

**SATREPS**

Science and Technology Research Partnership  
for Sustainable Development Program

On 11-13 Oct 2015 At DoubleTree by Hilton  
Johor Bahru , Malaysia

# Pursuing Green growth for sustainability and Resilience In Malaysian cities.

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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

- **Scientific evidence on the cause and impact of climate change at city or sub-national level. (IPCC AR5 WGIII report)**

## Challenges And Solutions

- **Malaysian Policies measures for mitigation and adaptation in cities**
- **11<sup>th</sup> Malaysia Plan (2016-2020)**

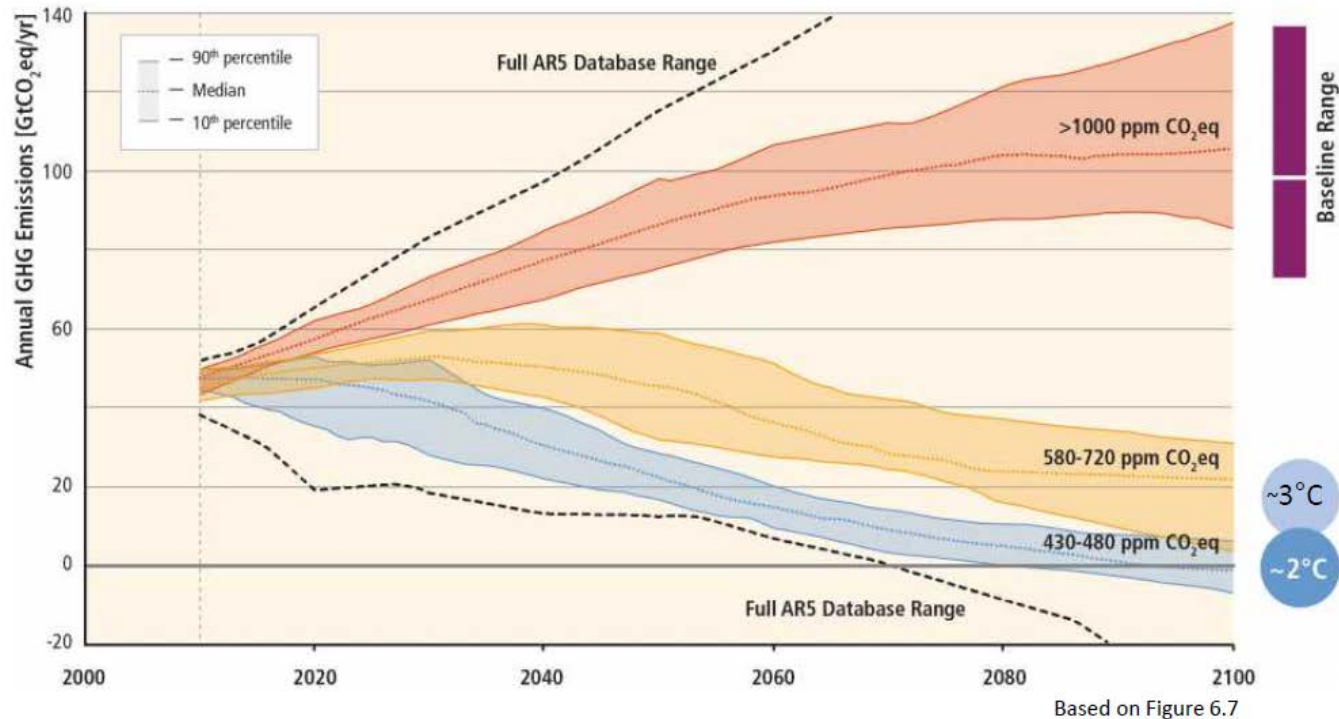
## LCS Iskandar Malaysia

- **The case of Low carbon Iskandar Malaysia**
- **Conclusion**

# IPCC Fifth Assessment Report (AR5)

## – Findings on Stabilisation of Atmospheric concentrations

Stabilization of atmospheric concentrations requires moving away from the baseline – regardless of the mitigation goal.



Working Group III contribution to the  
IPCC Fifth Assessment Report

Source: Shobhakar Dhakal 2015 CIRED Paris

# IPCC Fifth Assessment Report (AR5)

## – Findings on The Physical Science on Climate change

### Rising Temperatures

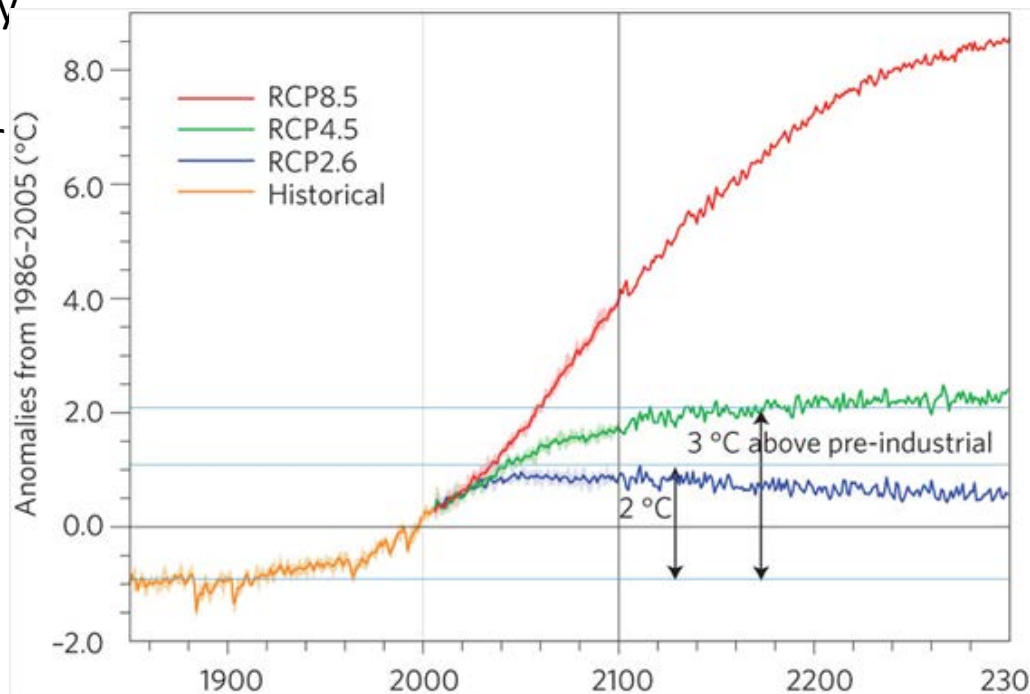
-Changes are observed in **all geographical regions**, the atmosphere and oceans are **warming**, the extend of **volume of snow and ice** are **diminishing**, **sea levels are rising** and **weather patterns** are changing.

### Projection

- Computer models of the climate used by IPCC indicate these changes will continue under a range of possible greenhouse gas emission scenarios over the 21<sup>st</sup> century. If emission continue to rise at the current rate, impact by the ends of this century are projected to include **global average temperature of 2.6-4.8 degrees Celsius higher than present**, **sea level 0.45-0.82 metre than present**.

