



Pocket Seminar – May 17, 2013

# “Infrastructure and PPPs Development in Thailand”

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# Self Introduction

- **2003 – 2007** Undergraduate Student, Department of Civil Engineering, Chulalongkorn University, Bangkok, Thailand
- **2007- 20011** Master Course Student, Department of Civil Engineering, Chulalongkorn University, Bangkok, Thailand
- **2010** Research Assistant in “*A Study on Financial Framework for Development of Urban Mass Transit System in Thailand*” under control of Japan International Cooperation Agency (JICA), Oriental Consultant public company limited, Bangkok, Thailand
- **2011-2012** Lecturer, Department of Facility and Building Management ,Faculty of Science and Technology, Suan Sunandha Rajabhat University, Bangkok, Thailand
- **2013 – Present** Doctoral Course Student, Department of Urban Management, Graduate School of Engineering, Kyoto University, Japan



- 1 **Infrastructure Development: Introduction**
- 2 **Current Status of Infrastructure Development in Thailand**
- 3 **PPPs Development in Thailand**
- 4 **My Research: A contract Design of PPP Projects by Considering Possibility of Renegotiation**





# Infrastructure Development: Introduction

- What is infrastructure? Typically, this term refers to the technical structures or facilities that support society. The word infrastructure has been used in English since at least 1927, originally meaning "The installations that form the basis for any operation or system".



Transport infrastructure



Energy infrastructure



Water management infrastructure

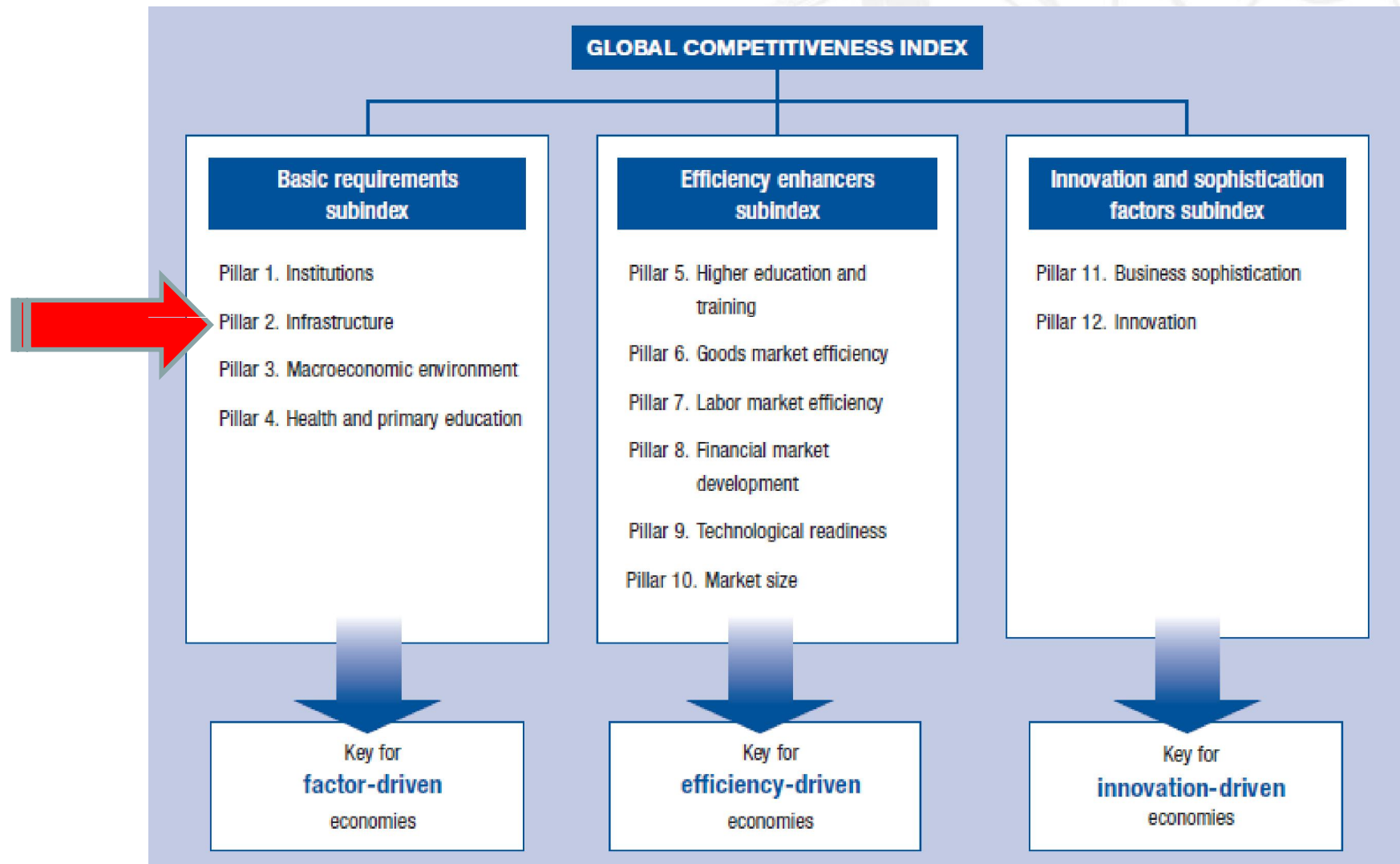


Social infrastructure

- Why is infrastructure development important ?  
These facilities are necessary for the functioning of economy and society in order to develop the country.

# Infrastructure Development: Introduction (cont.)

**Figure 1.** The Global Competitiveness Index framework



(Source: The Global Competitiveness Report 2012–2013)

# Infrastructure Development: Introduction (cont.)

**Table 1:** The Global Competitiveness Index 2012–2013: Basic requirements

BASIC REQUIREMENTS			PILLARS							
			1. Institutions		2. Infrastructure		3. Macroeconomic environment		4. Health and primary education	
Country/Economy	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Israel	37	5.10	34	4.75	36	4.89	64	4.72	40	6.04
Italy	51	4.81	97	3.56	28	5.19	102	4.23	25	6.27
Jamaica	114	3.82	87	3.62	85	3.59	141	2.89	104	5.19
Japan	29	5.30	22	5.13	11	5.92	124	3.67	10	6.50
Jordan	66	4.61	42	4.50	60	4.17	112	3.94	56	5.84
Kazakhstan	47	4.86	66	3.96	67	4.05	16	6.07	92	5.37
Kenya	123	3.62	106	3.43	103	3.09	133	3.39	115	4.58
Korea, Rep.	18	5.66	62	3.98	9	5.92	10	6.25	11	6.49
Taiwan, China	17	5.67	26	5.00	17	5.72	28	5.51	15	6.45
Tajikistan	105	3.97	65	3.96	118	2.66	120	3.82	87	5.43
Tanzania	122	3.65	86	3.62	132	2.27	107	4.12	113	4.60
Thailand	45	4.89	77	3.82	46	4.62	27	5.55	78	5.56

(Source: The Global Competitiveness Report 2012–2013)





# Current Status of Infrastructure Development in Thailand (cont.)



Capital and the largest city: **Bangkok**

Population: **about 67 million**

Capital city (Bangkok) population: **6 million**

Total area **513,120 km<sup>2</sup>** (Japan 377,944 km<sup>2</sup>)

