

Development of Low Carbon Society Scenarios for Iskandar Malaysia and Putrajaya. Transition towards LCS in Thailand and Asia Nov 17-18, 2010



Japan International Cooperation Agency

Technical Cooperation Project
UTM, IRDA, PTHM and JPBD Malaysia
Kyoto U, Okayama U and NiES Japan

POINTS OF DISCUSSION

- How to approach LCS sustainable future ?
 - Political will and Institutional commitment
 - Modeling experts – External and internal
- Who are the Stakeholders to implement Development of Low Carbon Society Scenarios
 - to obtain view points from policy makers and implementing related with LCS.
- . What are sustainable issues ?
 - National issues / Putrajaya and Iskandar Malaysia

Joint study with Malaysia

Needs of Malaysia

- Necessity of drastic reduction of national GHG emissions
- Necessity of scenarios/roadmaps for achieving LCS at local/city level
- Solving environmental and social problems associated with rapid economic growth

**Universiti Teknologi
Malaysia**
Chief : Ho Chin Siong

- Data collection of Iskandar Malaysia, Information collection and database development of Low-carbon options in Malaysia
- Capacity building of Malaysian officers

Collaborators in
Malaysia

- Iskandar Regional Development Authority (IRDA)
- Town and Country Planning Department (JPBD)
- Malaysia Green Technology Corporation (PTM)

Kyoto University

Chief: Yuzuru MATSUOKA

- General management of research activity
- Development & improvement of models for estimating LCS visions and roadmaps
- Developing models, estimation and quantification of co-benefit of mitigating air pollution

Okayama University

Chief: Takeshi FUJIWARA

National Institute for Environmental Studies
Chief: Mikiko KAINUMA

- Consolidating organizational arrangement of UTM to conduct trainings on LCS scenarios for Malaysia and Asian countries
- Establish Network for LCS in Asia

- Quantitative estimation of GHG emissions from waste management
- Development and proposal of waste management plan which is consistent with the LCS scenario

Output

- Methodology to create LCS scenarios which is appropriate for Malaysia is developed.
- LCS scenarios are created and utilized for policy development in IM.
- Co-benefit of LCS policies on air pollution and on recycling-based society is quantified in IM.
- Organizational arrangement of UTM to conduct trainings on LCS scenarios for Malaysia and Asian countries is consolidated, and a network for LCS in Asia is established.

Outcome, impact

- Capacity building and technology transfer to researchers and government officers in developing and newly emerging countries through development of low-carbon city scenarios
- Developing a network between researchers and government officers those who are studying or in charge of low-carbon policy in Asia
- Share the models and tools developed in this study and findings from the experience internationally through institutions such as

IPCC

Purpose/ Output

- To **develop Methodology** to create LCS scenarios which is appropriate for Malaysia
- To create LCS scenarios and **incorporate LCS in the development plan for policy implementation** in IM.
- To quantify **the Co-benefit of LCS policies on air pollution and recycling-based society** in IM.
- to conduct **trainings on LCS scenarios** in UTM for urban managers/researchers from Malaysia and other Asian countries
- To establish a **network for LCS** in Asia

COP 15 – Malaysia's target

- Prime Minister of Malaysia, Y.A.B Dato' Sri Mohd Najib bin Tun Abdul Razak, in **COP15** last year at Copenhagen, Denmark, proposed **to reduce CO₂ emission intensity in Malaysia to 40 per cent by the year 2020 compared with its 2005 levels, subject to assistance from developed countries.**



COP15 on Dec 17, 2009 at
Copenhagen, Denmark

Main points of Research project background

ISKANDAR MALAYSIA

1. Research approach based on view point of **Regional development of Iskandar Malaysia**
2. “Development of Low Carbon Society Scenarios for Asian Regions” (main target region: **Iskandar Development Region, Malaysia**)

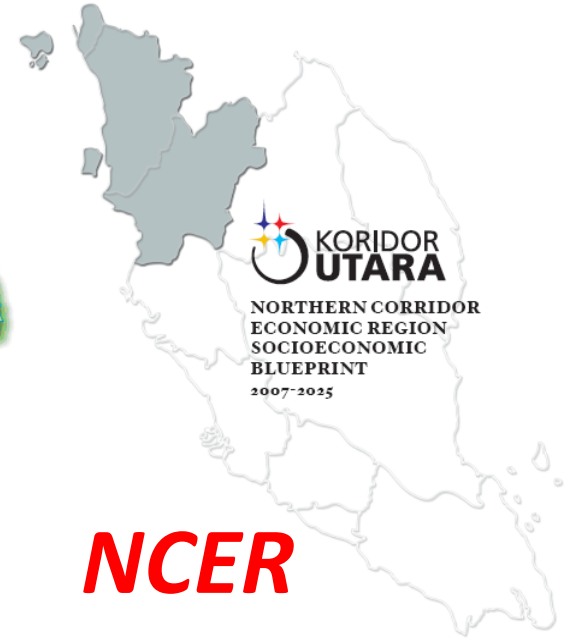
PUTRAJAYA

Research approach based on view point of **community /city development of Putrajaya**

Focus on LCS Putrajaya. Cooler Putrajaya and 3 R Putrajaya

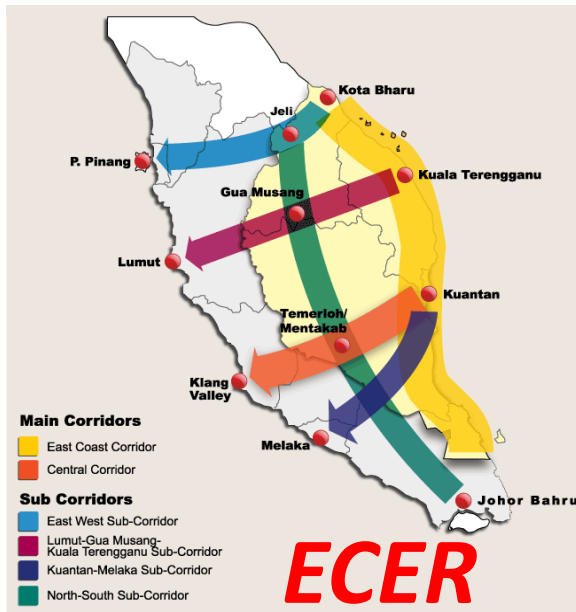
MALAYSIA: KEY ECONOMIC DEVELOPMENT CORRIDORS

