



# Asia-Pacific Roundtable

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**PS 6 (b)**

## **PLENARY SESSION SIX**

Tuesday, 31 May 2011

### **Physical and Institutional Connectivity in ASEAN**

by

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# Physical Connectivity and the East Asian Economy

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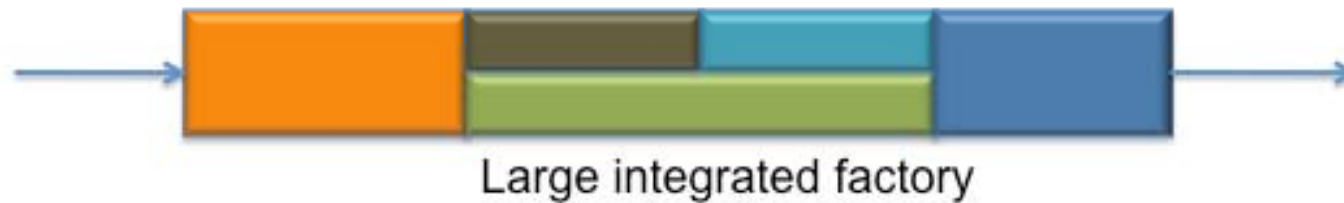
*25<sup>th</sup> Asia-Pacific Roundtable, Kuala Lumpur, 31 May 2011*

# 1. Why physical connectivity?

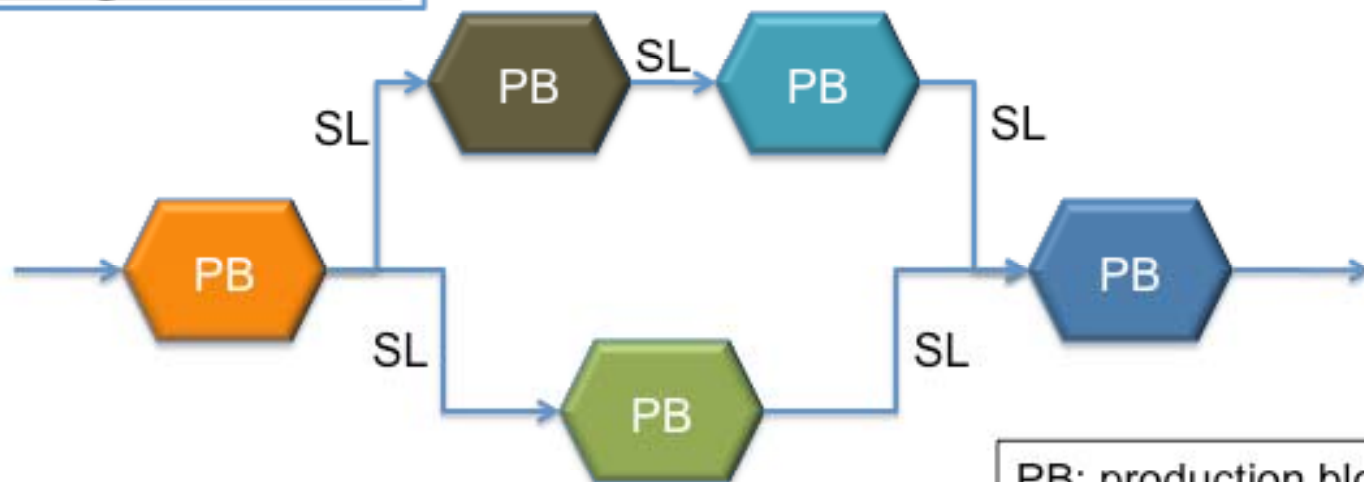
- Physical connectivity should be upgraded hand-in-hand with institutional connectivity.
- Particularly in ASEAN and East Asia, production networks are the strength.
  - Unprecedented fragmentation and agglomeration of economic activities
  - 2<sup>nd</sup> unbundling (Baldwin (2010))

Figure 1 The fragmentation theory: Production blocks and service links

Before fragmentation



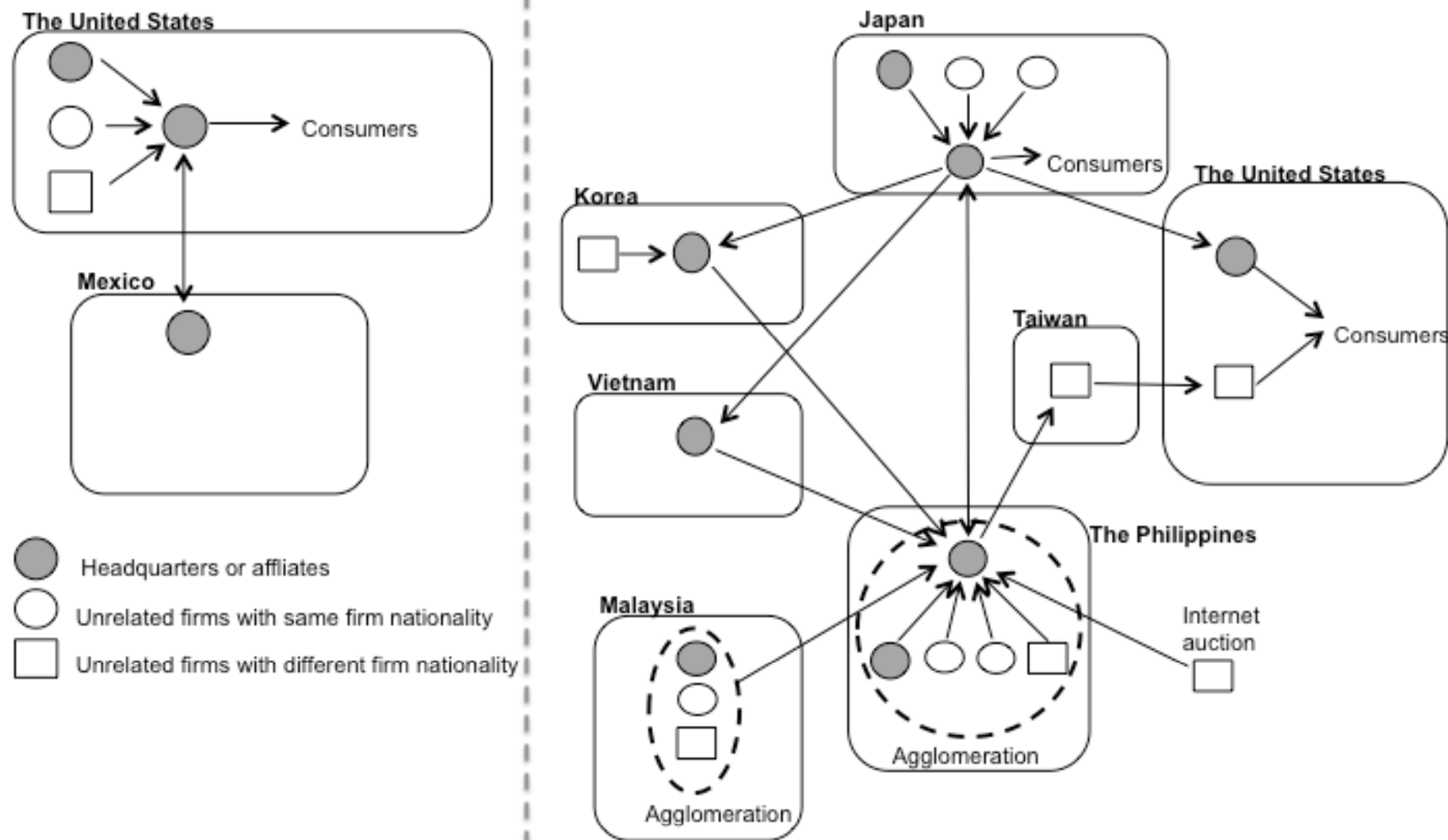
After fragmentation



PB: production blocks  
SL: service links

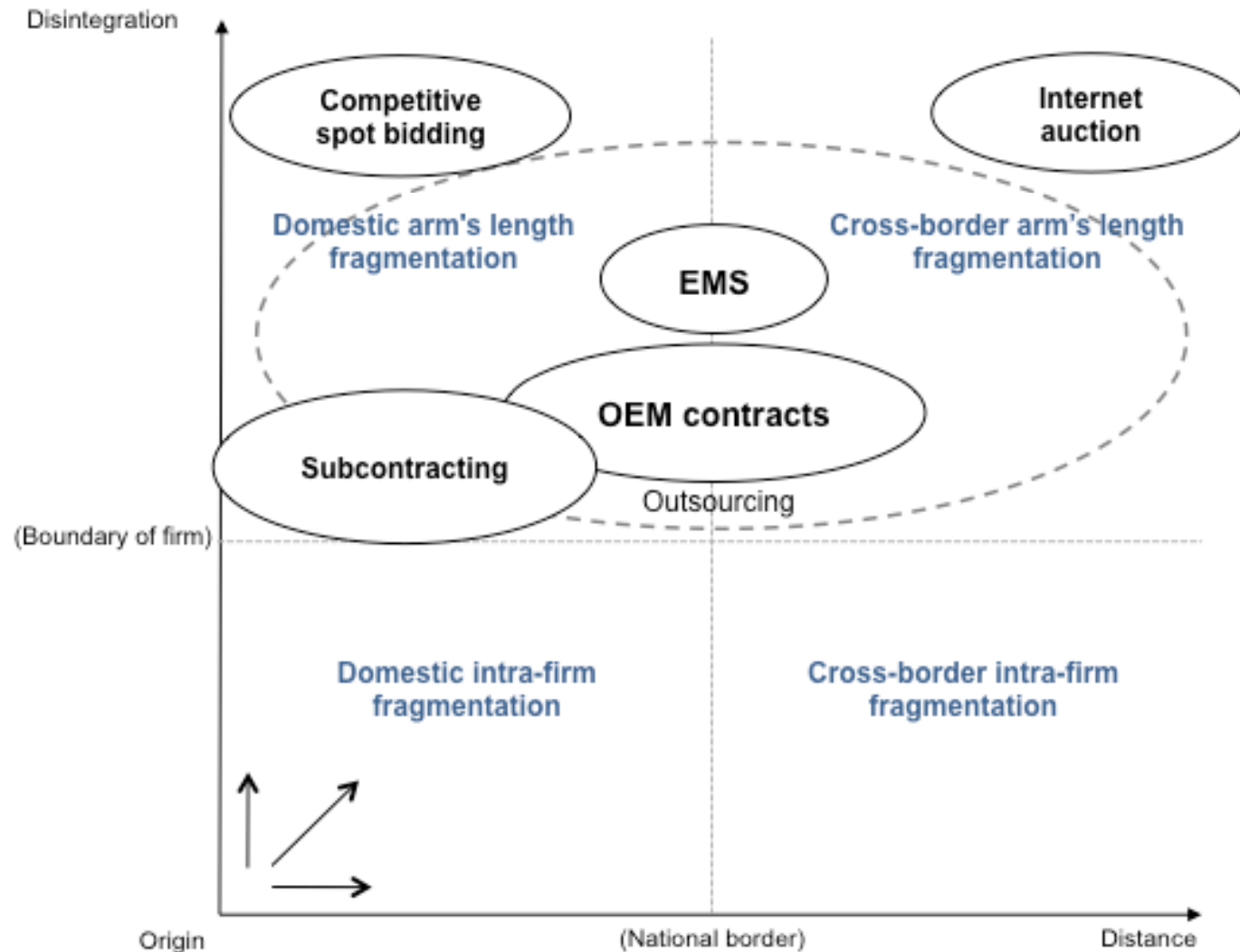
Source: ERIA (2010).

