Current Situation of Transport Data System in Thailand

Discussion Meeting with International Export on

"Essential Transport Indicators and Their Practical Applications"

23 June 2014

VIE Hotel Bangkok

Outline:

- **Progress on Design of an MRV System for Transport Sector in Thailand**
- **Current Situation of Transport Data System in Thailand**

Main Objective:

to design the support system for developing the national system for Measurement, Reporting, and Verification (MRV) in Thailand's transport sector

Existing Data

Strategies/Policies

Estimated GHG

Outputs:

- **Data** required for estimating the potential mitigation effects of a policy (or a set of policies) on GHG (Greenhouse Gases).
- **Model** for estimating transport activities
- **Methodology** for estimating the potential mitigation effects of a policy (or a set of policies) on ***GHG*** (Greenhouse Gases). The addition work in this component also includes the ***MAC*** analysis for the selected policies.

Strategies/ Policies

Non-urban rail ways improvements (Nation Level)

- ***Non-urban rail ways improvements:*** Existing railway is subject to be improved; doubling tracks, provision of train units, train interior and service improvement. Currently only 200 km out of 4000 km of railway line have double track. The train engines are lacking and result in irregular operations.

Strategies/ Policies

Fuel efficiency policy (Nation Level)

- ***Fuel economy standard of all new vehicles:*** A standard setting for fuel economy of motorcycle has enforced in 2014. Standards for other type of vehicles are going to be developed.
- **Car labelling:** In 2006, Energy Policy and Planning Office studied the fuel efficient label. Currently, Excise Department has studied the car labelling indicating the fuel efficiency and/or CO_2 emission.

Strategies/ Policies

Fuel subsidy reduction (Nation Level)

- The government fixed the LPG's price for domestic use at 18.13 THB, diesel at 29.99 THB. Within 2013, the price of LPG for transport sector will gradually increase to reflect the cost of production.

Strategies/ Policies

Public Transport Management (City Level)

- ***Bus Route Optimization:*** Bus routes are developed and optimized by BTMA. One 16-km BRT line in Bangkok also has priority at signal junctions.
- ***Integrated Ticketing:*** A common electronic ticket is planned for major public transport in Bangkok. A single ticket can be used on most public transport in Bangkok.
- ***Incentives for Public Transport Investments:*** In Thailand, bus, van and boat is owned and operated by private/public sector.

Strategies/ Policies

Urban PT infrastructure (City Level)

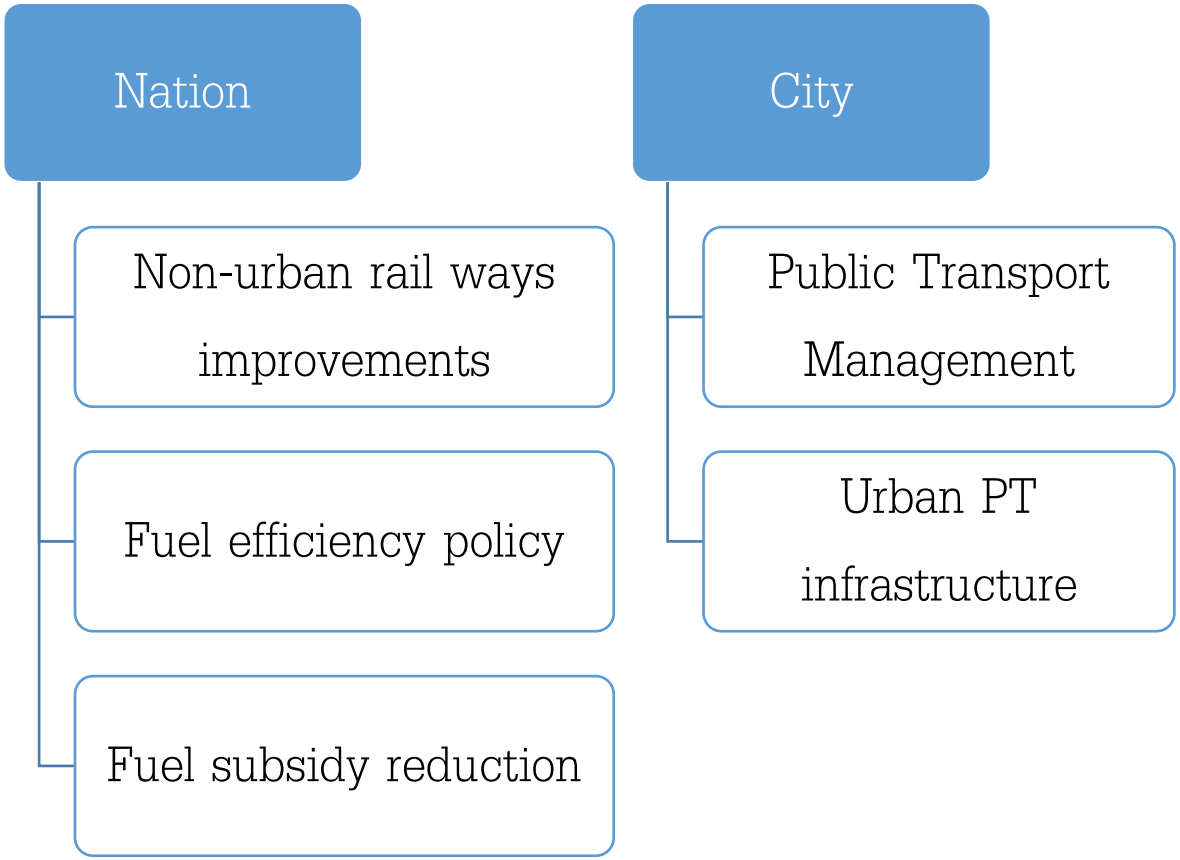
- Urban rail transit network is planned in Bangkok. Twelve lines of PT have the total length of 467 km. Moreover, BMA studies some rail transit, mainly monorail/light rail and extension of the existing rail system. The first BRT line has been operating since 2012. The other four lines in the BMA Actiona Plan on Global Warming Mitigation 2007-2012 are Mor Chit line, Don Muang line, Minburi line, and Bangan line.

