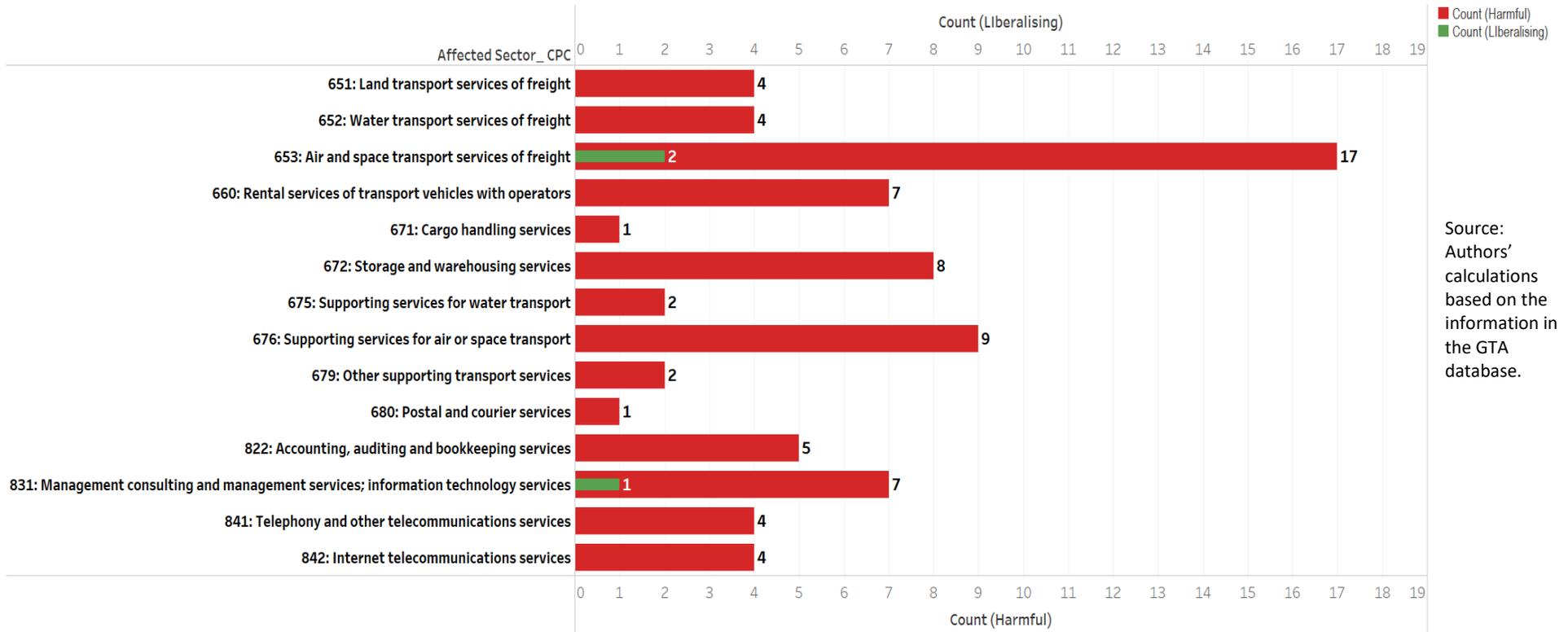
Source: Authors' calculations based on the information in the GTA database.

Figure E.7: Number of Trade Facilitating (Liberalising) Interventions by Economy and Sector, 2008 – 2021



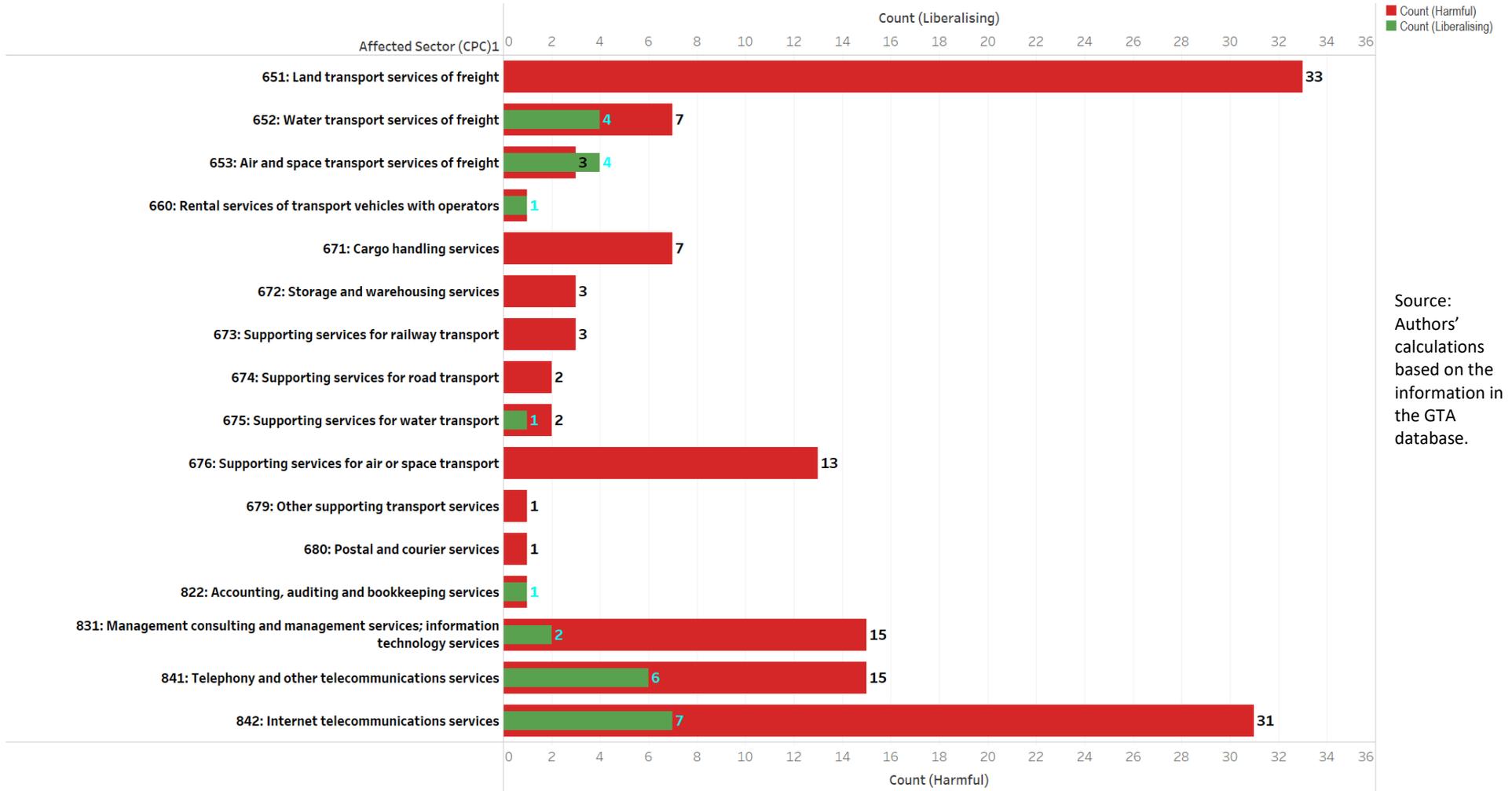
Source: Authors' calculations based on the information in the GTA database.

