

# LoCARNet 3<sup>rd</sup> Annual Meeting

Institute Pertanian Bogor, Indonesia on November 24-26 2014

## Grand Regional Research strategies

Science into Action – Realizing Low carbon society

The case of Iskandar Malaysia

**SATREPS**

Science and Technology Research Partnership  
for Sustainable Development Program

**Ho Chin Siong (UTM)**

**Faculty of Built environment/ UTM Low Carbon Asia Centre**



**Project for Development of Low Carbon Society Scenarios for Asian Regions**

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# Content- Structure of Presentation

## Background

- **Background – issues and challenges**
- **Urban problem and low carbon solution policy in Asia**

## Challenges And Solutions

- **Strategies to promote Low carbon sustainable development**
- **Action Plan for Urban future**
- **Ecolife challenge**

## LCS Malaysia

- **Low Carbon Society Blueprint for Iskandar Malaysia**
- **Solution- 12 actions**
- **Future Actions - FELDA ( Rural) and Local Planning authorities**

# ISSUES AND CHALLENGES



**Rapid urbanization and industrialization**



**Relatively high carbon intensity  
dependence on fossil fuel (fuel subsidy)**



**High Private car ownership**



**Low density development and urban  
sprawl**



**Low efficiency appliances and low usage  
of renewable energy.**

# URBAN PROBLEMS and Low carbon SOLUTIONS – Physical planning

## Material and Energy



## Mobility and Green



# URBAN PROBLEMS and Low carbon SOLUTIONS – Socio-economic

Social/ People



Economy/ Engine of Growth



# 10 Actions toward Low Carbon Asia

- NIES and other collaborating universities and institutes have proposed the 10 Actions to half global greenhouse gas emission in 2050 compared to 1990 level.
  - narrative storyline/roadmap by 2050 and model simulations



**Action 1** **Urban Transport**  
Hierarchically Connected  
Compact Cities



**Action 2** **Interregional Transport**  
Mainstreaming Rail and Water in  
Interregional Transport



**Action 3** **Resources & Materials**  
Smart Ways to Use Materials that  
Realize the Full Potential of Resources



**Action 4** **Buildings**  
Energy-Saving Spaces Utilizing  
Sunlight and Wind



**Action 5** **Biomass**  
Local Production and  
Local Consumption of Biomass



**Action 6** **Energy System**  
Low Carbon Energy System  
Using Local Resources



**Action 7** **Agriculture & Livestock**  
Low Emission Agricultural  
Technologies



**Action 8** **Forestry & Land Use**  
Sustainable Forestry Management

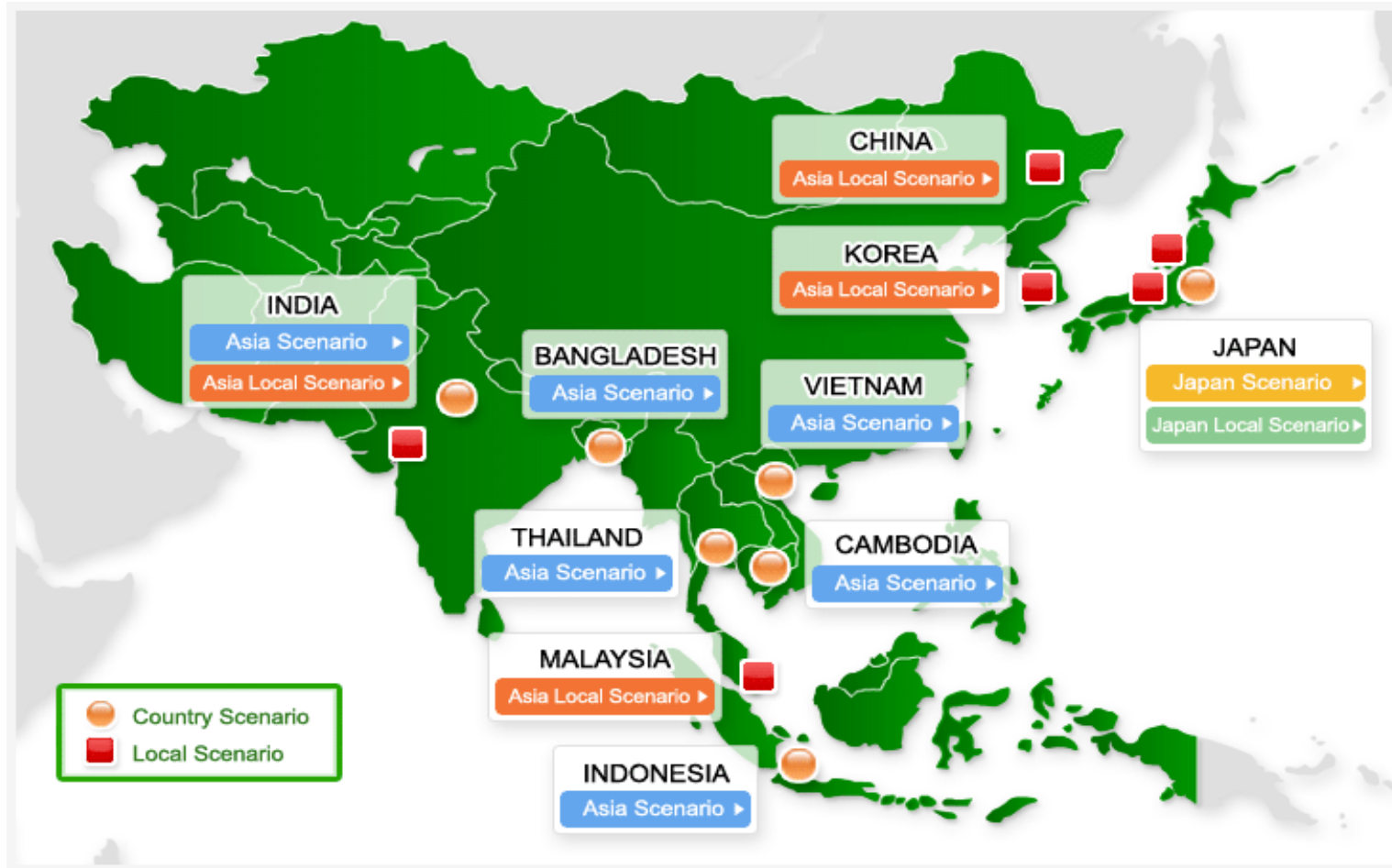


**Action 9** **Technology & Finance**  
Technology and Finance to  
Facilitate Achievement of LCS



**Action 10** **Governance**  
Transparent and Fair Governance  
that Supports Low Carbon Asia

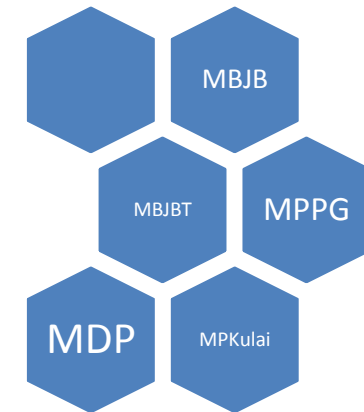
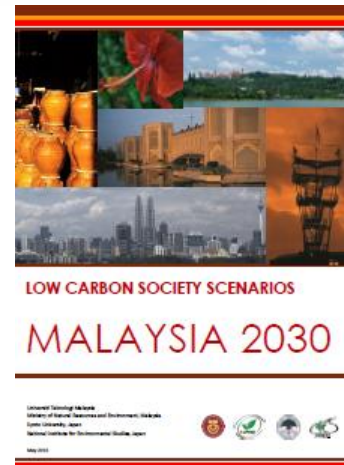
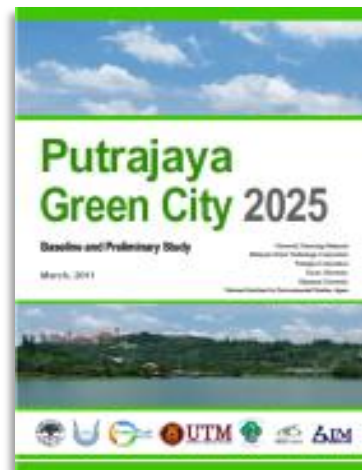
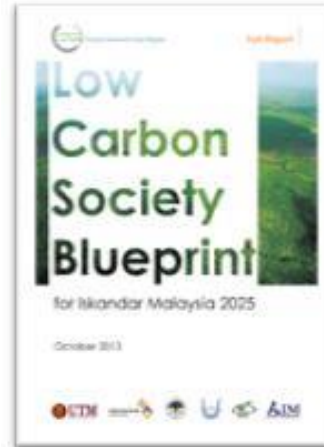
# Malaysia \_ Part of LCS Asia Network