Strategies/ Policies

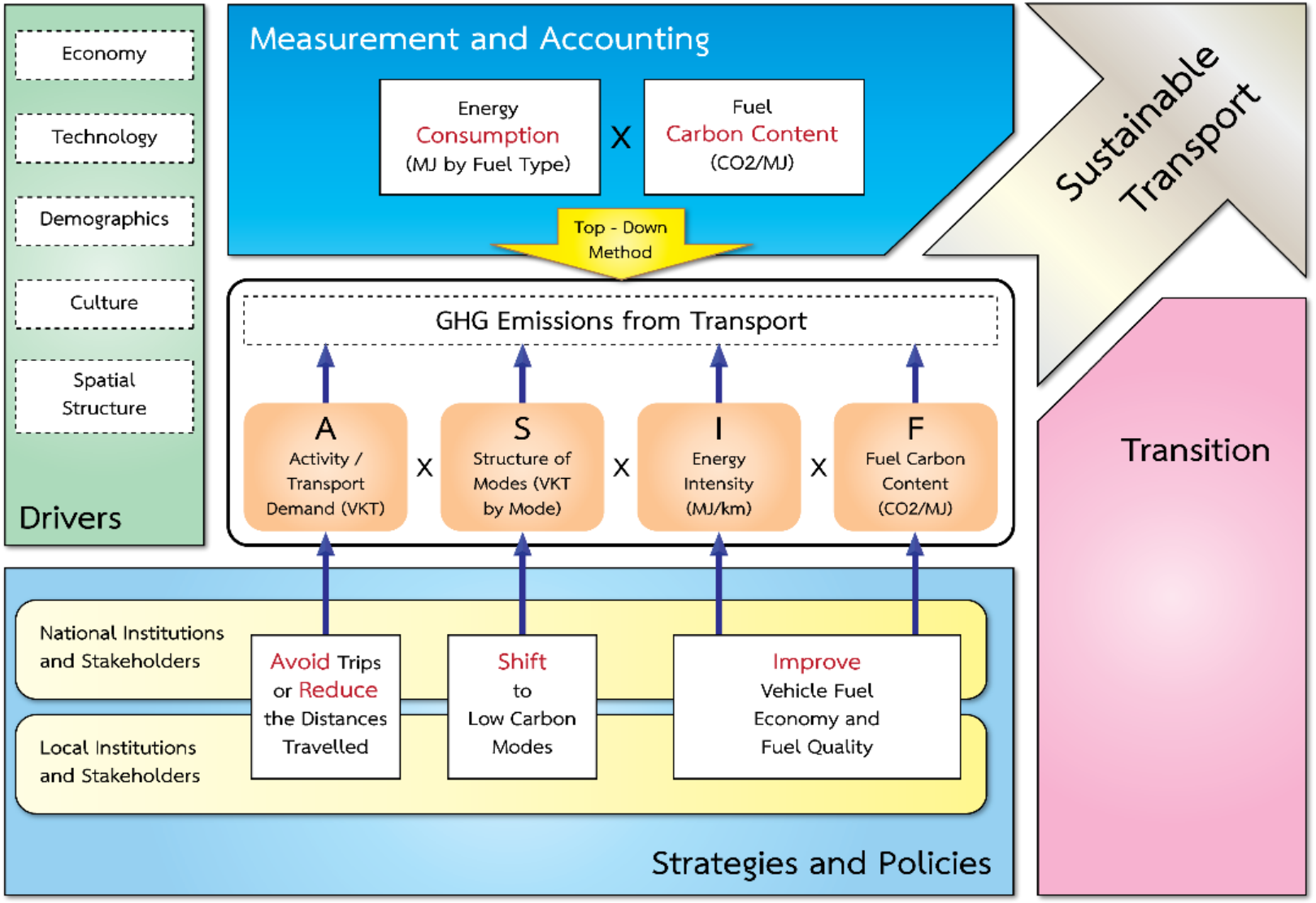
Non-Motorised Transport (NMT) (Project Level)

- **Cycling infrastructure:** The Government Cabinet acknowledged the resolution on Systems and Structures for Promotion of Walking and Cycling in Daily Life on November 19, 2013, and assigned relevant agencies to implement it.
- **Walking infrastructure:** Sidewalk is basic provision on most streets in cities. Walking paths are also provided as a basic access way in many areas.

Strategies/ Policies



Framework for CO_2 Emission Estimations



Source: Low-Carbon Land Transport Policy Handbook

Nation Area Model

Energy Consumption

(MJ by Fuel Price)

Fuel Carbon Content

(CO2 /MJ)

Nation

- Non-urban rail ways improvements
- Fuel efficiency policy
- Fuel subsidy reduction

Top Down

Bottom Up

Number of Veh. Reg.

- Fuel efficiency policy
- Fuel subsidy reduction

Vehicle Kilometer Travel

PCU-KM / Ton-KM

NAM

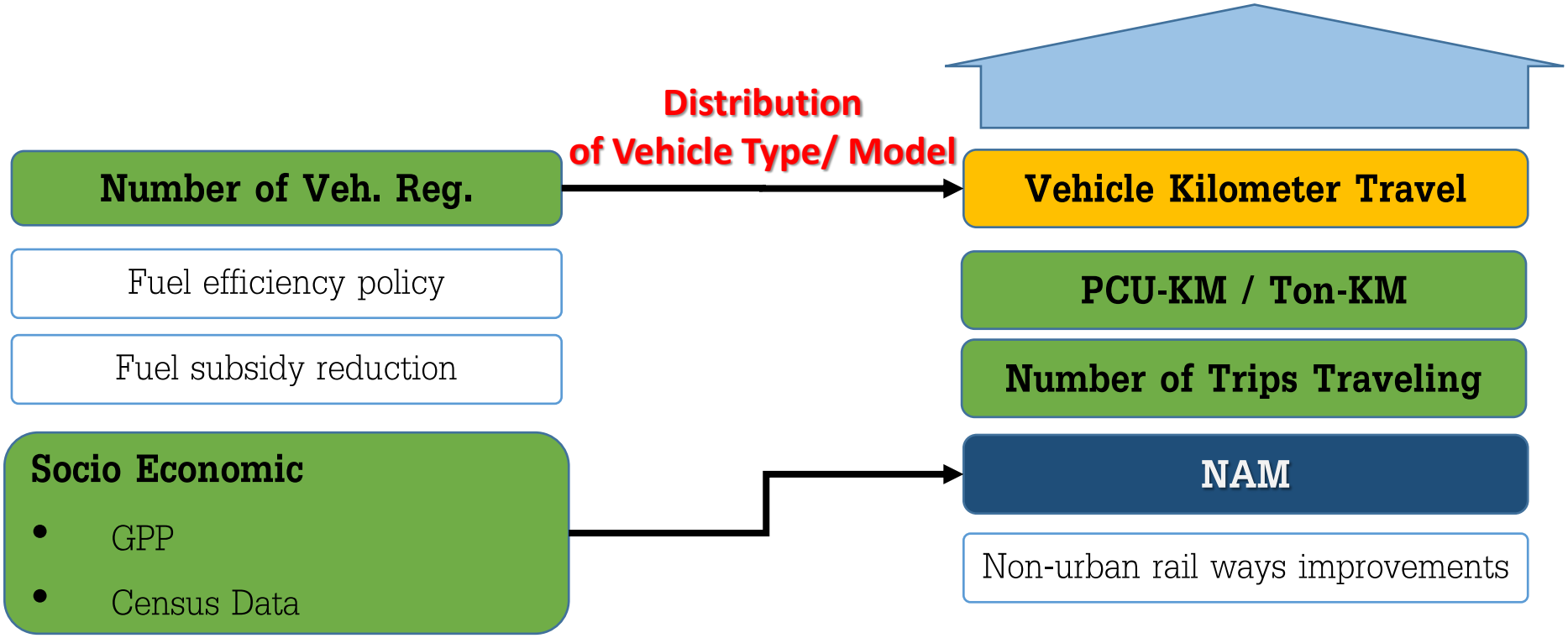
- Non-urban rail ways improvements

Questions

✓ **Top Down VS Bottom UP (% Acceptable)**

Nation Area Model

Bottom Up



Questions

- ✓ **Limitation of Accesses to the Model for Estimating VKT**
- ✓ **Is it possible to directly distribute the vehicle types to the VKT?**
- ✓ **Fuel Subsidy Reduction (LPG) -> not a mode shift but changes in type of veh.**

