

Development of Low Carbon Society Scenarios for Iskandar Malaysia

AIM workshop

Pullman Hotel Bangkok Nov 19, 2010



Japan International Cooperation Agency

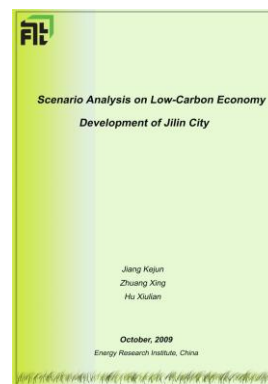
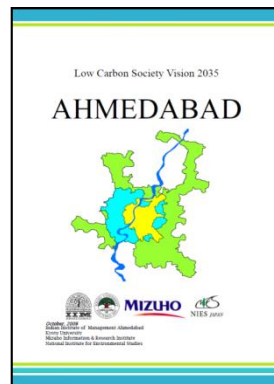
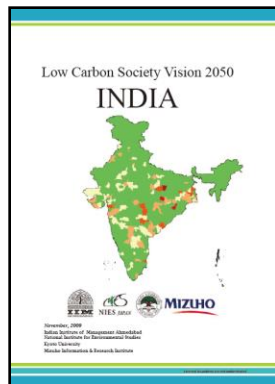
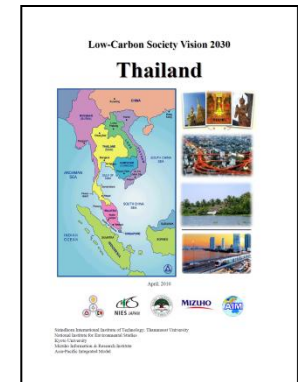
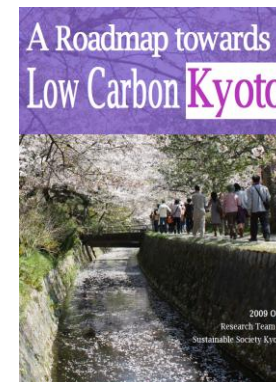
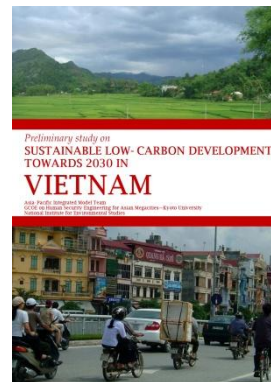
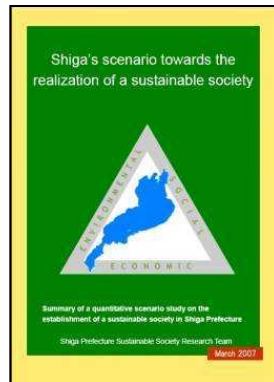
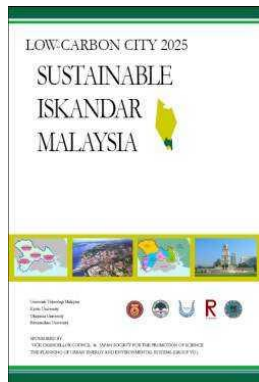
Technical Cooperation Project

UTM, IRDA, PTHM and JPBD Malaysia

Kyoto U, Okayama U and NiES Japan

On going Region specific studies

Communication and feedbacks of LCS study to real world



POINTS OF DISCUSSION

- Development LCS sustainable future
 - Political will and Institutional commitment
 - Modeling experts – External and internal
- Research sponsorship and expertise SATREPS project
- How to communicate research project with stakeholders/
Policy makers
- What are the current sustainable issues ?
 - to obtain view points from policy makers and implementing agency of the research project.

LCS Scenario development

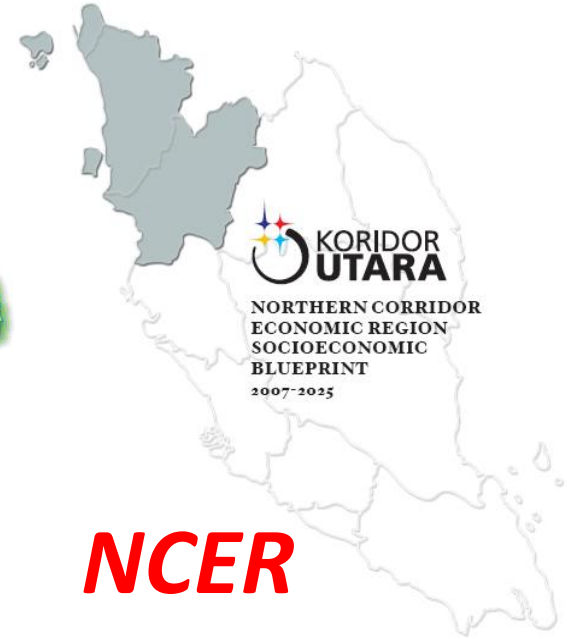
- Development LCS sustainable future
 - Quantification of variables
 - Modeling experts – External and internal
 - Vision - Political will and Institutional commitment

Why IM?

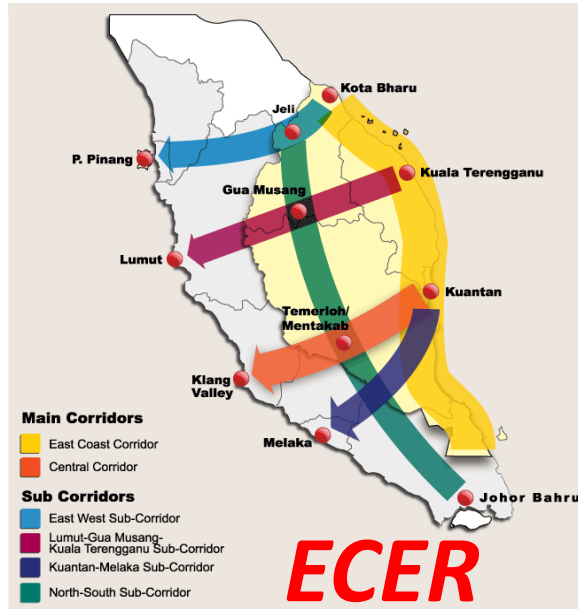
MALAYSIA: KEY ECONOMIC DEVELOPMENT CORRIDORS