# Figure 2 Production networks: The US-Mexico nexus versus East Asia



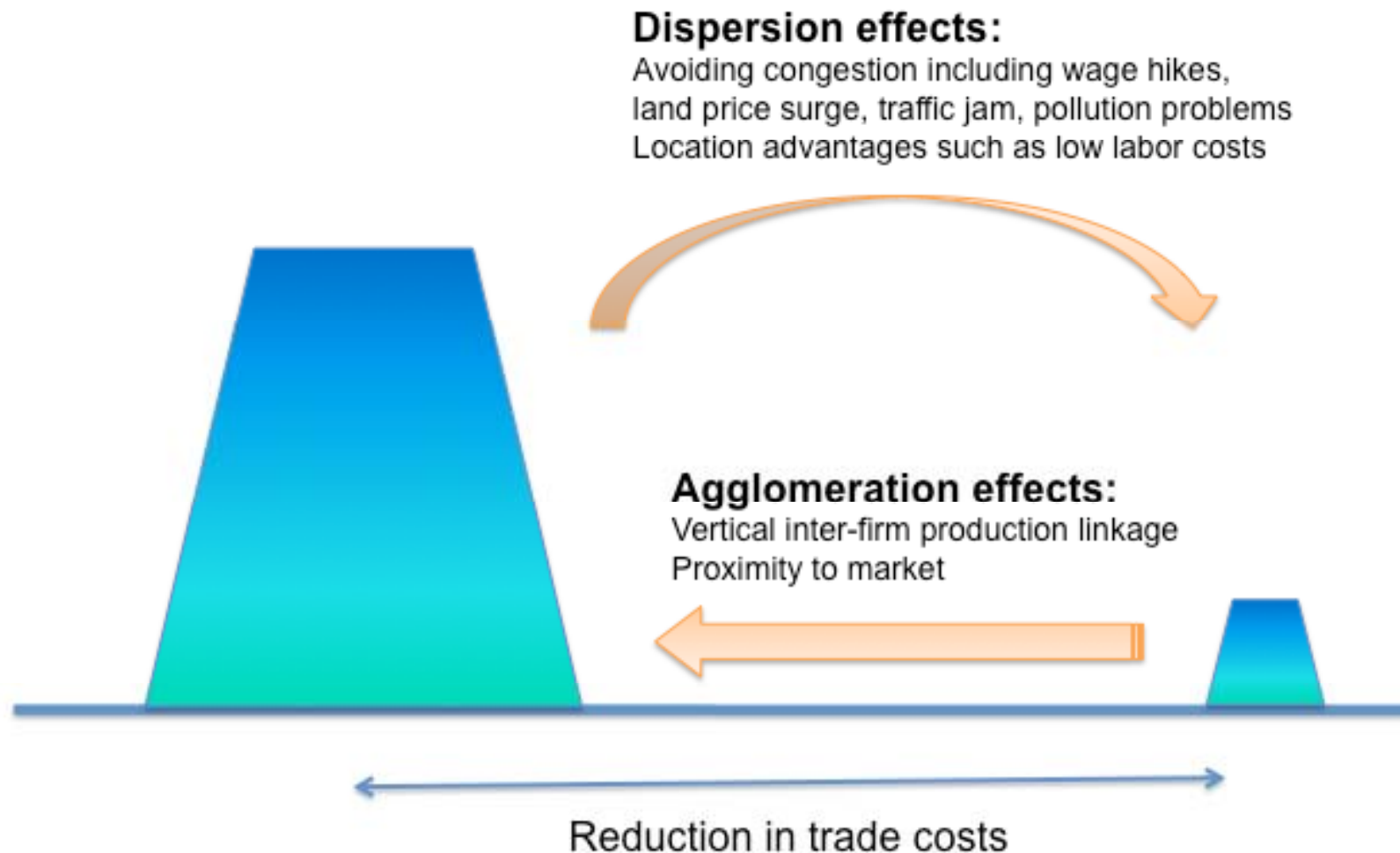
Source: ERIA (2010).

Figure 3 Two-dimensional fragmentation: An illustration



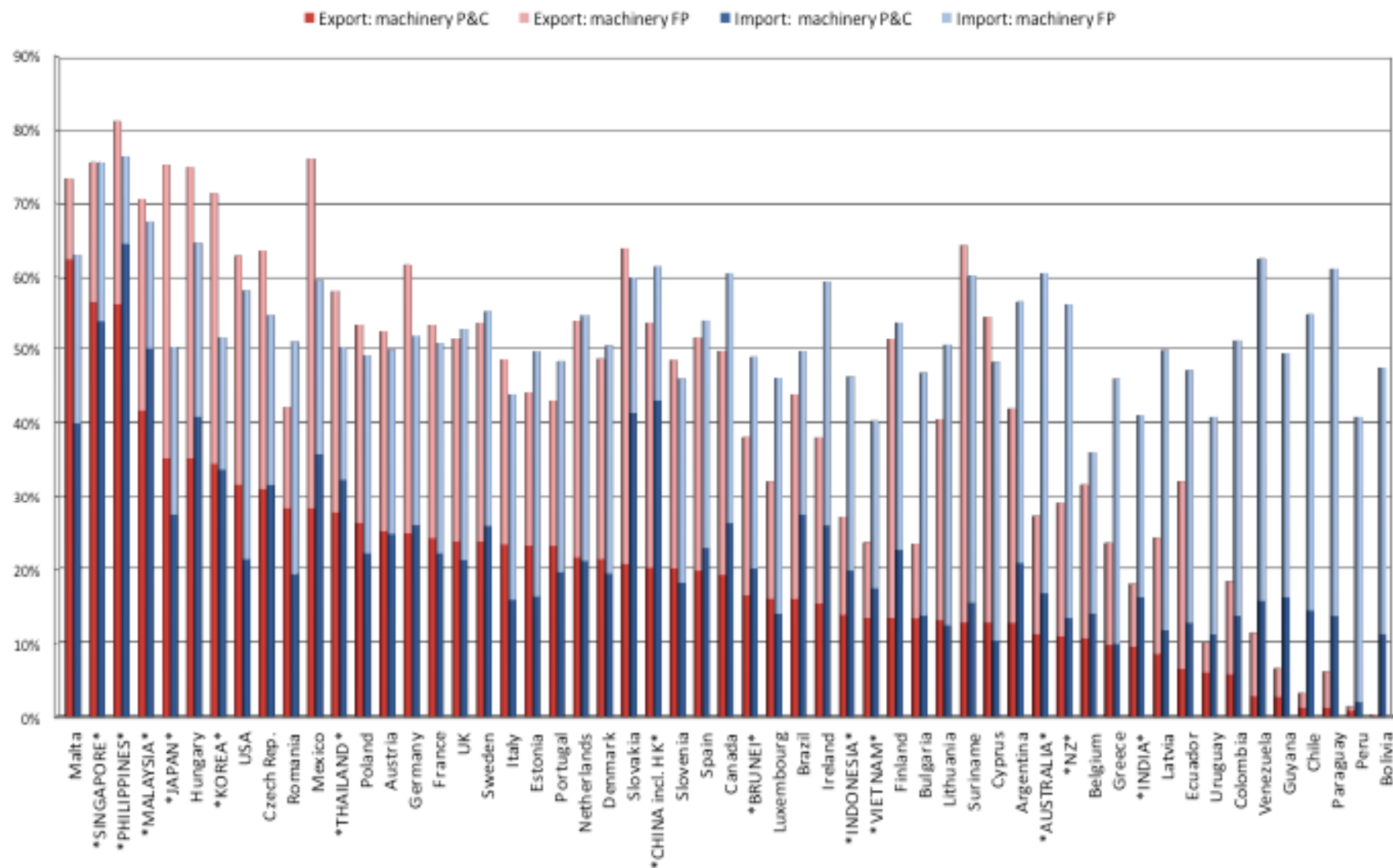
Source: ERIA (2010).

## Figure 4 Agglomeration and dispersion in new economic geography



Source: ERIA (2010).