Figure E.8: Number of Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Australia, 2008 – 2021



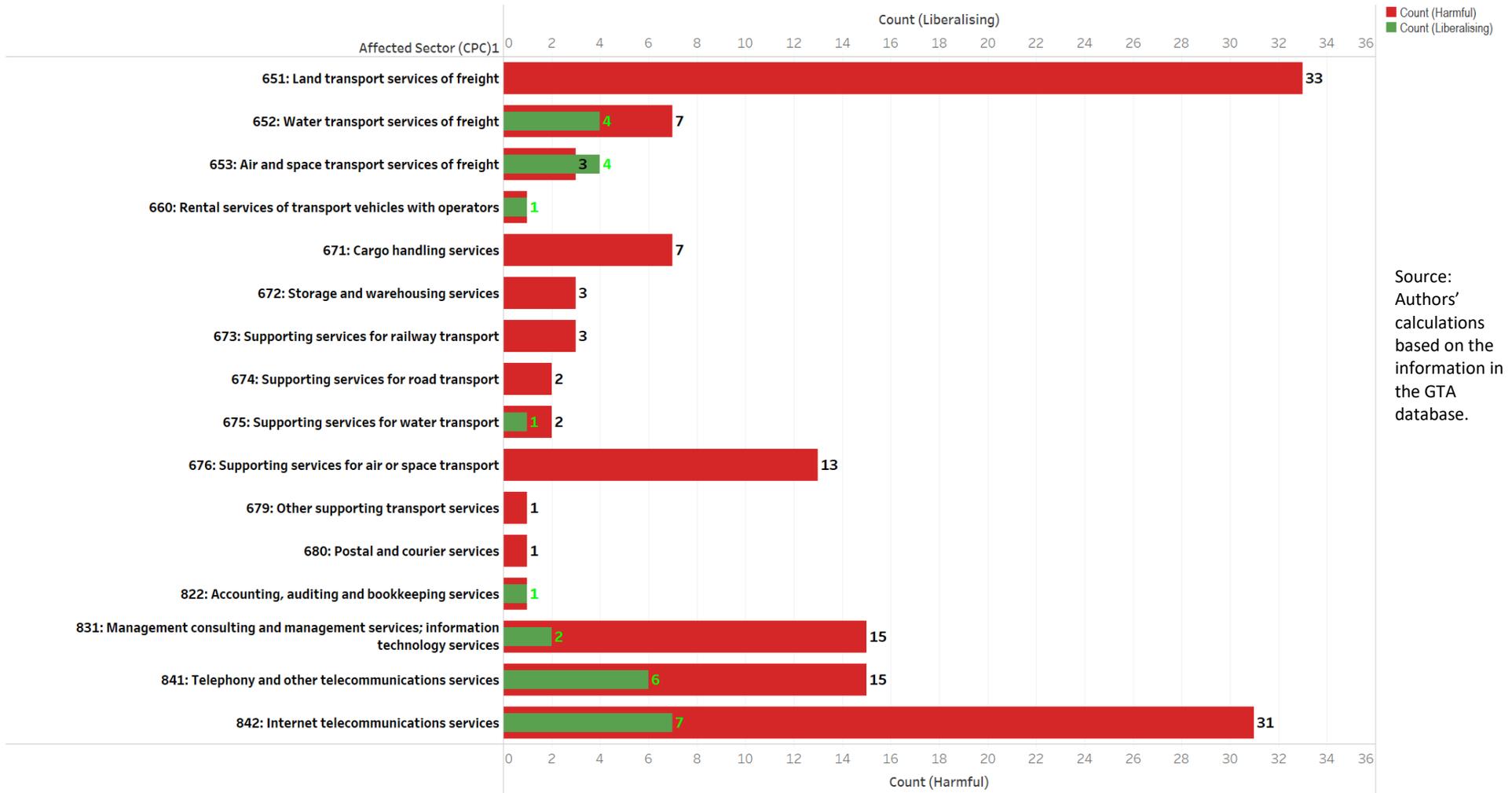
Source: Authors' calculations based on the information in the GTA database.