IM



NCER



ECER



SCORE



SDC

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**



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

CASE STUDY –ISKANDAR MALAYSIA

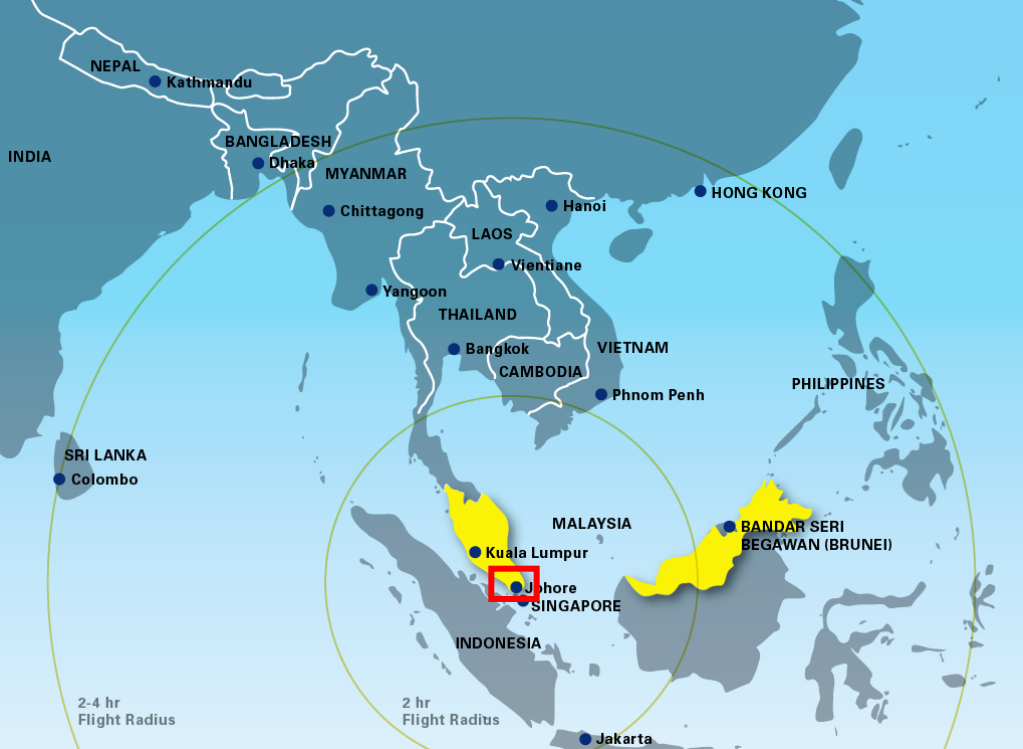


Case study

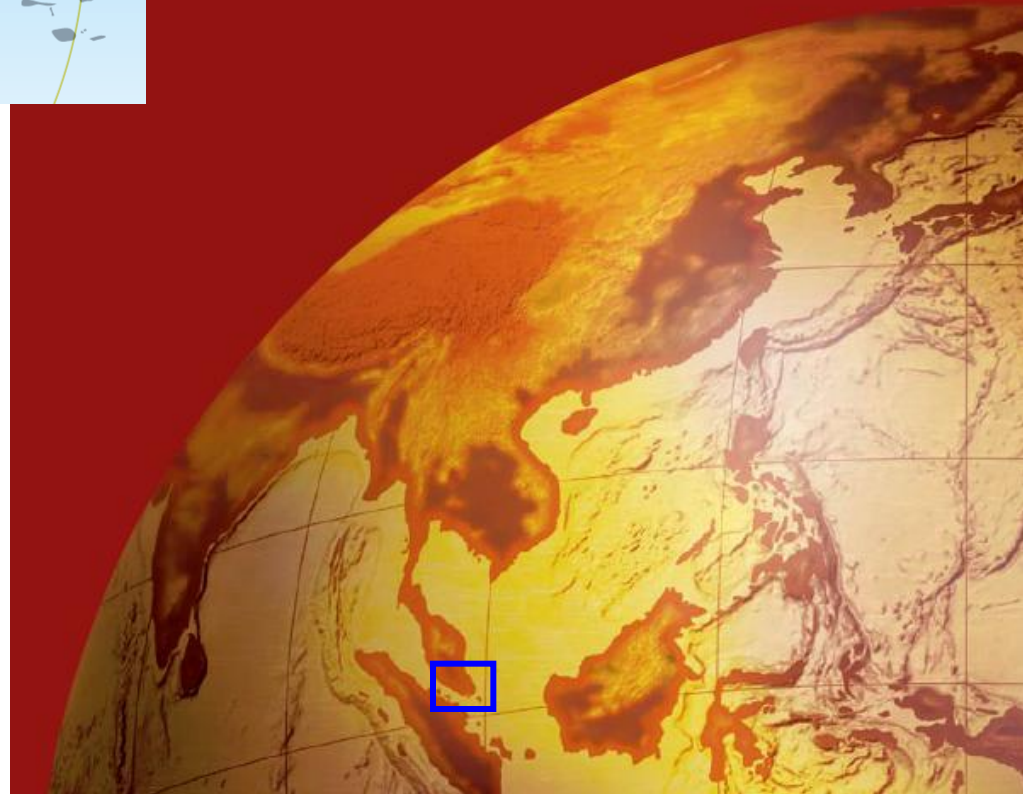