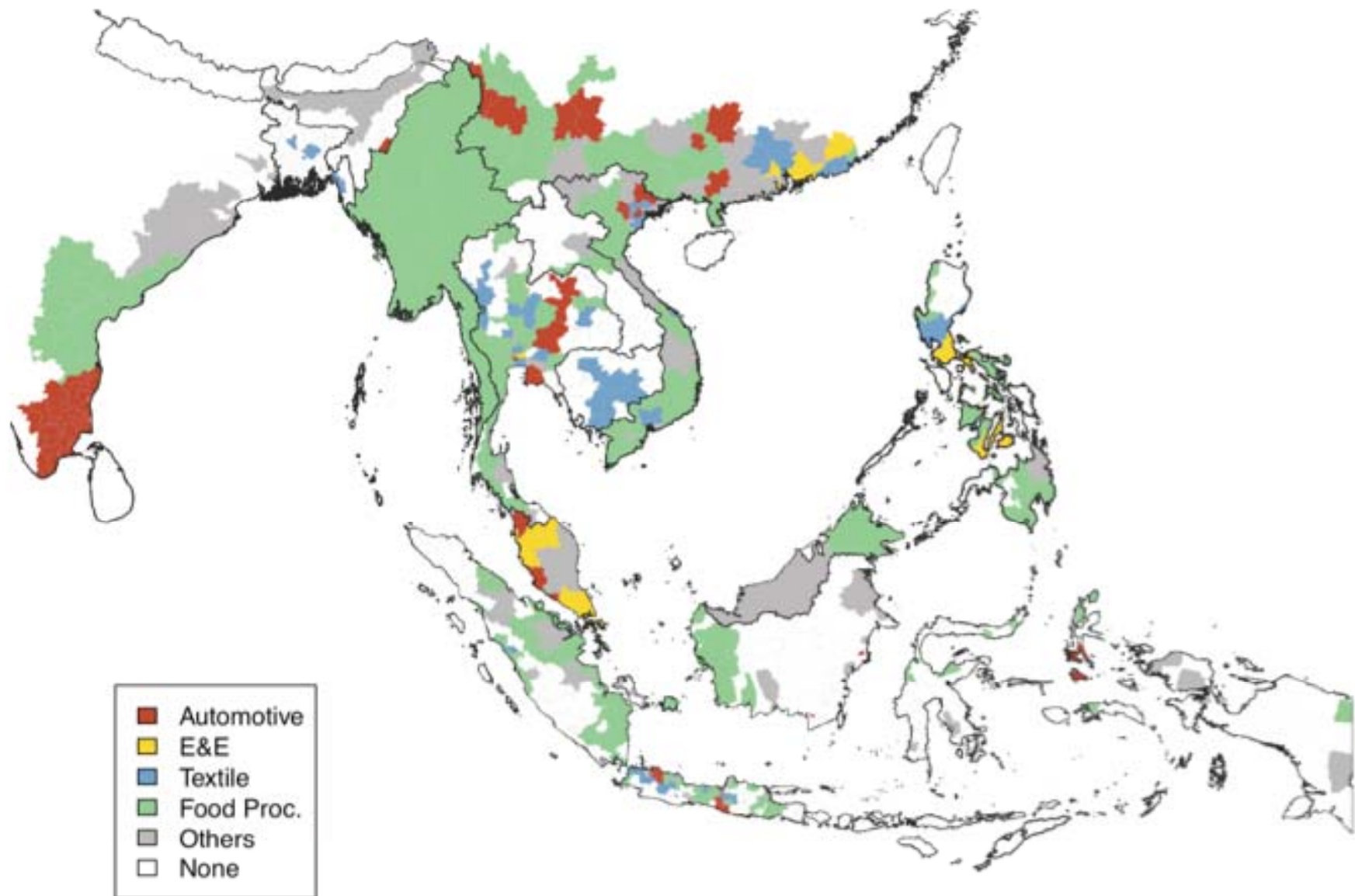
# Figure 5 Shares of machineries in total exports/imports of manufacturing goods to the world in 2007



Source: ERIA (2010).

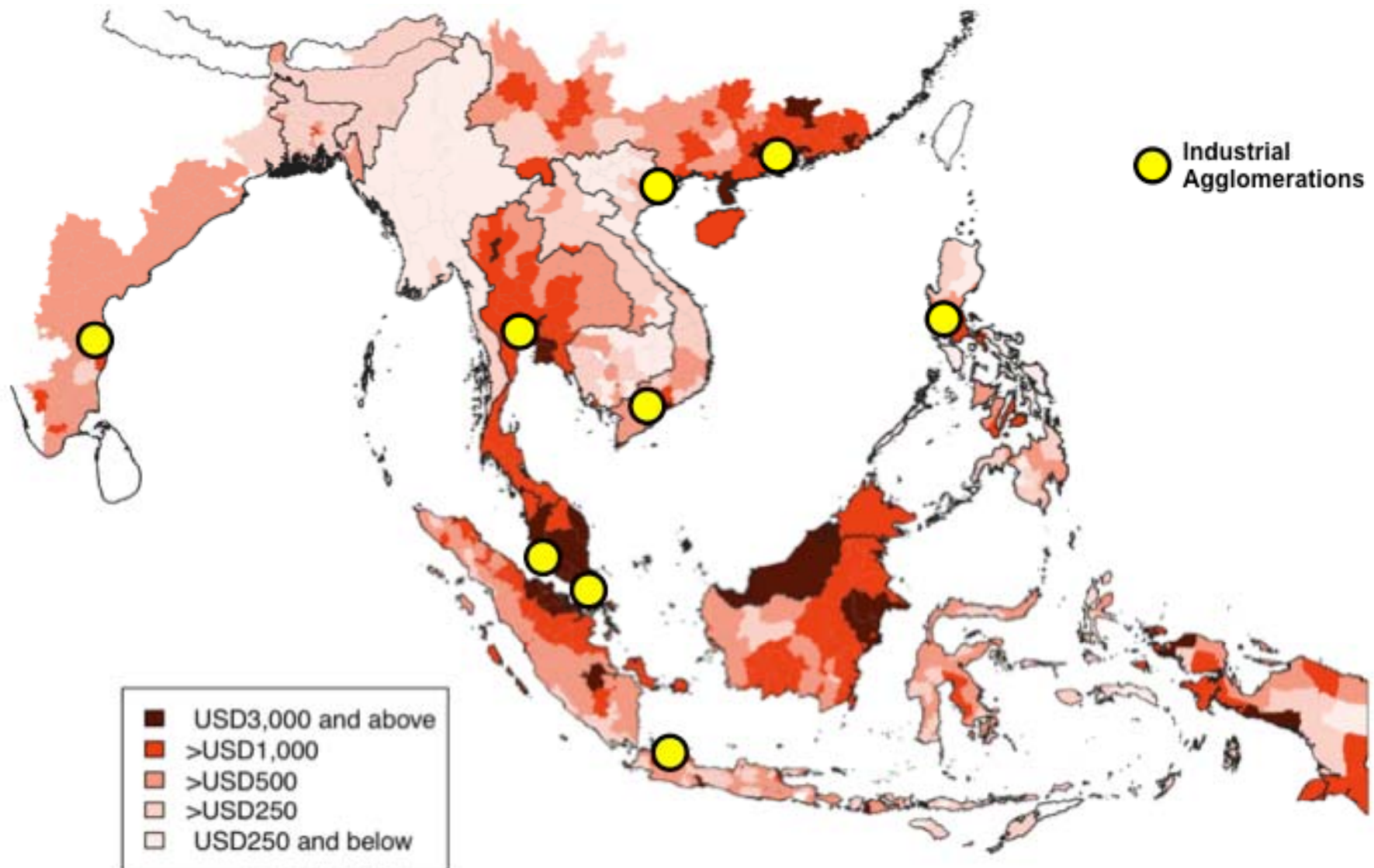


Figure 6 Location of manufacturing sub-sectors (2005)



Source: ERIA (2010).

Figure 7 Nominal GRDP per-capita (2005) and industrial agglomerations

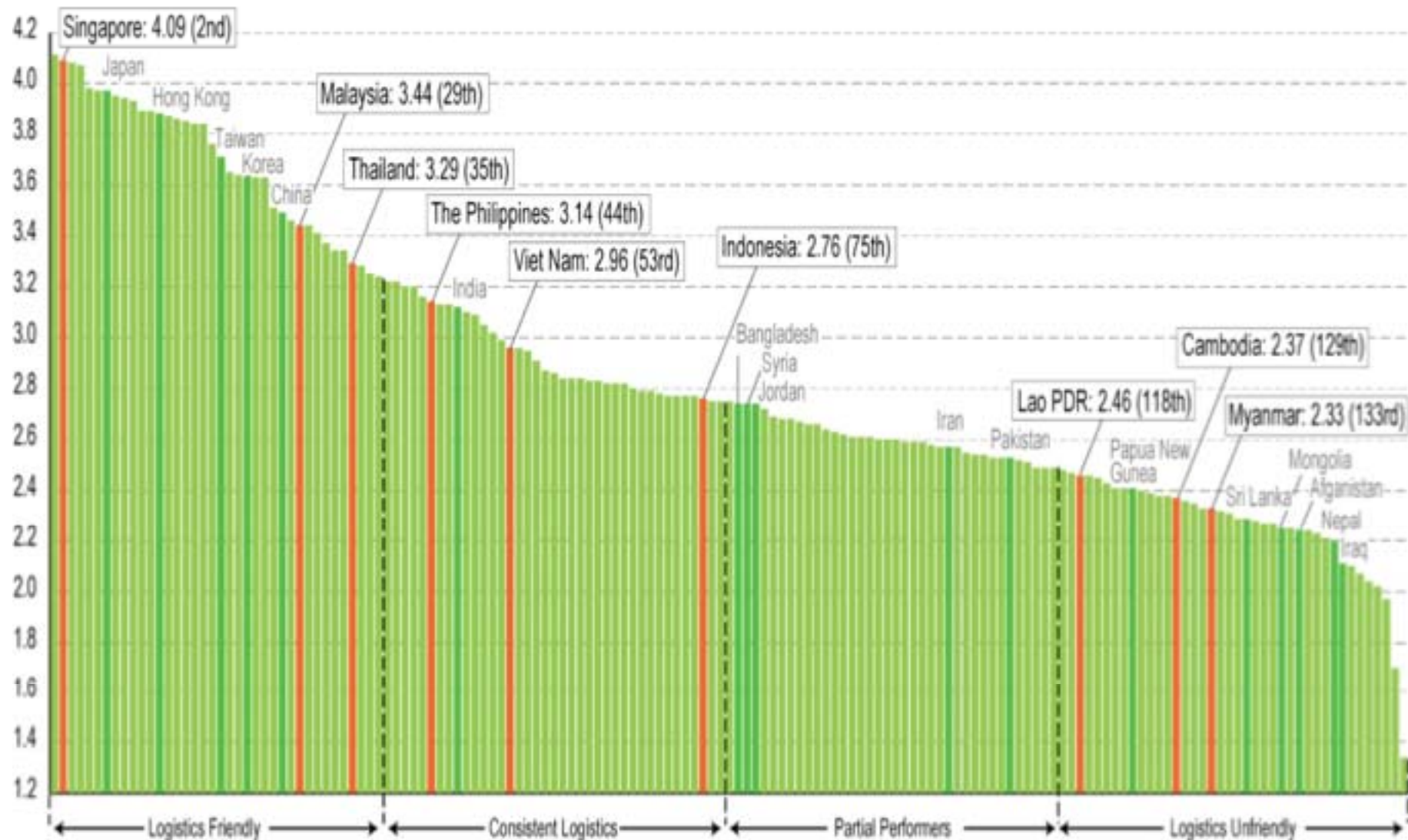


Source: ERIA (2010).