GDP (PPP) 2012 estimate: **Total \$651.856 billion**

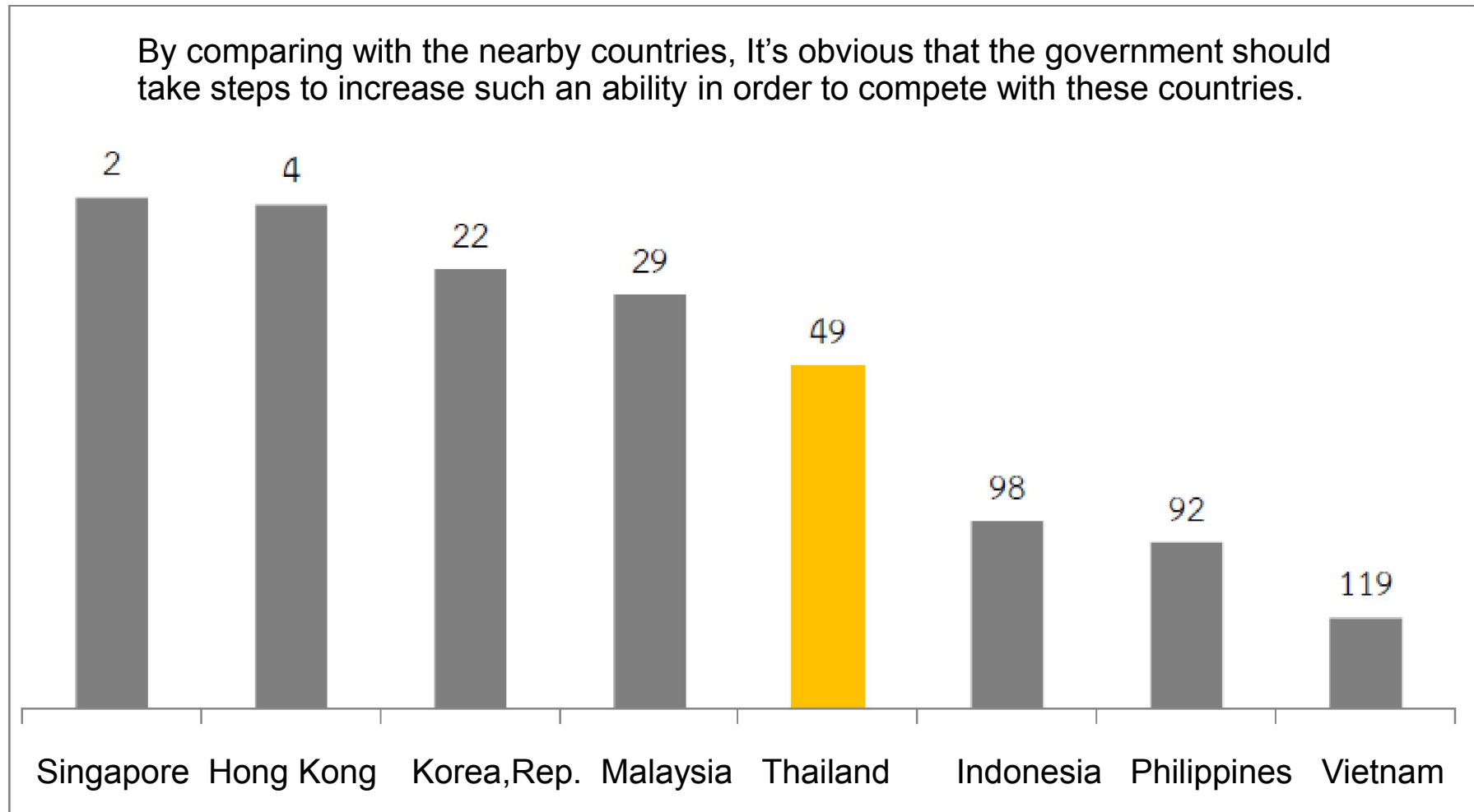
**:Per capita \$10,125.581**

(Source: Wikipedia)



# Current Status of Infrastructure Development in Thailand (cont.)

**Table 2:** The ability of the country's infrastructure

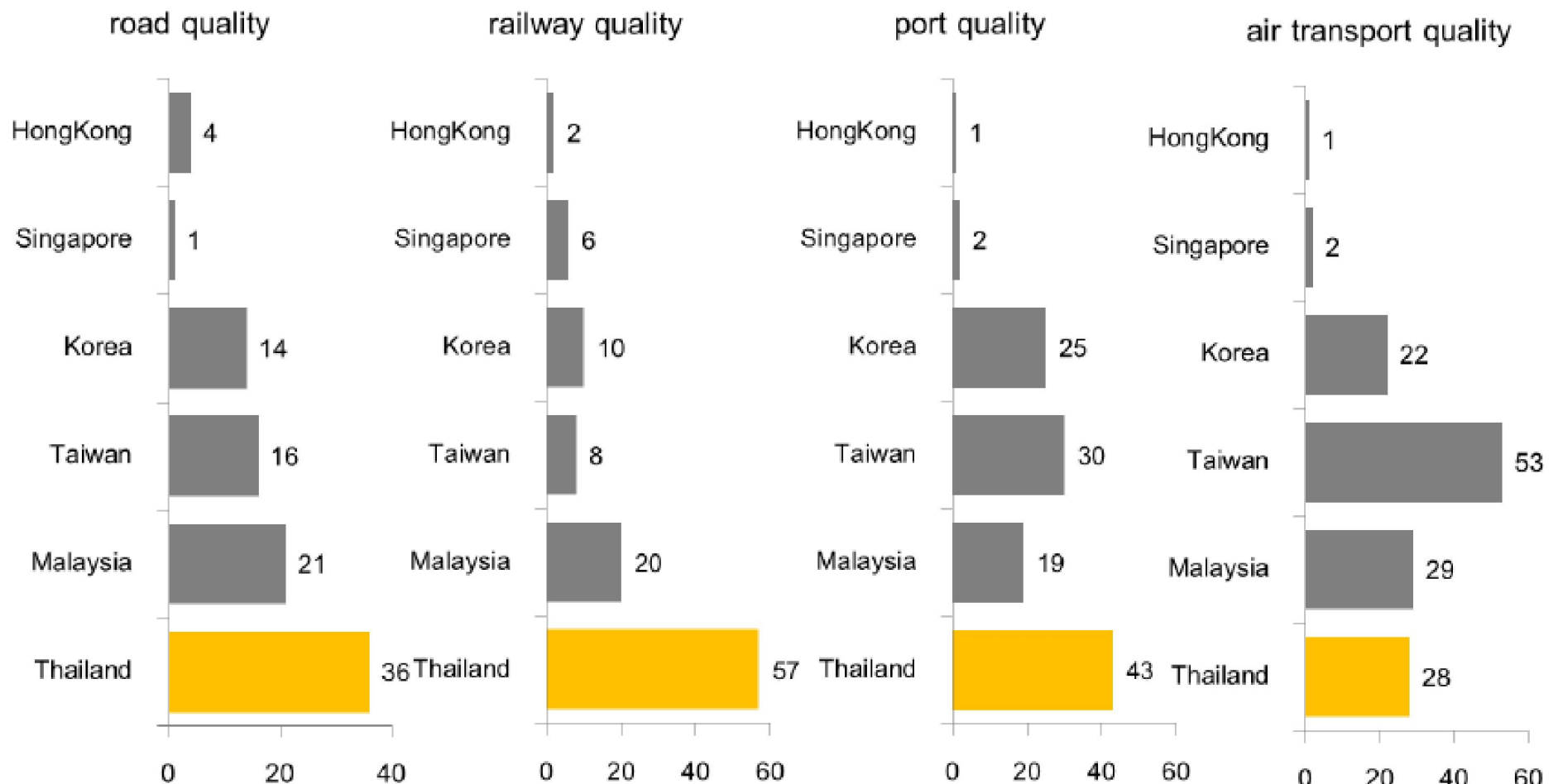


(Source: Ministry of Finance, 2013)