Iskandar Development Region

2,216 km²

Population 1,353,200



**Iskandar
Development
Region**



The Iskandar Malaysia Vision

Economic Growth

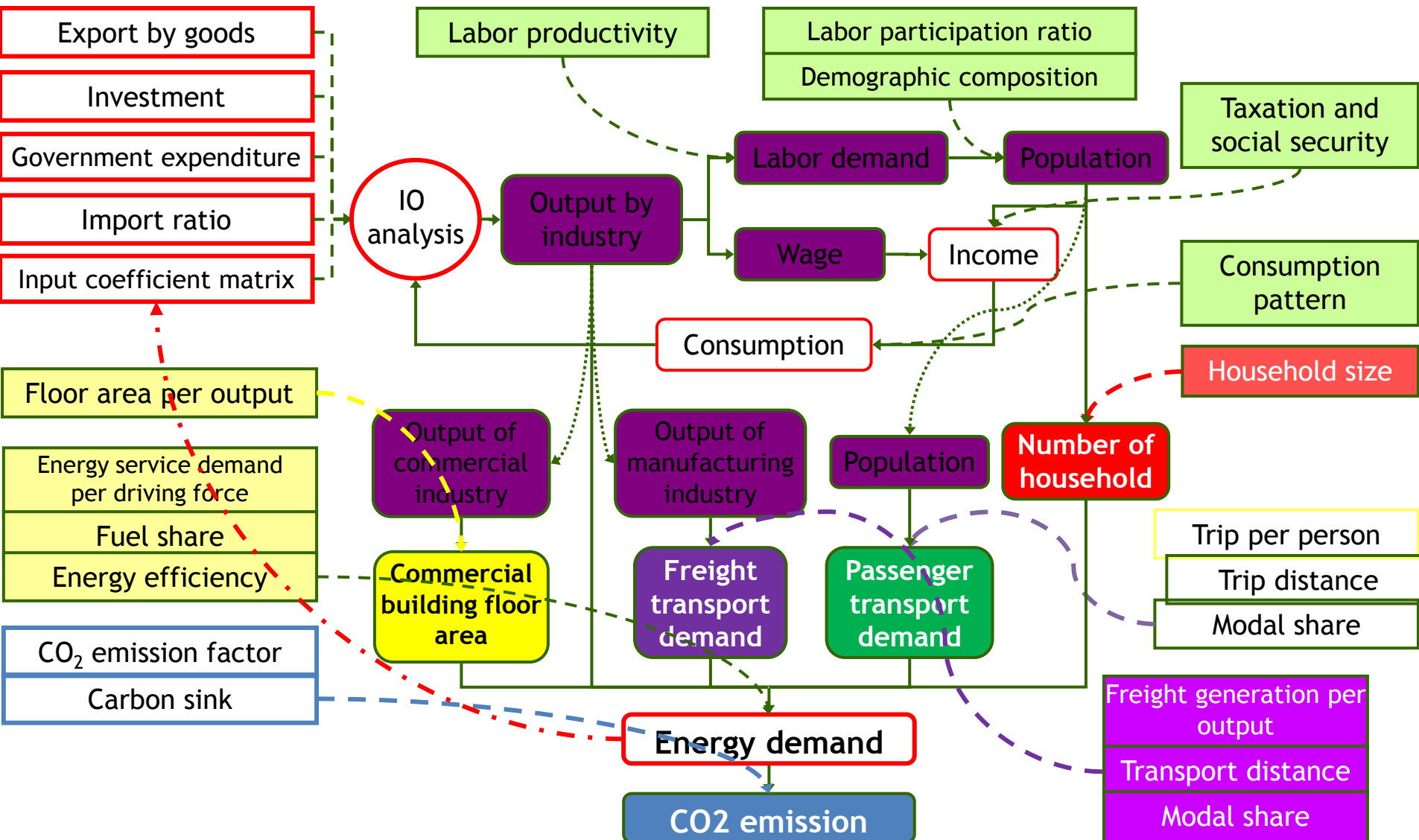
“To develop Iskandar Malaysia into a strong and sustainable metropolis of international standing”

