Chapter 4

The Assessment of Industrialisation and Urbanisation

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Chapter 4
The Assessment of Industrialisation and Urbanisation

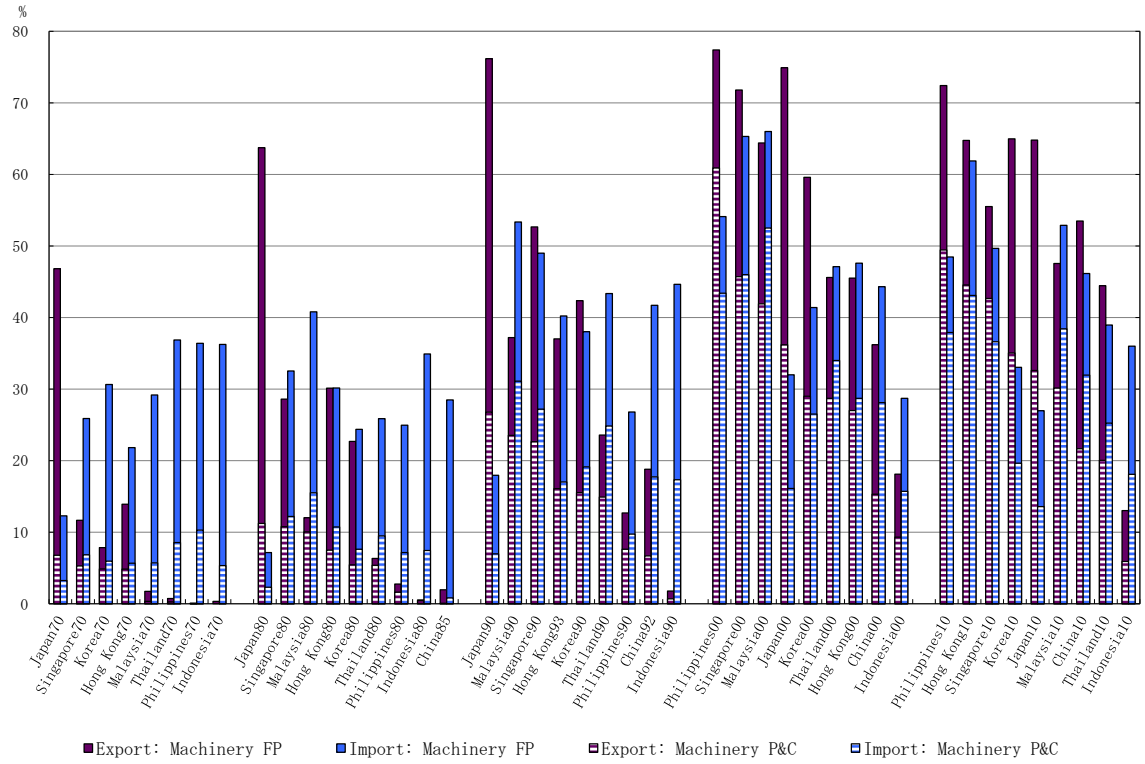
4-1. Positioning of ASEAN and East Asia in the Global Setting

ASEAN and East Asia have continuously led the development of international production networks, particularly in the machinery industries. Figure 4.1.1 presents shares of machinery trade, parts and components, as well as finished products, in total exports and imports in each country to show the evolution of machinery trade from 1970 to 2010. In 1970, most of machinery trade was for finished products, and Japan was the only net exporter in the region. In 1980, Singapore and Malaysia showed signs of export processing zone operations though export and import of machinery parts and components still had small shares. In 1990, we can see distinct changes from the first to the second unbundling. Malaysia and Singapore started both exporting and importing machinery parts and components in a massive manner. Hong Kong, Korea, and Thailand followed the similar transition. In 2000 and 2010, active production networks were developed with the Philippines and China added to the group of full-fledged second unbundling.

Figure 4.1.2 presents the total exports and imports of machinery parts and components and finished products in 1996 and 2011 by region. There are now three production centres of machinery industries in the world: East Asia that includes ASEAN+6, Europe, and North America. Among the three, East Asia is the largest. Indeed, particularly in electric machinery, East Asia exports parts and components to Europe and North America, indicating that production networks have extended to the whole world. On the other hand, the automobile industry tends to form agglomerations in each region or in a smaller area while international production networks support the formation of industrial agglomerations.[8]

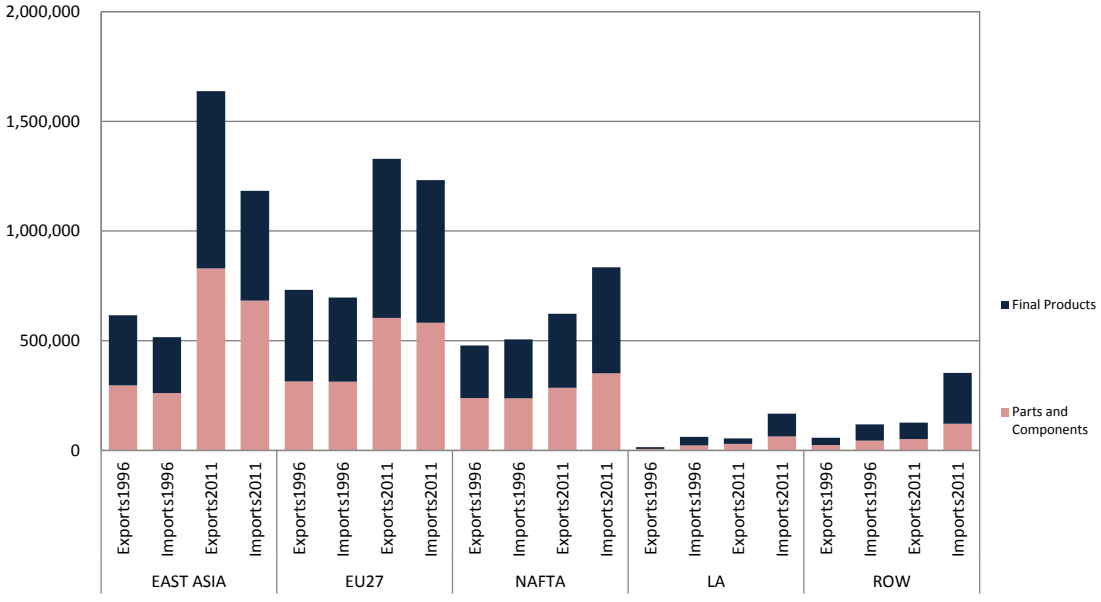
[8] Chang and Kimura (2015) provide the global picture of machinery production networks. Ando and Kimura (2013, 2014) conduct in-depth analyses on the relationship between Europe/North America and East Asia.

Figure 4.1.1. Shares of Machinery in the Total Exports/Imports to/from the World: 1970–2010



Note: The data for 1970 and 1980 and those after 1990 are based on SITC and HS commodity classification, respectively. Note that exports/imports of machinery parts and components based on SITC are understated by about one-fifth compared with those based on HS
Source: Kimura and Ando (forthcoming).

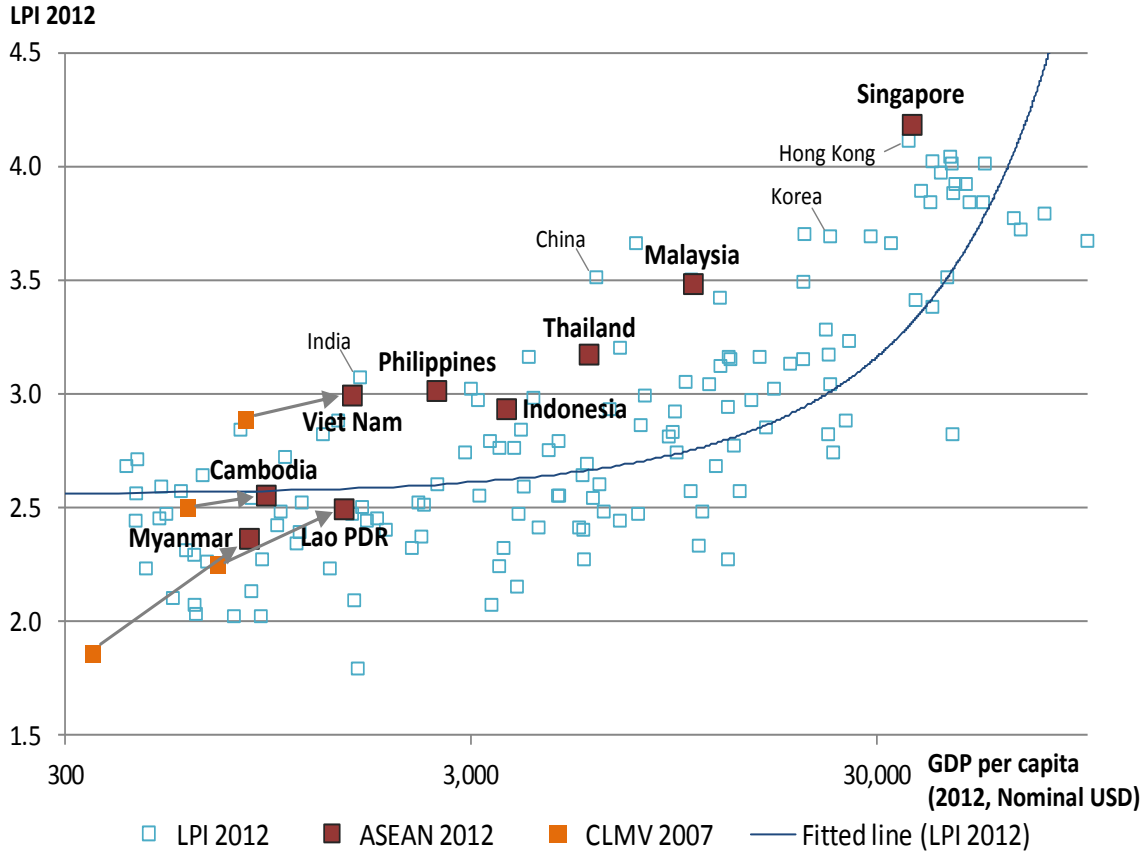
Figure 4.1.2. Machinery Exports and Imports by Region (US$ million)



Source: Chang and Kimura (2015).

East Asia's success in extending international production networks is at least partially due to the reduction in service link costs. The effort of economic integration as well as logistics infrastructure development obviously works well. Figure 4.1.3 plots the logistics performance index and GDP per capita for a number of countries in the world. Logistics performance in ASEAN and East Asian countries is relatively good compared with countries with similar per capita income though Cambodia, Lao PDR, and Myanmar are still at world average.

