# *THAILAND'S ENVIRONMENATL SUSTAINABLE TRANSPORT MASTER PLAN*

*24 April 2013*

*Bali, Indonesia*

Ministry of Transport, Thailand





# TOPIC

- Current situations

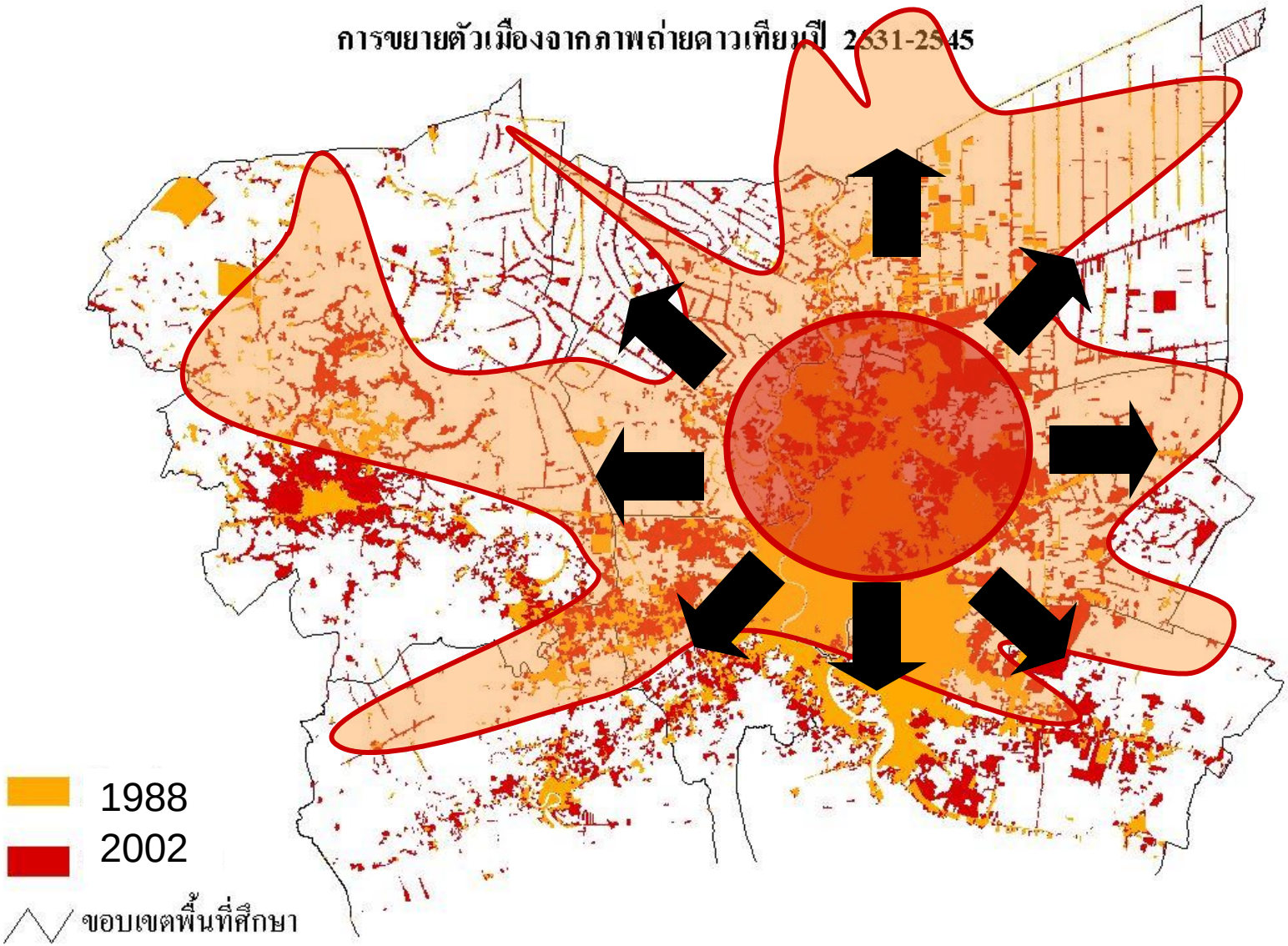
- Environmental Sustainable Transport Master Plan

**Bangkok Metropolitan Region , BMR**
**POPULATION : 17.5 millions**
**AREA : 7,760 sq.km.**
**GDP 68 % of National GDP**

