DOH's Management and Road Administrative System

15 August 2016

Department of Highways

Department of Highways' Management and Road Administrative System

Presented by

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Senior Professional Engineer

Organization Management and Road Administration

- Organization Management
- Road Administration

Organization Management

- *Organization Structure*
- *Responsibilities and Task*
- *Human Resources*

Organization Structure

Ministry of Transport

- Office of the Minister
- Department of Highways (DOH)
- Department of Land Transport
- Office of the Permanent Secretary
- Department of Rural Roads (DRR)
- Marine Department
- Office of Transport and Traffic Policy
- Department of Civil Aviation

Executive Administration

Director General

Office of Internal Audit

Office of Administrative System Development

4 Deputy Director General

- Administration
- Engineering
- Operations
- Maintenance

6 Chief Engineers

- Construction
- Planning
- Maintenance
- Highway Safety
- Location & Design
- Research and Development

Department of Highways Organization Chart

Director General

Office of Internal Audit

Office of Internal Audit

Deputy Director General (Administration)

- Office of the Secretary
- Finance and Accounting Division
- Personal Division
- Bureau of Law
- Office of Medical Service
- Office of Public Relations

Deputy Director General (Engineering)

- Training Division
- Bureau of Material Analysis and Inspection
- Bureau of International Highways Cooperation
- Information Technology Center
- Bureau of Location and Design

Deputy Director General (Operations)

- Procurement Division
- Bureau of Highway Construction 1-3
- Bureau of Mechanical Equipment and Communication
- Bureau of Right of Way
- Office of Road Construction Training Center Management
- Road Construction Center

Deputy Director General (Maintenance)

- Inter-City Motorway Division
- Inter-City Motorway Maintenance District
- Bureau of Highways Maintenance Management
- Bureau of Highways 1-15
- Highway District and Highway Maintenance District

Chief Engineer (Construction)

- Bureau of Bridge Construction
- Bridge Construction Rehabilitation Center

Chief Engineer (Maintenance)

- Office of Beautification and Architecture Management
- Office of Traffic Weight Control

Chief Engineer (Highway Safety)

- Bureau of Highway Safety

Chief Engineer (Location and Design)

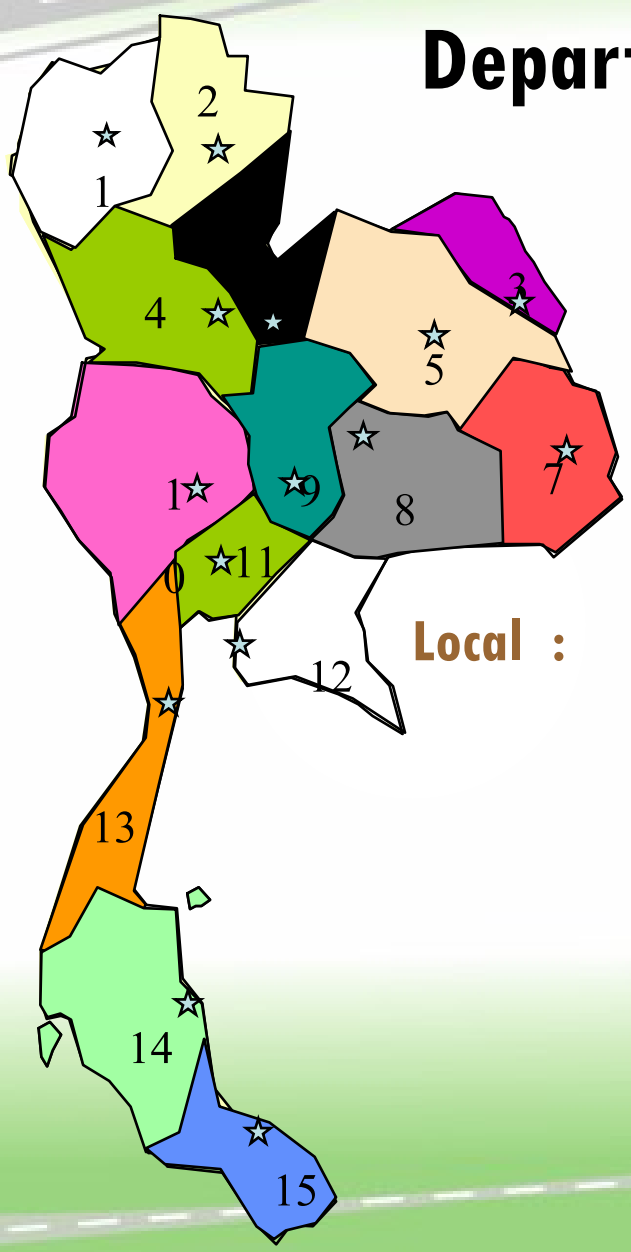
Chief Engineer (Planning)

- Bureau of Planning

Chief Engineer (Research and Development)

- Bureau of Road Research and Development
- Office of Standard and Evaluation

Agencies under Responsibility of Department of Highways



Head Quarter : 15 Bureaus
6 Divisions
7 Offices
1 Center

Local : 18 Highway Bureaus
105 Highway District Offices
5 Road Construction Centers
4 Bridge Construction Rehabilitation Centers

DOH's Vision & Strategies

DOH Vision

To be dedicated to the development of international-standard highways which create values to the economy, contribute to the society, and respond to stakeholders' demand

DOH Mission

1. Develop integrated highway network, serving national agenda and area-based strategy by coordinating with other organizations and stakeholders
2. Maintain highway standards, highway service level, and stakeholders' satisfaction

DOH Mission

3. Excel in highway engineering and management and regulation of highway usage to create an efficient transportation system incorporating social and environmental aspect
4. Ensure efficient management and enhance organizational attitude and culture to respond to changes

DOH Strategic Issues

1. Promote highway system to support economic development and augment national security
2. Develop a safe highway system
3. Maintain and improve quality of service of highway system
4. Enhance highway system to support quality of life and conserve environment
5. Improve management efficiency towards good governance principles

Duty and Responsibility

Highway Development

- Planning
- Survey and Design
- Land Acquisition
- Construction
- Analysis and Research

Highway Maintenance

- Maintenance Work
- Regulation, Inspection and Administration
- Road Safety

Human Resources

DOH Manpower

Civil Service Official Manpower	7,408	Numbers
Permanent Crew Manpower	7,295	Numbers
Temporary Crew Manpower (Approx.)	23,000	Numbers
Government Employee	6,804	Numbers
Total	*44,507*	*Numbers*

Status: Current Occupied
January 2012

Number of Official Classified by Position

Executive Position	(2 Levels)
Higher Executive	1
Primary Executive	4

Managerial Position	(2 Levels)
Higher Administrator	26
Primary Administrator	62

Knowledge Position	(5 Levels)
Advisory Level	4
Expert Level	54
Senior Professional Level	277
Professional Level	605
Practitioner Level	356

General Position	(4 Levels)
Highly Skilled Level	-
Senior Level	559
Experienced Level	3,687
Operational Level	931

Status: July 2016

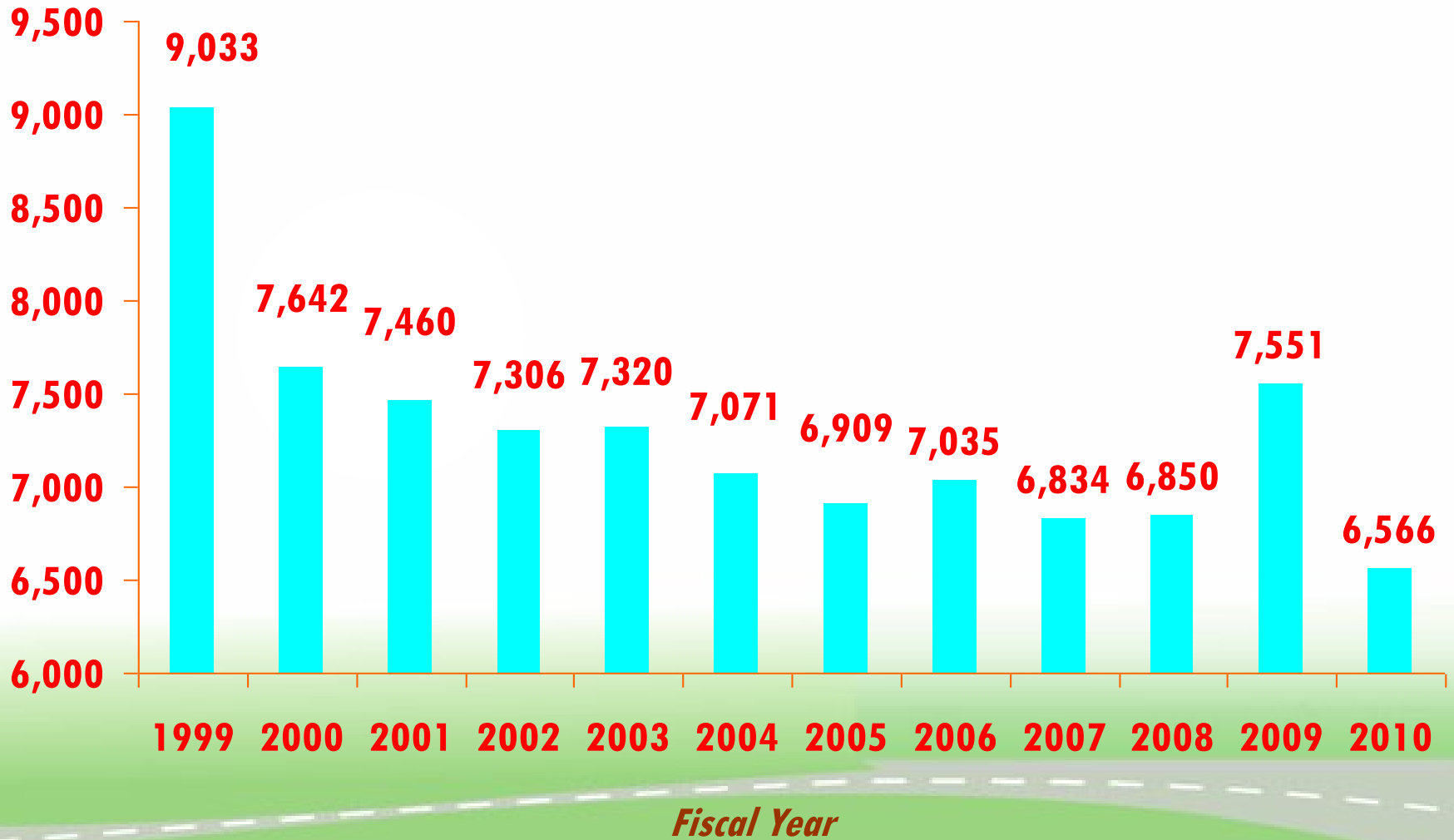
Number of Official Classified by Education Background

Education	Male	Female	Total	
Doctorate Degree	33	3	36	0.55%
Master Degree	493	143	636	9.69%
Bachelor Degree	2,823	1,732	4,555	69.37%
Professional Certificate	1,035	304	1,339	20.39%
Total	4,384	2,182	6,566	
	(66.8%)	(33.2%)		

Status: July 2010

Official Manpower Trend in 1999 - 2010

Official Manpower



Highway Department Functions

I. Highway Network System

II. Planning

III. Construction

IV. Maintenance

V. Control

VI. Traffic Safety Facilitation

Project Cycle

Evaluation group

- Planning Group
- Analysis Group
- Environmental Group

Project Idea

Project Viability

Budget Approval

Programming Group

Detailed Design

Land Acquisition

Construction

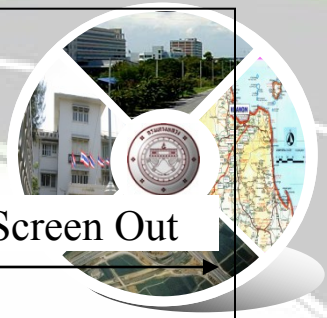
Maintenance

Project Evaluation

Criteria in Highways Planning

- Shall be in accordance with National Economic and Development Plan as well as Government Policies
- Shall be support to Social and Economic Development
- Economic viable
- Shall be implemented as set priority
- Clear objectives
- Flexibility
- Sound environmental

Highway Planning Methodology



Requests

Master List

- Under Construction
- Work in past 5 years

Screen Out

- New Links
- Bypass
- Interchange
- Overpass
- Railways Crossing

Existing 2-lane paved road

<4000 veh/day

ADT

>4000 veh/day

Reconstruction/ Rehabilitation

Widening

Laterite

Paving

Special Highways

JICA Study

Feasibility Study

- Traffic (Forecasting)
- Socio-economic (Benefit)
- Engineering (Costs)

- B/C Ratio
- NPV
- IRR

Ranking

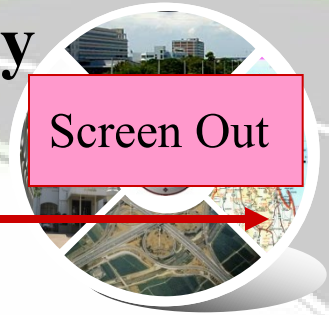
Highway Development Plan

MOT

NESDB

Cabinet

Highway Development Plan Methodology



Screen Out

REQUESTS → **MASTER LIST** → - UNDER CONSTRUCTION

- WORK IN PAST 5 YEAR

- New Link
- Bypass
- Interchange
- Overpass
- Railways Crossing

Existing Paved Road

Laterite → Paving

ADT

Widening

Reconstruction / Rehabilitation

Feasibility Study

Cabinet

NESDB

MOTC

Motorway

Motorway Plan

Traffic (Forecasting)

Socio-Economic (Benefit)

Engineering (Cost)

B/C Ratio

NPV

IRR

RANKING

Highway Development Plan

Process of Highway Planning

REQUESTS

Preliminary Priority Ranking

Short Term Plan

Compare with Various Projects

Annual Plan

ACTION PLAN

Budget

Long Term Plan

Feasibility Study

5 Year Plan

Land Acquisition

Detail Design

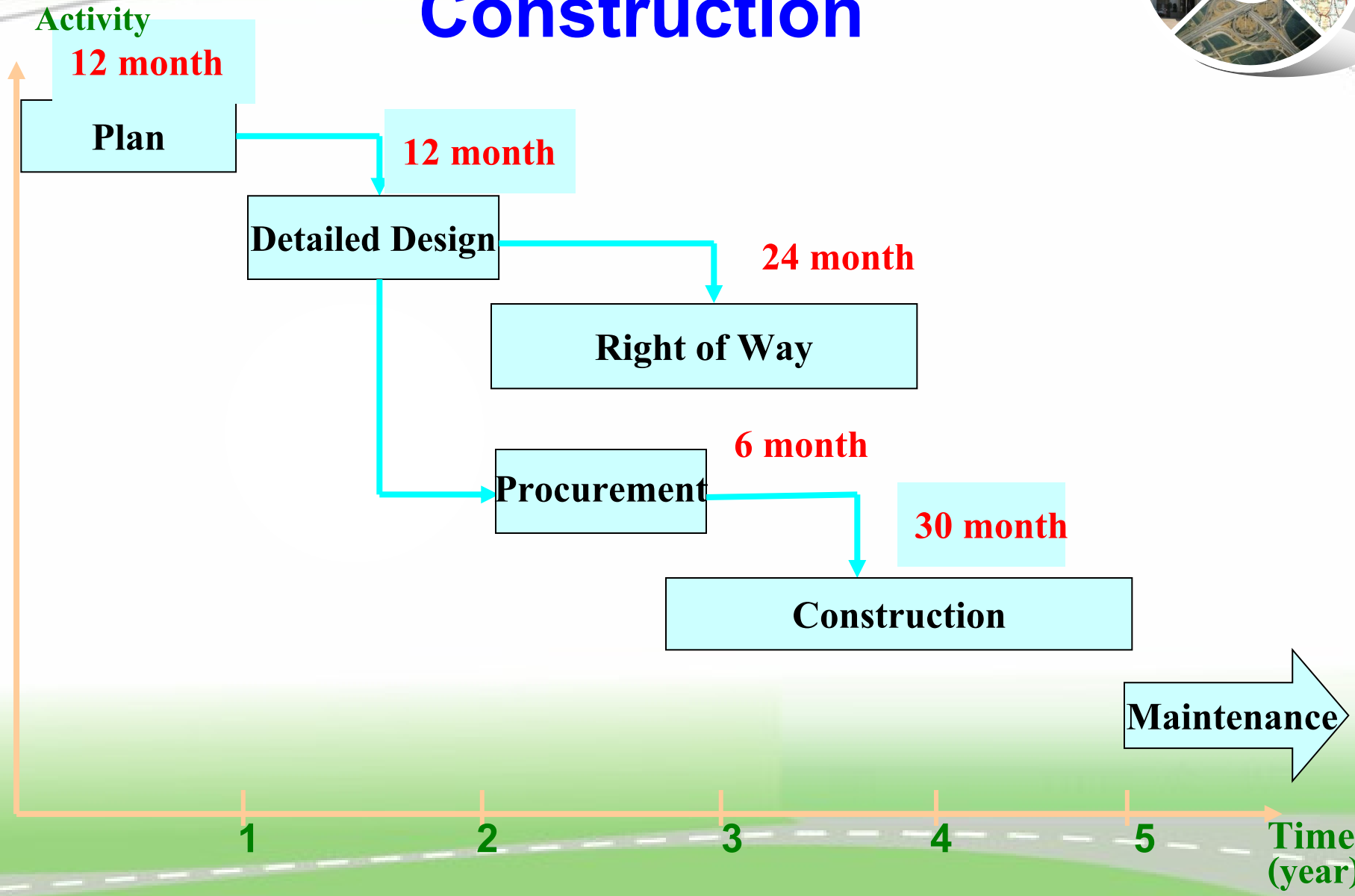
Construction & Rehabilitation

Maintenance

Post Project Evaluation

Highway Network

Step for Highway Construction



Financing Scheme on Infrastructure Development

- Government Budget
- External Loan
- Private Participation
- Road Fund

Steps of Project Analysis

Feasibility Study of the Highway Development Project on Economics, Engineering and Environment

Analysis (With Project)

Analysis (Without Project)

Comparison (With & Without Project)

Preliminary Design

Project Cost Estimation

Evaluation of Economic Benefit

- Direct Benefit

- **Vehicle Operating Cost Benefit (VOC)**
- **Reduce Travel Time (VOT)**
- **Reduce Accident Cost (ACC)**

- Indirect Benefit

Exclude tax and Contingency

Output of Economic Benefit

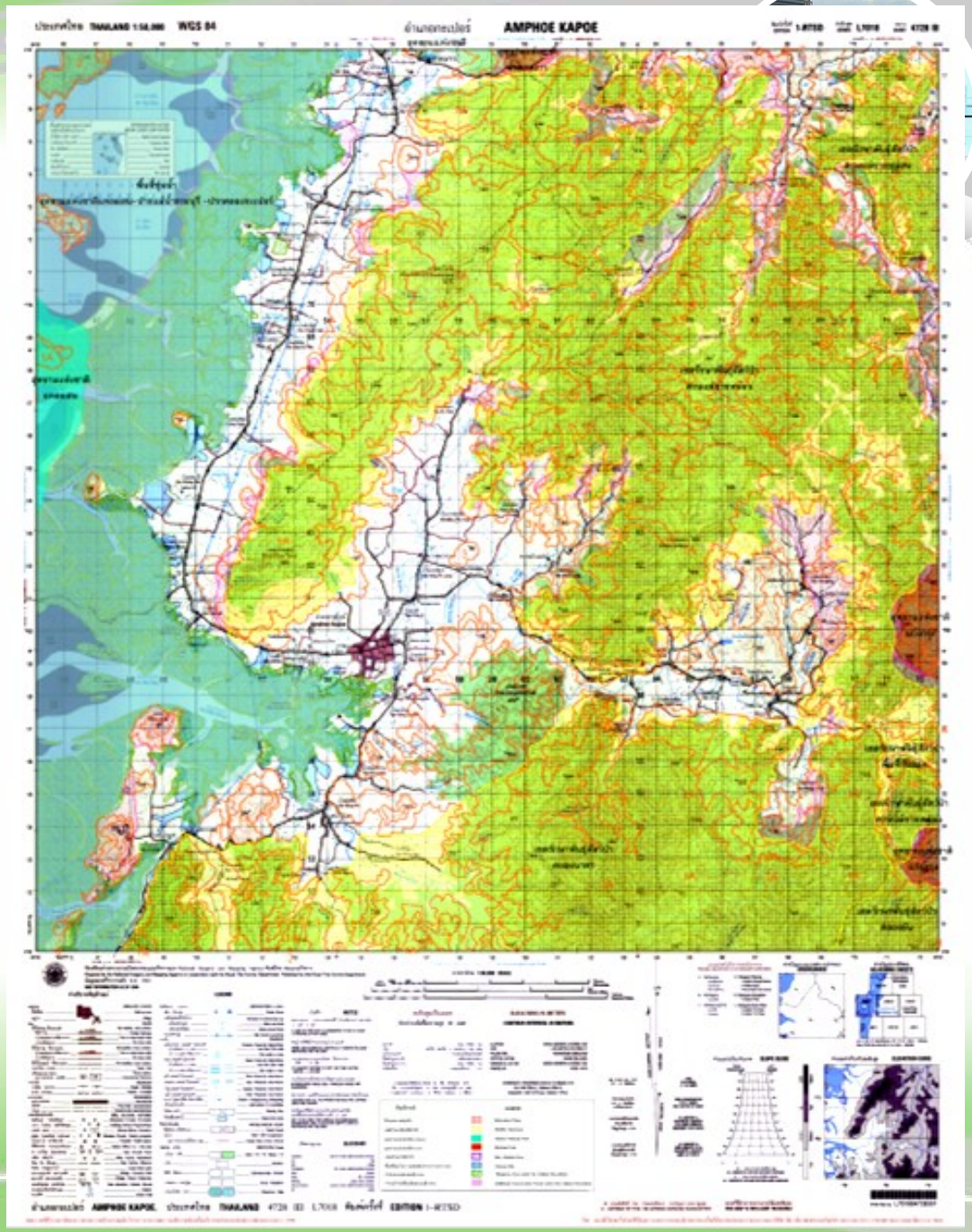
- **Net Present Value (NPV)**
- **Economic Internal Rate of Return (EIRR)**
- **First Year Rate Of Return (FYRR)**
- **Benefit / Cost Ratio (B/C Ratio)**

Sensitivity Analysis

Environmental Conservation Area

- Forest Conservation Area
- Wildlife Conservation Area
- Watershed Area
- Forest Mangrove Area
- Archeological Area
- Other Sensitive Area

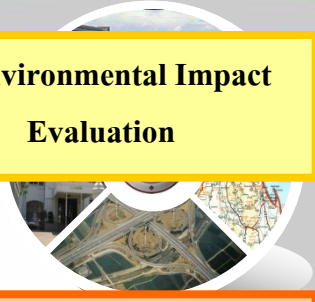
Require Environmental Impact Assessment (EIA) Study



Review and Collect Environmental Data

Examine Environmental Plans, Policies, and Strategies

1. Environmental Impact Evaluation



Long Listed Projects

2. Preliminary Screen

Short Listed Projects

Secondary Data (e.g. GIS)

Field Survey

3. Environmental Screen

Others

Checklist

Conduct IEE ?