Bangkok Area Model

- City
  - Public Transport Management
  - Urban PT infrastructure

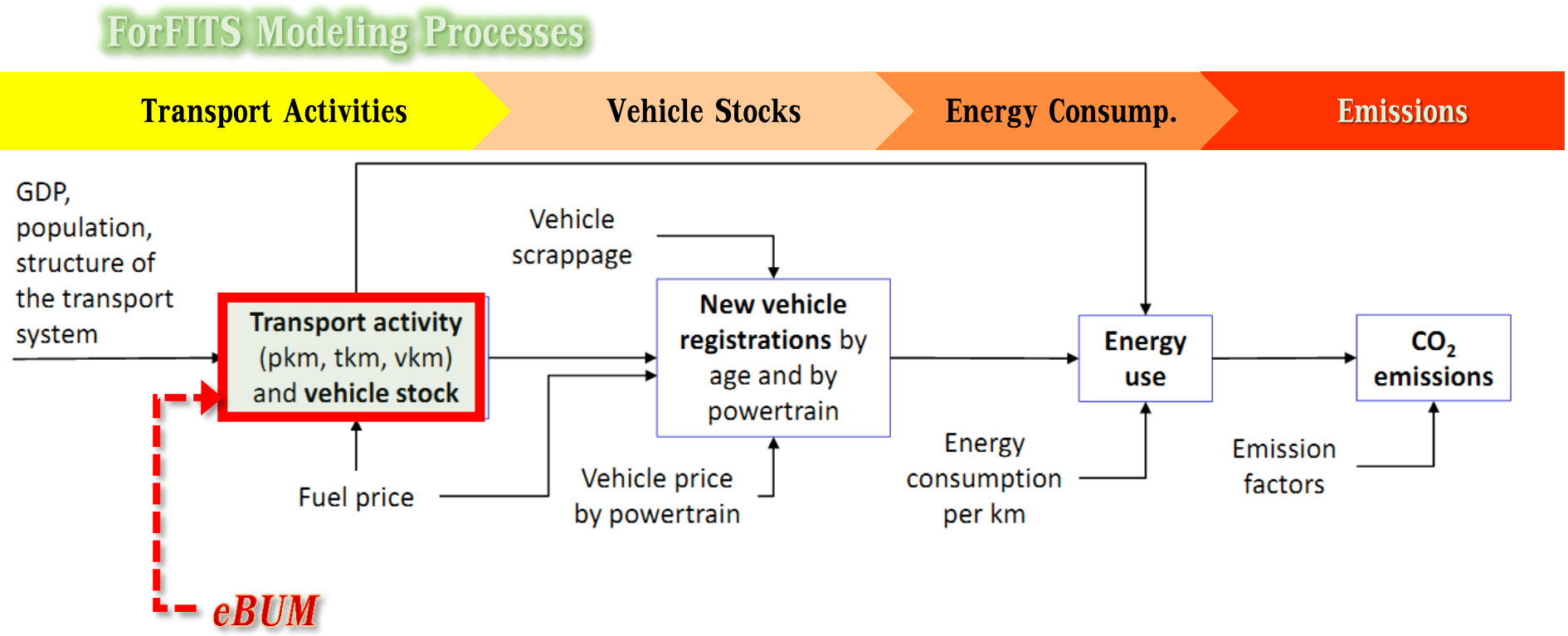
- **Traditional Travel Demand Model**
- **Infrastructure Sensitive**

- **Sketch Planning Model**
- **Policy Sensitive**
- **Developed by UNECE**

- **Infrastructure + Policy Evaluation**

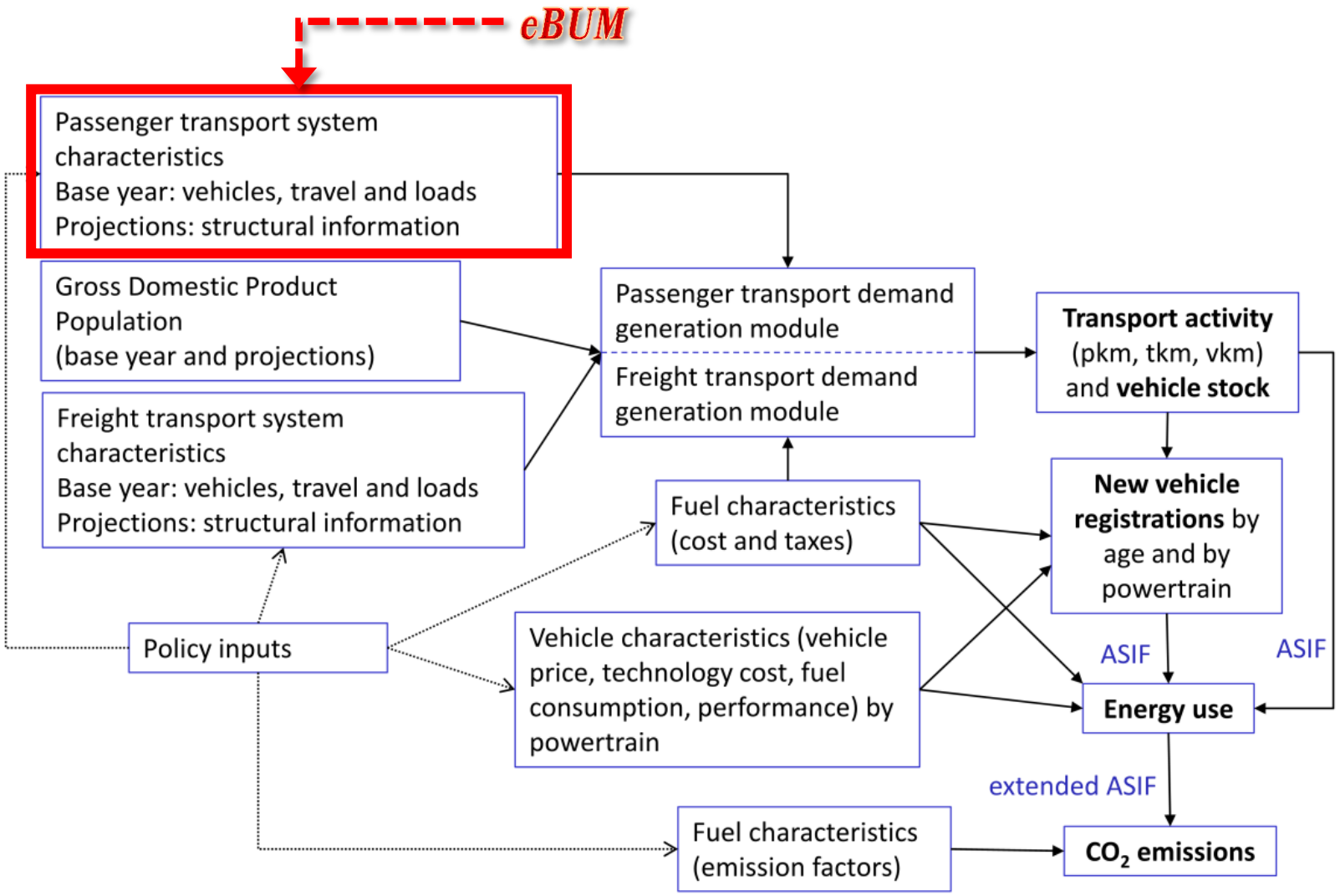
Bangkok Area Model

Transfer Data between eBUM and ForFITS



Bangkok Area Model

ForFITS Modeling Structure



Inputs for Transport Activities in ForFITS

DEMAND GENERATION PARAMETERS

Passenger

Drivers as fucntions of GDP per capita

- Personal passenger vehicles (PPV) per capita
- Pkm share on PPV in PPV + public transport
- Pkm share on air mode in total pkm
- People per active bike
- Personal vessels (boats) per capita