| | 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 |

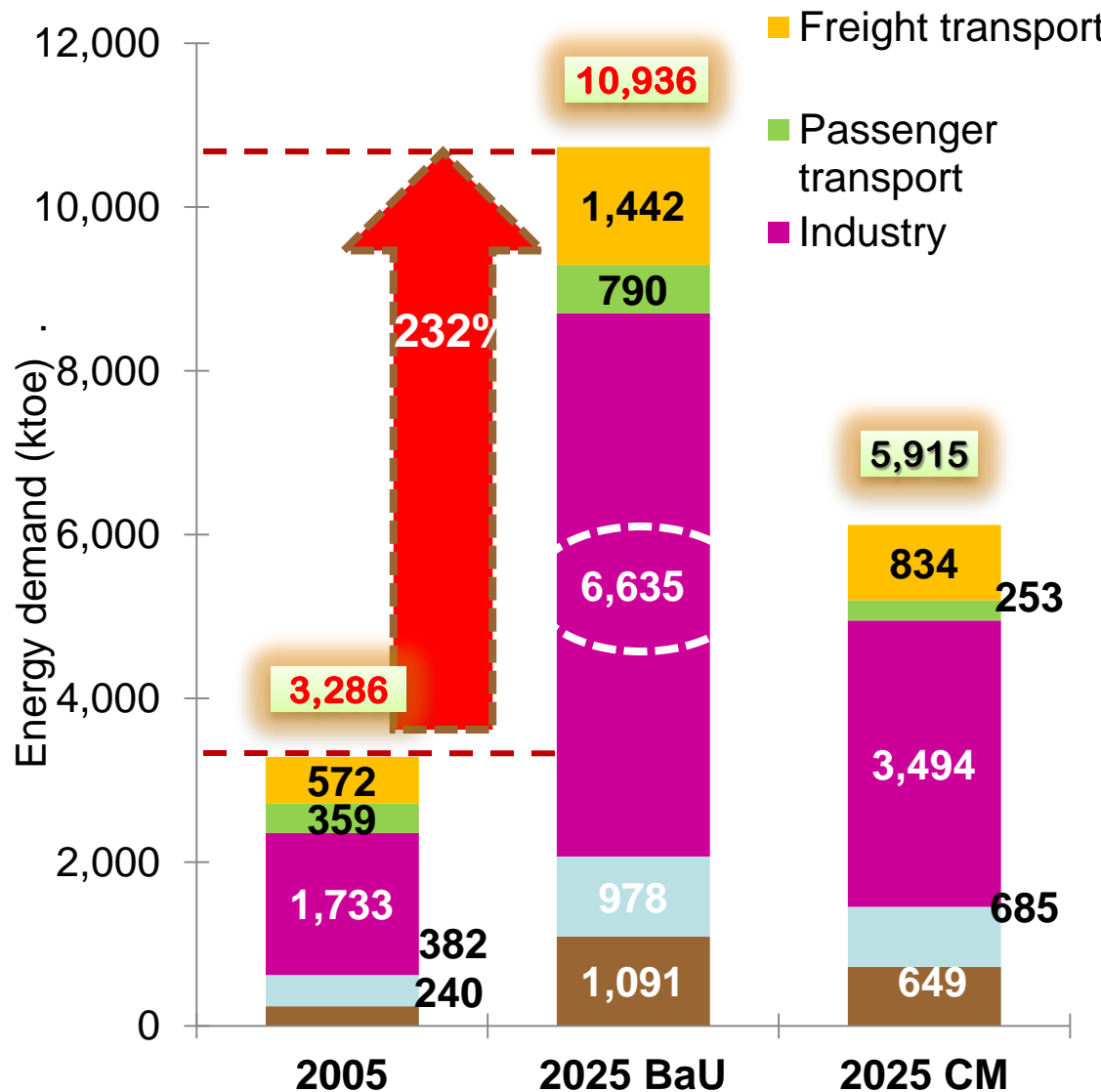
Socio Economic Scenario of IM

| | 222005 | 2025 | 2025/2005 |
|---|-----------|-----------|-----------|
| Population | 1,353,200 | 3,005,815 | 2.2 |
| No. of households | 317,762 | 751,454 | 2.4 |
| GDP (mil RM) | 37,641 | 176,224 | 4.7 |
| GDP per capita (RM/capita) | 27,817 | 58,628 | 2.1 |
| Gross output (mil RM) | 121,431 | 474,129 | 3.9 |
| Primary industry (mil RM) | 1,860 | 5,375 | 2.9 |
| Secondary industry (mil RM) | 83,502 | 263,444 | 3.2 |
| Tertiary industry (mil RM) | 36,069 | 205,309 | 5.7 |
| Floor space for commercial (mil m²) | 6.8 | 19.3 | 2.8 |
| Offices | 1.3 | 1.7 | 2.9 |
| Shops | 5.7 | 16.3 | 2.9 |
| Hospitals & Schools | 0.6 | 1.2 | 2.1 |
| Passenger transport demand (mil p-km) | 3,816 | 8,677 | 2.3 |
| Freight transport demand (mil t-km) | 1,652 | 5,303 | 3.1 |

LCS scenario study using ExSS



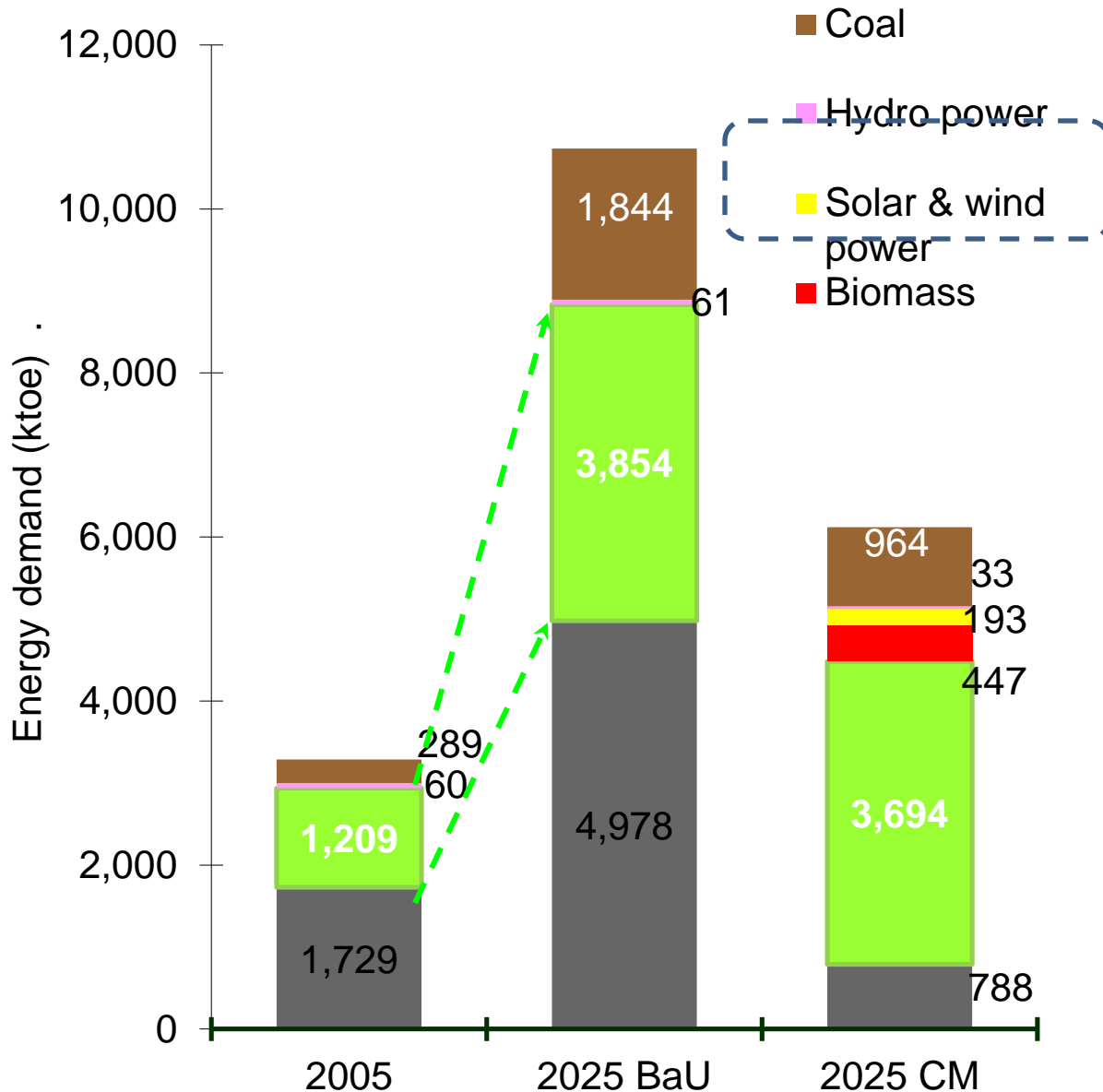
Energy Demand By Sector



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%.