Figure E.9: Number of Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Canada, 2008 – 2021



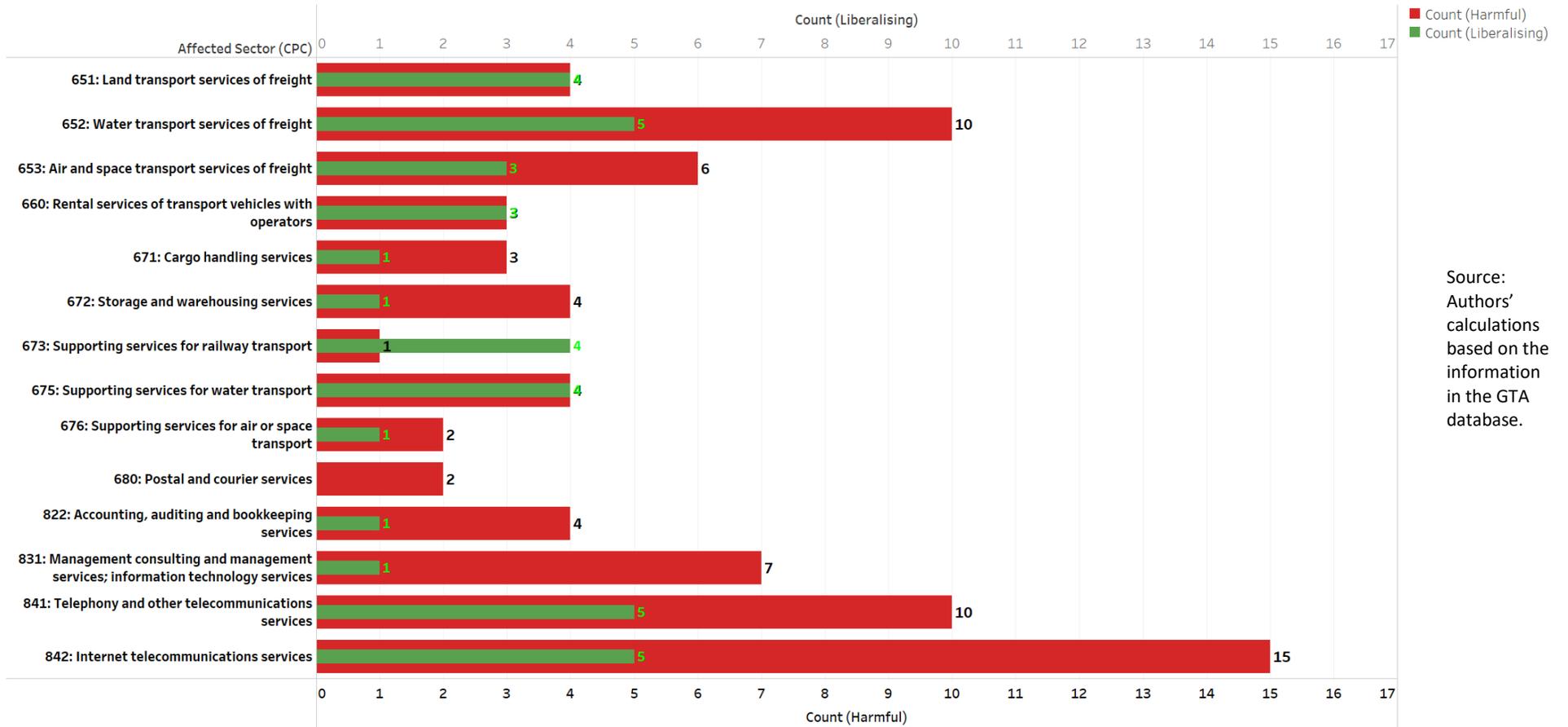
Source: Authors' calculations based on the information in the GTA database.

Figure E.10: Number of Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by China, 2008 – 2021



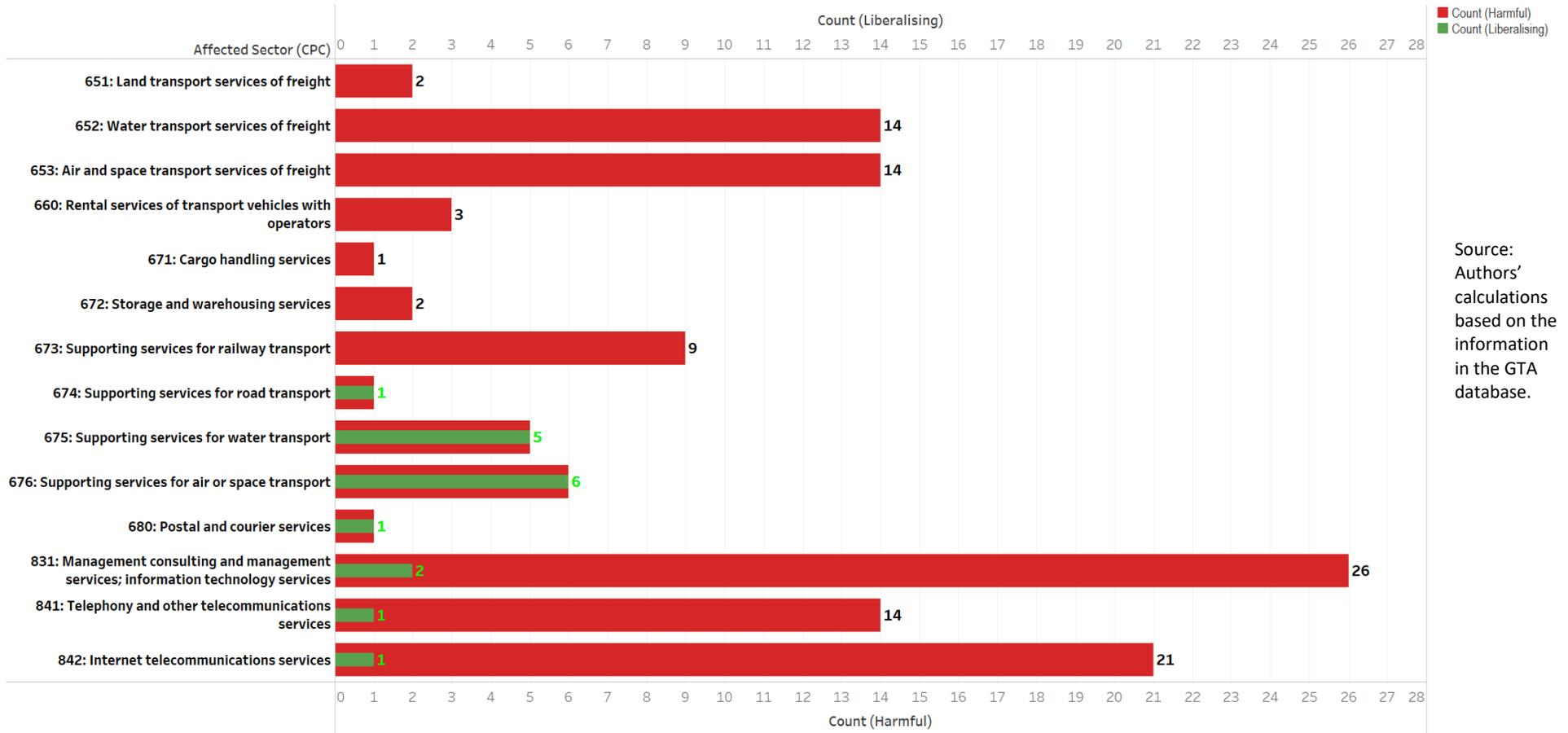
Source: Authors' calculations based on the information in the GTA database.