BACKGROUND



IM

NCER



ECER



1 MALAYSIA CHARTING DEVELOPMENT TOWARDS A HIGH INCOME NATION

- The 2011 Budget, with the aim to position Malaysia as a **developed and high-income economy** with inclusive and sustainable development, will continue to ensure that the **most conducive socio-economic environment** is created through the **Government Transformation Programme (GTP)** to underpin growth.

The 10th Malaysia Plan

- Building an environment that **enhances Quality of Life**
- New urbanism and **compact city**
- Growth concentrated in **urban conurbation**
- **Safe city** initiatives
- **Developing climate resilient growth** policy
- Adaptation measures
- Mitigation measures
- Incentives for **RE and EE**
- Improving **Solid waste management**
- Conserving forest
- Reducing **emission to improve air quality**

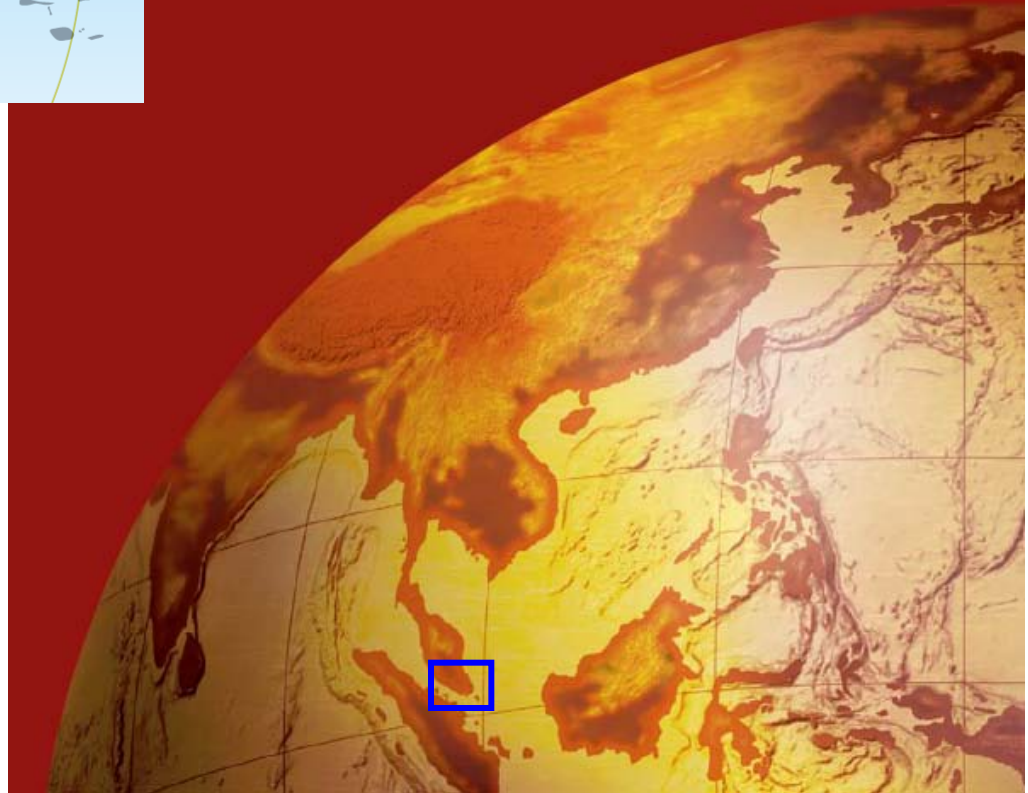


Case study

Iskandar Development Region

2,216 km²

Population 1,353,200



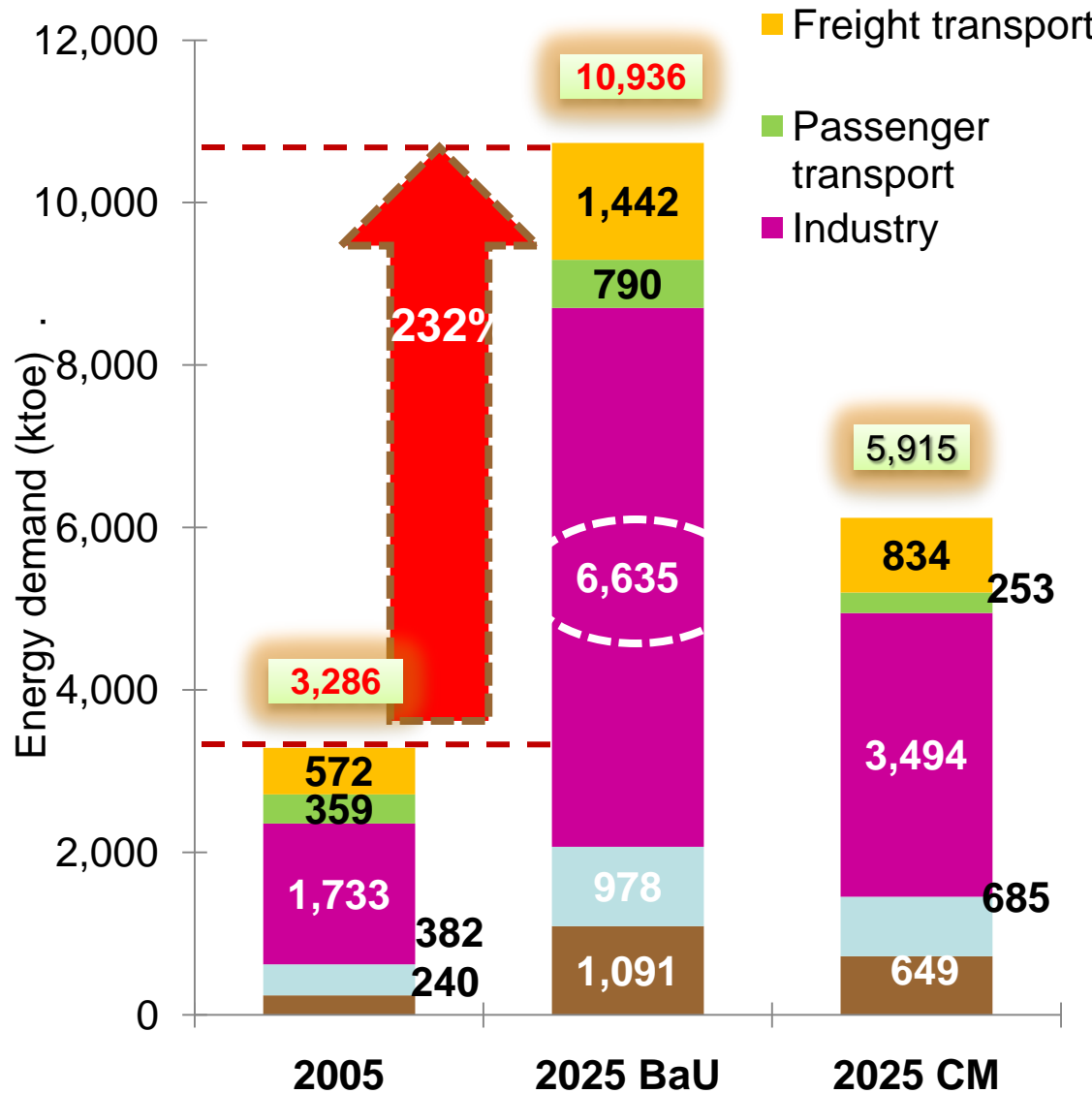
The Iskandar Malaysia Vision

Economic Growth

“To develop Iskandar Malaysia into a strong and sustainable metropolis of international standing”

	Year 2005	Projected (2025)
GDP (RM)	70 billion	325.5 billion
Per capita GDP (RM)	51,765	108,850
Employment	0.610 million	1.428 million
Population	1.4 million	3.1 million

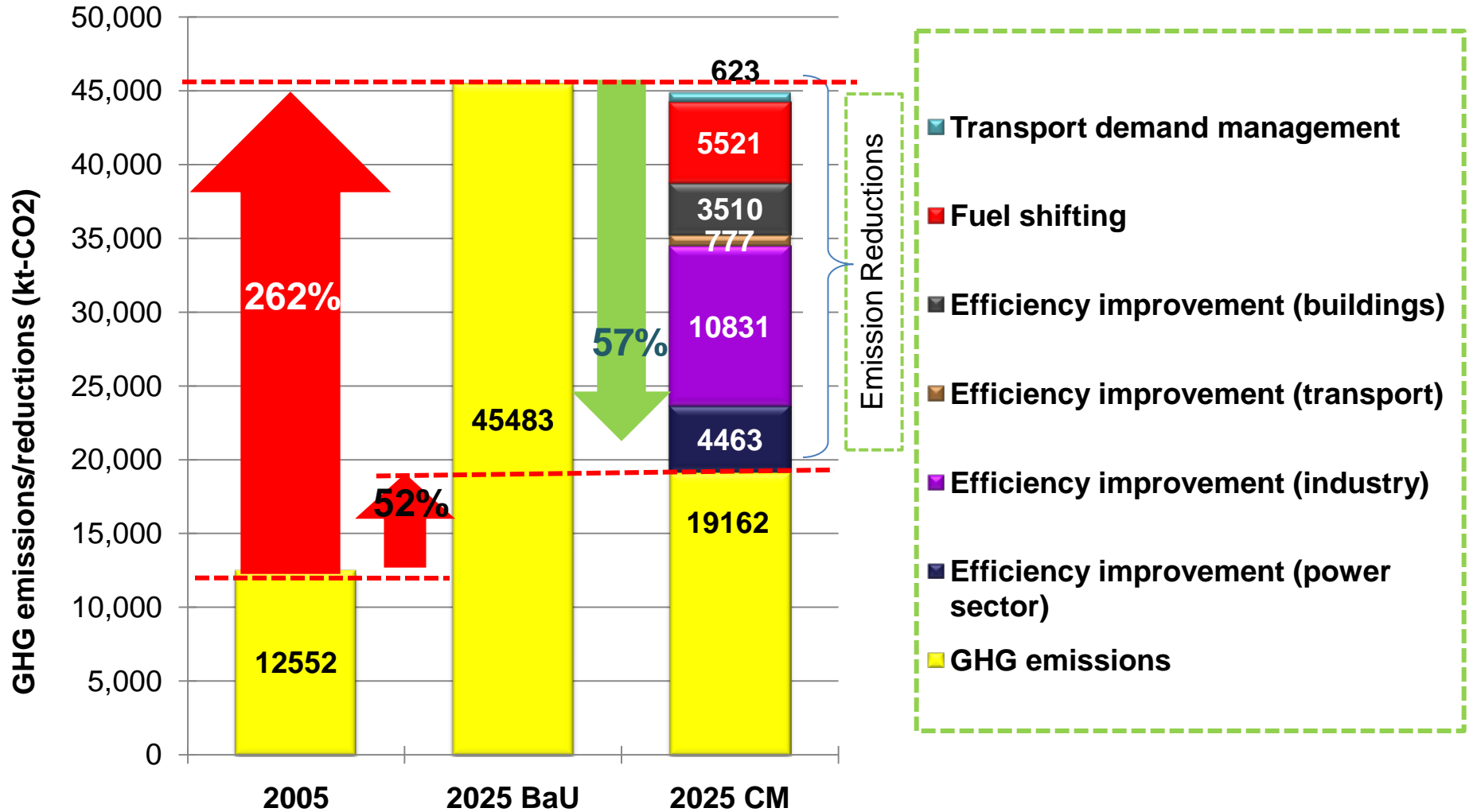
Energy Demand By Sector



Energy demand in IM is projected to increase from **3,286 ktoe** (toe: tonne oil equivalent) in 2005 to **10,936 ktoe** in 2025 for the BaU case (BaU: business as usual)

Industry is expected to be 6,635 ktoe and will maintain the largest share of 61%.

