Development of LCS Scenario in Iskandar Malaysia
(project under SATREPS research program)

HO Chin Siong, Janice Simson, Matsuoka Yuzuru, Gomi Kei

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16th AIM International Workshop

JST-JICA 2011- 2015

Technical Cooperation Project

UTM, IRDA, PTHM and JPBD Malaysia

Kyoto University, Okayama University and NIES Japan

PRESENTATION OUTLINE

1. BACKGROUND
   - Challenges and Issues
   - National Vision

ECONOMIC TRANSFORMATION PROGRAMME

2. CASE STUDY- ISKANDAR MALAYSIA
   - Comprehensive Development Plan 2025
   - Modeling output

ISKANDAR MALAYSIA

3. SATREPS PROJECT
   - JICA –JST visit
   - Workshops

Japan Science and Technology Agency

JICA Japan International Cooperation Agency

Background - MALAYSIA

ISSUES AND CHALLENGES

Rapid urbanization and industrialization

Relatively high carbon intensity dependence on fossil fuel

High Private car ownership

Low density development and urban sprawl

Low efficiency appliances

NATIONAL VISION 2010

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 Minster of Malaysia, Y.A.B Dato' Sri Mohd Najib bin Tun Abdul Razak, in COP15 last year at Copenhagen, Denmark, proposed to reduce CO_2 emission intensity in Malaysia to 40 per cent by the year 2020 compared with its 2005 levels, subject to assistance from developed countries.
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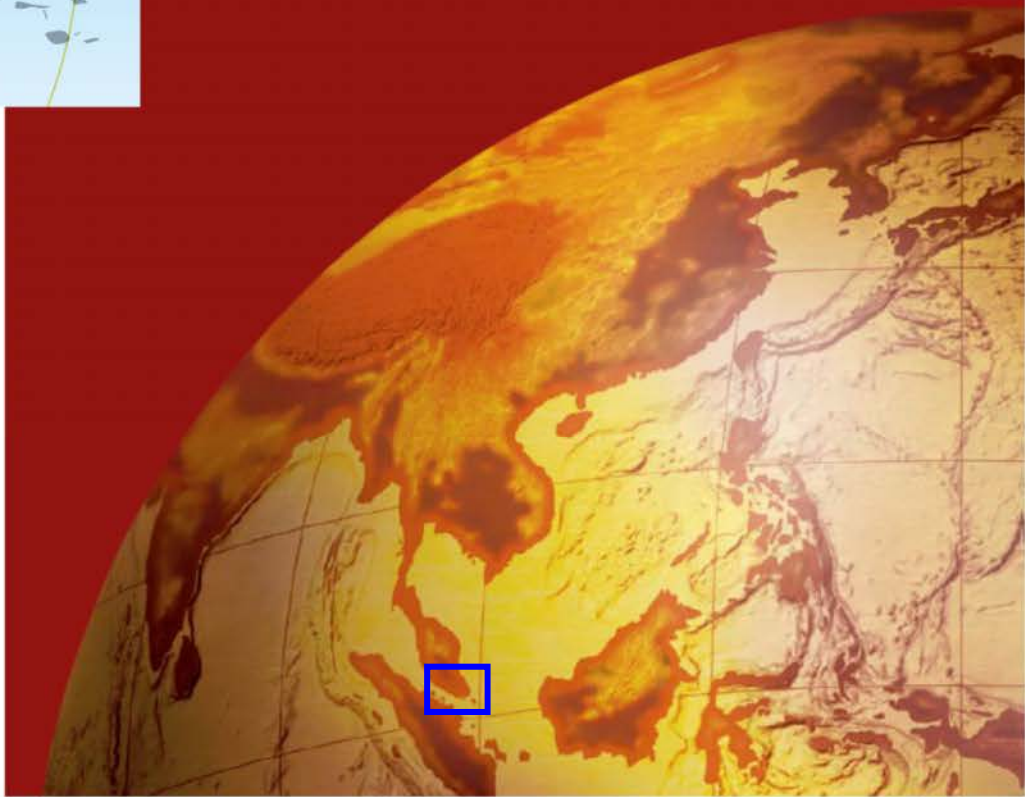
COP15 on Dec 17, 2009 at Copenhagen, Denmark

Case study

Iskandar Development Region

2,216 km^2

Population 1,353,200



Comprehensive Development Plan 2006-2025

The CDP is the principal document to guide IM's economic, social, physical development and environmental planning and management toward the establishment of a "strong, sustainable metropolis of international standards".