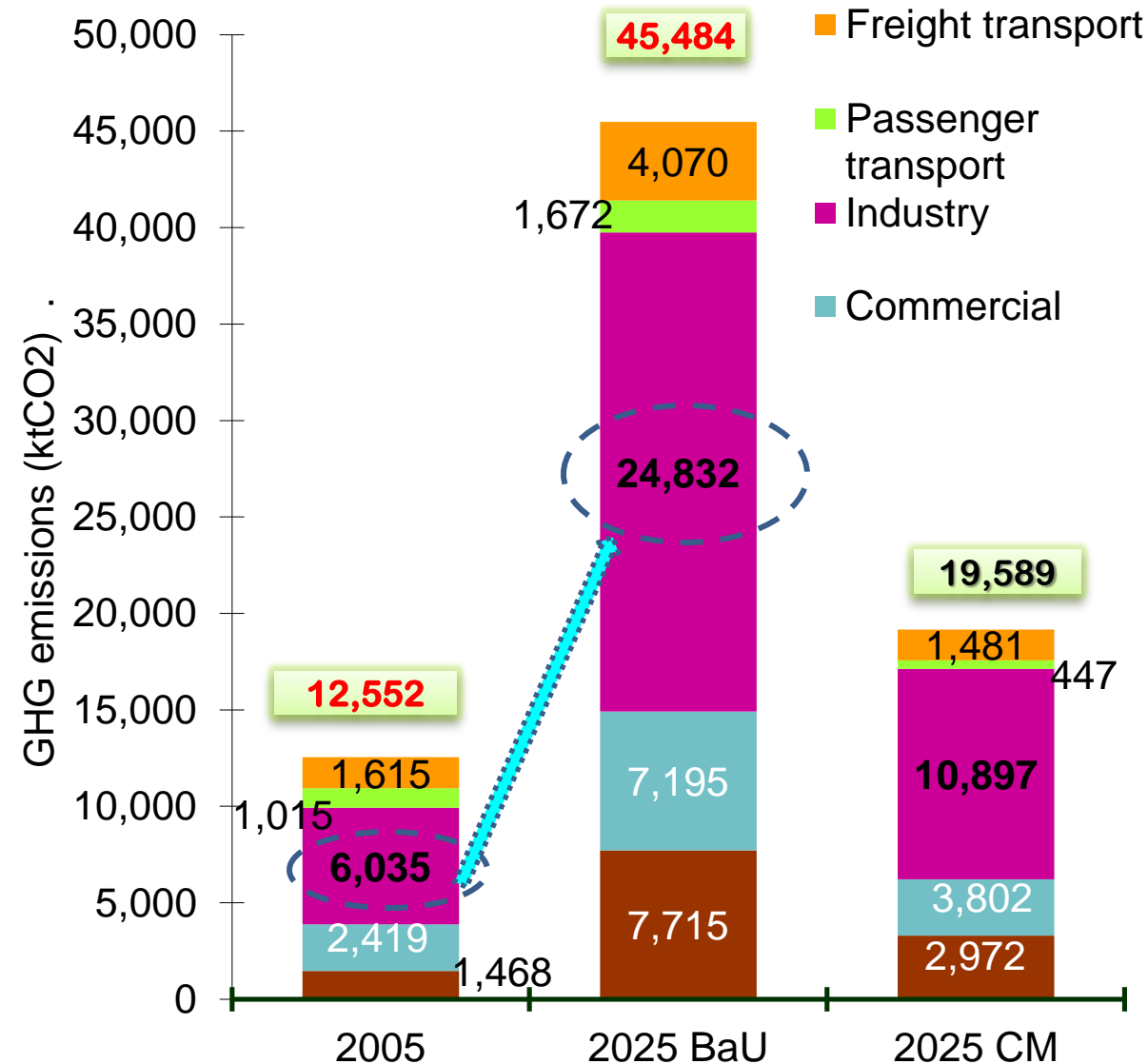
Energy Demand by Energy Sources



Increase in demand for natural gas (3.2 times) the consumption in 2005.

Energy sources such as **biomass, solar and wind power** will be newly introduced for primary energy in 2025 **CM case**.