# 3 Establishing Low Carbon Society Scenario in Malaysia

## - Regional Cooperation with Japan – NIES and IGES

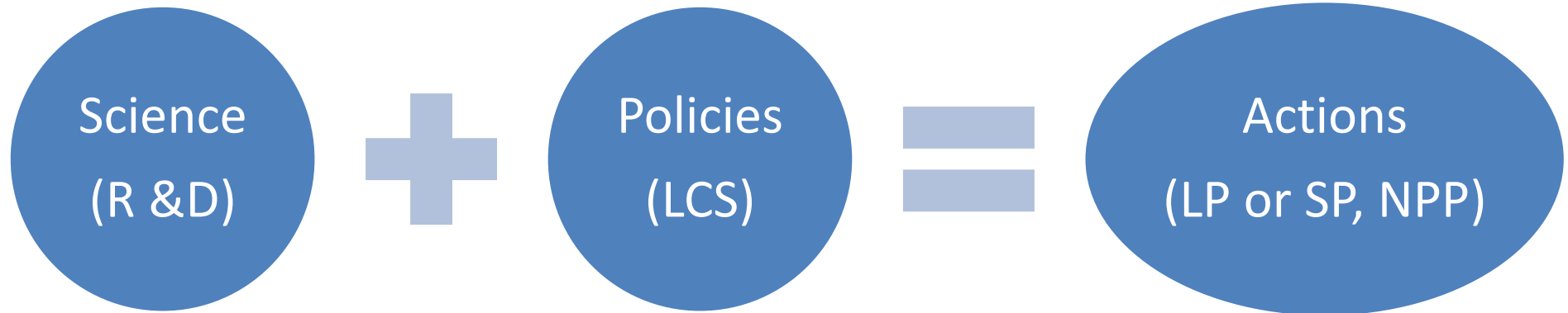
City and Region



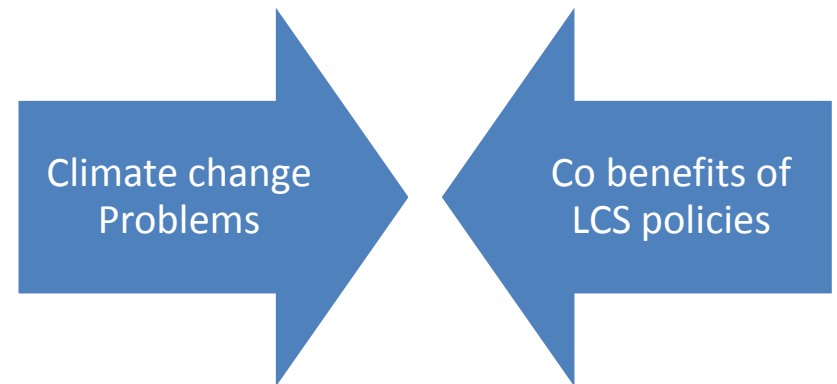
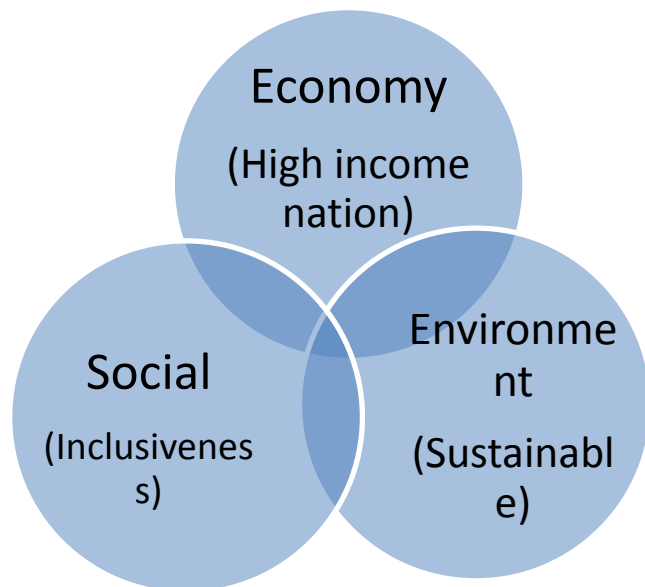
(Source: National Institute of Environment Studies, Japan)



# Research's Strategies to promote Low carbon sustainable development approach



Key element Sustainable development = PRO GROWTH, PRO JOB , PRO POOR and PRO ENVIRONMENT



# Low carbon society and sustainability in developing countries like Malaysia ?

## Rationale

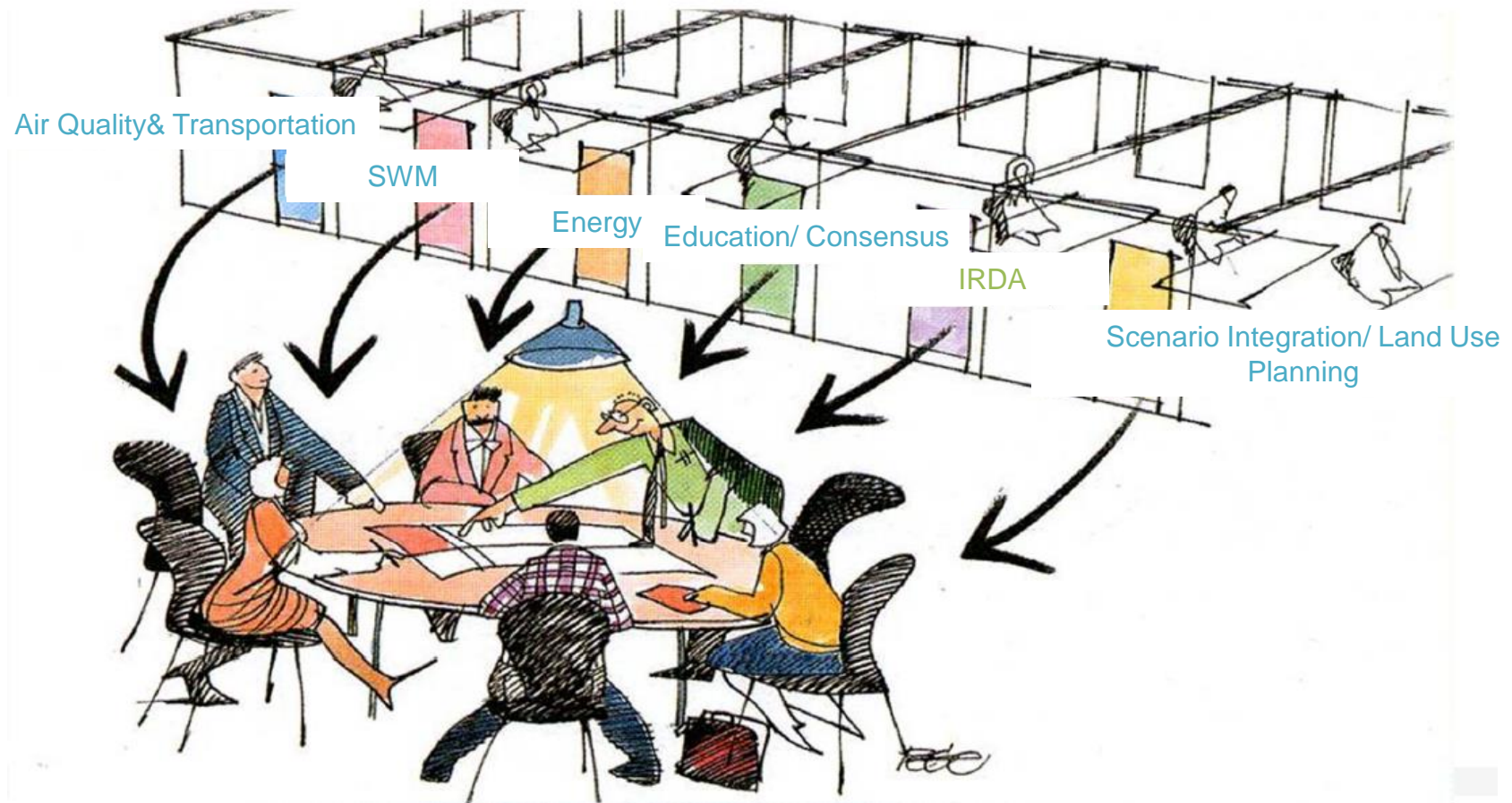
- **National Agenda** 40% CO<sub>2</sub> intensity reduction
- Green as **New Consumer Culture, New Market, New Growth** with Green Credentials  
**Economics + Environment = Green Economy.**
- **Fulfill roles to reduce vulnerability** on disasters (flood) and promote comfort and safety.
- Climate change and **sustainability policy issues are embedded** in all spatial planning policies ( NPP/ RS/LP)
- **Money-saving** -Energy conservation and renewable energy