RFD

Checklist

IEE

Checklist

Conduct IEE

Must Conduct EIA ?

EIA

Checklist

Conduct EIA

4. Evaluate Environmental Requirement

Project passed other study

Project passed Environmental Study

5. Project Ranking

Prioritize Project

Public Participation

Public Information

Public Seminar

Public Consultation

Road Administration

- *Highway Network*
- *Budgetary Allocation*
- *Highway Development Plan*
- *Highway Maintenance*

Highway Network

Highways Classification

Special Highways
National Highways
Concession Highways

→ DOH

Rural Roads → DRR

Local Roads → Local Administration

Thailand Highway Network System
205,097 km.

DOH
52,097 km.
(25%)

- Special Highways
- National Highways
- Concession Highways

DRR
45,500 km.
(22%)

- Rural Roads

Local Admin.
107,500 km.
(53%)

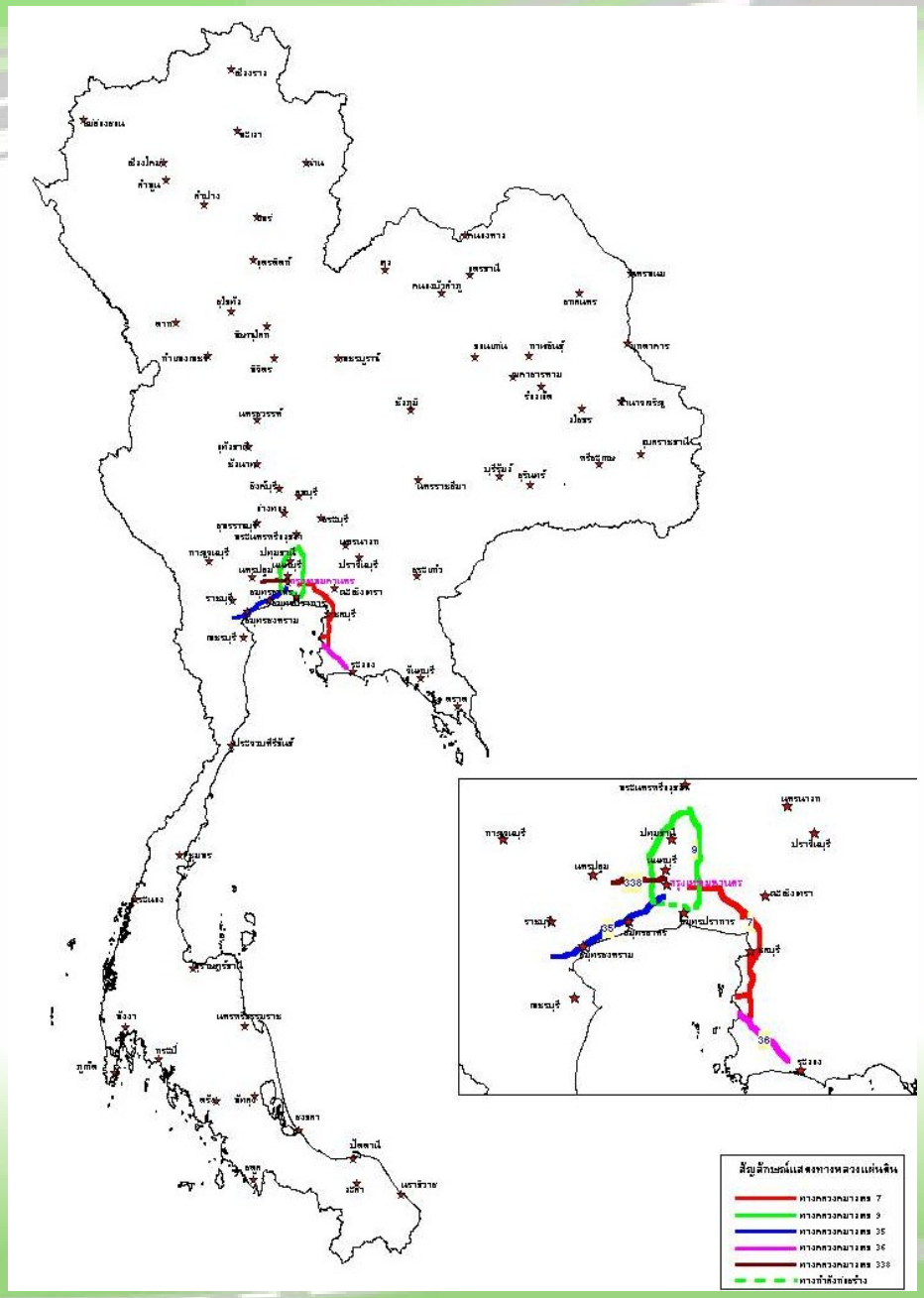
- Local Roads

Note : Not Official Registered Record

DOH Highway Network System
52,097 km.

- **Special Highways** 423 km.
- **National Highways** 51,652 km.
  - **Primary** 7,136 km.
  - **Secondary** 11,244 km.
  - **National** 33,272 km.
- **Concession Highways** 22 km.

ASEAN Highway Network 6,670 km.



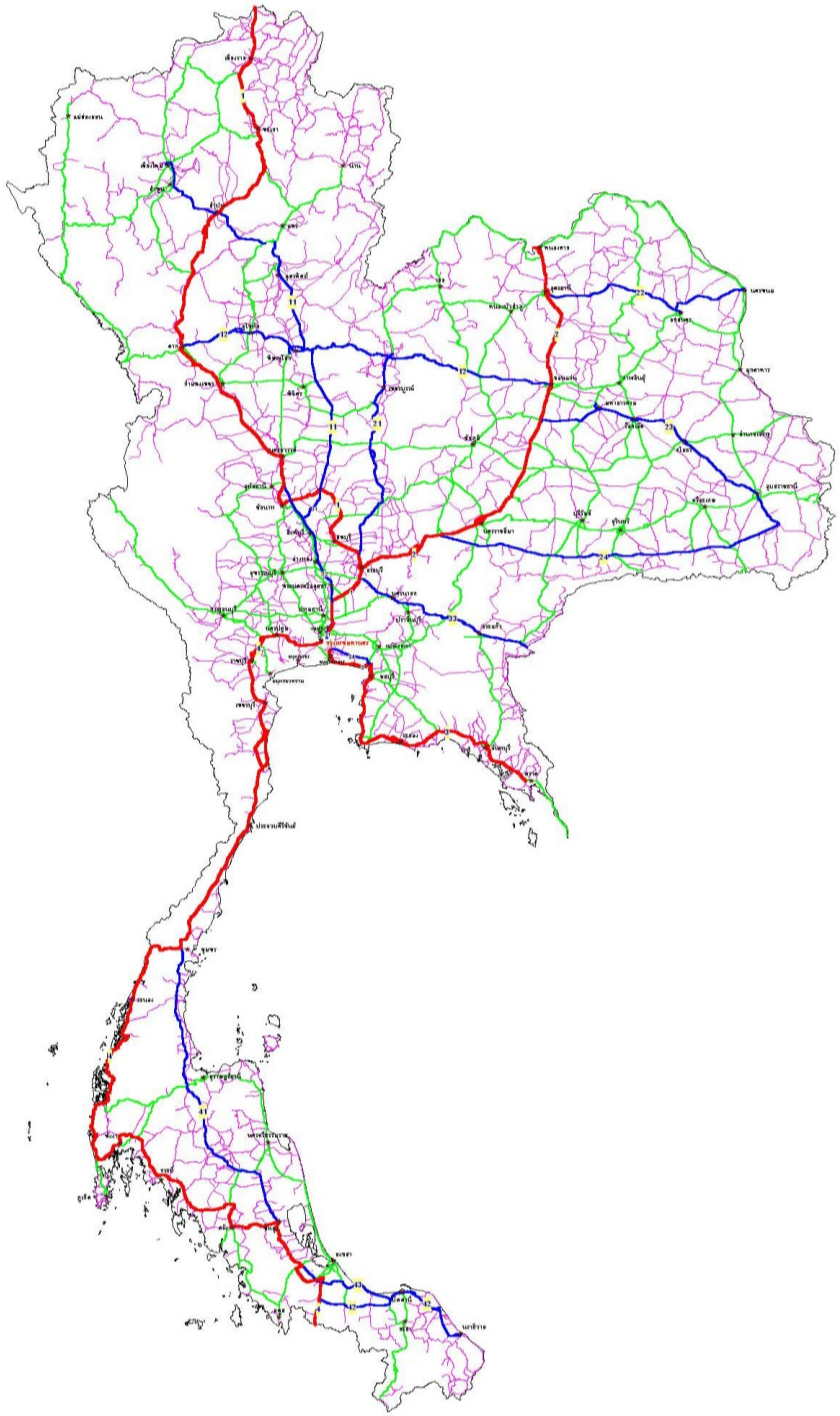
Special Highways

423 km.

Special Highways

- High Standard Road
- Fully Control Access
- Design Speed 120 - 140 km./hr. (Flat Terrain)

  80 km/hr. (Hilly Terrain)
- Necessary Facilities *(Restaurant, Gasoline Service Center, Lavatory and etc.)*



National Highways
51,652 km.

- One Digit No.
- Two Digit No.
- Three Digit No.
- Four Digit No.

Highways Route Numbering System

Region	National			Special
	Primary	Secondary	National	
North	1,1X	1XX	1XXX	5,5X
North-East	2,2X	2XX	2XXX	6,6X
Central	3,3X	3XX	3XXX	7,7X
South	4,4X	4XX	4XXX	8,8X

Note : Special Highway No. 9 : Bangkok Outer Ring Road

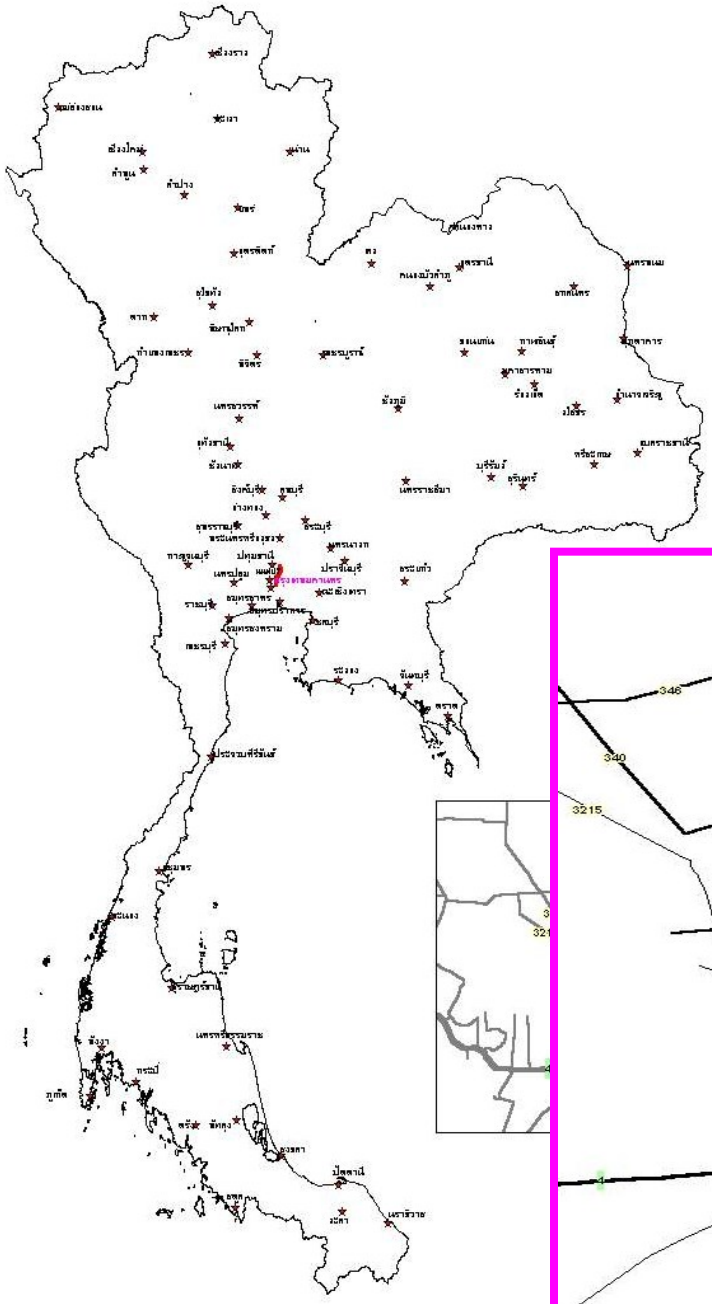
Thailand Highways Standard

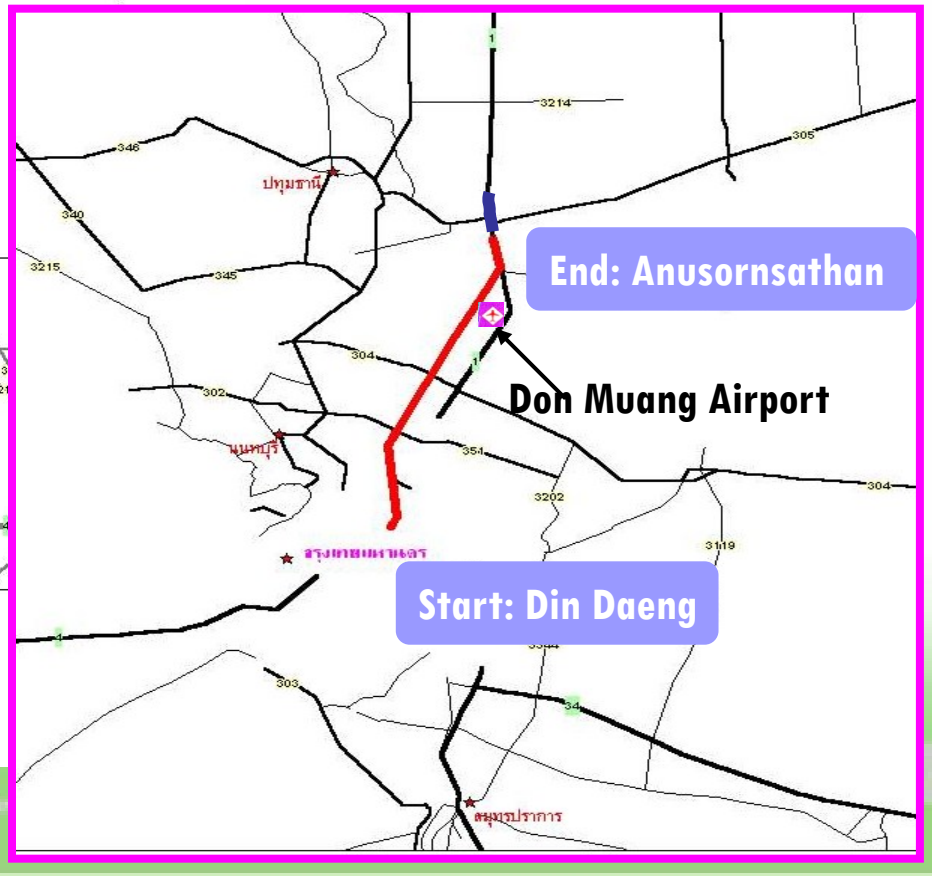
Class	Special	1	2	3	4	5	Urban Area	Frontage
ADT	>8,000	4,000-8,000	2,000-4,000	1,000-2,000	300-1,000	< 300	-	-
Design Speed (KPH)								
Flat & Moderate rolling	90-110				70-90	60-80	60	70-80
Rolling or Hilly	80-110				55-70	50-60	60	70-80
Mountainous	70-90				40-55	30-50	60	60-70
Maximum Grade								
Recommended pavement	High		Middle-High			aggregate	High	Middle-High
Roadway width (m)	7.00 per lane	7.00	7.00	7.00	7.00	8.00	3.00-3.50 per lane	3.00-3.50 per lane
Shoulder width (m)	LT 2.50-3.00 RT 1.00-1.50	2.50 2.50	2.00 2.00	1.50 1.50	1.00 1.00	- -	2.50 or Sidewalk	2.00 or Sidewalk
Roadway width on bridge (m)	11.00	11.00	11.00	11.00	11.00	11.00	11.00 or Design	Dependant
Right of way (m)	60-80		40-60		30-40		varies	-

Concession Highways

22 km.

Din Daeng - Don Muang - Anusornsathan Tollway





Budgetary Allocation

National Budget & DOH Budget

Mil. Baht

2,000,000
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0

National Budget
DOH Budget

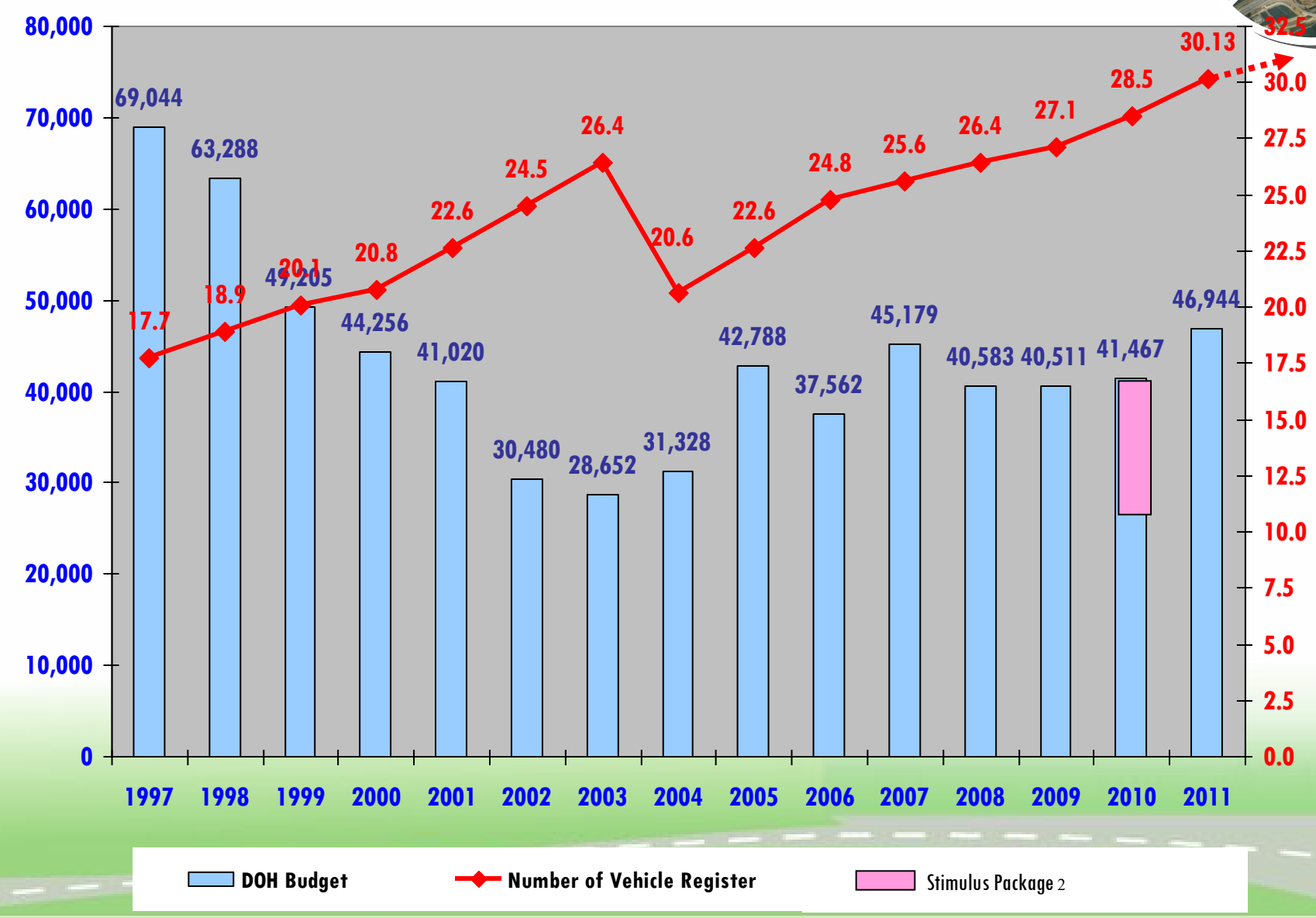
68,790
161,000
227,500
460,400
944,000
1,023,000
999,900
1,028,000
1,200,000
1,360,000
1,566,200
1,660,000
1,835,000
1,700,000

4,444
8,892
8,562
22,137
69,044
30,480
28,329
31,329
42,788
37,562
45,052
40,583
40,512
41,467