Environmental culture multipliers

- Personal passenger vehicles (PPV) per capita
- Personal passenger LDVS
- Pkm share on PPV in PPV + public transport
- Pkm share on air mode in total pkm
- People per active bike

Vehicle travel cost multipliers

- Personal passenger vehicles (PPV) per capita
- Personal passenger LDVS
- People per active bike
- Personal vessels (boats) per capita

Elasticities as functions of GDP per capita

- Annual personal vehicle travel to cost of driving
- Pkm on public transport vehicles to cost of driving
- Pkm on air vehicles to cost of driving

Freight

Drivers as fucntions of GDP per capita

- Share of light vehicles in total road freight

Elasticities

- Tkm to the cost of tkm
- Load factors to the cost of tkm

MODAL SHARES (EXOGENOUS PROJECTIONS)

Modal shares

- Modal shares between 2- and 3-wheelers
- Pkm shares in public transport modes
- Vehicle shares in light road freight modes

Summary of Key Indicators

Non-urban rail ways improvements

Public Transport Management

Urban PT infrastructure

Fuel efficiency policy

Fuel subsidy reduction

Activity Indicators (Avoid-Shift)

1. PKM/capita
2. TKM/capita
3. VKM/capita (mode wise)
4. PKM mode share/Trips mode share, TKM mode share

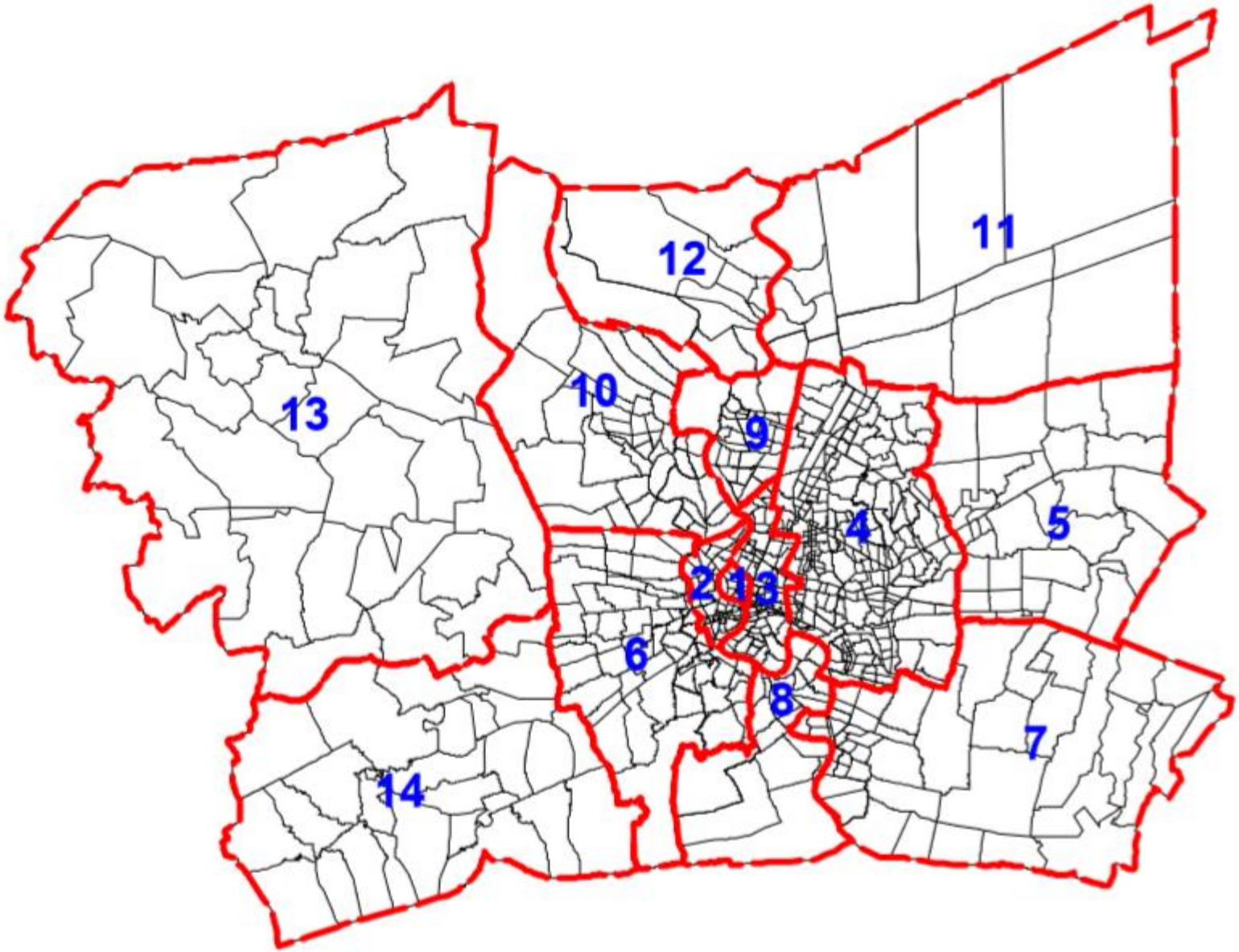
Improve Indicators (Improve)