## Why LCS cities?



# 05 Our Research Groups

## Development of Low Carbon Society Scenarios for Asian Regions

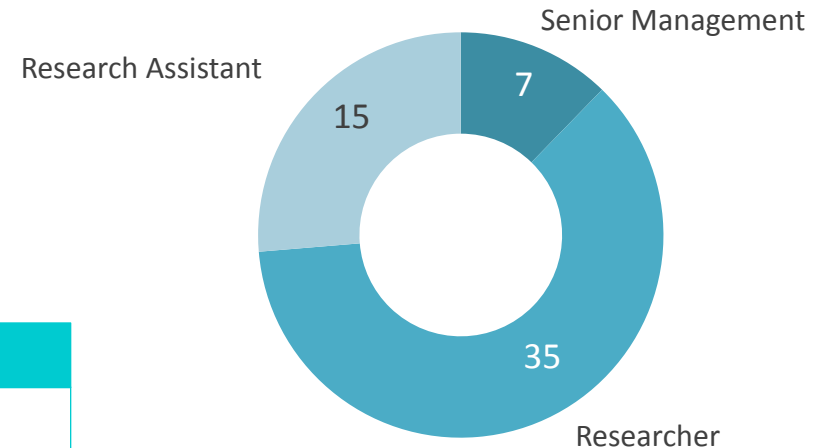


# 04 Project Organization

## Development of Low Carbon Society Scenarios for Asian Regions



Research Members



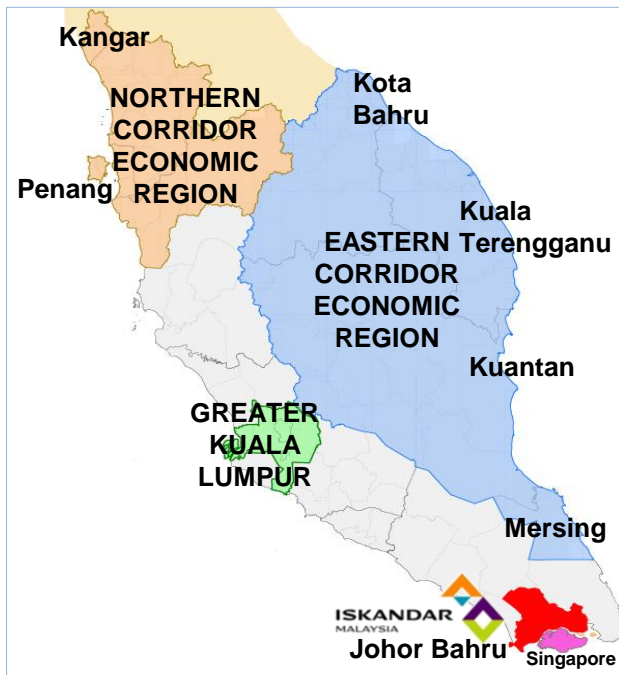
Total: 57 members

## The Case of Iskandar Malaysia

**“Strong and Sustainable Metropolis  
of International Standing”**

Iskandar Malaysia is Malaysia's economic growth corridor covering a total area of 2,317 sq km (12% of Johor State)

## Iskandar Malaysia in the context of Regional Corridors



*Iskandar Malaysia*



**3 times larger**

*Iskandar Malaysia*



**1.3 times larger**

*Iskandar Malaysia*



**11 times smaller**

*Iskandar Malaysia*



**30 times smaller**



Iskandar Malaysia covers **FIVE** local planning authorities.



	2005	2010	2025
Population (million)	1.35	1.61	3.00
Labour Force (million)	0.61	0.70	1.43
Employment (million)	0.62	0.72	1.46

Source: CDP 2006 – 2025, Population Census 2010 and consultant estimates

# 01 Low Carbon Society Scenarios for Iskandar Malaysia

## Project Background



### FLAGSHIP A

- JOHOR BAHRU CITY CENTRE**
- Central Business District (CBD) as heritage and cultural city
  - Customs, Immigration and Quarantine Complex (CIQ)
  - Johor – Singapore Causeway

### FLAGSHIP B

- NUSAJAYA**
- Kota Iskandar
  - EduCity
  - Medical Park
  - International Destination Resort
  - Southern Industrial & Logistics Clusters (SILC)
  - Puteri Harbour

### FLAGSHIP C

- WESTERN GATE DEVELOPMENT**
- Port of Tanjung Pelepas (PTP)
  - Tanjung Bin Power Plant
  - 2nd Link Access to Singapore
  - RAMSAR World Heritage Park
  - Tanjung Piai – Southernmost Tip of Mainland Asia
  - Maritime Centre

### FLAGSHIP D

- EASTERN GATE DEVELOPMENT**
- Tanjung Langsat Industrial Complex
  - Johor Port
  - Tanjung Langsat Port
  - Pasir Gudang Industrial Park

### FLAGSHIP E

- SENAI-SKUDAI**
- Senai Airport City
  - Senai High-Tech Park
  - Sedenak Industrial Park
  - MSC Cyberport City
  - Johor Technology Park
  - University Technology Malaysia (UTM)

Site: Iskandar Malaysia

(Iskandar Regional Development Authority)

### Objective:

i. To draw up **key policies and strategies** in guiding the development of Iskandar Malaysia in **mitigating carbon emission**. *Transforming Iskandar Malaysia into a sustainable low carbon metropolis by adopting green growth strategies/roadmap.*

ii. To respond to the nation's aspiration for **ensuring climate-resilient development for sustainability**.

Target Year: 2025 (2005 – 2025)