GHG Emission By Sector

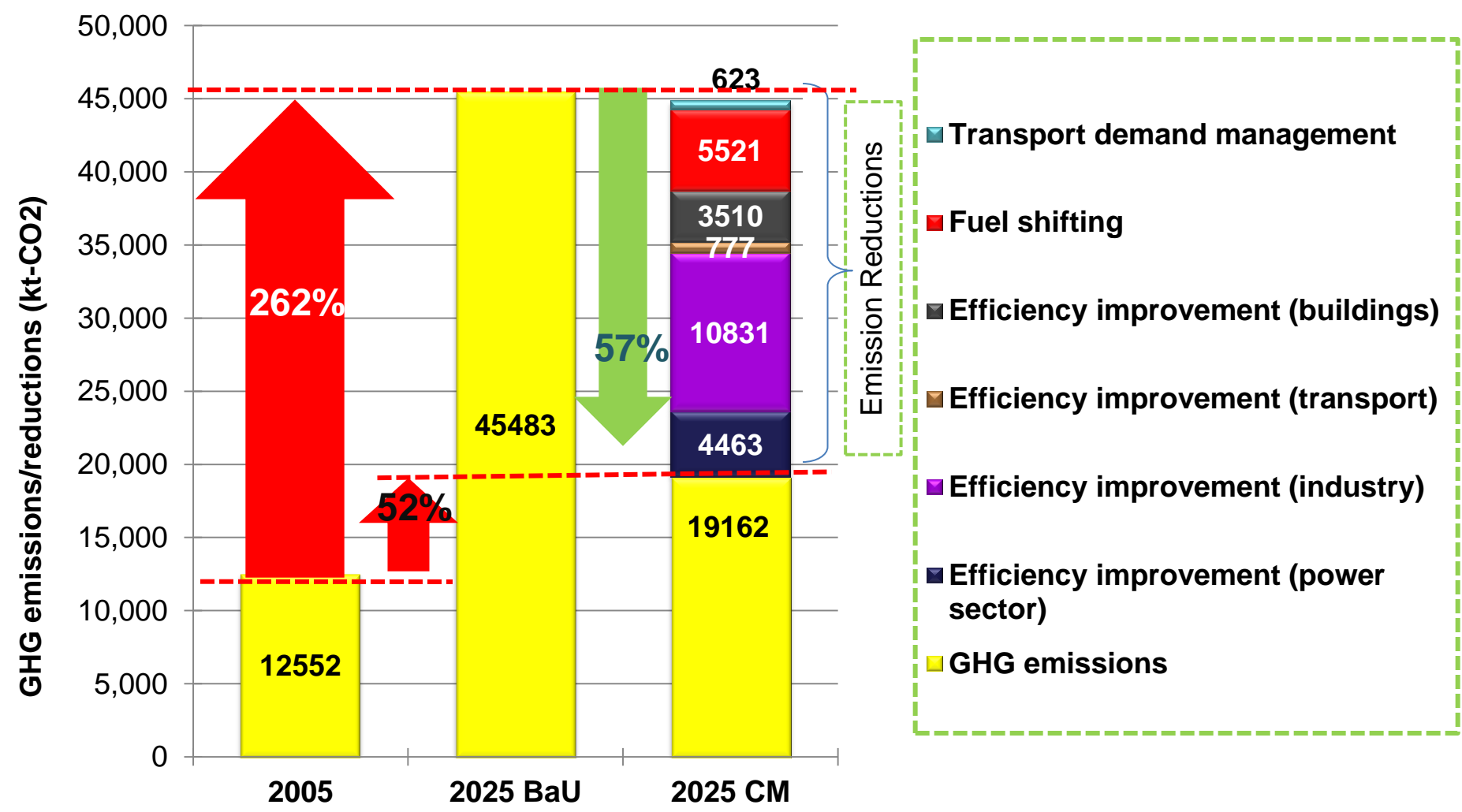


GHG Emissions in IM are projected to increase from 12,552 ktoe CO₂ (2005) to 45,484 ktoe CO₂ (2025 BaU)

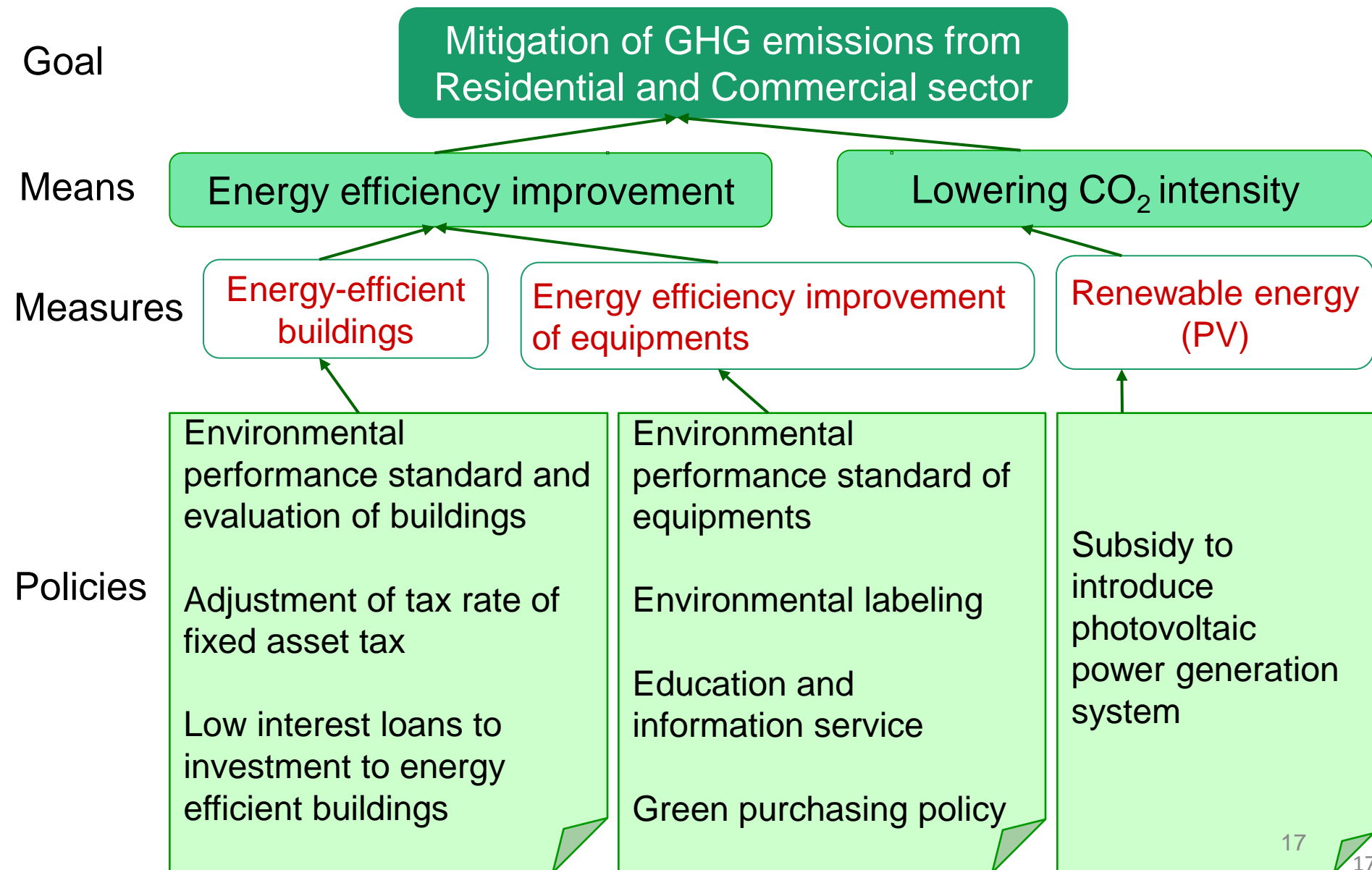
Industry Sector will increase 4.1 times in total as compared to 2004 in GHG emission . (54% of total GHG emission in 2025 BaU)

GHG emissions per capital : 9.3 tonnes of CO₂ /capita (2005) to 15.1 tonnes /capita (2025 BaU), with CM will be reduced to 6.5 tonnes of CO₂/capita.