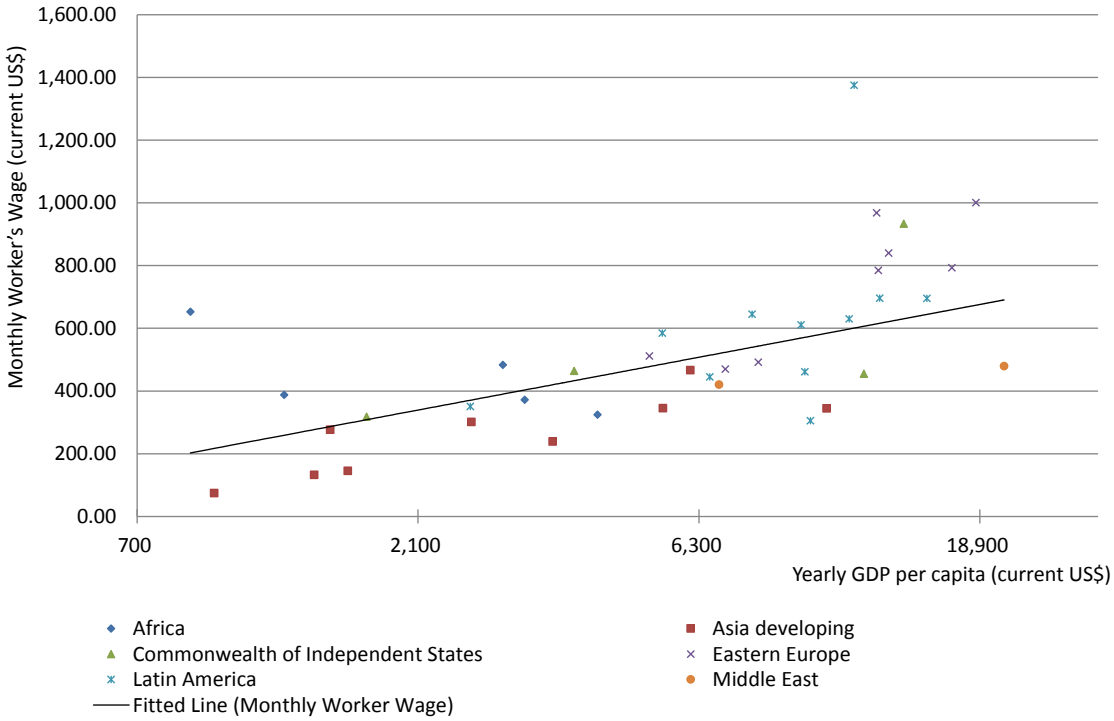
Figure 4.1.3. The Logistics Performance Index and GDP Per Capita



Note: LPI = logistics performance index, CLMV = Cambodia, Lao PDR, Myanmar, Viet Nam.
Source: ERIA (2010), updated. LPI is from the World Bank Website.

The competitiveness of the manufacturing sector is based on relatively smooth labour movements from the rural/agriculture/informal sector to the urban/manufacturing/formal sector. Figure 4.1.4 plots workers' wages in major cities and GDP per capita. Workers' wages are relatively low compared with countries in the rest of the world at similar income levels.

Figure 4.1.4. Monthly Worker's Wages and Yearly GDP Per Capita



Source: Chang and Kimura (2015). Data are from JETRO and the World Bank Database.

4-2. The Frontier of Production Networks

Let us assess in more detail the degree of participation of ASEAN Member States in international production networks in the recent period.

Figure 4.2.1 presents machinery shares in total exports/imports of manufactured goods to/from the world in 2007 and 2013 for East Asian countries and some other countries in Eastern Europe and Latin America. Different from Figure 4.1.1, we use manufactured goods exports and imports in the denominator in order to remove the influence of primary products trade. Countries are placed from the left in the order of the export shares of machinery parts and components.

Figure 4.2.1. Shares of Machinery in the Total Exports/Imports of Manufactured Goods to/from the World (2007)

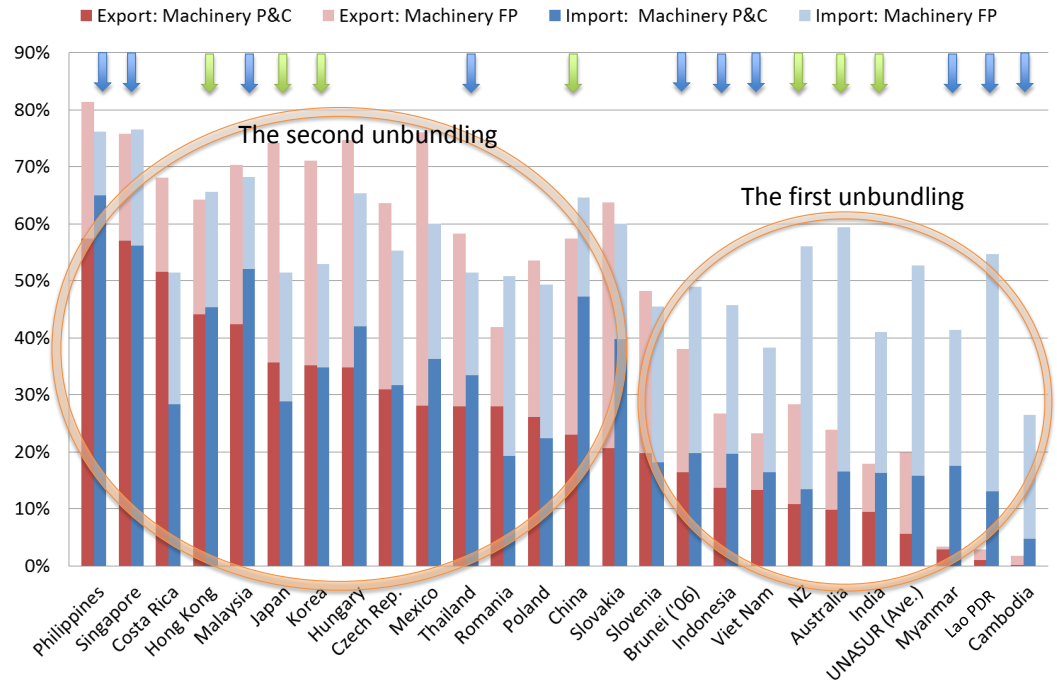
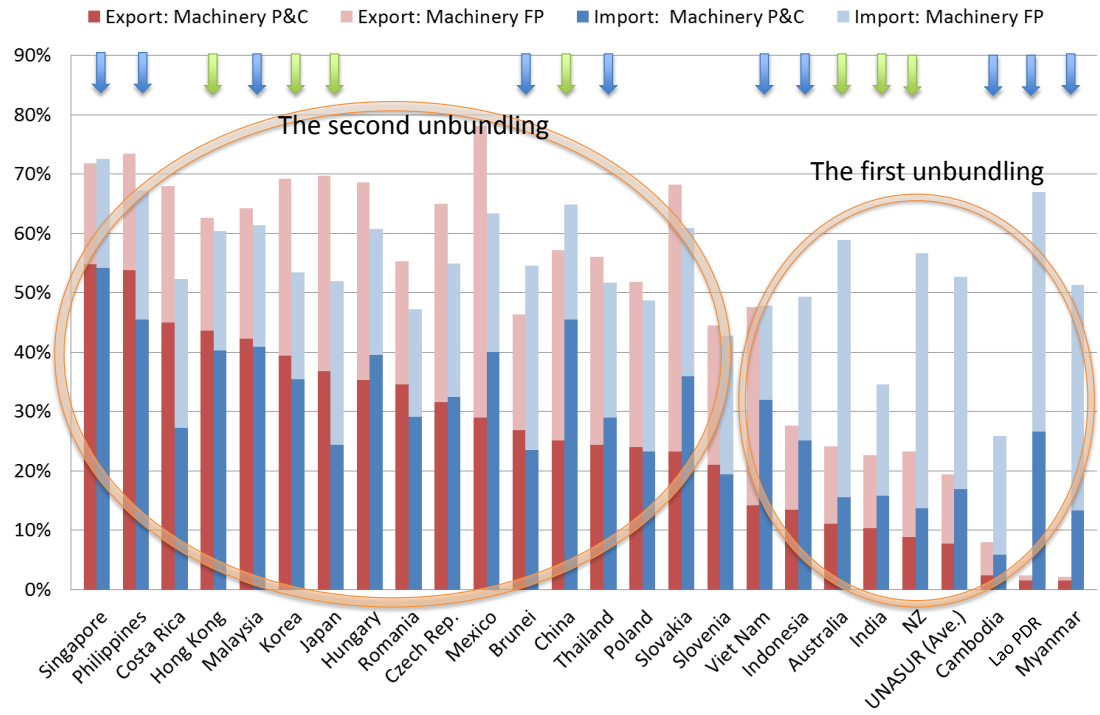


Figure 4.2.1. (*cont.*) Shares of Machinery in the Total Exports/Imports of Manufactured Goods to/from the World (2013)