# Iskandar Malaysia at a Glance

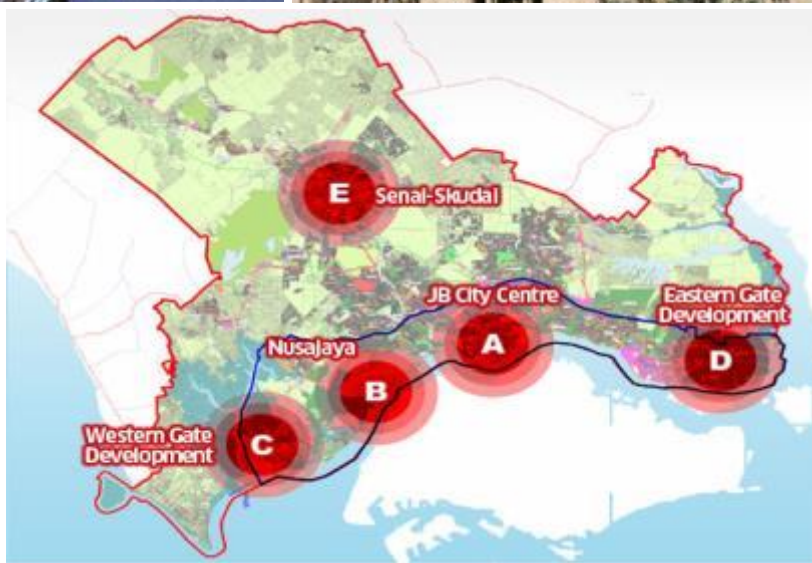
A



E



B



C



D

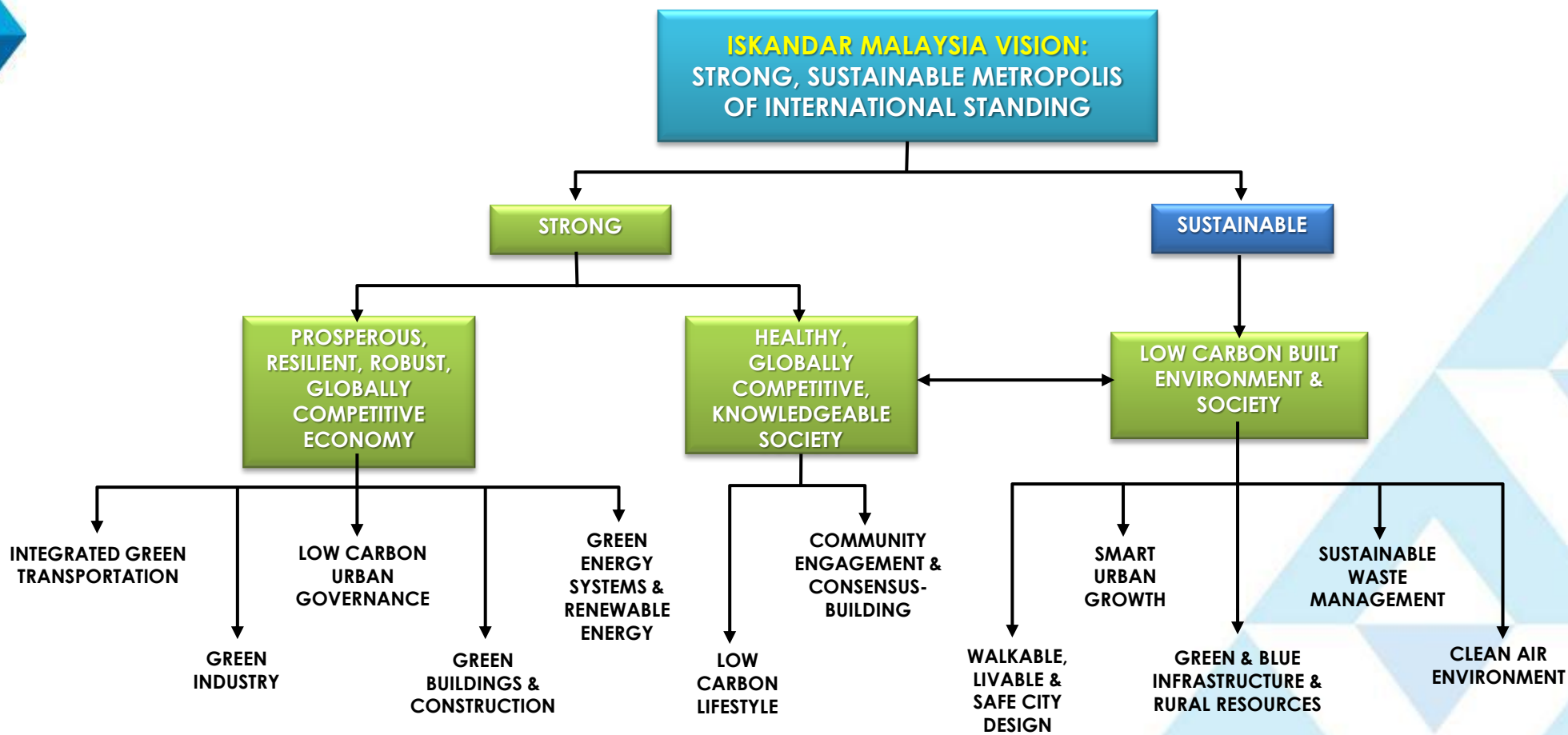






## Green-focused Agenda - Rationale

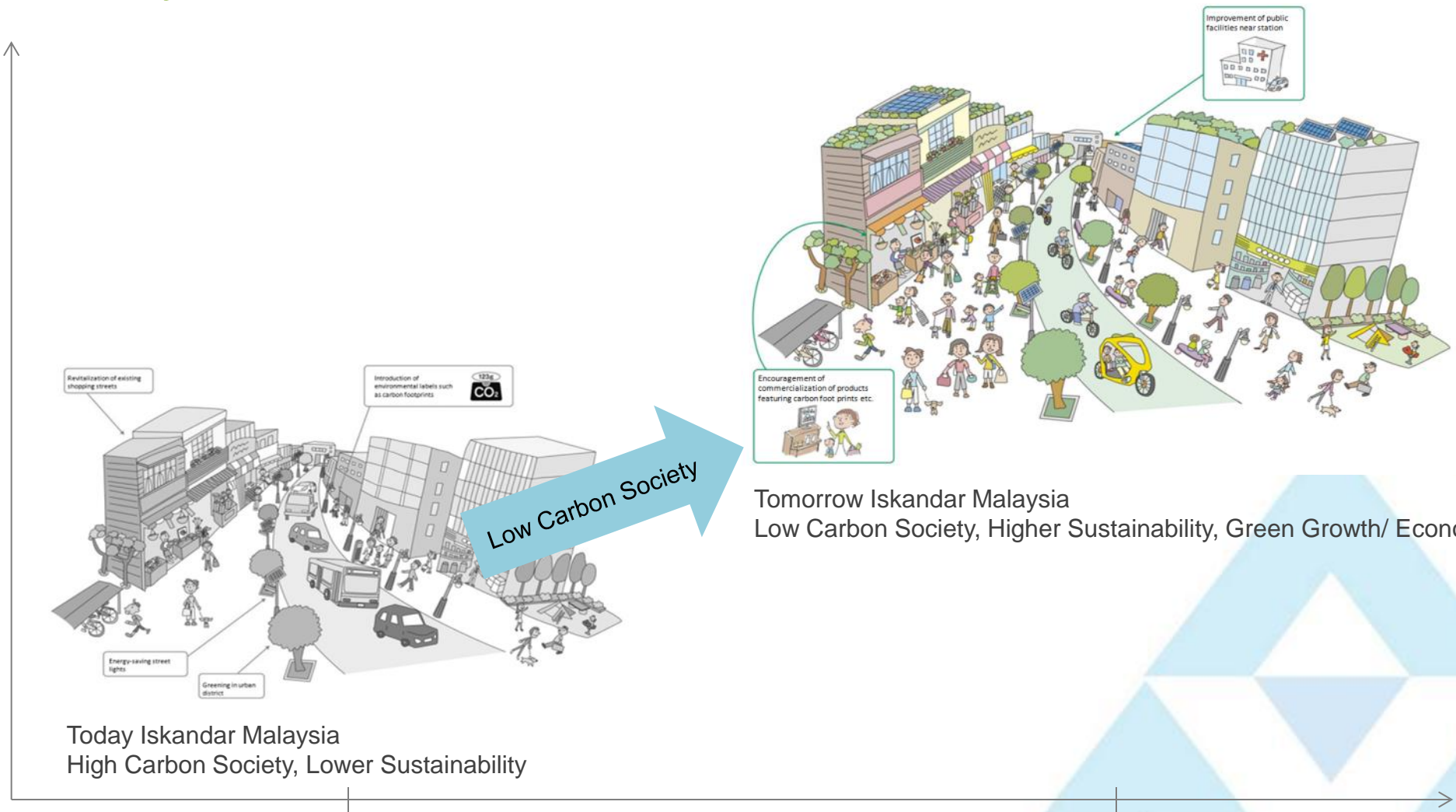
# Aligning the Vision with Low Carbon Society Development



# Towards Low Carbon Iskandar Malaysia 2025

## Today and Tomorrow

Sustainability



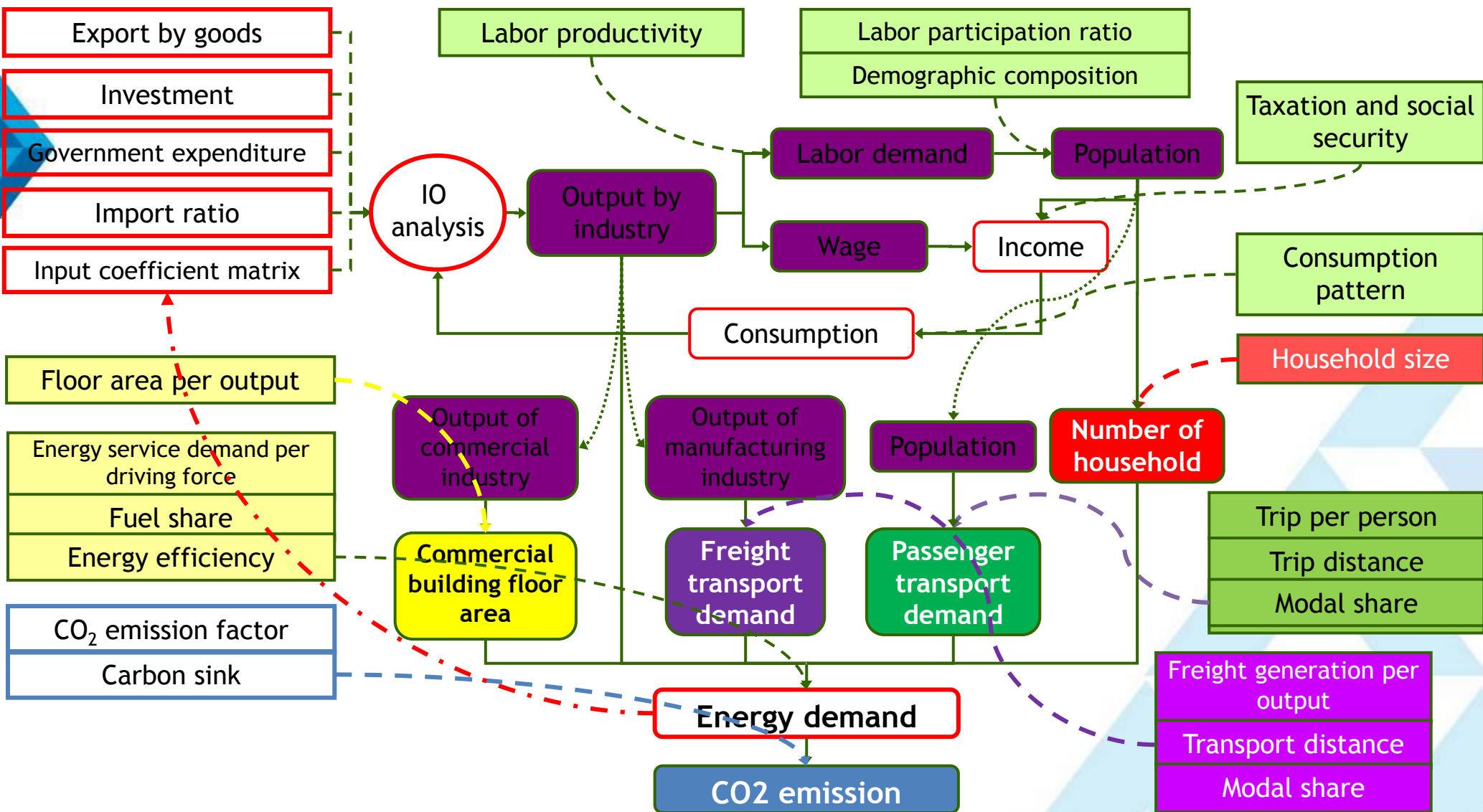
Today Iskandar Malaysia  
High Carbon Society, Lower Sustainability