1977 1982 1987 1992 1997 2002 2003 2004 2005 2006 2007 2008 2009 2010

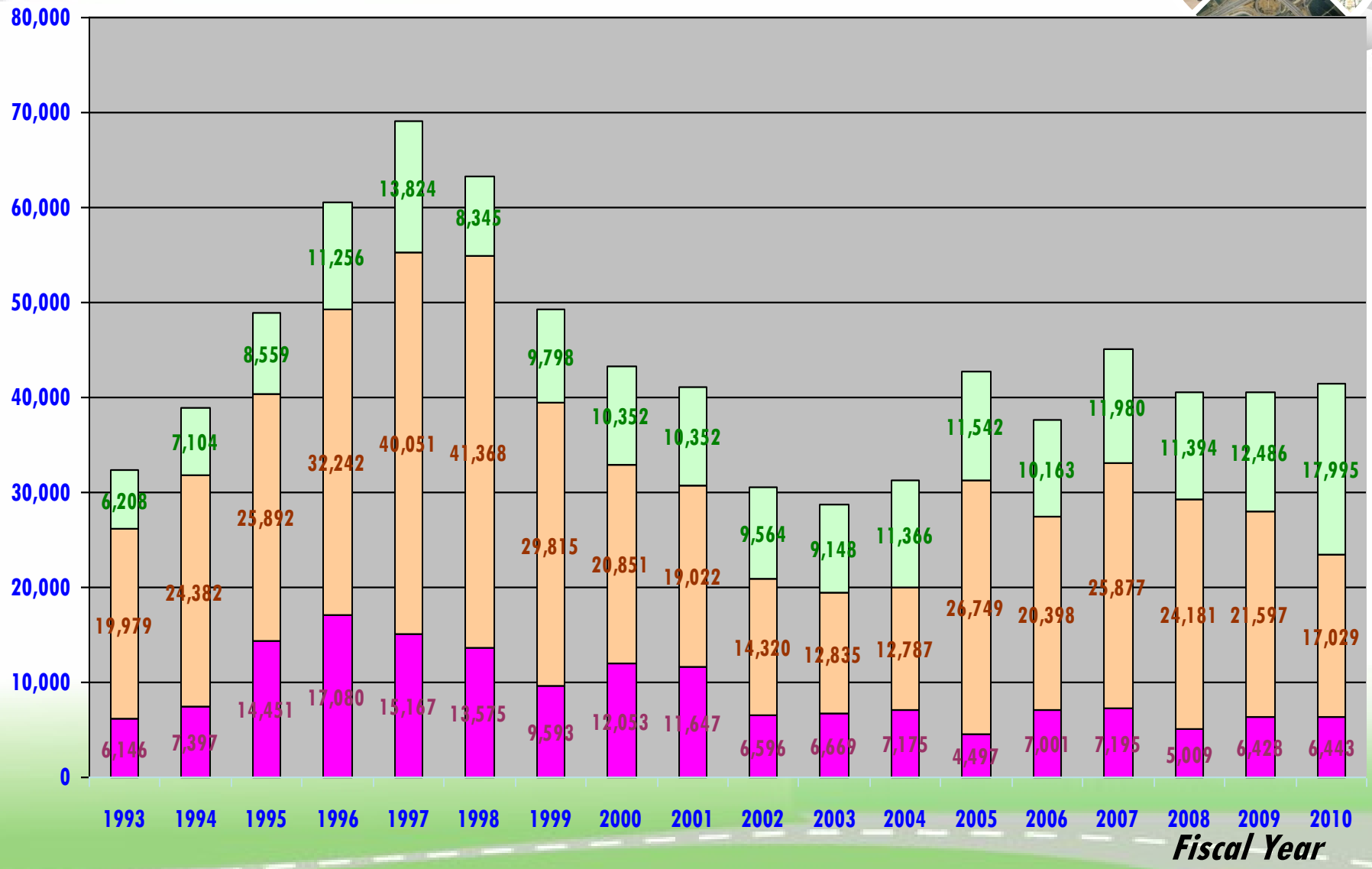
Fiscal Year

DOH Budget VS Registered Vehicles



DOH Budget

Mil. Baht



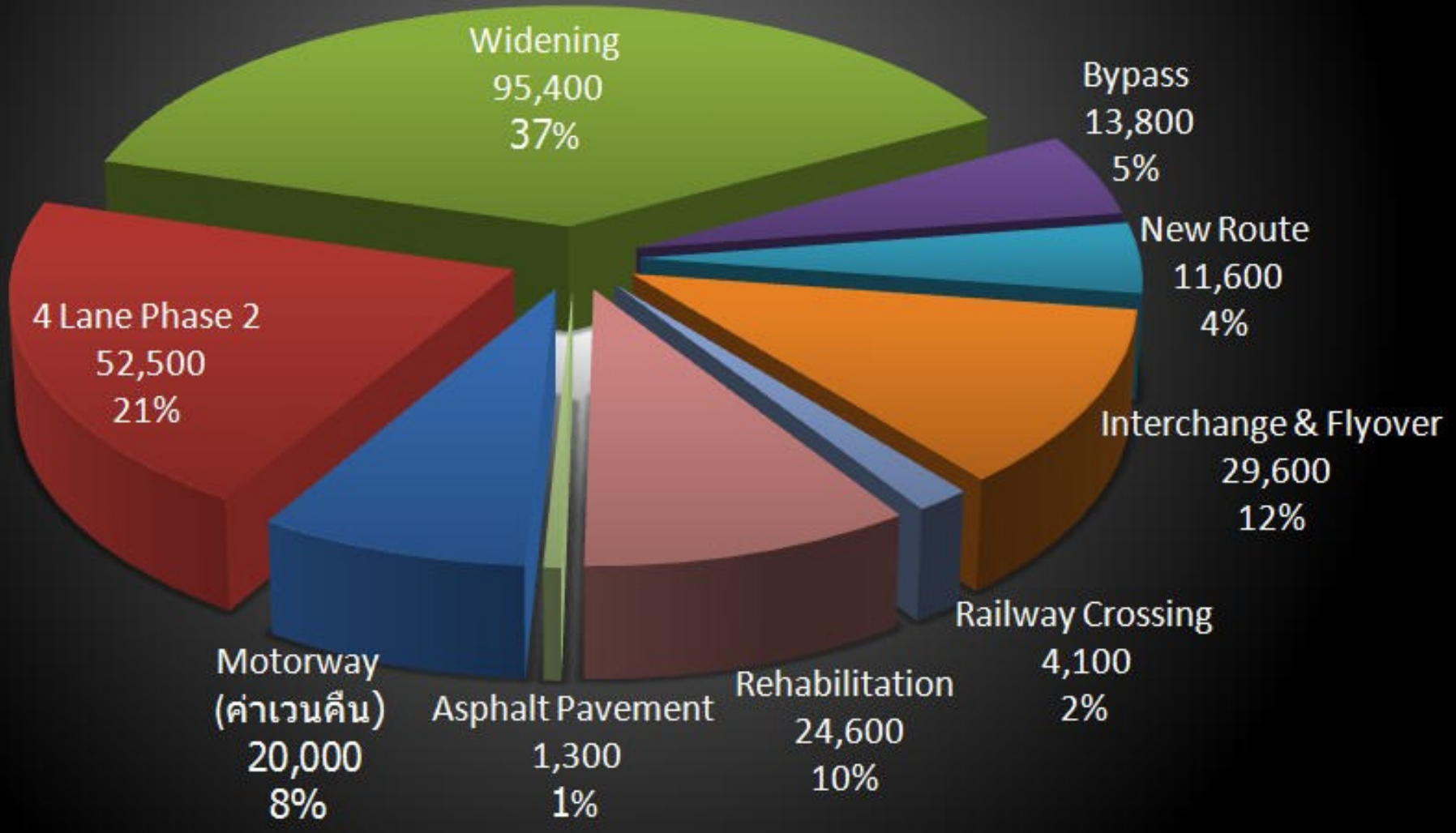
DOH Budget 2010-2011

Mil. Baht

Activities	2010	2011
Highway Development Project	20,440	19,013
Highway Maintenance	17,004	26,614
Highway Safety Management	4,023	3,084
Total	41,467	48,711

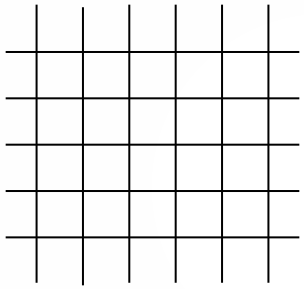
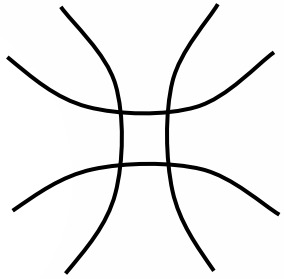
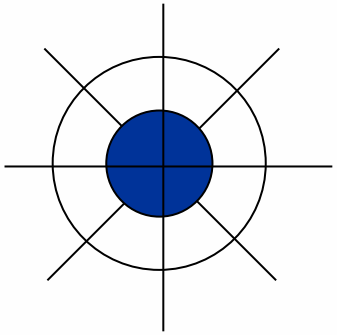
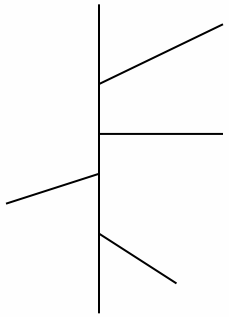

Master Plan for Highway Development
รายงานสรุปสำหรับผู้บริหาร
Executive Summary Report
รายงานการศึกษา
ผลกระทบสิ่งแวดล้อมเบื้องต้น
Initial Environmental Examination
ภาคผนวก
รายงานขั้นสุดท้าย
Final Report
รายงานหลัก
รายงานขั้นสุดท้าย
Final Report

Master Plan for Highway Development Classified by Activities



Road Hierarchy

Highway Pattern

Grid Network	Radial Network	Radial-Circumferential	Spine Network
			
United States	Small Cities	Japan / UK	Thailand / Malaysia

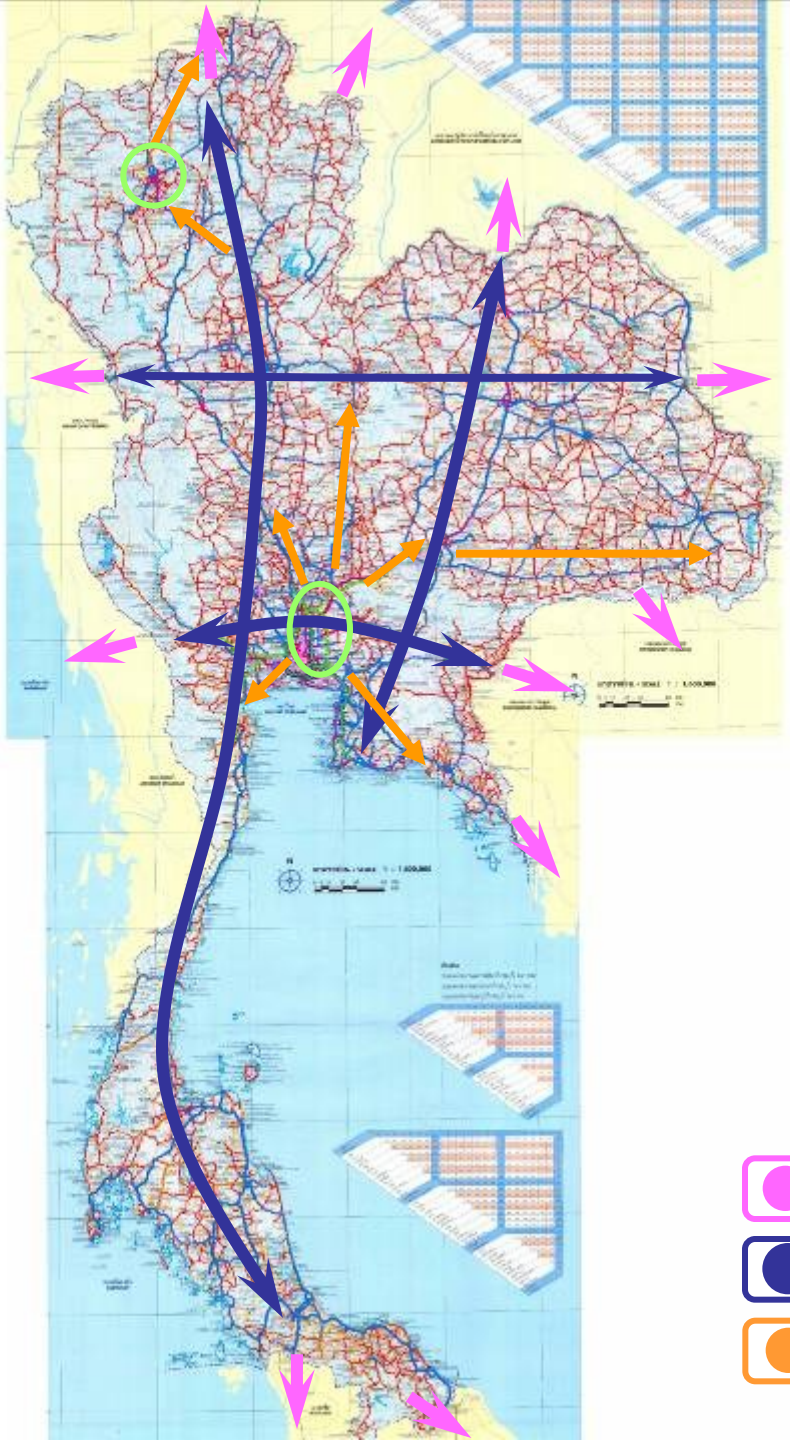
Bangkok is Central

International Gateway

Major Network

Minor Network

Grid Network

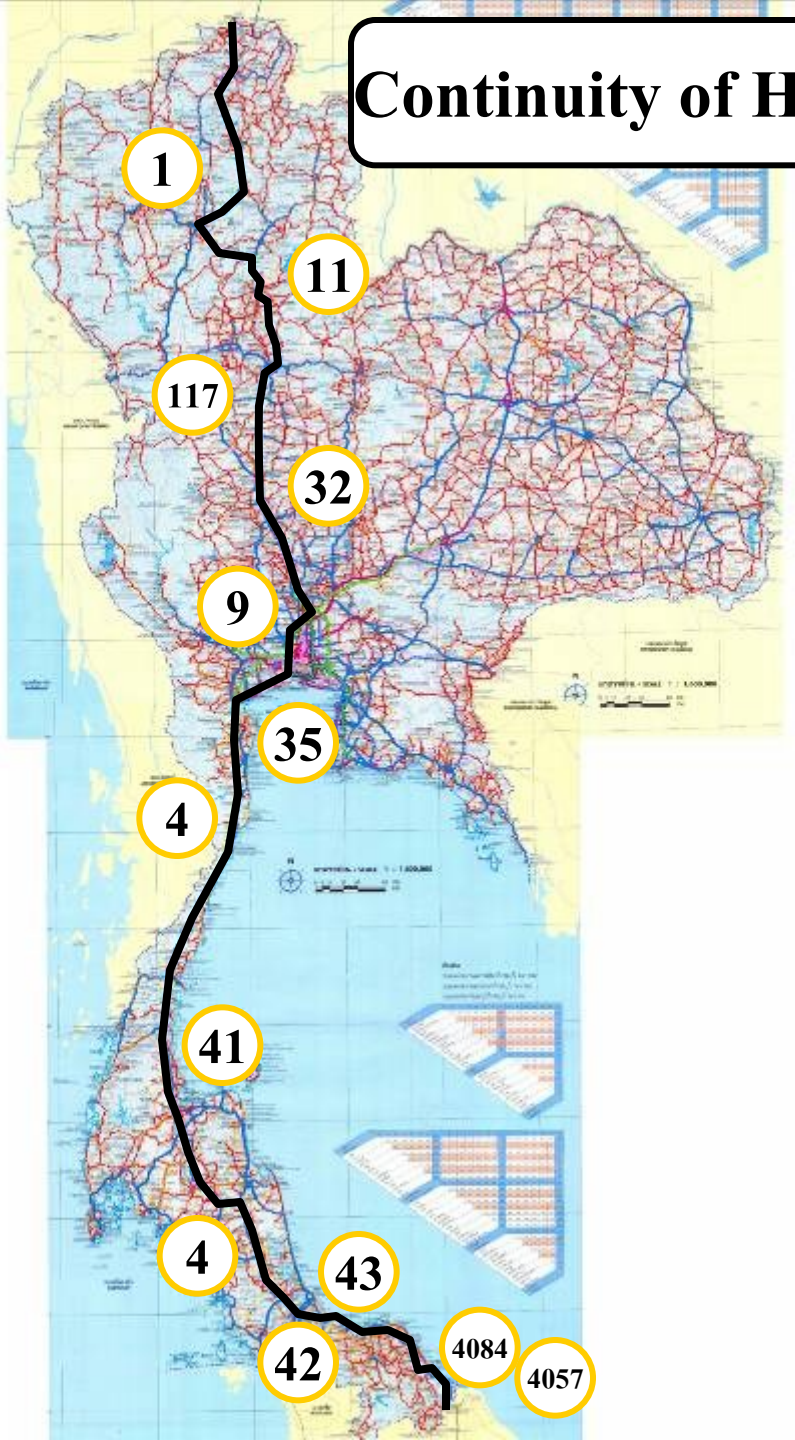


International Gateway

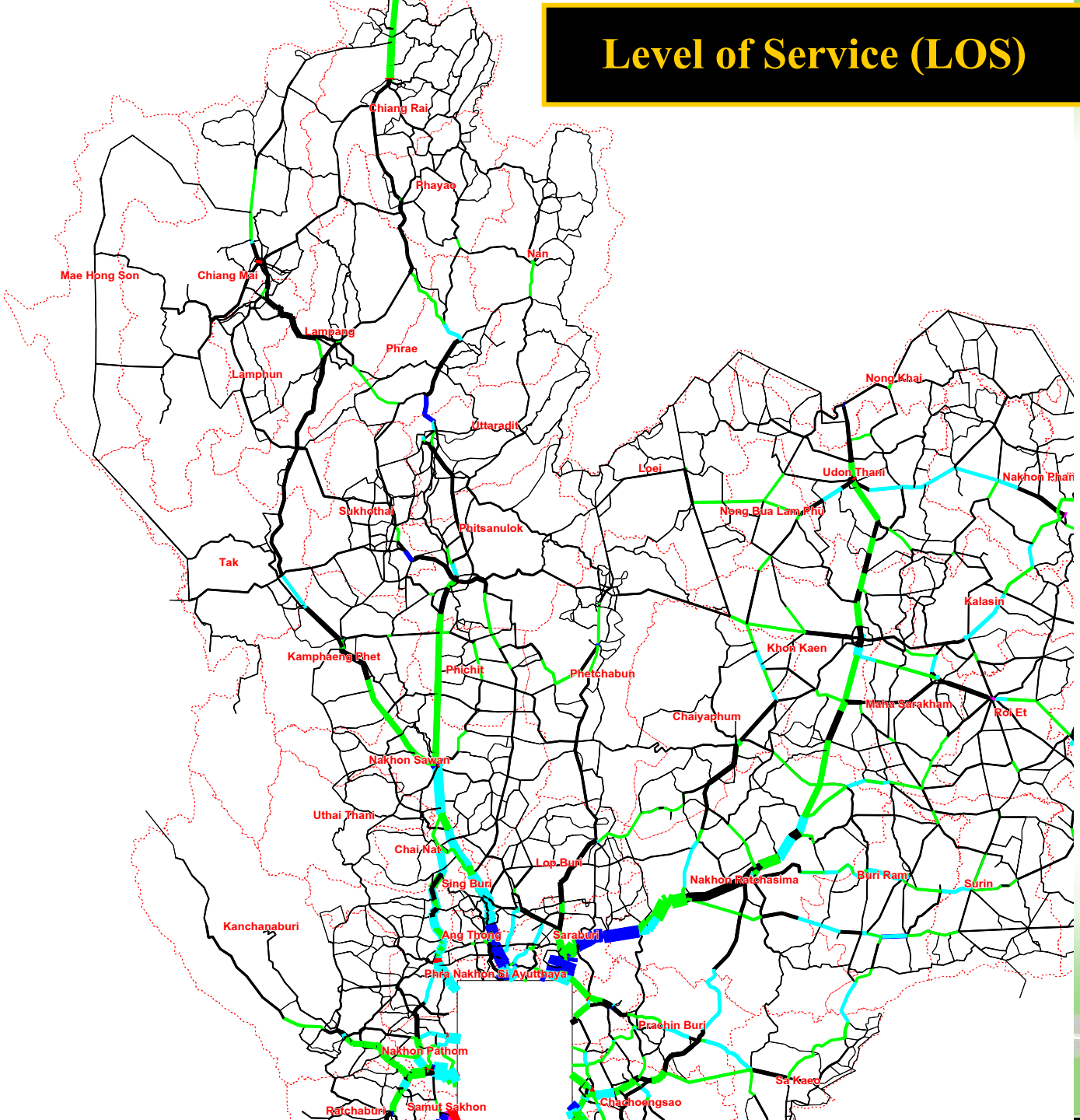
Major Network

Minor Network

Continuity of Highway Network



Level of Service (LOS)



Volume / Capacity (V/C)		
A	———	< 0.30
B		0.30 - 0.47

Step To Develop Master Plan

Review Existing Data and Projects

Government Policies
- Country's Development Strategies
- Infrastructure Strategy
- Environmental Strategy
- Vision of DOH

Demand from localities
- Provincial Strategy
- Highway Development Projects

Analysis of Highway Network
- ตามหลักวิศวกรรมจราจรและขนส่ง
- การครอบคลุมพื้นที่ ความจุและประสิทธิภาพของโครงข่าย ระดับการให้บริการ ความปลอดภัย ฯลฯ

Project List according to Demand (Long List)

Public participation 1

Preliminary Screening

Vision
แผนแม่บทการพัฒนาทางหลวง

Preliminary Screening
Classify according to project type
- Traffic Volume
- Pavement Condition
- Road Network
- Environment
- Policy & Plan

Screened Project List
Classify into 8 types of project
- Public Opinion from
- Gov.offices
- Local people
- Public Involvement

Preliminary Feasibility Study

Economic and Social forecast
Traffic volume survey O-D
Model and Traffic forcast
VOC, VOT, ACC
Benefit Evaluation
Engineering Study
Preliminary survey and design
Investment and Maintenance Cost
Economic/Financial Feasibility
Arial Map 1:50,000
Environmental Reservation Area
Environmental Study
ENV Checklist / IEE
Unit Cost (Up to region)

Set Priorities and Master Plans

Analyze Budget Allocation

Set Priority
- Economic
- Engineering
- Environment
- Policy

Highway Master Plan (10 year)

Five year Plan (5 year)