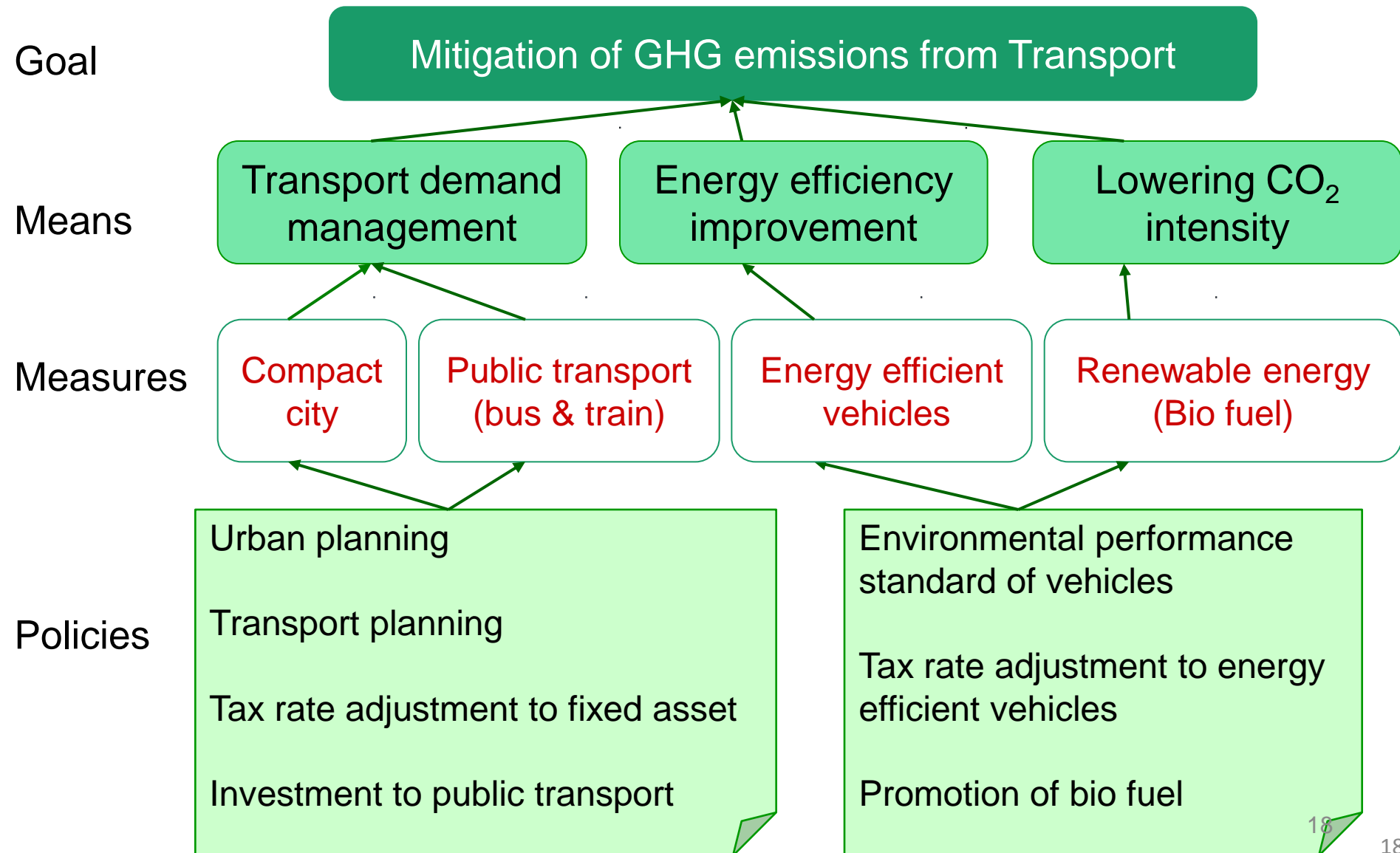
Potential Mitigation in IM



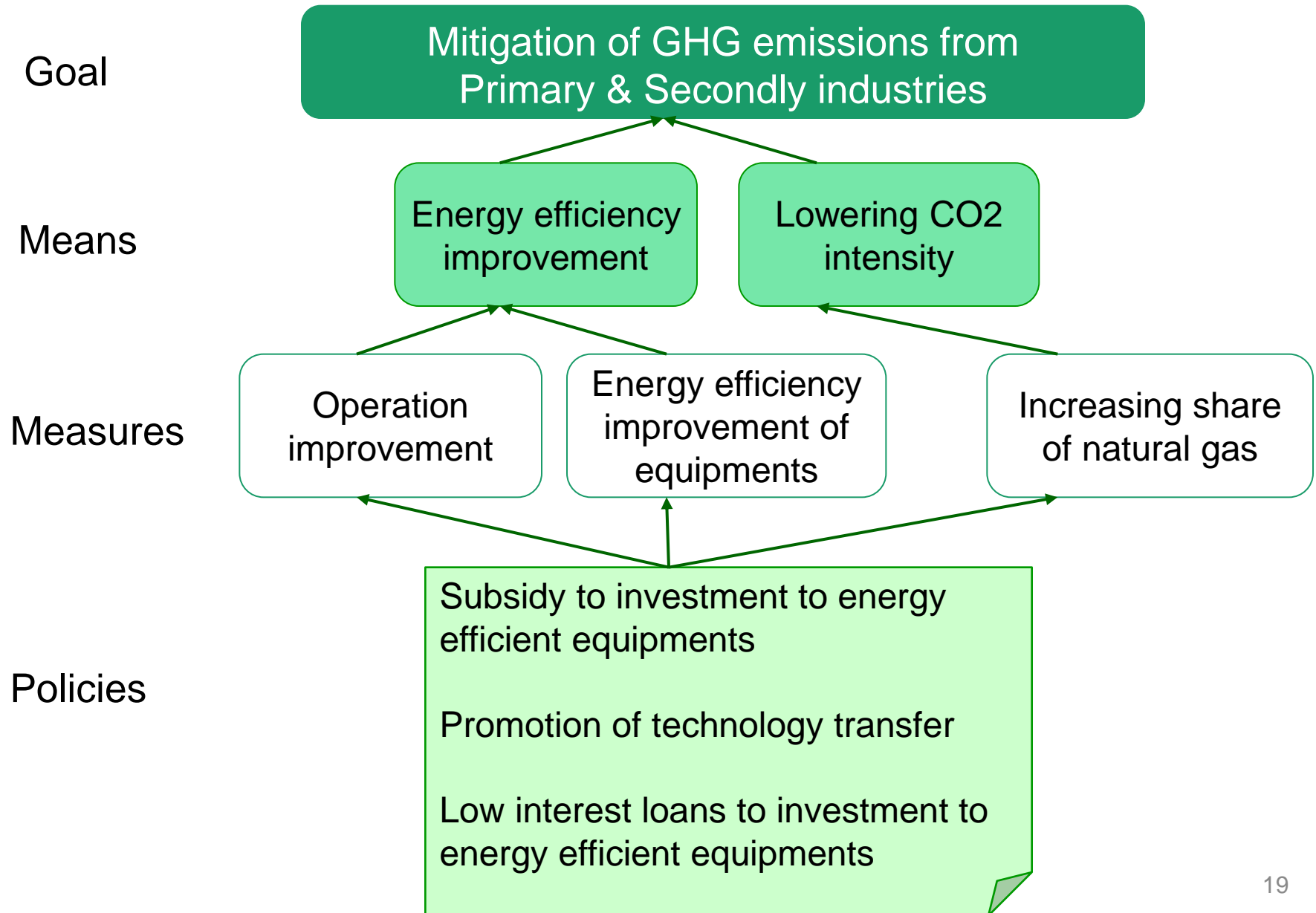
Mitigation measures and policies for buildings (residential and commercial)