Bangkok Metropolitan

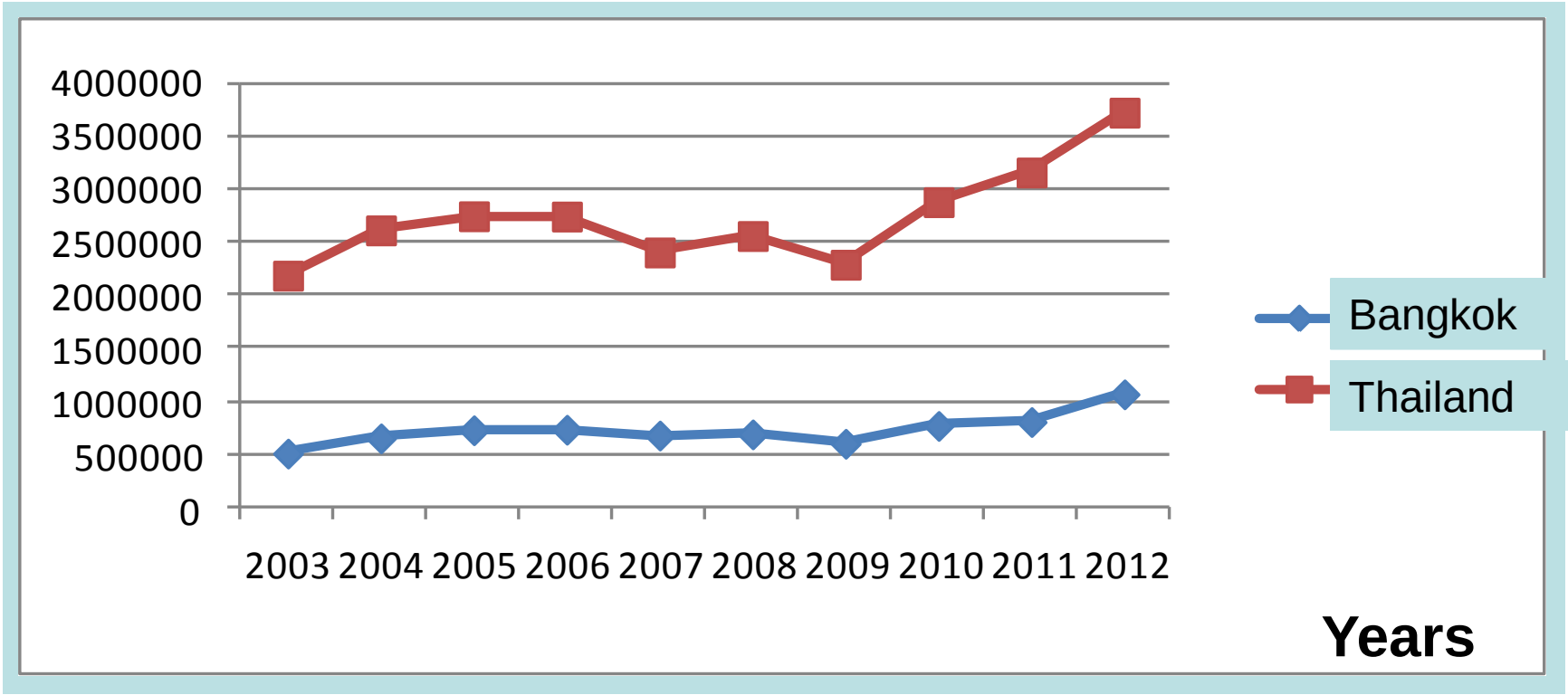
Panorama

# Bangkok's Land Use (Urban Sprawl)



# Bangkok situation

# Number of Vehicle registration : 2003 - 2012




Source: Department of Land Transport

# Quality of Life

**The $CO_2$ PROBLEM IS A TRANSPORT PROBLEM, PREDOMINATELY CARS AROUND URBAN AREAS**



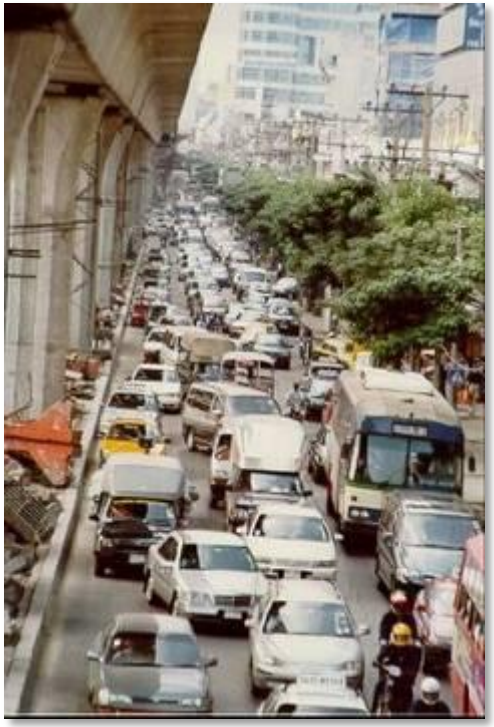
# Air Pollution

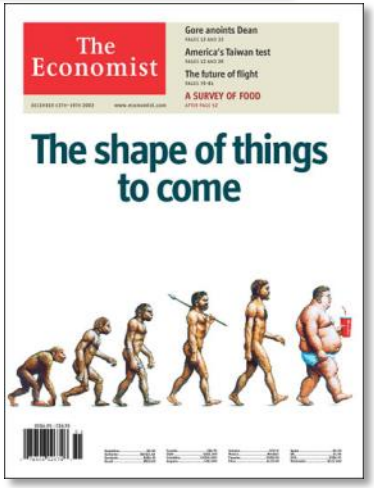
- **Health Impact**
- **Air pollution from transport sector (Bangkok)**
  - **75% of CO**
  - **80% of NOx**
  - **54% of PM**


3th Winner
Photo Competition CAP- Swisscontact 2002
"Don't Distrub My Breathing"