To prevent the most severe impact on climate change, UNFCCC agreed to a target of keeping the rise in average global temperature since pre industrialisation time **below 2 degree C** and considering lowering the target **below 1.5 C** in near future

### IPCC Emission scenarios



**Limiting temperature rise require substantial and sustained reduction emission of GHG.**

# – Key Findings of IPCC Fifth Assessment Report (AR5)



Many emerging **climate change risks** are concentrated in urban areas ( >50% population in urban areas – assets and economic activities)



Climate change **impacts on cities are increasing**

( Keys issues are rising temperature, heat stress, pollution, extreme weathers event, flooding)



The world's population is forecasted to doubled by 2050, **increasing nos. of people/ asset exposed to Climate Change risks.** (Rapid urbanisation in low and middle income countries).



Steps that **build resilience and enable SD** in urban areas can accelerate successfully adaptation globally

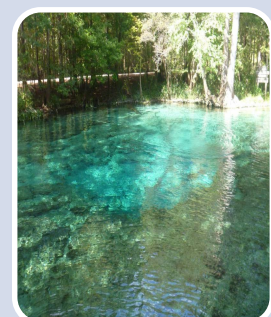
(Adaptation option exist areas such in food, water, energy and transport)



The greatest **potential for mitigation GHG emissions may lie in developing cities in industrialising countries**

(City based mitigation potential are building, transport, energy and industry)

# AR5 – Findings on Impact of Climate change - Cities on front line of Changing climate. Role of cities in reducing emissions and protecting their inhabitants



## Sea Water level Rise

- Early warning systems
- Coastal infrastructure
- Evacuation and response management

## Food Insecurity

- Green roofs and green markets
- Alternative food sources/aquaculture

## Extreme Weather events

- Localised migration, SWM, - stormwater and runoff infra.- Stockpiling

## Increased temperature

- Green zones
- Water features
- wind corridors
- Building code

## Fresh Water Availability

- Storage facilities
- Water recycling
- Use of grey water



# Potential for Adaptation and Mitigation options

## **ADAPTATION- cheaper in long run than doing nothing**

- Improving early warning systems
- Strengthening coastal infrastructure
- Evacuation and response management
- Green roofs and green markets
- Alternative food sources/ aquaculture
- Localised migration
- Stockpiling
- Green zones
- Building code
- Storage facilities

**Potential of ADAPTATION depends on structure and development level of individual city**

## **MITIGATION- can have positive impact for generation to come**

- Energy supply ( RE, CCS )
- Transport ( avoiding trips, LC transport, EE engine improvement, non fossil based)
- Buildings – new EE design, retrofitting old buildings.
- Energy supply- EE improvement
- Low carbon cities
- Policy instruments

**For developing countries In Asia - MITIGATION options include shaping urbanisation and infrastructure towards LC and sustainable pathways.**

# AR5 – Findings on GHG emission growth

## Influencing factors

- Physical, economic and social
- Development levels
- Urbanisation histories

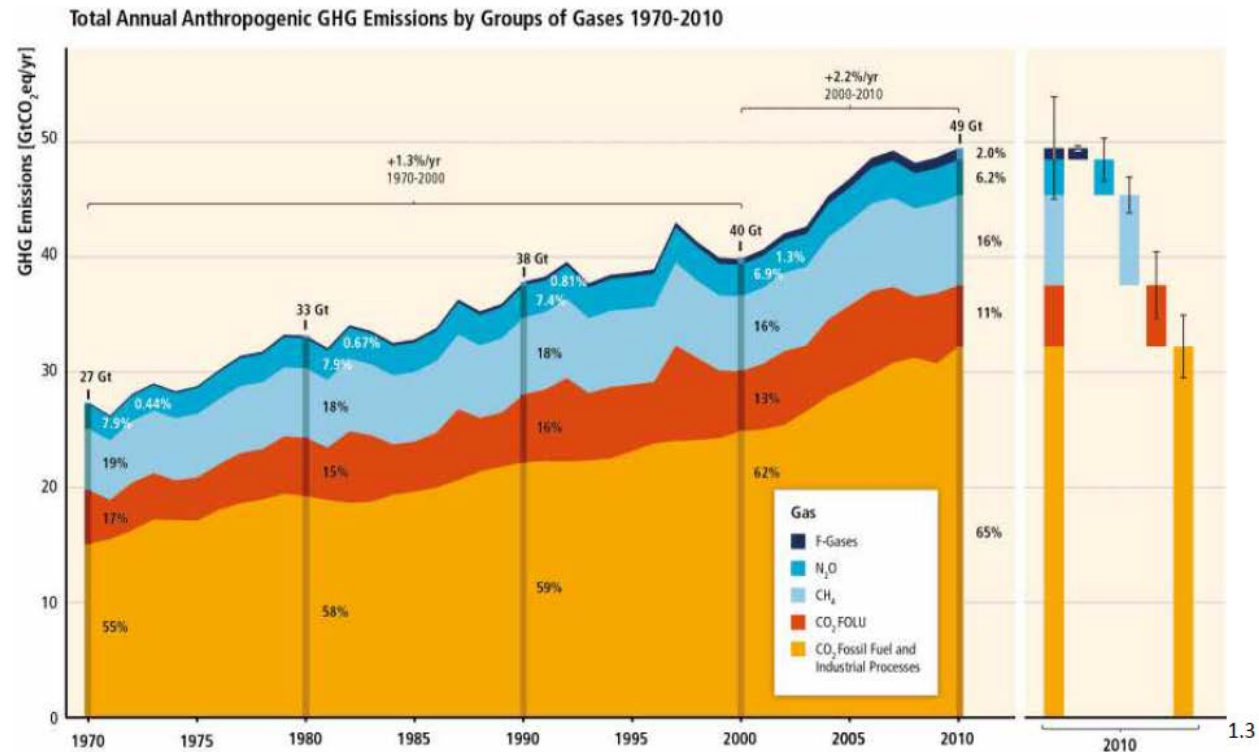
GHG emissions growth between 2000 and 2010 has been larger than in the previous three decades.

## Key factors

- Income,
- Population dynamics,
- Urban form,
- Locational factors,
- Economic structure and market