Downloadable at
www.iskandarmalaysia.com.my

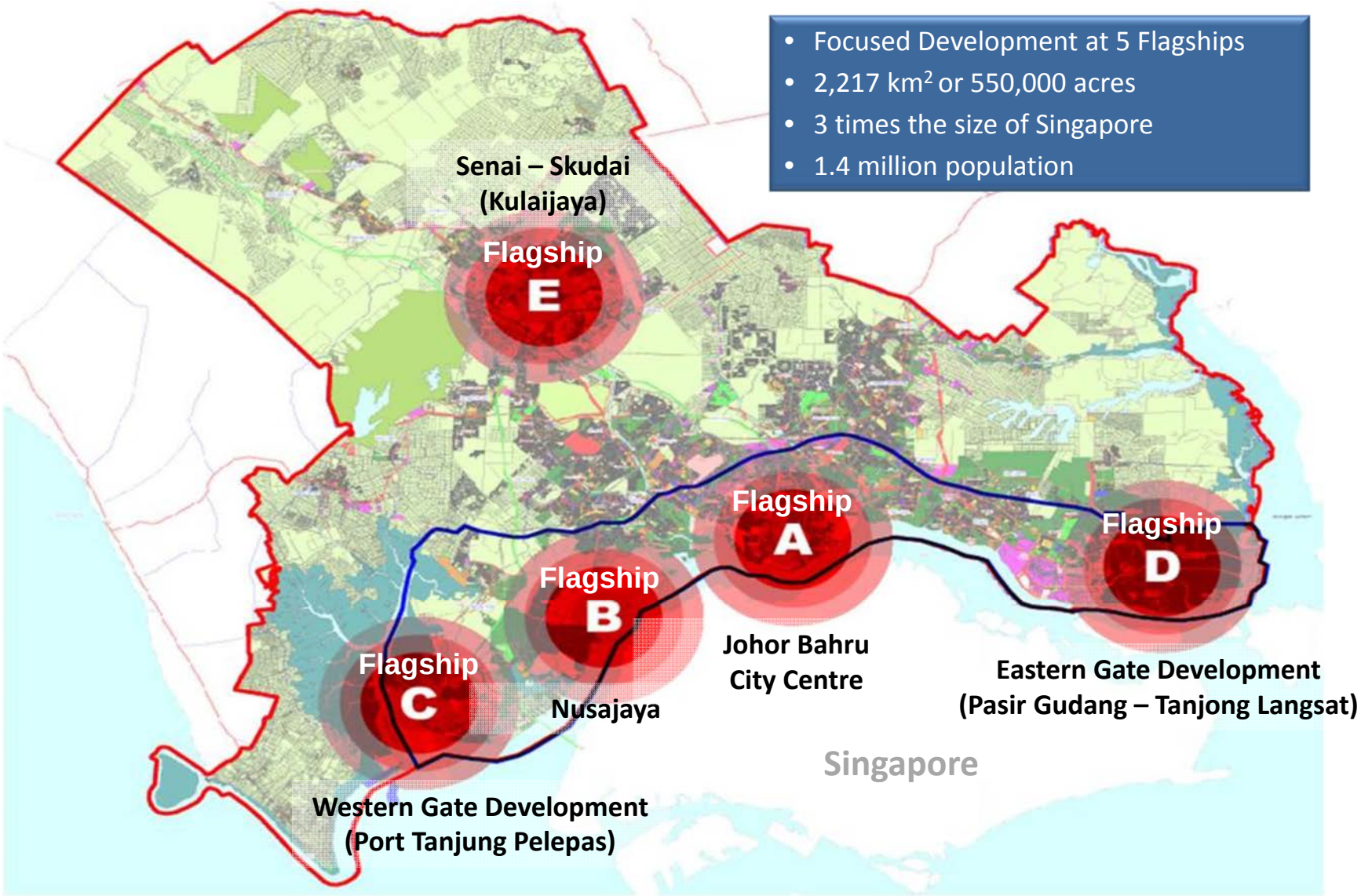
DEVELOPMENT STRATEGIES:

- ❑ **Balanced Development**
- ❑ **Protect and Conserve Nature, Historic and Open Spaces**
- ❑ **Focused Development at Areas with Existing & Adequate Infrastructure**
- ❑ **Promote Infill & Redevelopment**
- ❑ **Enhance Accessibility**
- ❑ **Promote Key Economic Areas as Focal Point For Growth**
- ❑ **Manage Regional Growth**
- ❑ **Plan for Innovative & Sustainable Infrastructure & Utilities**
- ❑ **Promote Planned Communities which produce Quality and Sustainable Neighbourhoods**

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 m^2)	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

Iskandar Malaysia: Geographical Area



Project Progress Update – Flagship A

Johor Bahru City Centre

Transformation of Johor Bahru City Centre (Planning) – Sg. Segget clean up

Johor Bahru City Centre

Sultan Iskandar Complex (Completed) - CIQ

Johor Bahru City Centre

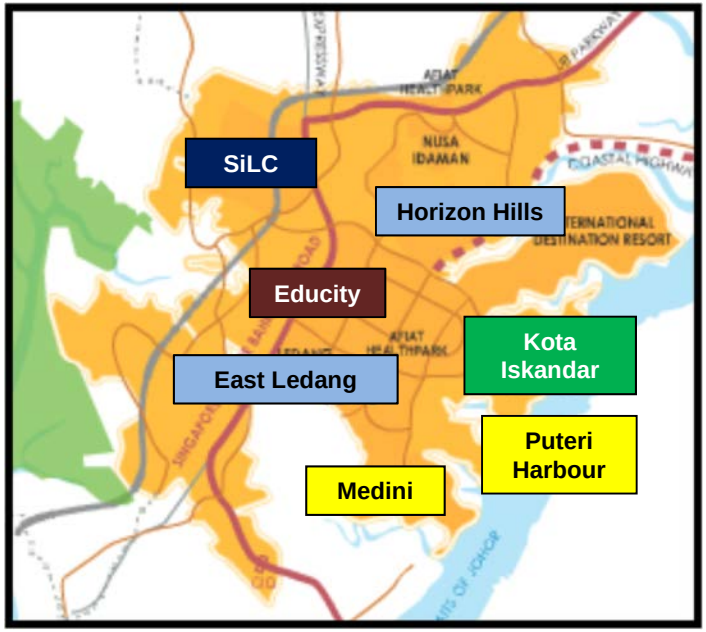
Upgrading of Komtar (In progress)