Figure E.11: Number of Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Indonesia, 2008 – 2021



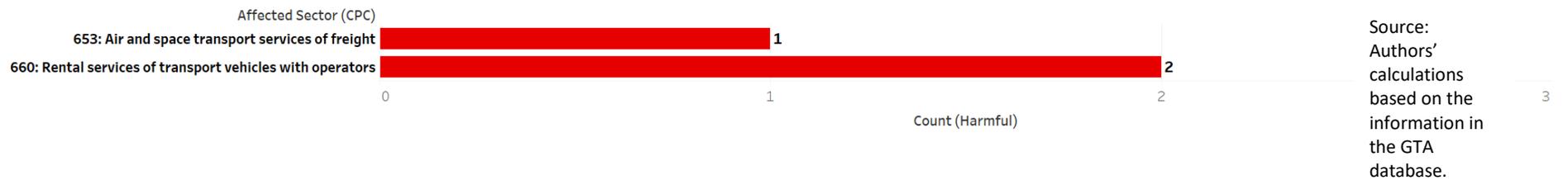
Source: Authors' calculations based on the information in the GTA database.

Figure E.12: Number of Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Japan, 2008 – 2021



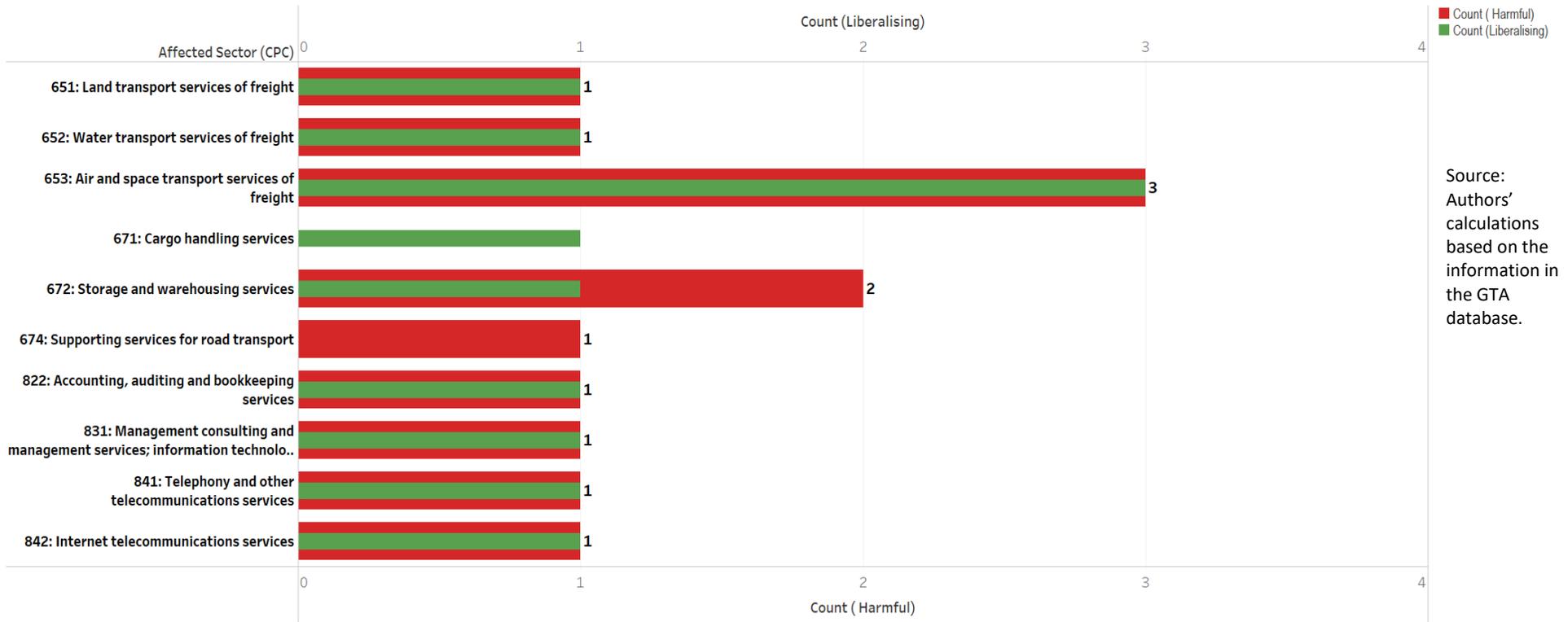
Source: Authors' calculations based on the information in the GTA database.