Present  
2010

Tomorrow Iskandar Malaysia  
Low Carbon Society, Higher Sustainability, Green Growth/ Economy

Future  
2025  
Year

# LCS scenario study using ExSS



# Projected Greenhouse Gas Emission Reduction in Iskandar Malaysia

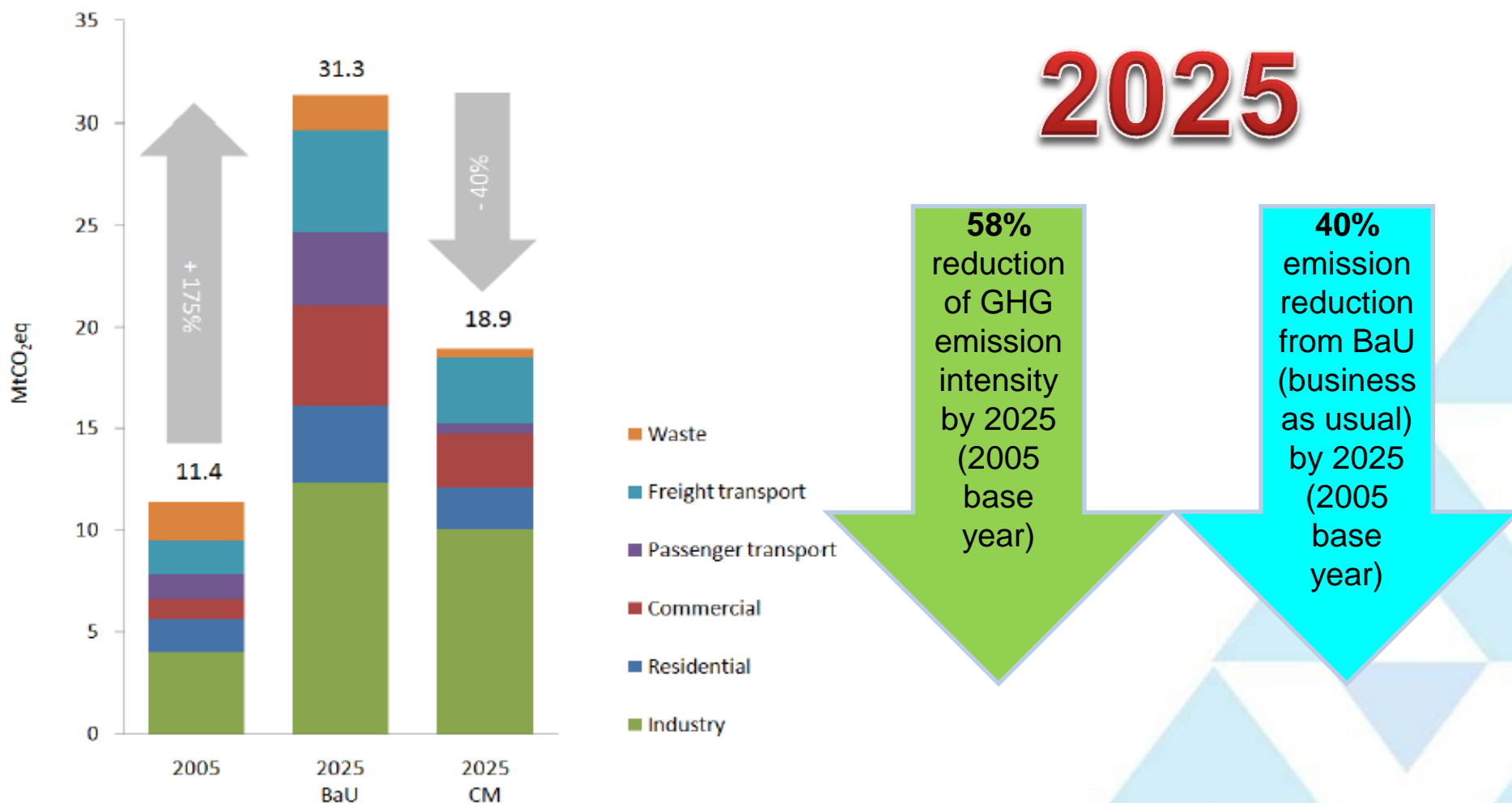


Figure 1: GHG emissions by sectors

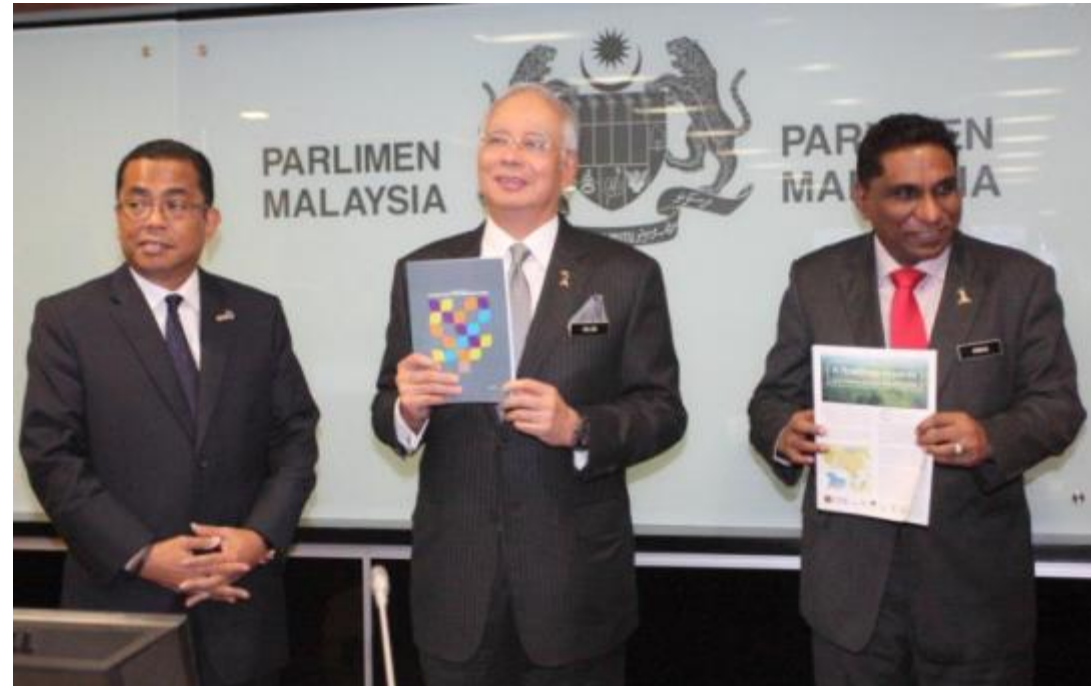
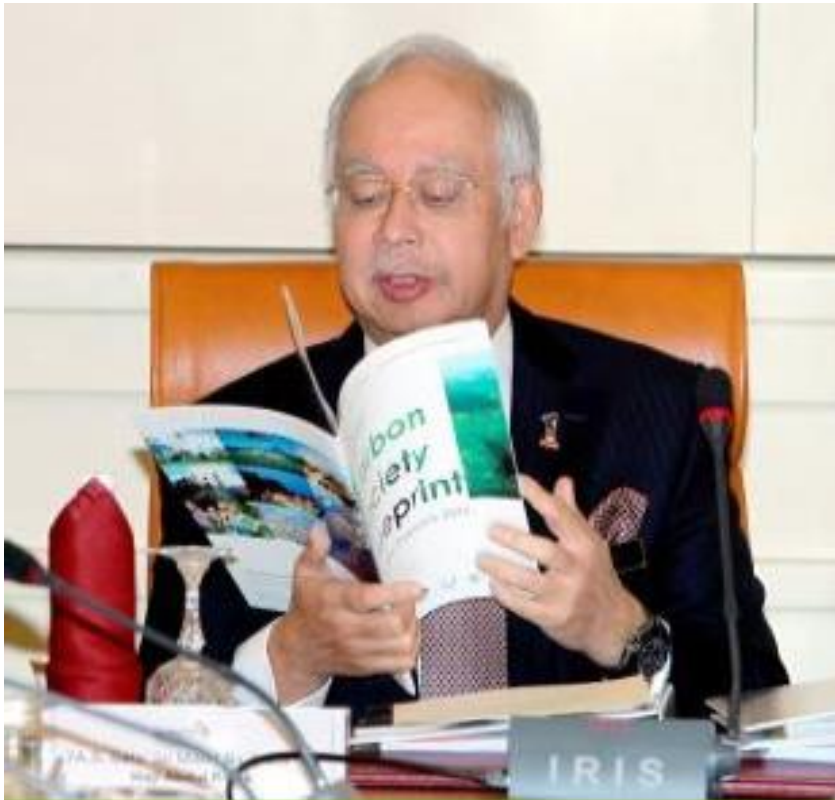
# Launching of the LCSBPIM - COP18 Doha, 2012



