8. Seamless Transport, Logistics Markets, and Physical Connectivity

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Seamless Transport, Logistics Markets, and Physical Connectivity

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I. Introduction

As the Association of Southeast Asian Nations (ASEAN) Member States (AMS) become more integrated and interconnected, their socio-economic activities will influence one another significantly. One of the main characteristics is growing intra-regional trade and the movement of people. Factors that have stimulated more trips in the region include the intra-ASEAN visa waiver policy, more frequent flights, emerging budget airlines and expanding airports, and tourism promotion. Bilateral liner shipping connectivity between major maritime AMS (especially Indonesia, Malaysia, Singapore, Thailand, and Viet Nam) has increased continuously, showing deepening regional trade.

AMS need to do more to reap the full benefits of such deepening connectivity. Seamless connectivity will improve efficiency in the movement of people and goods. It will support business, the labour market, and trade competition; and influence relocation and investment. This will result in a significant positive impact on the regional economy (Itakura, 2013; Kumagai et al., 2013; Stone, Strutt, and Hertel, 2012).

Growth in demand for infrastructure and logistics services outpaces the rise in supply. The region needs to develop more physical infrastructure such as seaports, airports, rail links, and highways; and to link them with the hinterland, especially industrial zones and regional distribution centres. In parallel, soft infrastructure such as transport and trade facilitation also needs to be improved to support optimum utilisation of the investment in physical infrastructure. Currently, the main documents guiding ASEAN connectivity are the Kuala Lumpur Transport Strategic Plan (KLTSP or ASEAN Transport Strategic Plan), 2016–2025 and the Master Plan on ASEAN Connectivity 2025 (MPAC 2025). Sector bodies derived and added relevant agreements, projects, and policies to complement and to implement the objectives of KLTSP and MPAC 2025. To achieve seamless connectivity, AMS should advance the harmonisation of the transport and logistics regulatory regime.

The rest of the chapter proceeds as follows. The next section presents simulation results of improved connectivity in ASEAN up to 2040 and its economic impact. The results suggest that enhanced connectivity benefits the region as a whole as well as most of the countries and many subnational regions. The rest of the chapter concentrates on four major issues related to ASEAN connectivity: the ASEAN Single Aviation Market (ASAM), ASEAN land connectivity, the ASEAN Single Shipping Market (ASSM), and the logistics system. The chapter ends with suggestions for turning challenges into opportunities towards seamless connectivity in the ASEAN region up to 2040.

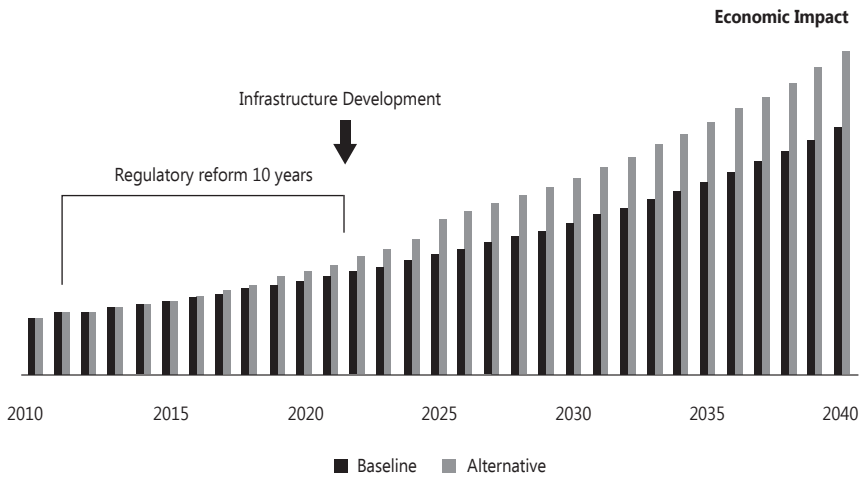
II. Economic Impact of Connectivity Improvement on ASEAN: GSM Results

The simulation used the model developed by the Institute of Developing Economies (IDE)/Economic Research Institute for ASEAN and East Asia (ERIA) Geographical Simulation Model (GSM), with 2010 as the base year (Kumagai et al., 2013). The variables used are sectoral and regional gross domestic product, prices, and wages to create a short-run equilibrium. Based on the short-run equilibrium obtained, it is assumed that workers will move to sectors and regions with a higher real wage rate. With this new distribution and the projected population increase, the next short-run equilibrium can be calculated with the new equilibrium wage and

price, and the predicted labour movement is recalculated. One short-term equilibrium calculation corresponds to 1 year, and the calculations are repeated 30 times until 2040.

To determine the economic impact of enhanced connectivity, two scenarios were simulated: a baseline scenario assuming no additional specified infrastructure development or institutional reform in ASEAN, and a development scenario assuming additional infrastructure development and institutional reform. The difference in the regional Gross Domestic Product (GDP) of 2040 between the simulation results of the two scenarios is taken as the economic impact, as depicted in Figure 1.

Figure 1: Image of Economic Impact



Source: Authors.

There are two important points to understand the simulation results illustrated in Figure 1. First, the baseline scenario assumes that the travel time currently required for roads, ports, airports, and border clearance remains the same up to 2040. With high economic growth in ASEAN, however, the volume and traffic of transport can be expected to increase dramatically. This means that congestion worsens and the assumed travel time cannot be kept constant if the level of infrastructure up to 2040 is the same as at present. Therefore, even though the baseline scenario

does not assume any specific infrastructure development such as a high-speed railway, it allows for upgrading of the current infrastructure to accommodate the increased demand for transportation to maintain the current travel time.

Second, infrastructure development and institutional reform do not necessarily result in uniformly positive economic impacts, i.e. some geographical relocation of economic activities could occur. For example, if infrastructure development is undertaken only in a distant region, firms and households may relocate and the regional GDP may be lower than the baseline scenario in areas negatively impacted by the infrastructure development.

Nonetheless, the simulations (ERIA, 2010; 2015) indicate that combining infrastructure development and institutional reform would lead to a high economic benefit at the national level as well as in many subnational (state, city, prefectural) regions.

This section presents a scenario combining infrastructure development and institutional reform. We assume that the following infrastructure development projects will be completed and available in 2025:

(i) Road improvement, Dawei deep sea port development, and border facilitation along the Mekong–India Economic Corridor
(ii) Road improvement and border facilitation along the East–West Economic Corridor
(iii) Road improvement and border facilitation along the North–South Economic Corridor
(iv) Indonesia–Malaysia–Thailand Growth Triangle and connection to surrounding economic clusters
(v) Brunei Darussalam–Indonesia–Malaysia–Philippines East ASEAN Growth Area (BIMP–EAGA) and connection to surrounding economic clusters
(vi) Sea route improvement between Manila and Singapore, Singapore and Jakarta, and Jakarta and Manila

(vii) Road development in Indonesia, the Lao People's Democratic Republic (Lao PDR), Myanmar, the Philippines, and Viet Nam, including the proposed Vientiane–Vinh Expressway (Keola and Kumagai, forthcoming)

(viii) High-speed railway in Indonesia, Malaysia–Singapore, and Thailand in planning or under construction (Isono, 2018; Kumagai, Isono, and Hayakawa, 2018)

Additionally, an annual reduction in non-tariff barriers (NTBs) from 2016 to 2025 in nine ASEAN countries is assumed as shown in Table 1.