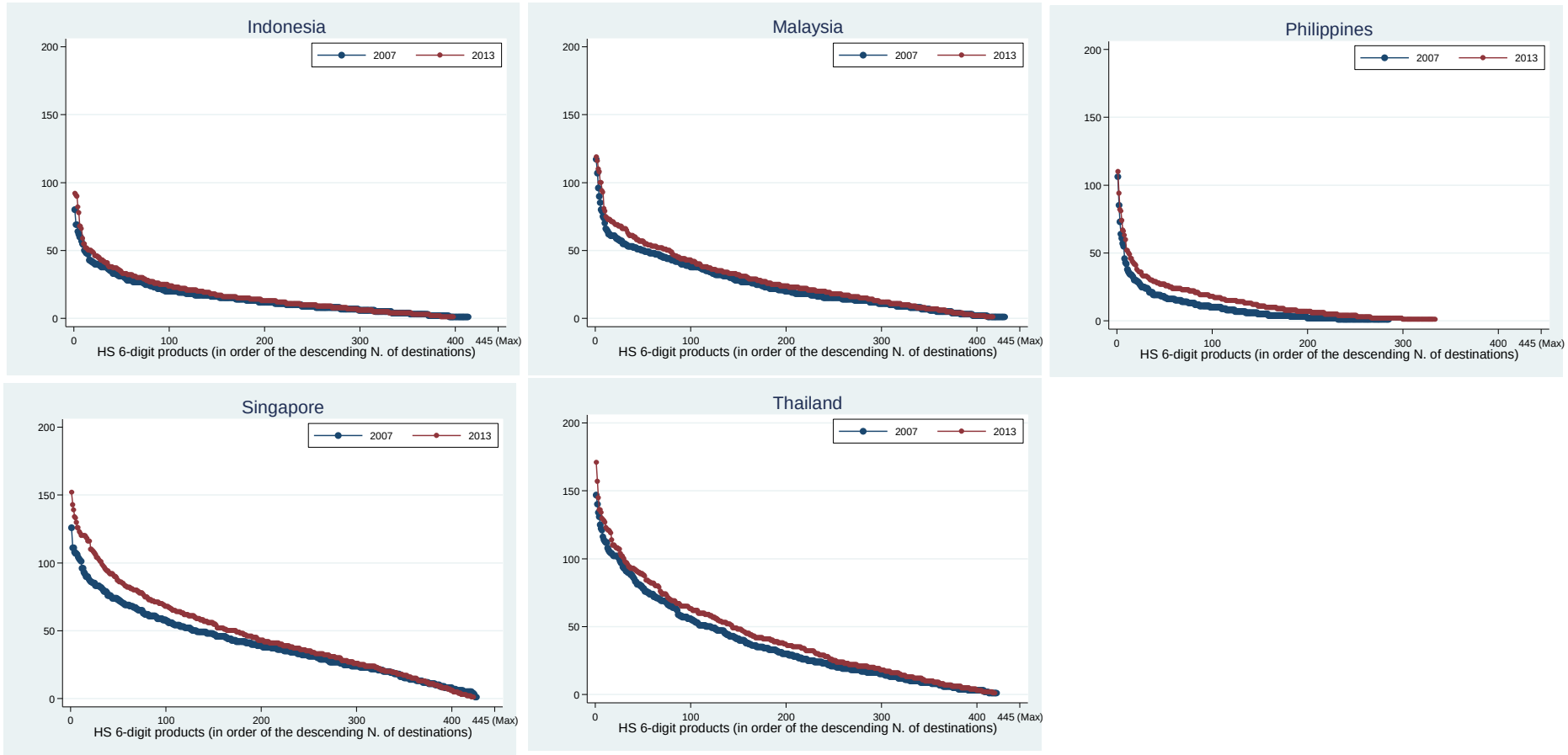


Source: Obashi and Kimura (2015).

The figure shows that Singapore, Malaysia, and the Philippines are continuously leading in fragmented production in ASEAN. Indonesia does not increase the parts and components share on the export side though its share on the import side goes up. Viet Nam has an increasing share of exports of machinery final products and an enhancing share of machinery parts and components imports. Cambodia seems to have started participating in production networks. Lao PDR expands parts and components imports. Overall, the latecomers seem to start coming into production networks though the degree of participation is still low in 2013.

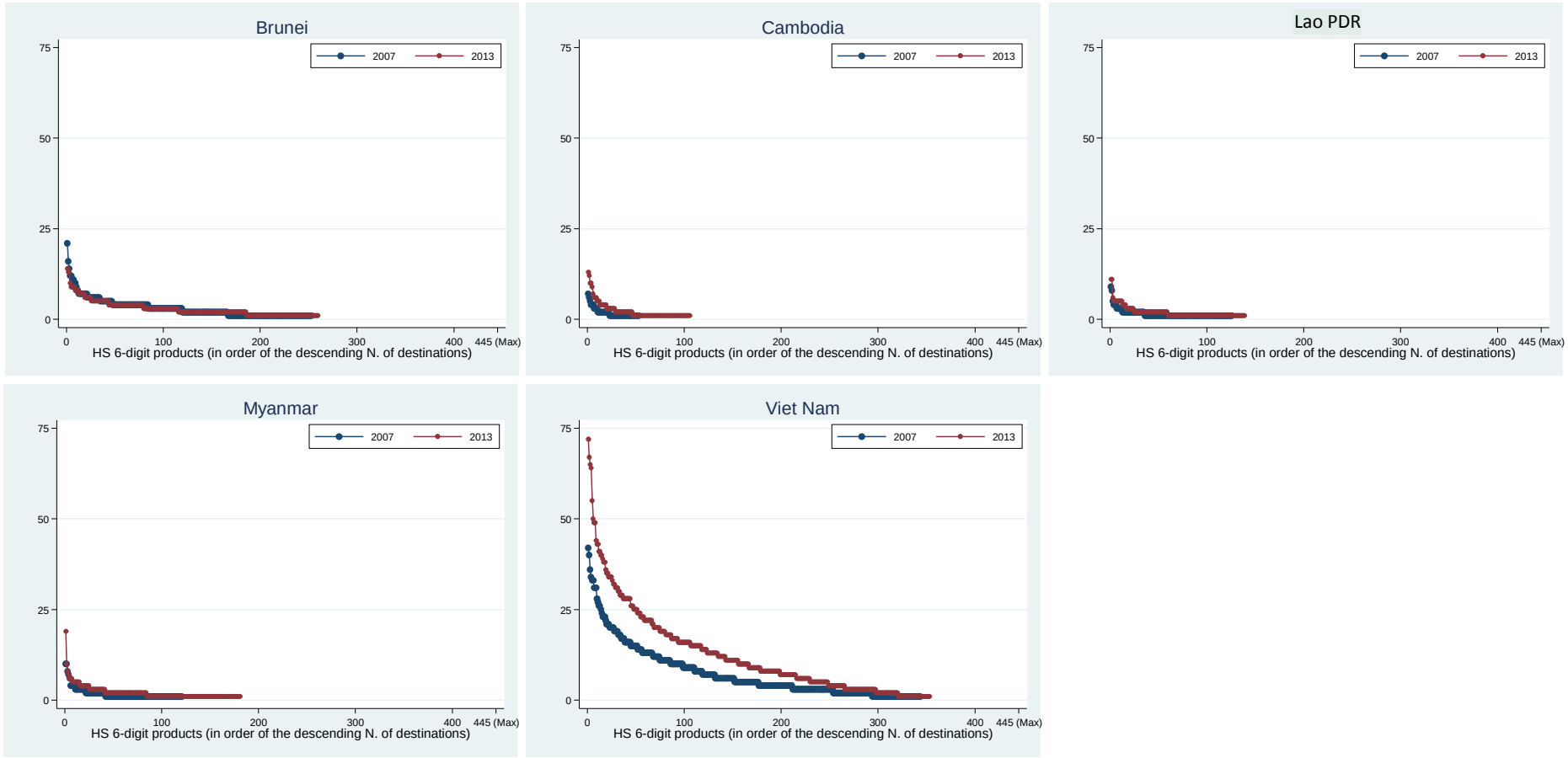
Figures 4.2.2 and 4.2.3 also assess the degree of participation in international production networks from a different angle. Here we check how many kinds of machinery parts and components are exported by each country, and to how many countries these are exported. The horizontal axis represents HS (Harmonized System) six-digit parts and components, the maximal number of which is 445. The vertical axis denotes the number of export destinations for each product. Products are in the order of the number of destinations. Figure 4.2.2 is for exports to countries all over the world while Figure 4.2.3 is for exports to East Asian countries, ASEAN+6 plus Hong Kong.

Figure 4.2.2. Number of Destination Countries in Export of Machinery Parts and Components to the World, by HS 6-digit product



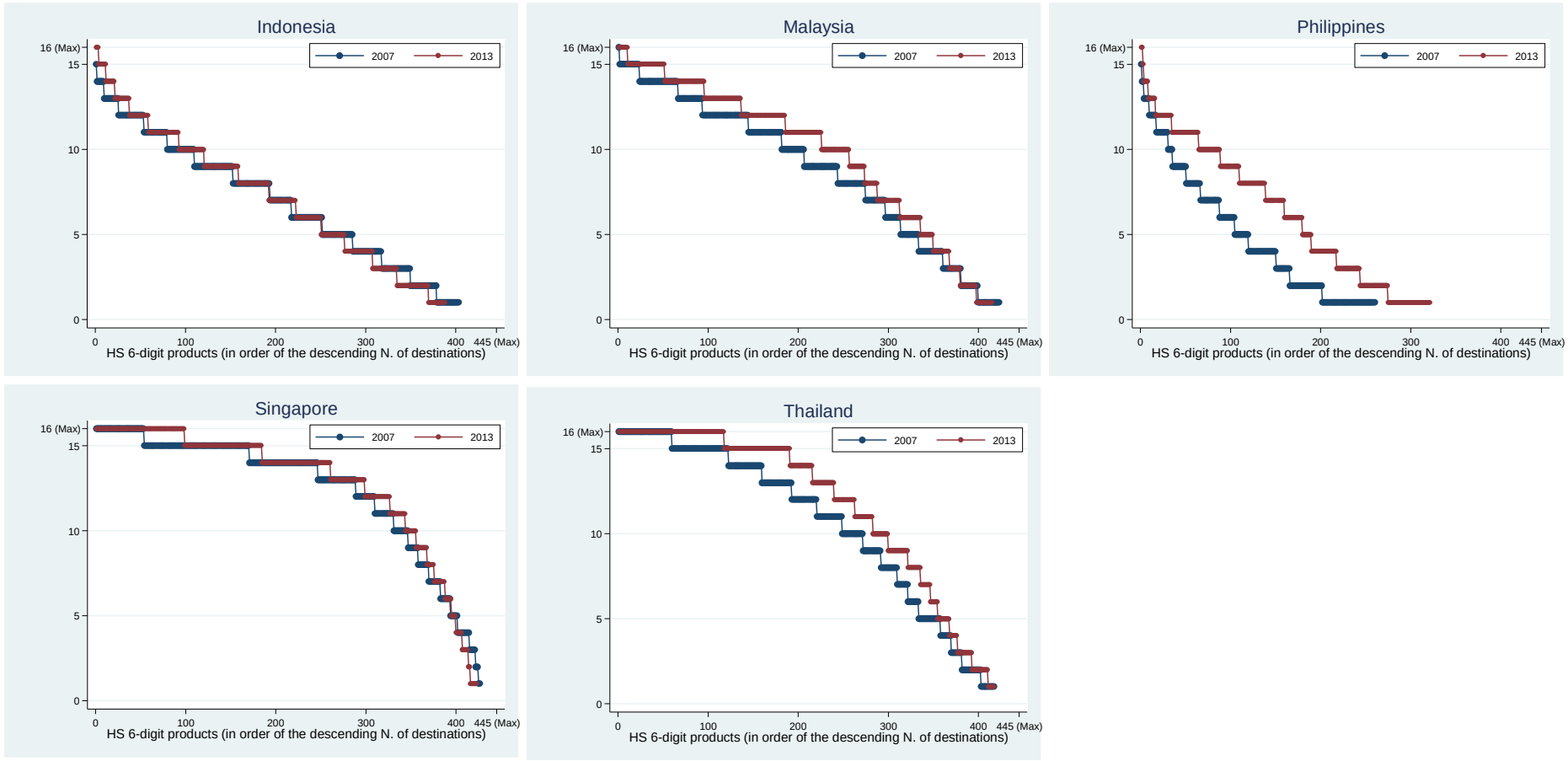
Source: Obashi and Kimura (2015).