Artist Impression

Johor Bahru City Centre

Heritage Trail (Completed)

Project Progress Update – Flagship B

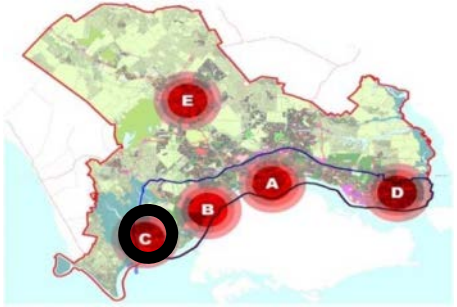


Kota Iskandar (Completed)

Puteri Harbour (In progress)

Actual Picture

Project Progress Update – Flagship C



March 2009

Western Gate Development

- ***Port Tanjung Pelepas***

MMC Corp, PTP – expansion

Western Gate Development

- ***Asia Petroleum Hub***

•One of the fastest growing container ports in the world

•4 new berths will be added by end 2010 - increasing the port's capacity by 3.2mn TEUs to 11.2mn TEUs.

• PTP is ranked 18th world busiest container seaport.

Project Progress Update – Flagship D

- ***Acerinox (Bahru Stainless Sdn Bhd)***

Construction in progress

Tanjung Langsat Area

Construction site

The main component of the Tanjung Langsat development is the 4200 acre Tanjung Langsat Industrial Complex developed by Johor Corp. It designed for Light, Medium & Heavy Industries.

Source: Johor Corp, IRDA

Project Progress Update – Flagship E

Senai - Skudai

Senai Hi-Tech Park

Senai - Skudai

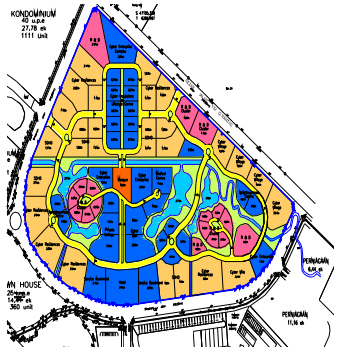
Johor Premium Outlet

Senai - Skudai

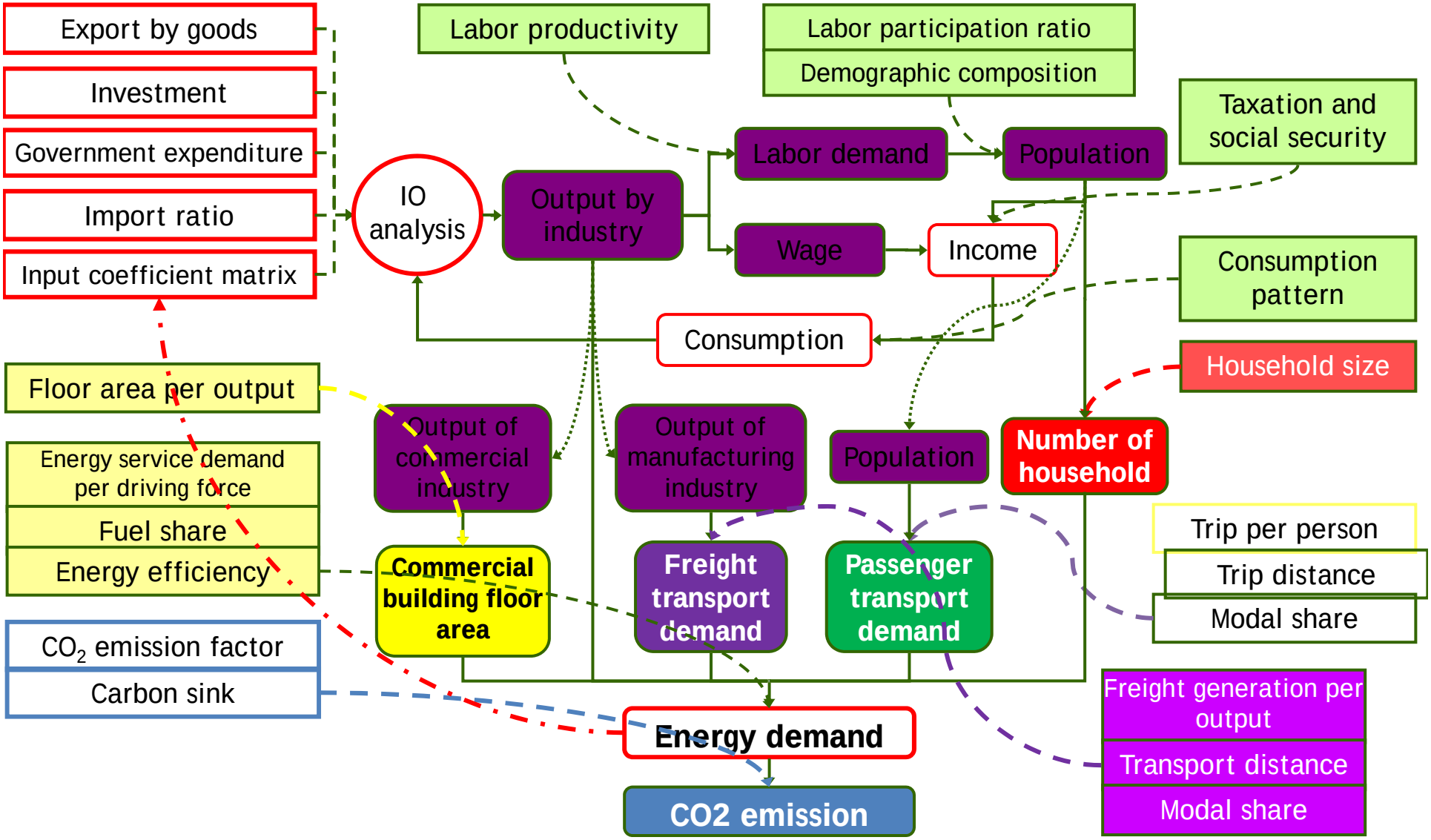
Senai International Airport – Airside Development (completed)