Potential Mitigation in IM



Low Carbon Cities Policy Package

Buildings

- Environmental performance standard and evaluation of buildings
- Adjustment of tax rate of fixed asset tax
- Low interest loans to investment to energy efficient buildings

- Environmental performance standard of equipments
- Environmental labeling
- Education and information service
- Green purchasing policy

- Subsidy to introduce photovoltaic power generation system

Transport & Land use

- Urban planning
- Transport planning
- Tax rate adjustment to fixed asset
- Investment to public transport

- Environmental performance standard of vehicles
- Tax rate adjustment to energy efficient vehicles
- Promotion of bio fuel

Industry

- Subsidy to investment to energy efficient equipments
- Promotion of technology transfer

- Incentive to introduce energy efficient equipments & buildings
- Incentive to introduce renewable energy

- Controlling urban growth & choice of transport mode

Energy efficiency improvement

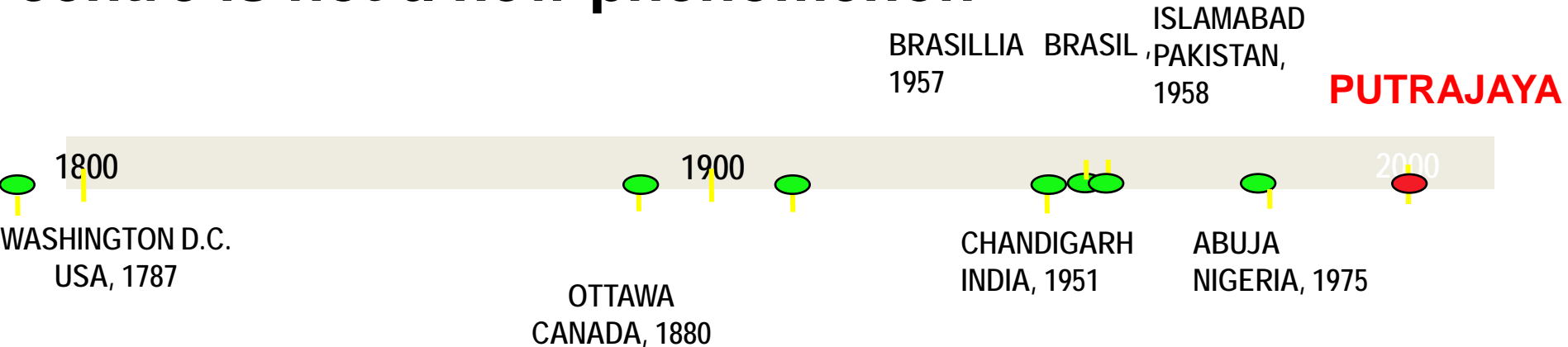
Lowering CO₂ intensity

Transport demand control

Mitigation of GHG emissions from Iskandar Malaysia

Creation of a new Federal Government Administrative Centre

Planning for a new Governmental administrative centre is not a new phenomenon










Recent cases -

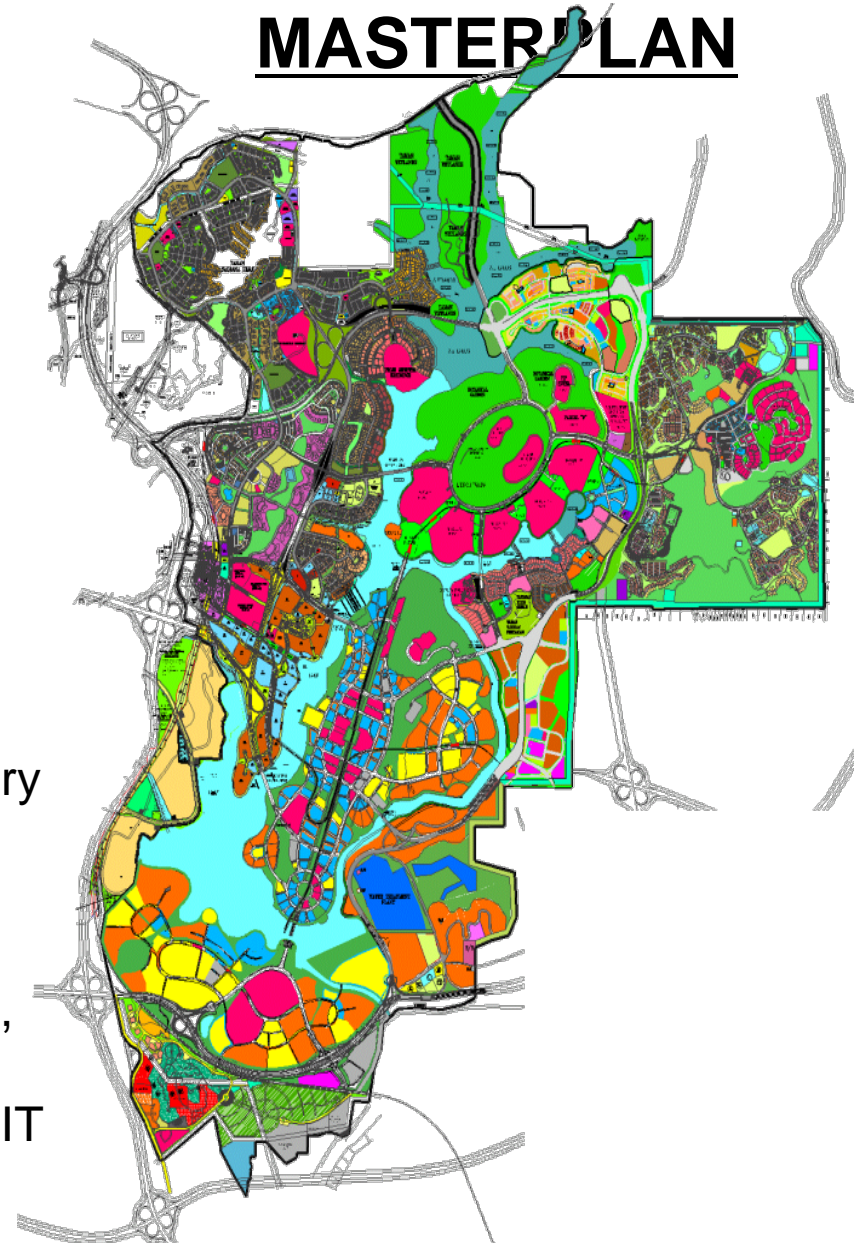
- Pinmana, Myanmar which is located about 320km north of Yangon
- Proposed South Korea's new capital 150km south west of Seoul in Yeongi Gongju region.