## 2. The assessment of logistics infrastructure in ASEAN

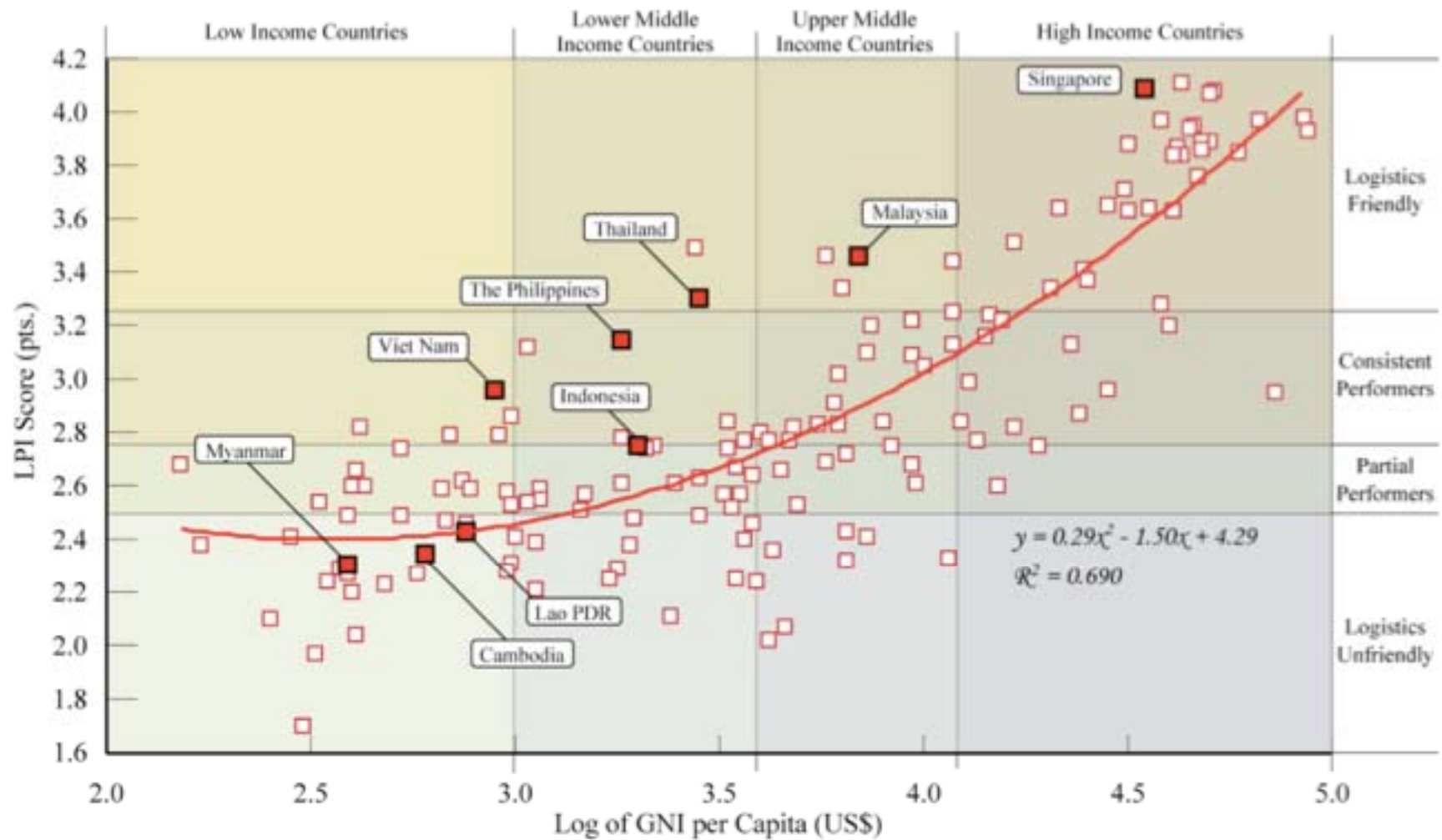
- The development of logistics infrastructure closely links with the degree of participation in production networks.
  - Logistics Performance Index (LPI) 2010 by WB
  - Doing Business 2010 by WB
  - By transport modes
    - Roads
    - Railways
    - Ports and marine transportation
    - Airports and air transportation

**Figure 8 LPI Ranking and Scores 2010**



Original source: Connecting to compete 2010, Trade Logistics in the Global Economy  
Source: ASEAN Secretariat (2010a).

**Figure 9 Correlation between LPI and Income per Capita**

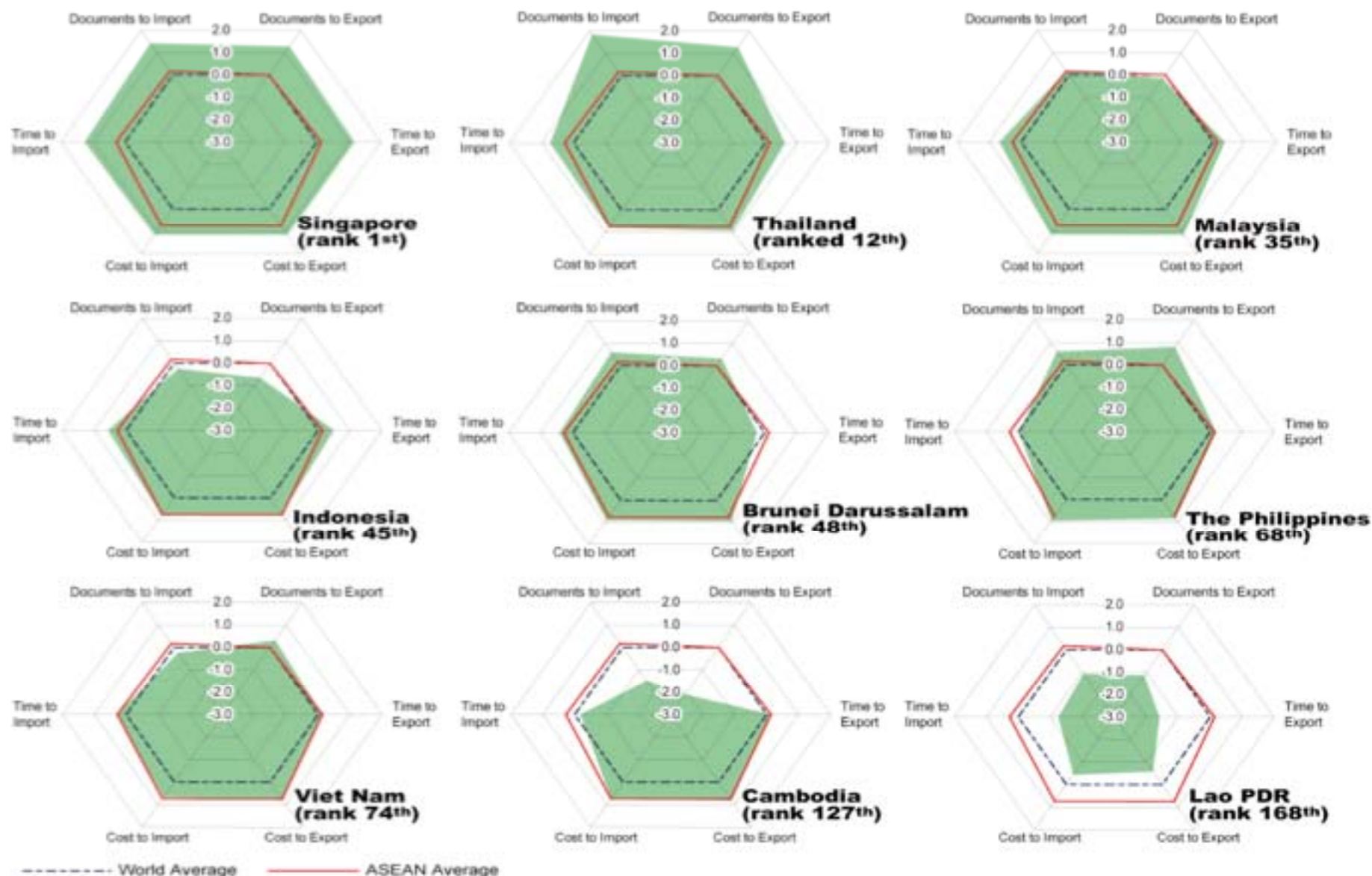


Note: Income groups are divided according to 2008 GNI per capita. Based on the World Bank's definition, the groups are: low income (\$975 or less); lower middle income (\$976 - \$3,855); upper middle income (\$3,856 - \$11,905); and high income (\$11,906 or more).

Source: ASEAN Secretariat (2010a).



**Figure 10 AMSs Standardized Scores of Six Indicators on Ease of Trading Across Border**



Source: ASEAN Secretariat (2010a) based on Doing Business 2010, World Bank/IFC.

**Figure 11**  
**Traffic Volume on Asian**  
**Highways**



Source : ASEAN Logistics  
 Network Map Study, JETRO,  
 2009.  
 Drawn from ASEAN  
 Secretariat (2010a).