Table 1: Assumption of Reduction in Non-Tariff Barriers, 2016–2025

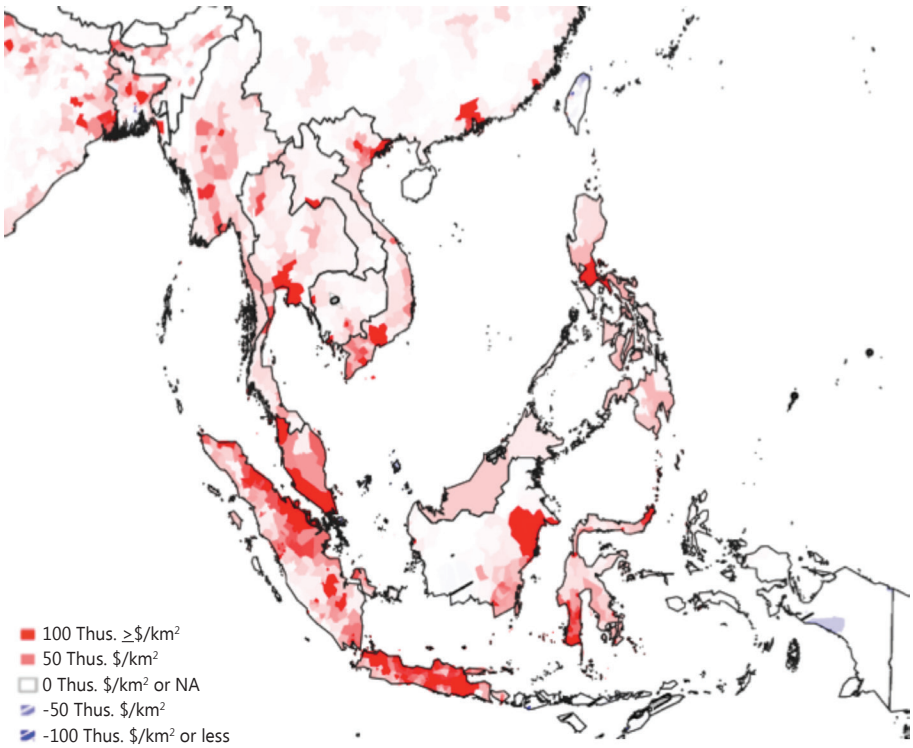
Country	%
Brunei Darussalam	2.18
Cambodia	1.31
Indonesia	1.97
Lao PDR	1.81
Malaysia	1.44
Myanmar	3.48
Philippines	1.05
Thailand	1.30
Viet Nam	1.23

Lao PDR = Lao People's Democratic Republic.

Source: ERIA (2015).

The economic impact is illustrated in Figure 2 by the 'impact density' index, which means the impact per area. ASEAN as a whole has an economic impact of 6.5%. As mentioned above, certain regions may achieve positive economic impacts individually. The top 10 regions with high economic impacts are shown in Table 2. These include major cities of Sulawesi Island, Indonesia and regions in southern Myanmar, indicating that the current connectivity of these regions and cities is relatively poor and has high economic potential.

Figure 2: Economic Impact of Infrastructure Development and Regulatory Reform in ASEAN Countries, 2040
(impact density)



Source: IDE/ERIA–GSM simulation result.

Note: ASEAN = Association of Southeast Asian Nations, km^2 = square kilometre, NA = not applicable.

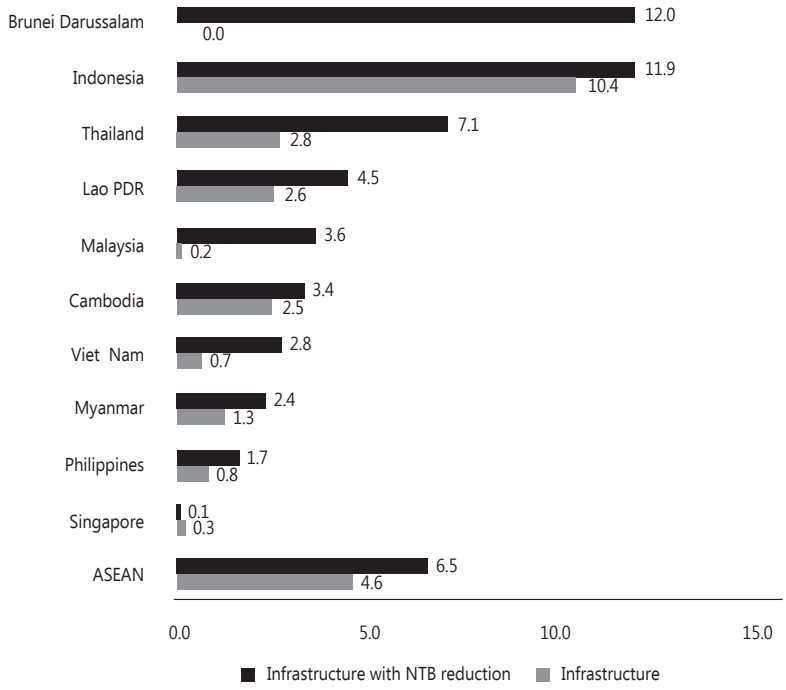
Table 2: Top 10 Regions with Highest Economic Impact (%)

No.	Region	Country	Economic impact (2040)
1	Dawei	Myanmar	49.8
2	Kawthoung	Myanmar	46.7
3	Kota Makasar	Indonesia	42.3
4	Kota Bontang	Indonesia	42.2
5	Kota Parepare	Indonesia	40.7
6	Myeik	Myanmar	39.0
7	Kendari	Indonesia	37.9
8	Kota Manado	Indonesia	36.2
9	Kota Kendari	Indonesia	34.8
10	Kota Bitung	Indonesia	32.9

Source: IDE/ERIA–GSM simulation result.

Figure 3 compares the economic impact of infrastructure development and a combination of NTB reduction and infrastructure improvement on each country. ASEAN as a whole will have a 4.6% economic impact from infrastructure development alone and a 6.5% impact from infrastructure improvement with NTB reduction. Figure 3 shows that the major beneficiaries of the infrastructure improvement are Indonesia and the continental ASEAN countries, in large part because most of the infrastructure investments in the simulation package are situated in the Greater Mekong Subregion area and Indonesia. It is also worth noting that Indonesia benefits most from the infrastructure investment because of the deficient infrastructure in the country. In contrast, countries with much better infrastructure – Brunei Darussalam, Malaysia, and Thailand – benefit more from the reduction in NTBs than infrastructure development.