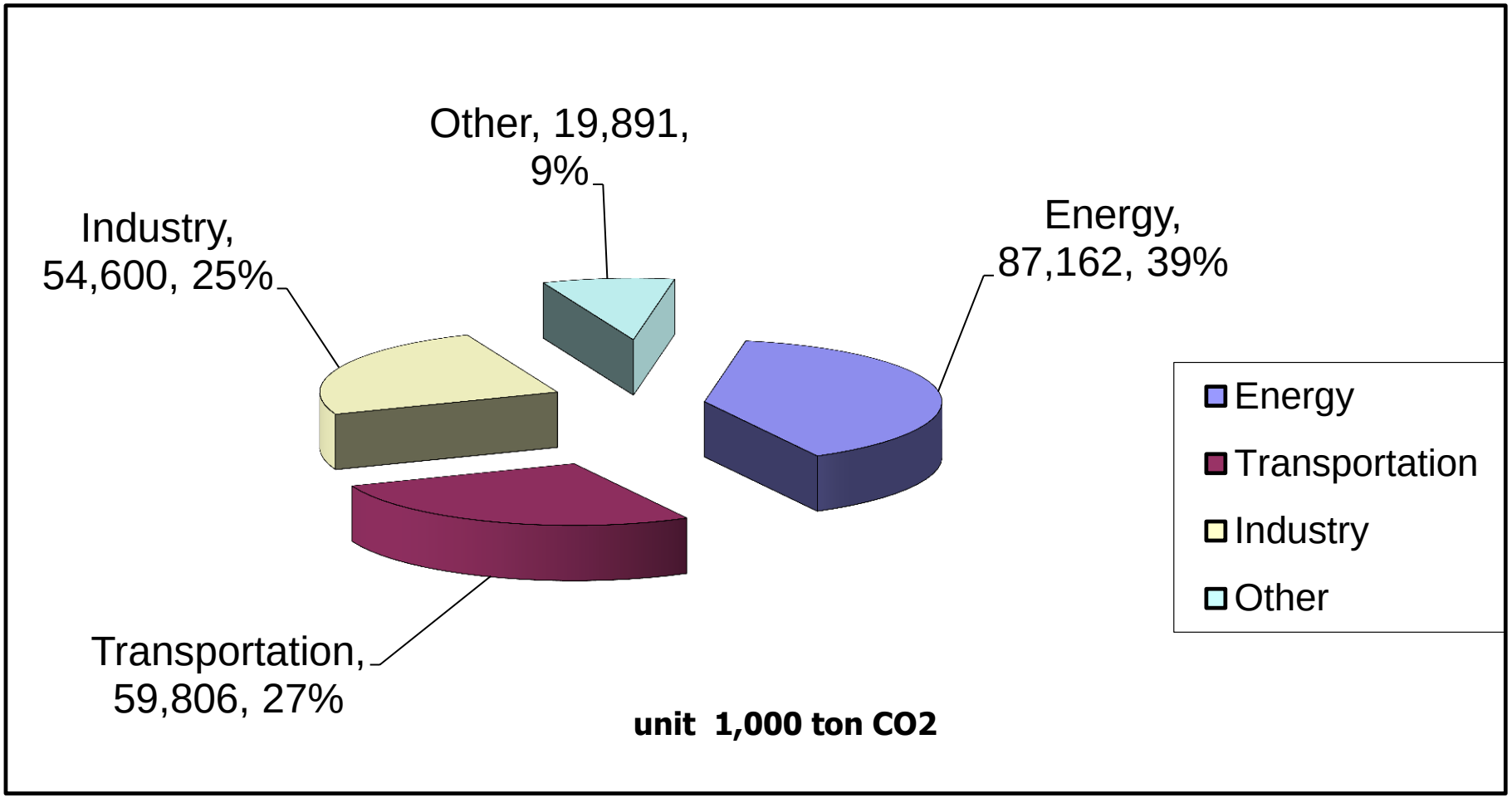
# Social Impact

- Road Accident
- Injuries
- Death
- Stress

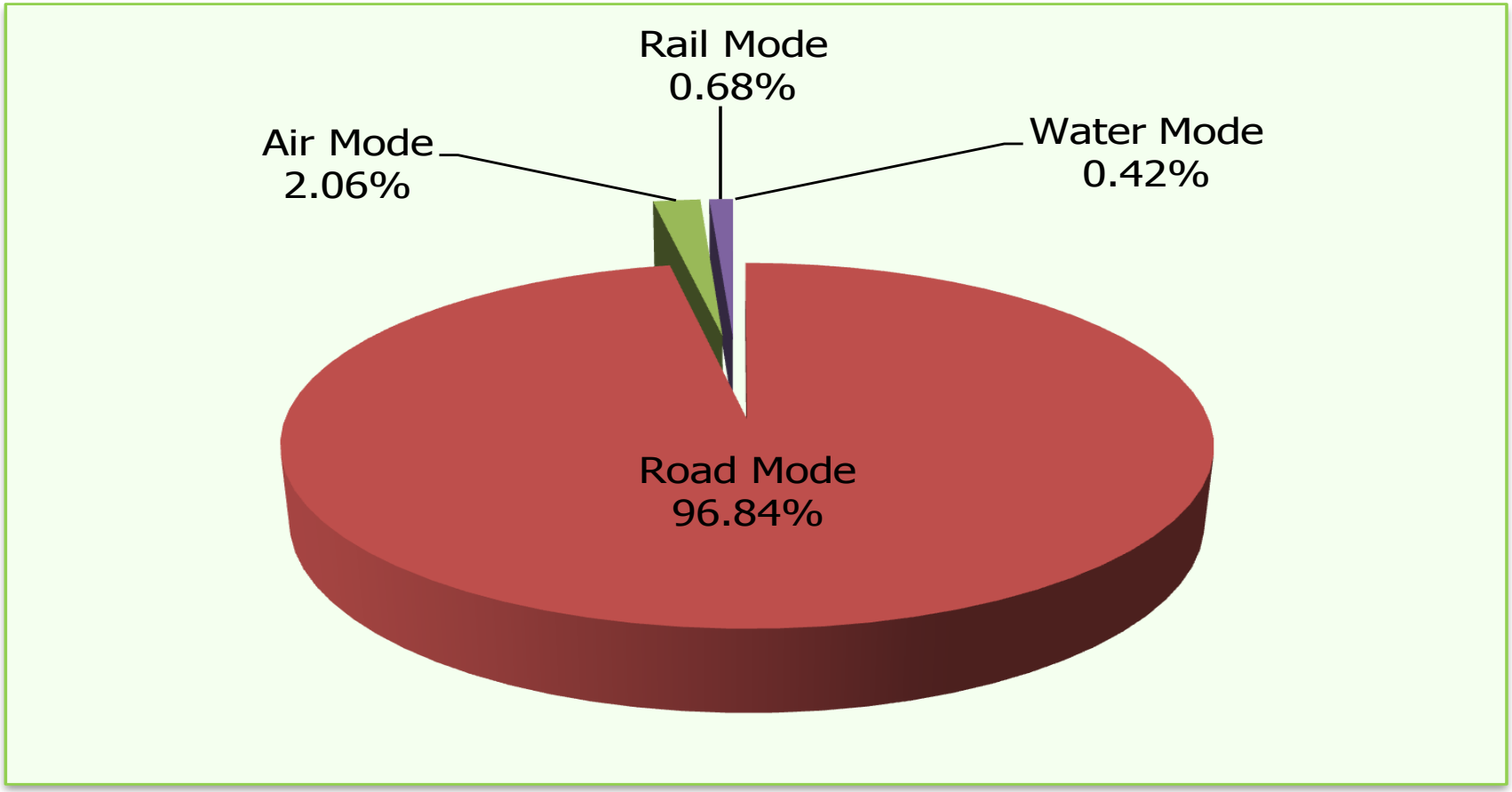



# GHGs Emission by Sector : 2011




Source: Thailand Energy Statistic 2012

# Volumes of Greenhouse gas released by Thailand's Transport Sector




***Source:*** *National Greenhouse Gas listing*

# 11th Thailand National Economic and Social Development Plan (Transport Sector During Year 2010-2015)

| International Trade Agreement | Climate Change | Sub – regional Corporation | Energy | Aging Society |
|---|---|---|---|---|

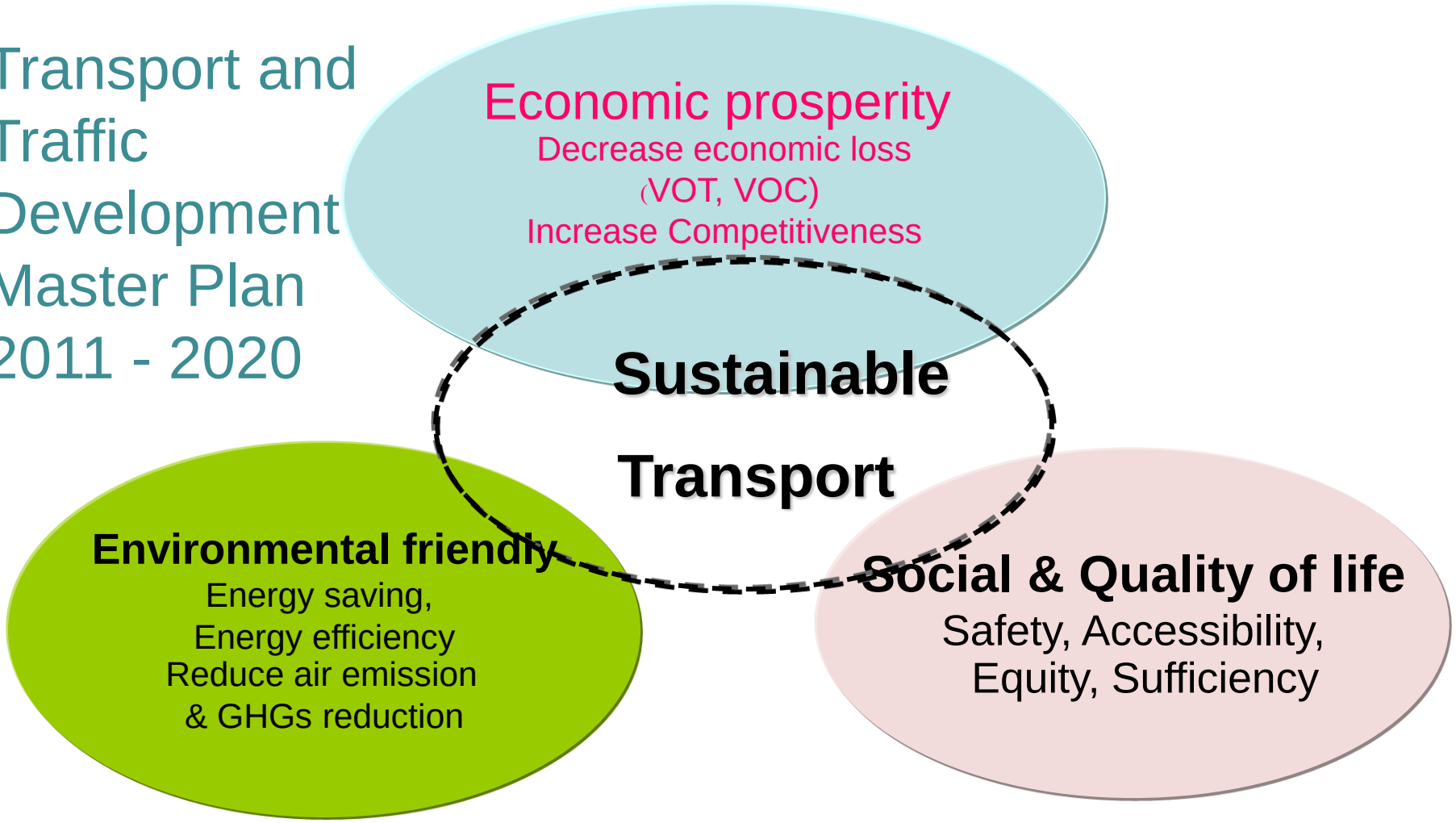
## Green Transportation

- Change to Alternative Energy , Green Energy and Efficiency use in Energy
- Road and Rail integrated Network around country and Neighboring Country
- Improve Multi-modal Transportation
- Improve Transport System, Efficiency , Effectiveness, Accessibility, Safety ,Transport for all, (Aging people and Handicap)
- More Public Private Participation(PPP) Investment