Figure 4.2.2. (*cont*.) Number of Destination Countries in Export of Machinery Parts and Components to the World, by HS 6-digit product



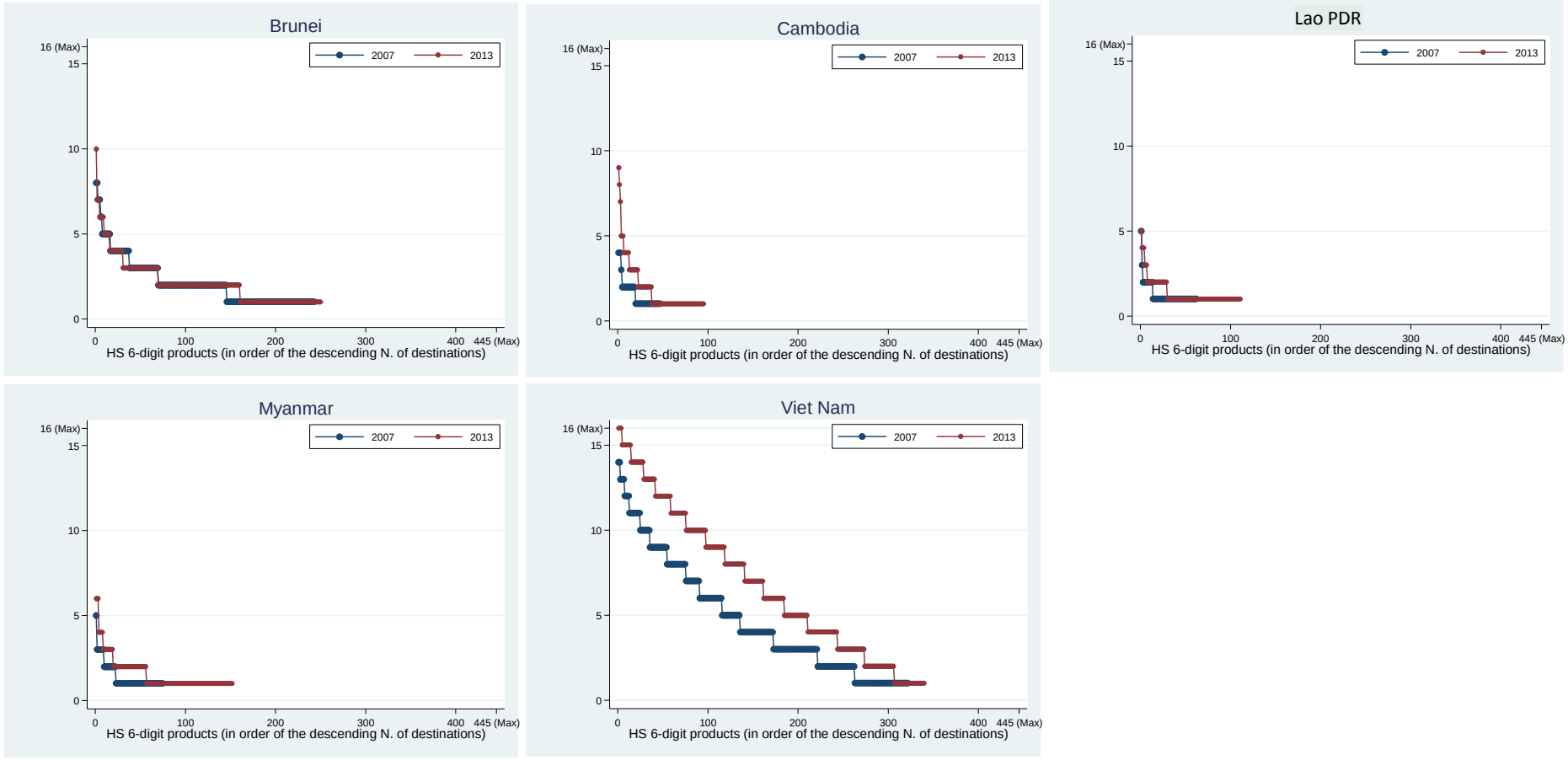
Source: Obashi and Kimura (2015).

Figure 4.2.3. Number of Destination Countries in Intra-East Asian Export of Machinery Parts and Components, by HS 6-digit product



Source: Obashi and Kimura (2015).

Figure 4.2.3. (*cont.*) Number of Destination Countries in Intra-East Asian Export of Machinery Parts and Components, by HS 6-digit product



Source: Obashi and Kimura (2015).

In Singapore, Malaysia, and Thailand, the number of exported products is almost saturated, close to the maximum. However, the number of export destinations still increased between 2007 and 2013, which means that production networks become more sophisticated. The Philippines is still notably behind but shows large expansion in both the number of exported products and the number of export destinations. Actually, the value of exports of these products by the Philippines disappointedly goes down while the involvement in production networks seems to be more sophisticated. Indonesia does not show much change.

Viet Nam quickly deepens its involvement in production networks in both the number of exported products and the number of export destinations, slightly surpassing the Philippines. Brunei Darussalam, Cambodia, Lao PDR, and Myanmar still have a long way to go, but the changes are drastic in percentage. They are quickly coming into production networks.

Overall, we can conclude that production networks in ASEAN steadily deepened and expanded in 2007–2013. In the coming years, the latecomers should make sure to expand their involvement in international production networks. For the forerunners, more sophistication in the way of participating in production networks will be the issue.

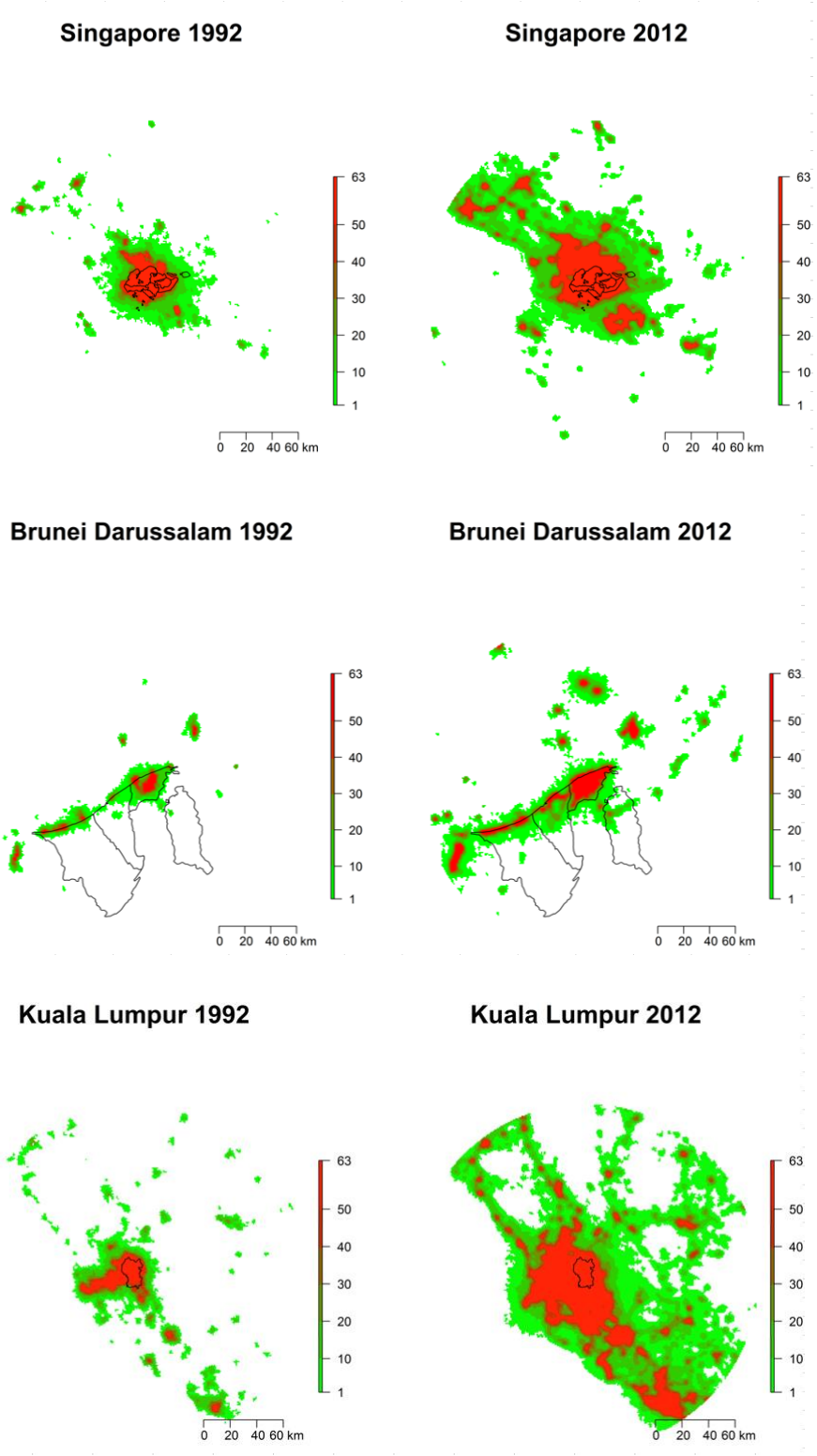
One update on policy research: ERIA and related researchers have extensively studied the durability and stability of production networks. A major conclusion is that despite any shock, economic crisis, or natural disaster, production networks consistently present robustness (Ando and Kimura, 2012; Okubo, Kimura, and Teshima, 2014). Production networks are less likely to be interrupted and more quickly to recover than other types of transactions. From the viewpoint of policymakers, the key is to contain a shock as temporary.