Figure 3: Economic Impact on ASEAN Member States, 2040
(%)



ASEAN = Association of Southeast Asian Nations, Lao PDR = Lao People's Democratic Republic, NTB = non-tariff barriers.
Source: IDE/ERIA–GSM simulation result.

III. ASEAN Single Aviation Market

The ASAM is aimed at full liberalisation of air travel within AMS, which would contribute positively to the region's competitiveness and the acceleration of ASEAN integration. It was first endorsed during the 13th ASEAN Summit in 2007 and was intended to be realised by 2015. To establish the ASAM, several key agreements were developed:

(i) ASEAN Multilateral Agreement on Air Services (MAAS) and its protocols 1–6.
(ii) ASEAN Multilateral Agreement on the Full Liberalisation of Air Freight Services (MAFLAFS) and its protocols 1 and 2.
(iii) ASEAN Multilateral Agreement on the Full Liberalisation of Passenger Air Services (MAFLPAS) and its protocols 1 and 2 (protocol 3 was added in 2017 and protocol 4 in 2018).

The MAAS was ratified in 2009, the ASEAN Multilateral Agreement on the Full Liberalisation of Air Freight Services in 2009, and the MAFLPAS in 2010, with some ratifications pending by several countries[1]. In 2011, the leaders of the AMS adopted the implementation framework of the ASAM, which covers economic and technical elements.[2] In 2016, all AMS had signed the agreement on ASEAN open skies, allowing the implementation of unlimited 'third', 'fourth', and 'fifth' freedom market access rights[3] between and within the ASEAN subregion and capital cities. Not all major international airports are included in this agreement, however, and some actions still need to be carried out to achieve full implementation.

Progress towards full liberalisation of the ASEAN aviation market has been marked by both enthusiasm and pessimism. On a positive note, significant progress has been made via regional agreements (MAAS, MAFLAS, and MAFLPAS), especially when Indonesia ratified the Open Skies Act in May 2016. With about 40% of the total AMS population, Indonesia is a decisive player in the market.

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1 Some countries need critical investments and efforts to fulfil the standards in the agreements, besides other reasons.

2 Economic elements comprise market access, charters, airline ownership and control, tariffs, commercial activities, competition law and policy/state aid, consumer protection, airport user charges, dispute resolution, and dialogue partner engagement. Technical elements comprise aviation safety, aviation security, and air traffic management.

3 The third freedom refers to the right to fly between home country of an airline to another country, e.g. Bangkok–Singapore by Thai airline. The fourth freedom is the corresponding right in the reverse direction of the third freedom, e.g. Singapore–Bangkok by Thai airline. The fifth freedom refers to the right to fly between two foreign countries on a flight originating or ending in one's own country, e.g. Jakarta–Kuala Lumpur–Bangkok by an Indonesian or Thai airline.

Additional adjustments have also been made, such as adding protocol 3 on 'Domestic Code-Share Rights Between Points Within the Territory of any other ASEAN Member States' and protocol 4 on 'Co-Terminal Rights between Points within the Territory of Any Other ASEAN Member State' to the MAFLPAS.[4] This shows adaptive responses to the dynamics of aviation market integration.

Some scholars and aviation experts also show scepticism, however, especially in the efforts towards full liberalisation and realising the full benefits of a single aviation market. The European Union (EU) single aviation market is the benchmark for a fully integrated aviation market because it is the only fully integrated regional aviation market (implementing up to the ninth freedom[5]) in the world. The liberalisation of the EU aviation market was based on a strongly binding European Single Market, beginning in 1983 after the European Council issued a directive on community authorisations for interregional air services between its member states. Therefore, the historical context of the EU and ASEAN cases is significantly different.

Scepticism is also directed at the limitation of the ASAM to the fifth freedom, with no discussion on moving towards the seventh freedom, let alone the ninth freedom. This is viewed as incomplete liberalisation, preventing people in the AMS from enjoying the full benefits of liberalisation. Other restrictions relate to the ownership and control of airlines. Two major restrictions apply to airlines' cross-border operations: (i) domestic restrictions, where countries do not allow full foreign ownership or dominant control of airlines based in their jurisdiction; and (ii) external restrictions, where bilateral airline service agreements between countries apply only to designated airlines which are 'substantially owned and effectively controlled' by their respective

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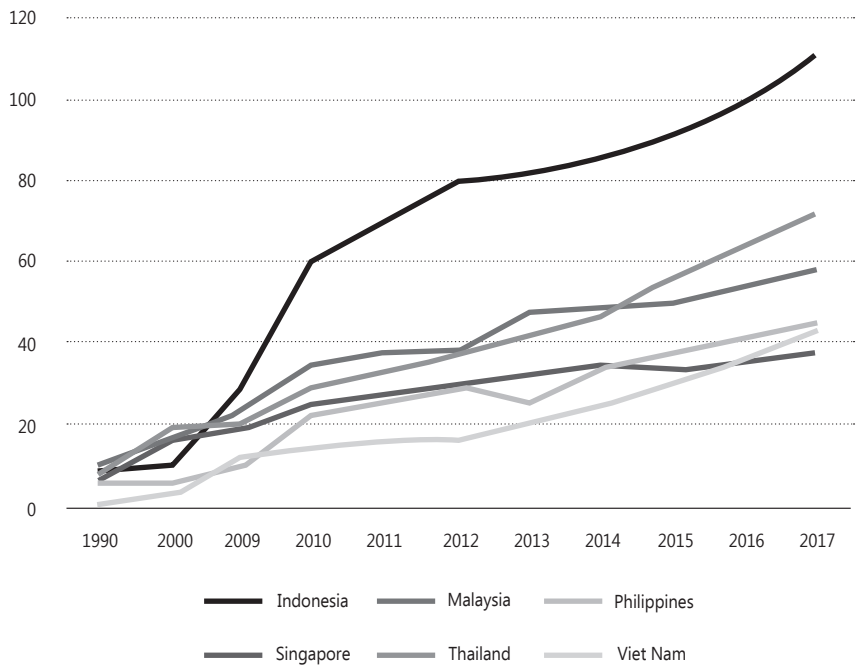
4 Recent additional agreements (2017) are the ASEAN Mutual Recognition Arrangement on Flight Crew Licensing and the Protocol to Implement the Tenth Package of Commitments on Air Transport Services Under the ASEAN Framework Agreement on Services.

5 The seventh freedom refers to the right to fly between two foreign countries while not offering flights to one's own country, e.g. Singapore–Bangkok by an Indonesian airline without making a stop in Indonesia. The ninth freedom refers to the right to fly inside a foreign country without continuing to one's own country (also known as cabotage), e.g. Denpasar–Medan by a Singaporean airline

nationals (Tan, 2017:2). This imposes investment barriers because of unrealised market potential in the region.