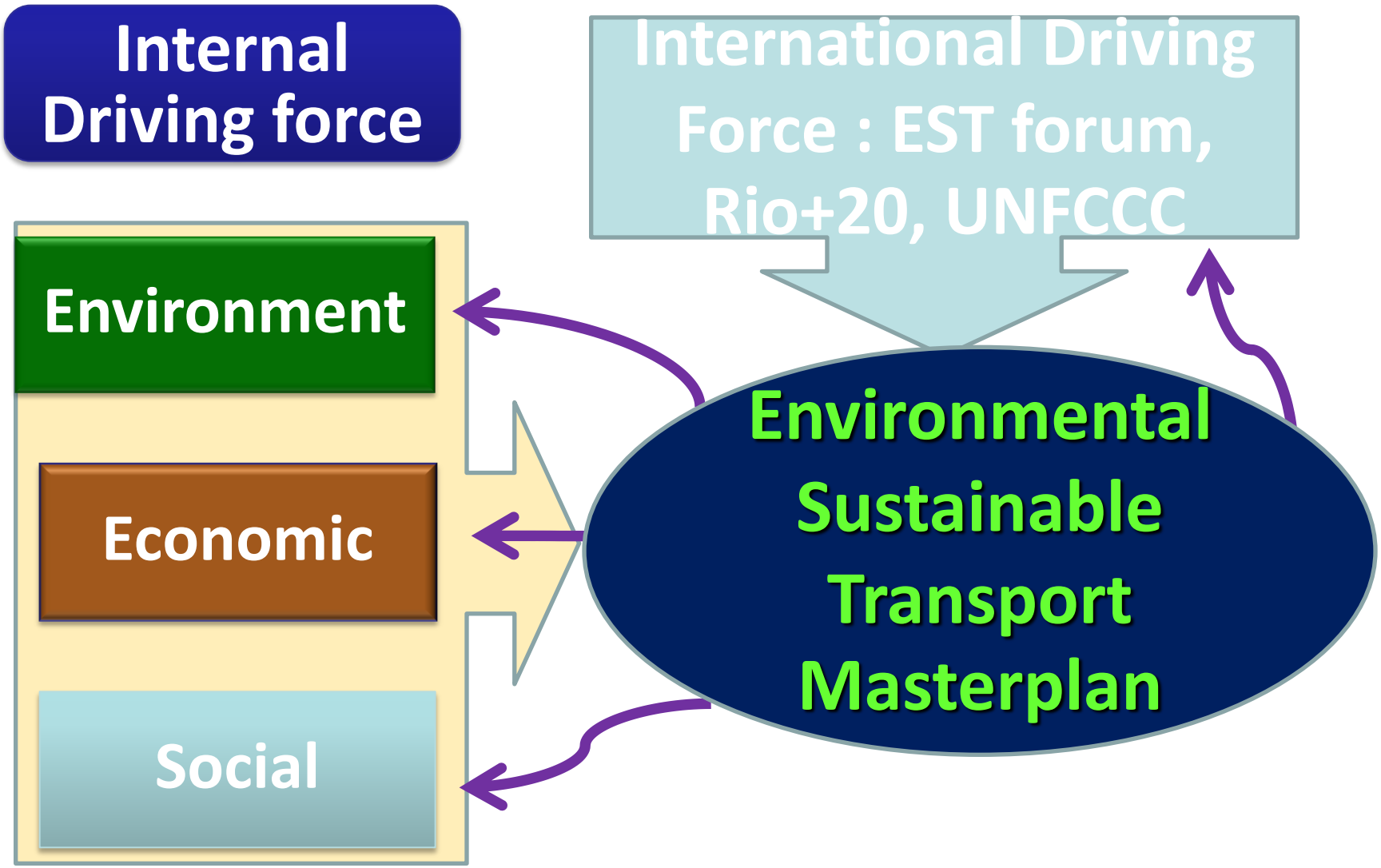
# Ministry of Transport

## Vision : Toward Sustainable Transport

Transport and Traffic Development Master Plan 2011 - 2020



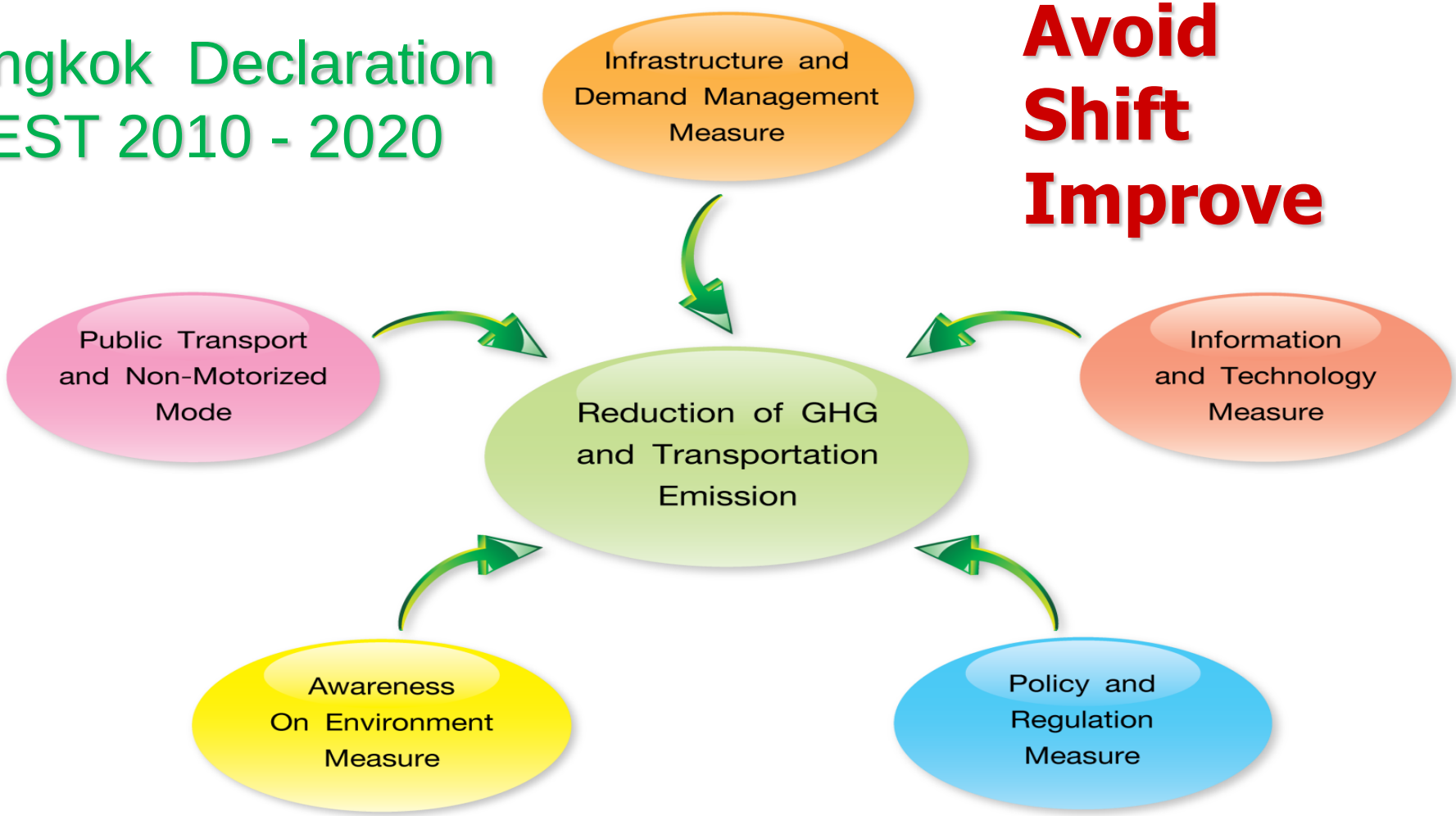
# Master Plan Development

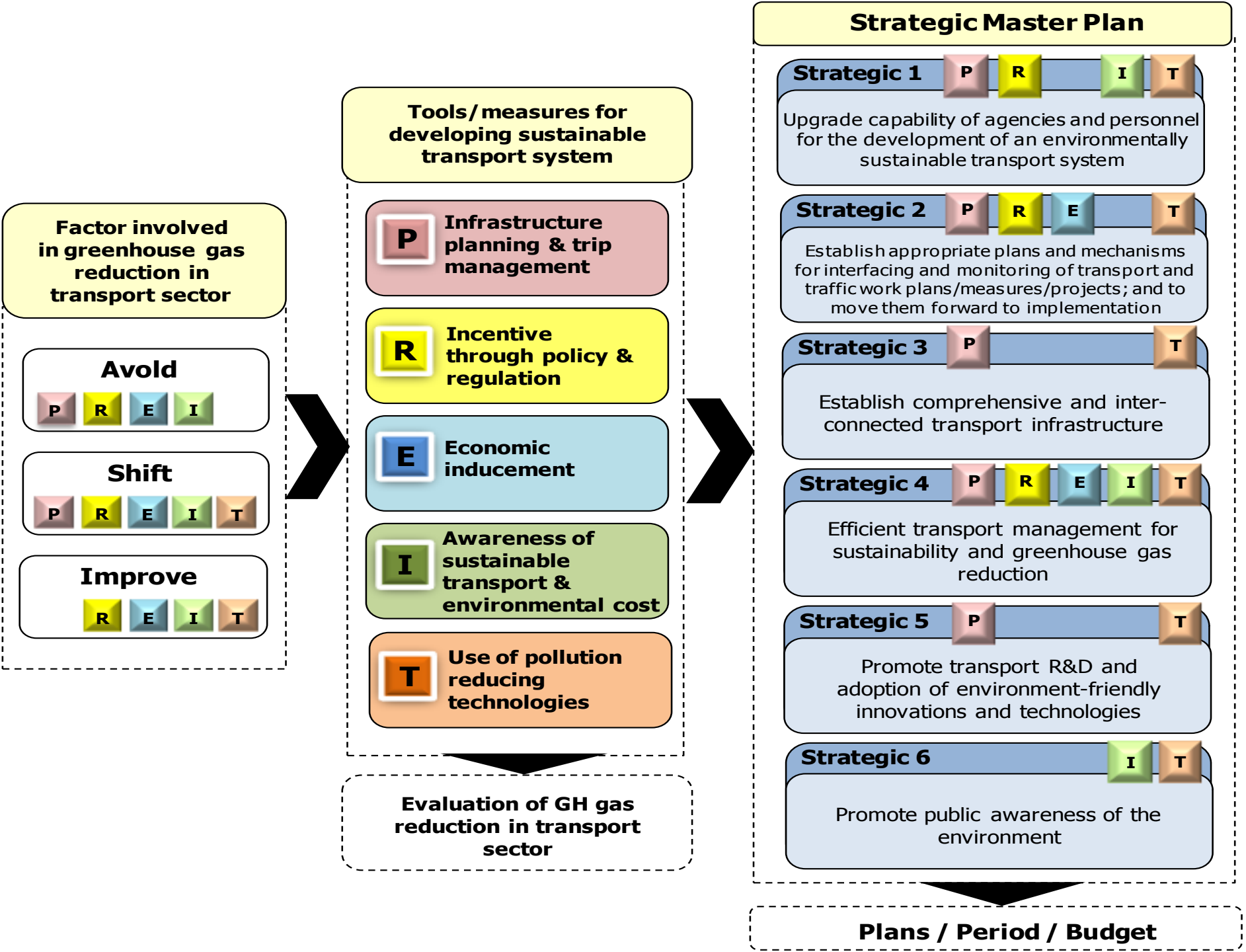


# SUSTAINABLE TRANSPORT MASTER PLAN

Bangkok Declaration
EST 2010 - 2020

**Avoid**
**Shift**
**Improve**




Factor involved in greenhouse gas reduction in transport sector
Avold
P R E I
Shift
P R E I T
Improve
R E I T
Tools/measures for developing sustainable transport system
P
Infrastructure planning & trip management
R
Incentive through policy & regulation
E
Economic inducement
I
Awareness of sustainable transport & environmental cost
T
Use of pollution reducing technologies
Evaluation of GH gas reduction in transport sector
Strategic Master Plan
Strategic 1
P R I T
Upgrade capability of agencies and personnel for the development of an environmentally sustainable transport system
Strategic 2
P R E T
Establish appropriate plans and mechanisms for interfacing and monitoring of transport and traffic work plans/measures/projects; and to move them forward to implementation
Strategic 3
P T
Establish comprehensive and inter-connected transport infrastructure
Strategic 4
P R E I T
Efficient transport management for sustainability and greenhouse gas reduction
Strategic 5
P T
Promote transport R&D and adoption of environment-friendly innovations and technologies
Strategic 6
I T
Promote public awareness of the environment
Plans / Period / Budget

# SUSTAINABLE TRANSPORT MASTER PLAN

## Vision

***"An efficient transport model that is environment-friendly, appropriate for the development of sufficient and sustainable socio-economic infrastructure for Thailand"***

## MISSION

***Every concerned agency shall be committed to sharing of knowledge and experience; engaged in own personnel development, and shall work with other parties in the effort to reduce greenhouse gas emission in the transport sector.***

## PURPOSE

***To achieve a Master Plan, comprising a short-term programme (2013–2017) and a long-term plan (2018–2030), with the reduction of greenhouse gas emission in the transport sector as its primary aim.***

STRATEGY