4-3. Size of Industrial Agglomerations

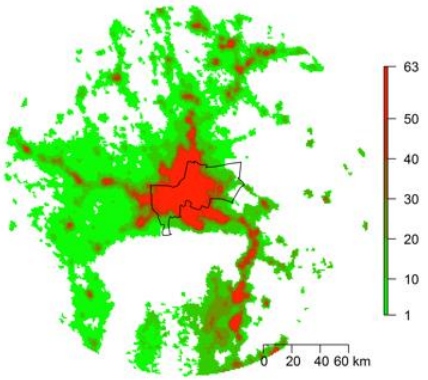
There is no established method to measure the size of industrial agglomerations. The following is still in an experimental stage, but we would like to share the possibility of a new empirical method that uses satellite pictures and maps night-time lights (Keola, Andersson, and Hall, 2015).

Figure 4.3.1 presents the strength of night-time lights in 12 cities in ASEAN10. Each map covers an area of 130 kilometres (km) diameter; the red and green areas stand for the strength of night-time lights in 63 grades. Black thin lines at the centre of each map show the city district except Singapore and Brunei Darussalam.

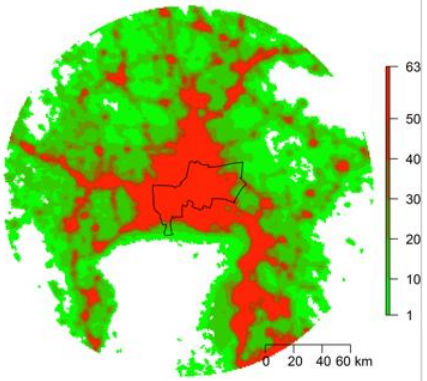
Figure 4.3.1. City Size with Night-time Light from Satellite



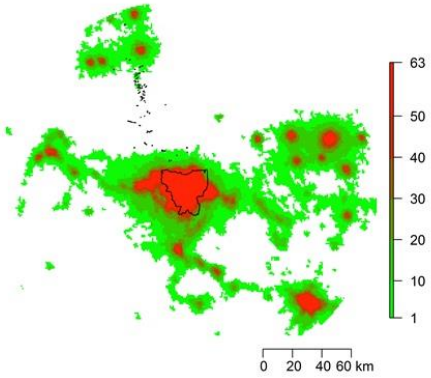
Bangkok 1992



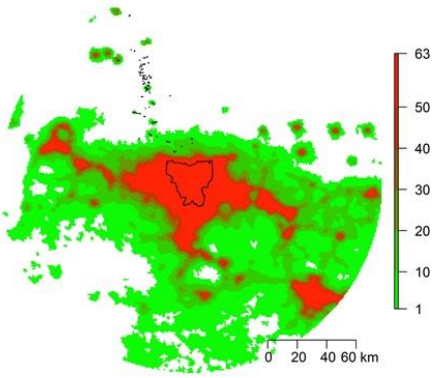
Bangkok 2012



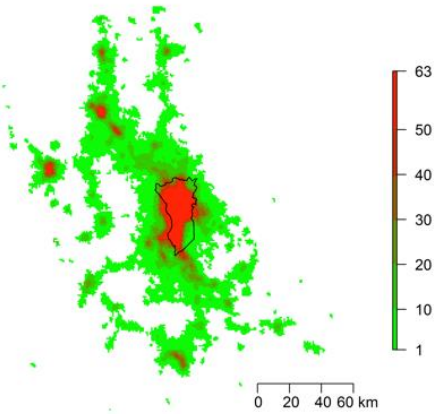
Jakarta 1992



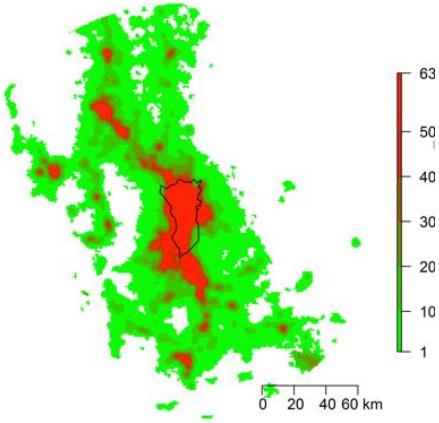
Jakarta 2012



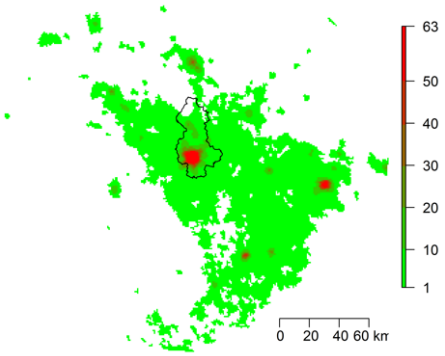
Manila 1992



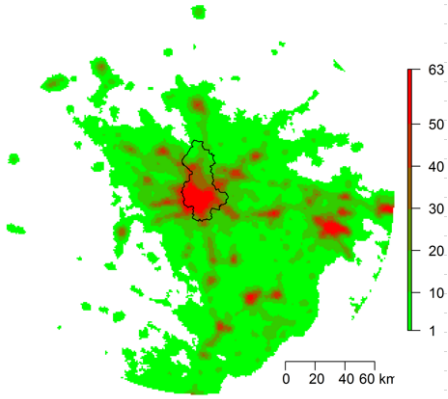
Manila 2012



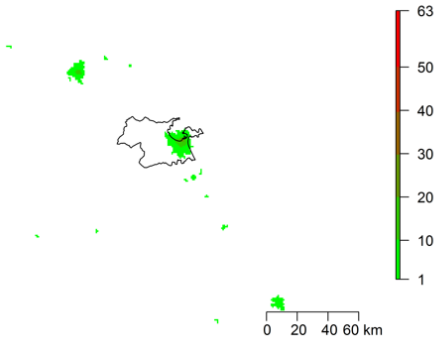
Ha Noi 1992



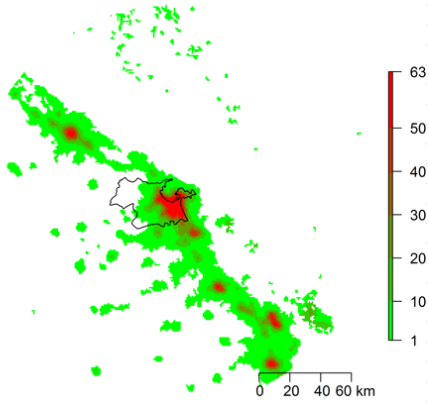
Ha Noi 2012



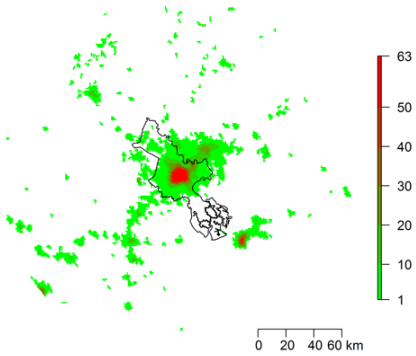
Da Nang 1992



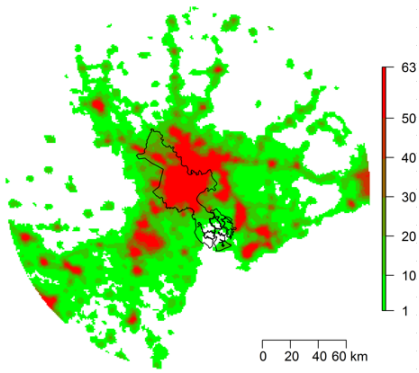
Da Nang 2012

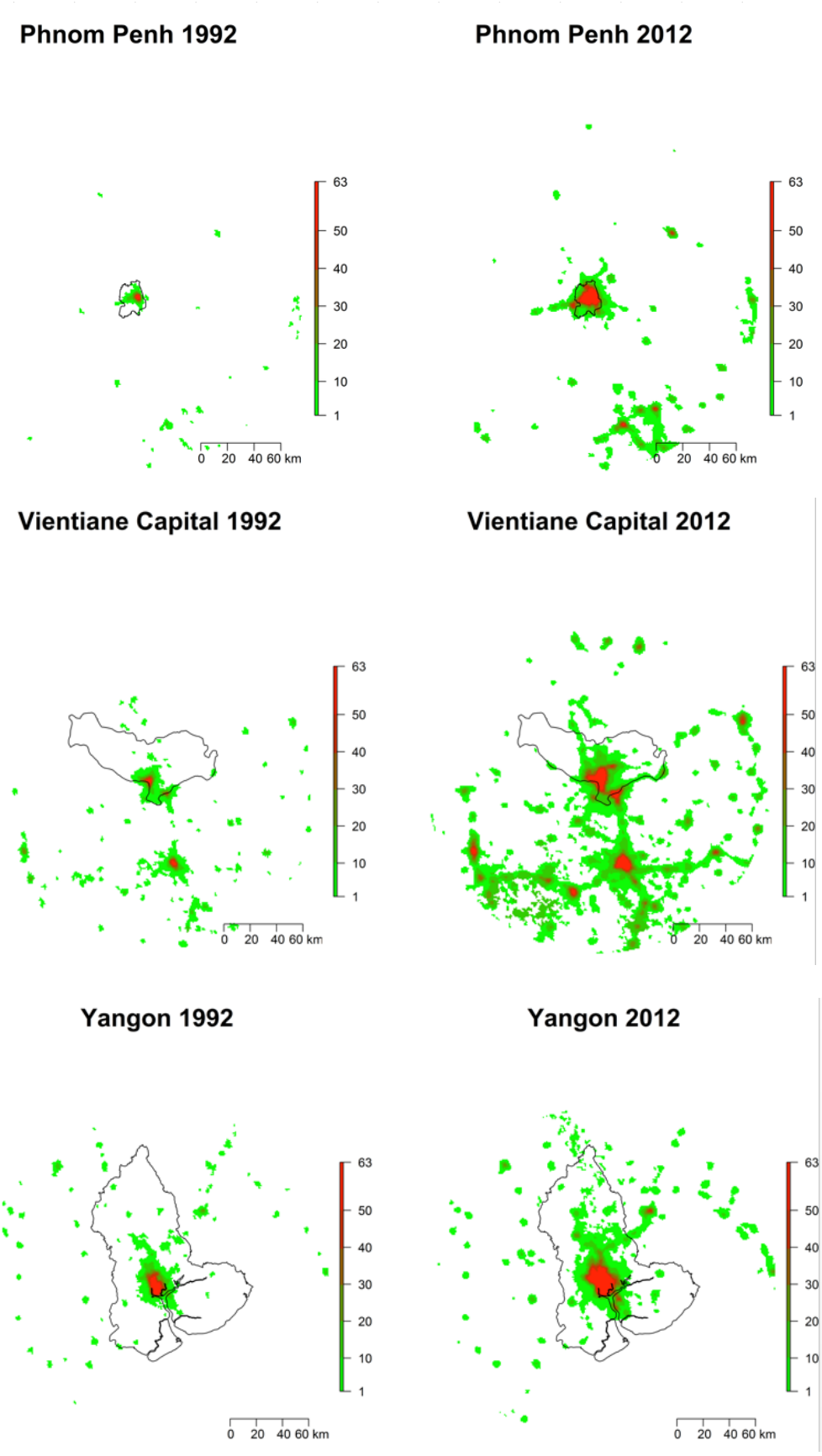


Ho Chi Minh 1992



Ho Chi Minh 2012





Source: ERIA-IDE Team.