Public participation 2

Review Policies and Strategies

- **National Development Plan (5 Years)**
- **Regional Strategies**
- **Provincial groups and Province Strategies**
- **Logistics Strategies**
- **International Cooperation Strategies**

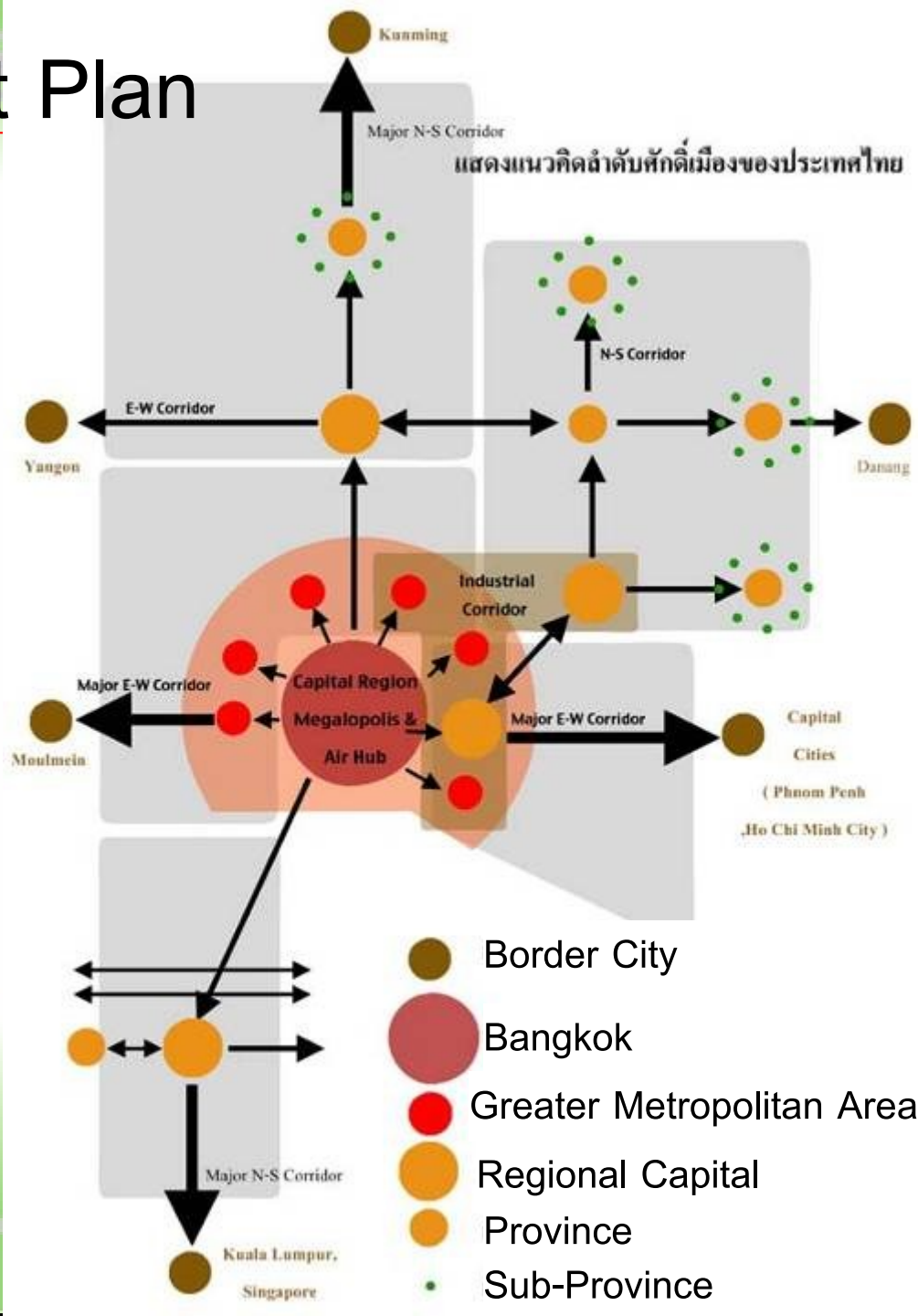
  GMS, ACMECS, IMT-GT, BIMS-TEC
- **Master Plan for Infrastructure and highway development**

National Development Plan

Hierarchy of City

Vision 5 years

Gateway to Asian Countries



Asian and ASEAN Highway

Asian Highway

4 Lane Phase 1

4 Lane Phase 2

Steps of Project Analysis

Feasibility Study of the Highway Development Project on Economics, Engineering and Environment

Analysis (With Project)

Analysis (Without Project)

Comparison (With & Without Project)

Preliminary Design

Project Cost Estimation

Evaluation of Economic Benefit

- Direct Benefit

- **Vehicle Operating Cost Benefit (VOC)**
- **Reduce Travel Time (VOT)**
- **Reduce Accident Cost (ACC)**

- Indirect Benefit

Exclude tax and Contingency

Output of Economic Benefit

- **Net Present Value (NPV)**
- **Economic Internal Rate of Return (EIRR)**
- **First Year Rate Of Return (FYRR)**
- **Benefit / Cost Ratio (B/C Ratio)**

Sensitivity Analysis

Highway Development Project

- Special Highway Construction
- National Highway Construction
- Rehabilitation and Improvement
- Interchange, Bridge and RC Tunnel
- Highway Improvement in Community Area
- Highway Improvement to Promote Tourism
- Paved Road

Special Highway Construction

- *High Standard*
- *Access Control*
- *High Speed*

Increase

- *Speed*
- *Safe*
- *World Wide Competition*

National Highway Construction

- *Upgrading Existing Road up to 4 Lane*
- *Increasing Highway Capacity*

Reduce

- *Travel Time*
- *Accident*
- *Traffic Congestion*

Rehabilitation and Improvement

- *Construct and Rehabilitate the existing Highway to extend service life*

Reduce	Increase
• Transport Cost	• Speed
• Travel Time	• Safe
• Accident	

Interchange, Bridge and RC Tunnel

- *High Capacity*
- *Increasing Level of Service*
- *Better Highway Network*

Reduce

- *Traffic Congestion*
- *Travel Time*
- *Accident*
- *Transport Cost*

Highway Improvement in Community Area

- *Densed Populated*
- *Drainage*
- *Side Walk*
- *Street Lighting*

- *Quality of Life*
- *Flood Protection*
- *Speed*
- *Safe*
- *Parking*

Highway Improvement to Promote Tourism

Construction Road

- To National Resource
- To Waterfall
- To Hillside
- To Seaside

Increase

- Promote Tourism
- Income
- Quality of Life

Paved Road

- *Existing Laterite to paved Road*

Reduce

- *Transport Cost*
- *Travel Time*

Increase

- *Income*
- *Quality of Life*

Highway Development Plan

Project /Activity	5 Year-Plan	
	Length (km.)	Budget (Mil Baht)
1. Special Highway Construction		178,110
2. 4 lane Highway Widening Project (Phase 2)	1,105.79	27,750
3. National Highway Construction (Upgrading Existing Road)	2,291.39	56595
4. Bypass Construction	423.38	10,181
5. New Link Construction	390.58	9,663
6. Interchange and Bridge Construction	66.21	15,196
7. Overpass Construction (Railway intersection)	15.36	2,725
8. Rehabilitation and Improvement	1,360.92	13,183
9. Paved Road Construction		-
10. Highway Maintenance		73,008
11. Highway Safety		20,212
12. Traffic Alleviation Project in Bangkok and its vicinities		7,000
Total		413,623

Inter-City Motorway Master Plan

20-Year Plan (1997-2017)

13 Networks

Length	**4,150 Km.**
Const. Cost	**472,360 MB.**
Land Acquisition	**65,600 MB.**

Completed **146 Km.**

Present Motorway Network under our Responsibility

- Motorway Link No. 7
  Bangkok – Chon Buri
  (- Pattaya)
- Motorway Link No.9
  Bang Phli – Bang Pa In

Flagship Motorway Projects

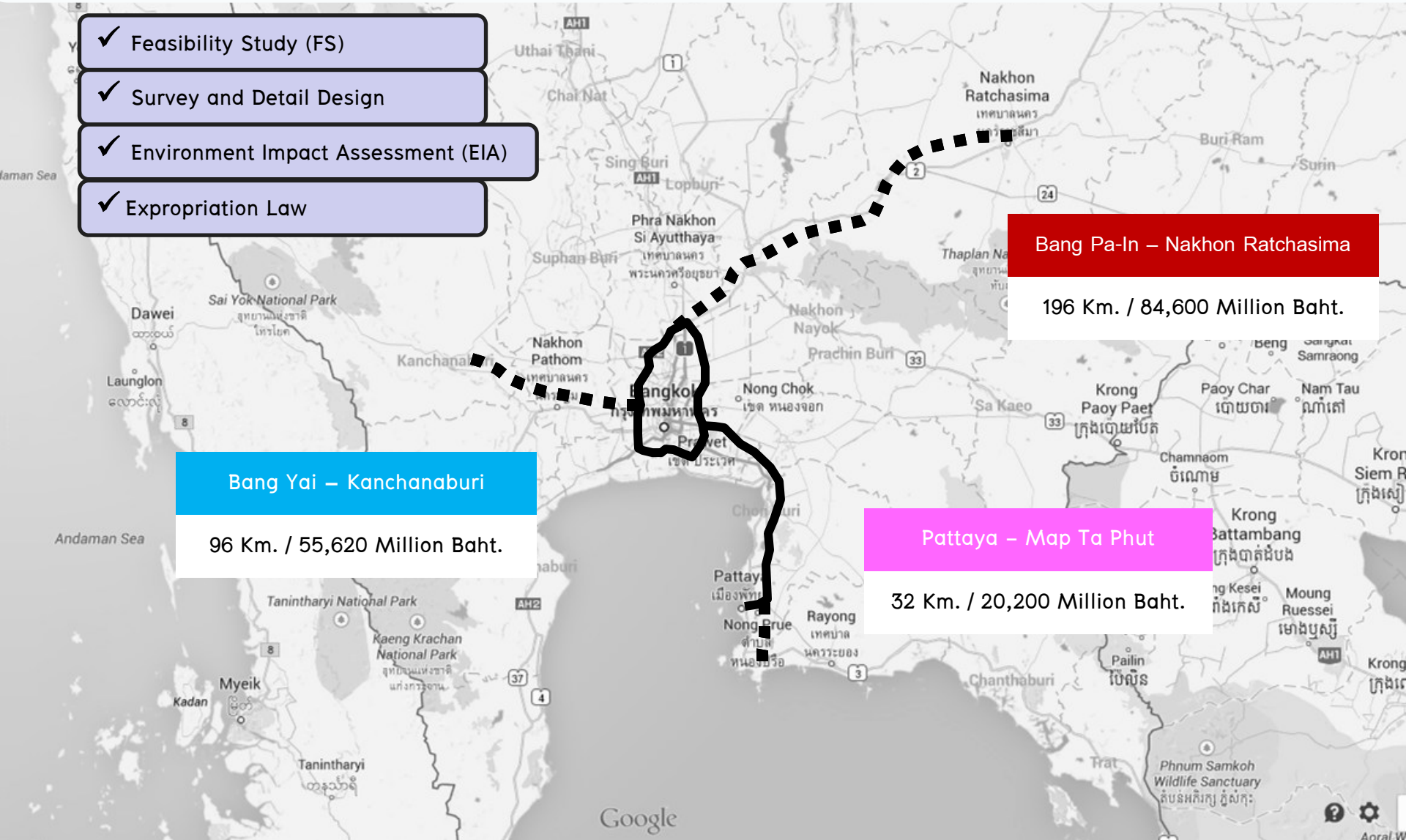
1. Motorway Link: Pattaya – Map Ta Phut

2. Motorway Link: Bang Pa-In – Nakhon Ratchasima

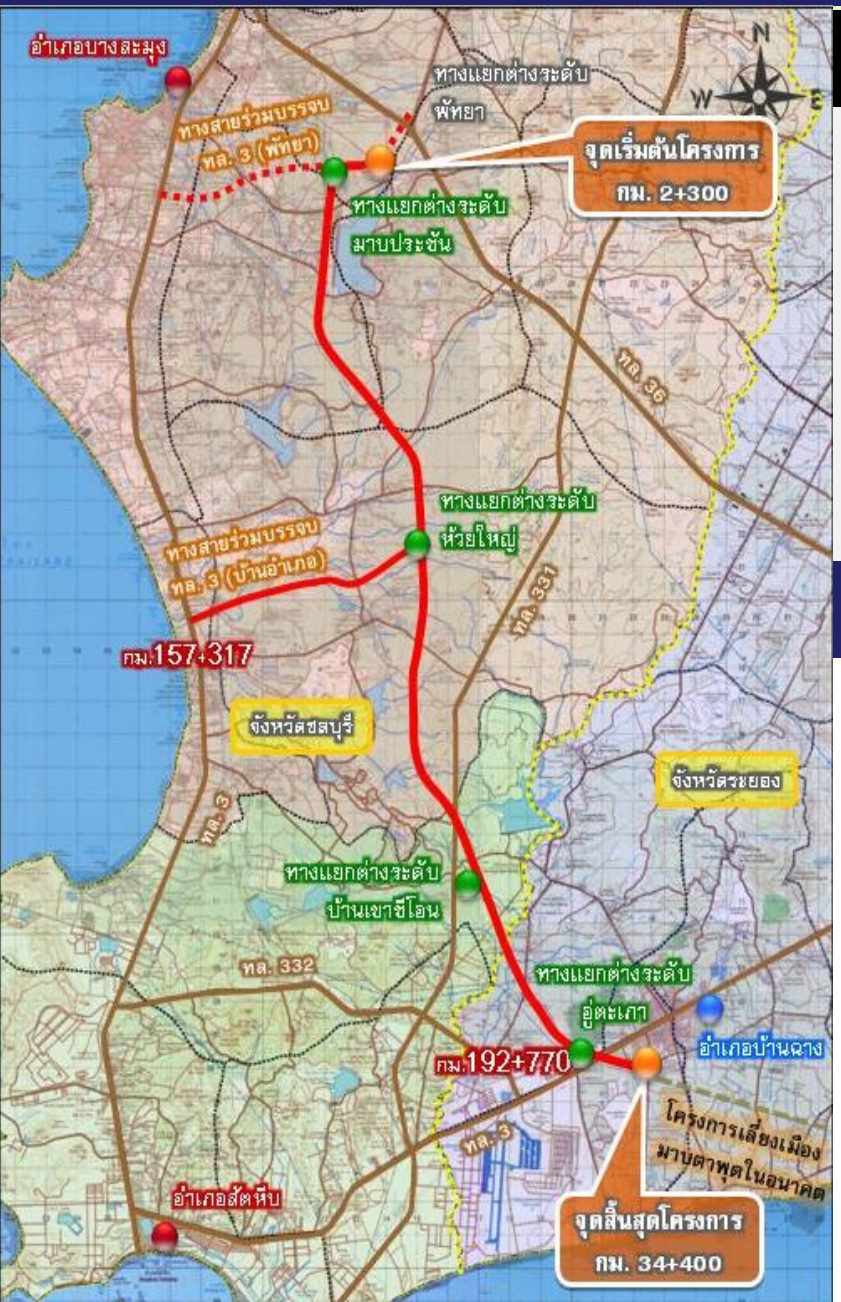
3. Motorway Link: Bang Yai – Kanchanaburi

Flagship Motorway Projects

- ✓ Feasibility Study (FS)
- ✓ Survey and Detail Design
- ✓ Environment Impact Assessment (EIA)
- ✓ Expropriation Law



1. Motorway Link: Pattaya – Map Ta Phut



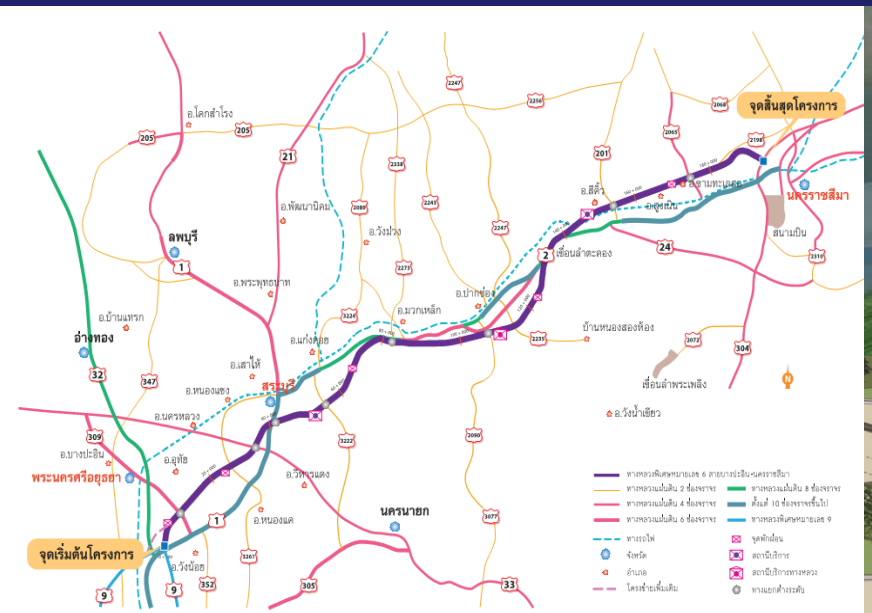
Project Overview

- 4 lane tolled road, Distance 32 Km.
- Extension of M7 Bangkok – Chon Buri – Pattaya
- Total capital expenditure 20,200 Million Baht
  - Construction Cost 14,200 Million Baht
  - Land acquisition compensation 6,000 Million Baht
- Economic Internal Rate of Return (EIRR) 17 %
- Timeline for Project Construction 2016 – 2019

Project Status

- Presently, the civil work has already been under Construction, using Procurement Public Sector Comparator (PSC or Traditional Procurement)
- Financing from "Construction Financing from Toll Collection Fund"
- For the operation and maintenance, the DOH plan to implement by ourselves.
- For the service center, the DOH will open to Public Private Partnership (PPP).

2. Motorway Link: Bang Pa-In – Nakhon Ratchasima



Project Overview

- 4 – 6 lane tolled road
- Distance 196 Km.
- Total capital expenditure 84,600 Million Baht
  - Construction Cost 77,970 Million Baht
  - Land acquisition compensation 6,630 Million Baht
- Economic Internal Rate of Return (EIRR) 19 %
- Timeline for Project Construction 2016 – 2019

Project Status

- The procurement process of the civil work was already stared, using Procurement Public Sector Comparator (PSC or Traditional Procurement)
- Financing through government budget for all the civil work.
- The construction work are about to start at the end of this April.
- For operation and maintenance, the DOH intends to seek the Public Private Partnership (PPP); in addition, the private firm shall itself invest in utility work.

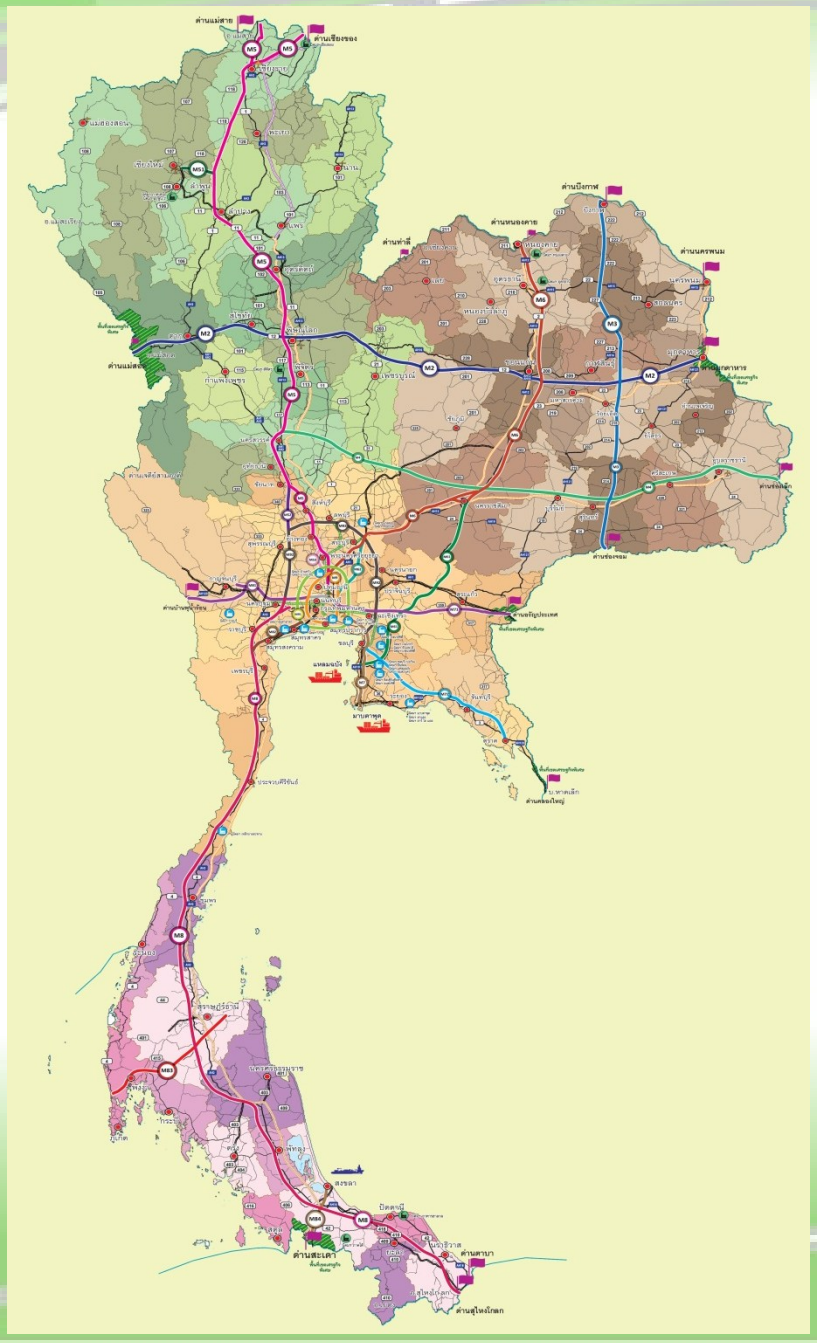
3. Motorway Link: Bang Yai – Kanchanaburi

Project Overview

- 4 – 6 lane tolled road
- Distance 96 Km.
- Total capital expenditure 55,620 Million Baht
  - Construction Cost 50,200 Million Baht
  - Land acquisition compensation 5,420 Million
- Economic Internal Rate of Return (EIRR) 15 %
- Timeline for Project Construction 2017 – 2019

Project Status

- The procurement process of the civil work is to be stated in this month, using Procurement Public Sector Comparator (PSC or Traditional Procurement)
- Financing through government budget for all the civil work.
- The construction work are planed to begin in July this year.
- For operation and maintenance, the DOH intends to seek the Public Private Partnership (PPP); in addition, the private firm shall itself invest in utility work.