LOCATION OF PUTRAJAYA



THE PUTRAJAYA MASTER PLAN

	Government	- 5.8%
	Residential	- 23.8%
	Commercial	- 2.8%
	Public Facilities	- 9.2%
	Utility & Infrastructure	- 21.2%
	Open Space	- 37.0%
	Civic and Cultural	- 0.2%



- The Putrajaya Master Plan is an exemplary exercise of multidisciplinary professional partnership
- Town planners, urban designers, architects, landscape architects, engineers, lake and wetland engineers, hydrologist, environmental managers, land surveyors, IT managers and many other professionals

Green City -Main Focus

- This research will be one that supports the current National Initiative towards promoting **Putrajaya as a Green City**. Elements of “Green” consist of many factors and the integration of them could realize the “Green” City.
- Among them, however, we focus on the following three main sectors which we will be studying, namely; the
- (1) Mitigation of thermal environment of Putrajaya, in order to realize **a Cooler Putrajaya**,
- (2) Reduction of CO₂ emission to create a **Low Carbon Putrajaya**, and
- (3) Sound Solid Waste Management of Putrajaya to realize **a 3R Putrajaya**

3 Main sectors

- This Putrajaya Green City Brochure will consists of 3 main sectors:
 - A Cooler Putrajaya
 - A Low Carbon Putrajaya
 - Putrajaya With 3R (Reuse, Reduce & Recycle)

A Cooler Putrajaya

- Lowering the peak temperature in Putrajaya City by **2-3 degrees Celsius**, by introducing various countermeasures for heat Island effect, such as **urban greening, green roof and design of urban air ventilation.**
- Lowering sensible temperature by introducing **water mist spray, roadside tree and sunbreak.**

A Low Carbon Putrajaya

- Identifying the reduction potential of CO₂ emitted within Putrajaya (Base year-2005), and by conducting snapshots of two scenarios:
 - Scenario of CO₂ emission in Business as Usual (BaU) case
 - Scenario of CO₂ emission with Low Carbon Measures implementation
- Identify the Low Carbon Measures which can be taken by relevant agencies towards encouraging the public to live a low carbon lifestyle.
- Identify and recommend policies which can be implemented by the Putrajaya Corporation (PJC) towards creating a Low Carbon Putrajaya.

Putrajaya with 3R (Reduce, Reuse & Recycle)

- To propose appropriate **management system including 3R activities** to reduce the amount of disposed solid waste and volume of GHG emitted **from waste collection, recycling and treatment as well as disposal system.**
- The quantitative targets in 2030 are:
 - Less than 50% of total generated waste to be landfilled.
 - 50% reduction of GHG emission per generated waste from 2005.
- Developing SWM Scenarios and identify policies to achieve both targets.