# Launching of the LCSBPIM Roadmap & LCS Booklet “Actions for a Low Carbon Future” - COP19 Warsaw, 2013



# Endorsed by Malaysia Prime Minister - YAB Dato' Sri Mohd Najib bin Tun Abdul Razak

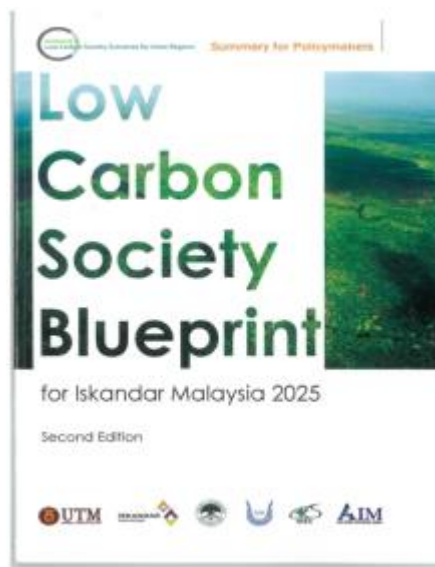


11<sup>th</sup> December 2012  
The PM endorses the launching of  
LCSBPIM at COP 18 during MoA

6<sup>th</sup> November 2013  
The PM launched Actions for a  
Low Carbon Future during MoA



# Low Carbon Society Blueprint for Iskandar Malaysia 2025



- The LCSBPIM– a quick reference for all policy-makers in both public and private sectors as well as IRDA;
- 12 Actions grouped in 3 parts namely: (Green Economy), (Green Community), and Green Environment);281 programmes;
- Each Chapter contains an analysis, list of programmes and the potential GHG emissions reduction;
- IRDA launched its Low Carbon Society Blueprint for Iskandar Malaysia 2025 on 30 November 2012 at the United Nations Climate Change Conference in Doha, Qatar. The ultimate goal is to reduce Iskandar Malaysia’s carbon intensity emissions by 50 per cent by 2025.
- The Blueprint was subsequently endorsed by the Prime Minister of Malaysia in December 2012

	Action Names	Themes
1	Integrated Green Transportation	GREEN ECONOMY
2	Green Industry	
3	Low Carbon Urban Governance	
4	Green Buildings & Construction	
5	Green Energy System & Renewable Energy	
6	Low Carbon Lifestyle	GREEN COMMUNITY
7	Community Engagement & Consensus Building	
8	Walkable, Safe, Livable City Design	GREEN ENVIRONMENT
9	Smart Growth	
10	Green and Blue Infrastructure & Rural Resources	
11	Sustainable Waste Management	
12	Clean Air Environment	

# Iskandar Malaysia: Actions For A Low Carbon Future



- The Booklet 'Actions for a Low Carbon Future' – list of 10 programmes which IRDA has started implementing or have been completed.
- On 6th November 2013, the Iskandar Malaysia: Actions for A Low Carbon Future is the implementation booklet which outlines the 10 programmes, was launched by Malaysia Prime Minister Dato' Sri Mohd Najib Tun Abdul Razak.
- On 15th and 18th November 2013, was the subsequent global launching at COP 19, Warsaw, Poland.

	Programmes	PIC
1	<b>Integrated Green Transportation – Mobility Management System</b>	<b>Kamisah Mohd Ghazali</b>
2	<b>Green Economy Guidelines</b>	<b>Ivy Wong Ling Ling</b>
3	<b>Eco-Life Challenge Project for Schools</b>	<b>Isma Ezwan Safri</b>
4	<b>Portal on Green Technology</b>	<b>Choo Hui Hong</b>
5	<b>Trees for Urban Parks/Forests</b>	<b>Boyd Dionysius Joeman</b>
6	<b>Responsible Tourism and Biodiversity Conservation</b>	<b>Boyd Dionysius Joeman</b>
7	<b>Bukit Batu Eco-Community</b>	<b>Hamdi Mohd Yusof</b>
8	<b>GAIA – Green Accord Initiative Award</b>	<b>Ivy Wong Ling Ling</b>
9	<b>Low Carbon Village FELDA Taib Andak</b>	<b>Dr Ibrahim Ngah (UTM)</b>
10	<b>Special Feature: Smart City – Nafas Baru Pasir Gudang: CLEAN AND HEALTHY CITY</b>	<b>Sakurah Jamaluddin , Sharifah Shahidah Syed Ahmad, Muhammad Fadly Muhammad Nor, Choo Hui Hong</b>

# Iskandar Malaysia: Actions For A Low Carbon Future

<b>1. Integrated Green Transportation – Mobility Management System</b>	<b>95%</b>	<b>2. Green Economy Guidelines</b>	<b>70%</b>	<b>3. Eco-Life Challenge Project for Schools</b>	<b>Part 1 2013; now part 2</b>
<b>4. Portal on Green Technology</b>	<b>25%</b>	<b>5. Trees for Urban Parks/Forests</b>	<b>40%</b>	<b>6. Responsible Tourism and Biodiversity Conservation</b>	<b>Now in Year 3</b>
<b>7. Bukit Batu Eco-Community</b>	<b>15%</b>	<b>8. GAIA – Green Accord Initiative Award</b>	<b>15%</b>	<b>9. Low Carbon Village FELDA Taib Andak</b>	<b>Now Phase 2</b>
<b>10. Special Feature: Smart City – Nafas Baru Pasir Gudang: GREEN AND HEALTHY CITY</b> I. Green Industry II. Green Community III. Integrated Solid Waste Management IV. Carbon Sequestration of Tree Preservation Order (TPO)				<b>40%</b>	

## Legend



Green Economy



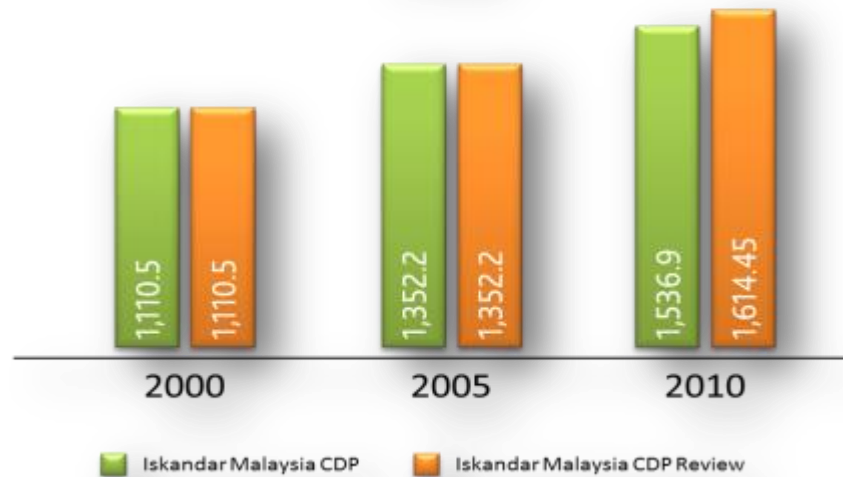
Green Environment



Green Community

# Quick update :Eco life Challenge Programmes

Iskandar Malaysia Population Growth 2000-2010  
( '000)



**198** primary schools,  
Phase 1 - **23** schools

**2014**, additional **80** schools  
involved in ELC programme.



The Iskandar Malaysia Eco-Life Challenge Project focuses on energy household accounting. School children track the energy consumption, waste generation and management, travelling choices, frugal consumption and utilizing renewable energy resources (sunlight). The aim is to raise children's awareness level on low carbon aspects.

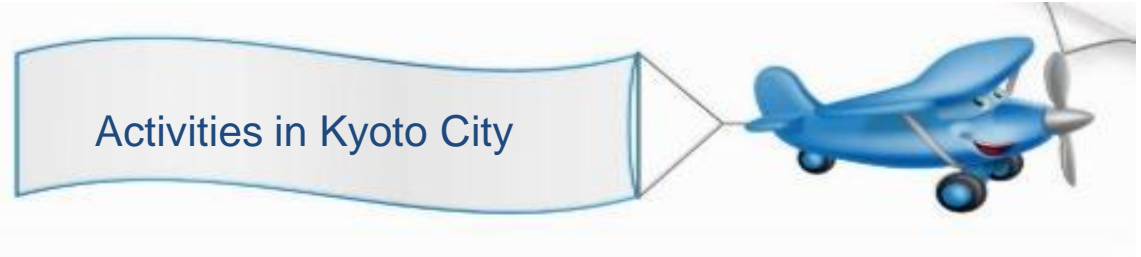
# Quick update :Eco life Challenge Programmes



Training for 23 schools teachers



The winners of the Eco-Life Challenge Project for Schools in IM 2013: SJK (C) Chee Tong won a trip to visit Kyoto City, Japan.