# Current Status of Infrastructure Development in Thailand (cont.)

**Table 3:** Infrastructure quality ranking



(Source: The Global Competitiveness Report, World Economic Forum , 2012)

# Current Status of Infrastructure Development in Thailand (cont.)

**Table 4:** Transportation and Logistics-Related Infrastructures: An Overview  
(Pomlaktong, N. and S. Ongkittikul, 2008)

Mode	Details
<b>Highways:</b>	<i>Total:</i> 61,586 km <i>Paved:</i> 61,238 km <i>Unpaved:</i> 348 km
<b>Railways:</b>	<i>Total:</i> 4,071 km <i>Narrow gauge:</i> 4,071 km 1,000-m gauge
<b>Waterways:</b>	4,000km <i>Note:</i> 3,701 km navigable by boats with drafts up to 0.9 m
<b>Merchant marine:</b>	<i>Total:</i> 386 ships (1,000 GRT or over) 2,038,597 GRT/3,104,712 DWT <i>By type:</i> bulk carrier 57, cargo 142, chemical tanker 12, combination ore/oil 1, container 21, liquefied gas 25, passenger 3, passenger/cargo 4, petroleum tanker 89, refrigerated cargo 30, roll on/roll off 1, specialized tanker 1 <i>Foreign-owned:</i> 55 (Indonesia 1, Japan 3, Norway 45, Singapore 6) <i>Registered in other countries:</i> 35
<b>Ports and harbors</b>	<i>(Major ports)</i> <i>Bangkok, Laem Chabang, Map Ta Phut Port, Songkhla, Phuket, Sriracha, Siam Sea Port</i>