## Key urban form drivers of GHG emission

- Density
- Land use mix
- Connectivity
- accessibility

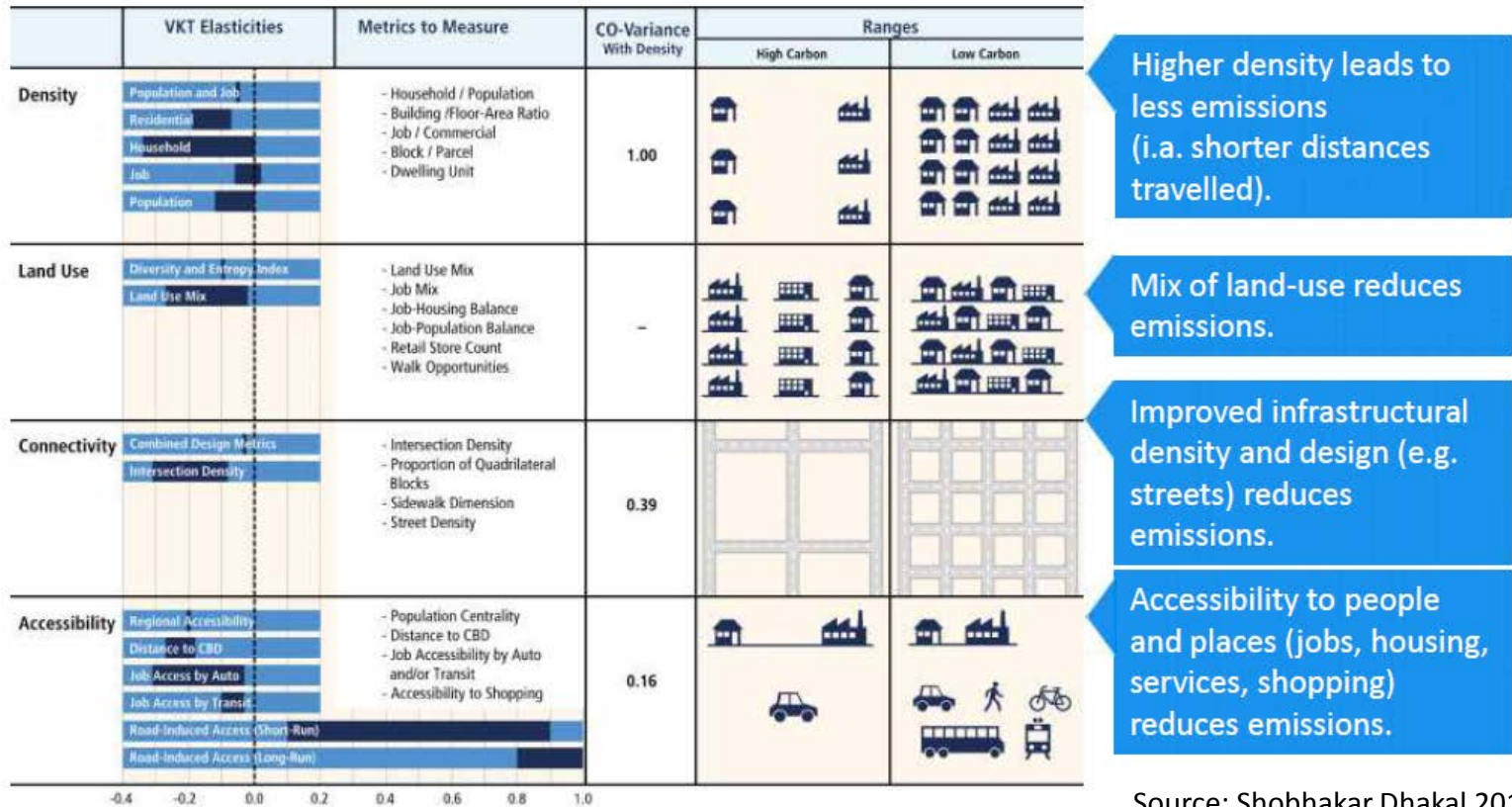


Source: Shobhakar Dhakal 2015 CIRED Paris



# AR5 – Findings on emissions drivers and urban solutions

Key drivers for emissions from urban form are density, land use, connectivity and accessibility

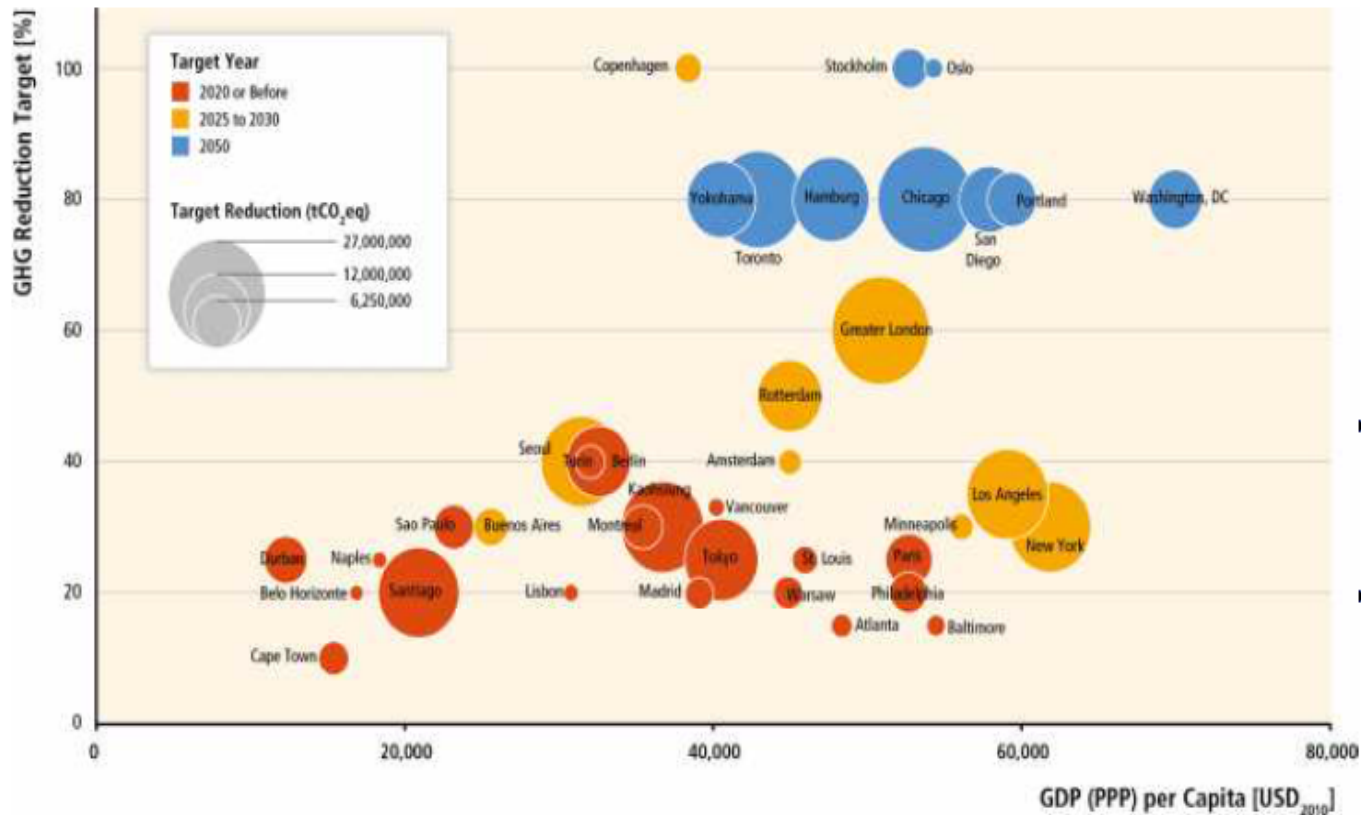


Source: Shobhakar Dhakal 2015 CIRED Paris

## Mitigation opportunities

- Small and mid size cities + Developing countries + Economic growth regions + infra not yet locked in