Senai - Skudai

Kulai Cyber City

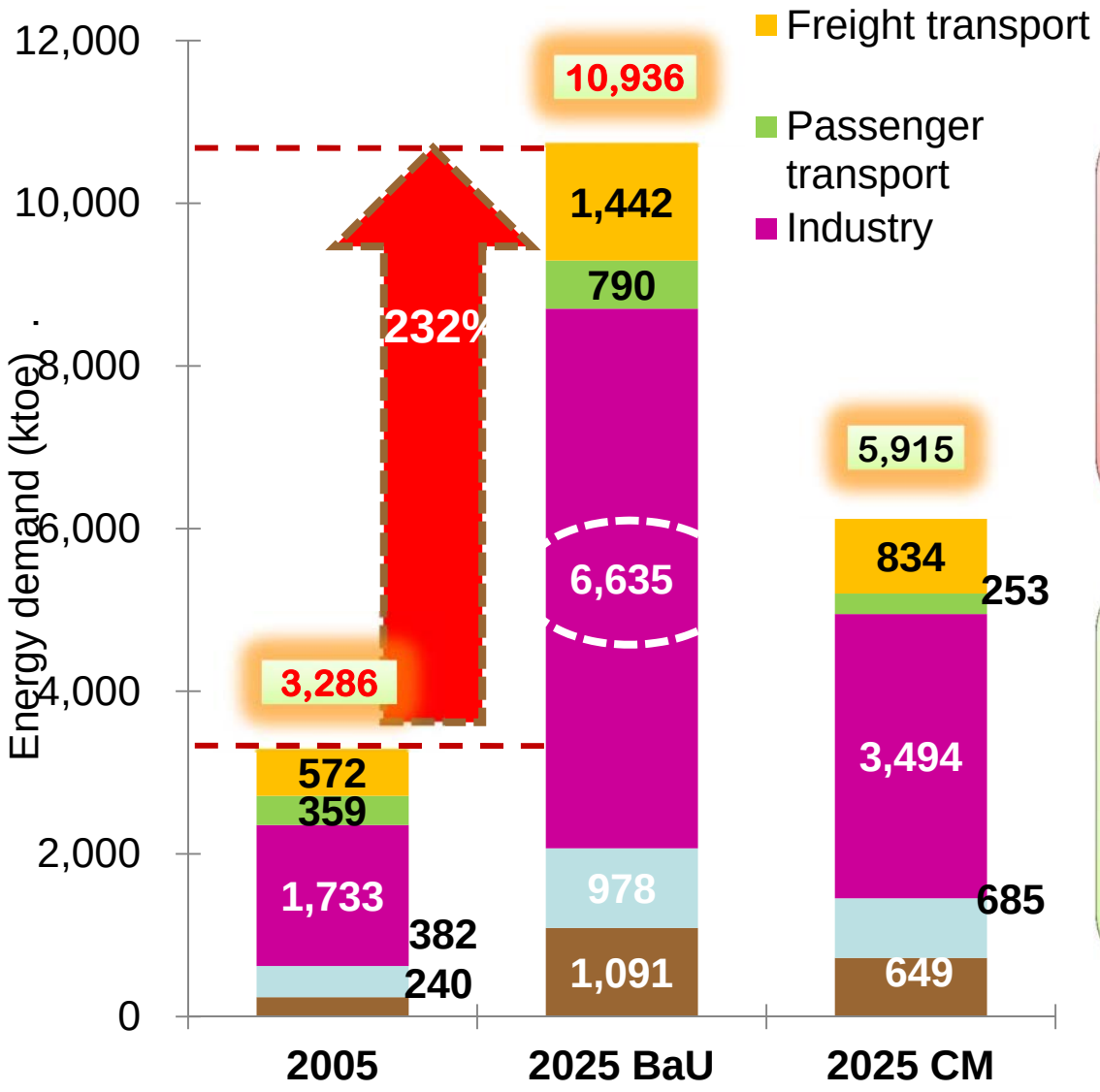


LCS scenario study using ExSS



Methodology developed by Shimada et.al (2006), Gomi et. Al (2007)