Figure E.13: Number of Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Hong Kong, China 2008 – 2021



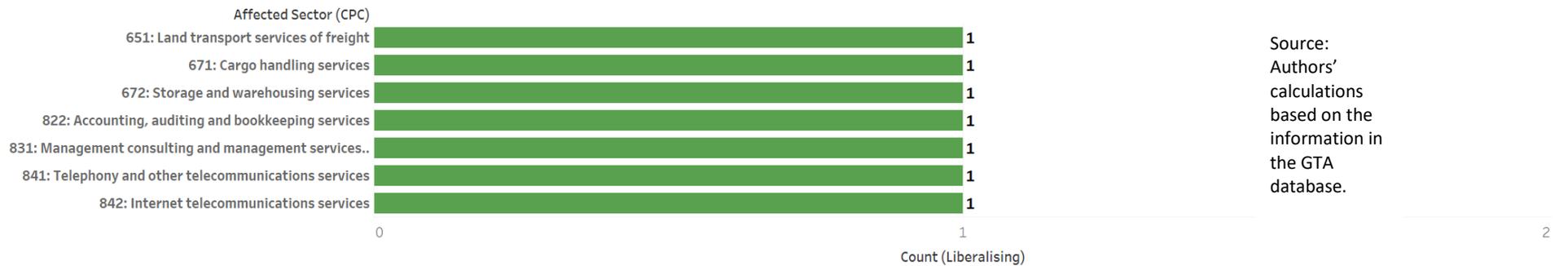
Source: Authors' calculations based on the information in the GTA database.

Figure E.14: Number of Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Malaysia, 2008 – 2021



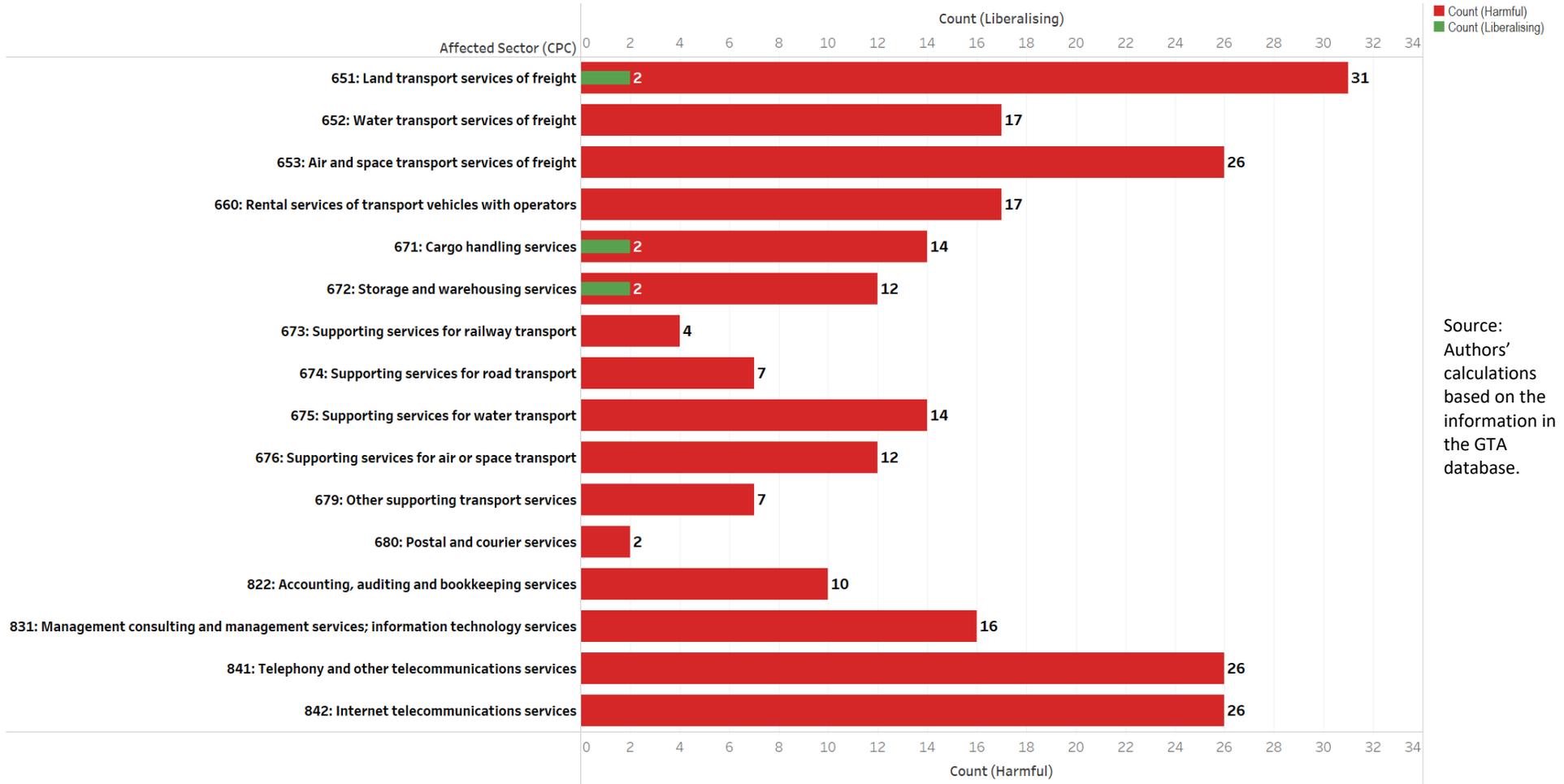
Source: Authors' calculations based on the information in the GTA database.

Figure E.15: Number of Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Chinese Taipei, 2008 – 2021



Source: Authors' calculations based on the information in the GTA database.