The strength of night-time lights depends on many factors but loosely corresponds to the level of economic activities and population density. Although we obviously need to develop parameters to draw some meaningful economic indicators from these maps, we can at least grasp the size of urban/suburban area and industrial agglomeration.

Major findings from these maps are as follows: first, industrial agglomerations grew fast in all ASEAN cities in 1992–2012. Not only was the intensity of lights in the middle of the city enhanced, but the lights also spread widely. This suggests the importance of spatial planning way ahead of actual sprawl.

Second, full-size industrial agglomerations such as Bangkok, Jakarta, and Manila also grow fast though the spatial patterns are quite different. The economic activities in the Bangkok Metropolitan Area are widespread while those in Jakarta and Manila are condensed in narrow areas. To form efficient industrial agglomerations, the spatial planning for the whole metropolitan area is crucial in order to enlarge positive agglomeration effects and limit congestion such as wage increases, land price hike, traffic congestion, and pollution problems. Ho Chi Minh City, Ha Noi, and Yangon also seem to require proper spatial planning at an early timing.

4-4. Prospects for Full- and Medium-sized Industrial Agglomerations

Another way to identify industrial agglomerations in the future is to look at population size. Of course, population size will depend on the extent of agglomeration growth. However, it is still useful to watch the projection of population size to see what sort of role each urban agglomeration may play in the national and regional economies.

Table 4.4.1 lists urban agglomerations with 500,000 inhabitants or more in 2030. It sorts the urban agglomerations by each country in the descending order of inhabitants in 2015 (see also Figure 4.4.1). Although the definition of city or urban agglomeration may differ across countries, we can get a rough idea on the potential of each urban agglomeration.

Table 4.4.1. Forecasted Population Size of Urban Agglomeration in ASEAN (thousands)

Country	Urban Agglomeration	2015	2030
Cambodia	Phnom Penh	1,731	2,584
Indonesia	Jakarta	10,323	13,812
	Surabaya	2,853	3,760
	Bandung	2,544	3,433
	Medan	2,204	2,955
	Semarang	1,630	2,188
	Makassar	1,489	2,104
	Palembang	1,455	1,888
	Batam	1,391	2,486
	Pekan Baru	1,121	1,731
	Denpasar	1,107	1,870
	Bogor	1,076	1,541
	Bandar Lampung	965	1,350
	Padang	903	1,254
	Samarinda	865	1,291
	Malang	856	1,156
	Tasikmalaya	787	1,305
	Banjarmasin	682	955
	Balikpapan	655	973
	Jambi	604	874
	Pontianak	603	844
	Surakarta	504	668
	Mataram	457	662
	Manado	426	579
	Ambon	425	679
	Yogyakarta	385	503
Lao PDR	Vientiane	997	1,782
Malaysia	Kuala Lumpur	6,837	9,423
	Johor Bahru	912	1,249
	Ipoh	737	998
	Kuching	560	755
	Kota Kinabalu	478	673
	Kuantan	440	617
	Seremban	422	585

Country	Urban Agglomeration	2015	2030
Myanmar	Yangon	4,802	6,578
	Mandalay	1,167	1,654
	Nay Pyi Taw	1,030	1,398
	Bago	518	783
	Mawlamyine	487	698
	Monywa	478	748
Philippines	Manila	12,946	16,756
	Davao City	1,630	2,216
	Cebu City	951	1,278
	Zamboanga City	936	1,313
	Cagayan de Oro City	688	958
	General Santos City	616	859
	Bacolod	559	753
	Iloilo City	457	611
	Lapu-Lapu City	447	681
	Basilan City	424	570
	Mandaue City	374	521
	Cotabato	351	543
Singapore	Singapore	5,619	6,578
Thailand	Bangkok	9,270	11,528
	Samut Prakan	1,814	3,139
	Udon Thani	526	772
	Chon Buri	518	796
	Nonthaburi	409	526
	Lampang	382	576
	Nakhon Ratchasima	368	505
	Rayong	332	527
Viet Nam	Ho Chi Minh City	7,298	10,200
	Ha Noi	3,629	5,498
	Can Tho	1,175	1,902
	Hai Phong	1,075	1,569
	Da Nang	952	1,365
	Bien Hoa	834	1,225
	Vungtau	351	512

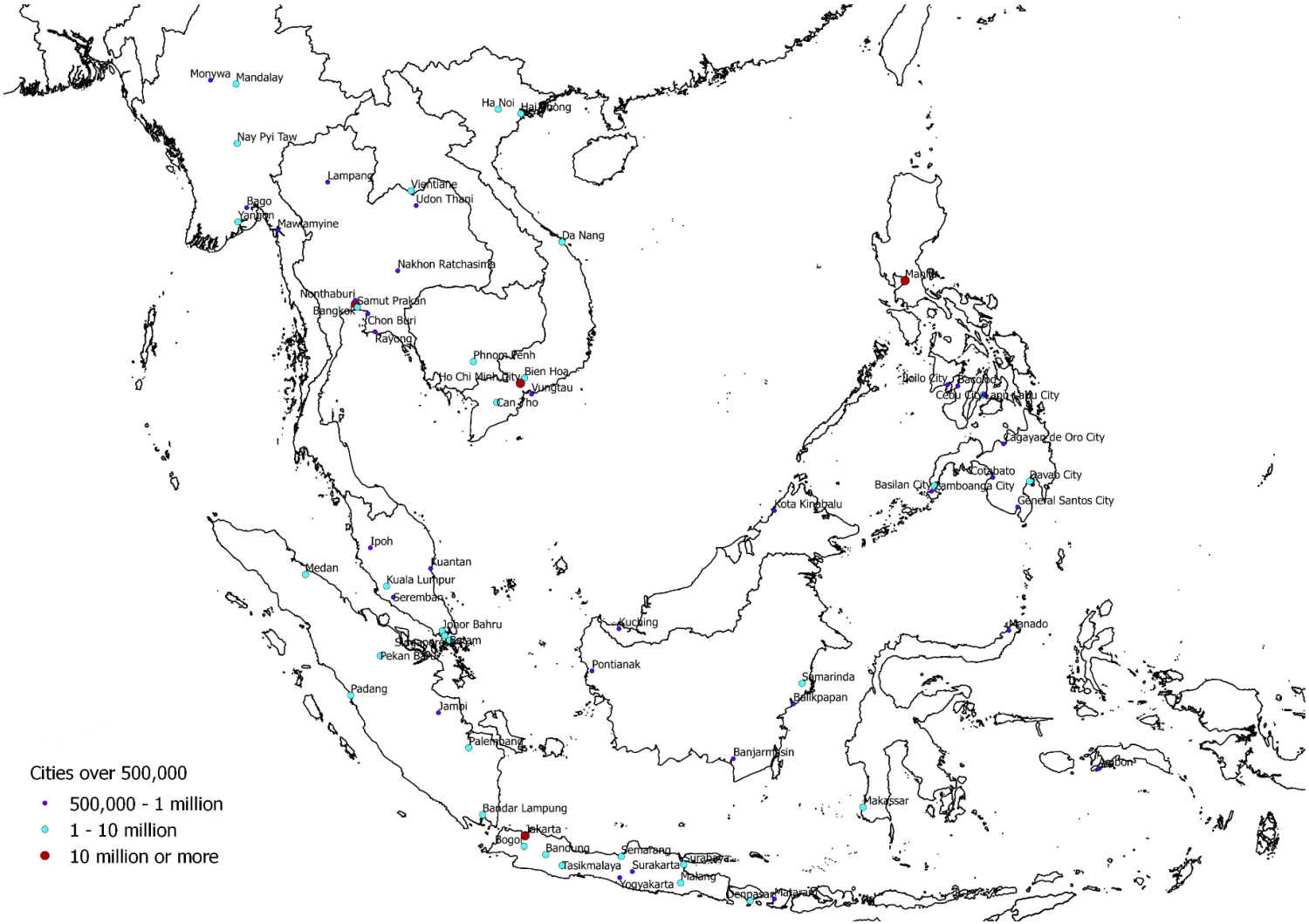
Source: United Nations (2015).

Urban agglomerations that will have more than 5 million people should be full-sized industrial agglomerations, classified as Tier 1. Such places will be, in the order of population size in 2030, Manila, Jakarta, Bangkok, Ho Chi Minh City, Kuala Lumpur, Singapore, Yangon, and Ha Noi.

The potential for middle-sized industrial agglomeration is found in cities with a population of 1 million or more in 2030. However, some of them seem to have peculiar characteristics. Let us look at these cities in more detail.

The table illustrates two types of the fast-growing urban agglomerations that will move up the ranking. The first agglomeration type is industrial districts near large urban areas such as Batam in Indonesia, Monywa in Myanmar, Chon Buri and Rayong in Thailand, and Vungtau in Viet Nam. These fast-growing urban agglomerations will attract industrial activities that need to avoid congestion in large urban areas. The second type is large cities in island countries with a steady population growth, such as Indonesia and the Philippines.

Figure 4.4.1. ASEAN Urban Agglomerations with 500,000 Inhabitants or More in 2030



Source: Data from World Urbanization Prospects, the 2014 revision, United Nations.
http://esa.un.org/unpd/wup/

Among the first type of fast-growing industrial districts is Batam in Indonesia, an island located about 20 km south of Singapore. Indonesia and Singapore have been developing Batam as a manufacturing base to host manufacturing activities relocating from Singapore. Similarly to Batam, Johor Bahru in Malaysia has a well-developed connectivity with Singapore through the Johor–Singapore causeway and will grow to have more than 1 million inhabitants in 2030. The present congestion in Singapore will stimulate the development of Singapore-centred subregional economic area in 2030.