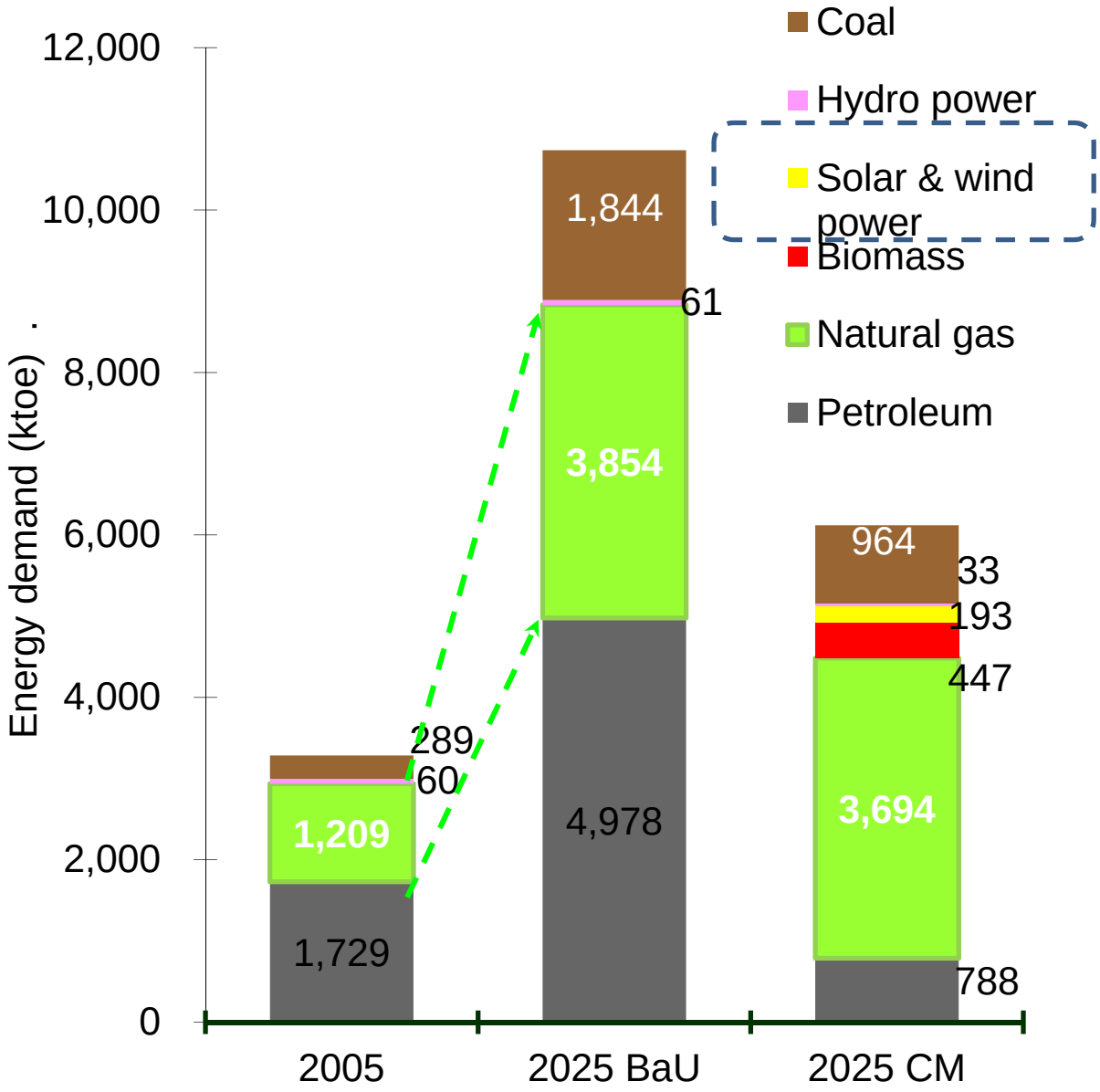
Energy Demand By Sector



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%.