In terms of economic value, Southeast Asia's aviation market has developed rapidly during the last decade. The number of passengers carried has surged significantly thanks to positive regional economic growth and the expansion of low-cost carriers. Indonesia experienced the highest passenger growth from 2009 to 2017 (Figure 4) of the six largest contributors of passengers in ASEAN countries (Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Viet Nam). These 'ASEAN6' quadrupled their total number of air passengers over the same period, mainly because of the expansion in the budget airlines market.

Figure 4: Air Passengers in ASEAN6, 2009–2017
(million)



ASEAN = Association of Southeast Asian Nations.

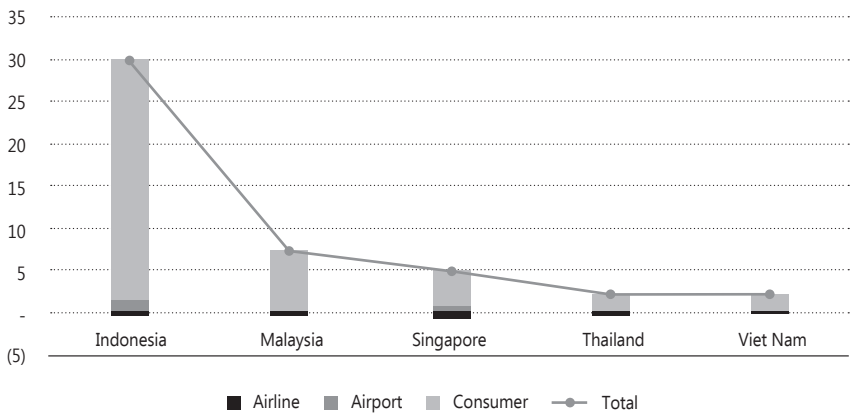
Note: The ASEAN6 countries are: Indonesia, Malaysia, Philippines, Singapore, Thailand, and Viet Nam.

Source: World Development Indicators. https://databank.worldbank.org/data/reports.aspx?source=2&series=IS.AIR.PSGR# (accessed 11 March 2019)

Passenger growth has exceeded increases in airport capacity. Indonesia has been building new airports and expanding existing airports to accommodate rapid air passenger growth, but capacity is still overstretched. Yogyakarta, for instance, must accommodate 7.8 million passengers annually through its 1.7 million passenger capacity airport.

The simulation of benefits gained from implementing the seventh freedom – applied to nine airlines and nine airports in five AMS – shows positive consumer and airport surpluses in all samples, but some decreasing profits for airlines (Figure 5).

Figure 5: Estimation of Surplus in Selected AMS Airlines and Airports from Implementation of the Seventh Freedom ($ million, estimated year: 2018)



( ) = negative, AMS = ASEAN Member States, ASEAN = Association of Southeast Asian Nations.
Source: Zen et al. (forthcoming).

The economic benefits mainly come from higher demand, additional frequency and extended routes, and a higher consumer surplus resulting from lower travel costs. As it happened in EU aviation market, liberalisation will reshape the airline markets. Full-service airlines will be more efficient if they focus on the network at one or a few central hubs. In Europe, full-service airlines used the liberalisation to increase third and fourth freedoms operations between their country of origin and other EU countries, and combined them into sixth freedom. By this, they can

maximise their network economies. There will be a consolidation on full-service airlines and expansion by budget airlines (Burghouwt et al., 2015). Thus, we expect that there will be some decreased profits experienced by full-service airlines given they have not changed the service patterns yet, but there will be higher consumer surplus and airport profits due to reduced airfare costs and increased air traffic..

Maintenance, repair, and overhaul (MRO) is also a lucrative industry. Several MRO corporations have established their hubs or centres in AMS in response to the region's growing market. In 2017, AFFIX KLM E&M and FL Technics strengthened their MRO operations in Indonesia. This type of business is typically carried out in cooperation with local companies such as GMF AeroAsia (Garuda Indonesia), the Philippines' Asian Aerospace Corporation, and SIA Engineering Company.

The realisation of a single aviation market has been slowed by lack of progress on regulatory advancement in the region. Progress on mutual recognition agreements (MRAs) is slow, and the fifth freedom is not fully implemented. At the same time, AMS need to align their regulatory capability and safety standards with the International Civil Aviation Organization (ICAO) safety-related Standards and Recommended Practices. The ICAO standards with their recommended practices could be interpreted and implemented in different ways across the countries. This hampers harmonisation of aviation standards in ASEAN.

The ICAO began the Universal Safety Oversight Audit Programme (USOAP) in 1999 to ensure the implementation of its Standards and Recommended Practices. The USOAP focuses on a country's capability to provide safety oversight by assessing whether it has effectively and consistently implemented the critical elements of a safety oversight system (ICAO, 2019). The system evolved into the USOAP Continuous Monitoring Approach to reduce the cost burden on the audited countries. The ICAO audits in 2016, 2017, and 2018 showed that some AMS fell below the target of 60% overall effective implementation, despite improvement over time.

If ASEAN had a regional oversight body to enforce ICAO standards (perhaps partially) – allowing a reduction of the ICAO audit process and cost sharing between members – the cost of audits might be reduced. A regional oversight body could also provide capacity building for AMS; support methods appropriate to each country's conditions (e.g. transfer of knowledge, systems, or technology under bilateral cooperation); and speed up the integration process.

ASEAN needs a champion to establish an ICAO regional office in order to speed up the harmonisation and standardisation process. Airline safety standards must not be compromised, as the impact could be substantial and harmful. The integration of the aviation market needs to be accelerated alongside the enforcement of security and safety standards.

The absence of community ownership (community airlines) hinders the transfer and efficient allocation of cross-border resources through cabotage barriers as well as control and ownership restrictions. Regional strategies have been developed but do not supersede national regulations.

To reap the full benefits of a single aviation market, ASEAN should move faster towards full implementation of the third, fourth, and fifth freedoms; and start the necessary steps to discuss and establish agreements on the seventh freedom. Some immediate actions include (i) establishing an ICAO regional body, (ii) expediting the MRA process on Flight Crew Licensing (currently only two countries have ratified the MRA), (iii) ratifying protocols 3 and 4 on the MAFLPAS and the Protocol to Implement the Tenth Package of Commitments on Air Transport Services Under the ASEAN Framework Agreement on Services, and (iv) exploring additional airports to be included in the open skies agreements (MAAS, MAFLAFS, and MAFLPAS) in parallel with the expansion in

airport capacity. Further relaxation of 'ownership and effective control' rules also merits serious consideration. Since the aviation market is growing vigorously, it demands a quick and adaptive response as well as anticipatory policy to embrace the dynamics. Amongst ASEAN single market sectors, the aviation and information and communication technology sectors may be the most dynamics, despite high economic potential.