# Travel Pattern of people in Bangkok

Bus **35%**

Mass Transit **4%**

Car **56%**

Total

**17**

Mil. Trips/Day



6

Mil. trips/Day



Sky Train

0.45

Mil. Trips/Day

Subway

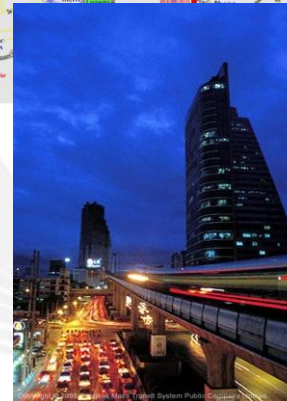
0.18

Mil. Trips/Day



9.5

Mil. Trips/Day





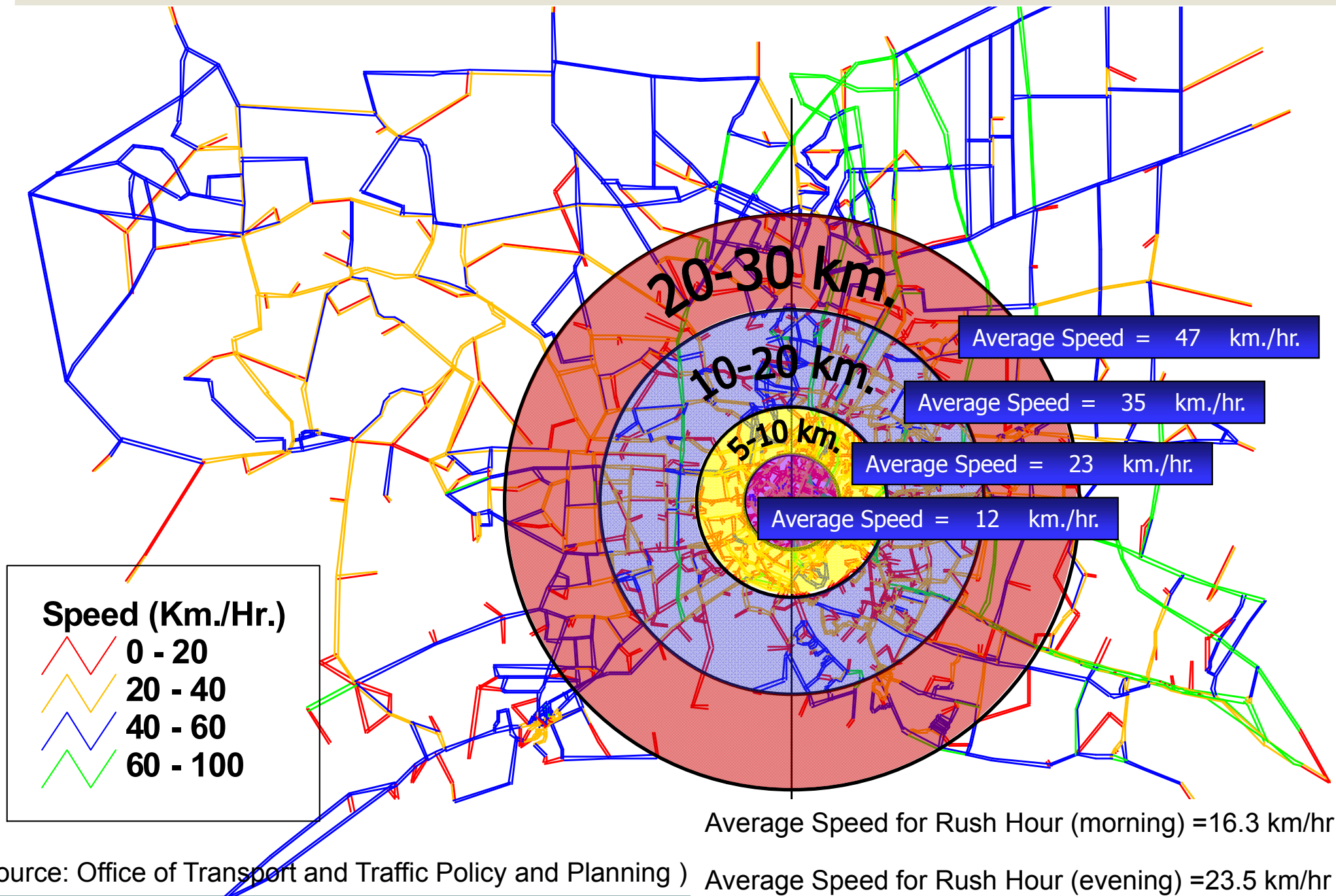


## Current Bangkok Traffic Condition



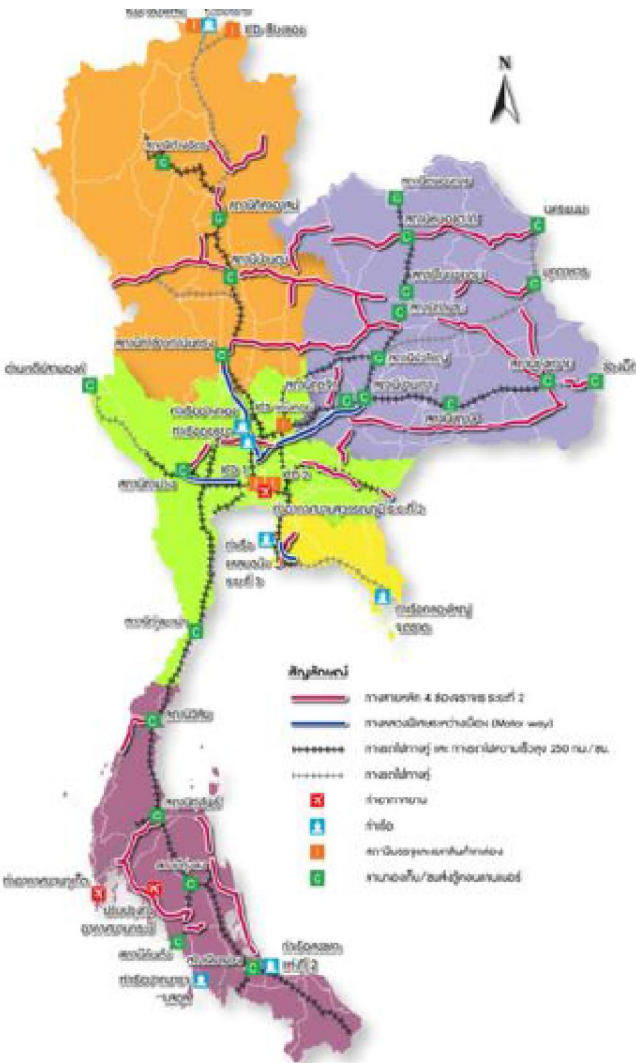


# Current Road Traffic condition in Bangkok



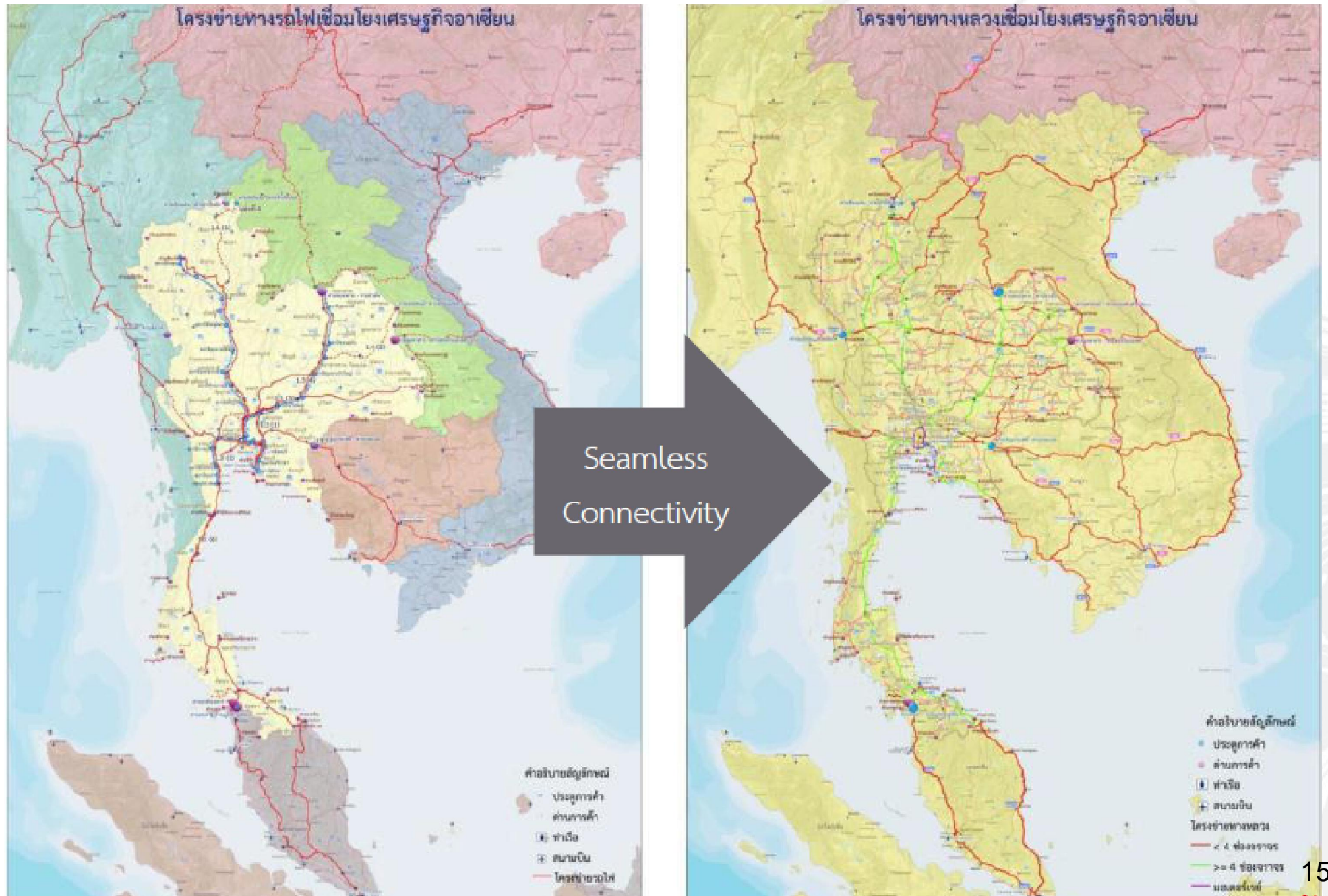
# Current Status of Infrastructure Development in Thailand (cont.)

## Roads and Highway in Thailand



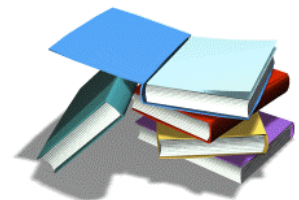
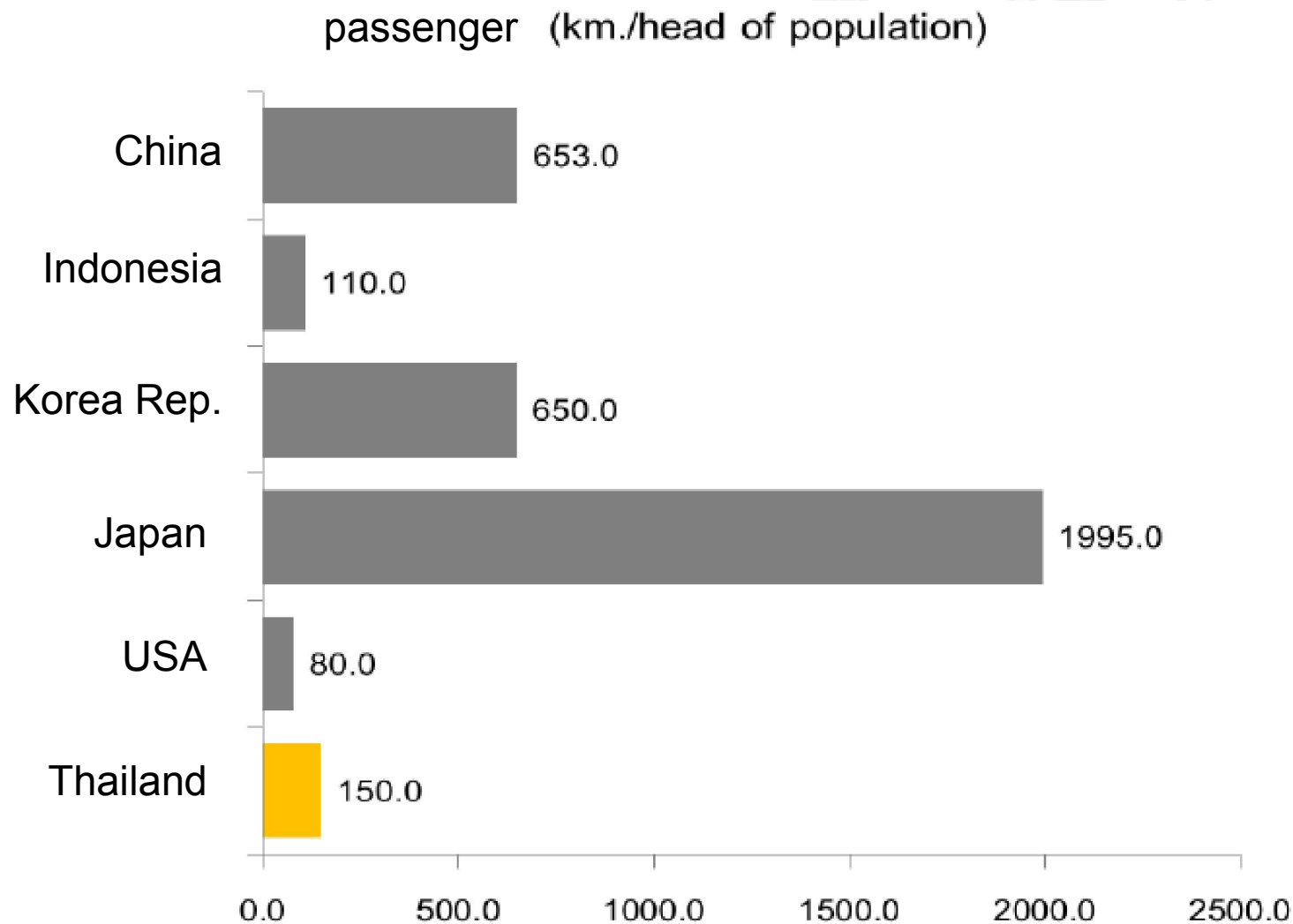