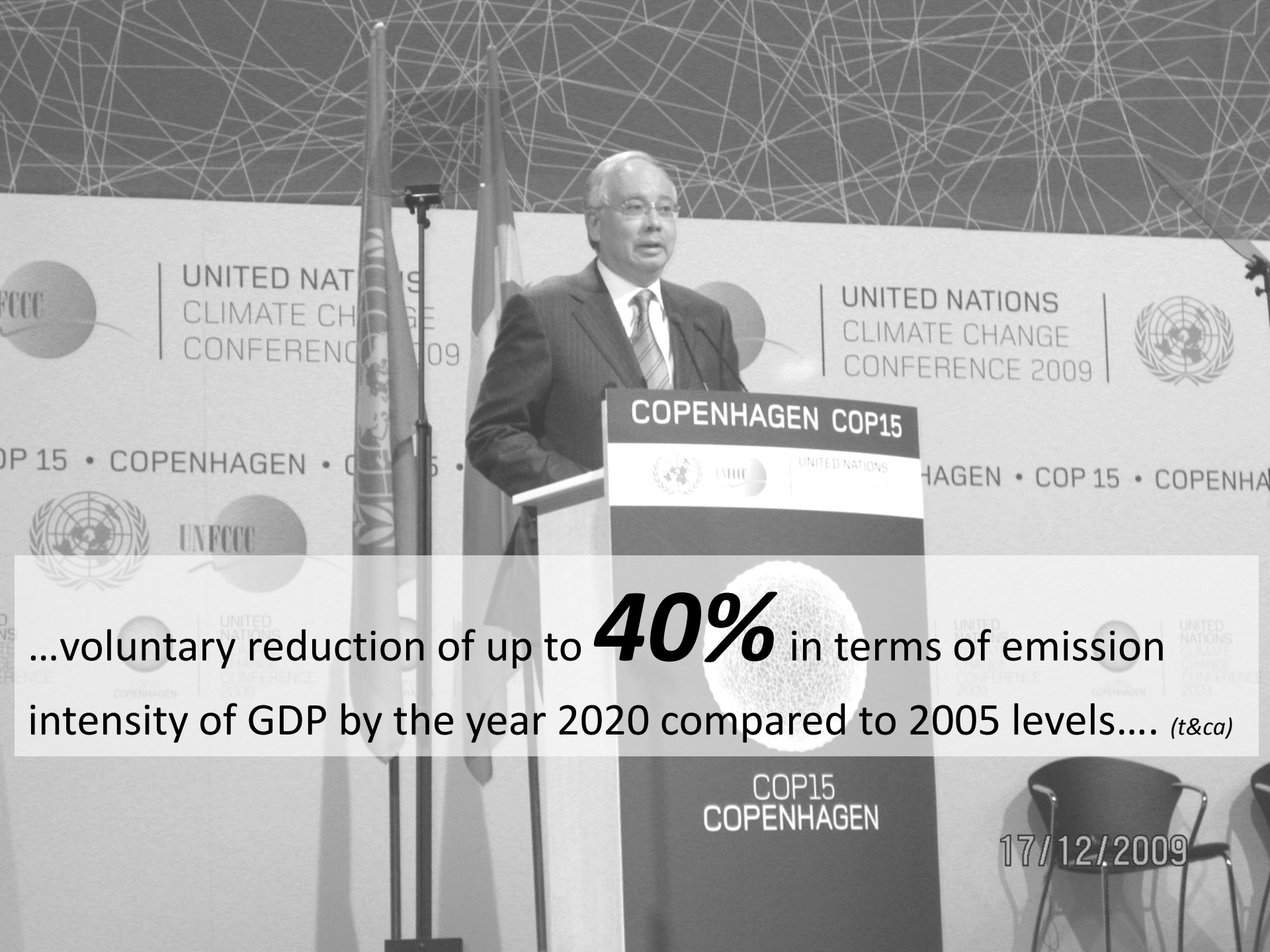
# Climate Action Plans and Mitigation Commitment



- Little systematic assessment on their level of implementation & the extent to which reduction targets are being achieved
- Focused largely on energy efficiency
- Limited consideration to land-use planning strategies and other cross-sectoral, cross boundary measures

Sources: Baseline emissions, reduction targets, and population from self-reported data submitted to Carbon Disclosure Project (2013). GDP data from Istrate & Nadeau (2012). Note that the figure is illustrative only; data are not representative, and physical boundaries, emissions accounting methods and baseline years vary between cities. Many cities have targets for intermediate years (not shown).

**Many cities are undertaking Climate actions plan and mitigation (20-40%) commitments. Yet aggregate impact on urban emission is still uncertain.**



UNITED NATIONS  
CLIMATE CHANGE  
CONFERENCE 2009

UNITED NATIONS  
CLIMATE CHANGE  
CONFERENCE 2009

COPENHAGEN COP15



UNITED NATIONS

UNFCCC

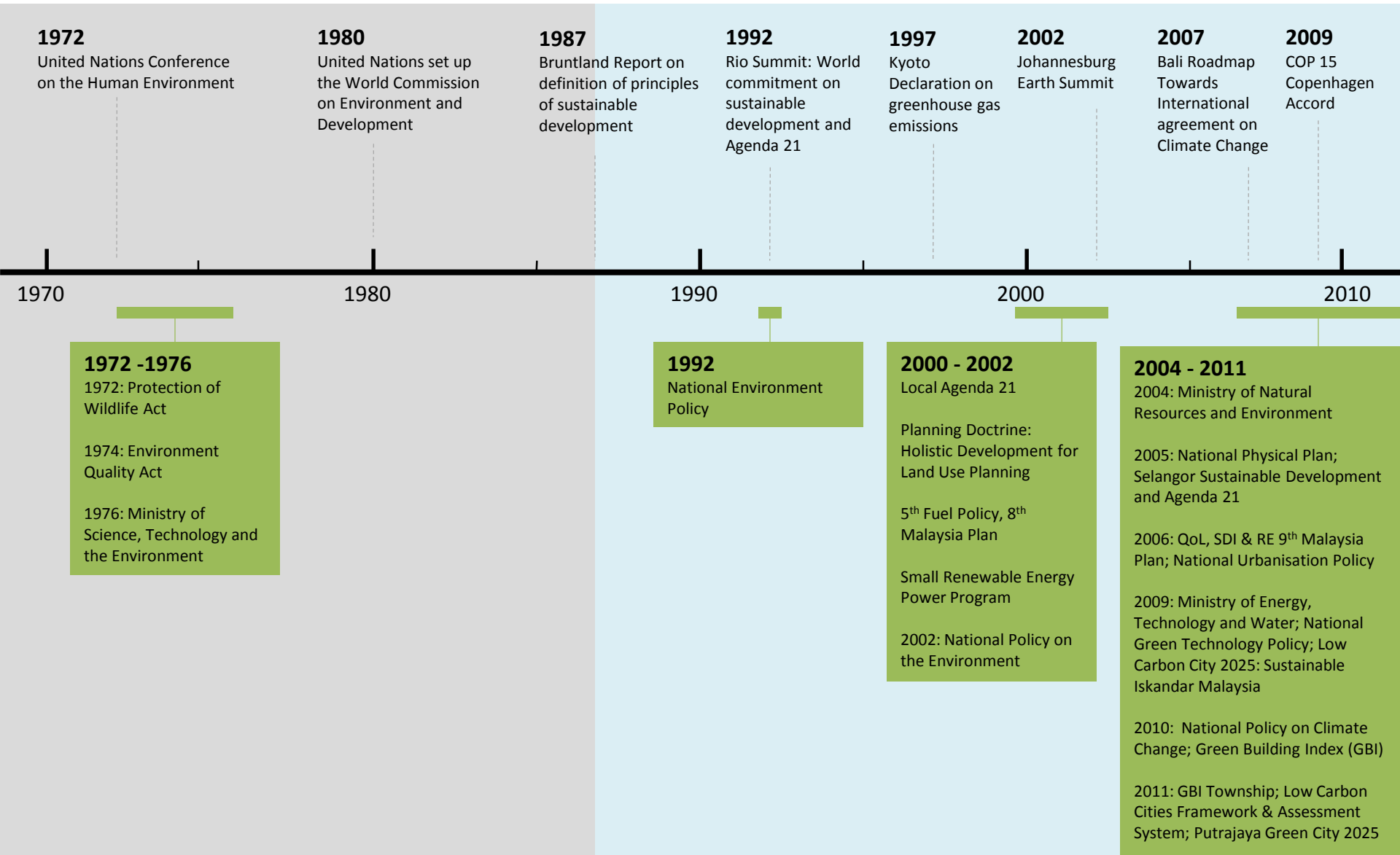
...voluntary reduction of up to **40%** in terms of emission intensity of GDP by the year 2020 compared to 2005 levels.... *(t&ca)*