1. Annually increased in CO2 emissions
2. Annual Fuel consumption growth per year
3. Fuel consumption per VKT

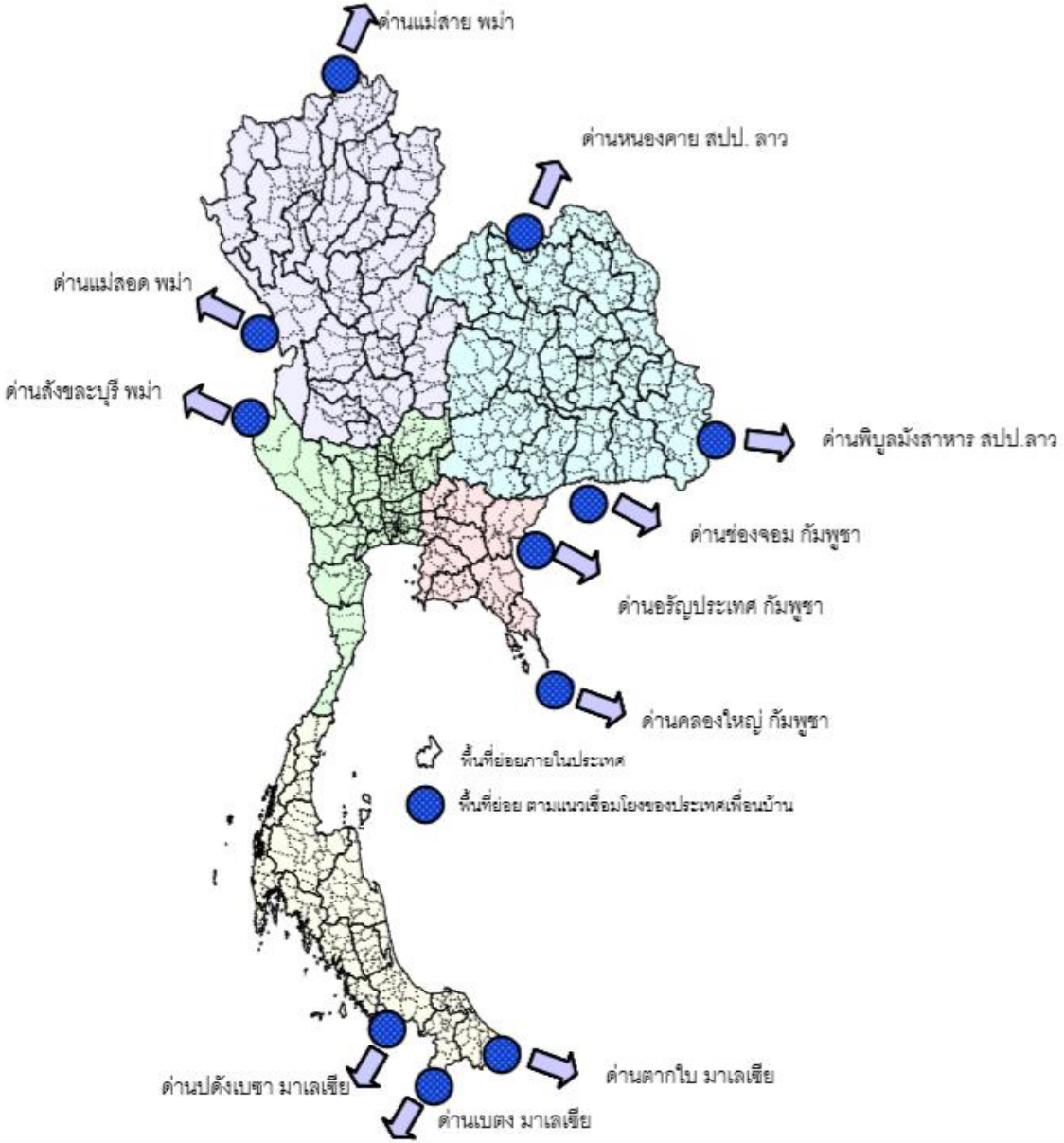
Current Transport Model Data

- Data from Transport Model – NAM
- Data from Transport Model - eBUM

Current Transport Model Data

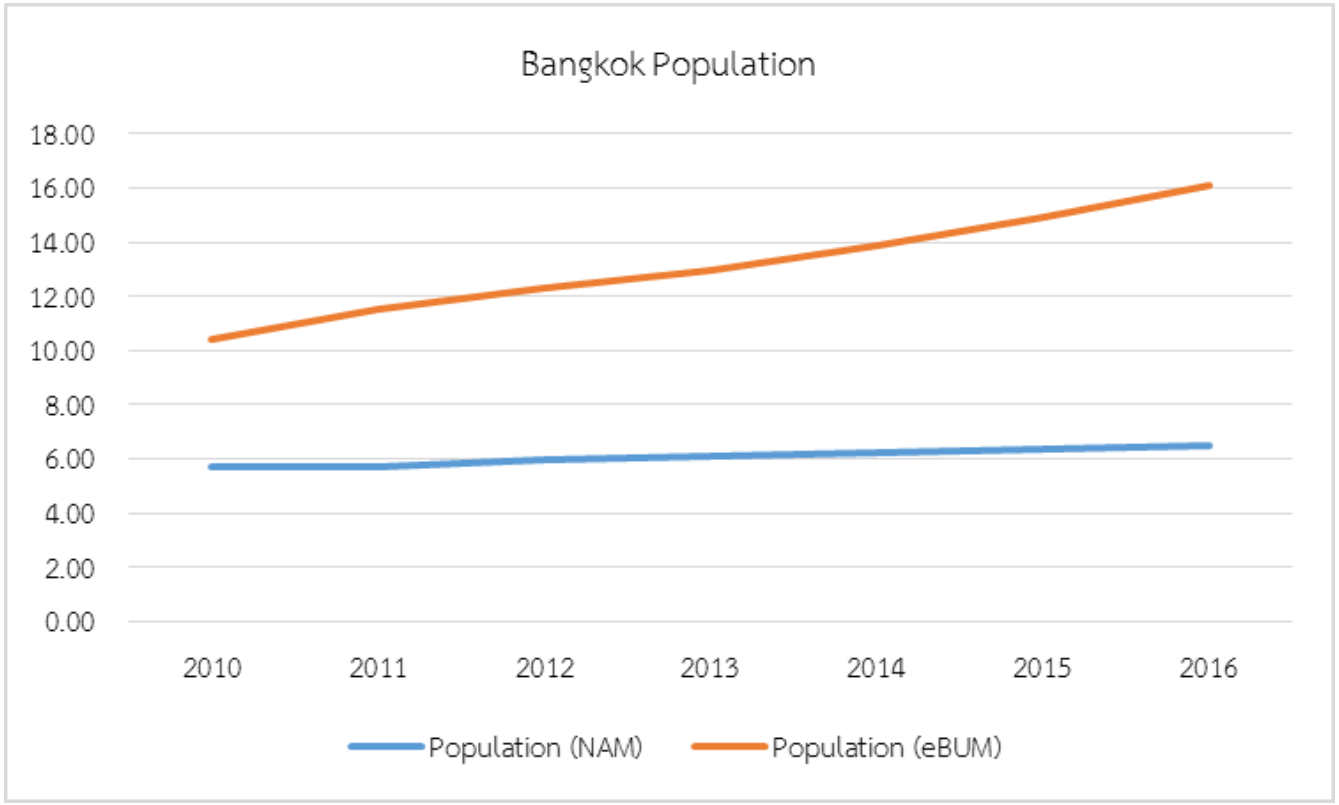


Current Transport Model Data



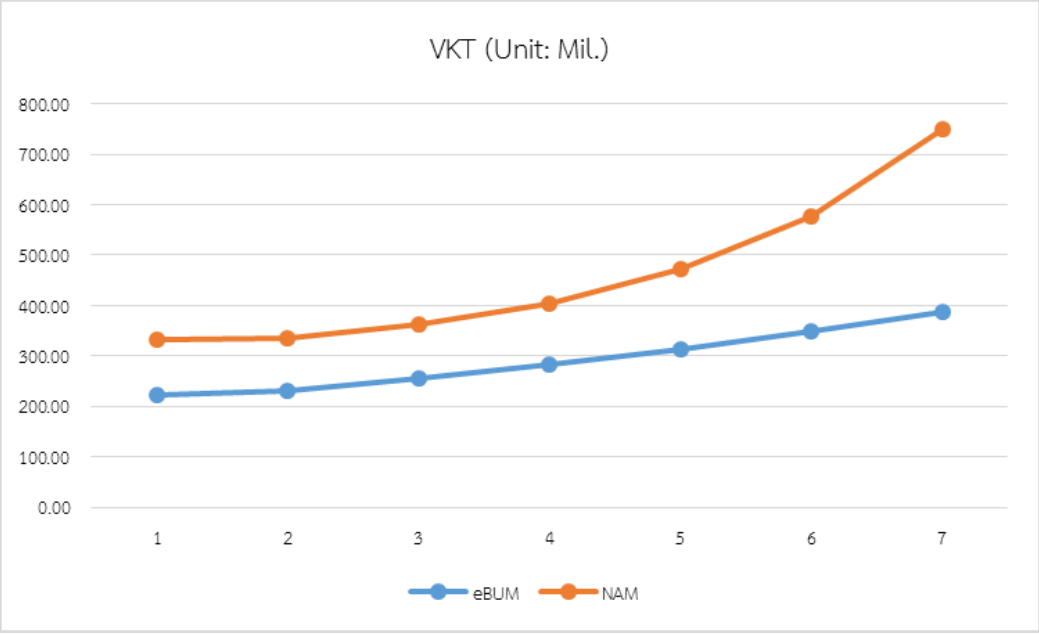
Current Transport Model Data

	2010	2011	2012	2013	2014	2015	2016
Population (NAM)	5.70	5.74	5.93	6.07	6.20	6.33	6.47
Population (eBUM)	10.40	11.54	12.29	12.99	13.88	14.94	16.10
HH (Mil.)	3.61	3.85	4.18	4.48	4.83	5.28	5.75
HH Size	3.00	2.99	2.94	2.89	2.86	2.83	2.80
Avg Incomes	27,778	27,799	33,927	38,378	42,616	47,044	51,932
Labours (Mil.)	5.86	6.27	6.71	7.2	7.81	8.36	8.94