**Figure 12**  
**Railway Network in all AMSs**

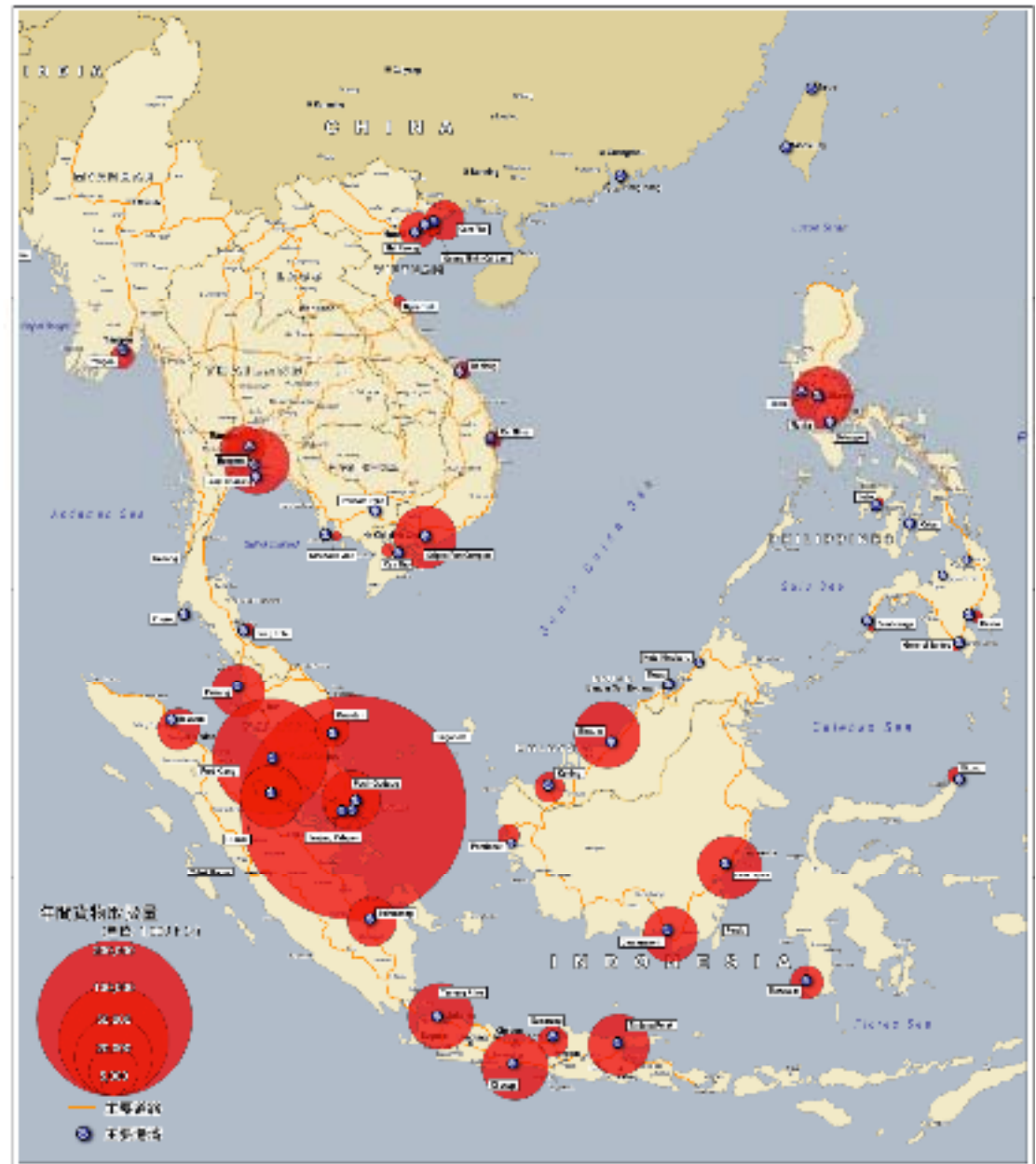


Source : ASEAN Logistics  
 Network Map Study, JETRO,  
 2009.  
 Drawn from ASEAN  
 Secretariat (2010a).



**Figure 13**  
**Major ports in ASEAN and their cargo handling**

Source : ASEAN Logistics Network Map Study, JETRO, 2009.  
Drawn from ASEAN Secretariat (2010a).



**Figure 14**  
**Major airports in ASEAN**  
**And the frequency of**  
**flights**

Source : ASEAN Logistics  
 Network Map Study, JETRO,  
 2009.  
 Drawn from ASEAN  
 Secretariat (2010a).



### 3. Initiatives in ASEAN and East Asia

- Comprehensive Asia Development Plan (CADP) (ERIA (2010))
  - Three-tier development strategies in terms of the degree of participation in production networks
- Master Plan on ASEAN Connectivity (ASEAN Secretariat (2010b))
- Brunei Action Plan (ASEAN Strategic Transport Plan) (ASEAN Secretariat (2010a))

## Table 1 Infrastructure Development in Tier 1 by CADP

Logistics infrastructure	Other economic infrastructure	Urban and social infrastructure
<p><b>1. Road / bridges</b> Highway system, bridges and bypass roads in and around metropolitan areas Access roads/bridges to gateway ports/airports</p> <p><b>2. Railways</b> Urban public transport system (subway, LRT, MRT) and railways to connect urban and suburban areas</p> <p><b>3. Ports / maritime</b> Sizable port facility to cater massive container transactions and specialized loading facilities</p> <p><b>Airports</b> 4. Sizable airport facility to cater massive movements of passengers and freight</p>	<p><b>1. Industrial estates / special economic zones</b> High-tech park with private initiatives</p> <p><b>2. Energy / power</b> Stable and ample supply of electricity and energy for both industries and residences</p> <p><b>3. Telecommunication</b> Infrastructure services for innovative society</p>	<p><b>1. Water and sanitation, medical and others</b> Metropolitan and social infrastructure for urban amenity</p>

## Table 2 Infrastructure Development in Tier 2 by CADP

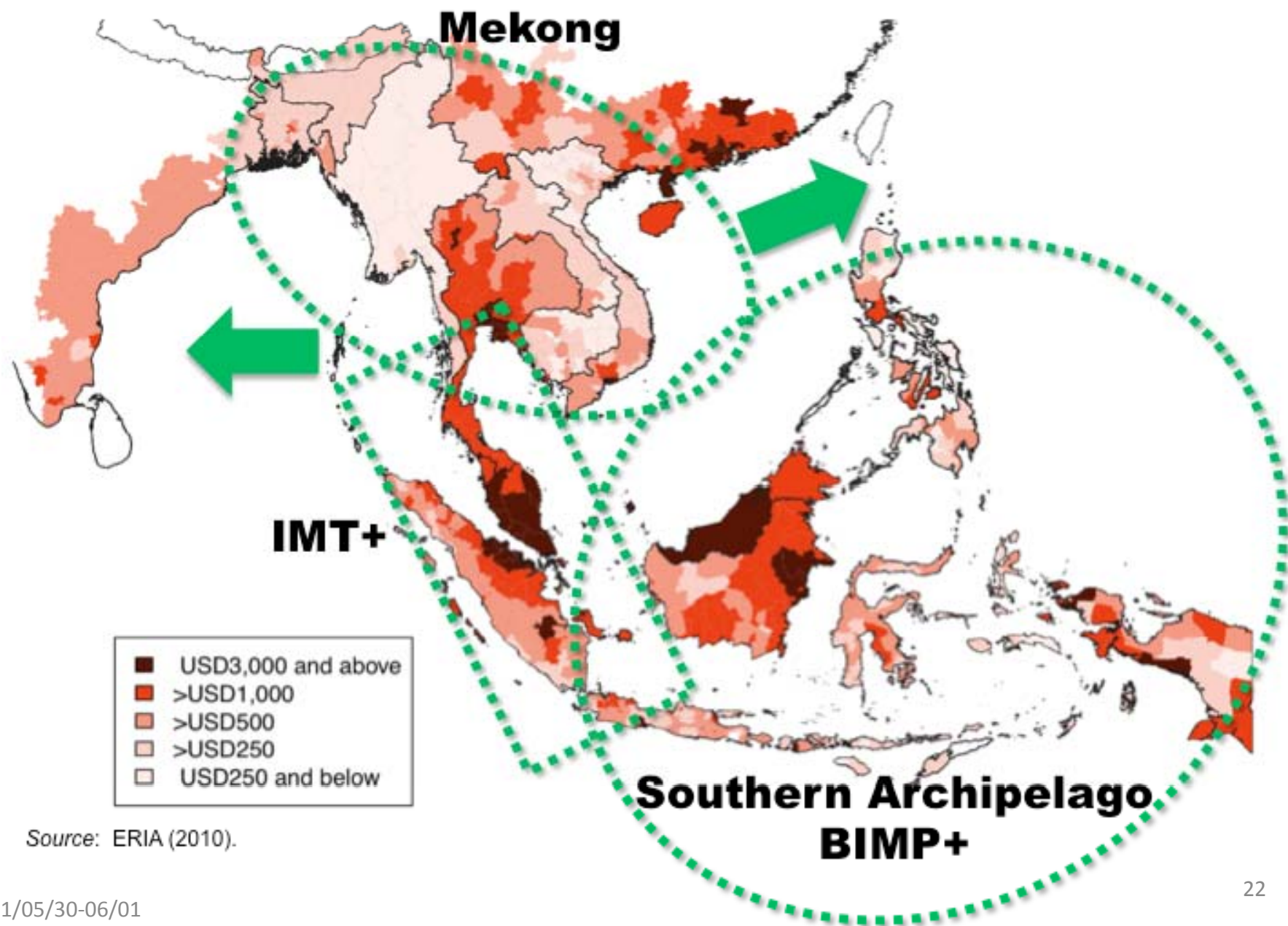
Logistics infrastructure	Other economic infrastructure	Urban and social infrastructure
<p><b>1. Road / bridges</b> Middle-distance roads for connecting industrial centers, logistics hubs, and neighboring industrial agglomerations Sub-urban road system for avoiding congestions</p> <p><b>2. Railways</b> Development of regional arterial railway networks</p> <p><b>3. Ports / maritime</b> Upgrading major ports to enhance handling capacity</p> <p><b>4. Airports</b> Upgrading major airports for both passengers and cargos</p>	<p><b>1. Industrial estates / special economic zones</b> SEZs in border areas and population centers</p> <p><b>2. Energy / power</b> Stable and ample supply of electricity and energy for industries</p> <p><b>3. Telecommunication</b> Development / upgrading of trunk telecommunication networks</p>	<p><b>1. Water and sanitation, medical and others</b> Improving water and sanitary conditions in urban areas</p>



## Table 3 Infrastructure Development in Tier 3 by CADP

Logistics infrastructure	Other economic infrastructure	Urban and social infrastructure
<p><b>1. Road / bridges</b> Long-distance road connection and rural road networks for various industrial development Sub-urban road system for avoiding congestions</p> <p><b>2. Railways</b> Middle-distance railways for resource-based industries</p> <p><b>3. Ports / maritime</b> Upgrading of local ports</p> <p><b>4. Airports</b> Upgrading / development of local airports</p>	<p><b>1. Industrial estates / special economic zones</b> Industrial estates in growth nodes</p> <p><b>2. Energy / power</b> Development of power plants taking advantage of location advantages Local supply of electricity and energy</p> <p><b>3. Telecommunication</b> Local telecommunication networks</p>	<p><b>1. Water and sanitation, medical and others</b> Improving water and sanitary conditions</p>