COP15  
COPENHAGEN

17/12/2009

# 02 Low Carbon Society Movement in Malaysia

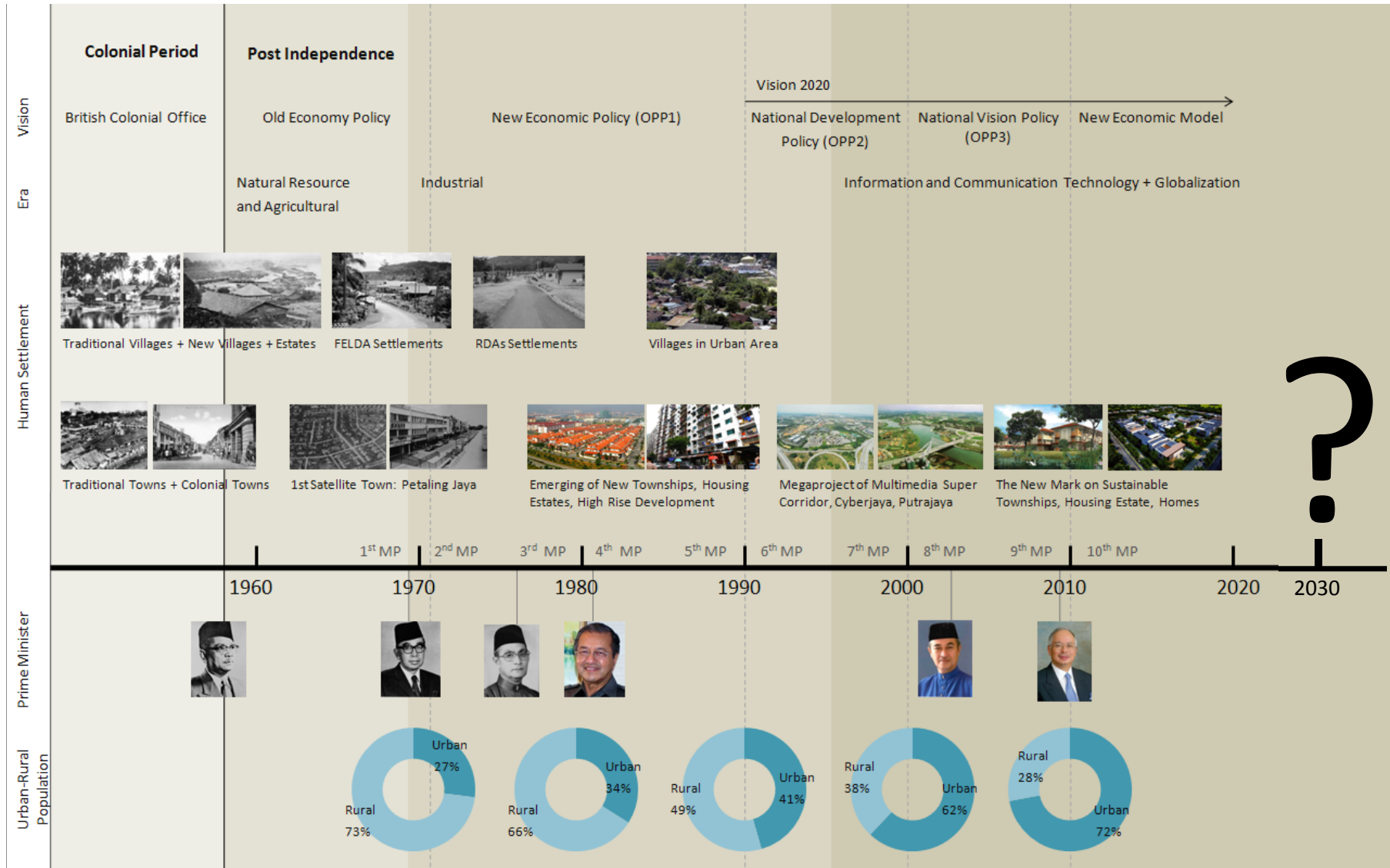
## The Pathway to Sustainable Urban Development





# 02 Low Carbon Society Movement in Malaysia

## The Pathway to Sustainable Urban Development



(Source: Ho Chin Siong, Teh Bor Tsong and Chau Loon Wai, 2011)

# 02 Low Carbon Society Movement in Malaysia

## Eleventh Malaysia Plan 2016-2020 (Green Growth Policy)

### Game Changer

## Embarking on green growth

### Why is green growth important for Malaysia?

Malaysia, like many countries across the world, is grappling with the challenge of balancing a growing population and demand, with a natural environment that is increasingly under stress. In the global context of increasing intensity and frequency of extreme weather events, adopting green growth has now become an imperative for Malaysia. It represents Malaysia's commitment to renew and, indeed, increase its commitment to the environment and long-term sustainability.

### What will success look like?

A successful green growth trajectory will ensure:

- Detrimental impact of socio-economic activity on environmental systems is reduced;

- Natural capital, including forested areas, biodiversity, and water resources as well as its ecosystems, is valued and sustainably managed;
- Development gains are protected, thus ensuring wellbeing of people across generations; and
- Energy use is efficient and renewable energy is widely used.