**Strategy 1**: *Upgrade capability of agencies and personnel for the development of an environmentally sustainable transport system.*

**Strategy 2**: *Establish appropriate plans and mechanisms for interfacing and monitoring of transport and traffic work plans/measures/projects; and to move them forward to implementation.*

**Strategy 3**: *Establish comprehensive and inter-connected transport infrastructure.*

**Strategy 4**: *Efficient transport management for sustainability and greenhouse gas reduction.*

**Strategy 5**: *Promote transport R&D and adoption of environment-friendly innovations and technologies.*

**Strategy 6**: *Promote public awareness of the environment.*

**Strategy 1: Upgrade capacity of agencies and personnel for the development of an environmentally sustainable transport system. (11 plans/projects)**

- **Upgrade capability of bus services quality**
- **Development and Training in "Global warming and transport"**

**Strategy 2: Establish appropriate plans/mechanisms for interfacing/monitoring of transport and traffic work plans/measures/projects; forward to implementation (19 plans/projects)**

- **Plan for development of public transport in regional cities**
- **Study of sustainable and environmental-friendly water and air transport**

**Strategy 3: Establish comprehensive and inter-connected transport infrastructure (44 plans/projects)**

- **Mass rapid transit projects (15 projects)**
- **Construction of Sea port in Chumporn province**

**Strategy 4: Efficient transport management for sustainability and greenhouse gas reduction (22 plans/projects)**

- Procurement of new efficient buses with low pollution emissions (BMTA's3183 NGV buses)
- Study of standards for parking control/fee collection of parking lots

**Strategy 5: Promote transport R&D and adoption of environmentally – friendly innovations and technologies**

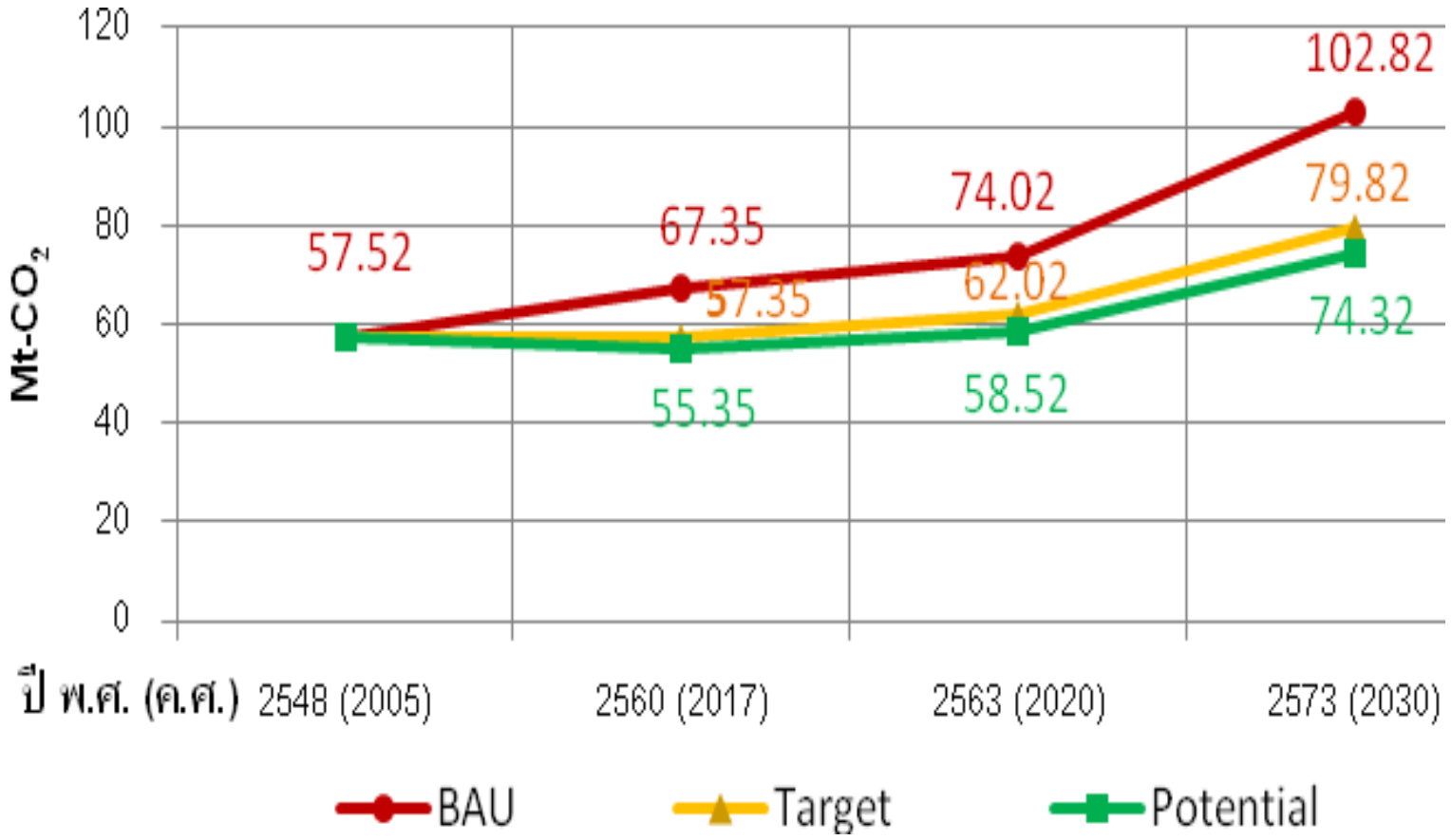
**(15 plans/projects)**

- Promotion of R&D of efficient high-tech equipment
- Promotion of the use of eco-friendly vehicle