Figure 15 Three sub-regions proposed by CADP



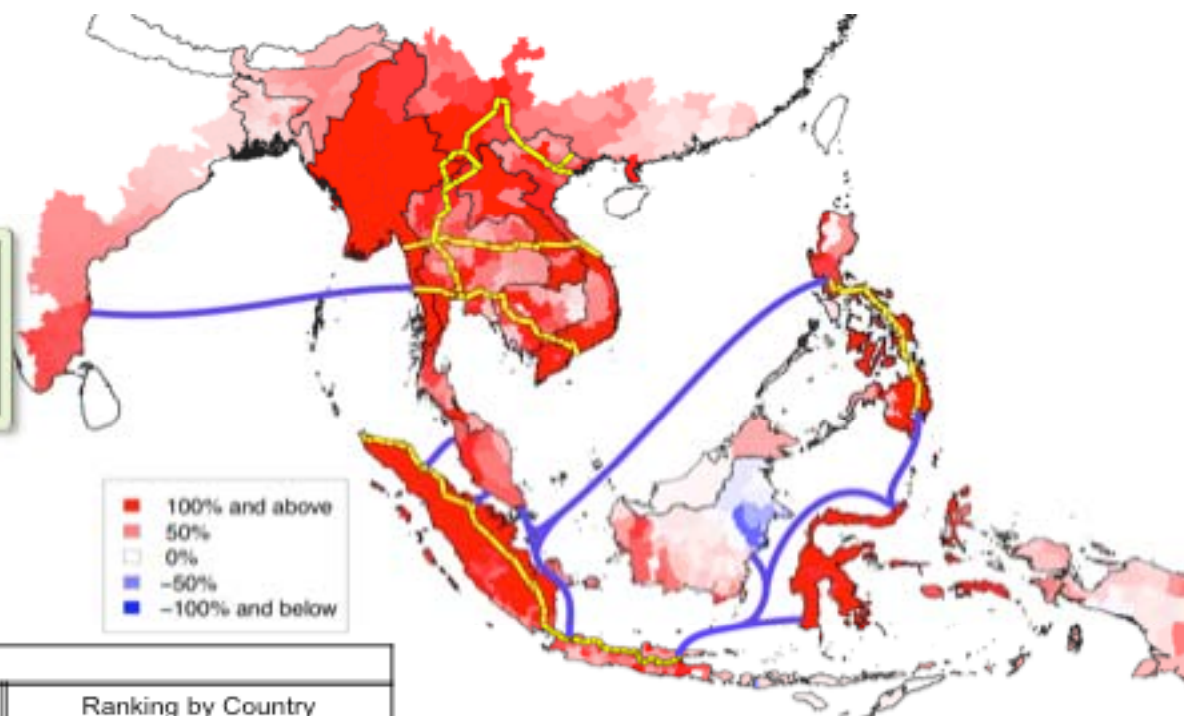
Source: ERIA (2010).

**Figure 16**  
Simulation results by GSM

**Scenario 7**

**All Corridors**

☐ Scenarios 4, 5, and 6 are implemented.



All				
Ranking by Region			Ranking by Country	
Region	Country	Economic Effects	Country	Economic Effects
Kota Lhokseumawe	Indonesia	533.7%	Myanmar	145.8%
Asahan	Indonesia	485.8%	Vietnam	114.6%
Mamuju Utara	Indonesia	480.8%	Laos	99.3%
Kota Pematang Siantar	Indonesia	463.4%	Thailand	98.6%
Rokanhilir	Indonesia	432.8%	Cambodia	97.9%
Indragiri Hilir	Indonesia	419.2%	Indonesia	85.0%
Kota Binjai	Indonesia	411.4%	Philippines	73.4%
Kota Kediri	Indonesia	410.3%	Malaysia	64.4%
Kota Tanjungbalai	Indonesia	408.1%	India	45.6%
Soc Trang	Vietnam	404.4%	Singapore	29.2%
Number of regions with	100% or more	254	China	25.4%
	50% to 100%	239	Bangladesh	23.0%
	0% to 50%	446	Hong Kong	8.2%
	Less than 0%	17	Macao	4.1%
Total Economic Effects in 956 Regions		54.77%	Brunei	2.7%

Source: ERIA (2010).



Table 4

## ➤ Summary table: the number of listed projects

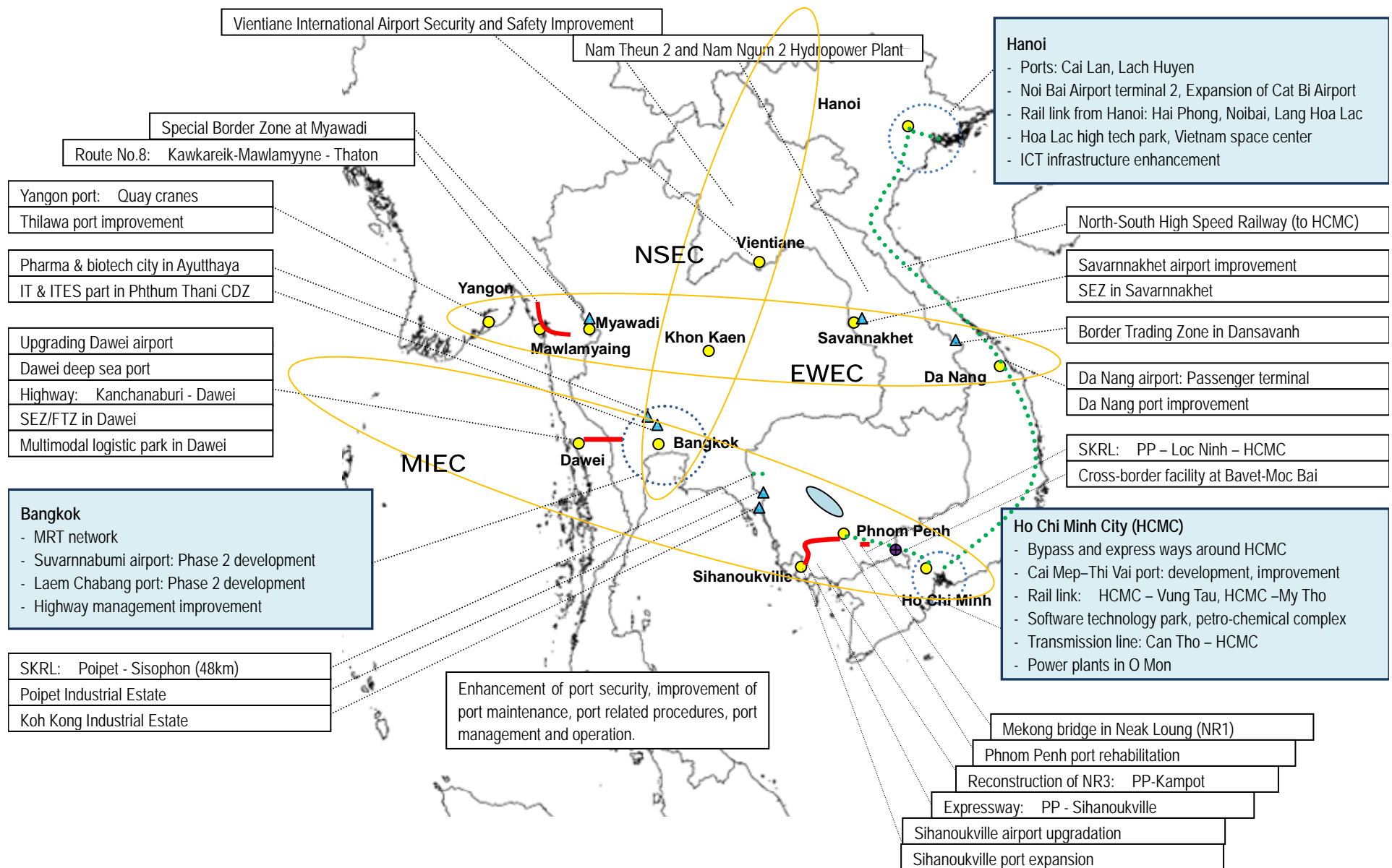
	Total	Mekong	BIMP+	IMT+	Brunei Darussalam	Cambodia	Indonesia	Laos	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	China	India
<b>Total</b>	<b>695</b>	<b>452</b>	<b>190</b>	<b>61</b>	<b>2</b>	<b>103</b>	<b>169</b>	<b>77</b>	<b>23</b>	<b>26</b>	<b>52</b>	<b>0</b>	<b>60</b>	<b>188</b>	<b>11</b>	<b>33</b>
<b>Priority</b>																
Top Priority	170	113	51	14	1	15	33	1	3	8	25	0	26	57	1	18
Priority	166	87	56	23	0	19	53	6	7	6	17	0	7	48	1	10
Normal	359	252	83	24	1	69	83	70	13	12	10	0	27	83	9	5
<b>Tier</b>																
Tier 1	178	109	63	6	0	0	45	0	7	0	18	0	22	65	1	20
Tier 2	313	217	59	45	1	58	60	26	10	22	27	0	34	110	4	7
Tier 3	204	126	68	10	1	45	64	51	6	4	7	0	4	13	6	6
<b>Type</b>																
Public	541	358	146	45	2	95	121	71	21	25	45	0	54	125	11	17
PPP	154	94	44	16	0	8	48	6	2	1	7	0	6	63	0	16
<b>Sector</b>																
Logistics	443	279	128	44	2	60	106	55	13	18	46	0	39	100	8	18
: Road / Bridge	227	150	66	11	1	37	54	43	2	6	21	0	10	49	5	7
: Railway	66	51	6	9	0	6	9	3	5	2	0	0	19	19	0	4
: Port / Maritime	99	44	41	22	1	8	34	1	5	9	18	0	7	23	0	6
: Airport	36	28	6	2	0	6	4	7	1	1	3	0	2	8	3	1
Other Economic	201	146	45	10	0	32	45	22	7	8	3	0	21	78	3	9
: Industrial Estate / SEZ	56	56	0	0	0	8	0	7	0	3	0	0	8	28	0	4
: Energy / Power	135	80	45	10	0	17	45	13	7	3	3	0	11	47	2	5
: Telecommunication	12	11	1	0	0	8	1	2	0	2	0	0	2	3	1	0
Urban and Social	49	25	17	7	0	11	18	0	3	0	3	0	0	10	0	4
Others (Soft)	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2

Source: ERIA (2010).