# Future Plan for Infrastructure Development in Thailand



# Current Status of Infrastructure Development in Thailand (cont.)

From the research of International Union of Railways, the commuters in Thailand **far less** use public transportation **than** other developed countries.



(Source: International Union of Railways)

## Current Status of Infrastructure Development in Thailand (cont.)

# Rail System in Thailand



โครงข่ายปัจจุบัน 4035Km.

เหนือ	781 Km
ตะวันออกเฉียงเหนือ	1,093 Km
ตะวันออก	527 Km
ใต้	1,569 Km
แม่ฮ่อง	65 Km

ครอบคลุมพื้นที่ 47 จังหวัด





# Current Status of Infrastructure Development in Thailand (cont.)

Occurrence of rail accidents mainly due to the lack of signaling equipment at various roads railways junction.





# Current Status of Infrastructure Development in Thailand (cont.)

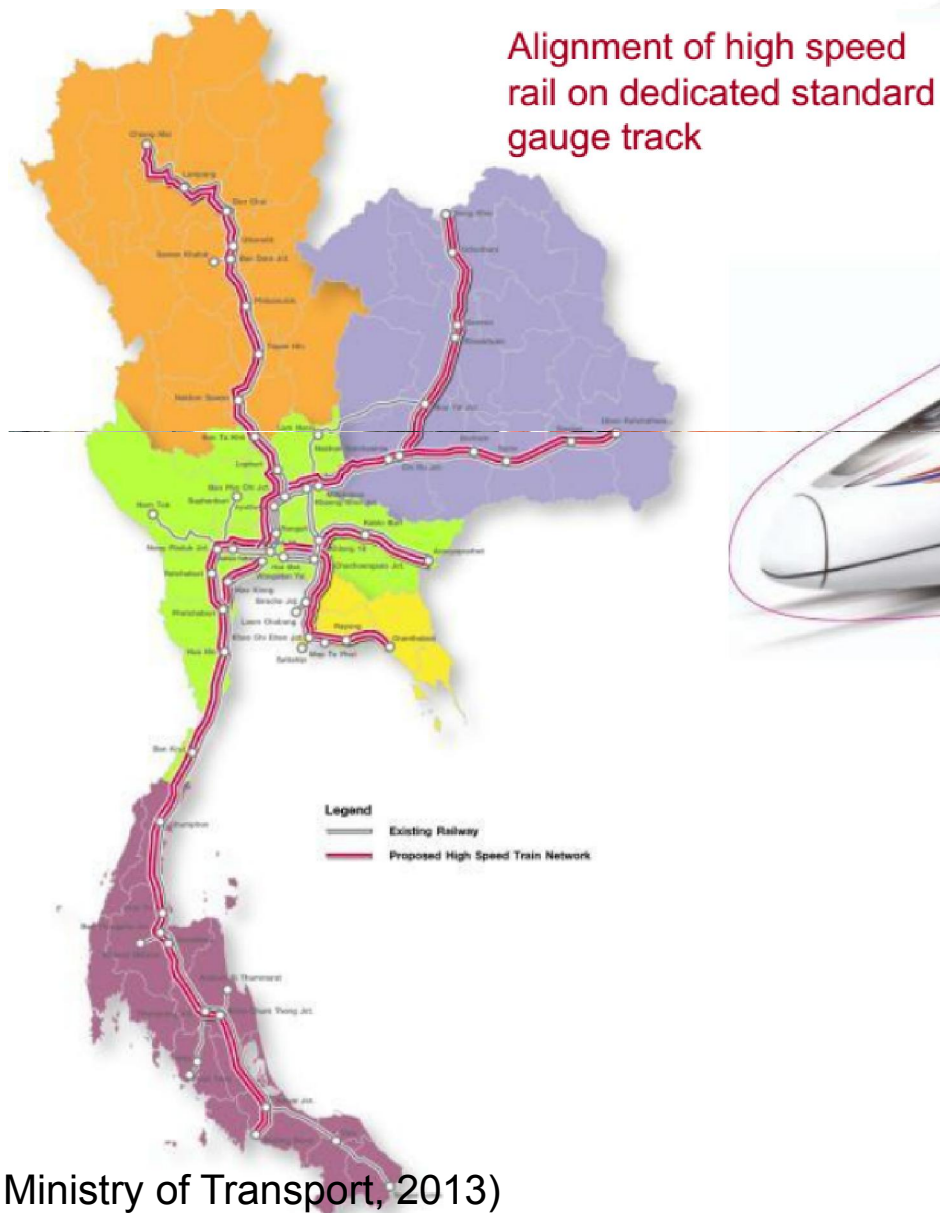
## Mass Rapid Transit system in Bangkok





# Current Status of Infrastructure Development in Thailand (cont.)

## Mass Rapid Transit system in Bangkok



From BANGKOK to CHIANG MAI and RAYONG Provinces  
จาก กรุงเทพมหานคร มุ่งสู่ เชียงใหม่  
จาก กรุงเทพมหานคร มุ่งสู่ ระยอง

1

2

REVOLUTIONIZING the National Transportation Capability for Improved Quality of Life and Socio-economic Development  
พลิกโฉมขีดความสามารถ  
ที่เพิ่มขีดความสามารถในการแข่งขัน  
ยกระดับคุณภาพชีวิตของประชาชน