Current Transport Model Data

Daily Trips	VKT		Million	Million	Portion Nation	Portion Bangkok
	eBUM	NAM	Veh. Reg (Nation)	Veh. Reg (Bangkok)		
2010	223.51	331.84	28.48	6.18	11.650	36.182
2011	230.48	335.50	30.19	6.57	11.111	35.064
2012	256.32	362.38	32.48	7.24	11.158	35.412
2013	281.70	404.93	34.62	7.92	11.695	35.572
2014	313.28	472.09				
2015	347.56	577.82				
2016	387.14	749.51				



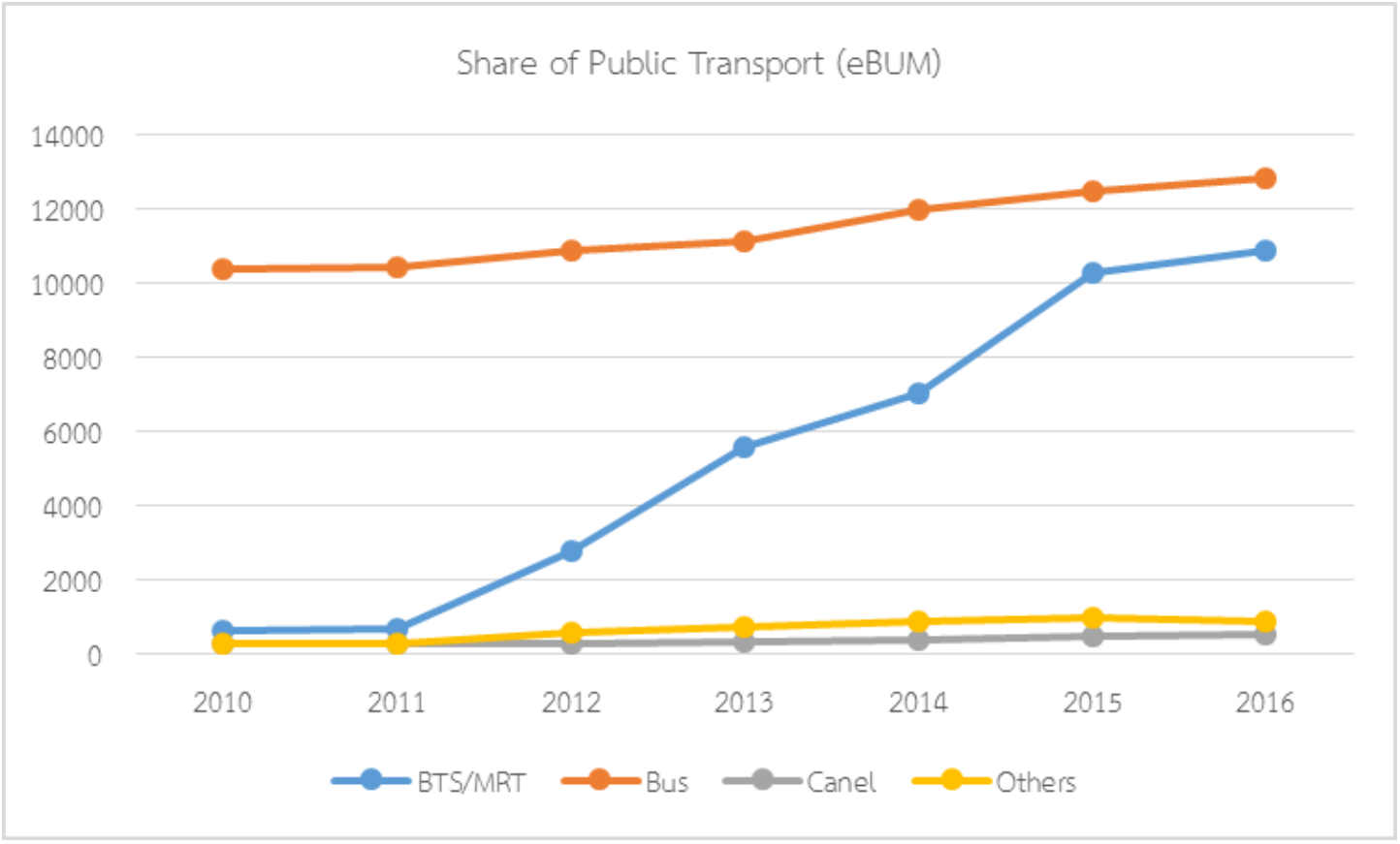
Current Transport Model Data

Person Trips in Bangkok

	Total	Private	Share	Pulic	Share
2010	21,900	10,300	47.03%	11,600	52.97%
2011	22,347	10,600	47.43%	11,747	52.57%
2012	25,900	11,300	43.63%	14,600	56.37%
2013	30,100	12,300	40.86%	17,800	59.14%
2014	33,900	13,600	40.12%	20,300	59.88%
2015	39,200	14,900	38.01%	24,300	61.99%
2016	43,800	18,600	42.47%	25,200	57.53%