Inter – City

Motorway

Master Plan

PPP PROJECTS

PPP Projects in Road Sector

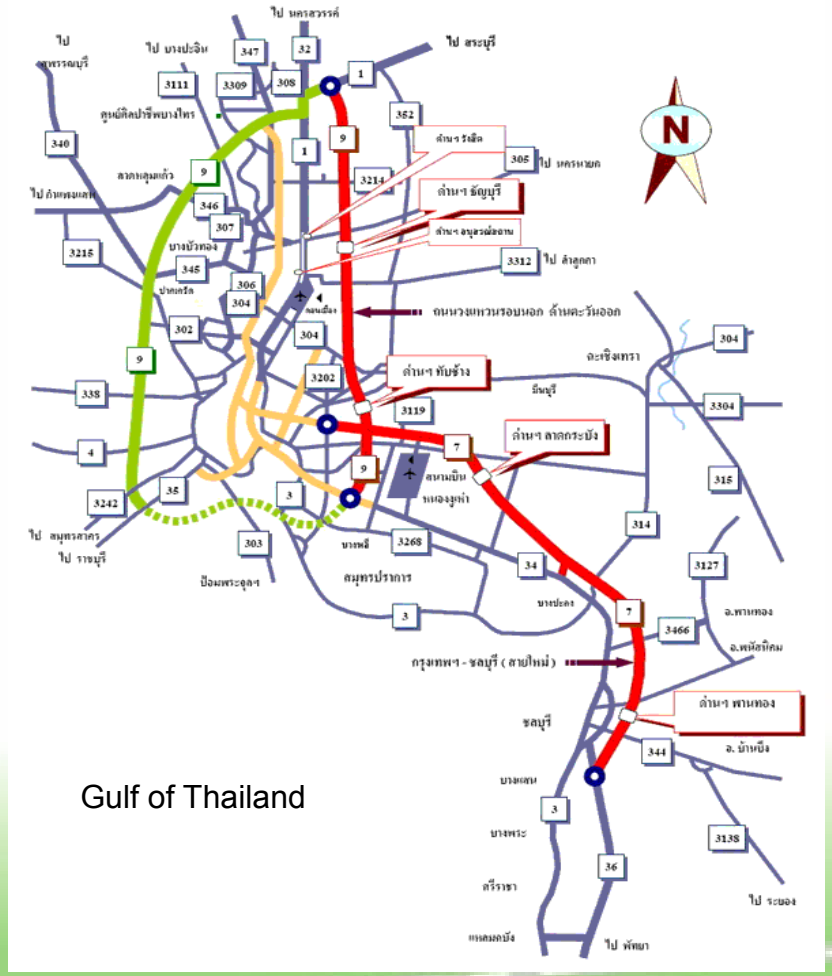
- PPP for the Operation and Maintenance processes
  - Bang Pa In – Nakorn Ratchasrima Motorway Link
  - Bang Yai – Karnchanaburi Motorway Link

- PPP for the entire project lifecycle (Construction, Operation and Maintenance)
  - Nakhon Pathom – Cha Am Motorway Link
  - Extended Motorway Link: Uttara Pi Muk - Bang Pa In
  - Thonburi – Paktho Motorway

    (elevated tolled road on National Highway No. 35)
  - Hat Yai – Thai – Malaysia (Sadao) Border Motorway Link
  - All Rest Areas and Service Centers in the Motorway Network

THAILAND FUTURE FUND

Thailand Future Fund (Challenge Ahead)

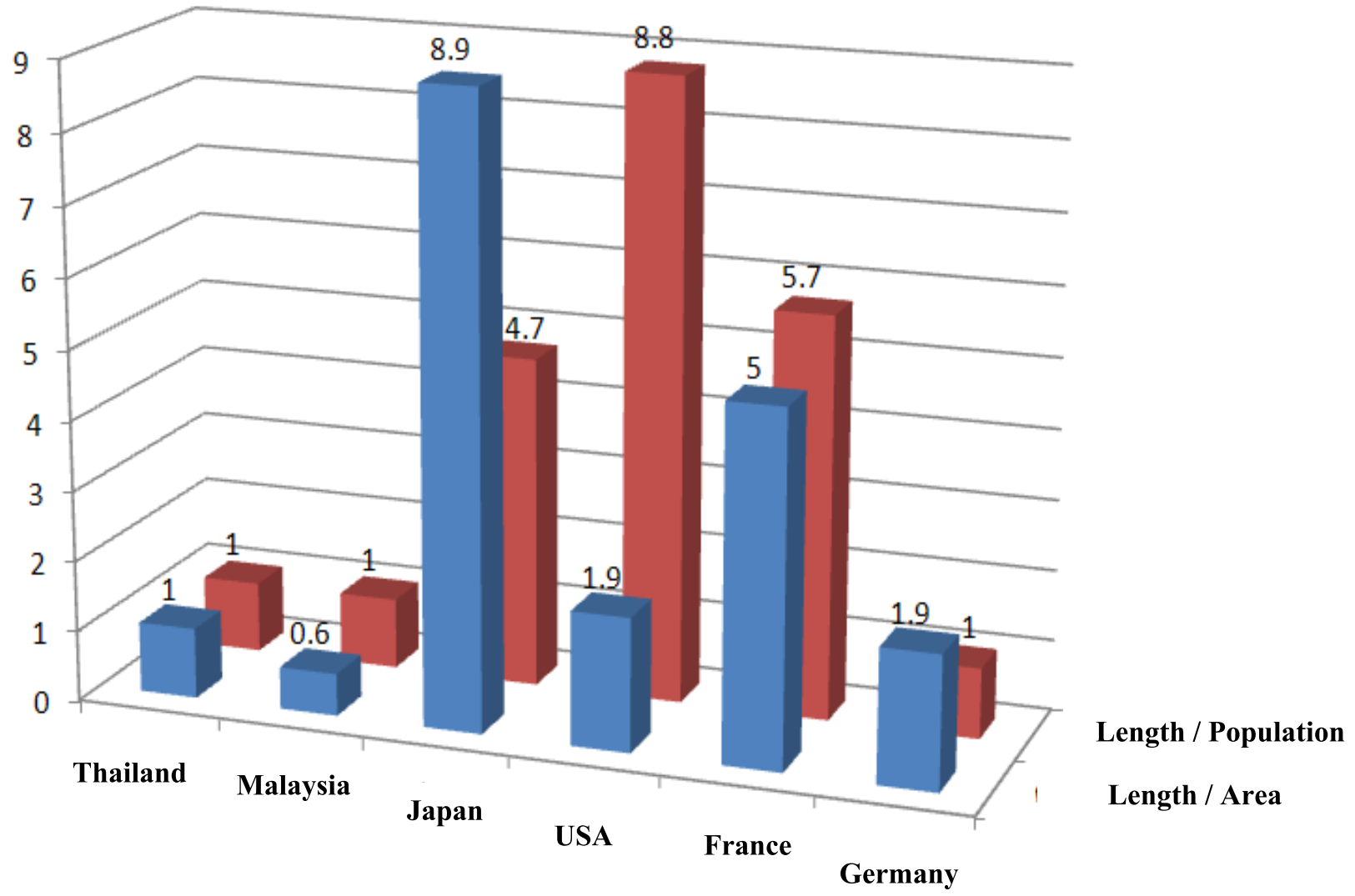


Presently, the State Enterprise Policy Office (SEPO) and the Department of Highways plan to include the existing motorway No. 7 and 9 into the Thailand Future Fund.

However, this is still in the phase of beginning. Many challenges are still ahead:

- Legal issue
  (Tolled Road Act of Legislation)
- Financial Possibility

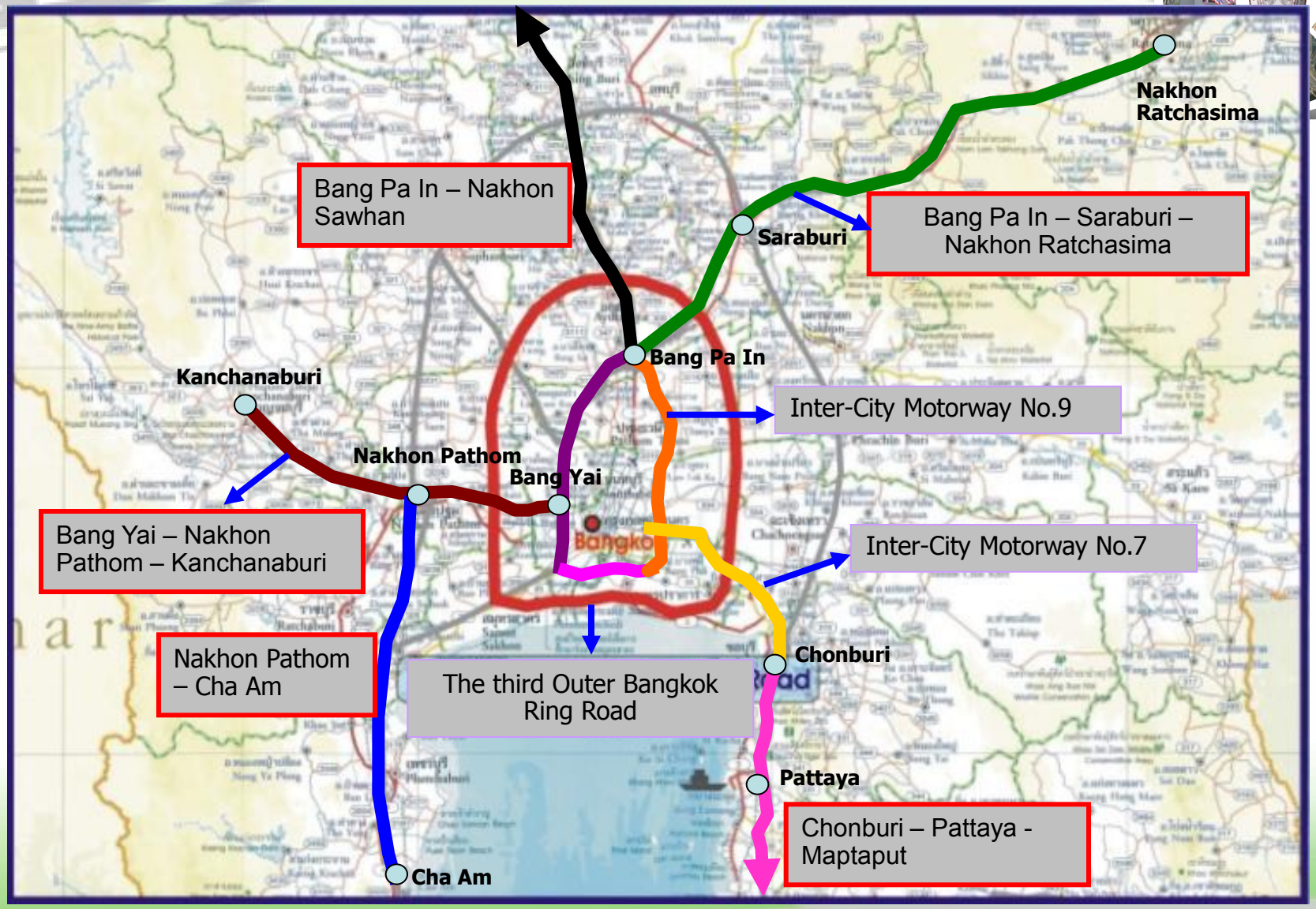
Motorway Network in Thailand and Other countries



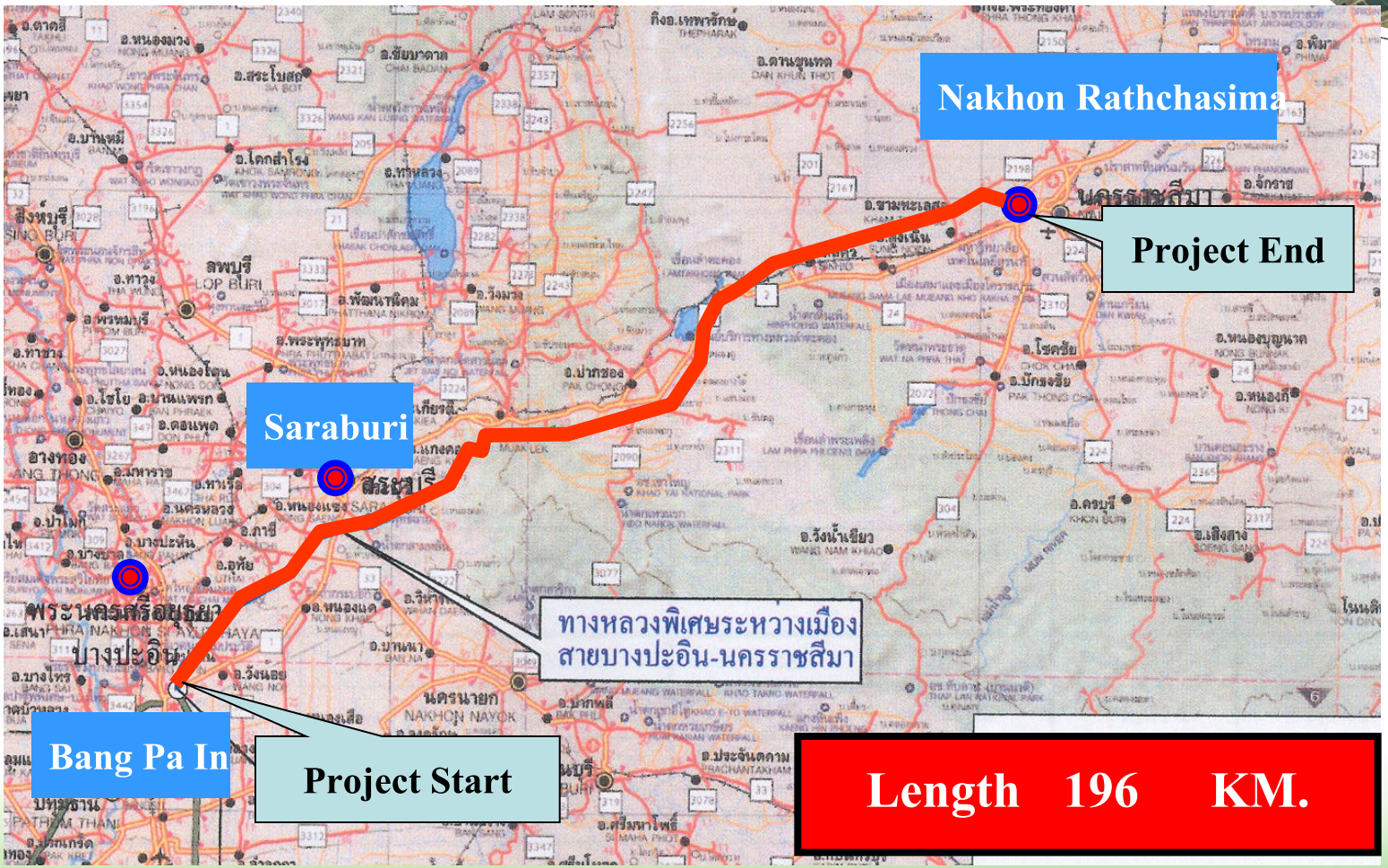
Motorway Network in Thailand and Other countries

Countries	Thailand	Malaysia	Japan	USA	France	Germany
Length (Km.)	166	1,472	7,383	75,009	10,843	12,363
Motorway/Area (Km./10,000 Sq.km.)	3	45	195	76	198	346
Motorway/Population	1	16	70	27	70	123

ที่มา : CIA Fact book ปี พ.ศ.2551

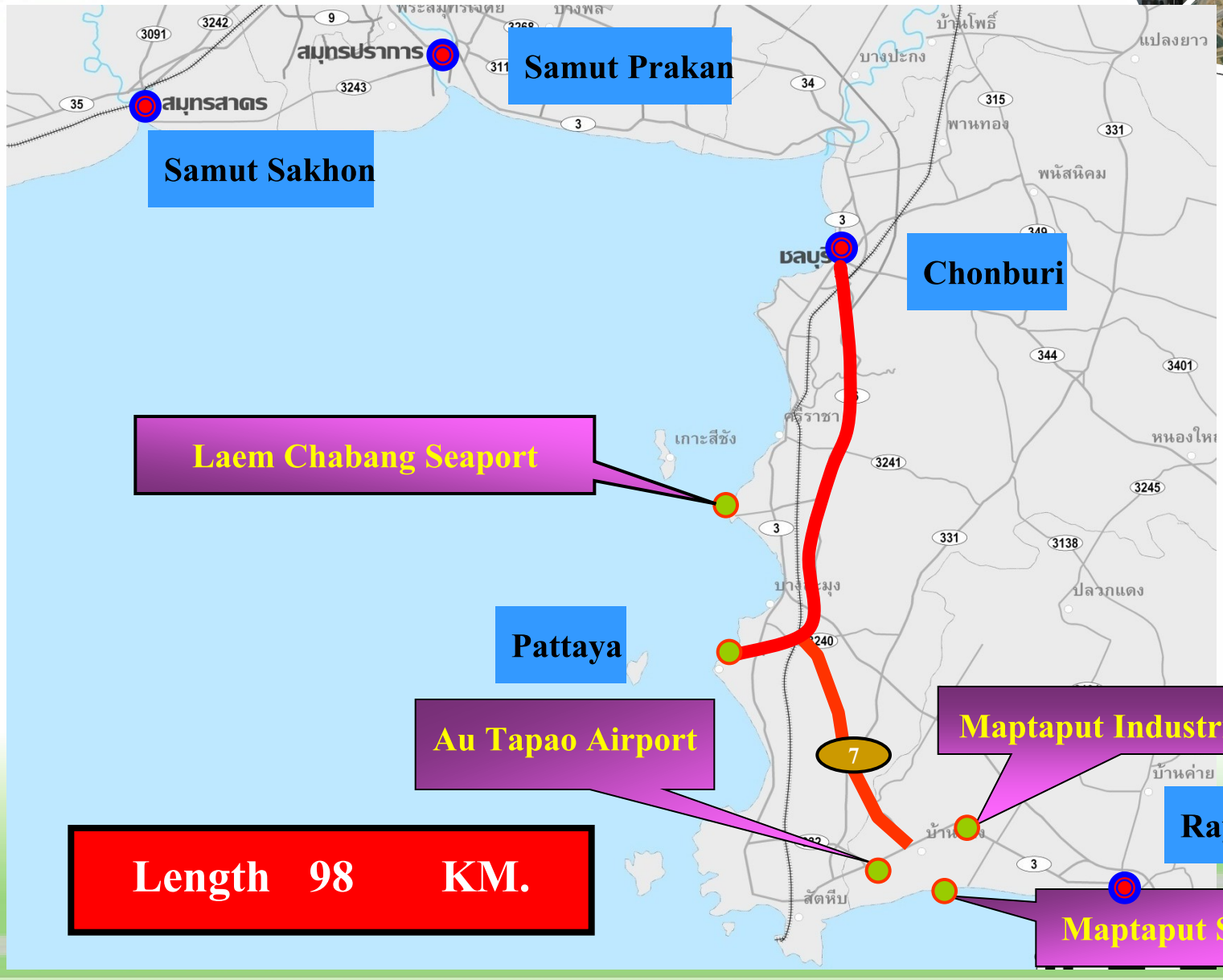

Nakhon Ratchasima
Bang Pa In – Nakhon Sawhan
Saraburi
Bang Pa In – Saraburi – Nakhon Ratchasima
Bang Pa In
Kanchanaburi
Inter-City Motorway No.9
Nakhon Pathom
Bang Yai
Bang Yai – Nakhon Pathom – Kanchanaburi
Inter-City Motorway No.7
Nakhon Pathom – Cha Am
Chonburi
The third Outer Bangkok Ring Road
Pattaya
Chonburi – Pattaya - Maptaput
Cha Am

1. Inter-City Motorway Route Bang Pa In – Saraburi – Nakhon Ratchasima

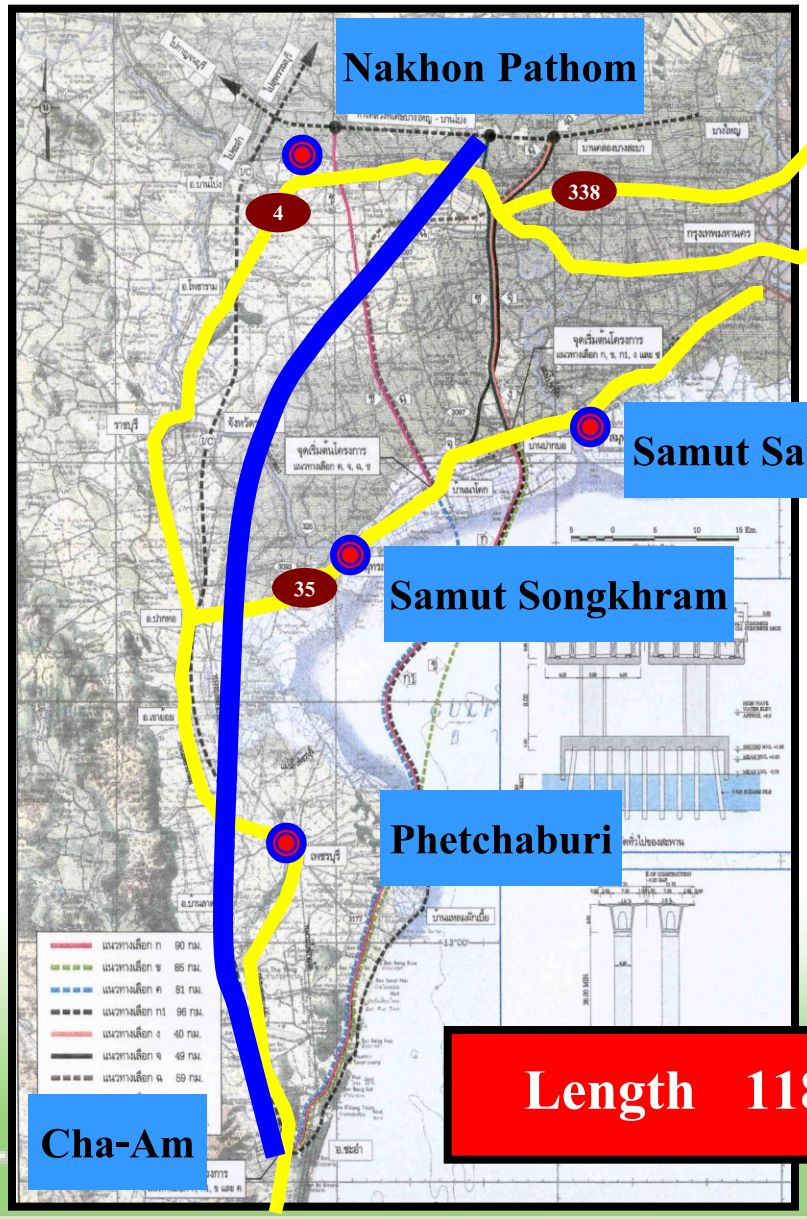


2. Inter-City Motorway Route Bang Yai – Nakhon Pathom – Kanchanaburi

3. Inter-City Motorway Route Chonburi -Pattaya – Maptaput



4. Inter-City Motorway Route Nakhon Pathom – Samut Songkhram – Cha Am



Length 118 KM.