IV. ASEAN Land Connectivity

This section will discuss land connectivity issues, focusing on continental ASEAN where most land borders amongst AMS are located. It will look at both rail and road connectivity.

A. ASEAN Rail Connectivity

The railway system in continental ASEAN is not connected despite concrete plans to develop the Singapore–Kunming rail link (Asian Development Bank, 2010). Table 3 describes existing and new requirements for the railway construction in the missing sector/ routes and spur lines along the Singapore–Kunming Rail Link (SKRL) network. To complete the SKRL network, new railway construction will be required in Cambodia, the Lao PDR, Myanmar, and Viet Nam, with further rehabilitation in Thailand and China. The maximum length of new construction is required in the least developed country, the Lao PDR. The railway development discussed in this section does not consider the Chinese high-speed train project, which is not part of the SKRL.

Table 3: Construction Requirements in Missing Routes and Spur Line as per SKRL

Country	Missing sector/route and spur line	Existing (km)	New construction (km)
Lao PDR	Vientiane–Thakhek–Mu Gia (No 1 in triangle on the map)	-	466
Viet Nam	Mu Gia–Tan Ap–Vung Anh (No 2 in triangle on the map)	6	119
Cambodia	Poipet (Thai border)–Sisophon (No 1 on the map)	-	48
Cambodia	Phnom Penh–Loc Ninh (Viet Nam border) (No 2 on the map)	32	254
Viet Nam	Loc Ninh (border)–Ho Chi Minh City (No 3 and No 4 on the map)	20	129
Myanmar	Thanbyuzayat–Three Pagodas Pass (No 5 on the map)	-	110
Thailand	Three Pagodas Pass–Nam Tok (No 6 on the map)	-	153

km = kilometre, Lao PDR = Lao People's Democratic Republic, SKRL = Singapore–Kunming Rail Link.

Source: Adapted from ASEAN Connectivity Project Information Sheets (ASEAN Secretariat, 2012).

Rail logistics are complex as they require the management of capacity, schedule, shipment characteristics, origin, and destination. Table 4 describes the rail situation in continental ASEAN.

Table 4: Continental ASEAN Rail Matrix

Components	Cambodia	Lao PDR	Myanmar	Thailand	Viet Nam
Standard gauge	No	No	No	No	Planned
Double track	No	No	Yes	Limited	No
Dedicated track for freight services	No	No	No	No	Planned
Centralised train control	No	No	Planned	Limited	Limited
Electrified lines	No	No	No	Planned	Planned
Heavy load wagons	No	No	No	No	No
Long train (over 60 TEUs)	No	No	No	No	No
Modern locomotives	No	Limited	Yes	Planned	Limited
Unit container train operations	No	Planned	No	Yes	Yes
24 freight terminal operations	No	Planned	Yes	Yes	Limited

Components	Cambodia	Lao PDR	Myanmar	Thailand	Viet Nam
Privately owned rail wagons	Planned	Planned	Limited	Planned	No
Private freight train operations	Planned	Planned	No	Planned	Limited

ASEAN = Association of Southeast Asian Nations, Lao PDR = Lao People's Democratic Republic, TEU = twenty-foot equivalent unit.

Source: Adapted from Banomyong (2013).

The ASEAN rail freight system is characterised by the following issues:

(i) Access charges are higher than direct road transport. To use rail transport, goods usually have to be transported by road to rail terminals for intermodal transfers –increasing access charges to rail transport.
(ii) The lack of international routes (almost none) leads to excessive transit times and poor service quality.
(iii) Priority is not given to timetables, resulting in poor reliability.

Apart from physical constraints, ASEAN railways generally need to be more customer-oriented, particularly in terms of pricing flexibility and contract arrangements, amongst others. Efforts to improve and integrate the ASEAN rail network need to be based on long-term support, as the network capability is currently constrained by limited infrastructure and lack of management capability. Completion of the missing links in the SKRL are still significantly behind schedule, as illustrated in Figure 6.

Figure 6: SKRL Route Network

SKRL = Singapore–Kunming Rail Link.

Source: ASEAN Secretariat (2012).

B. ASEAN Road Connectivity

Road is the dominant mode of transport in continental ASEAN, but its management and operation need to be harmonised and standardised. The challenge is that road infrastructure in Cambodia, the Lao PDR, Myanmar, and Viet Nam lags behind that of Thailand and Malaysia. Multi-lane dual carriageway only exists in Viet Nam, while limited access highways are non-existent in Cambodia, the Lao PDR, and Myanmar. Both Myanmar and Viet Nam have toll roads and ring roads around

major cities, as urban congestion has hindered the efficient flow of goods carried by trucks, especially during peak hours. This is also the reason behind the implementation of total or partial truck bans in many AMS. Table 5 describes road transportation issues in continental ASEAN.

Table 5: Continental ASEAN Road Transport Matrix

Components	Cambodia	Lao PDR	Myanmar	Thailand	Viet Nam
Multi-lane dual carriageway	No	Planned	No	Yes	Yes
Limited access highway	No	Planned	No	Partial	No
Toll road	Limited	Planned	Yes	Yes	Yes
Ring road – capital	Limited	Planned	Yes	Yes	Limited
Ring road –major cities	Limited	Planned	Yes	Yes	Limited
Partial truck ban	Limited	Planned	Yes	Yes	Yes
Control – axle load limit	Partial	Yes	Yes	Partial	Planned
Limit enforced by police	Partial	Planned	No	Partial	No
Articulated trucks	Yes	Limited	Yes	Yes	Yes
Modern commercial trucks	Limited	Planned	Yes	Yes	Yes
Road- worthiness certificate	Partial	Limited	Yes	Yes	Planned
Pollution control	No	Planned	Yes	Yes	Yes
Test failed but still on road	Partial	Yes	Yes	Yes	Yes

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

Source: Adapted from Banomyong (2013).

Overloading of cargo is another issue that many ASEAN countries face. Axle load limits are in place but enforcement is often lacking. In terms of compliance, a roadworthiness certificate is theoretically required in most ASEAN countries, but enforcement is again often lacking. The same applies to pollution control. Substandard trucking is a general problem in ASEAN, as well as insufficient equipment for container transport, and constitutes a formidable barrier to the widespread introduction of door-to-door multimodal movement of containers.

ASEAN countries are characterised by a lack of enforcement capability with regard to road rules and regulations. This observation needs to be interpreted with great care, however, as these cases usually occur on separate circumstances. Nevertheless, low enforced road rules and regulations appear to have important implications for sector competitiveness and sustainable development.