Figure E.16: Number of Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Russia, 2008 – 2021



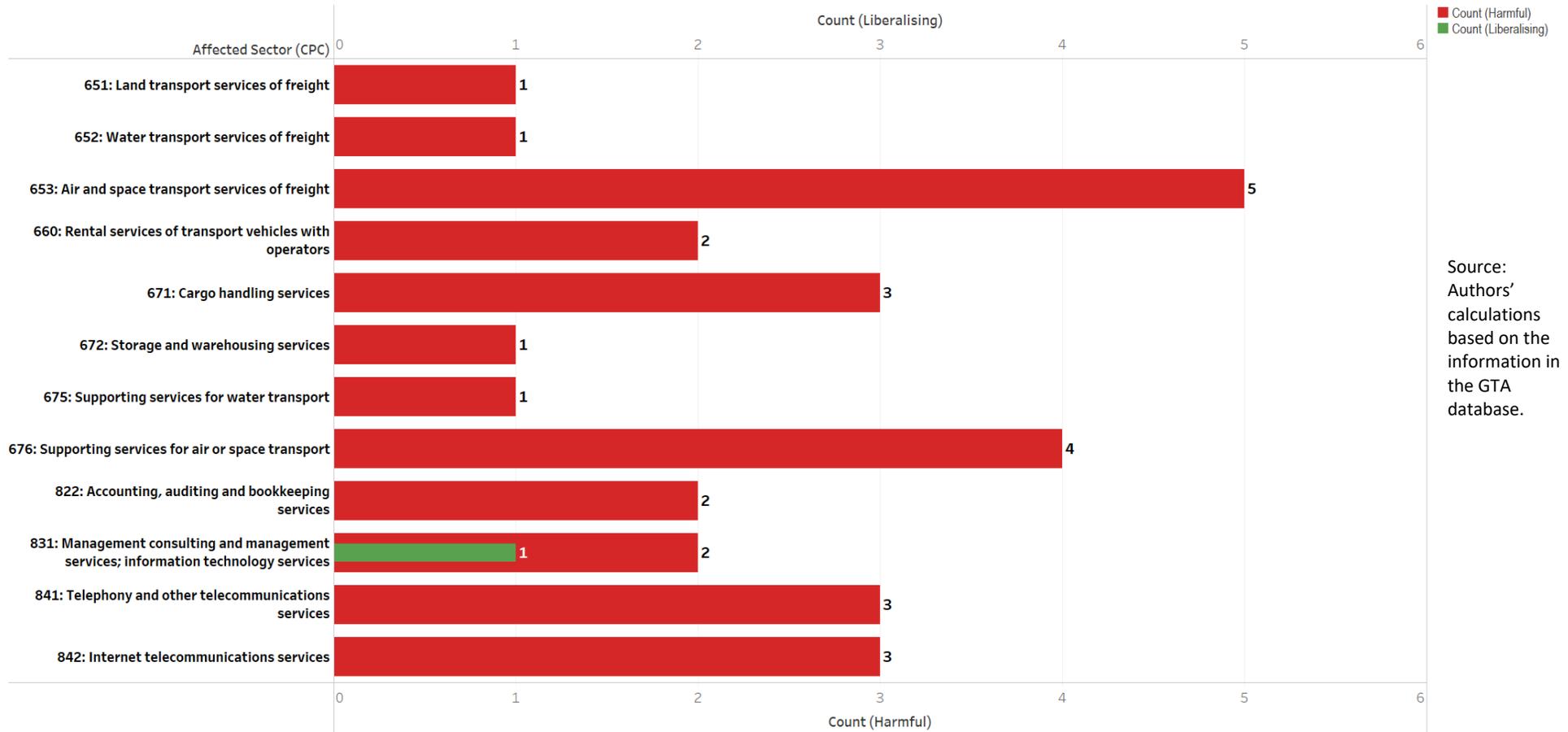
Source: Authors' calculations based on the information in the GTA database.

Figure E.17: Number of Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Chile, 2008 – 2021



Source: Authors' calculations based on the information in the GTA database.

Figure E.18: Number of Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Singapore, 2008 – 2021



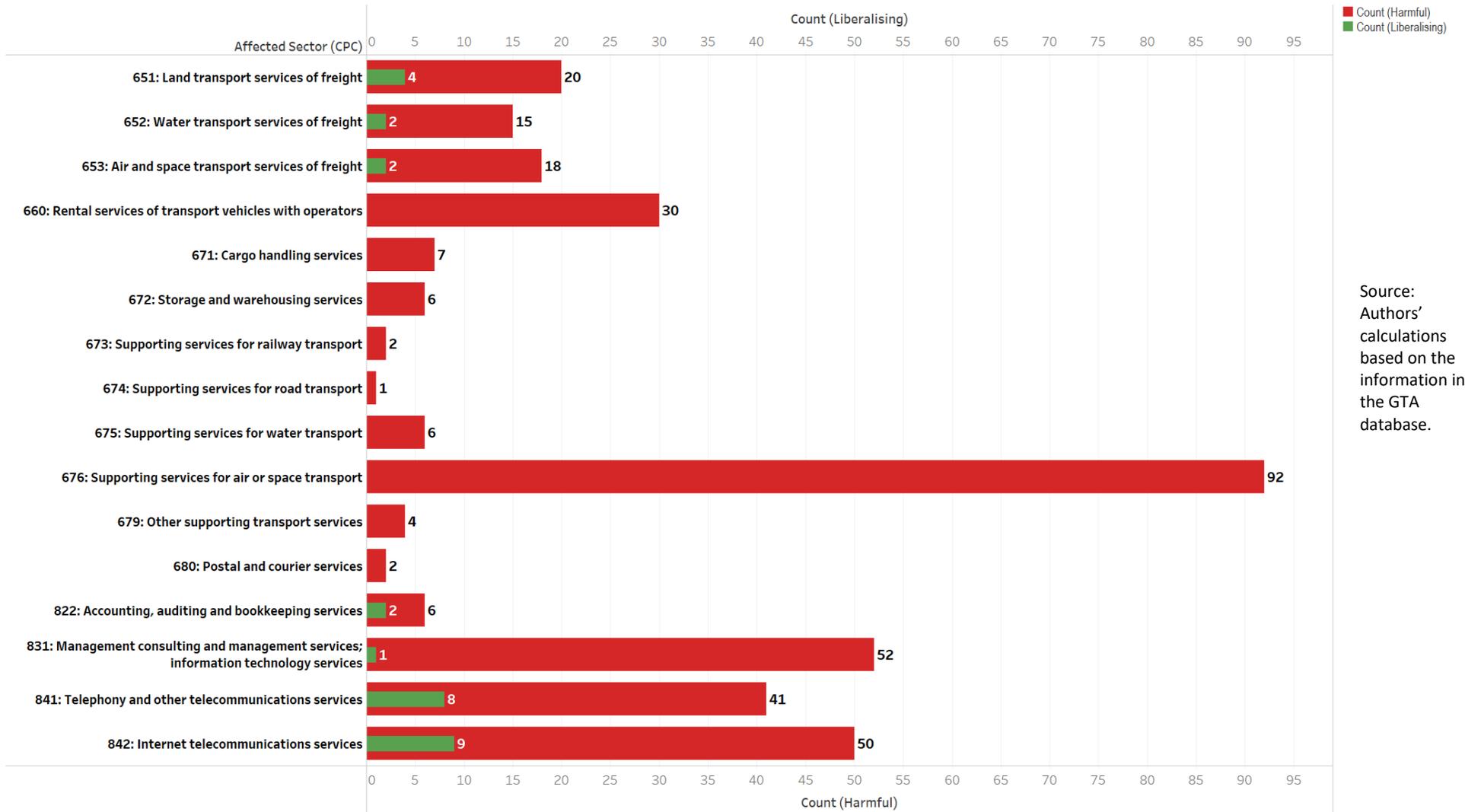
Source: Authors' calculations based on the information in the GTA database.