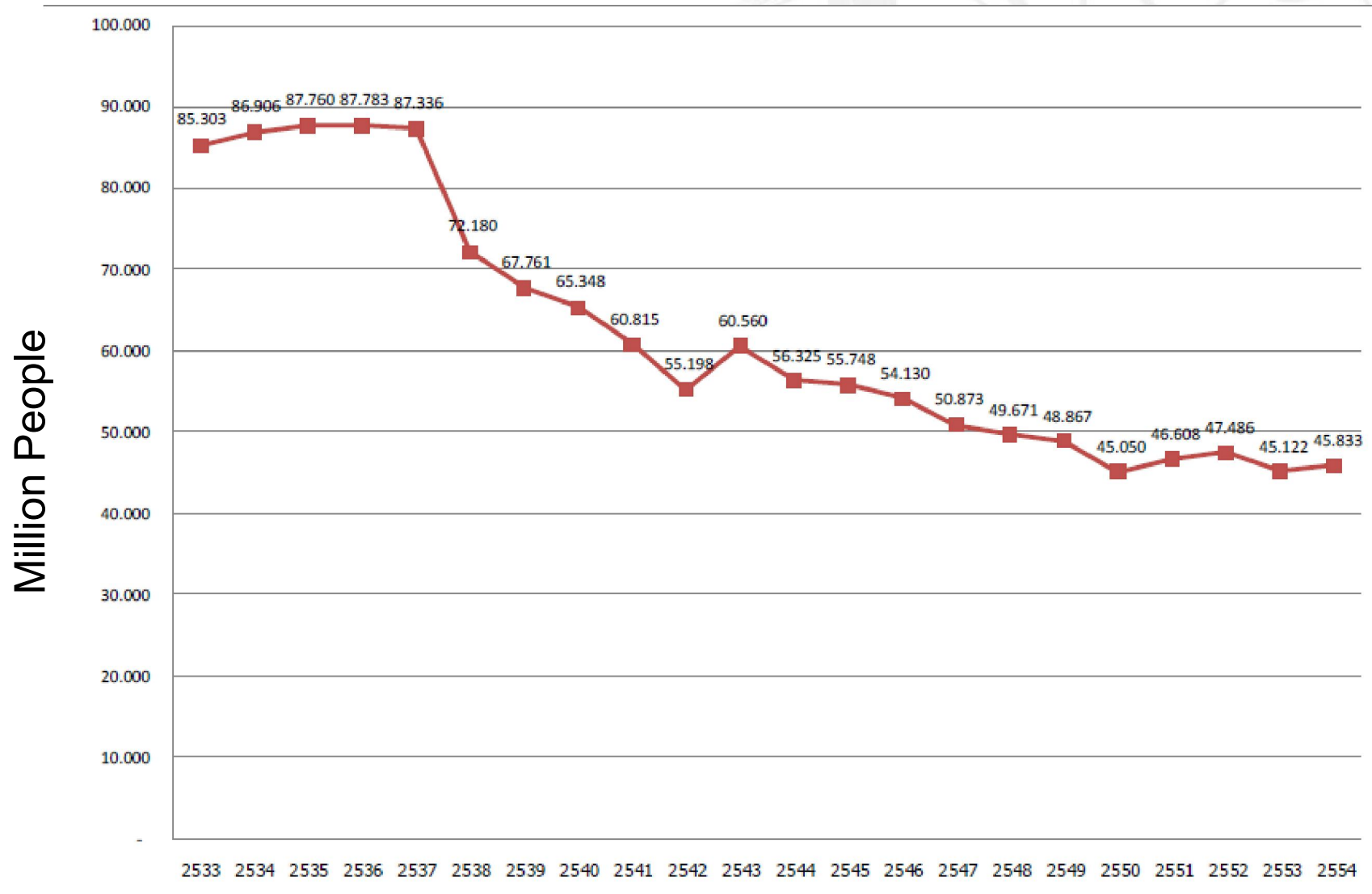
GEARING TOWARDS THE REGION'S MOBILITY AND ECONOMIC DEVELOPMENT

เดินทางขับเคลื่อนประเทศ สู่...ศูนย์กลางการคมนาคม  
ในภูมิภาค



# Current Status of Infrastructure Development in Thailand (cont.)

In addition, the number of passengers who use trains have dropped continuously so far.



(Source: Ministry of Transport, 2013)

# Current Status of Infrastructure Development in Thailand (cont.)

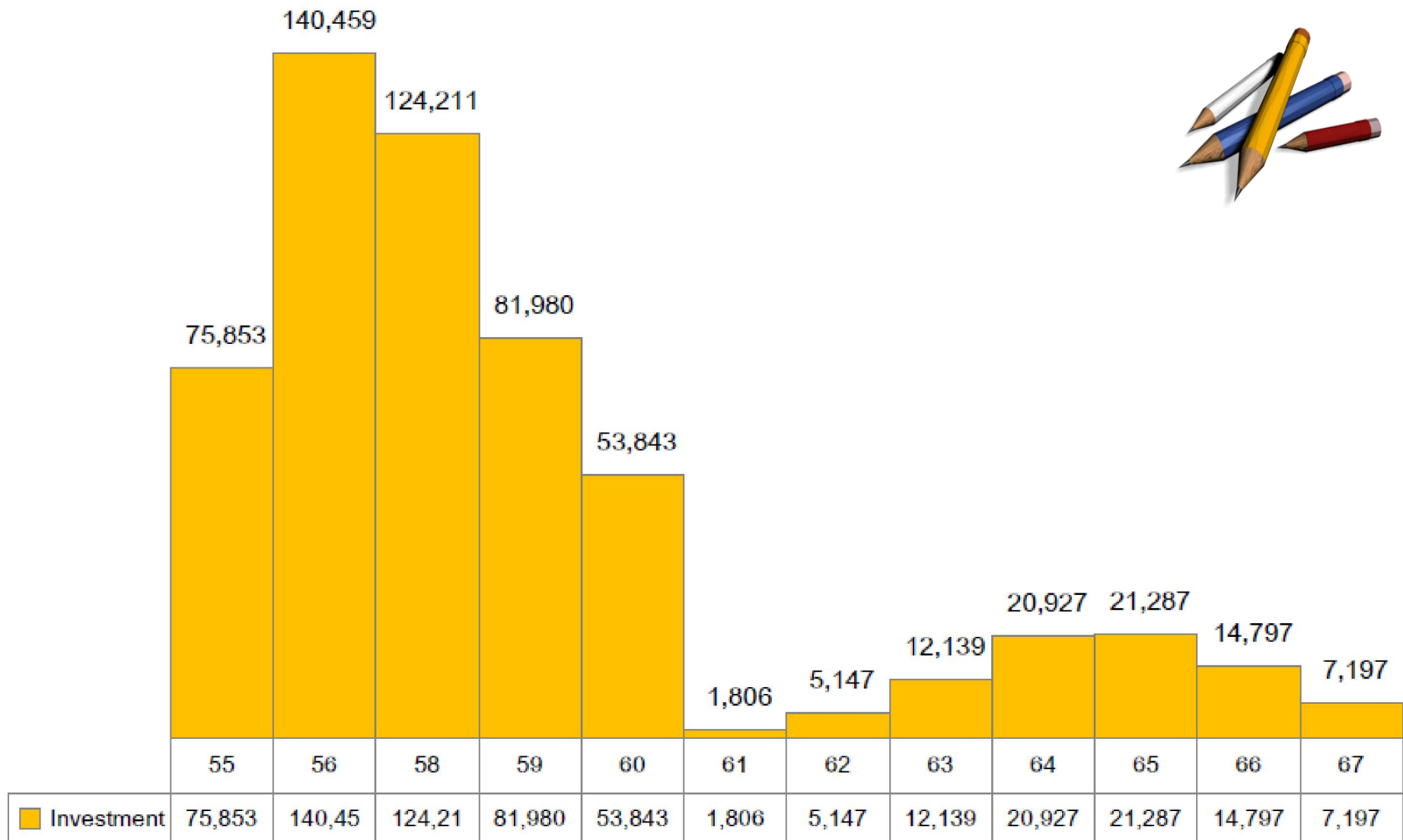
What is our plan in the future?