Mitigation measures & policies for transport & land use



Mitigation measures & policies for industry



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

Mitigation Measures



RESIDENTIAL & COMMERCIAL SECTOR

- Energy Efficiency (EE) Improvement (**Buildings & equipments**)
- Lowering CO₂ Intensity (**Renewable Energy – Photovoltaic power generation system**)



TRANSPORTATION (FREIGHT & PASSENGER)

- Transport Demand Management (**Improvement of Public Transportation Sector**)
- EE Improvement (**Hybrid Vehicles**)
- Lowering CO₂ Intensity (**Renewable Energy- Bio fuel**)



INDUSTRY & POWER SECTOR

- EE Improvement – (**Improvement in Operations & Equipment, Promotion of Technology Transfer**)
- Lowering CO₂ Intensity (**Increase share of Natural Gas Usage**)

RESEARCH PROJECT SPONSOR

- SATREPS PROJECT
- STAKEHOLDERS
 - IRDA
 - TOWN AND COUNTRY PLANNING DEPARTMENT
 - MALAYSIAN GREEN TECHNOLOGY CORPORATION
 - UTM

What is the SATREPS (Science and Technology Research Partnership for Sustainable Development)

- **SATREPS is a research program intending to promote international joint research through collaborating Japan's advanced S&T and Official Development Assistance (ODA), as a symbol of promoting Science and Technology Diplomacy. It is conducted in collaboration between JST and JICA supported by Ministry of Education, Culture, Sports, Science and Technology (MEXT) and Ministry of Foreign Affairs (MOFA), Japan.**
- **This program is to entails promotion of international joint research targeting global issues and envisaging future utilization of research outcomes.**
- **Implemented through collaboration with Official Development Assistance (ODA), the aim of the program is to acquire new knowledge leading to resolution of global issues.**
- **Such international joint research under the program will also address the research and development of capacity and contribute to the sustained research activities in developing countries.**

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

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

Okayama University
Chief: Takeshi FUJIWARA

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

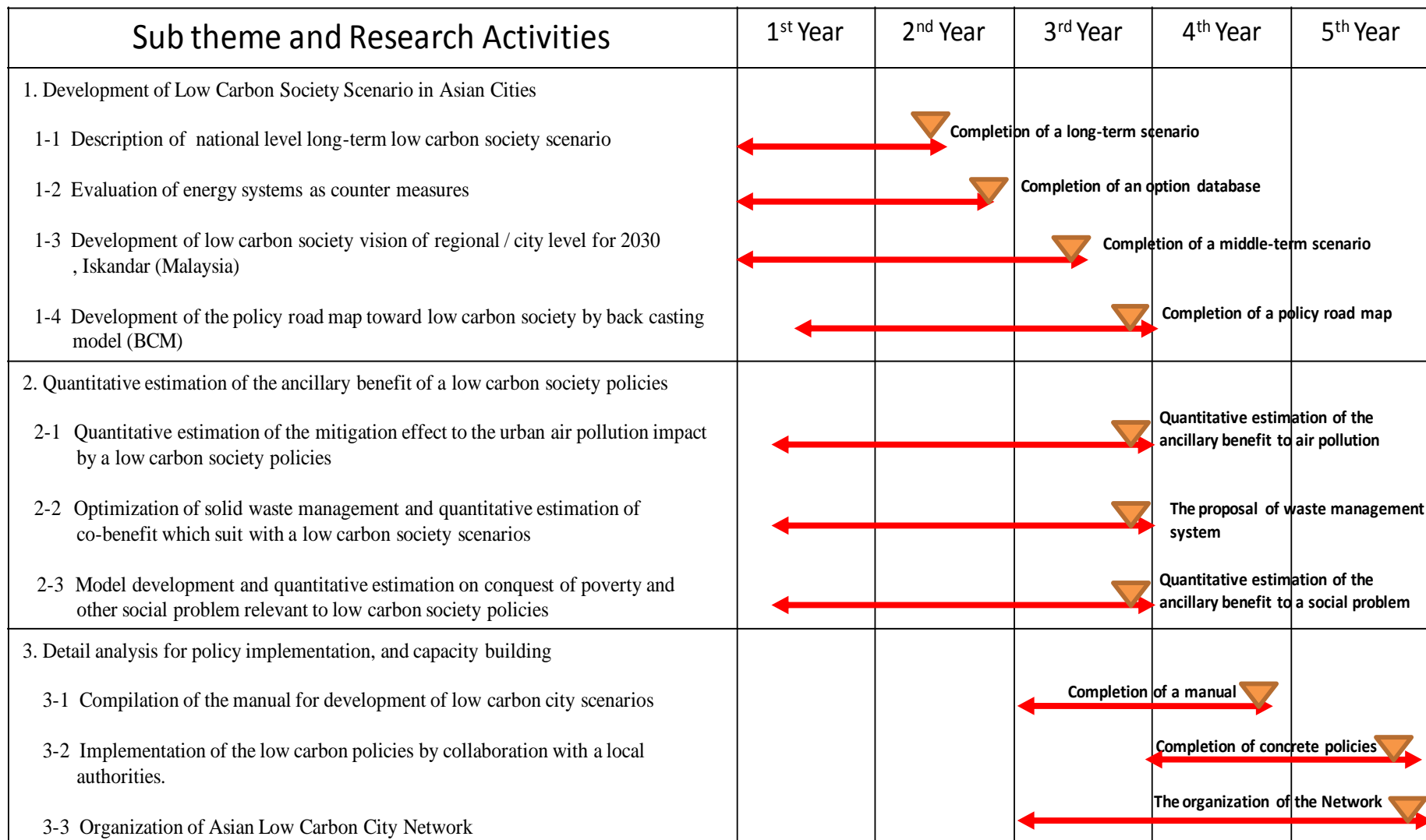
Output

- 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

GANTT CHART



Project Purpose

- To develop Methodology for creating Low-Carbon Society scenarios
- To apply research findings and use the methodology and in Malaysia, and also to disseminate the ideas to other Asian countries.

2.0 Outputs

- 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

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.