Overall Structure of C-ExSS

Demography & Economy

- Economic growth rate
- Relocation of government offices
- Migration

Life style

- Income
- Expenditure
- House type
- Employment rate

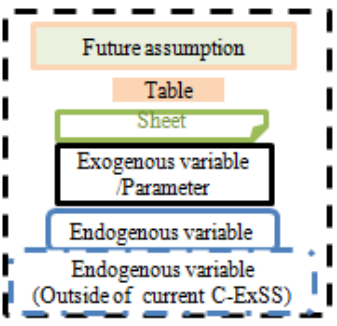
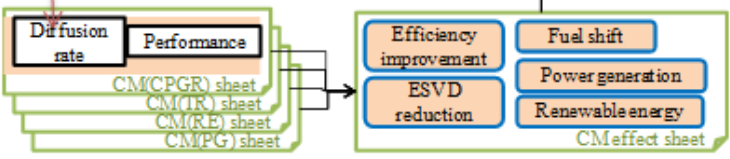
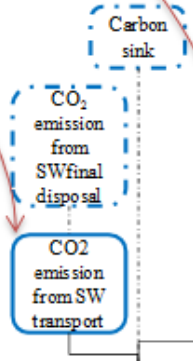
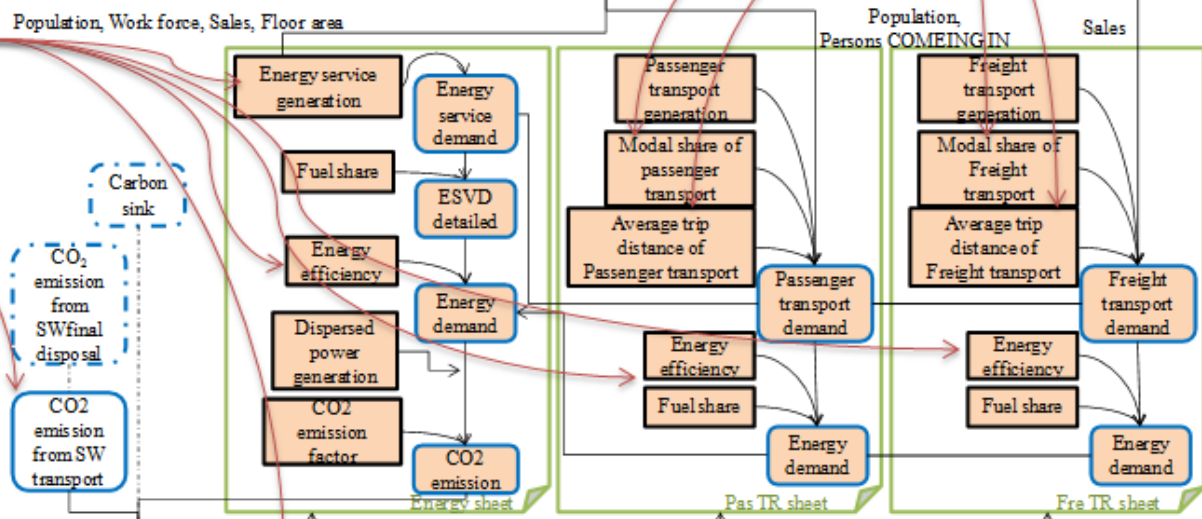
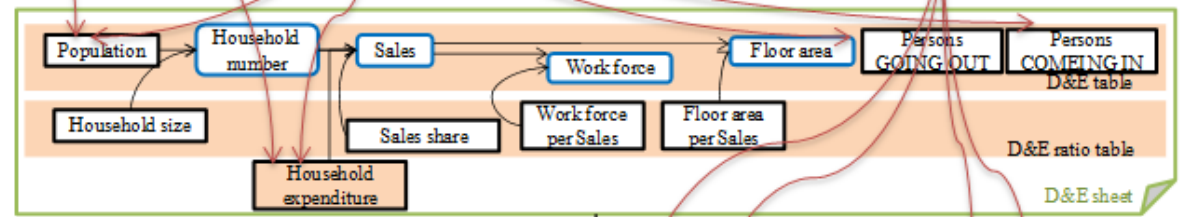
Transport

- Urban/rural structure change
- Infrastructure development
- Behavioral change

Energy consumption

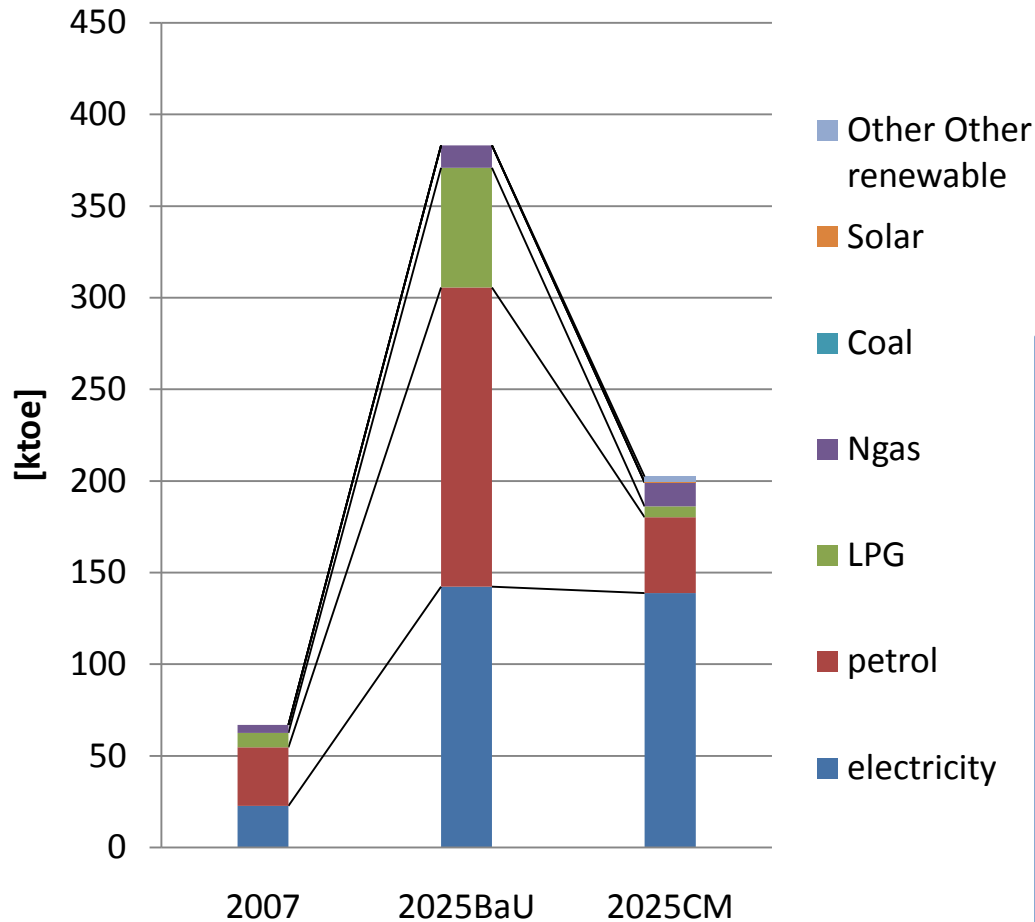
- Economic growth
- Technological development
- Awareness of people
- Behavioral change