### How will this be achieved?

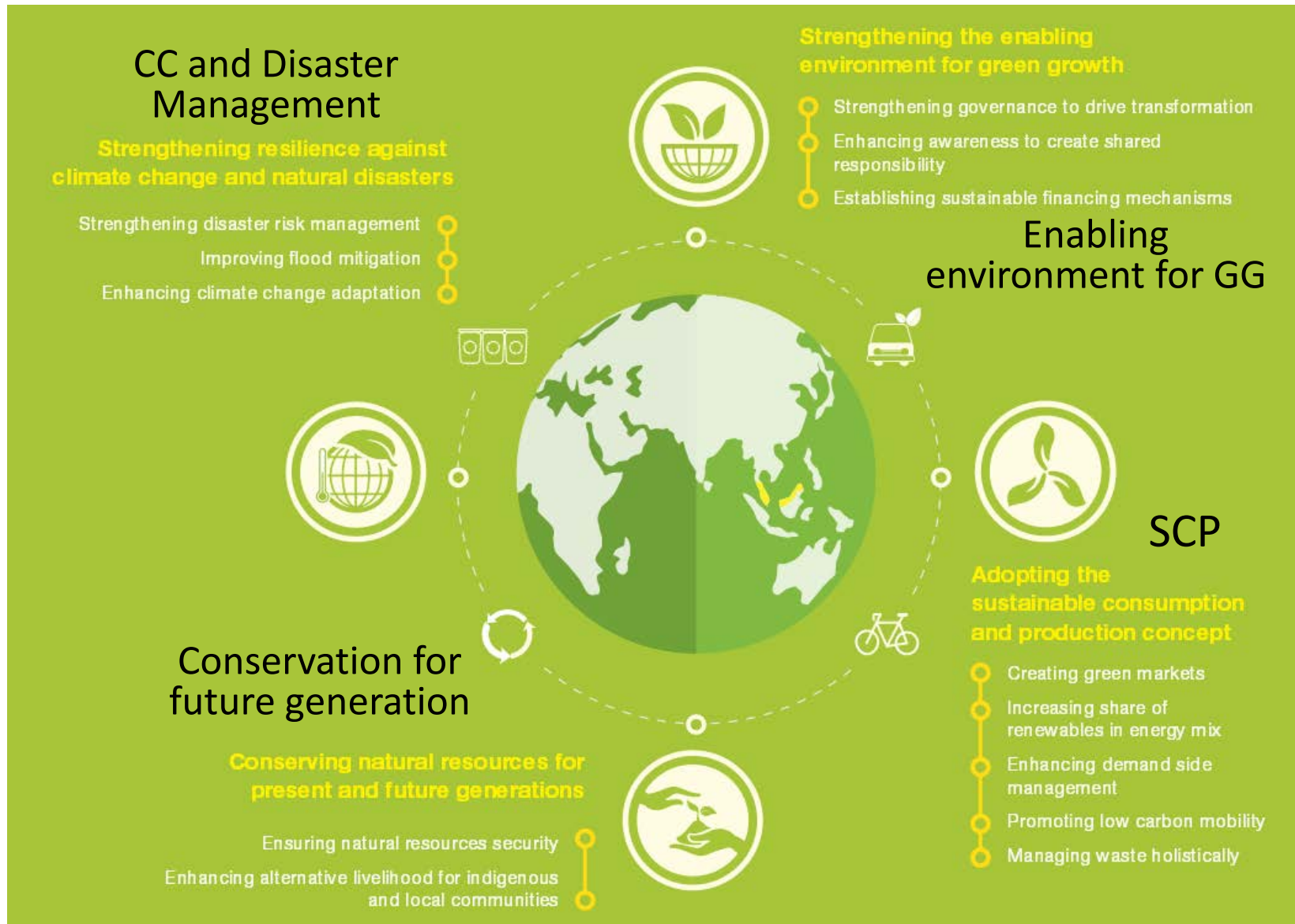
Achieving these aspirations requires a fundamental shift away from a 'grow first, clean up later' development model towards one that views resilient, low-carbon, resource-efficient, and socially inclusive development as an upfront investment that will yield future gains over multiple generations to come. This requires fundamental changes across every major dimension including how policy is determined, how institutions are regulated, how responsibilities are shared, and how people value their environment.

**Shift away from 'grow first and clean up later' development model towards one that is resilient, low carbon, resource efficient and socially inclusive development.**



# 02 Low Carbon Society Movement in Malaysia

## Eleventh Malaysia Plan 2016-2020 (Green Growth Policy)



# 02 Low Carbon Society Movement in Malaysia

## Game Changer - Green Growth for Sustainability and Resilience

“Growth that is **efficient** in its use of natural resources, **clean** in that it minimises pollution and environmental impacts, and **resilient** in that it accounts for natural hazards and the role of environmental management and natural capital in preventing physical disasters.”  
(World Bank)

Efficient

+

Clean

+

Resilient

From

Quantity  
of growth

Waste to  
landfill

Climate change  
mitigation and  
adaptation as a  
cost

Government's  
responsibility

Resource and  
energy  
intensive

To

Quality of growth  
that takes into  
consideration the  
cost to the climate,  
environment, and  
the nation's natural  
resources

Waste as  
**resource**  
that can be reused  
through recycling  
and recovery, for  
power generation,  
and other waste to  
wealth initiatives

Climate change  
mitigation and  
adaptation as an  
**investment**  
that is accounted  
for during the  
upfront planning and  
investment stages

**Shared  
responsibility**  
between the  
government, private  
sector, and individual  
citizen

Resource and energy  
**efficient**  
in balancing both  
supply-side and  
demand-side  
considerations and  
constraints

# 02 Low Carbon Society Movement in Malaysia

## Greening Iskandar Malaysia and Putrajaya



### Low Carbon Iskandar Malaysia 2025

#### Size

221,634 hectares

#### Population (mil.)

1.35 (2005)

3.00 (2025)

#### Gross Domestic Product (bil RM)

35.7 (2005)

141.4 (2025)



### Putrajaya Green City 2025

#### Size

4,931 hectares

#### Population

49,452 (2007)

347,700 (2025)

#### Gross Domestic Product (mil RM)

23.6 (2007)

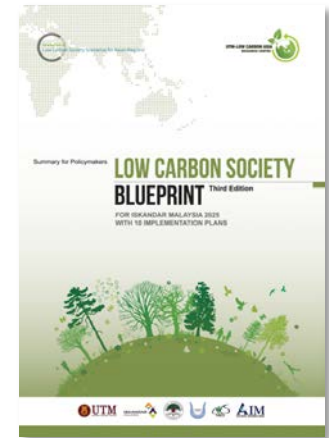
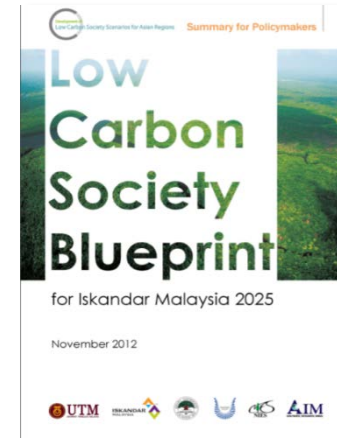
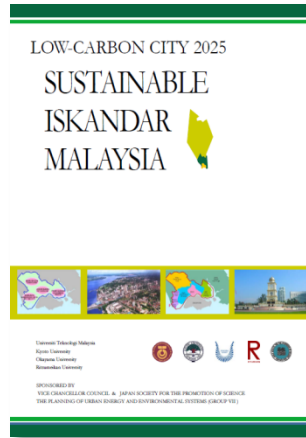
50.3 (2025)

# 02 Low Carbon Society Movement in Malaysia

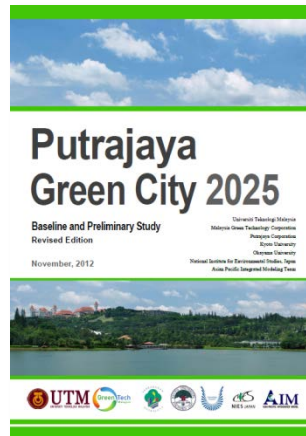
## Greening Iskandar Malaysia and Putrajaya