V. ASEAN Single Shipping Market

Cooperation between AMS on a single shipping market and logistics began in the 1990s. The Transport Action Agenda and Successor Plans of Action, 1996–1998 were concluded at the first ASEAN Transport Meeting (ATM) in 1996, followed by the Transport Action Agenda and Successor Plans of Action, 1999–2004. Since then, cooperation and integration of the ASEAN transport sector have been guided by a series of consecutive sectoral plans of action: the ASEAN Transport Action Plan, 2005–2010; the ASEAN Strategic Transport Plan, 2011–2015; and the ASEAN Transport Strategic Plan, 2016–2025 (KLTSP) (ASEAN Secretariat, 2017).

Under the KLTSP, four working groups were created by the Fifth ATM: (i) the ASEAN Air Transport Working Group, (ii) the ASEAN Land Transport Working Group, (iii) the ASEAN Maritime Transport Working Group, and (iv) the ASEAN Transport Facilitation Working Group. These groups coordinate and implement the decisions of the ASEAN Senior Transport Officials Meeting. Together with the ASAM, the ASSM was stated in the Master Plan on ASEAN Connectivity, 2010–2015; and its implementation framework was endorsed by the 20th ATM meeting in Myanmar in 2014.

The KLTSP provides seven goals and related actions for maritime transport for 2016–2025:

1. Realise the ASSM through the implementation of the agreed strategies and measures.[6]
2. Realise the roll-on roll-off shipping network operation in ASEAN.
3. Develop an efficient and integrated inland waterway transport network.
4. Enhance the navigation system and security measures in line with international standards.
5. Formulate necessary policy initiatives and recommendations to develop strategic maritime transport logistics between ASEAN and its Dialogue Partners.
6. Intensify regional cooperation in improving transport safety.
7. Strengthen ASEAN search and rescue cooperation to ensure effective and coordinated aeronautical and maritime search and rescue operations in the region.

AMS have worked towards ensuring that the 47 designated ports meet acceptable performance and capacity levels (part of strategy 1, see footnote (vi)), but recognise the need to enhance the implementation. The KLTSP also agrees to adopt relevant International Maritime Organisations (IMO) conventions on the navigation system and security measures, even though the ratification has not yet been fully done. Key IMO conventions – including the International Convention for the Safety of Life at Sea (SOLAS, including the 1996 amendment); the International Convention for the Prevention of Pollution from Ships (MARPOL, including the 1997 amendment); and the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW, including the 1995 amendment) – have not yet been fully ratified by AMS. No AMS have ratified the SOLAS 1996 or the STCW 1995; and only half of the AMS have ratified the MARPOL 1995. This should become a high action priority for AMS to realise the ASSM.

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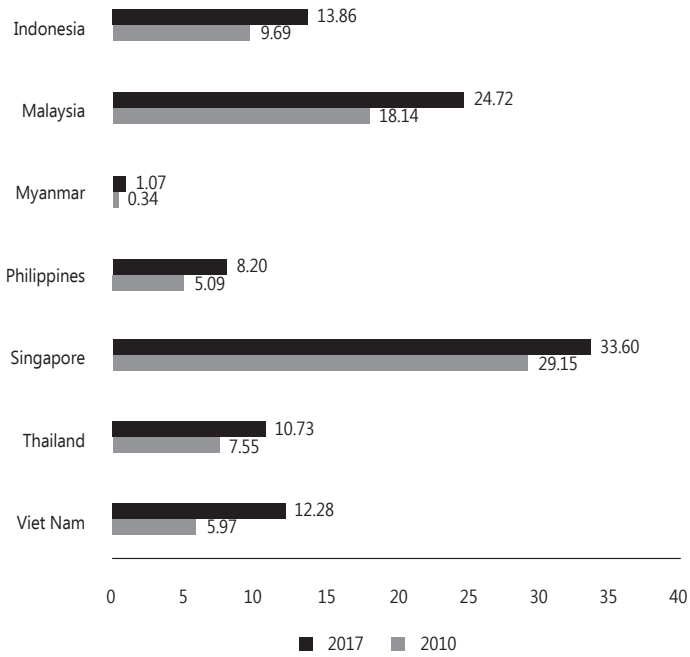
[6] The list of strategies is: (i) develop and monitor the key performance indicator on port efficiency; (ii) conduct a pilot project on the operationalisation of the ASSM, including in-depth cost and benefit studies; (iii) identify a mechanism to mutually recognise the certificates of competency for near coastal voyages issued by AMS; (iv) enhance the implementation of Electronic Data Interchange in ASEAN ports; (v) establish a national coordinating body, where applicable, to oversee the port and land transport infrastructure development, and work on a national master plan for port and land transport development for better port access; (vi) enhance the capacity of the 47 designated ports; (vii) improve the reliability of the technical standards of ASEAN ports; and (viii) establish cruise corridors.

The shipping market in the ASEAN region has been growing continuously. Several ports in Indonesia, Malaysia, Myanmar, Singapore, Thailand, and Viet Nam have been developed and expanded. This has created more opportunities to cooperate by unleashing the potential of domestic and regional markets. The two largest archipelagic economies in the region – Indonesia and the Philippines – have strong but underdeveloped maritime potential. From 2010 to 2017, the region's container throughput grew by 42%, outpacing global throughput growth of 34% (UNCTADstat). Figure 7 shows the increased throughput in selected AMS, with Myanmar, Viet Nam, and the Philippines as significant achievers in terms of percentage change. Myanmar grew by 219%, Viet Nam by 106%, and the Philippines by 61%, while Indonesia increased by 43% and Thailand by 42%.

Figure 7: Container Throughput in Selected AMS, 2010 and 2017 (million TEU)



AMS = ASEAN Member States, ASEAN = Association of Southeast Asian Nations, TEU = twenty-foot equivalent unit.

Source: UNCTADstat (2018). International trade in goods and services. Geneva: United Nations Conference on Trade and Development. https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx (accessed 26 February 2019).

Indonesia, as the largest economy in Southeast Asia with more than 17,000 islands, has not fully utilised its maritime potential. This is depicted in Table 6, as the liner index indicates a country's integration level into global liner shipping networks.

Table 6: Liner Shipping Connectivity Index in Selected AMS

Country	2010	2018
Indonesia	25.60	47.76
Malaysia	88.14	109.86
Myanmar	3.68	9.29
Philippines	15.19	28.98
Singapore	103.76	133.92
Thailand	43.76	47.95
Viet Nam	31.36	68.82

AMS = ASEAN Member State, ASEAN = Association of Southeast Asian Nations.

Source: UNCTADstat (2018), International Trade in Goods and Services. Geneva: United Nations Conference on Trade and Development. https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx (accessed 26 February 2019).

Underdeveloped maritime economies in some AMS have significant scope to maximise their potential and support deeper intra- and extra-ASEAN connectivity. The ASEAN economic community envisages ASEAN as a single market and production base. Manufacturing is the key element in ASEAN production networks that also connects the region with the global value chain. The expansion in manufacturing will drive demand for shipping.[7] PwC predicts that major ports in Malaysia, Indonesia, the Philippines, and Viet Nam will outpace other ASEAN ports in their throughput growth (Wijeratne, Tripathi, and Sircar, 2018).