Monywa in Myanmar is about 135 km away from Mandalay, the second largest city in Myanmar, and operates an industrial zone. Monywa is the capital of Sagaing Region and is situated on the Tamu–Mandalay (Indian Myanmar border) trade route. The urban agglomeration has potential to develop the border trade, domestic market for Sagaing and Chin State, and mining industry. Bago is another notable urban agglomeration that will expand as fast as Monywa. This urban agglomeration is located about 80 km away from Yangon, sitting on the highway road that connects Yangon, Nay Pyi Taw, and Mandalay. Bago is also a transport junction with the East–West Economic Corridor linking Yangon with Mawlamyine, Myawaddy in Myanmar, and other urban agglomerations in the Greater Mekong Subregion (GMS). Bago will expand its economic activities as an industrial zone due to its locational advantage and a new international airport project. As Kudo, Kumagai, and Umezaki (2013) discuss, two growth poles—Yangon and Mandalay––and their surrounding areas will lead Myanmar's economic growth.

Chon Buri and Rayong in Thailand are two main provinces in the Eastern Seaboard that agglomerate the automobile and petrochemical industries, respectively. The Eastern Seaboard has been developed with Japan's official development assistance for constructing infrastructure, including Laem Chabang Port in Chon Buri Province, to host Japanese and other foreign direct investment). Thai developers of industrial estates provide not only fundamental facilities for manufacturing—such as industrial land, utilities, and factories for rent—but also other facilities for accommodation, education, shopping, entertainment, recreation, and healthcare. Such improvement in urban amenities will attract more foreign direct investments and talents to these urban agglomerations outside Bangkok.

Vungtau in Ba Ria Vungtau Province of Viet Nam has been developing a new deep-water port, Cai Mep–Thi Vai Port, to relocate container transportation from the Saigon

port. The rapid urbanisation in Ho Chi Minh City generates dispersion forces, which promote industrial development in its surrounding areas including Bien Hoa in Dong Nai Province that is expected to have more than 1 million habitants in 2030. Bien Hoa is a transport junction that sits on National Route No. 1 connecting Ho Chi Minh City with Ha Noi and National Route No. 51 connecting Bien Hoa with Cai Mep–Thi Vai Port. Currently several industrial parks are operated in Bien Hoa, such as Bien Hoa Industrial Zone and Loteco Industrial Zone, and in Ba Ria Vungtau Province, such as My Xuan Industrial Park and Phu My Industrial Zone. The Japan International Cooperation Agency studies the construction of the new international airport, Long Thanh International Airport, in Dong Nai Province under a public–private partnership (PPP) programme and also plans to provide an official development assistance for an expressway between Bien Hoa and Vungtau.

The urbanisation prospects indicate the importance of urban planning and connectivity improvements for sustainable development in all tiers and narrowing development gaps, particularly between Tiers 1 and 2. The governments of ASEAN Member States need to mitigate congestion in major urban areas by developing public transportation services and ring roads on the one hand while constructing new roads to have better links between the urban areas and existing and potential industrial districts on the other.

4-5. Creating an Innovation Hub

Urban areas are large spaces that provide favourable environments to promote innovation. Large cities can accommodate a huge variety of skilled labour with specialised knowledge. The spatial concentration of diversified people and industries with specialised skills and knowledge and geographic proximities among them facilitate people-to-people and business-to-business knowledge flow. Interactions among such people and business in cities help them learn from others, obtain new ideas, and initiate innovations (Glaeser, Kallal, Scheinkman and Shleifer, 1992).

Innovation regularly occurs in cities. This is because talents, firms, and capitals attract each other, and consequently move to the areas where they are abundant. Therefore, developing countries, especially upper middle–income countries, need to

assess the strengths and weaknesses of their major cities and formulate appropriate plans to develop urban areas that can attract these scarce resources.

The Global Power City Index measures the comprehensive power of the world's major cities including those in ASEAN Member States such as Malaysia (Kuala Lumpur), Singapore, Thailand (Bangkok), and other East Asian countries such as Australia (Sydney), China (Beijing, Shanghai), India (Mumbai), Japan (Fukuoka, Osaka, Tokyo), and South Korea (Seoul). The index ranks 40 cities according to six main functions representing city strength (Economy, Research and Development [R&D], Cultural Interaction, Liveability, Environment, and Accessibility[8]) and based on the viewpoints of four global actors (Manager, Researcher, Artist, and Visitor) and one local actor (Resident) (MMF, 2014, p.1).

Table 4.5.1 shows Tokyo, Singapore, and Seoul rank in the top six, while two mega cities in China—Beijing and Shanghai—are ranked 14th and 15th, respectively, in 2014. On the other hand, two cities in upper middle–income ASEAN Member States, Bangkok and Kuala Lumpur, are ranked only 29th and 34th, and Mumbai ranked second to the last, 39th of 40 cities.

The ranking according to the functions demonstrates the strengths and weaknesses of each city. Tokyo ranks high in Economy (1st) and R&D (2nd) whereas its ranking based on Liveability (17th) is approximately median. Singapore has advantages in the functions of Cultural Interaction (4th) and Environment (5th) while its Liveability is ranked 37th, reflecting high living costs. It is worth mentioning that the ranking of Singapore's R&D function is the 8th highest among many of the large cities in East Asia and Southeast Asia, and is competitive with large cities in Europe.

Bangkok's strengths lie in Accessibility (12th) and Cultural Interaction (16th) whereas its weakness lies in R&D (34th). Kuala Lumpur has its strength in Liveability (22th) but is ranked low for all the other functions. Kuala Lumpur's weaknesses lie especially in R&D (35th) and Cultural Interaction (35th). Both Bangkok and Kuala Lumpur are far behind Beijing and Shanghai in R&D.

[8] The index measures the functions of (1) Economy with indicator groups of market size, market attractiveness, economic vitality, human capital, business environment, and regulations and risks; (2) R&D with indicator groups of academic resources, research background, and research achievement; (3) indicator groups of Cultural Interaction with trendsetting potential, cultural resources, facilities for visitors, attractiveness to visitors, and volume of interaction; (4) Liveability with indicator groups of working environment, cost of living, security and safety, living environment, and living facilities; (5) Environment with indicator groups of ecology, pollution, and natural environment; and (6) Accessibility with indicator groups of international transportation network, international transportation infrastructure, inner-city transportation services, and traffic convenience.

Table 4.5.1. Function-Specific City Ranking

City	Total Score	Economy	R&D	Cultural Interaction	Livability	Environment	Accessibility
London	1	4	3	1	21	7	1
New York	2	2	1	2	29	25	7
Paris	3	12	7	3	1	16	2
Tokyo	**4**	**1**	**2**	**6**	**17**	**9**	**10**
Singapore	**5**	**6**	**8**	**4**	**37**	**5**	**8**
Seoul	**6**	**11**	**6**	**12**	**23**	**11**	**5**
Amsterdam	7	18	23	15	8	13	3
Berlin	8	19	16	5	3	10	17
Hong Kong	9	5	12	26	34	19	6
Vienna	10	27	25	8	4	6	20
Frankfurt	11	20	28	31	16	4	4
Zurich	12	8	22	34	7	3	23
Sydney	**13**	**9**	**14**	**10**	**27**	**14**	**28**
Beijing	**14**	**3**	**21**	**7**	**24**	**40**	**27**
Shanghai	**15**	**7**	**15**	**19**	**19**	**37**	**11**
Stockholm	16	15	20	27	10	2	30
Toronto	17	10	17	24	14	26	22
Copenhagen	18	17	31	29	13	8	21
Madrid	19	35	32	17	11	12	14
Los Angeles	20	30	4	11	35	20	36
Istanbul	21	21	30	9	26	35	9
Vancouver	22	14	24	32	2	23	32
Brussels	23	28	29	13	20	32	15
Washington, DC	24	13	13	23	30	17	33
Milan	25	37	36	22	9	18	13
Osaka	**26**	**22**	**11**	**30**	**12**	**30**	**29**
Barcelona	27	38	33	14	5	31	16
Geneva	28	16	27	38	6	1	39
Bangkok	**29**	**32**	**34**	**16**	**28**	**21**	**12**
Boston	30	26	5	28	38	27	26
Chicago	31	29	9	21	33	33	24
San Francisco	32	24	10	25	36	24	31
Taiwan	33	23	18	39	18	28	19
Kuala Lumpur	**34**	**25**	**35**	**35**	**22**	**29**	**25**
Moscow	35	31	19	18	40	38	18
Fukuoka	**36**	**34**	**26**	**40**	**15**	**22**	**37**
Mexico City	37	36	38	20	31	36	35
Sao Paulo	38	33	37	33	32	15	40
Mumbai	**39**	**39**	**39**	**37**	**25**	**34**	**38**
Cairo	40	40	40	36	39	39	34

Source: Mori Memorial Foundation (2014), 'Global Power City Index 2014'.

The actor-specific city ranking also shows that Singapore, Kuala Lumpur, and cities in China have a higher Manager ranking but lower Resident ranking (Table 4.5.2). Among the cities of ASEAN Member States, Singapore (39th) is lower than Kuala Lumpur (33th) and Bangkok (24th) in the Artist ranking. On the other hand, Singapore is 9th in the Researcher ranking, whereas Bangkok and Kuala Lumpur are at 35th and 37th, respectively.