**Strategy 6: Promote Public awareness about environmental issues (9 plans/projects)**

- Holding public relations activities and provision of knowledge about eco-friendly driving
- Study and production of national public relations materials to disseminate information about global warming

# GHGs emission from Transport sector



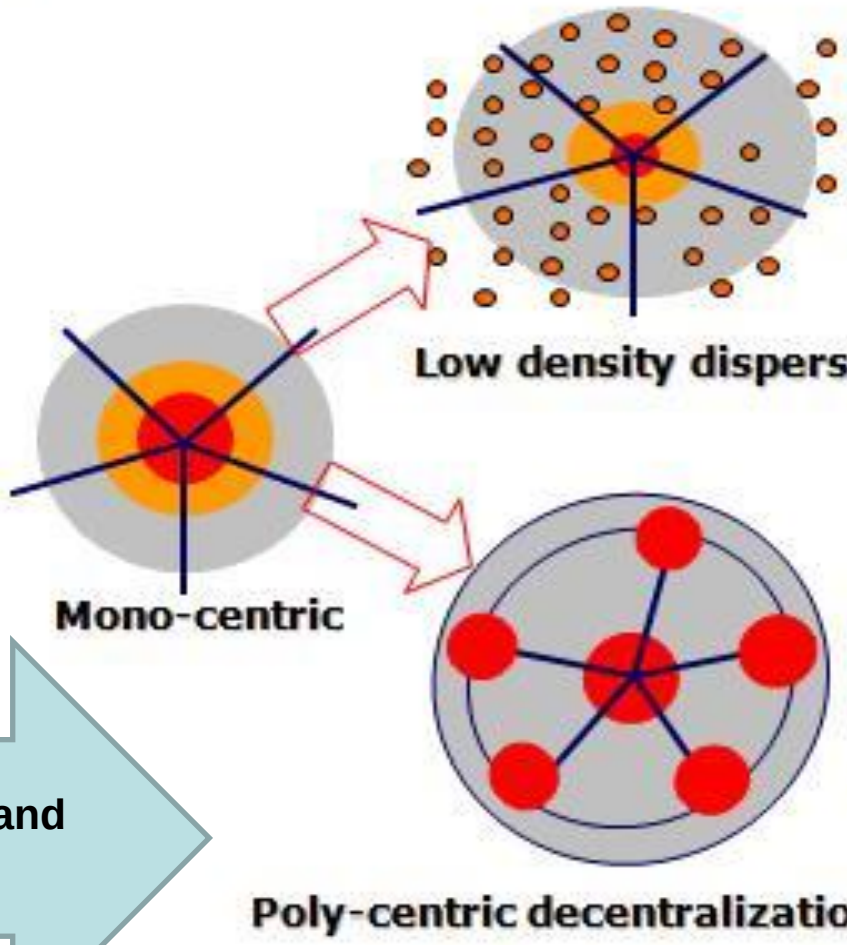
# Potential
# GHGs reduction in Transportation Sector

| Year | GHGs at BAU (Million tons $CO_2$ e) | Potential of GHGs reduction | |
|---|---|---|---|
| | | (Million tons $CO_2$ e) | % |
| 2005 | 57.52 | - | - |
| 2017 | 67.53 | 11 - 13 | 16 - 19 |
| 2020 | 74.02 | 15 - 16 | 20 - 22 |
| 2030 | 102.82 | 27 - 30 | 26 - 29 |

# avoid

## Avoid – Shift – Improve Concept

**Expected City**




**Car oriental city**

No

**Public transport as backbone of the city**

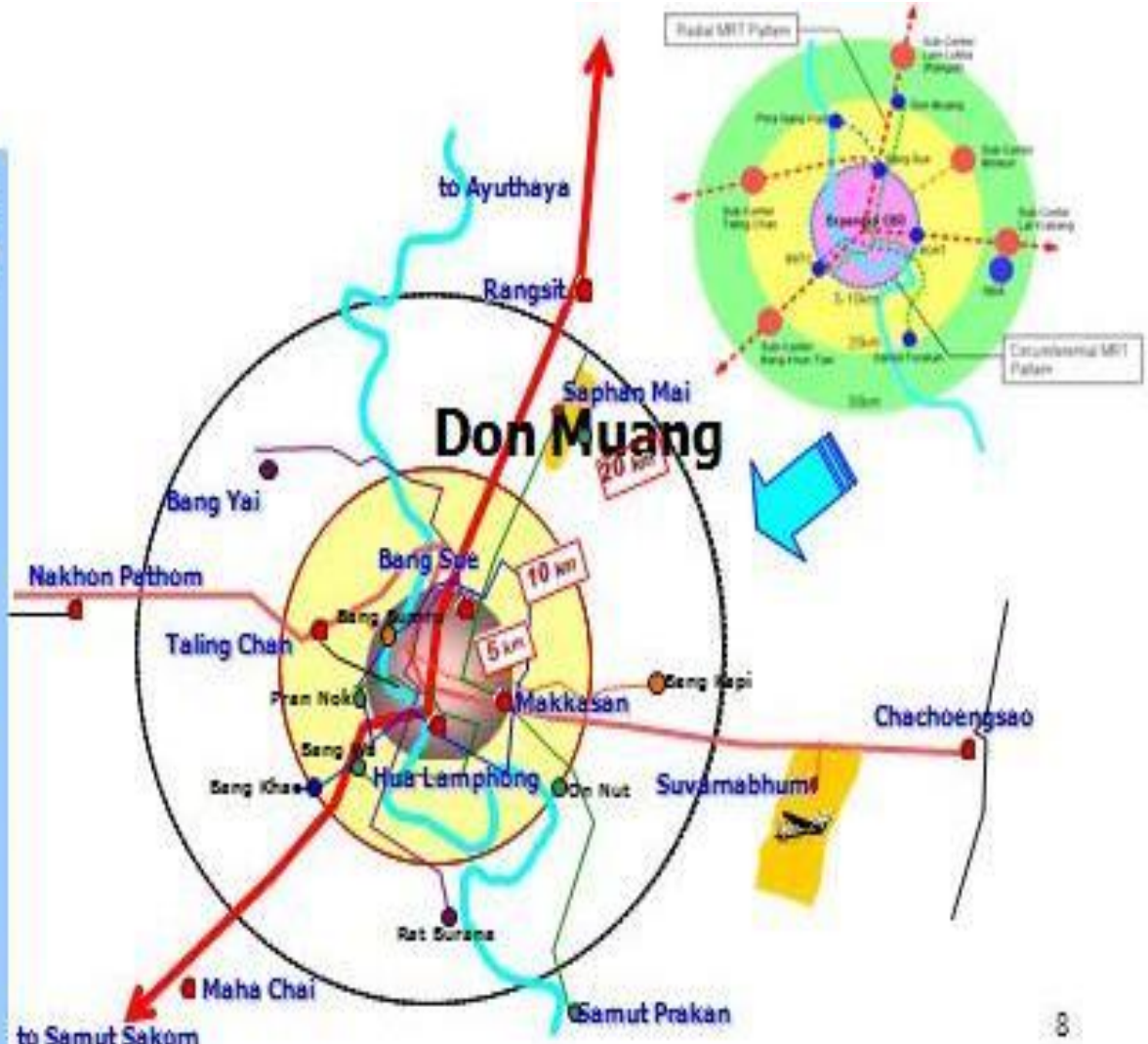
Yes !!!