# 03 Low Carbon Society Proposal Plans for 5 Municipalities

## Integrating Iskandar Malaysia and 5 Local Municipalities

Top - down

Low Carbon Society Blueprint for Iskandar Malaysia 2025

Bottom - up

Low Carbon Society Action Plan for Johor Bahru 2025

Low Carbon Society Action Plan for Johor Bahru Tengah 2025

Low Carbon Society Action Plan for Pasir Gudang 2025

Low Carbon Society Action Plan for Kulai Jaya 2025

Low Carbon Society Action Plan for Pontian 2025

Iskandar Malaysia

Direction, Guide and Policy



- Detail Local Action
- Priority and Preference
- Correct Data through Survey
- Chose Implementable measures on the ground
- Pioneering Activities through Pilot Projects

FIVE (5) Local Municipalities



# 03 Low Carbon Society Proposal Plans for 5 Municipalities

## Local Action Plan: Cover and Theme (Example)



JOHOR BAHRU CITY COUNCIL **MBJB**

JOHOR BAHRU TENGAH MUNICIPAL COUNCIL **MPJBT**

PASIR GUDANG MUNICIPAL COUNCIL **MPPG**

KULAI MUNICIPAL COUNCIL **MPKU**

PONTIAN DISTRICT COUNCIL **MDP**

Under SATREPS, the project development of Low Carbon Society, focuses on the vibrant heart of the city of Johor Bahru City Council (JCC) which will be the main focus of the project. The project will be implemented in the area of the city of Johor Bahru City Council (JCC) which will be the main focus of the project. The project will be implemented in the area of the city of Johor Bahru City Council (JCC) which will be the main focus of the project.

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Under SATREPS, the project development of Low Carbon Society, focuses on the vibrant heart of the city of Pontian District Council (PDC) which will be the main focus of the project. The project will be implemented in the area of the city of Pontian District Council (PDC) which will be the main focus of the project. The project will be implemented in the area of the city of Pontian District Council (PDC) which will be the main focus of the project.



Johor Bahru

Johor Bahru Tengah

Pasir Gudang

Kulai Jaya

Pontian

*'The Vibrant Heart of Southern Region'*

*'Livable Community City'*

*'Green Manufacturing Hub'*

*'Smart Logistic Hub'*

*'Agrobiodiversity Hub'*

# On-going Projects Under Green Agenda



**Master plan and guideline on connected pedestrian walk and cycle lane for Iskandar Malaysia**



**Integrated Coastal Erosion Prevention Plan for Tanjung Piai-**



**Gazettement of Sg Pulau Forest Reserve as a State Park**



**Planned strategic enhancement of Pulau Kukup as a premier ecotourism destination in Iskandar Malaysia**



**Majlis Teknologi Hijau dan Perubahan Iklim Negeri Johor (MTHPI)**



**Framework Strategy to protect sensitive environments in IM**



**Renewable Energy and Energy Efficiency**



**Collaboration with MGTC for LCCF pilot project in Iskandar Malaysia**



# Media Highlights 2012-2013 (LCS AND IM)



## 日マ共同研究で施策12件発表 イスクンダルの低炭素化を支援

イスクンダルの低炭素化（LCS）とマレーシアの持続可能な成長（IM）を支援する目的で、イスクンダルとマレーシアの共同研究が完了し、12件の政策提言が発表された。イスクンダルは、低炭素化と持続可能な成長の両方を達成するために、イスクンダルの低炭素化とマレーシアの持続可能な成長の両方を支援する必要があると指摘している。



## Metro

### Low carbon society

All parties in Iskandar Malaysia have roles to play in transforming the economic growth corridor as a sustainable living place for the well-being of the society.



## Balanced approach

Cooperate to transform Iskandar Malaysia for sustainable living

Cooperation between all parties involved in Iskandar Malaysia is essential for the success of the low carbon society and sustainable living. The Iskandar Regional Development Authority (IRDA) is committed to leading the way in sustainable living and low carbon society. The IRDA is committed to leading the way in sustainable living and low carbon society. The IRDA is committed to leading the way in sustainable living and low carbon society.



## 依斯干達 購買203億

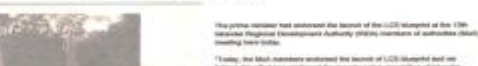
依斯干達發展局（IRDA）今年11月，購買總額達203億馬幣的物業。這項物業包括多項住宅、商業及工業地產。IRDA表示，這項物業的購買，是其在發展依斯干達地區的重要一步。



## NEW STRAITS TIMES

### Najib confident of Iskandar M'sia's investment drawing power

Prime Minister Datuk Seri Najib Razak is confident that Iskandar Malaysia will attract significant investment. He stated that the region's infrastructure and strategic location are key factors in attracting investors. He also mentioned that the region's low carbon society and sustainable living initiatives are also attractive to investors.



## Cooperate to transform Iskandar Malaysia for sustainable living

The Iskandar Regional Development Authority (IRDA) is committed to leading the way in sustainable living and low carbon society. The IRDA is committed to leading the way in sustainable living and low carbon society. The IRDA is committed to leading the way in sustainable living and low carbon society. The IRDA is committed to leading the way in sustainable living and low carbon society.

## マレーシアに「日本式」環境都市づくりを模倣 - CO2削減

マレーシアに「日本式」環境都市づくりを模倣する。CO2削減を目的とした取り組みが、依斯干達地区で進められている。IRDAは、日本の環境都市づくりのノウハウを参考に、低炭素社会の実現を目指している。IRDAは、日本の環境都市づくりのノウハウを参考に、低炭素社会の実現を目指している。



## Ismail says Iskandar corridor moving in right direction but more work needed

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## PM Najib: Iskandar Malaysia has exceeded expectations

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# Media Highlights 2013-2014 (LCS AND IM)



### Najib lancar buku panduan pastikan kualiti hidup lebih baik penduduk Wilayah Iskandar

Profil on November 1, 2013 10:00am



PRIME MINISTER NAJIB RAZAK (left) launching the book on low carbon society blueprint today at the Iskandar Malaysia Regional Development Authority (IRDA) Conference Room. Other dignitaries present include Menteri Besar Johor Johari Abdul Salleh (middle) and Menteri Besar Melaka Mohd. Khalid Yusoff (right).



### Iskandar Malaysia Aiming to be Low Carbon City

Mar 27th, 2014 - by admin



Prime Minister Najib Razak (left) launching the Low Carbon Society Blueprint (LCSB) with other officials at the Iskandar Malaysia Regional Development Authority (IRDA) Conference Room.

Following the rising trend and increasing demand for sustainable living spaces, Iskandar Malaysia is set to implement the Low Carbon Cities Framework and Assessment System (LCCFAS), which was drawn up by the Ministry of Energy, Green Technology and Water (MINTAW) and Malaysian Green Technology Corporation (MAGTEC Malaysia).



### Community

Executive Aide-of-Camp

### Johor to reduce power consumption in support of low carbon society

By SUGUNA HUDA



### NUSAJARA: Johor is making a pledge to reduce power consumption at all state government buildings here at least by 5% to show its support and commitment to the low carbon society.

### Low Carbon Cities (Part 2) - Iskandar's unique blueprint

By SUGUNA HUDA

IRDA will be working on the implementation of understanding (IRDA) between Iskandar Malaysia and Iskandar Regional Development Authority (IRDA) that is intended to facilitate the regional development of 5% low carbon society target by 2015.

### AIC approves "Low Carbon Society Blueprint for Iskandar Malaysia 2025"

Formulated by international research team including Kyoto University (28 March, 2014)

### 'Services, logistics investments rising'

BULLISH MOOD: Iskandar has been enjoying 7pc-8pc annual growth, says Irda head

### Iskandar Malaysia akan lancar sistem pengurusan mobiliti

KUALA LUMPUR: Pihak Berkuasa Wilayah Persekutuan Iskandar dan pemegang saham utama projek pembangunan bandar Iskandar Malaysia pada Rabu mengumumkan lapan projek pembangunan infrastruktur yang akan dilaksanakan di Iskandar Malaysia pada tahun 2014.