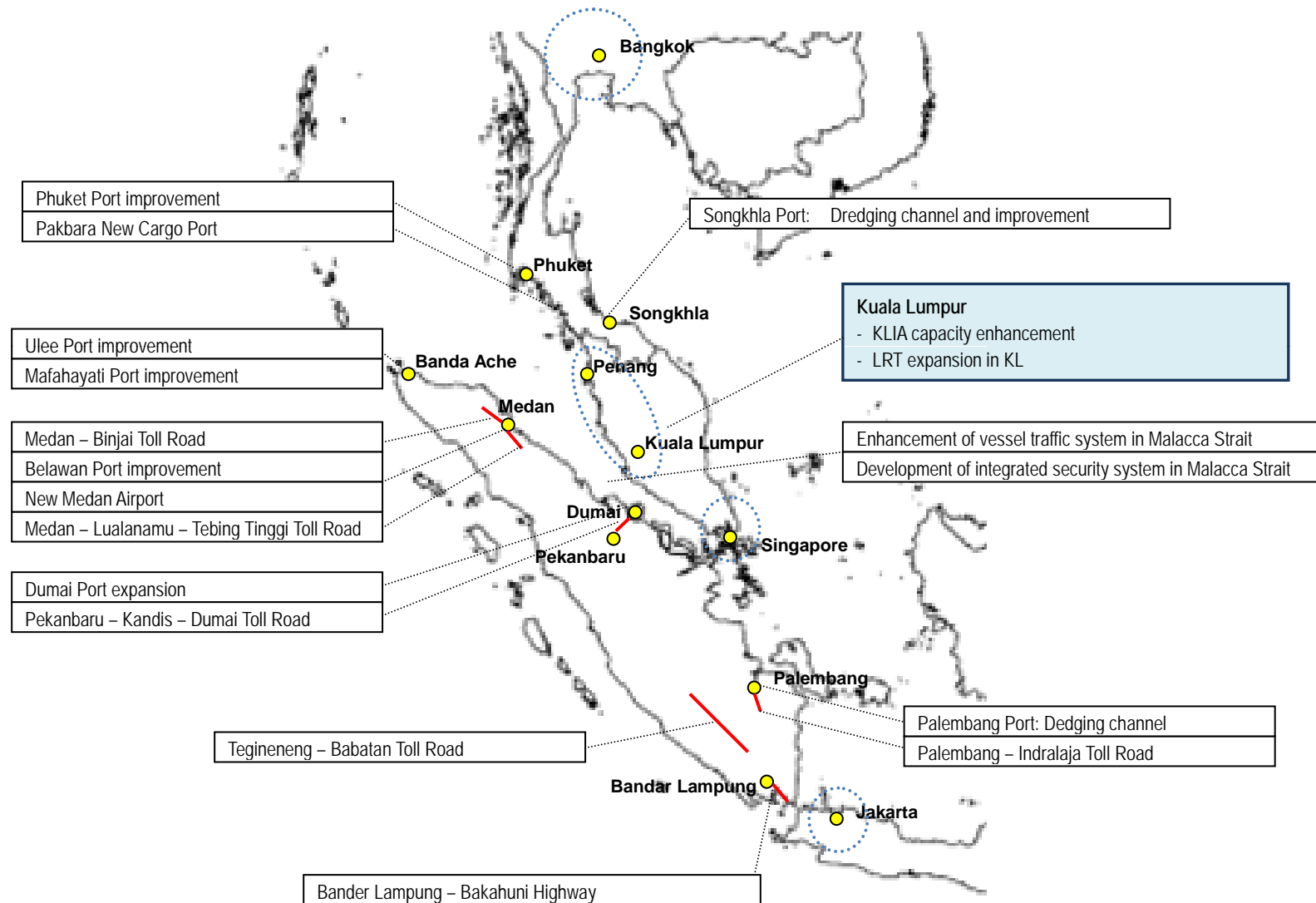
## ➤ Summary table: cost estimates

	Mekong				BIMP+				IMT+				ALL Sub-regions			
		Public	PPP	Sub-total		Public	PPP	Sub-total		Public	PPP	Sub-total		Public	PPP	Sub-total
Tier 1	Top Priority	139,205	36,721	175,926	Top Priority	41,088	15,206	56,294	Top Priority	272	0	272	Top Priority	180,565	51,927	232,492
	Priority	28,817	3,134	31,951	Priority	9,047	2,873	11,921	Priority	665	275	939	Priority	38,530	6,282	44,811
	Normal	271	0	271	Normal	1,148	2,075	3,223	Normal	279	0	279	Normal	1,698	2,075	3,773
	Sub-total	168,293	39,855	208,148	Sub-total	51,284	20,154	71,438	Sub-total	1,216	275	1,490	Sub-total	220,793	60,283	281,076
Tier 2	Top Priority	4,076	3,456	7,532	Top Priority	4,415	1,006	5,420	Top Priority	326	2,749	3,075	Top Priority	8,817	7,210	16,027
	Priority	6,154	3,553	9,707	Priority	5,557	690	6,247	Priority	1,501	818	2,319	Priority	13,211	5,061	18,272
	Normal	31,716	4,348	36,065	Normal	1,602	2,301	3,903	Normal	3,642	275	3,917	Normal	36,960	6,925	43,885
	Sub-total	41,946	11,357	53,303	Sub-total	11,573	3,997	15,570	Sub-total	5,469	3,842	9,311	Sub-total	58,988	19,196	78,184
Tier 3	Top Priority	0	0	0	Top Priority	0	0	0	Top Priority	0	0	0	Top Priority	0	0	0
	Priority	22	1,190	1,212	Priority	25	24	49	Priority	12	15	27	Priority	59	1,229	1,288
	Normal	15,277	1,683	16,960	Normal	8,929	2,469	11,398	Normal	821	0	821	Normal	25,028	4,152	29,180
	Sub-total	15,299	2,873	18,172	Sub-total	8,954	2,493	11,447	Sub-total	833	15	848	Sub-total	25,087	5,381	30,468
ALL Tiers	Top Priority	143,281	40,176	183,457	Top Priority	45,503	16,212	61,715	Top Priority	598	2,749	3,347	Top Priority	189,381	59,137	248,519
	Priority	34,992	7,877	42,870	Priority	14,629	3,587	18,216	Priority	2,178	1,108	3,285	Priority	51,799	12,572	64,371
	Normal	47,265	6,031	53,296	Normal	11,680	6,845	18,524	Normal	4,742	275	5,018	Normal	63,687	13,151	76,838
	Sub-total	225,538	54,085	279,623	Sub-total	71,811	26,644	98,456	Sub-total	7,518	4,132	11,650	Grand-total	304,867	84,861	389,728

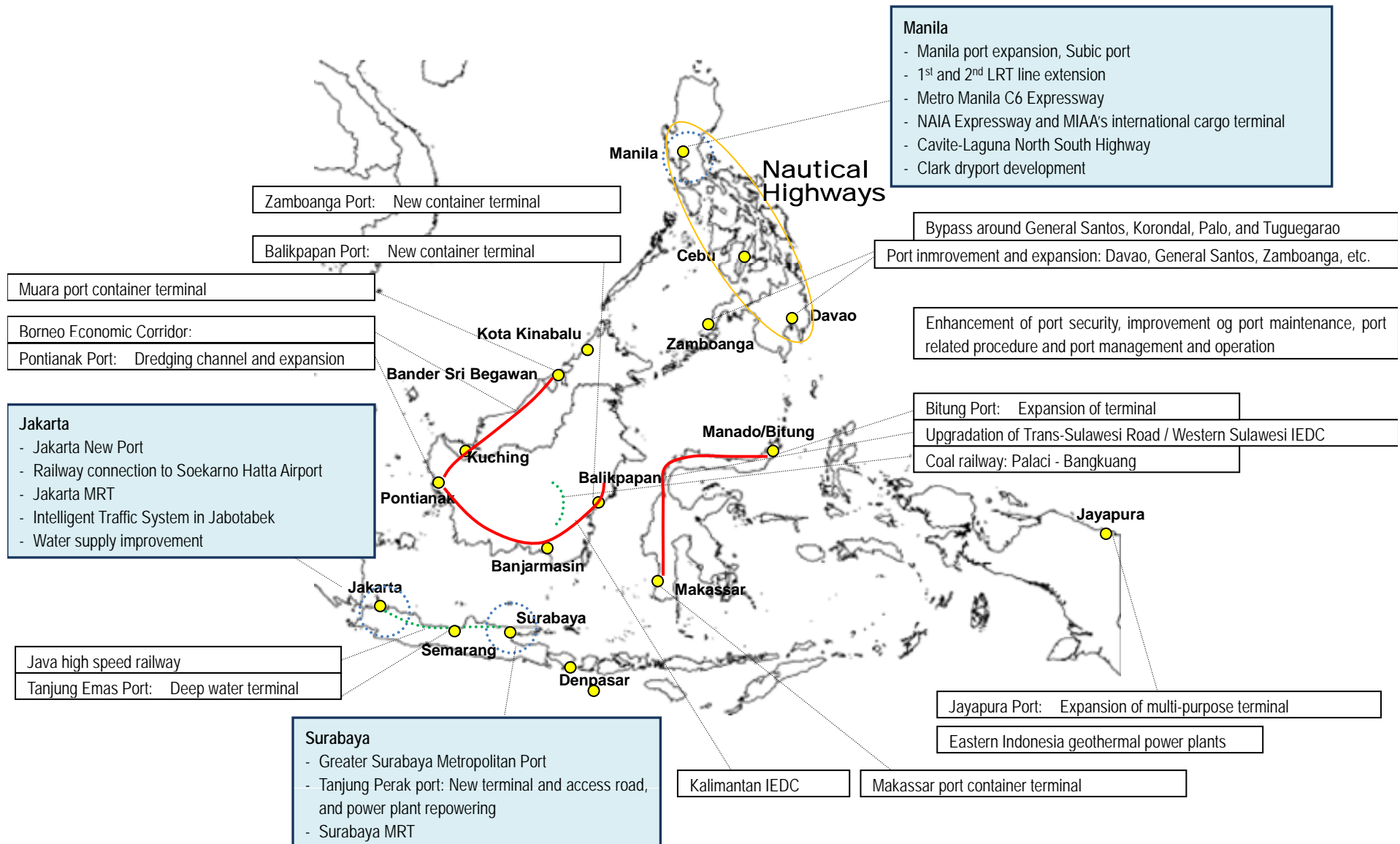
## ➤ Selected prospective projects in Mekong sub-region