**Urban Planning and Land use designed**

# Shift

## Avoid – Shift – Improve Concept






**Integrated Multimodal Transport**

# Shift

# Mass Rapid Transit Master plan

**Previous plan** | **Short** | **10 years** | **20 year**

1999
24 km

2004
20 km

2009
2.2 km

236 km

391 km

12 lines
509 km

1994
IRTS MASTER
LAN (MTMP)

2000
URMAP

2004
Revised
URMAP (BMT)

2005
IMAC

2006
MRT
Modernization

2010

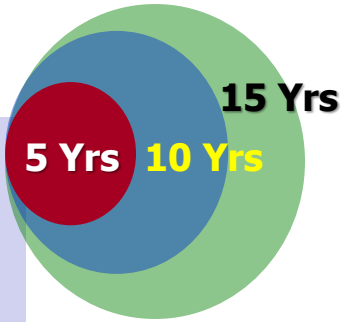
2014-16

2019

2029

**M-MAP** (2010-2029)


Shift




# Railway Development Master Plan

- **Restructuring (urgent Phase: 2010-2014)**
  - Track rehabilitation
  - Refurbishing Locomotive
  - Breaking Bottle neck
  - Reducing intersection between rail and road
- **Improvement (Phase II: 2015-2029)**
  - Double Track Extension
  - Sub-Region Connecting
  - High Speed Train
- **Enhance Efficiency (Phase III: 2020-2025)**
  - High Seed Train Network extension
  - New Logistic Routes

# Shift Non-Motorized Transport

**Non-Motorized Transport** : is one of travel choices,

- **Bicycle lanes** alongside motor lanes or running trough public parks have been built.

- **Bicycle parking spaces** and other cycling facilities have been provided.

- **Pedestrians walking street**


# Improve

## Avoid – Shift – Improve Concept

**1. Vehicle Emission Standards**

- **New Vehicles**

  **EU4 standards, implemented since the end of 2012**

- **In-use Vehicles**

- **The emission standards are used as reference standards for inspection and maintenance programme, consisting of Black Smoke, CO, HC, White Smoke, and Noise**

# Shift

**Rail in Thailand**

- **4,346 Km.**

  **in 47 provinces**


**Rail Improvement**
**(Year 2010-2514 Total Cost Bt153 billion)**

- **New Double-track Rail 767Km.**
- **Improve Sleepers (Wood to Concrete)**
- **Buy new Locomotives**
- **Improve Train-Road Barriers**

# Shift & Improve

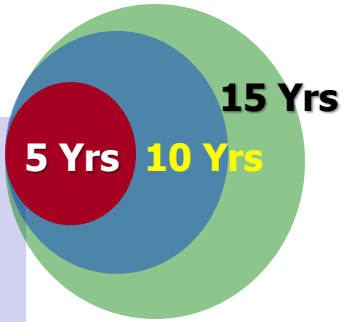
**Bangkok Metropolitan Region (BMR) Mass Transit Master Plan (2010-2029)**

**1.Commuter Train lines and Airport Link 3 lines 176 Km. (Existing 36.4 Km.)**

**2.Mass Rapid Transit 5 lines 217 Km. (Existing 43 km. Under Con. 20 Km. In process 23 Km.)**

**3.Light Rail Transit 4 lines 102 Km.**

Shift

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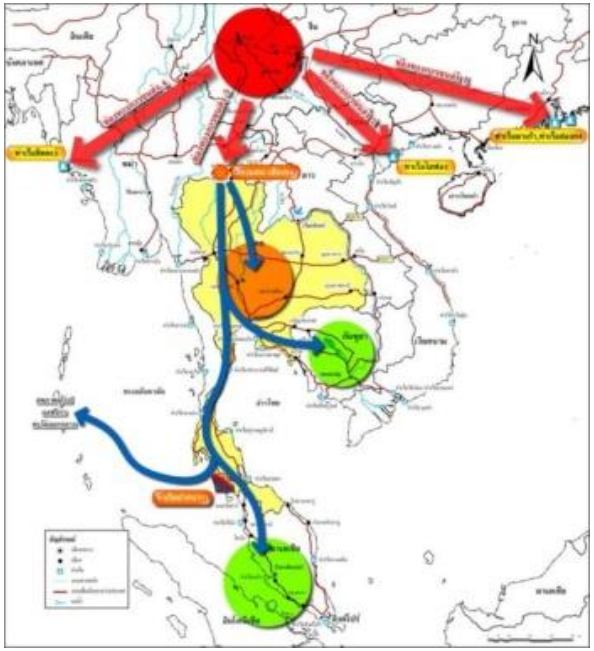
Shift

# Deep Seaport

# Pakbara (Andaman Sea)

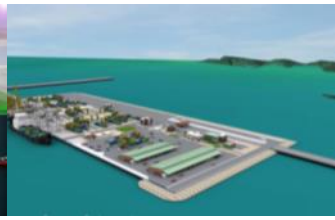
## Project Information

| Duration | Investment | Type |
|---|---|---|
| 6 Years<br>(Yr 2011-2016) | Cost 12,434 MB<br>- Civil Work 9,585.58 MB<br>- Project Supervision 150.85 MB<br>- Environment 7.7 MB<br>- Tools and Equipments 2,692.9 MB | PPPs (BTO) |



## Return on Investment

| Discount rate | IRR | B/C | NPV |
|---|---|---|---|
| 12% | 14.31 % | 1.1 | 726.5 MB |
| 8% | 14.31 | 1.15 | 3,494.90 MB |



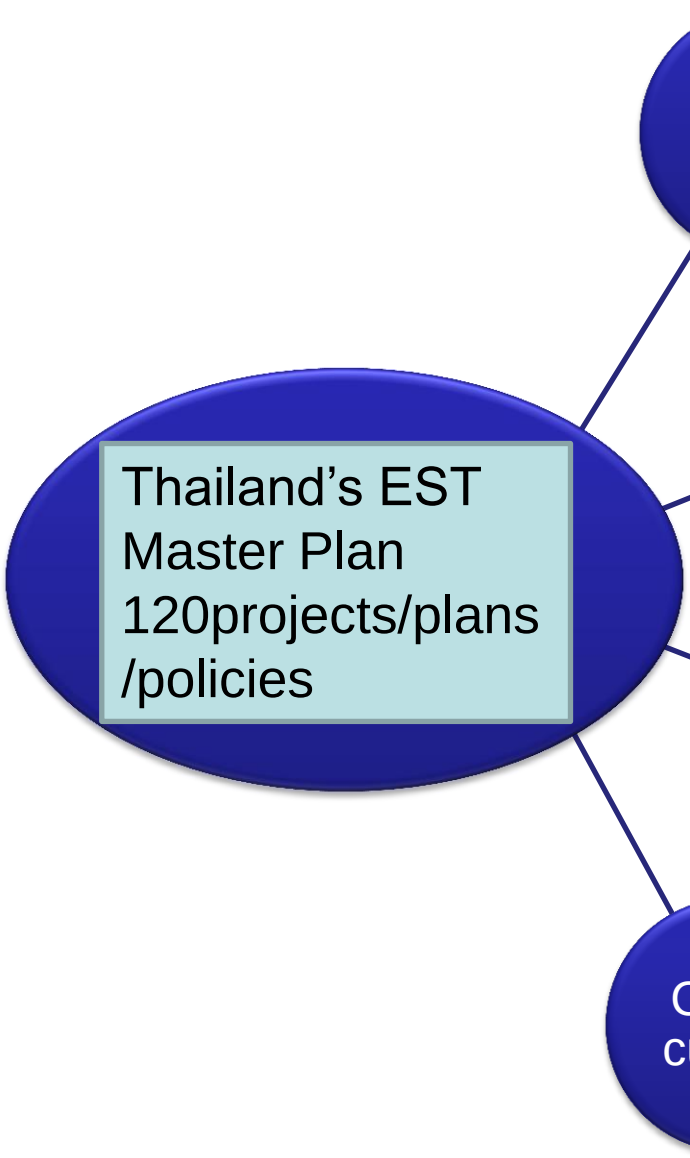
# Barriers for Towards Sustainable Transport

- Policy Barriers
- Institutional Barriers
- Technical Barriers
- Market Barriers
- Economic and Financial Barriers
- Information Barriers

# Barrier Removal Activities

- **Capacity building** (***e.g., financial evaluation, technology application, energy-integrated urban transport planning***)
- ***Institutional strengthening*** ***(e.g., regulatory frameworks, vehicle emission standards)***
- **Investments** (***e.g., demonstration & replication projects***)
- **Training** (***e.g., design, operation, maintenance of vehicles and transport systems***)
- **Targeted research** (***e.g., adaptation of technologies, techniques, practices to local conditions***)