### Low Carbon Iskandar Malaysia 2025



### Putrajaya Green City 2025





# Iskandar Malaysia at a Glance

A



E



B



C

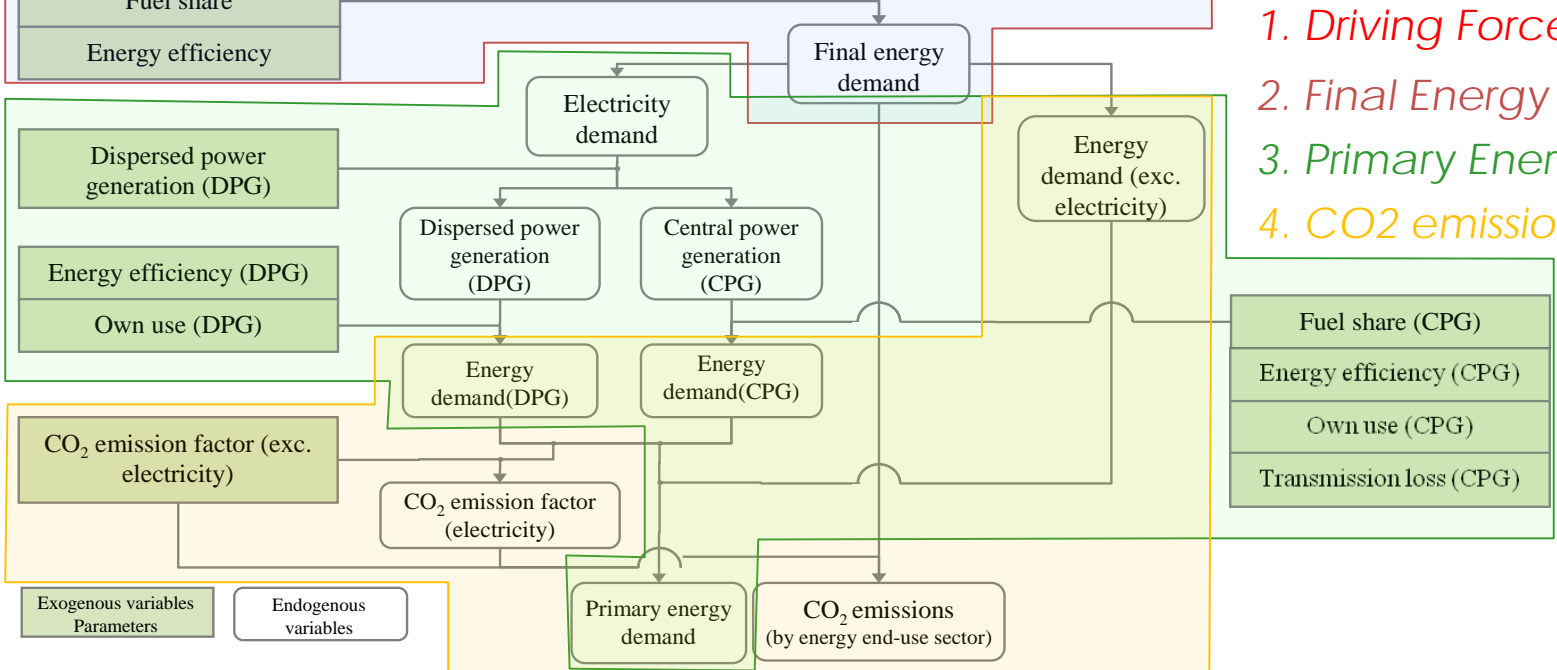
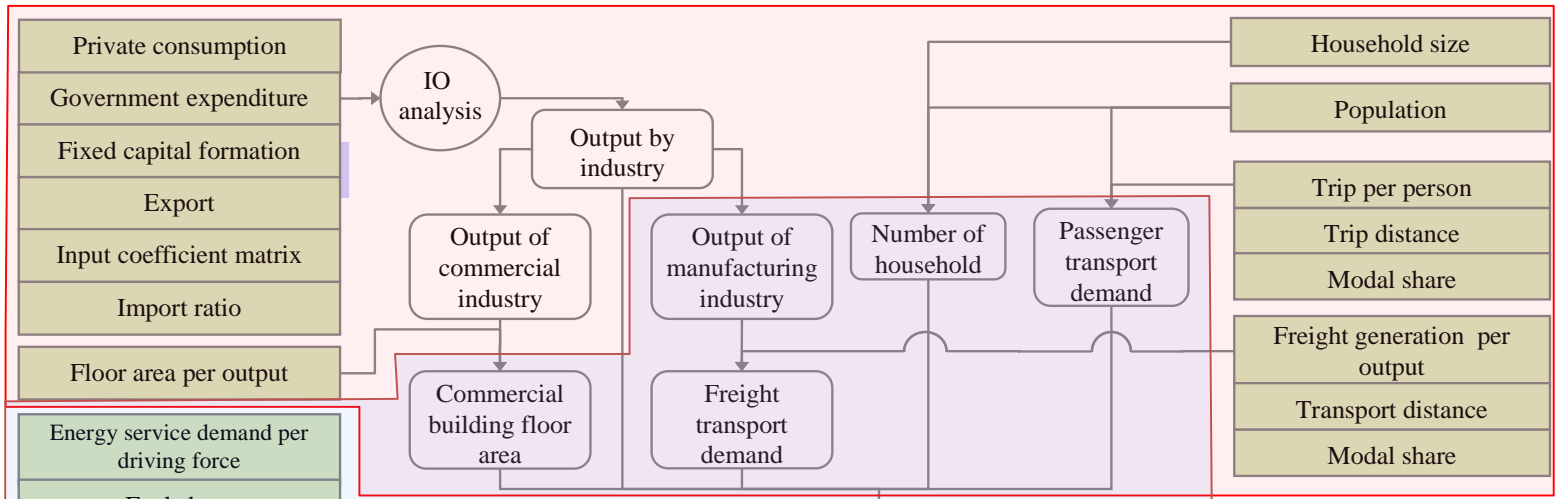