Figure E.19: Number of Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by New Zealand, 2008 – 2021



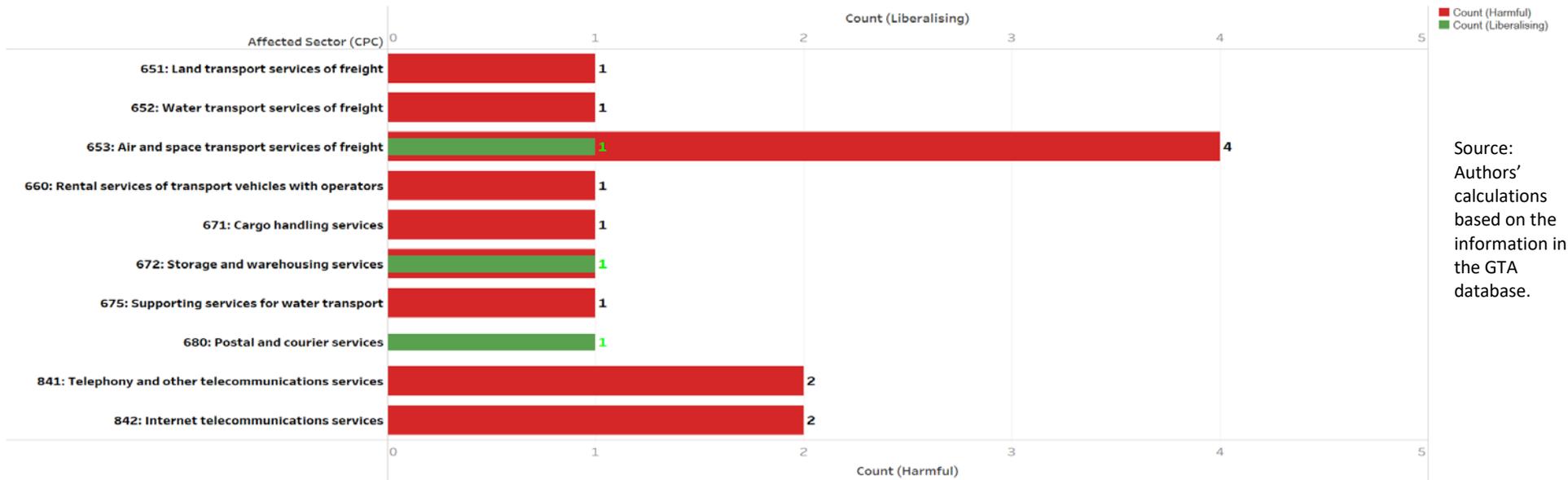
Source: Authors' calculations based on the information in the GTA database.

Figure E.20: Number of Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by United States, 2008 – 2021



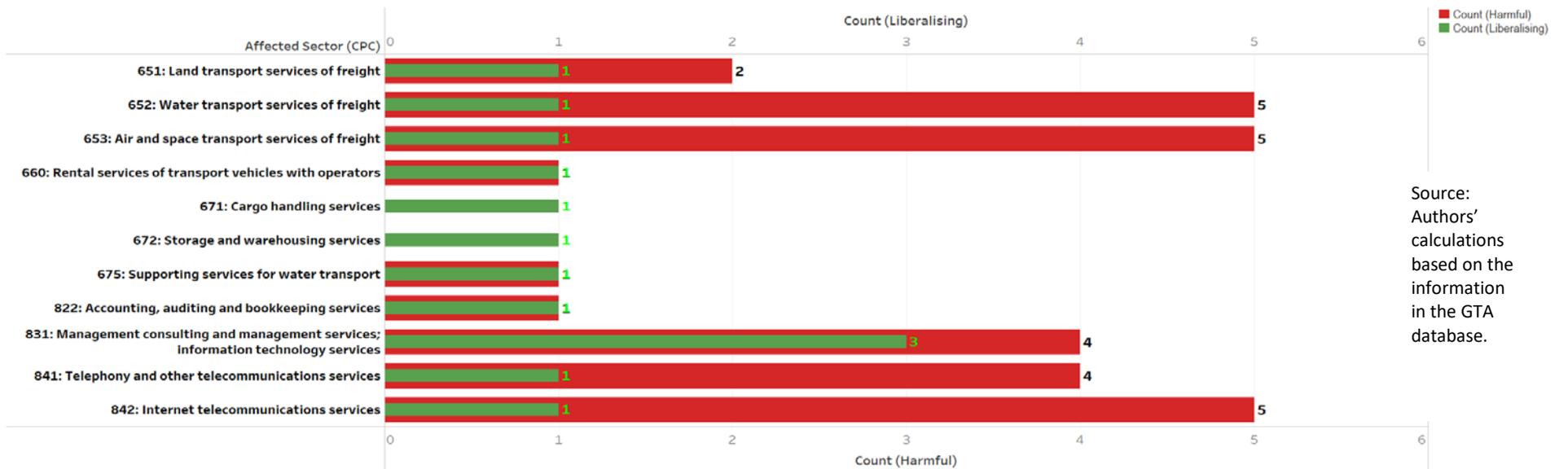
Source: Authors' calculations based on the information in the GTA database.