## ➤ Selected prospective projects in IMT+ sub-region



## ➤ Selected prospective projects in BIMP+ sub-region

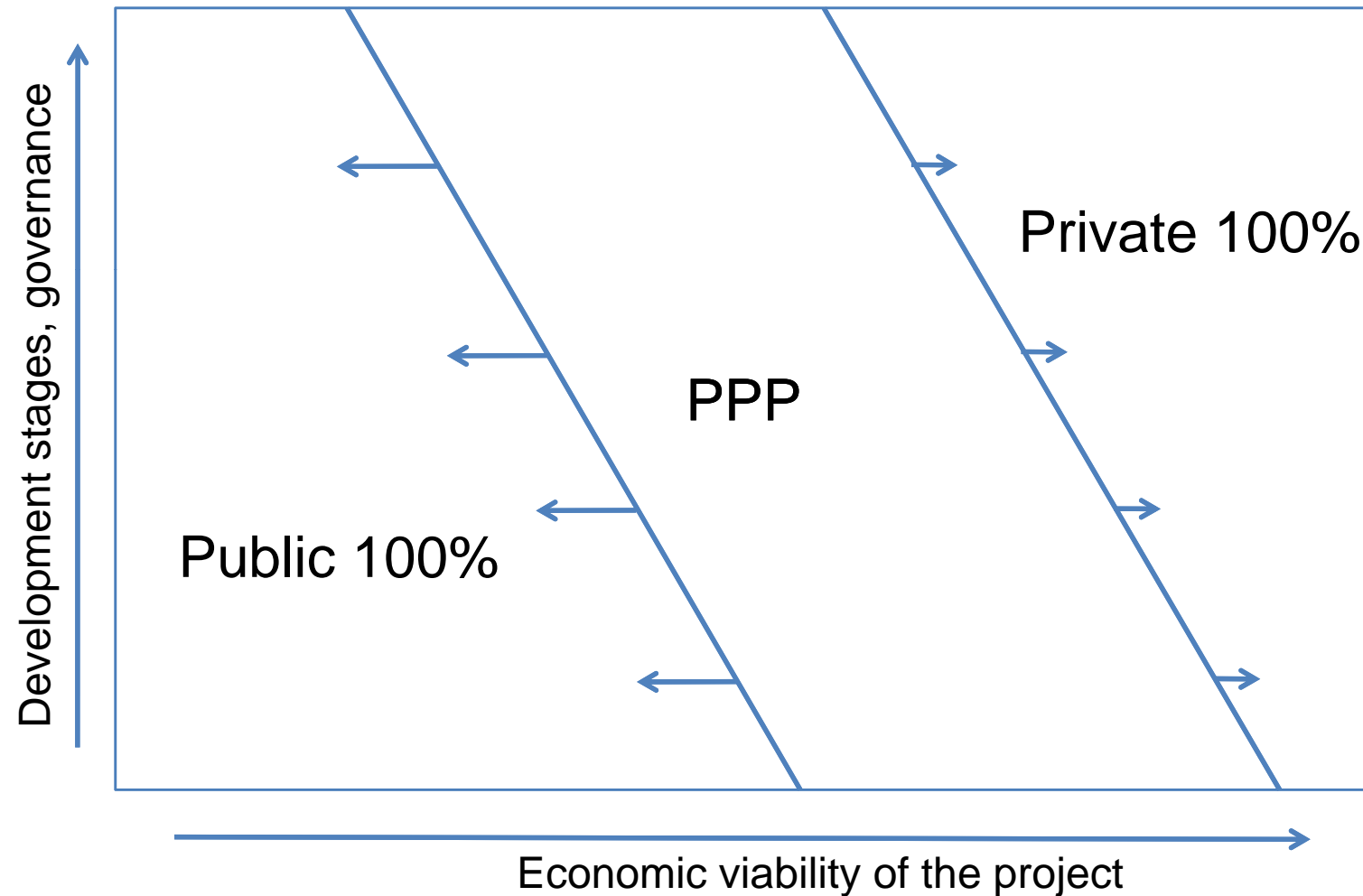


## 4. Essence of public-private partnership (PPP)

- Investment demand for infrastructure
- Theoretical foundation of PPP
  - When is PPP relevant?
  - Market failure and the role of government
  - Economic viability of the project
  - Additional gains from private incentive
  - Price and non-price competitiveness
- Toward designing Asian PPP



## ➤ Why is the public-private partnership needed?



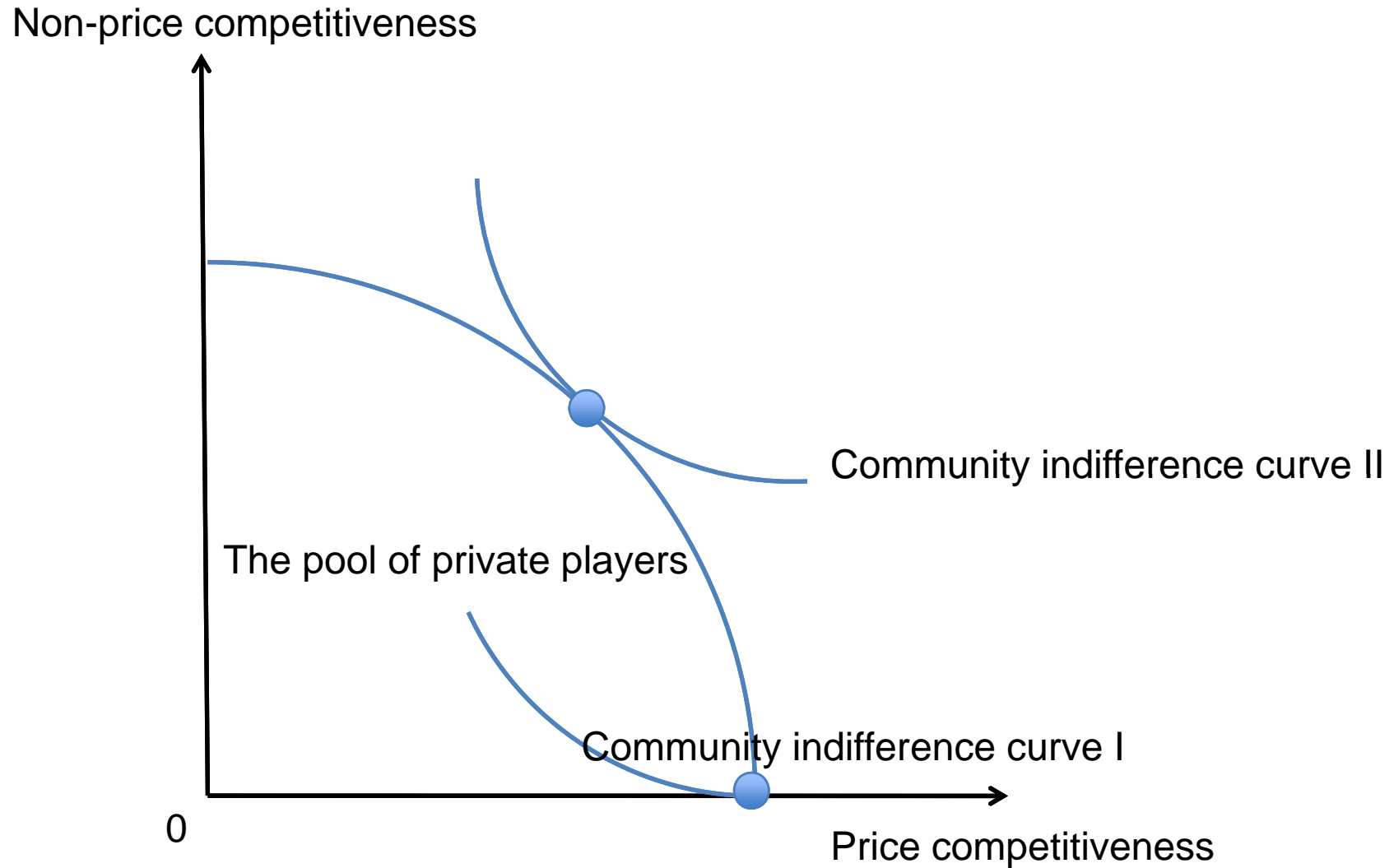
## ➤ Market failure with which government intervention is possibly justified

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Market failure	Examples
Existence of economies of scale	At the firm or plant level At the industry or macro level In industrial agglomeration
Existence of positive or negative externalities	Social net benefits > project net benefits (e.g., infrastructure projects) Social net benefits < project net benefits (e.g., pollution industry)
Existence of public goods	Existence of goods with non-rivalry and non-excludability (e.g., rural access roads)
Existence of imperfect competition	Monopoly, oligopoly State monopoly
Existence of imperfect competition and/or uncertainty	Liquidity constraints (e.g., shortage of SME finance) Super large infrastructure projects



## ➤ Price and non-price competitiveness of private players in open bidding



## 5. Toward more prosperous and equitable ASEAN and East Asia

- ASEAN and East Asia present a new development strategy.
- Connectivity is the key to further enhancing the competitiveness of the ASEAN economy.
  - Institutional connectivity by AEC
  - Physical connectivity by infrastructure development
- The “establishment” of AEC in 2015 is not a final goal. Still far from a “perfectly integrated economy.”
- As for logistics infrastructure development, connectivity for Tier 3, linkage for Tier 2, and innovation for Tier 1 should be promoted.

## GDP per capita in 2020 in extended East Asian countries

GDP/capita (USD)	1995	2000	2008	2020 Estimate
Australia	19,915	19,508	45,062	66,073
Singapore	24,220	23,073	39,422	58,006
Brunei	16,050	17,996	35,626	57,858
Japan	41,833	36,835	38,581	49,164
New Zealand	16,640	13,613	29,860	42,080
South Korea	11,581	11,488	19,295	33,648
Malaysia	4,314	4,030	8,197	14,454
Thailand	2,794	1,968	4,055	10,531
China	601	946	3,235	8,671
Indonesia	1,056	804	2,247	6,859
Philippines	1,059	977	1,847	6,675
Vietnam	284	396	1,041	3,800
India	350	411	960	3,584
Cambodia	303	287	754	2,336
Laos	370	303	852	1,948
Myanmar	125	191	529	1,172
East Asia Average	2,847	2,660	4,277	8,579

Figures for past (nominal) GDP per capita are from ADB, *Key Indicators for Asia and the Pacific 2009* and UN, *World Population Prospects: The 2008 Revision*. Future forecasts are ERIA estimates, taking into account the trends, impact analysis of development policies etc.  
Source: Fujimoto, Hara, and Kimura (2010).

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