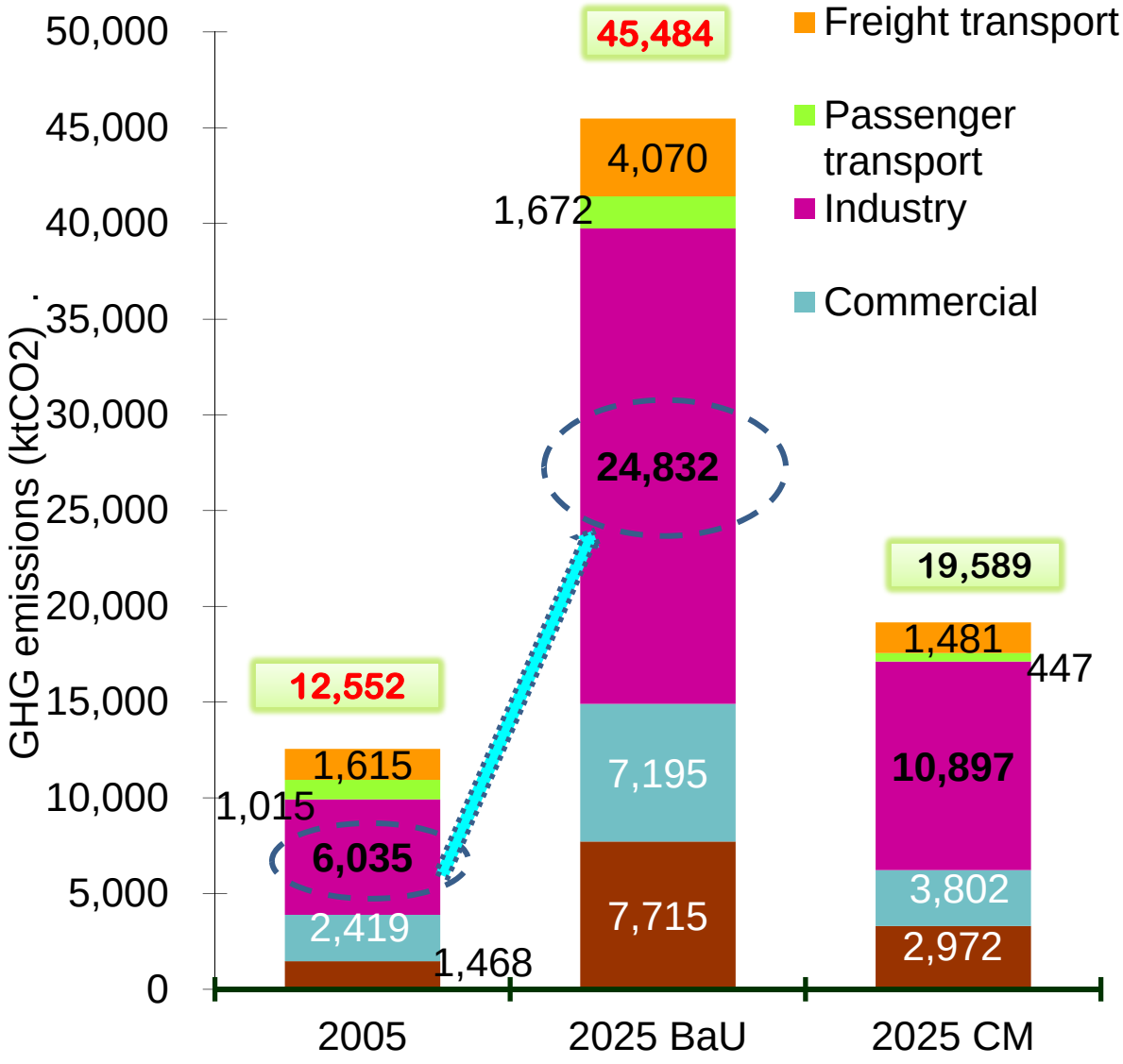
Energy Demand by Energy Sources



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

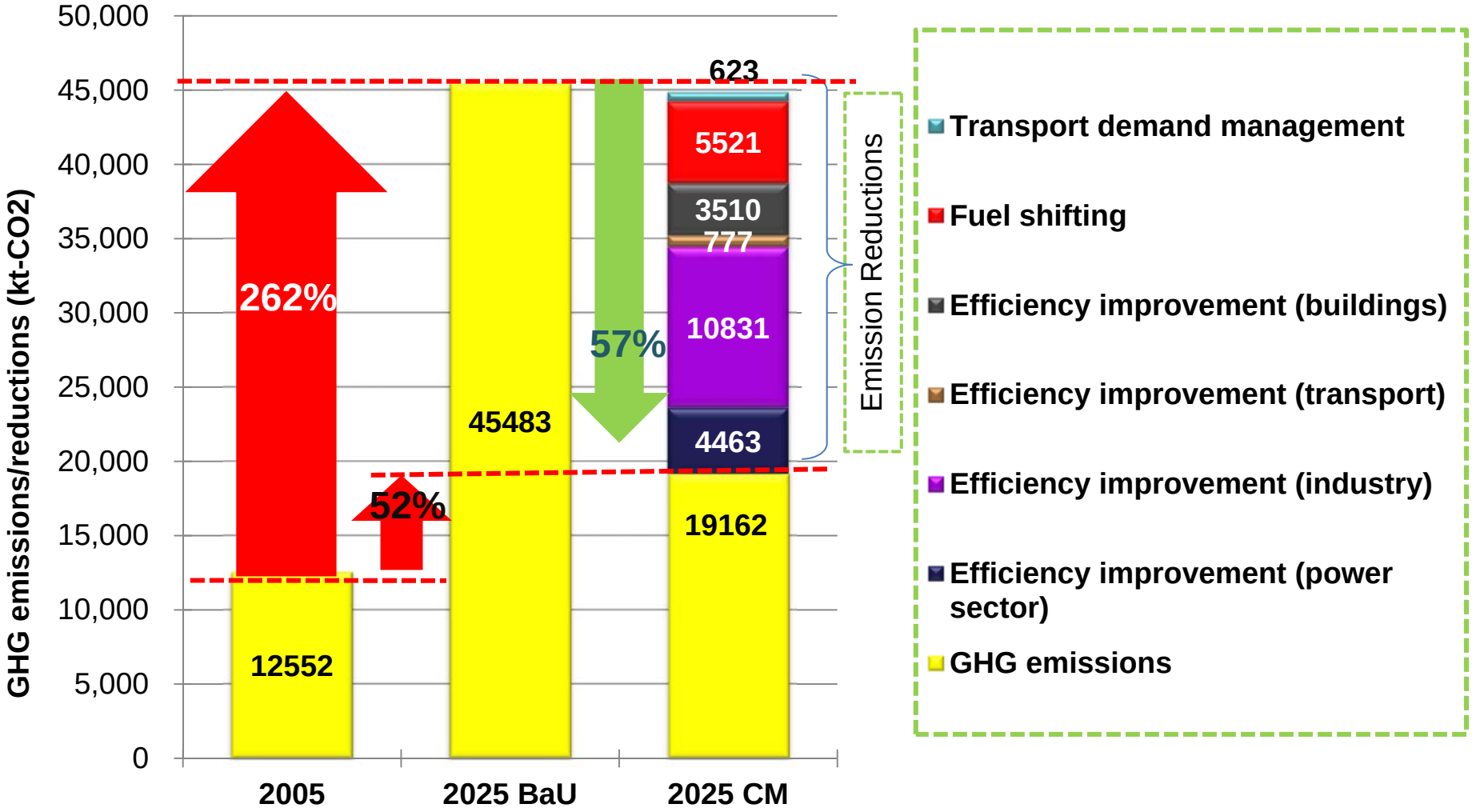


GHG Emissions in IM are projected to increase from 12,552 ktoe CO2 (2005) to 45,484 ktoe CO2 (2025 BaU)

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 CO_2 /capita (2005) to 15.1 tonnes /capita (2025 BaU), with CM will be reduced to 6.5 tonnes of CO_2/capita.

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 CO_2 intensity

Transport demand control

Mitigation of GHG emissions from Iskandar Malaysia

Preliminary findings Mitigation Measures

RESIDENTIAL & COMMERCIAL SECTOR

- Energy Efficiency (EE) Improvement (Buildings & equipments)
- Lowering CO_2 Intensity (Renewable Energy – Photovoltaic power generation system)

TRANSPORTATION (FREIGHT & PASSENGER)

- Transport Demand Management (Improvement of Public Transportation Sector)
- EE Improvement (Hybrid Vehicles)
- Lowering CO_2 Intensity (Renewable Energy- Bio fuel)

INDUSTRY & POWER SECTOR