Solid waste



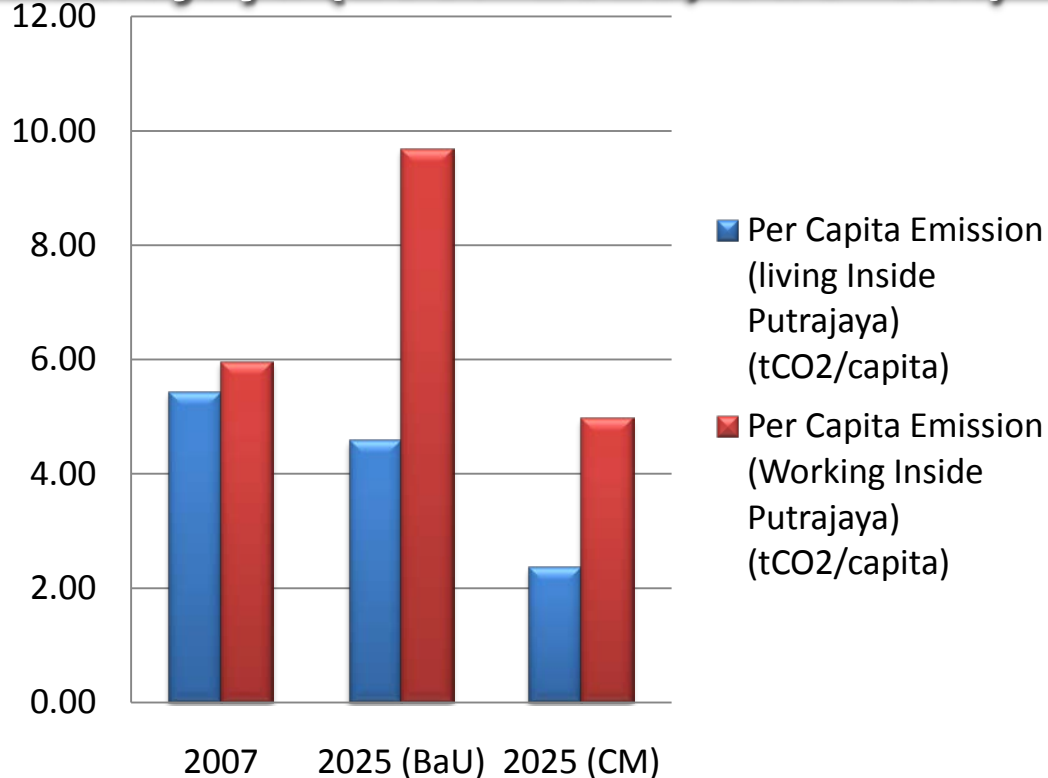
Final Energy Demand by Fuel Types in the Scenarios

Final energy demand in the scenarios by fuel type



- Energy Demand in Putrajaya by Fuel Type is mainly Dominated by Electricity.
- From 2025 BaU case to 2025 (CM) case the reduction in Petrol will be the most, Based on through Model Shift into the Passenger transportation Sector.
- We have not included the possibility of Solar and energy usage in this calculation.

Per Capita CO 2 Emission and Emission Reduction In Putrajaya (2007-2025, BaU-CM)



➤ The per capita CO2 Emission are calculated based on 2 scenarios:

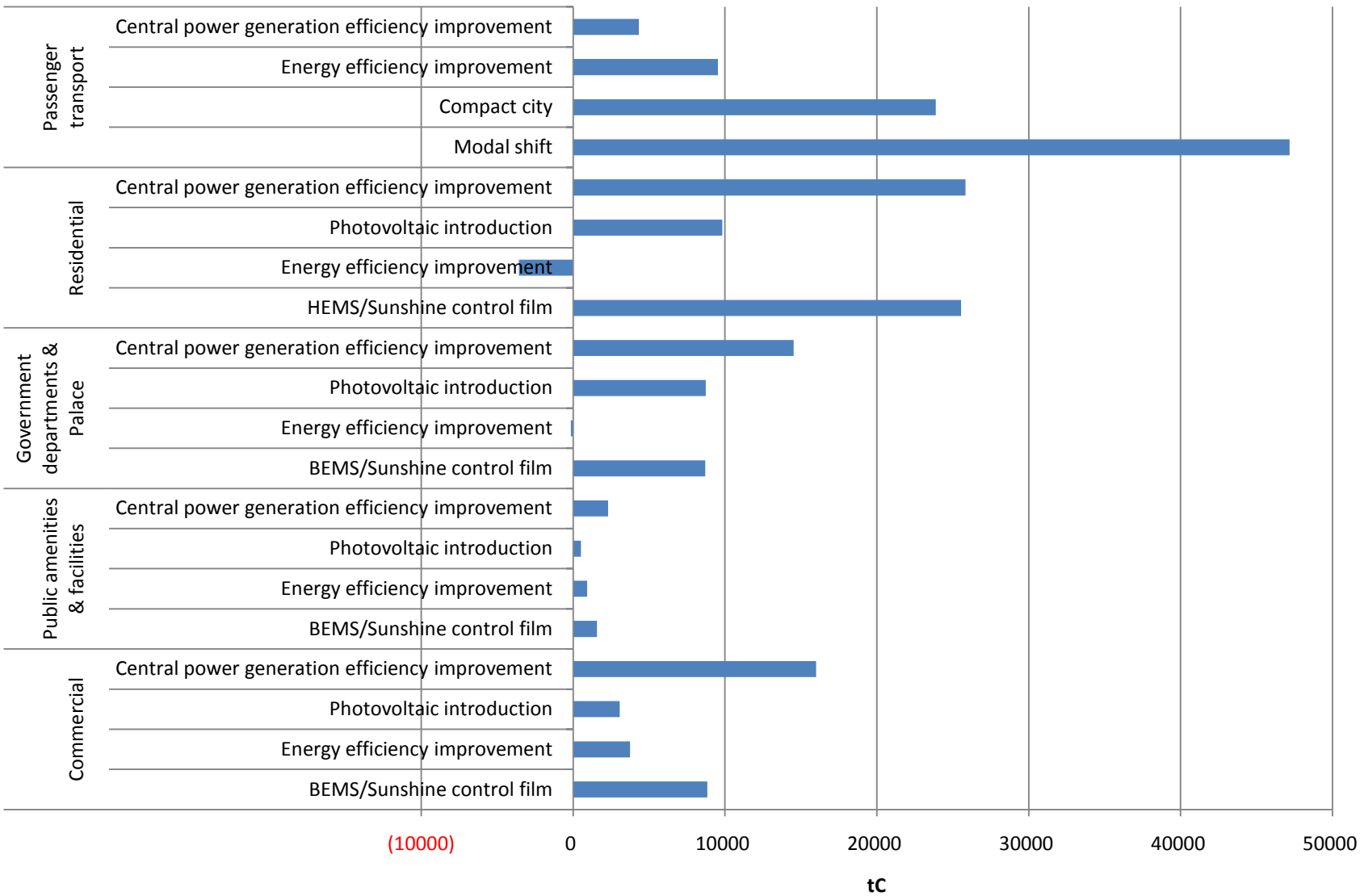
- People Living inside Putrajaya
- People Working Inside Putrajaya