5. Inter-City Motorway Route Bang Pa In – Nakhorn Sawan

Length 206 KM.

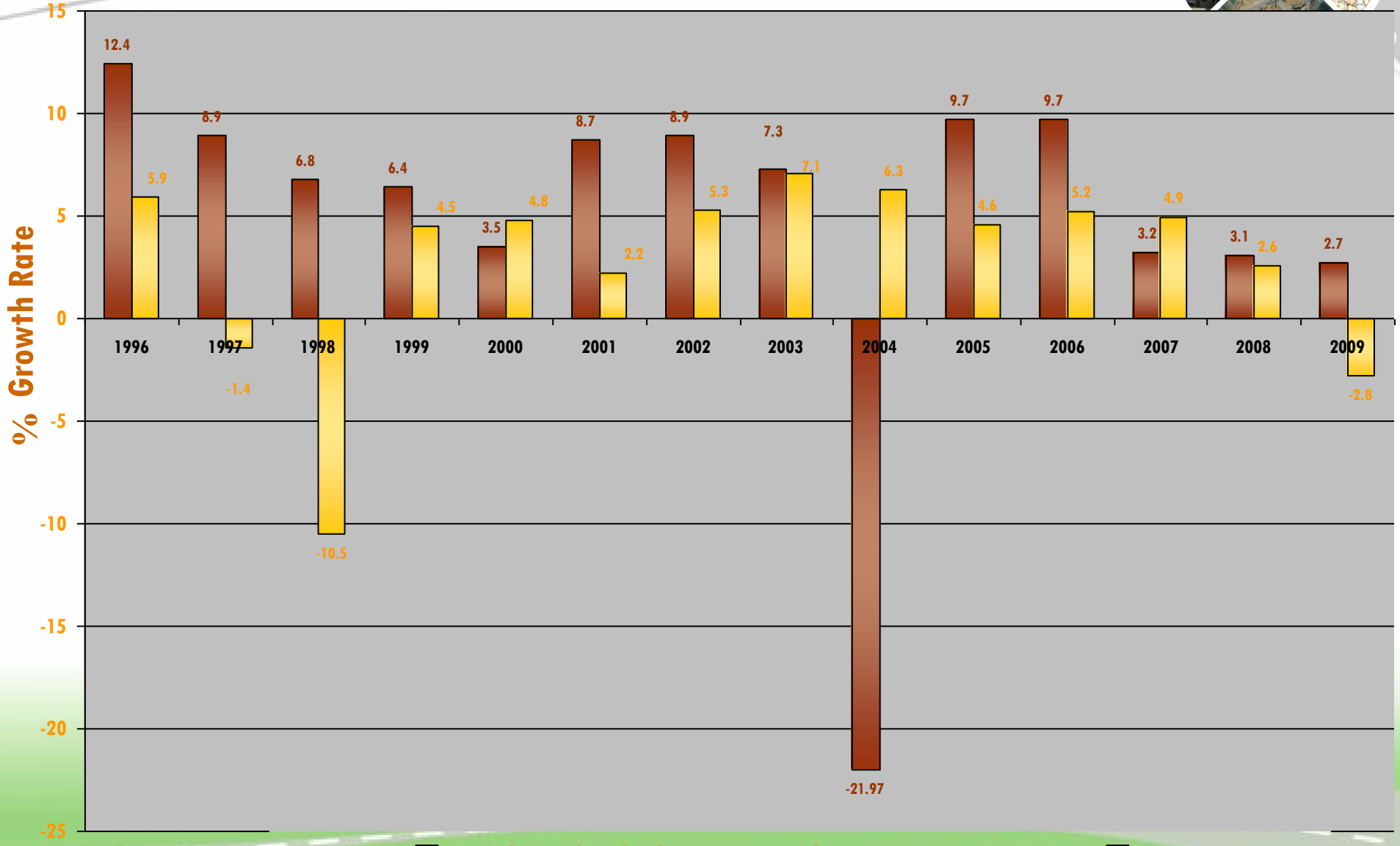
Highway Maintenance

- Highway & Bridge Maintenance
- Flood & Disaster Improvement
- Highway Architectural and Landscape Improvement

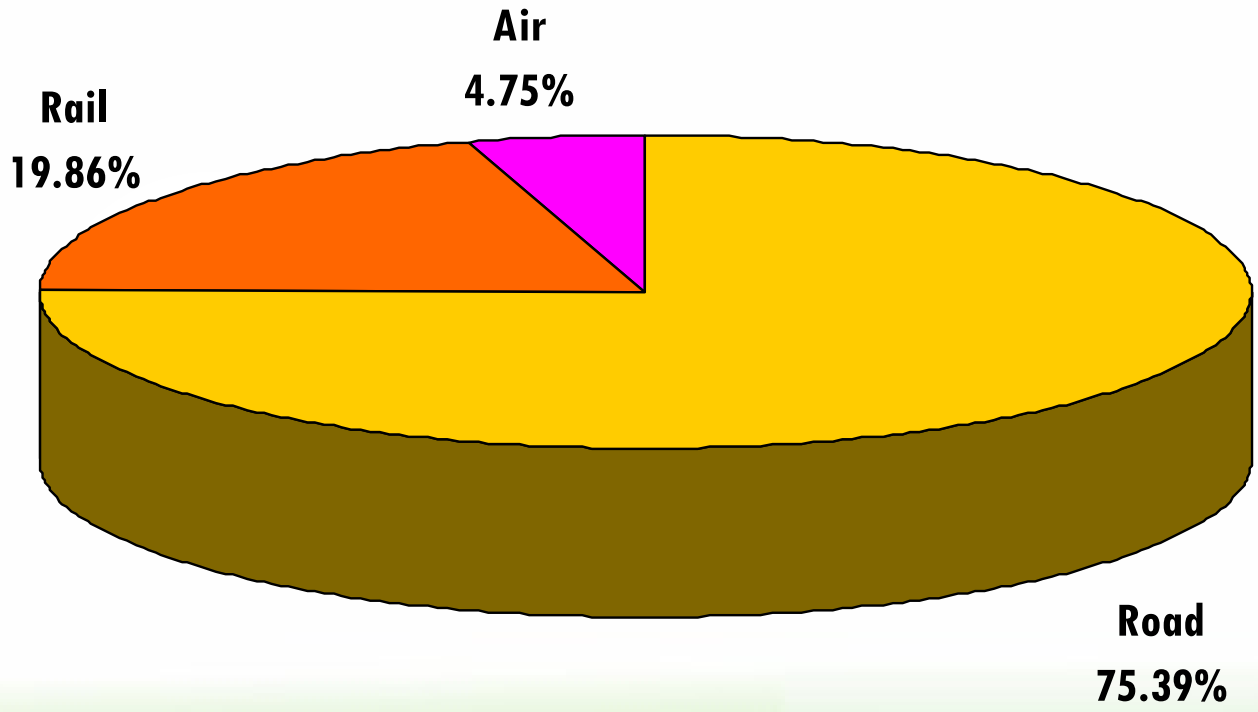
Highway Safety Management

- Congestion Management
- Management of Accident Problems such as studies on accident data, Black-spot Safety Improvement

GDP & Number of Vehicle Registered in 1996-2009

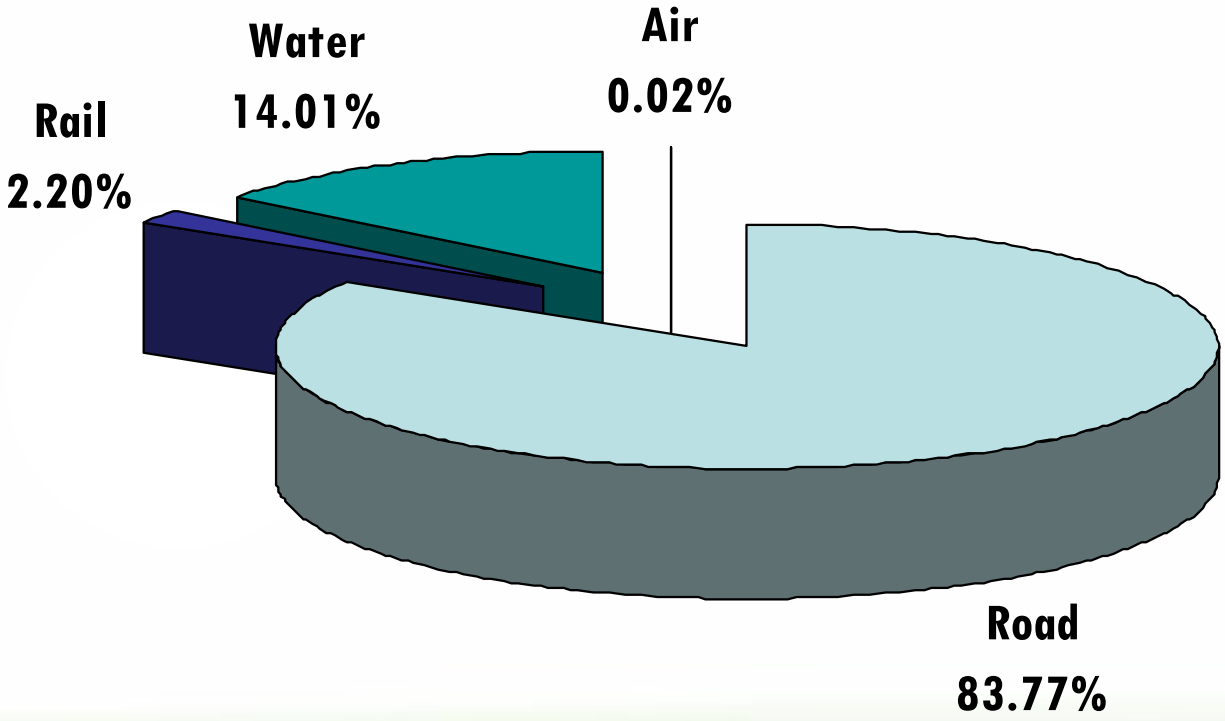


Share of Passenger Transport in 2015



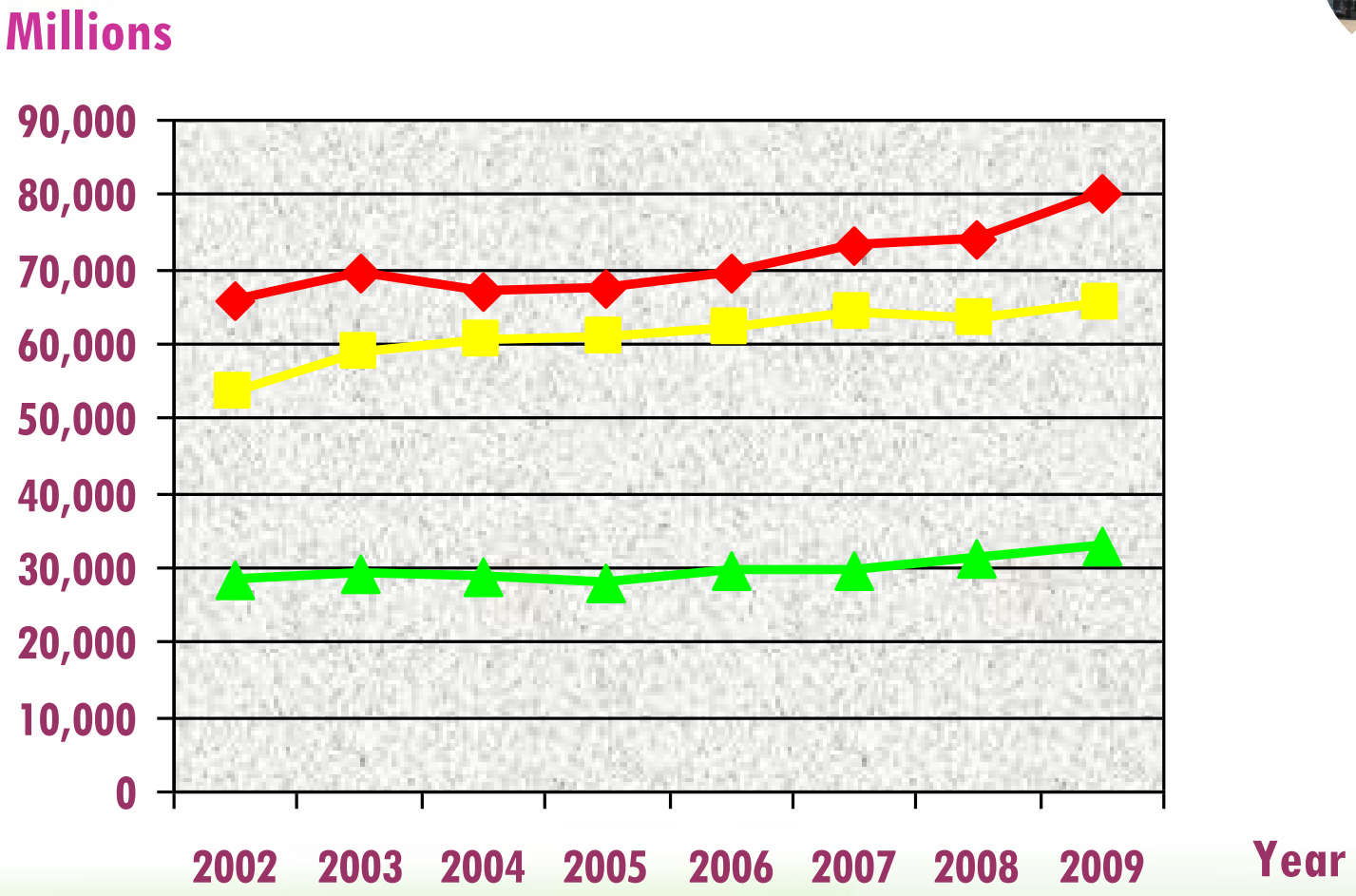
Status :2015

Share of Domestic Freight Transport in 2015



Status :2015

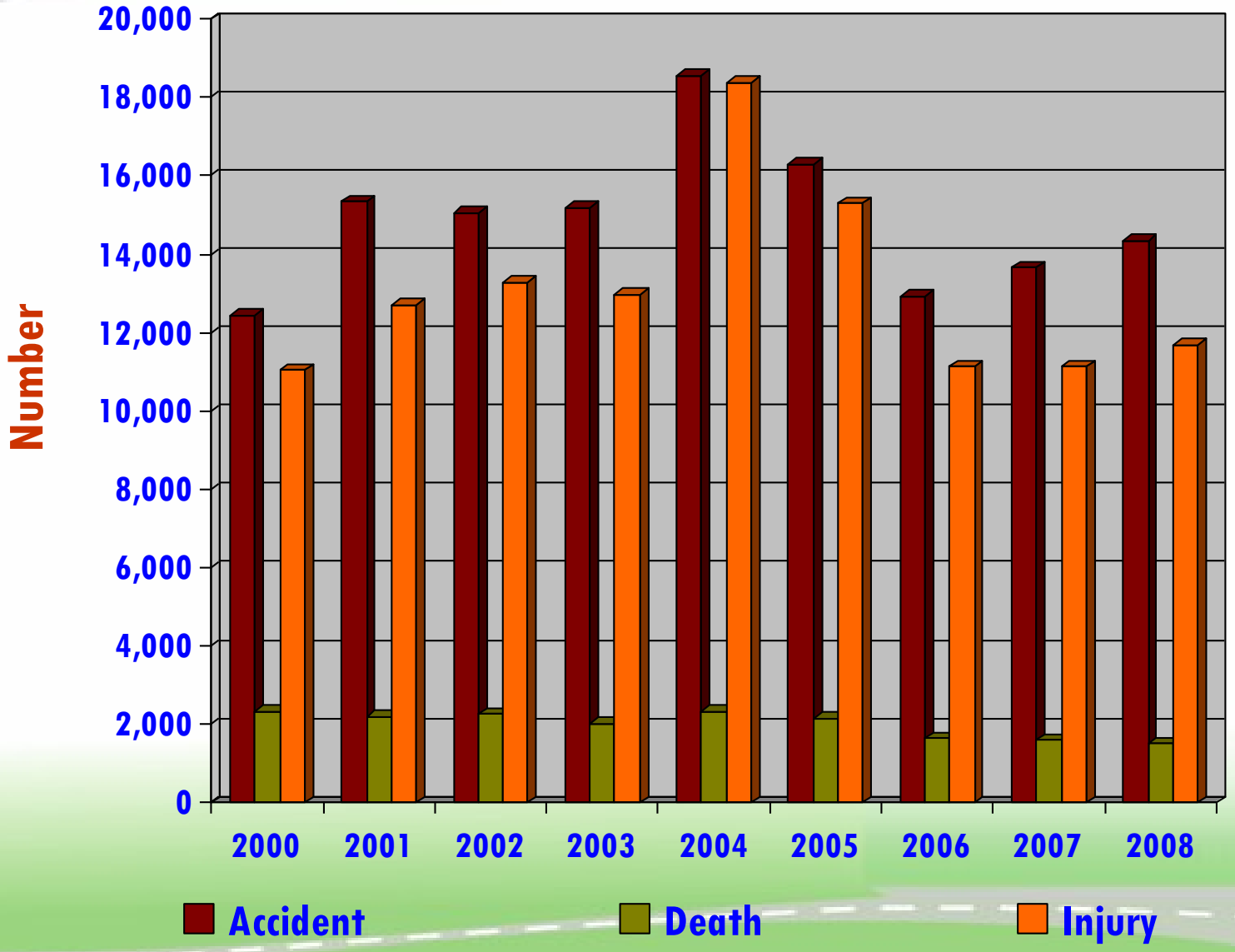
Traveled Vehicle – Kilometers



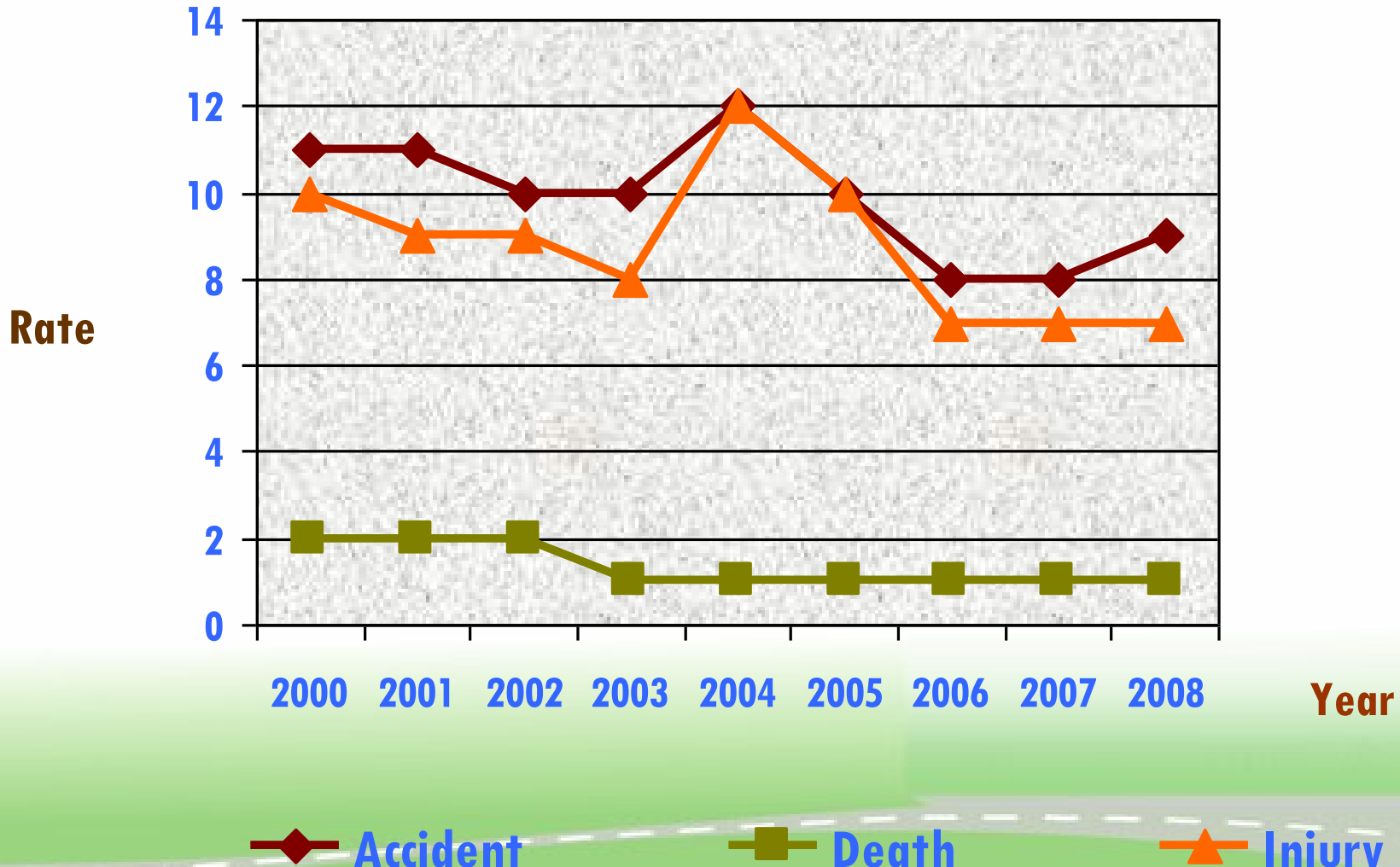
Volume/Capacity : V/C

V / C	2 lane		4 lane		>4 lane		Total	
	Section	Km.	Section	Km.	Section	Km.	Section	Km.
0.00-0.60	1,831	36.729.646	385	8,131.572	135	2,477.250	2,351	47,338.468
0.61-0.70	10	151.941	3	29.441	6	73.006	19	254.388
0.71-0.80	7	70.120	4	88.012	3	71.720	14	229.852
0.81-0.90	2	39.987	2	37.892	1	26.267	5	104.146
0.91-1.00	3	51.566	3	13.263	1	24.110	7	88.939
> 1.0	17	204.395	1	6.871	1	10.181	19	221.447
Total	1,870	37,247.655	398	8,307.051	147	2,682.534	2,415	48,237.240