- EE Improvement – (Improvement in Operations & Equipment, Promotion of Technology Transfer)
- Lowering CO_2 Intensity (Increase share of Natural Gas Usage)

SATREPS PROJECT

- Science and Technology Research Partnership for Sustainable Development -

- **Project Title:**
  Development of Low Carbon Society Scenarios for Asian Regions

- **Project Period: Five years (2011～2015)**

- **Project Area: Iskandar Development Region (IM), Malaysia**

- **Sponsored by JICA (Malaysian side) and JST(Japanese side)**

- **Total fund supported by JICA : 190 Million JY**

- **Project Purpose:**

Develop Methodology for creating Low-Carbon Society (LCS) scenarios and applied to Iskandar Development Region (IM), as well as other regions in Malaysia, and the research findings are disseminated to Asian Countries.

AIM ASIA-PACIFIC INTEGRATED MODEL

KYOTO UNIVERSITY KYOTO JAPAN FOUNDED 1897

NIES JAPAN

UTM UNIVERSITI TEKNOLOGI MALAYSIA

RESEARCH OUTPUT AND ACTIVITIES

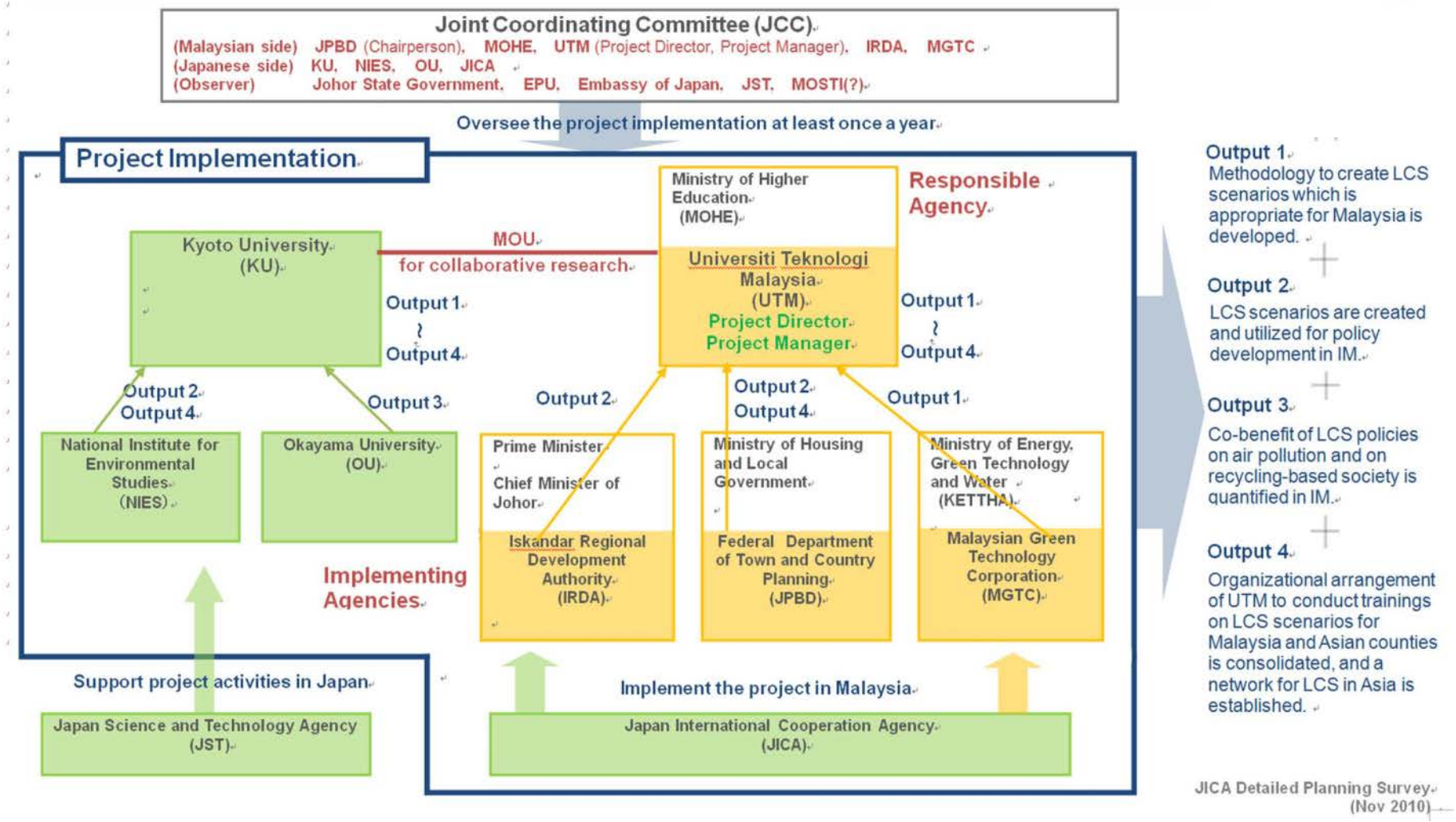
1.Methodology to create LCS scenarios which is appropriate for Malaysia.