➤ The Per capita emission for People Working inside Putrajaya is higher than the Persons living in Putrajaya based on the Energy use in the Gov and Commercial Sectors.

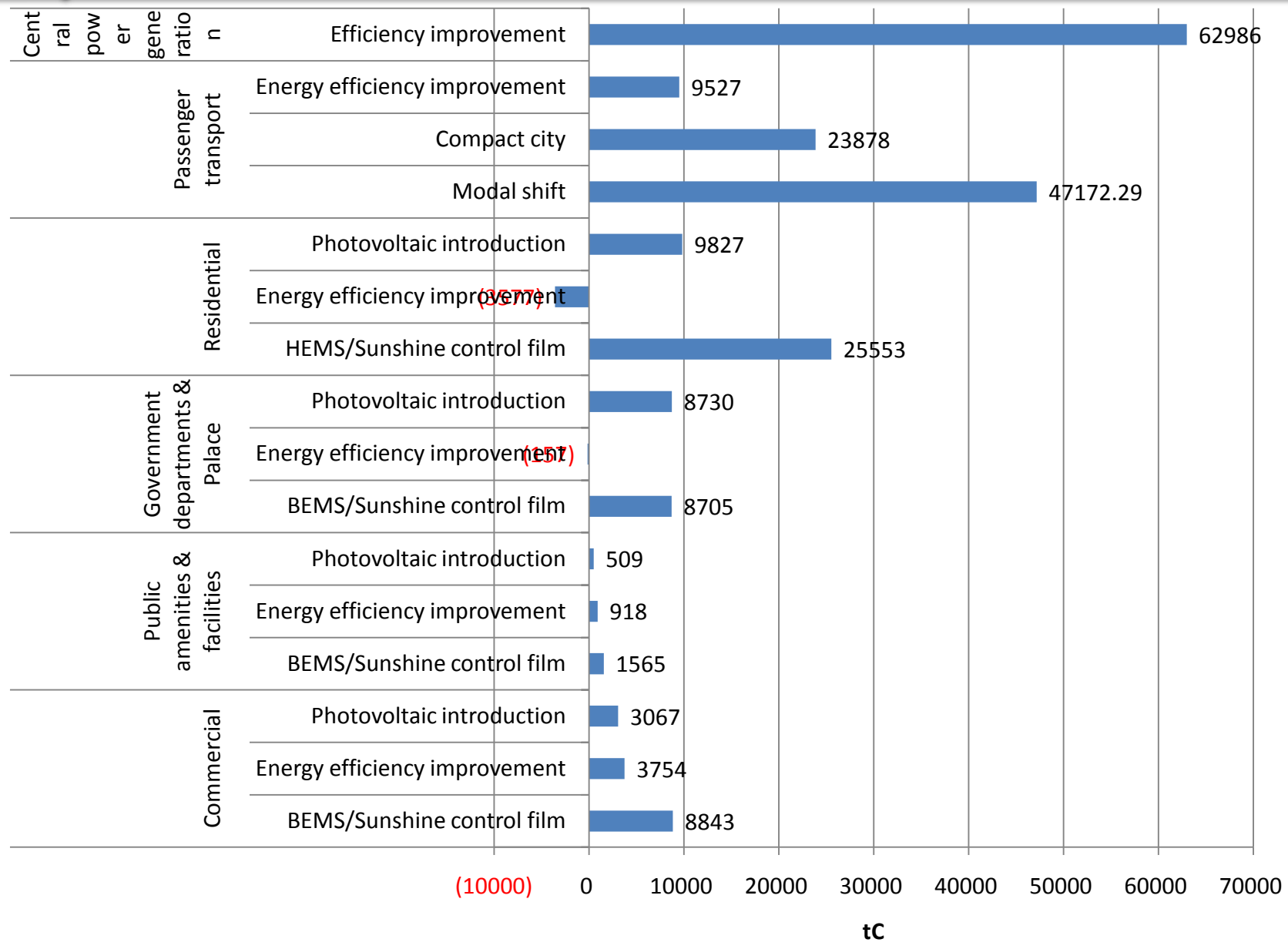
	2007	2025 (BaU)	2025 (CM)
Per Capita Emission (living Inside Putrajaya) (tCO2/capita)	5.43	4.58	2.35
Per Capita Emission (Working Inside Putrajaya) (tCO2/capita)	5.95	9.68	4.97

CO2 Emission Reduction By Counter Measure

**CO2 emission reduction by countermeasures(from BaU)
(including CPG's effect in each sector)**



CO2 Emission Reduction by Countermeasures (From BaU)



Conclusion

1

- LCS Scenario development needs **national vision and political/ society commitment and input.**

2

- The use of model to **quantify this vision** into quantifiable variables – AIM model from NIES and Kyoto University

3

- **Data collection** and **Support of experts** in modelling exercise – Capacity building

4

- To realize a LCS, IM has to have **new and bold policies to encourage and promote businesses and citizens** have to take countermeasures to lower the emissions levels.

THANK YOU FOR THE ATTENTION.