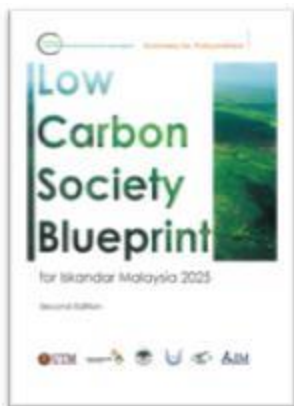
### 依区明年管制车流量

新系统优化城市交通

### Practices of Iskandar Economic Zone, Malaysia

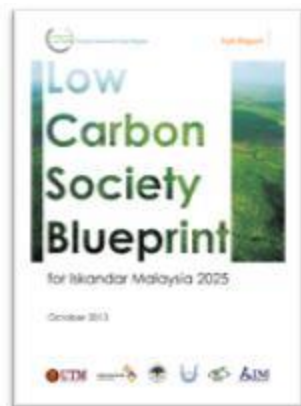
Low Carbon Society Blueprint for Iskandar, Malaysia

# Low Carbon Society for Iskandar Malaysia Publications



Low Carbon Society  
Blueprint for Iskandar  
Malaysia 2025- Summary  
for Policymakers

<http://irdep.irda.com.my/cms/download/documentSharing/18230>



Low Carbon Society  
Blueprint for Iskandar  
Malaysia 2025- Full  
Report

<http://irdep.irda.com.my/cms/download/documentSharing/26570>



A Roadmap towards Low  
Carbon Iskandar Malaysia  
2025

<http://irdep.irda.com.my/cms/download/documentSharing/26563>



Iskandar Malaysia: Action  
for a Low Carbon Future

<http://irdep.irda.com.my/cms/download/documentSharing/26571>



The Economics of Low  
Carbon Cities: Johor  
Bahru and Pasir Gudang  
Malaysia

<http://irdep.irda.com.my/cms/download/documentSharing/26564>

# In Progress-Developing a Low Carbon Society Roadmap for Iskandar Malaysia

**Step 1** Low Carbon Society Blueprint for Iskandar Malaysia  
- Clear GHG target for year 2025

**Step 2** Low Carbon Society Implementation Roadmap 2015-2025 using Backcasting Tool

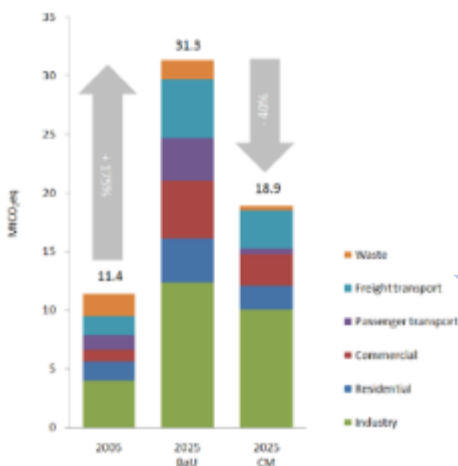
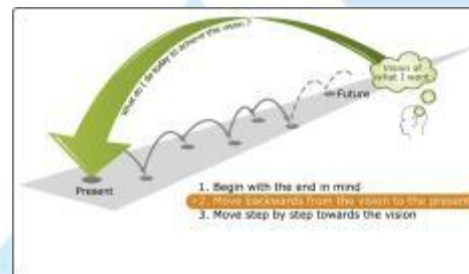
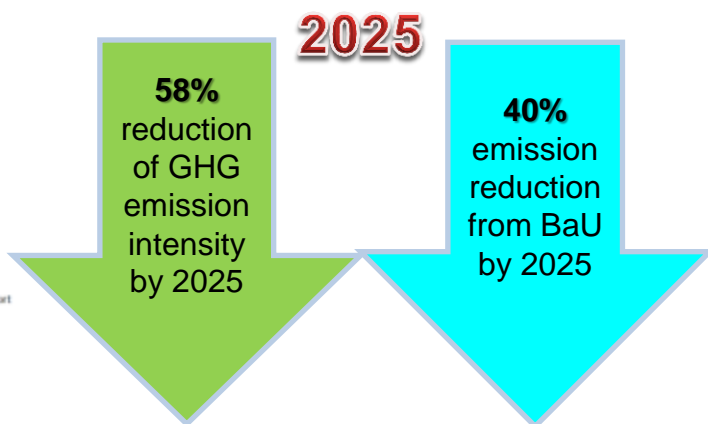
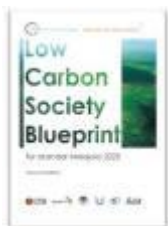


Figure 1: GHG emissions by sectors



# A Roadmap towards Low Carbon Iskandar Malaysia 2025



Low Carbon Society Blueprint for Iskandar Malaysia 2025

IRDA's Implementation Plan 2013-2015



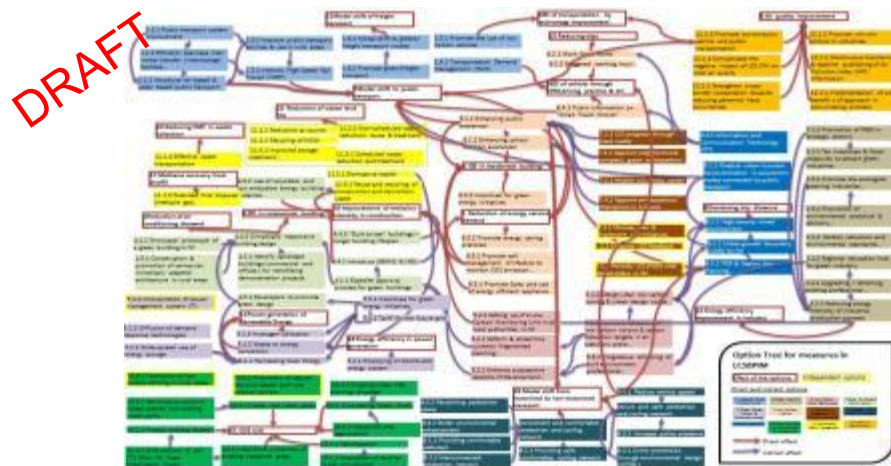
A Roadmap towards Low Carbon Iskandar Malaysia 2025



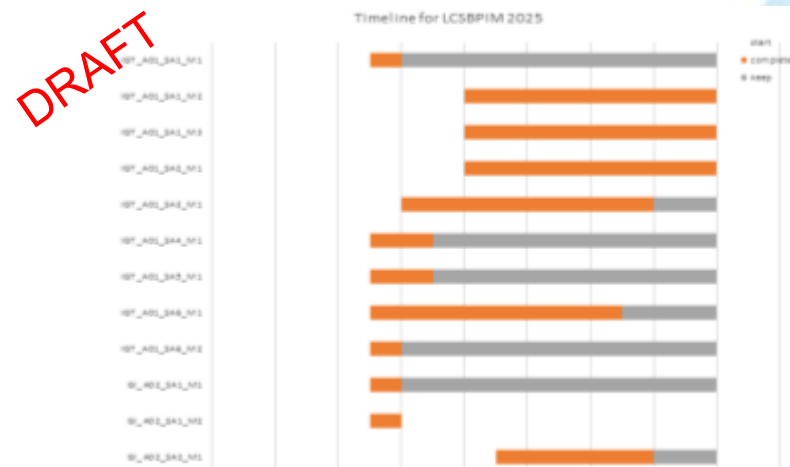
This Roadmap has been formulated to serve as a complementary document to the LCSBPIM. It provides a pathway to guide the implementation of actions outlined in the LCSBPIM by priority, timeline and related implementation agencies.

# Low Carbon Society Implementation Roadmap 2015-2025

- ❖ LCS Implementation Roadmap will serve as a complementary document to the LCSBPIM 2025.
- ❖ It provides pathways to guide the implementation of programmes recommended in the LCSBPIM 2025 by outlining according to the given priority, timeline and related implementation agencies.
- ❖ It will provide answers to the following questions: Which policies should come first? How long should the implementation period be? When should these policies be implemented? Who are the potential agencies involved in these policies?



Option Trees for LCSBPIM 2025  
 - Relationship between 97 measures  
 (Output from Kyoto University Training- July 2014)



Timeline for 97 measures in LCSBPIM 2025  
 (Output from Kyoto University Training- July 2014)

## a) DEVELOPMENT APPROACH

In a rapid urbanization of developing countries, **Sustainable economic corridor development/ conurbation planning**( consists of several local authorities) is a important component to facilitate green environment, green economy and green community. **CONURBATION SCALE + MULTI DISCIPLINARY**

## b) METHODOLOGY

Good **baseline quantitative study, consensus building and low carbon blueprint plan** will help to develop an **integrated climate resilient , Low carbon framework** for a city by providing **objective** decision.

-Looking beyond policy – **SCIENCE-KNOWLEDGE-POLICY- IMPLEMENTATION (completing PDCA cycle) \*\* 5 LPA and School eco life project**

## c) DISEMMINATION and NETWORK

The **researchers/scientists** have to work with **local implementation agencies** and **international collaboration** for **capacity building opportunities**.  
( **KNOWLEDGE SHARING and COE development**)



*Thank you for your attention!*  
ho@utm.my

Thank You Terima Kasih 谢谢 धन्यवाद ありがとう