# Conclusion




- Urban planning
- Complex city

**Most difficult**

Not yet

- Mode of Transport : public and mass transit
- Freight :road to rail

**Implementing**

- Vehicle/fuel standard
- Technology

**Largely Implemented**

- Safety : Decade of road safety
- Climate Change
- Awareness

**Largely Implemented**



# Thank you

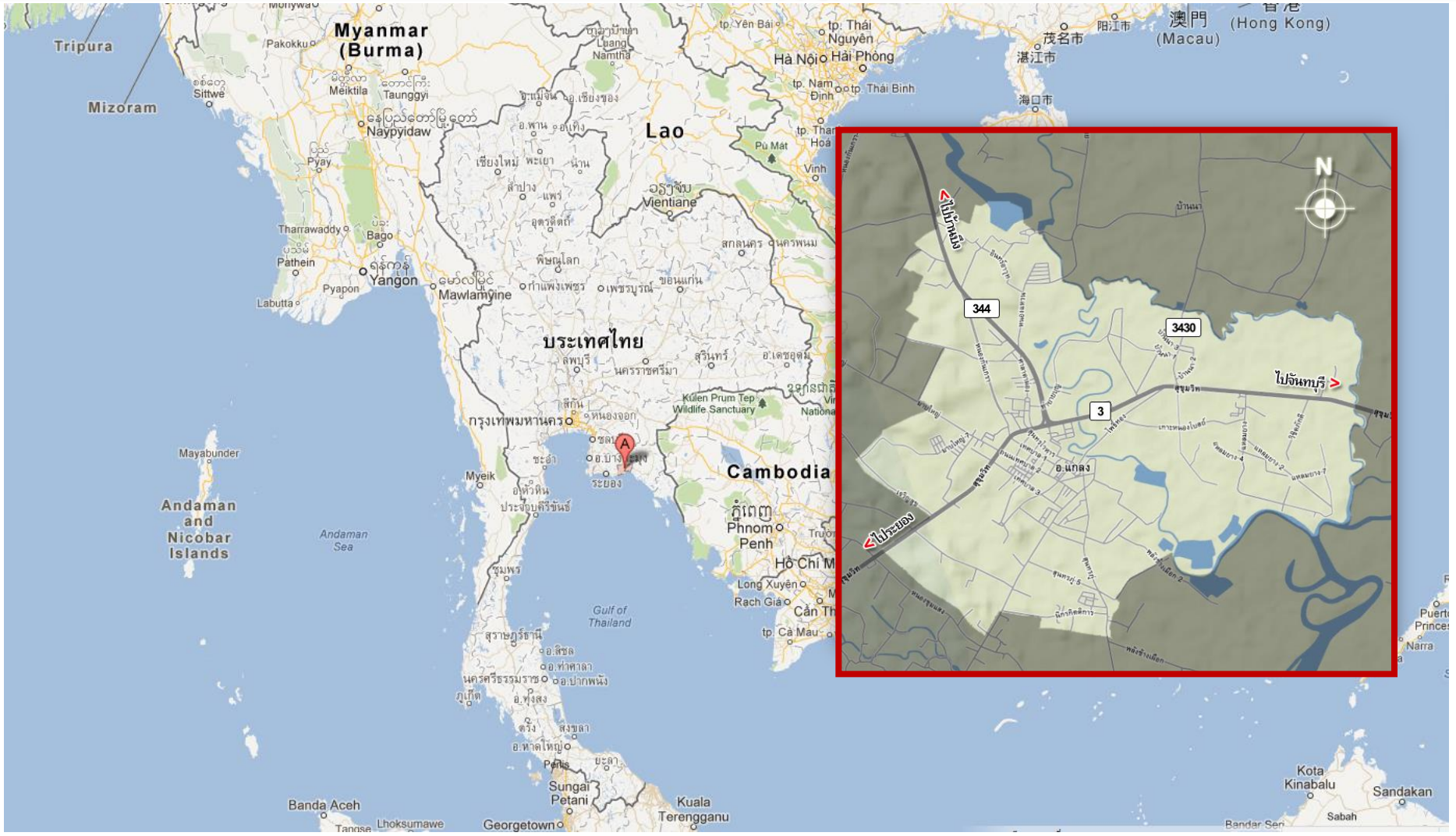



# Pilot Project

## A Study of the Local Public Transport System:

**Case Study on Klaeng District, Rayong Province, Thailand**

# Location of Klaeng District, Rayong Province, Thailand



# Concepts

With the corporation of Local authority and community, considerable plans on climate change that reduce the amount of $CO_2$ emission was introduced as follow:

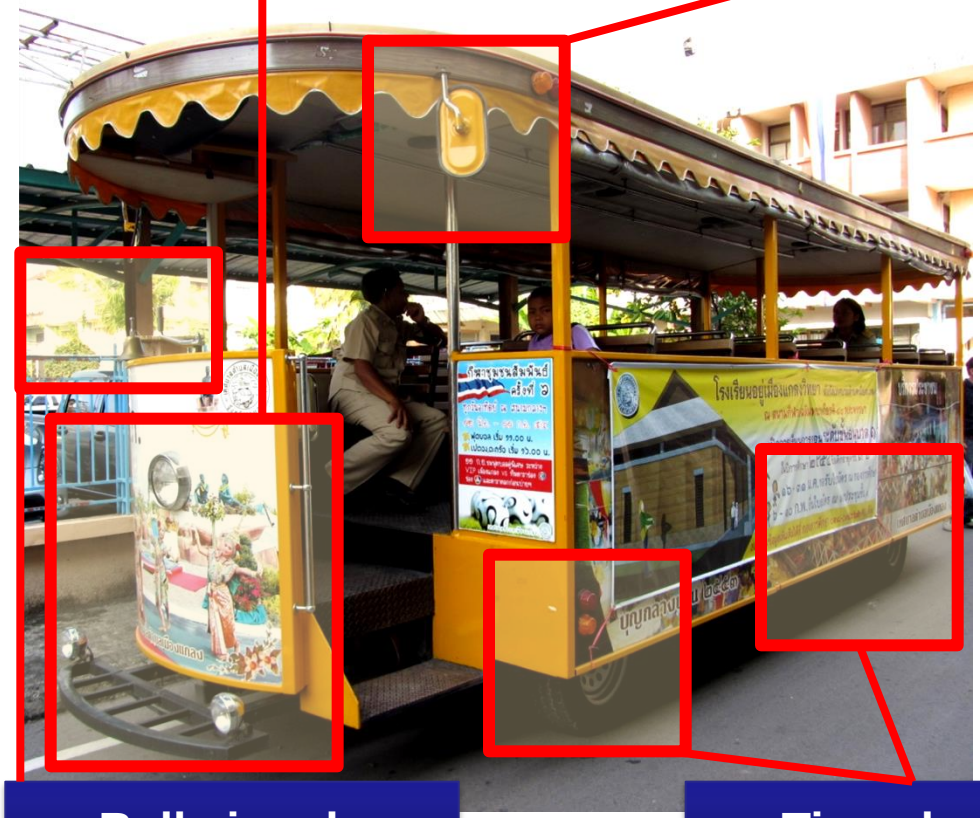
- Reduce vehicle use and fuel consumption
- Increase the mobility of traffic
- Introduce local public transport called "Klaeng's Public Transport System"

# Klaeng's Public Transport

Headlights

Rearview mirror

Backlights



Bell signals

Tire wheels

Gasoline engine cars converted to use LPG

# Services and Operation

- Free service for everyone
- 4 Cars
- Provide early morning and evening services
- Accommodate 40-50 passengers/vehicle
- Serve more than 300 students and 170 people per day

- A service range is about 3-13 kilometre
- Average speed is 12-18 km/hr
- Travel time is about 15-35 minutes

# Outcome of the operation

- Reduce fuel consumption, approximately 7,250 litres/year
- Reduce CO2 emission, approximately 16 tons/y

# Benefits to Community

- Alternative travel choice which is convenient, safe and improve quality of life for community.
- Decrease in traffic and improve the environment in the city.
- Release parental time burden, thus, have more time to earn income for the family.
- Create a strong cooperation and connection between member of community.
- Effectively encourage people to engage in physical exercise

**“Some say they won’t go exercise if there is no Klaeng’s Municipal Tram System services”**

# Conclusion


Green Growth Development
Environmental Sustainable Transport
National Policy for Climate Change



# Thank you

Further information, please contact
chutinthorn.p@gmail.com