- The Thai government recently unveiled an ambitious long-term Bt2.2tn (\$60bn) mega-infrastructure plan designed to enhance regional connectivity and position Thai cities as regional hubs ahead of the implementation of ASEAN Economic Community (AEC).
- The proposal, which currently awaits for parliamentary approval to borrow the funds, could increase per capita income to US\$10,000 per year from the present US\$5,000 within the next 10 years according to the Fiscal Policy Research Institute Foundation.
- Under the plan, 55 infrastructure projects are to be completed by 2020. If approved by parliament, 64% of the total budget will be spent on 31 railway projects including 4 high-speed rail projects, 24% on road projects, and 12% on water and air transportation infrastructure.



# Current Status of Infrastructure Development in Thailand (cont.)

## Mass Rapid Transit system in Bangkok: The Overall Investment in Urban Rail system



Source: Office of Transport and Traffic Policy and Planning



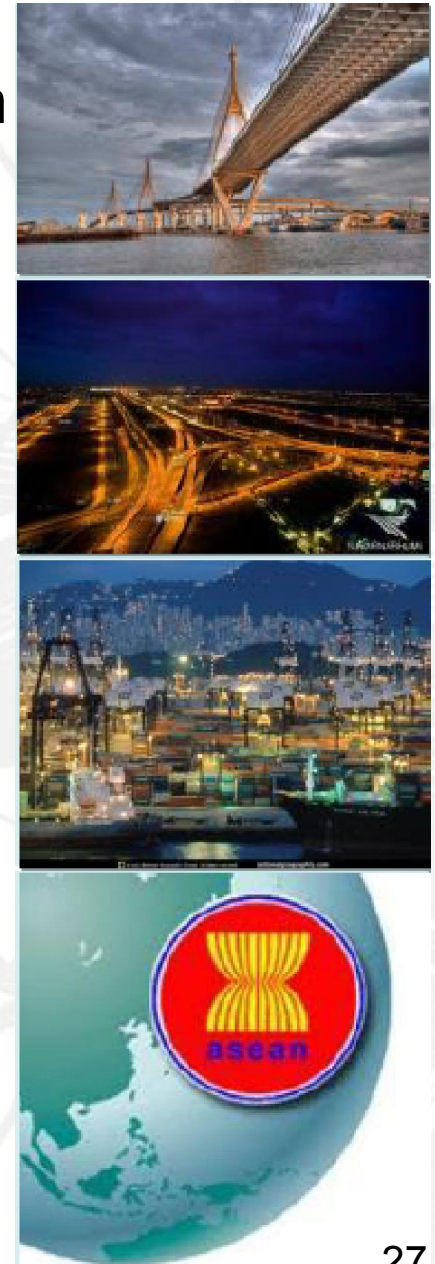
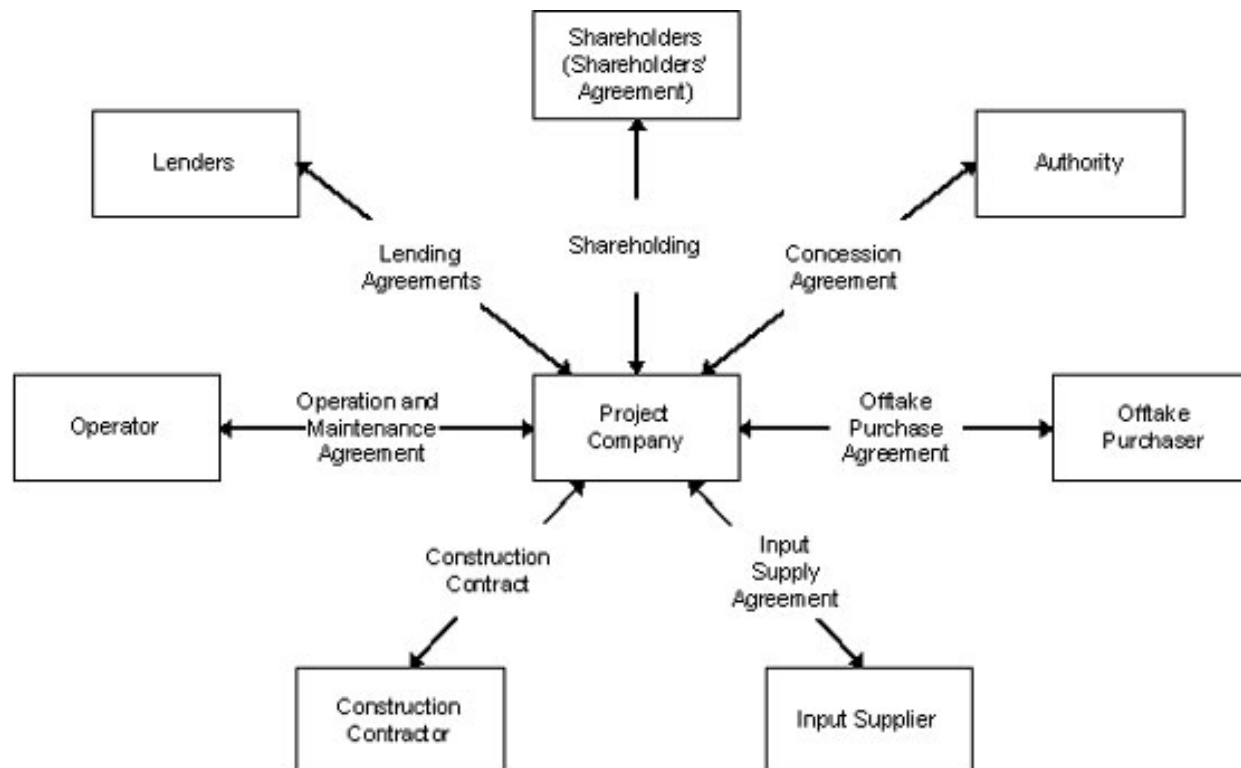
# Public-Private Partnerships (PPPs)

- What is PPPs? An alternative to procurement of the Facility by the public sector (known as “public sector procurement”, using funding from tax revenues or public borrowing).
- Developing countries generally lag behind in infrastructure development because they often lack funds from the normal sources expected in the developed countries. The main reason behind this is the inadequacy of public funds due to the low tax base in developing countries caused by the relatively weak domestic economies with low levels of industrial and commercial investment (Merna and Njiru, 2002).



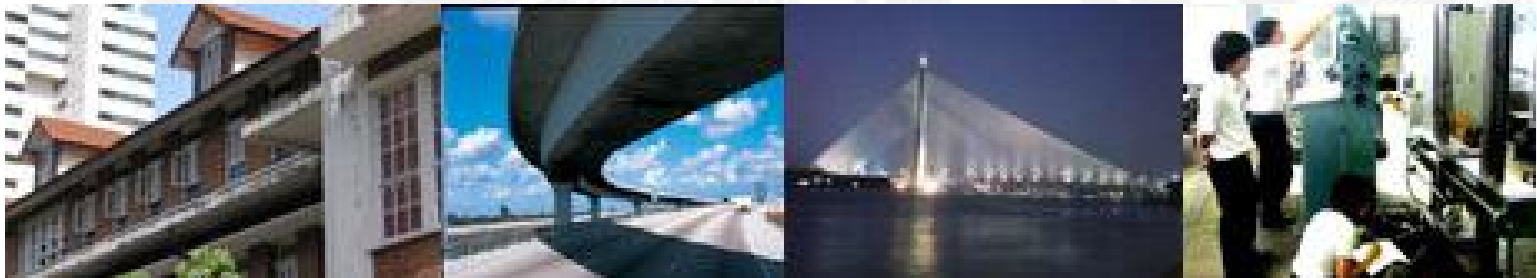
# Public-Private Partnerships (PPPs) (Cont.)