Connectivity with the hinterland is important in determining the success of the logistics system. However, this issue – along with cabotage restrictions and unbalanced flows of goods – has yet to be resolved. The unbalanced flow of goods (between the east–west, north–south,

[7] Exporters with 1% lower shipping costs will enjoy a 5%–8% higher market share (Hummels, 1999).

and southern corridors) has caused a long-term uneven distribution of the population and centres of growth. The trend in the world shipping market is towards bigger fleets and fewer players. In general, liner shipping connectivity with countries outside ASEAN is stronger than within ASEAN. Indonesia, Malaysia, Singapore, and Thailand have a moderate to strong liner shipping bilateral connectivity index with one another. Stronger shipping bilateral connectivity occurs between Malaysia and Singapore and between them and non-AMS – especially East Asian economies (China, Hong Kong, India, Japan, and the Republic of Korea (henceforth Korea)); several European Union member states; the United Arab Emirates; the United Kingdom; and the United States. Other ports (Indonesia, the Philippines, and Thailand) have weak connectivity with the rest of the world, except Singapore, which is the main regional hub (UNCTADstat, 2018).[8]

This means that Southeast Asia may need a deeper and larger regional shipping market which uses midsized fleets to distribute and feed large vessels in regional ports. Currently, Singapore port and Kelang and Tanjung Pelepas ports in Malaysia are the biggest players in Southeast Asia. Additional ports such as Kuala Tanjung port in North Sumatra could also become important regional ports. Other ports in the Philippines and eastern Indonesia could become secondary hubs. India and Southeast Asia could enhance the maritime trade route by connecting ports in the Bay of Bengal and Sabang. To ease excessive traffic in the Strait of Malacca, a new route along the east coast of Sumatra could be explored as an alternative between India and Java; and could be expanded to central and eastern Indonesia and the Philippines. Together with the expansion of the regional shipping market, ASEAN must improve its hinterland connectivity and related elements such as distribution centres, cold storage, and gateways, to provide a seamless logistics system.

[8] The authors assume that a connectivity index higher than 0.5 is strong.

VI. ASEAN Logistics System

The system to operate the transport infrastructure is equally important in relation to connectivity. In the KLTSP, the logistics system was guided under three areas: (i) maritime transport, (ii) sustainable transport, and (iii) transport facilitation. The three goals are (i) developing strategic maritime transport logistics between ASEAN and its Dialogue Partners, (ii) developing a framework for green and efficient freight and logistics, and (iii) building skills and capacity in logistics and supply chain management for logistics service providers.

In 2007 AMS endorsed the Roadmap for the Integration of Logistics Services, which aims to liberalise maritime logistics services,[9] enhance competitiveness and expand the capability of ASEAN logistics service providers, improve human resources capability, and enhance multimodal transport infrastructure and investment. To enhance the competitiveness of the logistics system, the region must ensure a seamless process of multimodal transport and transport facilitation. Agreements related to this effort are: (i) the ASEAN Framework Agreement on the Facilitation of Goods in Transit in 1998; (ii) the ASEAN Framework Agreement on Multimodal Transport in 2005; (iii) the ASEAN Framework Agreement on the Facilitation of Inter-State Transport in 2009; and (iv) the ASEAN Framework Agreement on the Facilitation of Cross Border Transport of Passengers by Road Vehicles in 2017.

The first three agreements are for goods and the fourth is for facilitating the movement of people across borders. The implementation of multimodal transport, as agreed in the ASEAN Framework Agreement on Multimodal Transport, will minimise time loss at trans-shipment points, simplify administrative procedures, and result in cost savings and a more competitive logistics system. According to United Nations Global Survey on Trade Facilitation and Paperless Trade Implementation, the implementation rate of trade facilitation varies across AMS, especially on

[9] These include cargo handling, storage and warehousing, freight transport agency, courier, packaging, customs clearance, international freight transportation (excluding cabotage), and international road and rail freight transport services.

transparency,[10] formalities,[11] institutional arrangements and cooperation, paperless trade, and cross-border paperless trade (ESCAP, 2017).

The abovementioned UN Global Survey on trade facilitation measures showed that 'transparency', 'formalities', and 'institutional arrangement and cooperation' highly influence the realisation of multimodal transportation, whereas 'paperless trade' and 'cross-border paperless trade' measures affect more the speed, cost, and efficiency of logistics systems. If ASEAN wants to have a competitive logistics system, it must increase the implementation of those four trade facilitation measures. Additional suggestions include harmonising tax codes; providing support for multimodal transport operators in all member states (sufficient infrastructure, integrated service, and a legal framework);[12] establishing an institutionalised ASEAN public–private dialogue mechanism in the logistics sector (to facilitate dissemination, feedback from the private sector, adjustments, and implementation); and developing a cross-border framework for integrated e-commerce and logistics system (the success of e-commerce is influenced by logistics systems). In this context, it is crucial to develop a reliable, adequate, and efficient chain system, including warehouses, cold storage, distribution centres, and gateways.

VII. Turning Challenges into Opportunities: Seamless Connectivity

Evidence-based research and simulations indicate significant economic benefits of deeper ASEAN connectivity. This requires significant work to realise the vision and enjoy its full benefits. The above-mentioned challenges must be addressed individually and collectively, according to each domain. Apart from developing and expanding physical infrastructure to meet increasing demand and to support the logistics market, it is imperative to improve the performance of trade facilitation,

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10 This relates to Articles 1–5 of the World Trade Organization Trade Facilitation Agreement; and Article X of the General Agreement on Tariffs and Trade on the Publication and Administration of Trade Regulations.

11 This relates to Articles 6–10 of the World Trade Organization Trade Facilitation Agreement; and Article VIII of the General Agreement on Tariffs and Trade on the Fees and Formalities connected with Importation and Exportation.

12 Limao and Venables (2001) estimated that differences in infrastructure quality account for 40% of the variation in transport costs for coastal countries and up to 60% for landlocked countries.

customs, and standards. This includes institutional development to monitor standards, improve regional systems, and provide feedback for the evaluation process.

The ASAM should aim for the seventh freedom in 2040, which allows traffic between the territory of the granting state and any third state with no requirement to include on such operation any point in the territory of the recipient state. This allows optimal use of regional resources, since it facilitates increased geographical coverage for all regional airlines. The recognition of community airlines will also produce greater benefits. The community airlines can take advantage of their position as regional airlines to make agreements with other countries or regions. The recognition also abolishes ownership restrictions for community carriers (Tan, 2017:6). The market for trade and tourism would be enlarged and airlines could operate more efficiently.

Rail connectivity in ASEAN is still a challenge because of limited regional infrastructure linkages. If ASEAN is serious about promoting rail connectivity, it is necessary to align regional and national rail development priorities to enable physical rail linkages through the disbursement of adequate national budget. If this is not done, railway connectivity in ASEAN will be dependent upon Chinese-led rail development projects which may serve the interests of China more than those of ASEAN.