Figure E.21: Number of Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Viet Nam, 2008 – 2021



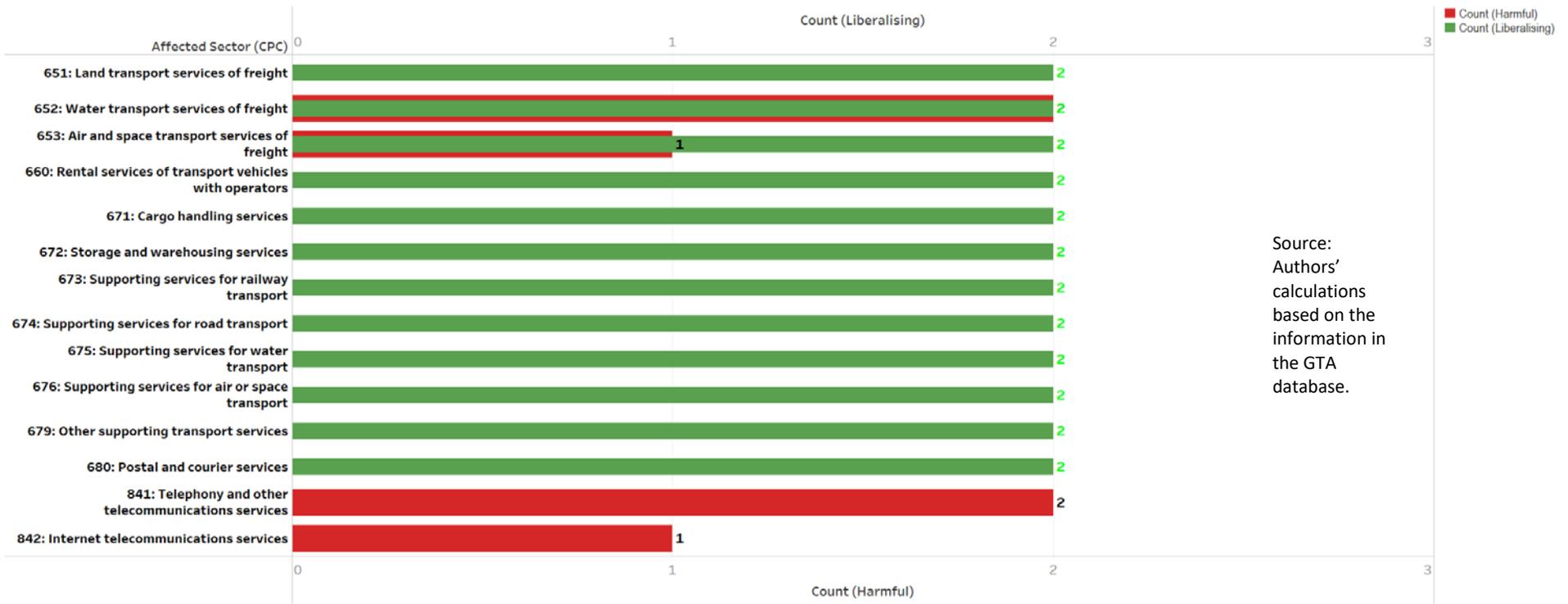
Source: Authors' calculations based on the information in the GTA database.

Figure E.22: Number of Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Korea, 2008 – 2021



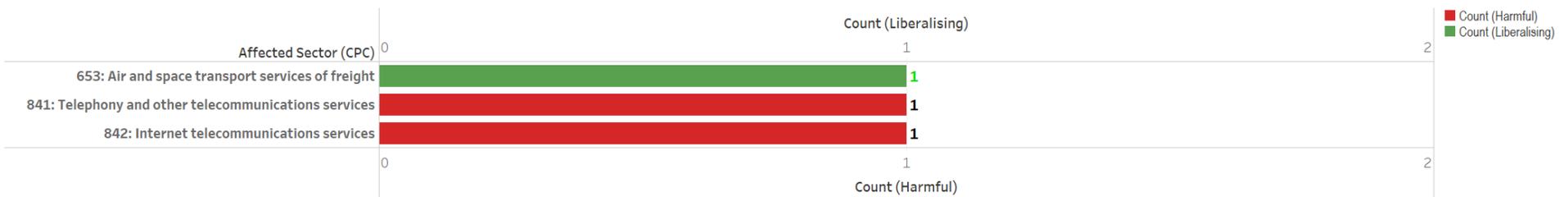
Source: Authors' calculations based on the information in the GTA database.

Figure E.23: Number of Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Thailand, 2008 – 2021



Source: Authors' calculations based on the information in the GTA database.

Figure E.24: Number of Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Philippines, 2008 – 2021



Source: Authors' calculations based on the information in the GTA database.

Figure E.25: Number of Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Mexico, 2008 – 2021



Source: Authors' calculations based on the information in the GTA database.

Figure E.26: Number of Trade Restrictive (Harmful) and Trade Facilitating (Liberalising) Interventions by Peru, 2008 – 2021

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Source: Authors' calculations based on the information in the GTA database.