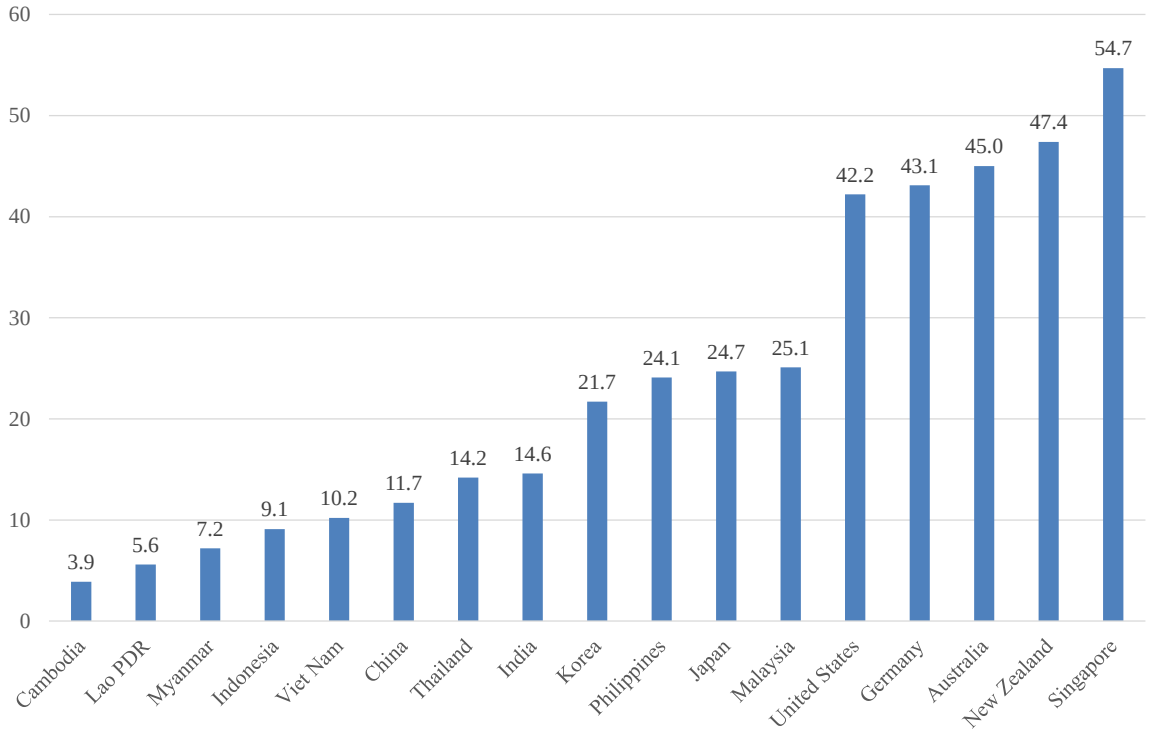
Table 4.5.2. Actor-Specific City Ranking 2014

City	Manager	Researcher	Artist	Visitor	Resident
London	1	3	2	1	2
New York	6	1	3	2	3
Paris	8	4	1	3	1
Tokyo	**9**	**2**	**8**	**6**	**5**
Singapore	**2**	**9**	**39**	**9**	**29**
Seoul	**11**	**7**	**35**	**15**	**18**
Amsterdam	14	23	6	13	11
Berlin	16	15	4	10	6
Hong Kong	3	16	40	16	20
Vienna	19	20	5	12	8
Frankfurt	23	26	19	20	7
Zurich	17	18	34	26	4
Sydney	**20**	**12**	**26**	**21**	**23**
Beijing	**4**	**14**	**10**	**7**	**25**
Shanghai	**5**	**29**	**17**	**5**	**27**
Stockholm	15	19	21	32	10
Toronto	10	22	18	17	21
Copenhagen	21	25	20	31	15
Madrid	29	31	11	14	16
Los Angeles	35	5	7	35	31
Istanbul	7	32	23	4	36
Vancouver	12	17	16	22	13
Brussels	26	33	22	18	26
Washington, DC	27	10	12	24	9
Milan	31	27	13	19	12
Osaka	**28**	**13**	**25**	**23**	**19**
Barcelona	30	36	9	8	24
Geneva	22	24	38	39	14
Bangkok	**25**	**35**	**24**	**11**	**35**
Boston	24	6	36	28	17
Chicago	32	11	15	27	32
San Francisco	34	8	30	30	22
Taiwan	18	30	37	29	30
Kuala Lumpur	**13**	**37**	**33**	**34**	**38**
Moscow	38	21	32	36	33
Fukuoka	**33**	**28**	**29**	**37**	**28**
Mexico City	39	34	14	25	34
Sao Paulo	37	38	27	40	37
Mumbai	**36**	**39**	**31**	**38**	**39**
Cairo	40	40	28	33	40

Source: Mori Memorial Foundation (2014), 'Global Power City Index 2014'.

Overall, the Global Power City Index indicates that Tier 1 capital regions in ASEAN Member States, Bangkok and Kuala Lumpur, lack R&D resources. Figure 4.5.1 shows that even large manufacturing bases such as Thailand (14.2 percent) and Indonesia (9.1 percent) have substantially lower proportions of skilled employment than the Philippines (24.1 percent) and Malaysia (25.1 percent) where electronics manufacturing is agglomerated.

Figure 4.5.1. Share of High-skilled Employment

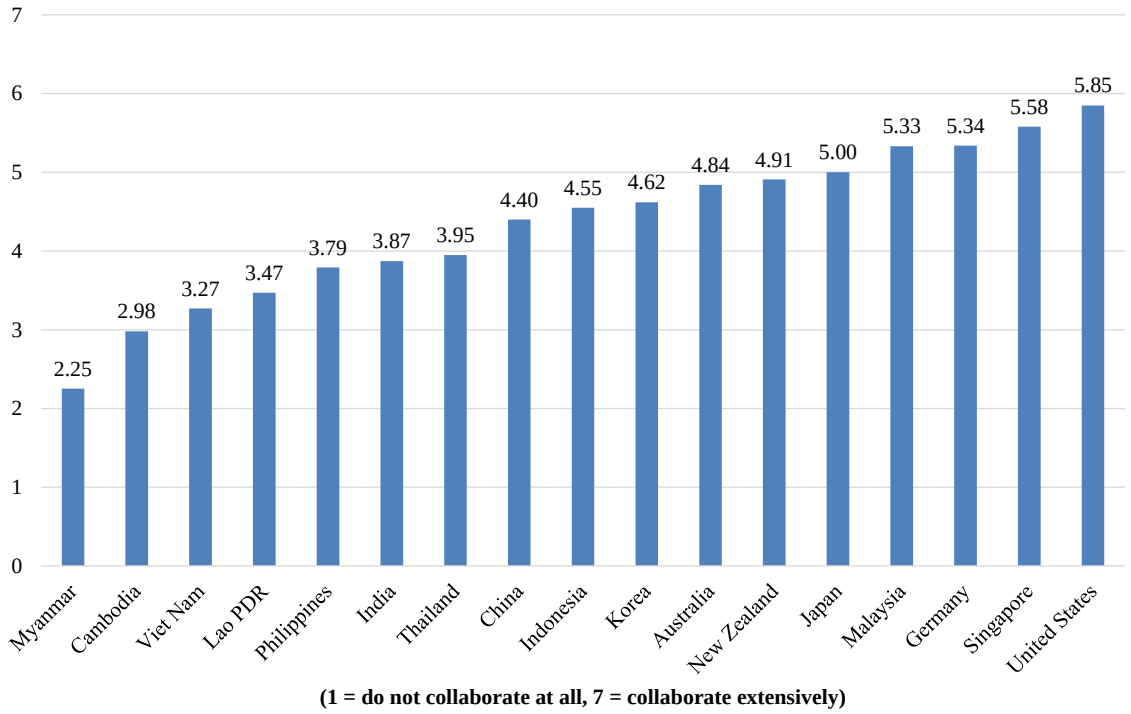


Source: World Economic Forum (2015). Originally ILOSTAT data from 2014 or latest available as of March 2015.

University–industry linkages do not play a main role in innovative activities in most middle-income countries in Southeast Asia. Figure 4.5.2 shows the perception of business leaders regarding university–business collaboration in R&D. Many business leaders do not recognise extensive collaboration in R&D between business and universities even in the Philippines and Thailand.

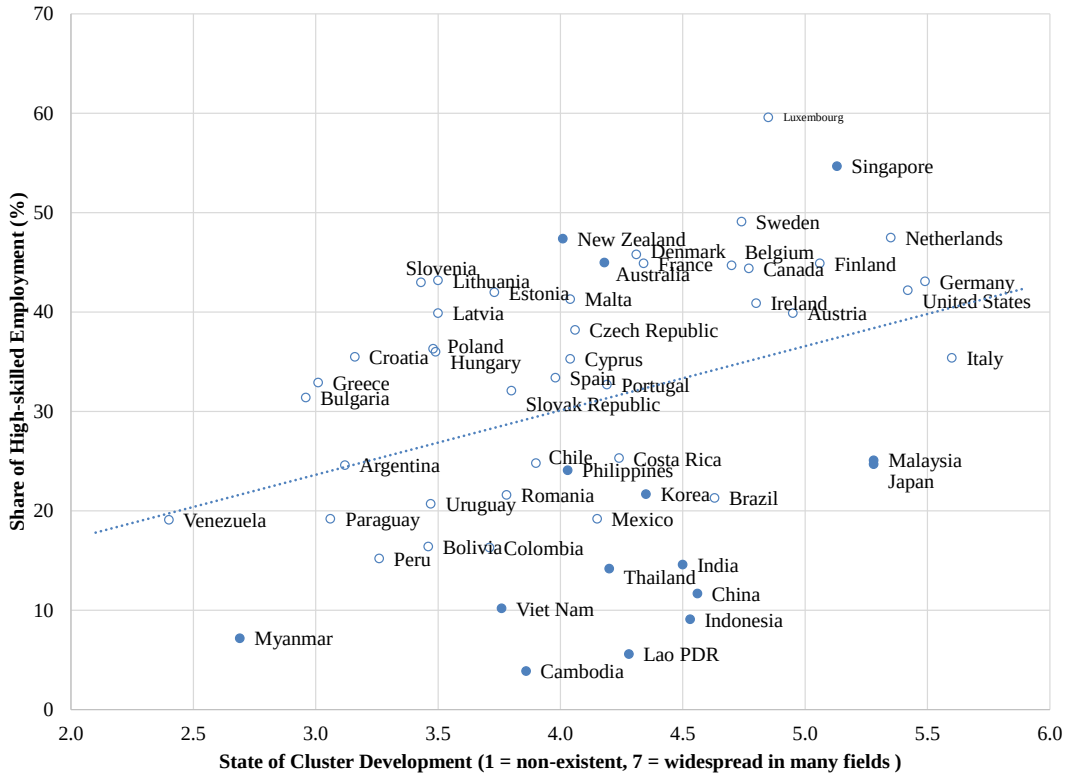
East Asian industrialisation has been taking advantage of agglomeration rather than depending on quality human resources. Figure 4.5.3 compares the relationship between cluster development and skilled employment share among countries in East and Southeast Asia, Europe, and North and South America. Most countries in Europe are positioned above the trend line, indicating these countries rely on skilled employment for their development. In contrast, all countries in Southeast Asia except Singapore are positioned below the trend line, indicating these countries rely on clustering for their development. Compared with Asian countries, Latin America has not developed clusters; rather it has more skilled employment as European countries.

Figure 4.5.2. University–Business R&D Collaboration



Note: R&D = research and development
Source: World Economic Forum (2015). Originally World Economic Forum, Executive Opinion Survey, 2014–2015.

Figure 4.5.3. Cluster Development and Skilled Employment



Source: Depicted from World Economic Forum (2015).

Presently, middle-income ASEAN Member States do not have sufficient skilled jobs and high-quality urban infrastructure. These countries need to foster human capital and upgrade urban infrastructure in Tier 1 regions and combine them with agglomeration forces to develop indigenous innovation capabilities.