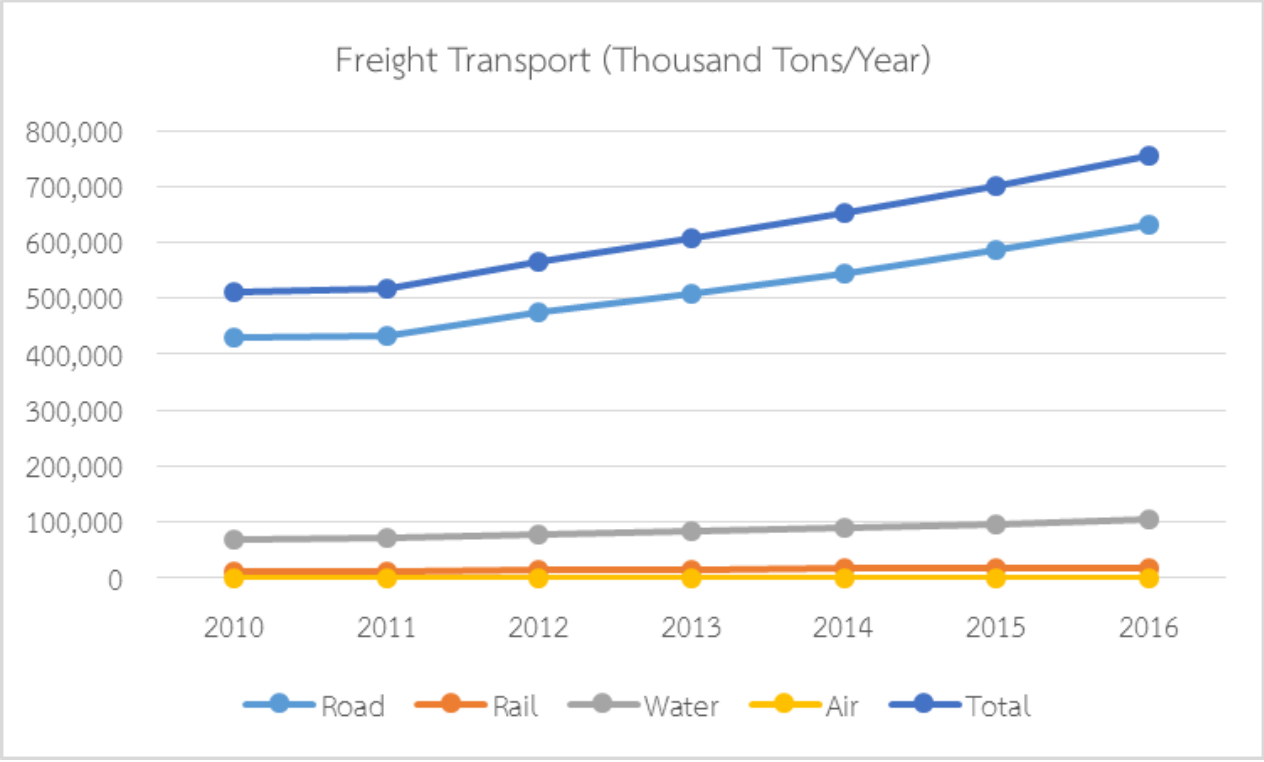
Current Transport Model Data

Thousand-Person Trips/Day							
Year	2010	2011	2012	2013	2014	2015	2016
BTS/MRT	636	683	2,798	5,611	7,065	10,309	10,898
Bus	10,407	10,451	10,902	11,167	11,975	12,520	12,857
Canel	280	298	300	318	383	487	526
Others	292	315	598	750	876	991	892



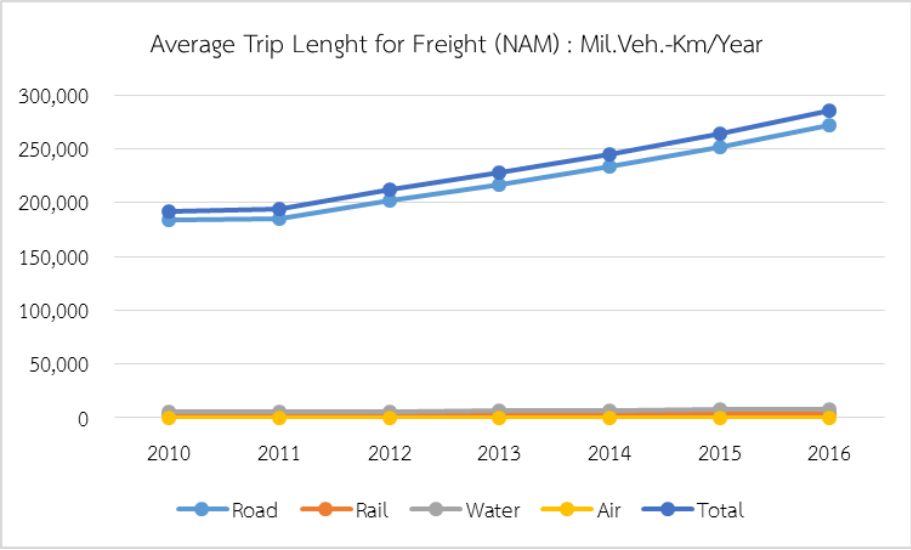
Current Transport Model Data

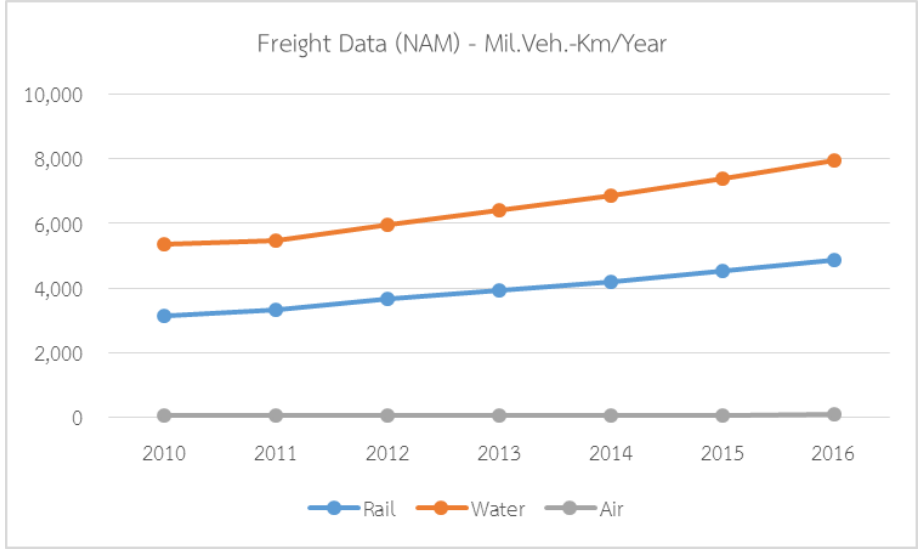
Freight Data (NAM) - Thousand-Ton/Year							
Year	2010	2011	2012	2013	2014	2015	2016
Road	429,295	433,184	474,050	508,140	545,485	586,553	631,807
Rail	11,007	12,995	14,222	15,244	16,364	17,601	18,955
Water	70,149	71,690	78,454	84,122	90,270	97,073	104,557
Air	64	64	71	78	86	95	106
Total	510,515	517,933	566,797	607,584	652,205	701,322	755,425