Highway Traffic Accident Trend

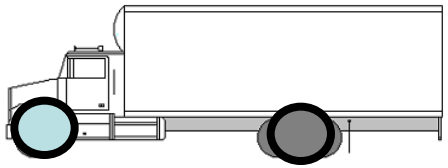


Accident Rate on Highways and per 100 million vehicle-kilometer



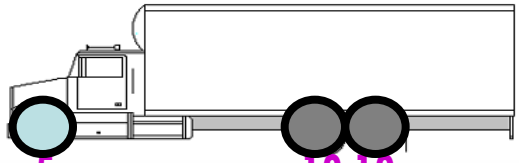
Legal Weight

6 wheels
(2 axles)



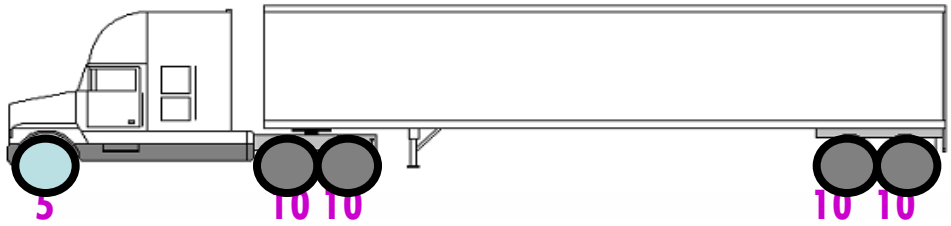
15

10 wheels
(3 axles)



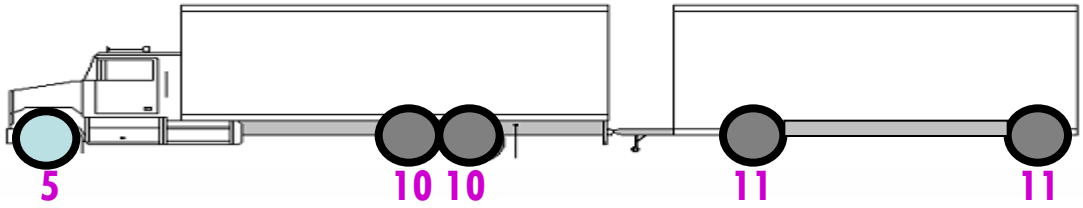
25

18 wheels
(5 axles)



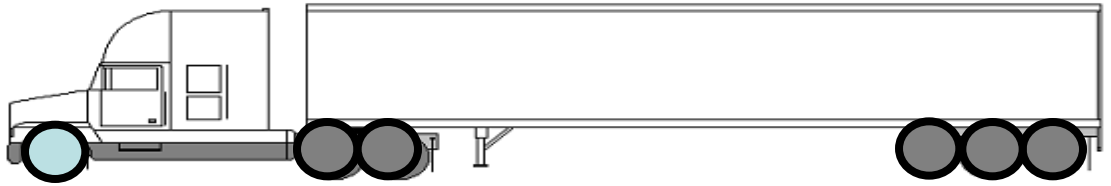
45

18 wheels
(5 axles)



47

22 wheels
(6 axles)



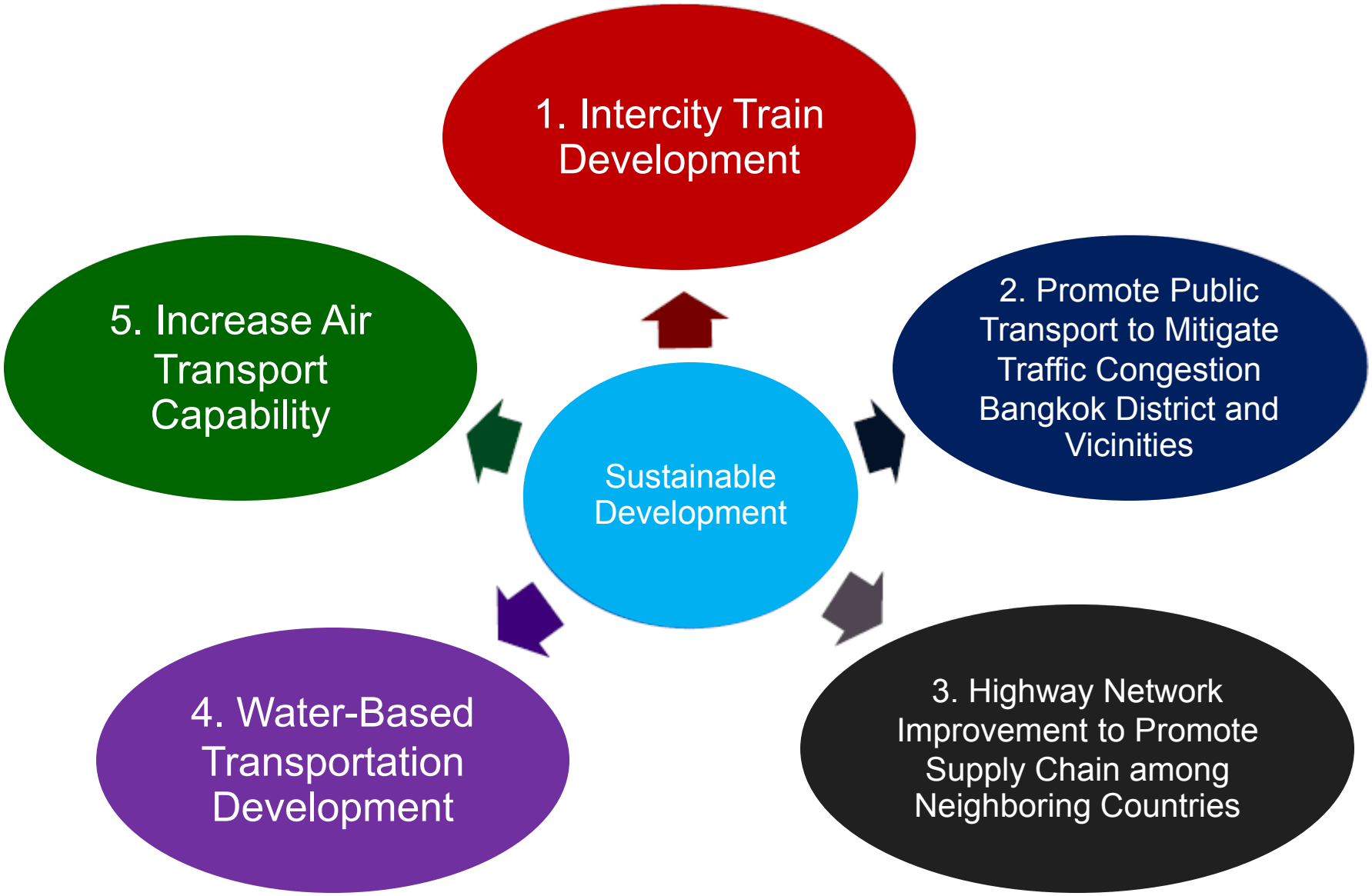
50.5

Single tyre

Double tyre

Thailand Transportation Infrastructure Planning 2015 – 2025

Thailand Transportation infrastructure Strategic 2015 - 2025



Thailand Transportation infrastructure Strategic Plan

1. Intercity Train Development

- 1.1 ปรับปรุงระบบอุปกรณ์และโครงสร้างพื้นฐาน
- 1.2 การพัฒนาระบบรถไฟทางคู่

2. Promote Public Transport to Mitigate Traffic Congestion Bangkok District and Vicinities

- 2.1 รถไฟฟ้า 10 สาย
- 2.2 การจัดซื้อรถประจำทางเชื้อเพลิง NGV 3,183 คัน และอู่จอด
- 2.3 การก่อสร้างโครงข่ายถนนและสะพานใน กทม. และปริมณฑล

Department of Highways

3. Highway Network Improvement to Promote Supply Chain among Neighboring Countries

- 3.1 การยกระดับการเข้าถึงพื้นที่เกษตร/ท่องเที่ยว
- 3.2 Intercity Connection and Supply Chain Improvement
- 3.3 Border Gateway Connection
- 3.4 Highway Facility Improvement and Mutimodal Transportation

4. Water-Based Transportation Development

- 4.1 การพัฒนาท่าเรือ
- 4.2 การเสริมสร้างประสิทธิภาพการขนส่งทางน้ำ รักษาตลิ่ง

5. Increase Air Transport Capability

- 5.1 การเพิ่มขีดความสามารถของท่าอากาศยาน
- 5.2 เพิ่มขีดความสามารถระบบการจัดการจราจรทางอากาศให้ได้มาตรฐานสากล
- 5.3 การเพิ่มประสิทธิภาพฝูงบิน
- 5.4 การจัดตั้งนิคมอุตสาหกรรมอากาศยาน
- 5.5 การก่อสร้างอาคารเพื่อรองรับการพัฒนาบุคลากรการบินพลเรือน

Highway Development Projects Under Thailand's Transportation Infrastructure Strategic Plan 2015 - 2022

Plan 3. Highway Network Improvement to Promote Supply Chain among Neighboring Countries

3.2 Intercity Linkage and Supply Chain Network

-Major Intercity Highways Maintenance (11 Routes)

-Construction of Intercity Motorway (14 Projects)

-Construction of Four-lane Highway Widening Projects (68 Projects)

-Construction of Overpasses and Flyover U-turns on Major Highways

3.3 Border Gateway Connection

-International Highway Development Projects (16 Projects)

3.4 Highway Facility Improvement and Multimodal Transportation

-Construction of Railway Overpass Bridges (83 Projects)

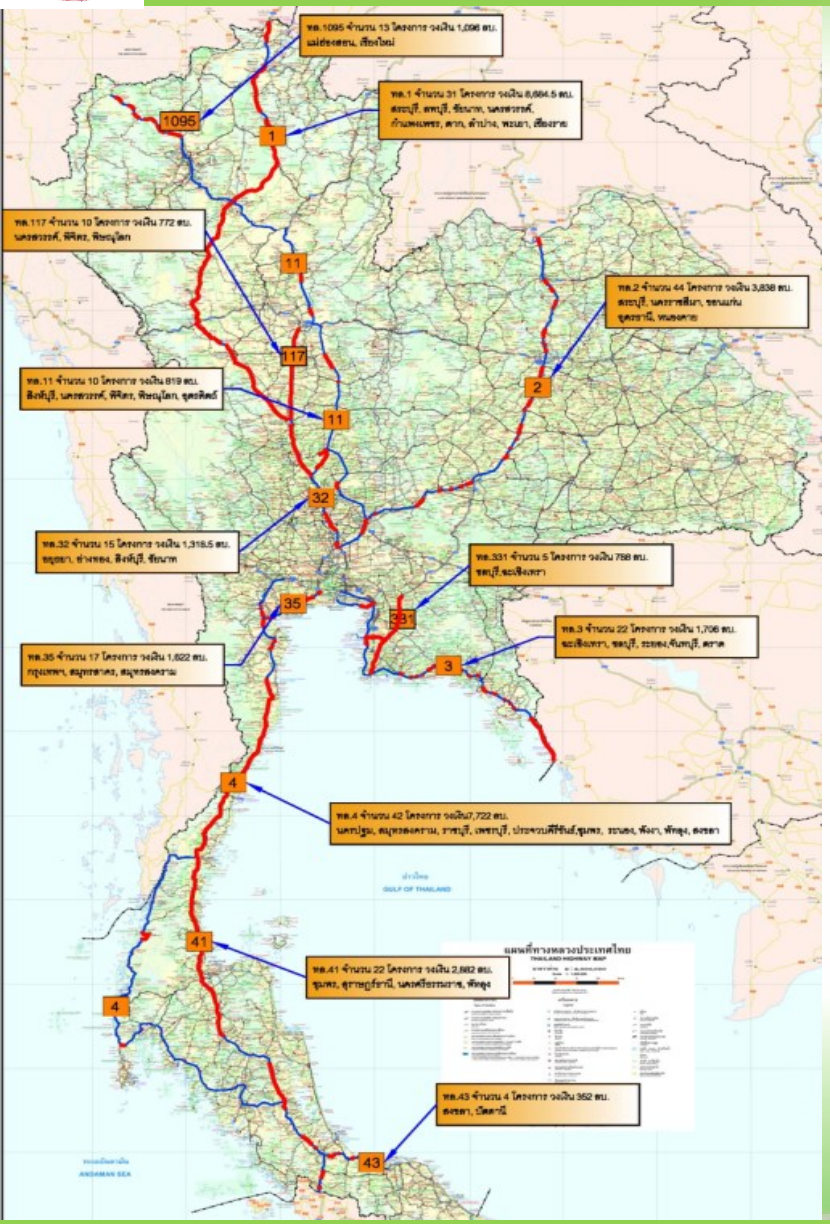
Thailand's Transportation Infrastructure Planning

Projects	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
1. Major Intercity Highways Maintenance (11 Routes)	3,412	24,519	6,889	-	-	-	-	-	-	-	34,822
2. Construction of Railway Overpass Bridges	-	389	1,449	2,487	2,623	2,983	3,729	4,345	4,441	1,751	24,200
3. Construction of Intercity Motorway	1,440	8,065	38,535	110,632	192,289	190,449	104,225	6,100	12,200	12,200	676,135
4. International Highway Construction (18 Projects)	180	1,731	5,674	10,140	7,950	2,120	-	-	-	-	27,795
5. Construction of Four-lane Highway Widening Projects (68 Projects)	1,188	11,317	37,270	42,710	20,969	13,417	6,040	-	-	-	132,912
6. Construction of Overpasses and Flyover U-turns on Major Highways	-	860	3,102	4,374	4,216	4,698	5,634	4,090	4,858	12,954	44,786
Total	6,220	46,881	92,919	170,343	228,047	213,667	119,628	14,535	21,499	26,905	940,650

Projects that Received Budget Allocation in Year 2015

Projects	2015	2016	2017	Total
1. Major Intercity Highways Maintenance	3,412.15	6,889.88	6,889.88	17,191.90
2. Construction of Railway Overpass Bridges	-	-	-	-
3. Construction of Intercity Motorway	1,440	-	-	1,440
4. International Highway Construction	180	510	510	1,200
5. Construction of Four-lane Highway Widening Projects	1,188.13	3,284.69	3,284.69	7,757.50
6. Construction of Overpasses and Flyover U-turns on Major Highways	-	-	-	-
Total	6,220.28	10,684.57	10,684.57	27,589.40

Major Intercity Highways Maintenance Projects



Project Purposes

- Increase major highway capability
- Maintenance deteriorated highway to decrease logistic cost

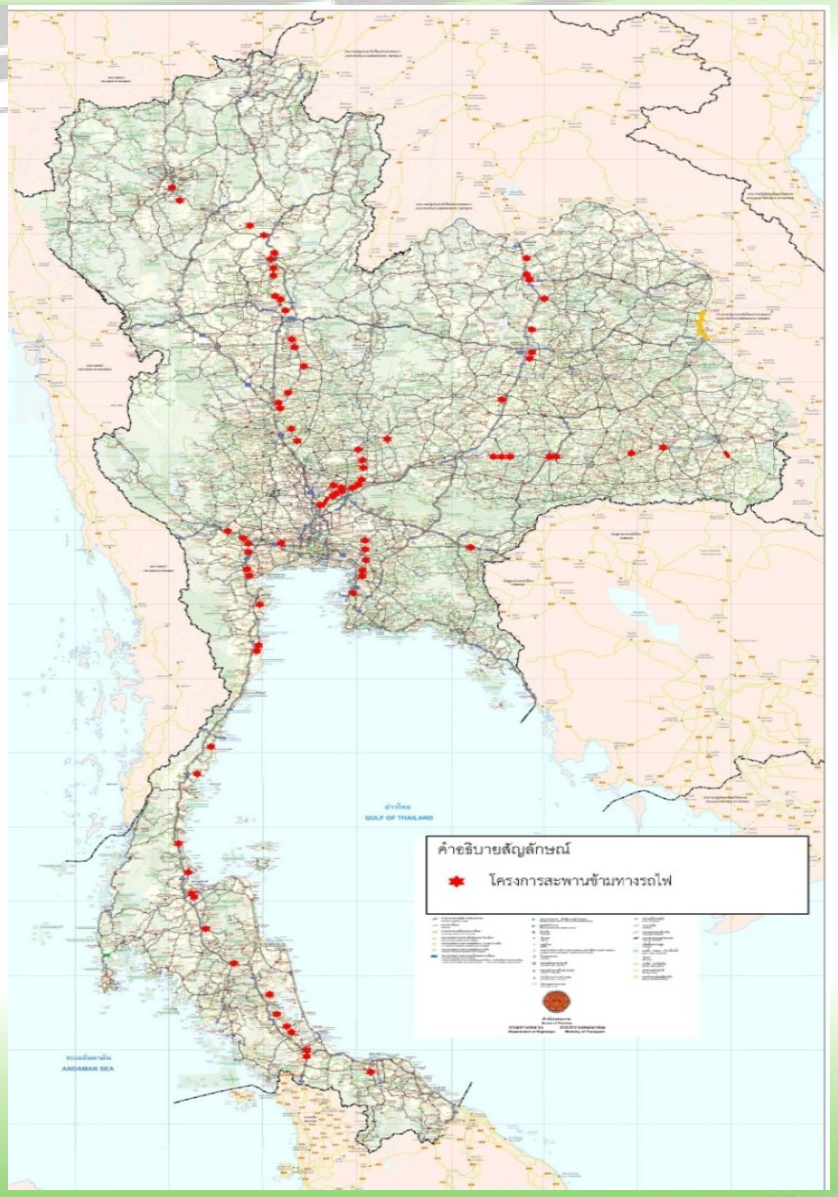
Scope of the Projects

- Maintenance severely deteriorated highway sections (11 routes in 38 districts)
- Route 1,2,3,4,11,32,35,41,43,117,331 and 1095

Project Benefits

- Road User Cost Saving 23,560 Million Bath/Year
- Employment Creation 24,000 Jobs
- Economic Internal Rate of Return (EIRR) = 33%

Construction of Railway Overpass, 83 Bridges



Project Purposes

- Follow the State Railway of Thailand Investment Plan by the Cabinet on 12 April 2010
- To solve the highway-railroad crossing problem

Scope of the Projects

- Construct the railway overpass bridge at the site with T.M. > 100,000 veh-round/day, 83 bridge in 28 districts

Project Benefits

- Dissipate traffic congestion an accident on highway-railroad crossing sites
- Travel time saving 8 minute/veh
- Employment Creation 7,000 Jobs
- Economic Internal Rate of Return (EIRR) = 21.60%

Construction of Intercity Motorways

1. Motorway Link: Bang Pa In – Nakhon Ratchasima
2. Motorway Link: Bang Yai – Kanchanaburi
3. Motorway Link: Pattaya – Map Ta Phut
4. Motorway Link: Nakhon Pathom – Cha Am Section 1
5. Motorway Link: Nakhon Pathom – Cha Am Section 2
6. Motorway Link: Hat Yai – Thai–Malaysia Border
7. Motorway Link: East Bangkok Ring Road, Round 3
8. Motorway Link: West Bangkok Ring Road, Bang Bua Thong–Bang Pa In
9. Motorway Link: Uttara Pi Muk – Bang Pa In
10. Motorway Link: Extended Boromarajonani – Petchkasem
11. Motorway Link: Nation Highway Route 35 (Thonburi – Paktho)
12. Motorway Link: Nation Highway Route 305 (Pathum Thani – Rangsit, East Bound)
13. Motorway Link: West Bangkok Ring Road, Round 3
14. Motorway Link: Nation Highway Number 7 Bangkok – Chonburi (Section:)

Only Motorway Link: Pattaya – Map Ta Phut was allocated the budget for land Aquisistion Compensation, 1,440 Million Baht from total requirement 2,500 Million Baht.