2.LCS scenarios are created and utilized for policy development in Iskandar Malaysia (IM).

3.Co-benefit of LCS policies on air pollution and on recycling-based society is quantified in IM.

4.Organizational arrangement of UTM to conduct trainings on LCS scenarios for Malaysia and Asian countries is prepared, and a network for LCS in Asia is established.

IMPLEMENTATION ARRANGEMENT AND OUTPUT



RESEARCH PROJECT TIMELINE 2011-2015

- **Need substantial input to blueprints etc.**
- **Compiling the the first draft of LCS roadmap**

Interim project Evaluation

Final project Evaluation

	2011	2012	2013	2014	2015
ACTIVITY 1: METHODOLOGY	Apply the whole methodology and tools		Revising and Improvement		
ACTIVITY 2: IMPLEMENTATION	Design the scenarios and roadmaps	Details for Implementation	Implementation	Revising and Improvement	Wrap up the project
ACTIVITY3: AIR & SWM	Detailed basic survey	System integration	Manual development		
ACTIVITY 4: DISSEMINATION	International Expert Workshop once per year International Training Workshop once per year				

LCS Study in Malaysia: Chronology of events

Beginning of the LCS Study for Iskandar Malaysia (2008)

The outcome of Low Carbon City 2025, Sustainable Iskandar Malaysia Brochure (01/2009)

LCS IM Brochure and idea presented to IRDA (01/2009)

- Visited Iskandar Malaysia Study area. Collaboration & discussions with UTM (Prof Charles Ho) starting a LCS group at UTM.

Research Delegation to Malaysia (08/2009)

- IRDA & IMREC
- UTM
- JPBD-KL
- JICA – KL
- PTHM
- KeTTHA)

Research Delegation to Malaysia. Success in getting the JICA-JST fund for IM (05/2010)

- IRDA , UTM, JPBD-KL, JICA–KL, PTHM
- JICA KL site visit to IM
- Visit to Putrajaya Corporation. Japan came to Malaysia to invite our Malaysian Counterparts to come to Japan for a Technical visit in line with the JICA- JST Project. (26-30 Sept 2010)

The continuation of the Malaysian LCS research (2010- 2011)

- Preparation of LCS study brochures for Malaysia –
- To come out with the LCS road map for Iskandar Malaysia.
- The Putrajaya Green City Study and Brochure.
- AIM Training (BDJ / Dr. Zainab IBRAHIM/Dr. Kei Gomi/Miss Janice SIMPSON/ Miss Yuri HAYASHI

LCS Activities in Malaysia…

Expert Talk Held by JPBD KL

Guided tour around Putrajaya by PJC

Meeting with Vice Chancellor of UTM

LCS UTM team & Japan team members.

Day 1: AIM Training – participants from Japan, China, India, Malaysia, Indonesia, Thailand, South Korea and Taiwan

Prof. Yuzuru Matsuoka (Head of LCS Project – Kyoto U; Dr. Junichi Fujino, NIES; Dr. Zainah Ibrahim JPBD R&D; Dr. ... (Executive Director of NIES) and Boyd Joeman IRDA

LCS UTM Research Workshop – 07 Jan 2011


Implement
Comply . Enforce
Monitor . Review
Green-focused Agenda
Env'l Planning & Mngt
Social & Cultural Dev
Integrated Transport
SWM
Land Use Planning
RE & Resources
Economic Dev
Com & Industry Planning & Dev
Fed Policy
CDP
IRDA's BPs
LCS
DPs
NPP
Talent Workforce; Low carbon lifestyle
TODs
Modes Infrastructure Corridors Movements
Reuse Recycle Reduce Compost
Decarbonising development/ Development Process
UD Phased Dev & DC
FIT
EE blgs & areas
Rainwater harvesting
Green Economy
Value-added products & services

Synergy of LCS research and application in Iskandar Malaysia

IRDA Blueprints that promote Low Carbon Society

IM Vision: "A Strong, Sustainable Metropolis of International Standing"

Essential Mechanisms

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.

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