Current Transport Model Data

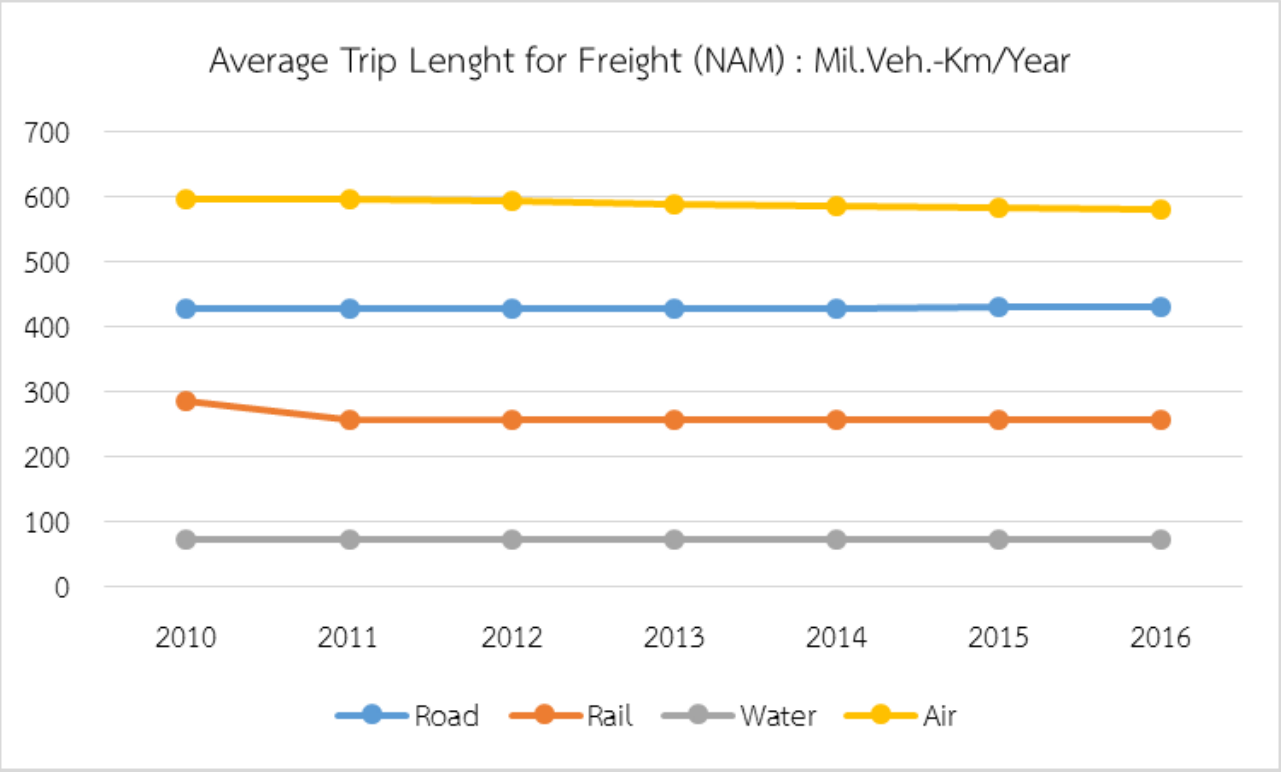
Freight Data (NAM) - Mil.Veh.-Km/Year							
Year	2010	2011	2012	2013	2014	2015	2016
Road	183,541	185,345	202,390	217,180	233,622	251,856	272,362
Rail	3,146	3,335	3,650	3,911	4,201	4,519	4,867
Water	5,361	5,451	5,965	6,395	6,864	7,381	7,950
Air	50	51	55	59	64	68	74
Total	192,098	194,181	212,060	227,545	244,751	263,824	285,253





Current Transport Model Data

Average Trip Length for Freight (Km)							
Year	2010	2011	2012	2013	2014	2015	2016
Road	428	428	427	427	428	429	431
Rail	286	257	257	257	257	257	257
Water	72	72	72	72	72	72	72
Air	596.5	595.9	592.7	589.5	586.3	583.1	580
Total	376	374	374	374	375	376	377



Existing Data

Number of Veh. Reg.	Land Transport Depart.	Annually Collected
Energy Statistics Import/Export/Consumption	Energy Policy and Planning Office	Annually Collected
Environmental Data.	Pollution Control Depart.	Annually Collected
Traffic/Transport Data		
- Transport network	Ministry of Transportation	Occ. Updated
- Freight Transport.	OTP	By Project
	Depart. of Civil Aviation	Annually Collected
	Railway Depart.	Annually Collected
	Marine Depart.	Annually Collected

Existing Data

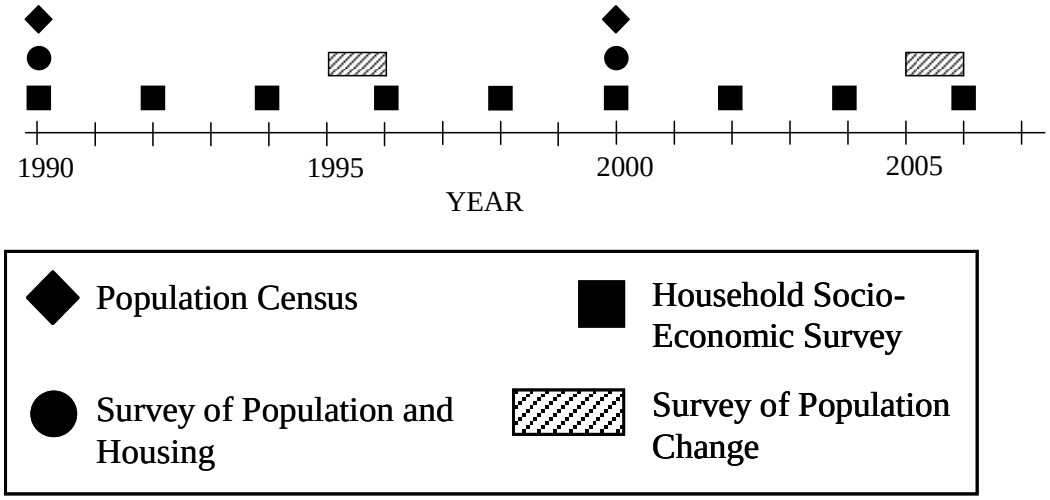
Traffic/Transport Data		
- Passenger Transport.	BTS / MRT	Daily Collected
	BMTA	Yearly Report
	DOH (AADT)	Yearly Report
	DOH/ DOR/ OTP	By Project
	Railway Depart.	Annually Collected
	Marine Depart.	Annually Collected
	Airport of Thailand PLC.	Annually Collected

Existing Data

Socio-Economic Data		
- Number of Pop.	National Statistical Office	Census Data
	Depart. of Provincial Admin.	Admin. Data
- HH Incomes - HH Veh. Dist.	Office of Transport and Traffic Policy and Planning	Collected by Proj.

Other Socio Economic Data

Note:
1-Population Census
2-Survey of Population and Housing
3-Household Socio-Economic Survey
4-Survey of Population Change



Variables	1	2	3	4
Household Characteristics:				
HH_TYPE	X	X	X	X
HH_CHAR	X	X	X	
TOTAL_MEM	X	X	X	X
NUM_BIC		X		
NUM_MT		X		
NUM_PC		X		
HH_INCOMES			X	X
Household Member Characteristics:				
REL2HH	X	X	X	X
M_STATUS	X	X	X	X
GENDER	X	X	X	X
AGE	X	X	X	X
W_STATUS	X	X	X	X
ATT_EDU	X	X	X	X
IND_INCOMES			X	X

Summary

- Needs for Modeling Tools
- Updated and Reliable Data
- Effective Indicators