International Highway Development Projects

Project Purposes

- Mitigate traffic congestion around the border areas
- Promote border trading

Scope of the Projects

- Construct standard 4-lane highways, 18 routes in 9 border regions

Project Benefits

- Travel time saving 25 minute/veh
- Employment Creation 5,000 Jobs
- Economic Internal Rate of Return (EIRR) = 18.20%

Construction of Four-lane Highway Widening Projects

Project Purposes

- Mitigate traffic congestion and reduce logistic cost after the AEC opening

Scope of the Projects

- Construct 4-lane highway on 68 routes in 25 districts, 1,908 Km. totally

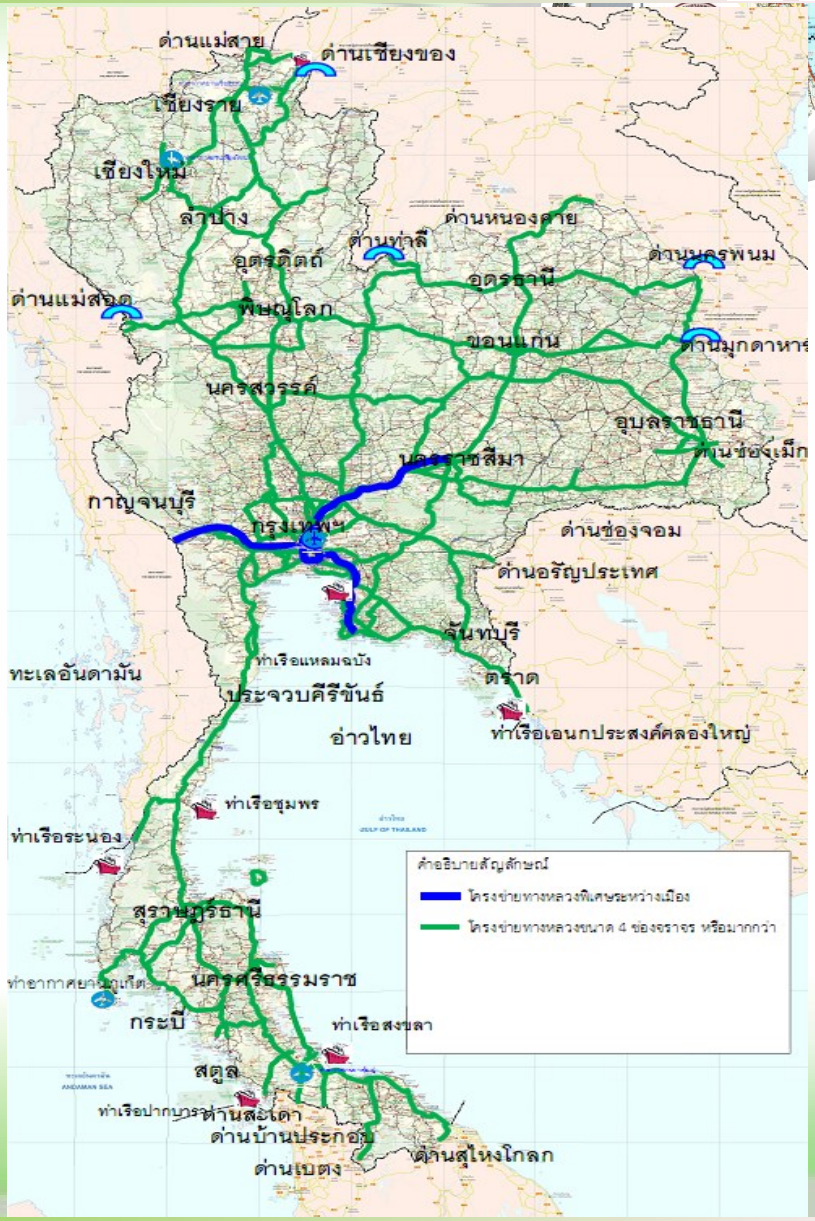
Project Benefits

- Travel time saving 32 minute/veh
- Employment Creation 29,000 Jobs
- Economic Internal Rate of Return (EIRR) = 26.60%

Construction of Overpasses and Flyover U-turns on Major Highways

National Highway Route Number
Route no. 1 Phahonyothin
Route no. 2 Mittraphap
Route no. 4 Phetkasem
Route no. 32 Asia
Route no. 34 Bangna – Trat
Route no. 35 Praram 2
Route no. 37 Bypass Hua Hin
Total 7 routes

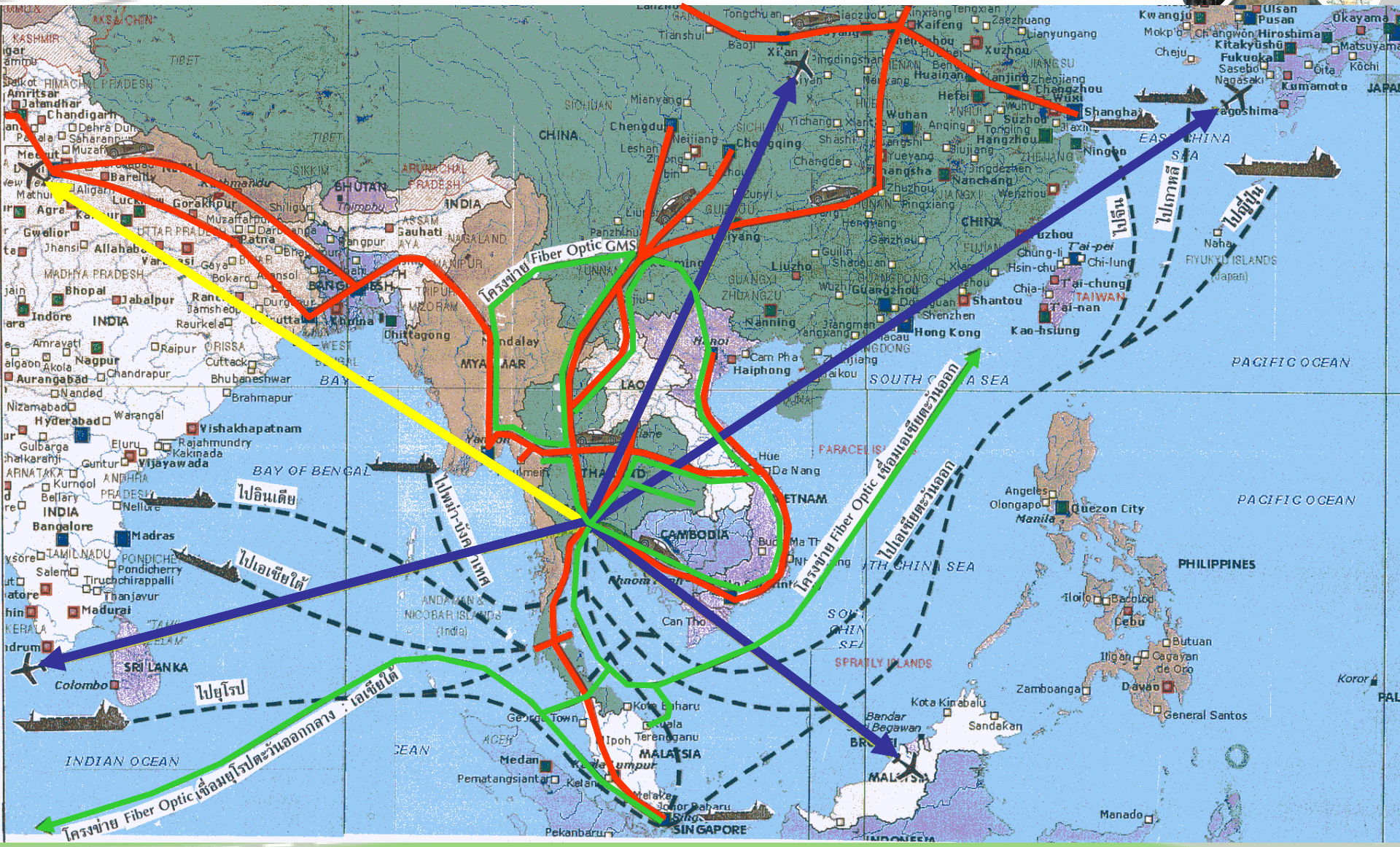
Before and After



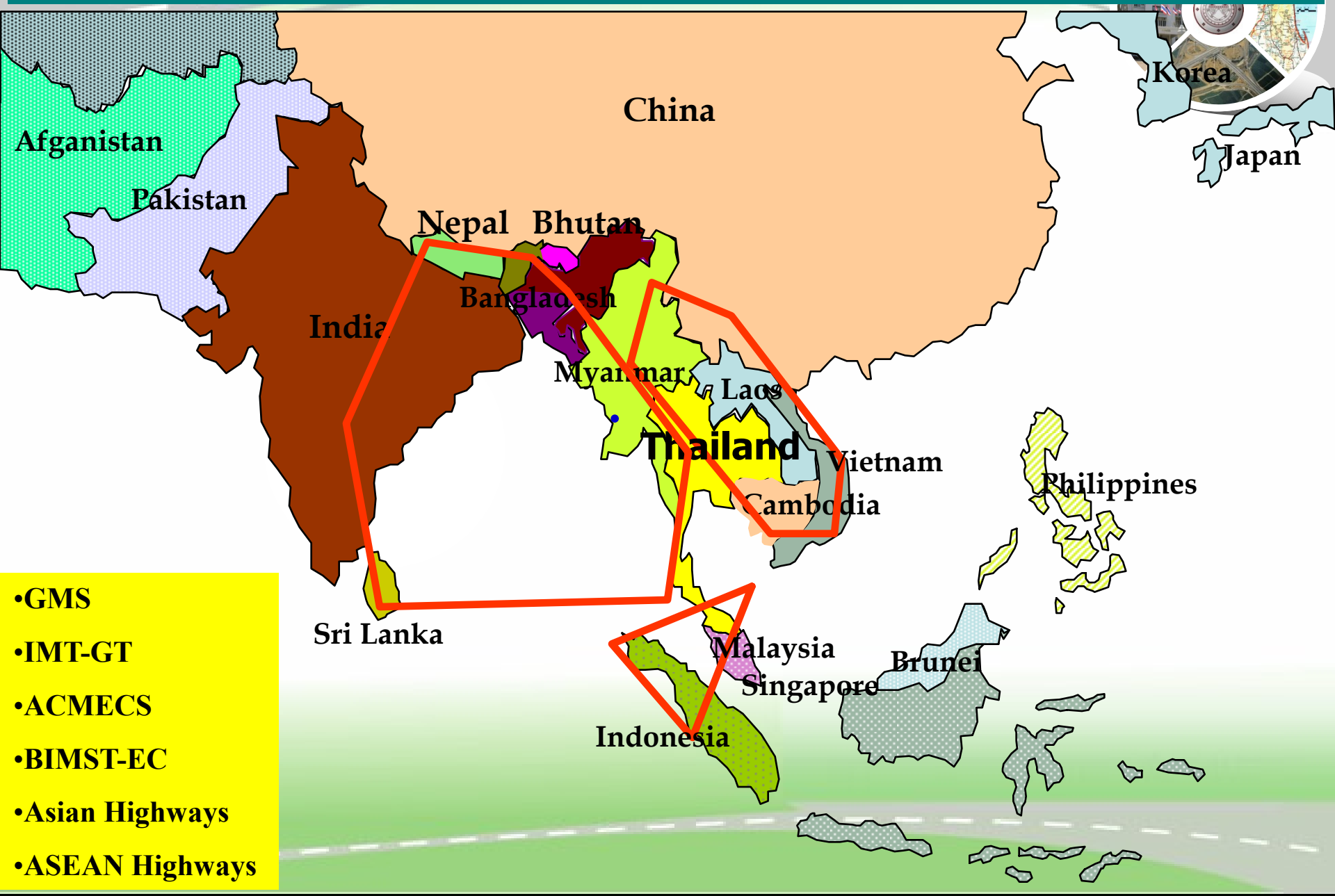

The End

International Cooperation Projects

Economic Gateway

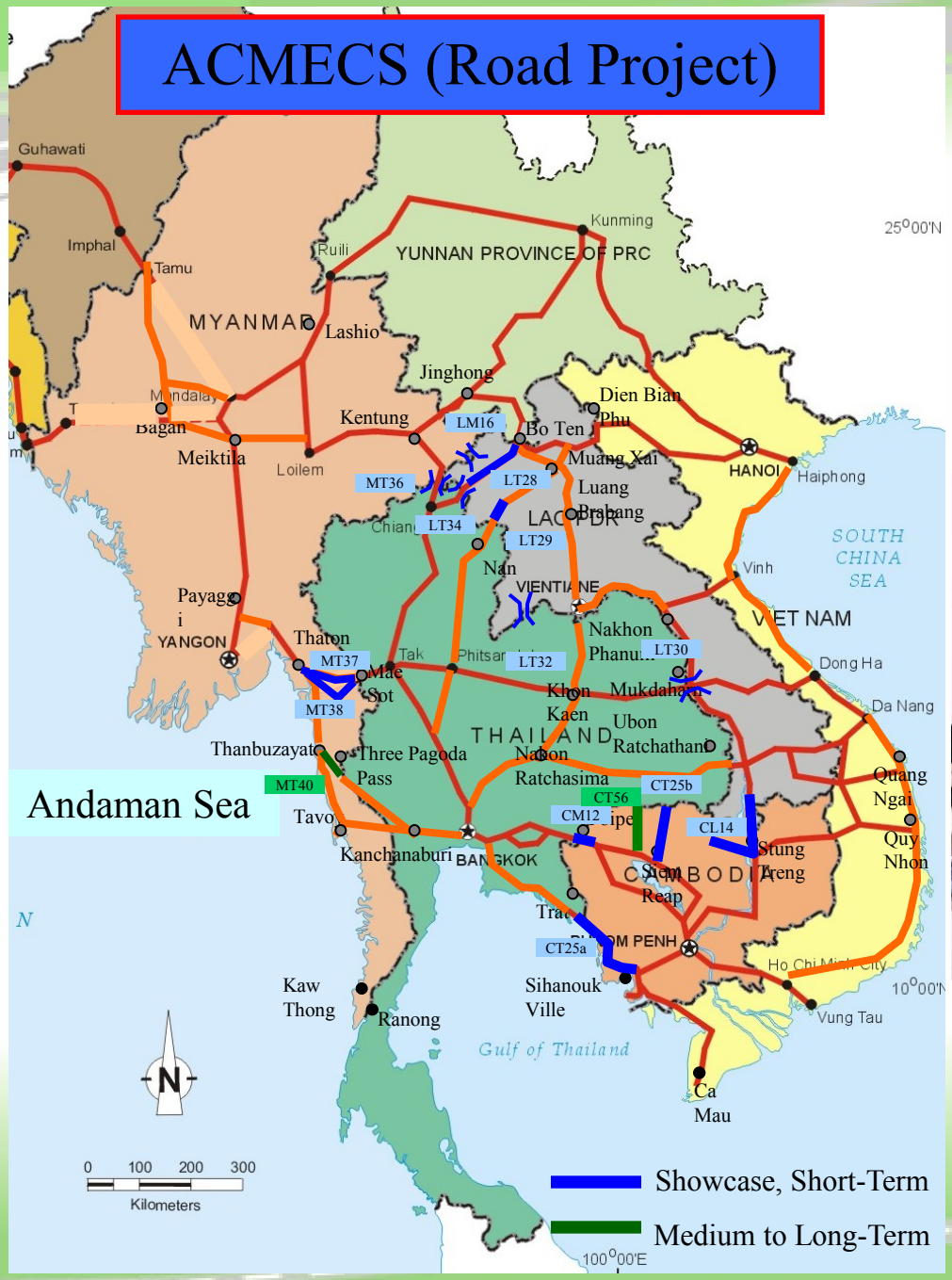


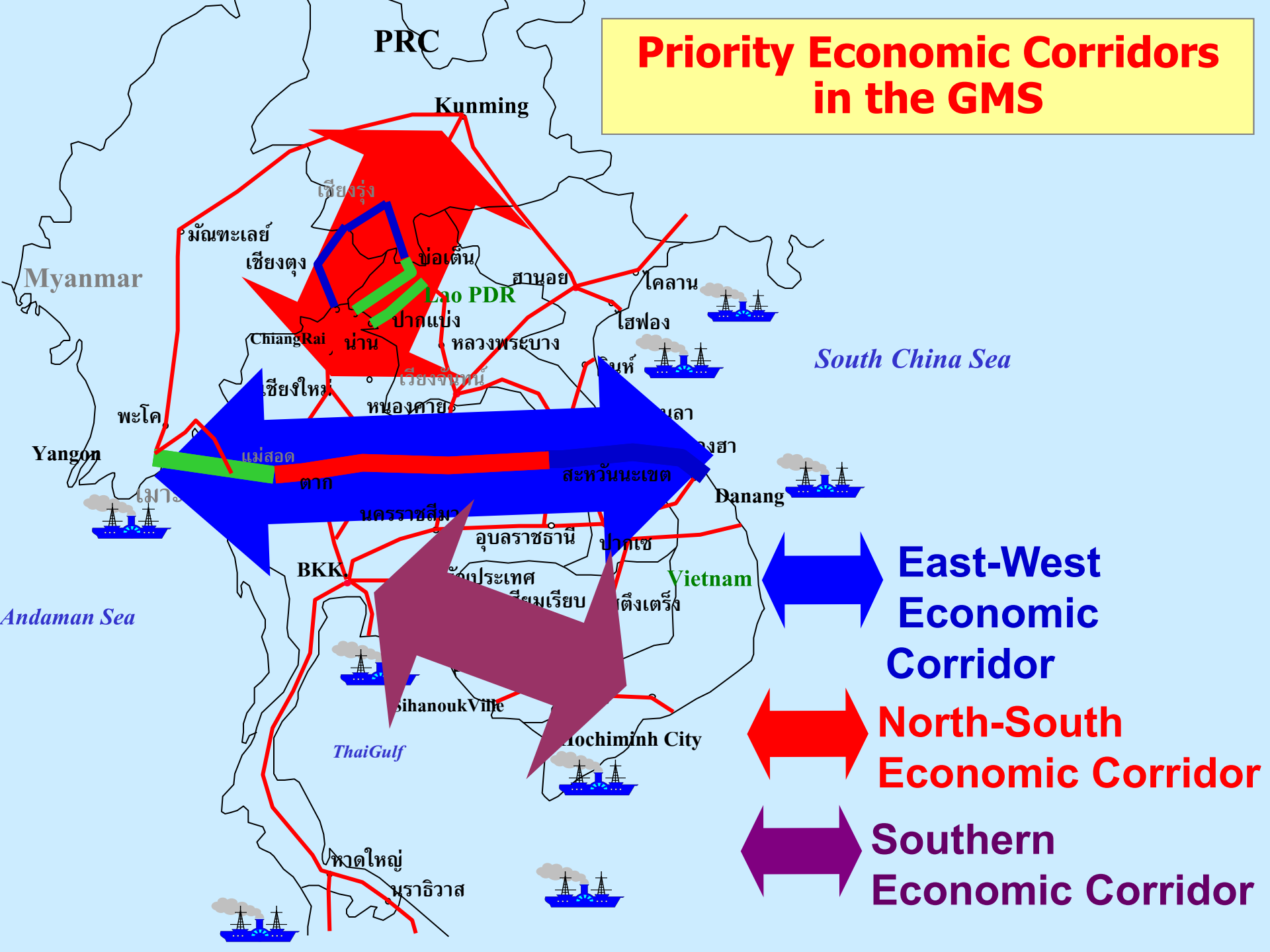
Economic Cooperation Forums



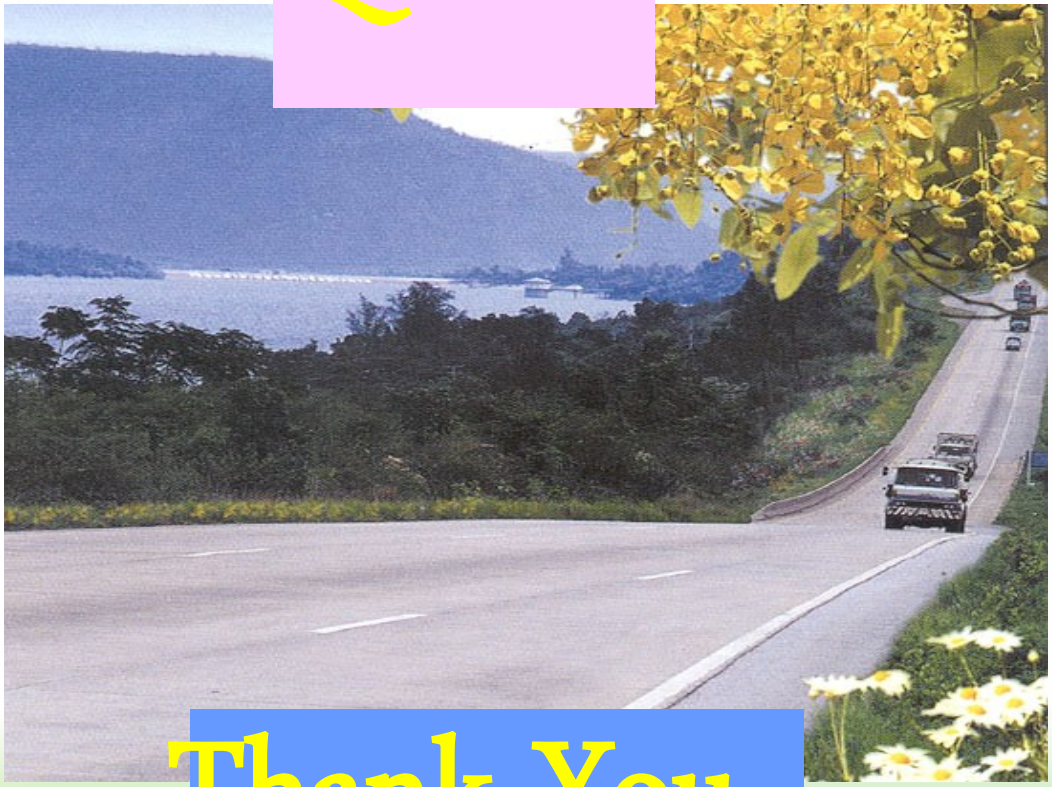
- GMS
- IMT-GT
- ACMECS
- BIMST-EC
- Asian Highways
- ASEAN Highways

ACMECS (Road Project)




Priority Economic Corridors in the GMS
PRC
Kunming
เชียงรุ่ง
มัณฑะเลย์
เชียงตุง
Myanmar
บ่อเต็น
ฮานอย
ไคลาน
Lao PDR
ปากแบ่ง
ไฮฟอง
ChiangRai
น่าน
หลวงพระบาง
South China Sea
เชียงใหม่
เวียงจันทน์
หนองคาย
พะโค
Yangon
แม่สอด
ตาก
สะหวันนะเขต
Danang
นครราชสีมา
อุบลราชธานี
ปากเซ
BKK
Vietnam
Andaman Sea
ThaiGulf
SihanoukVille
Hochiminh City
หาดใหญ่
นราธิวาส
East-West Economic Corridor
North-South Economic Corridor
Southern Economic Corridor

Q & A



Thank You...