- Thus, PPP has become a key mechanism for providing new facilities that has advantages for both public and private sectors (Dias and Iaconou, 1995).
- Recently, PPPs have become an increasingly important approach to providing public infrastructures (Yescombe, 2007).



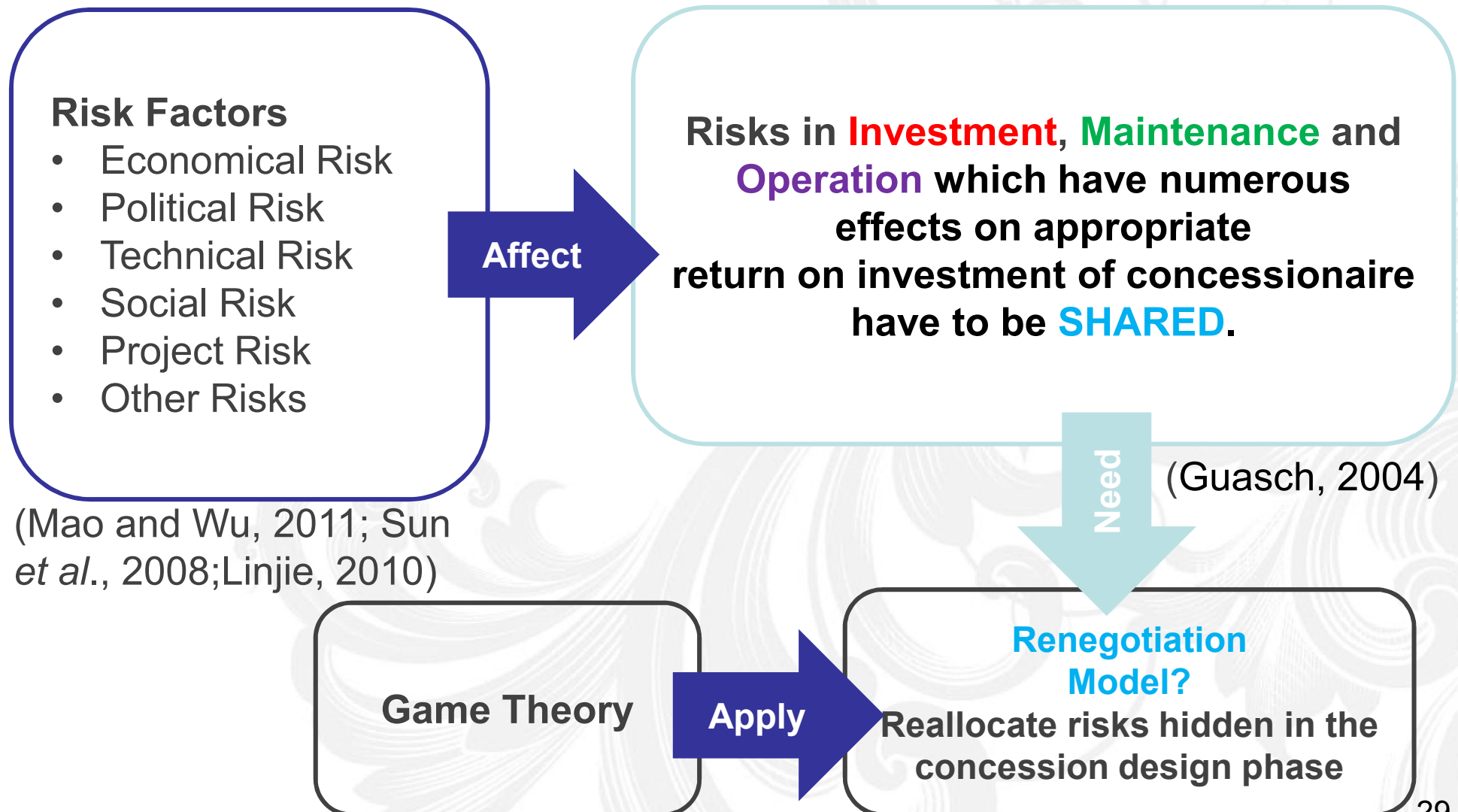
# Why PPP is important?

- Not only for Thailand, the major reasons are:
  - such governments in many developing countries have insufficient fund to develop several projects at the same time (Auschauer, 1991).
  - The increase of social demand in order to improve the quality and efficiency of public services for extensive economic and social development (Grimsey and Lewis, 2004).
- However, according to expensive construction, operating and maintenance costs, this kind of investment can hardly attract the private companies to invest.





- Risks, Uncertainties, and Renegotiation

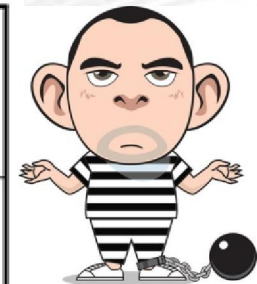


# Game Theory Vs PPPs

- In PPP research, there will be great potentials in gaining important new insights and building new theories by applying this method. These new theories will help practitioners, including governments, developers, and bankers, etc., better cooperate together, with higher efficiency and effectiveness.



Prisoners held in a separate room and cannot communicate Both suspected of a crime They can either confess or they can deny the crime Payoffs are years in prison Decisions made under uncertainty		Prisoner A	
		Confess	Deny
Prisoner B	Confess	(3 years, 3 years)	(1 year, 10 years)
	Deny	(10 years, 1 year)	(2 years, 2 years)





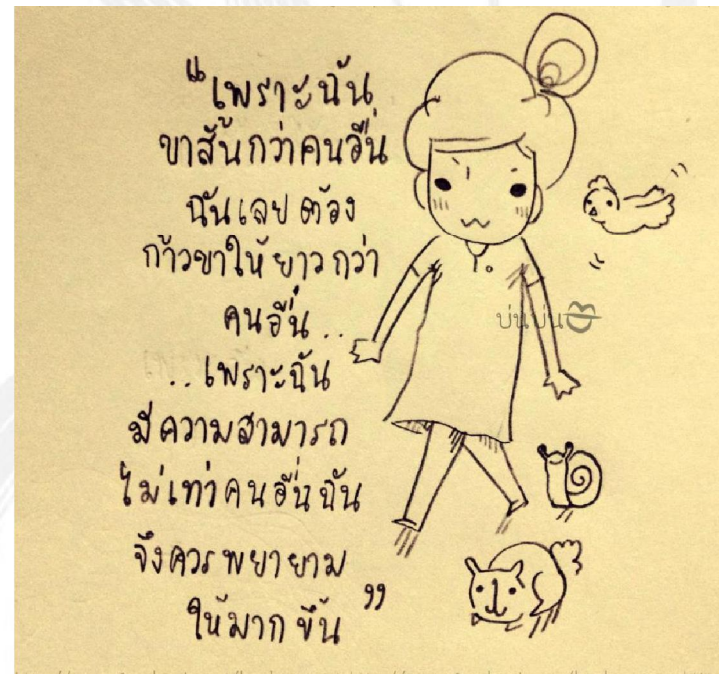
# My Message to you

- “Stupidity is a rightful characteristic for only students. **So, don't be hesitate or afraid to make a question or make a wrong answer.**” (Onishi, 2013)
- I suppose you're in one of the best education pavilion in Japan. You also have generous and intelligent sensei to guide you, don't waste your opportunity!

## My Motto:

“If your legs are shorter than others's, you have to speed up or take each step further than others instead. Likewise, If you realize you're not as genius as other students, thus you're supposed to try harder in studying than others as well.”

If you want a rainbow....you gotta put up with the rain!!!





# Questions & Answers



Thank you for your attention