Road connectivity has improved significantly, despite discrepancies in road quality and capacity. The biggest drawback to road connectivity are land border crossings, which need to be improved – especially regarding procedures to improve cross-border transport, as the main ASEAN transport facilitation agreements still have not been enforced in AMS. It is time to rethink the cross-border transport system to establish truly seamless transport between AMS. This could be done with the provision of integrated border management, which will facilitate the movement of vehicles from one AMS to another with full harmonisation of technical requirements and documentation.

Relaxing cabotage, even partially, would improve maritime connectivity by opening the market, increasing economies of scale, and raising competitiveness. Careful implementation of partial cabotage could be applied to existing subregional cooperation such as BIMP–EAGA. Subregional maritime markets will be connected to regional hubs such as Singapore and Malaysia, as well as Indonesia. Connectivity with non-AMS Asian hubs (China, Hong Kong, India, Japan, and Korea) is equally important. Potential new routes could be explored, e.g. between south India (Visakhapatnam or Paradip ports) and west Indonesia (Sabang port in Aceh) via the Indian Ocean; and extended to Jakarta or Surabaya and then to the BIMP–EAGA area. This type of route could ease congestion in the Strait of Malacca.

Additionally, as proposed for the ASAM, establishing a regional body for maritime connectivity merits consideration. Such an institution could become an arm of the IMO in ASEAN, providing a regular forum for knowledge exchange, capacity building, certification, simple audits, and support for accelerating the ratification process. As a regional institution, it would have strong credibility and funding, as well as knowledge accumulation. This would make it attractive for international dialogue partners to support.

Other crucial actions to realise a seamless transport and logistics market include:

- An agreement on standards related to economic measures and the transport sector, commitments to obtaining and sharing data, and knowledge sharing to support regional development.
- Considering the regional market integration plan as one of the determinants of national planning to tap opportunities, secure long-term regional projects, and identify all types of cooperation for synergy.
- Agreeing on progressive technology platforms while securing the standards for consumer protection, efficient rules, and cybersecurity. This is particularly important to support general trade, e-commerce, and the logistics system.
- Promoting public engagement during the planning and development process to ensure that the results will benefit the public.

References

ASEAN Secretariat (2017), ASEAN Transport Development. Jakarta. Indonesia.

ASEAN Secretariat (2012), ASEAN Connectivity Project Information Sheets. Edited by The ASEAN Secretariat. Jakarta.

Asian Development Bank (2010), *Connecting Greater Mekong Subregion Railways: A Strategic Framework*. Manila: Asian Development Bank.

Banomyong, R. (2013), 'The Greater Mekong Sub-region of Southeast Asia: Improving Logistics Connectivity', in J. Bookbinder (ed.) *Handbook of Global Logistics*, International Series in Operations Research and Management Science, Vol. 181. New York, NY: Springer, pp.69–96.

Burghouwt G., P. Mendes de Leon, and J. de Wit (2015), 'EU Air Transport Liberalisation: Process, impacts and future considerations', Discussion Paper No. 2015-04, International Transport Forum, OECD.

ERIA (2010), *The Comprehensive Asia Development Plan*, ERIA Research Project Report 2009, No.7-1. Jakarta: ERIA.

ERIA (2015), *The Comprehensive Asia Development Plan 2.0 (CADP 2.0): Infrastructure for Connectivity and Innovation*. Jakarta: ERIA.

ESCAP (2017), *Trade Facilitation and Paperless Trade Implementation in ASEAN: Regional Report 2017*. Bangkok: United Nations ESCAP.

Hummels, D. (1999), *Toward a Geography of Trade Costs*. National Bureau of Economic Research. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=160533

ICAO (2019), USOAP Continuous Monitoring Approach. https://www.icao.int/safety/cmaforum/Pages/default.aspx (accessed 28 February 2019).

Isono, I. (2018), 'The High-speed Railway (HSR) Service, The Eastern Economic Corridor's Development, and Thailand: A Geographical Simulation Analysis', in D. Hiratsuka (ed.) *High-Speed Railway, the EEC, and the Change of the Landscape of Thailand and its Neighboring Countries*, Bangkok Research Center (BRC) Report No. 20. Bangkok: BRC, Japan External Trade Organization (JETRO)/IDE–JETRO, pp.19–35.

Itakura, K. (2013), 'Impact of Liberalization and Improved Connectivity and Facilitation in ASEAN for the ASEAN Economic Community', *ERIA Discussion Paper Series*. ERIA-DP-2013-01. Jakarta: ERIA.

Keola S. and S. Kumagai (forthcoming), 'A Geographical Simulation Analysis of Impacts of Vientiane–Hanoi Expressway'.

Kumagai, S., I. Isono, and K. Hayakawa (2018), 'Economic Impacts of High-Speed Rail between Kuala Lumpur and Singapore: An Application of IDE–GSM', *Discussion Papers*, No. 700. Chiba: IDE–JETRO.

Kumagai, S., K. Hayakawa, I. Isono, S. Keola, and K. Tsubota (2013), 'Geographical Simulation Analysis for Logistics Enhancement in Asia', *Economic Modelling*, 34, pp.145–53.

Limao, N. and A.J. Venables (2001), 'Infrastructure, Geographical Disadvantage, Transport Costs, and Trade (English)', *The World Bank Economic Review*, 15(3), pp.451–79.

Stone, S., A. Strutt, and T. Hertel (2012), 'Socio-Economic Impact of Regional Transport Infrastructure in the Greater Mekong Subregion', in B. Bhattacharyay, M. Kawai, and R. Nag (eds.) *Infrastructure for ASEAN Connectivity*. Cheltenham, UK and Northampton, MA: Edward Elgar Publishing, pp.95–138.

Tan, A.K. (2017), 'Ownership and Control of Airlines in Southeast Asia: Prospect for an ASEAN Community Carrier'. *Brief IDEAS*, No. 8. Kuala Lumpur: Institute for Democracy and Economic Affairs (IDEAS).

UNCTADstat, Liner Shipping Bilateral Connectivity Index, Annual (2018). Geneva: United Nations Conference on Trade and Development. http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=96618 (accessed 23 October 2018).

Wijeratne, D., S. Tripathi, and S. Sircar (2018), *The Future of ASEAN – Time to Act*. Singapore: PwC Growth Markets Centre.

World Customs Organization (2008), *International Convention on the Simplification and Harmonization of Customs Procedures (as Amended)*. Brussels: World Customs Organization.

World Trade Organization (2014), 'Protocol Amending the Marrakesh Agreement Establishing the World Trade Organization'. Geneva: World Trade Organization.

Zen, F. et al. (forthcoming), 'Towards ASEAN Single Aviation Market'. Jakarta: ERIA.