D



# Low Carbon Society Scenarios for Iskandar Malaysia

## Asia-Pacific Integrated Model (AIM) Crash Course...



1. Driving Force Settings
2. Final Energy Demand
3. Primary Energy Demand
4. CO2 emissions



# Projected Greenhouse Gas Emission Reduction in Iskandar Malaysia

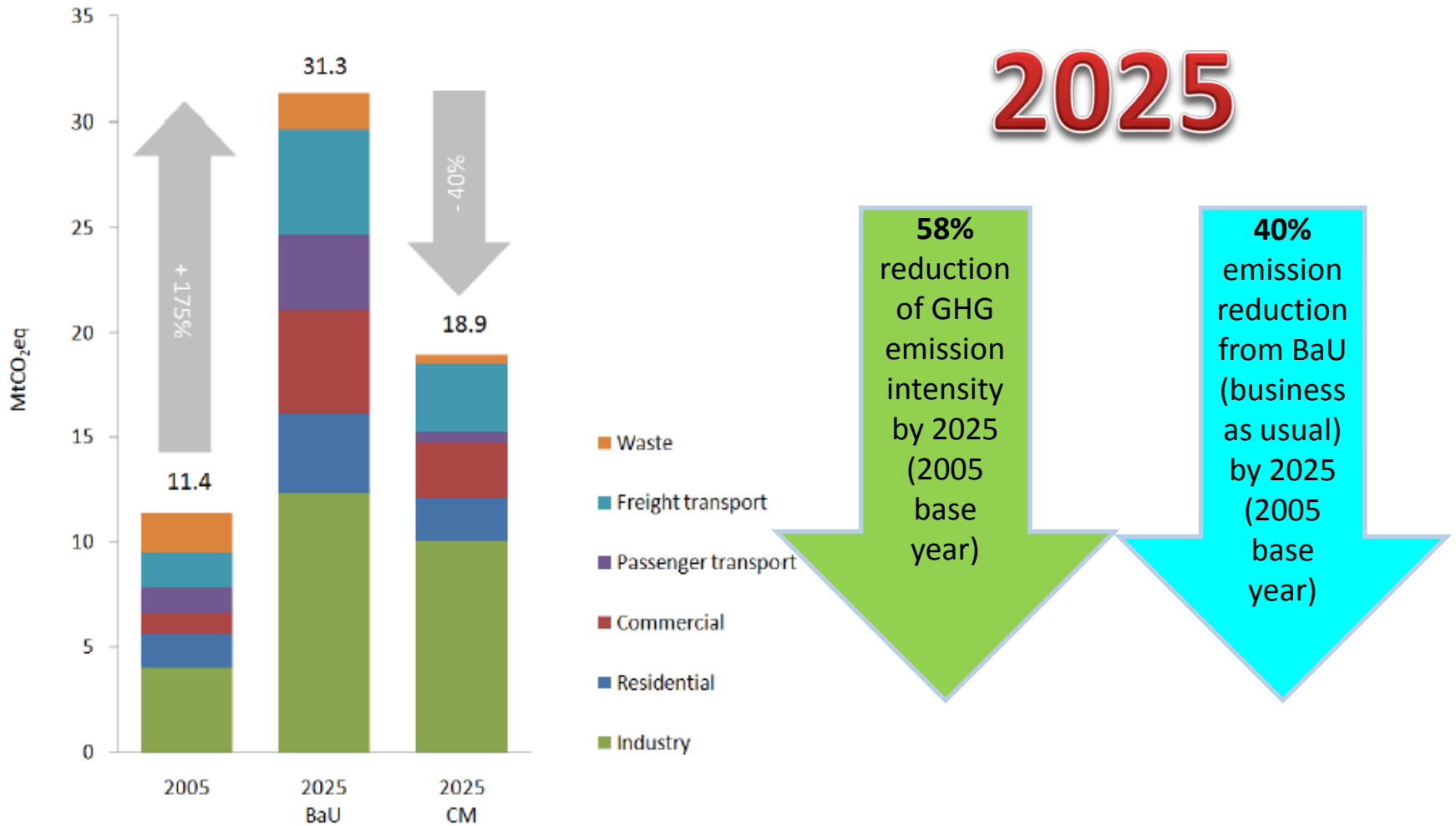
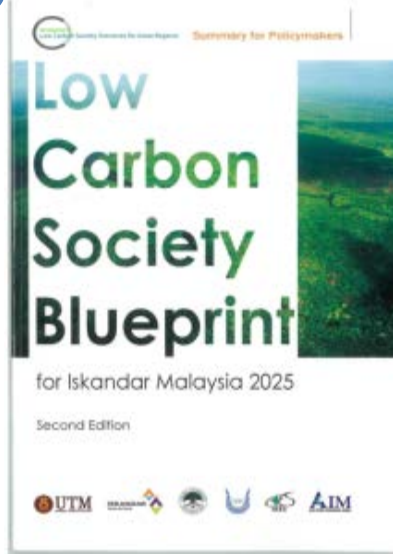


Figure 1: GHG emissions by sectors

# Low Carbon Society Blueprint for Iskandar Malaysia

2025

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



Programmes	
1	<b>Integrated Green Transportation – Mobility Management System</b>
2	<b>Green Economy Guidelines</b>
3	<b>Eco-Life Challenge Project for Schools</b>
4	<b>Portal on Green Technology</b>
5	<b>Trees for Urban Parks/Forests</b>
6	<b>Responsible Tourism and Biodiversity Conservation</b>
7	<b>Bukit Batu Eco-Community</b>
8	<b>GAIA – Green Accord Initiative Award</b>
9	<b>Low Carbon Village FELDA Taib Andak</b>
10	<b>Special Feature: Smart City – Nafas Baru Pasir Gudang: CLEAN AND HEALTHY CITY</b>

# Low Carbon Society for Iskandar Malaysia Publications

2012



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

2013



Low Carbon Society Blueprint for Iskandar Malaysia 2025- Full Report

2013



A Roadmap towards Low Carbon Iskandar Malaysia 2025

2013



Iskandar Malaysia: Action for a Low Carbon Future

2014



Low Carbon Society Brochures for 5 Municipalities within IM



COP 18, Doha



MOA, 2012



MOA, 2013



COP 19, Warsaw



COP 20, Lima

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 Brochures for 5 Municipalities within IM

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



Johor Bahru

**Vibrant world class cosmopolis of the south**



Johor Bahru Tengah

**Green livable city & creative innovation belt**



Pasir Gudang

**Green & clean industrial port city**



Kulajijaya

**Smart integrated logistic hub**



Pontian

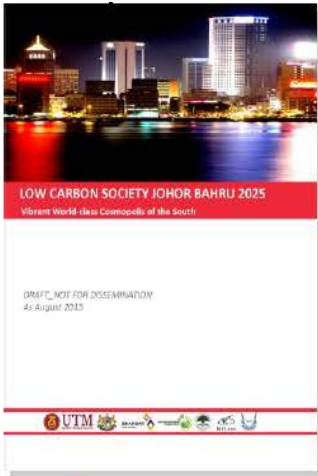
**Clean energy and agro-biodiversity hub**





# Low Carbon Society Scenarios for Iskandar Malaysia

## NOW ONGOING...Local Authority LCS Blueprints




Johor Bahru

*“World-Class Cosmopolis of the South”*



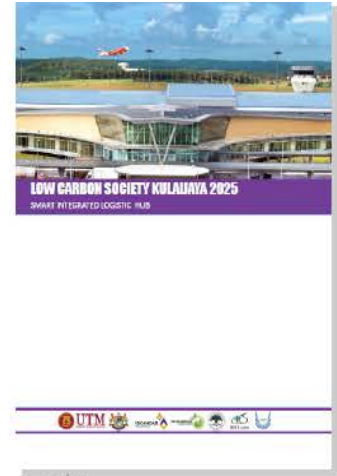

Johor Bahru Tengah

*“Green Livable City and Creative Innovation Belt”*



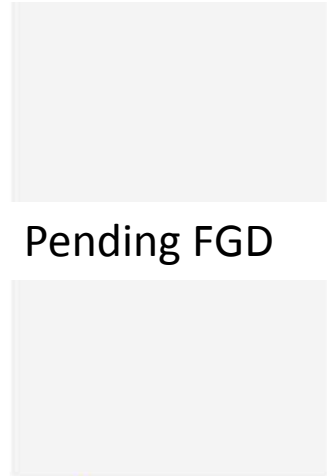

Pasir Gudang

*“Green and Clean Industrial Port City”*




Kulaijaya

*“Smart Integrated Logistic Hub”*



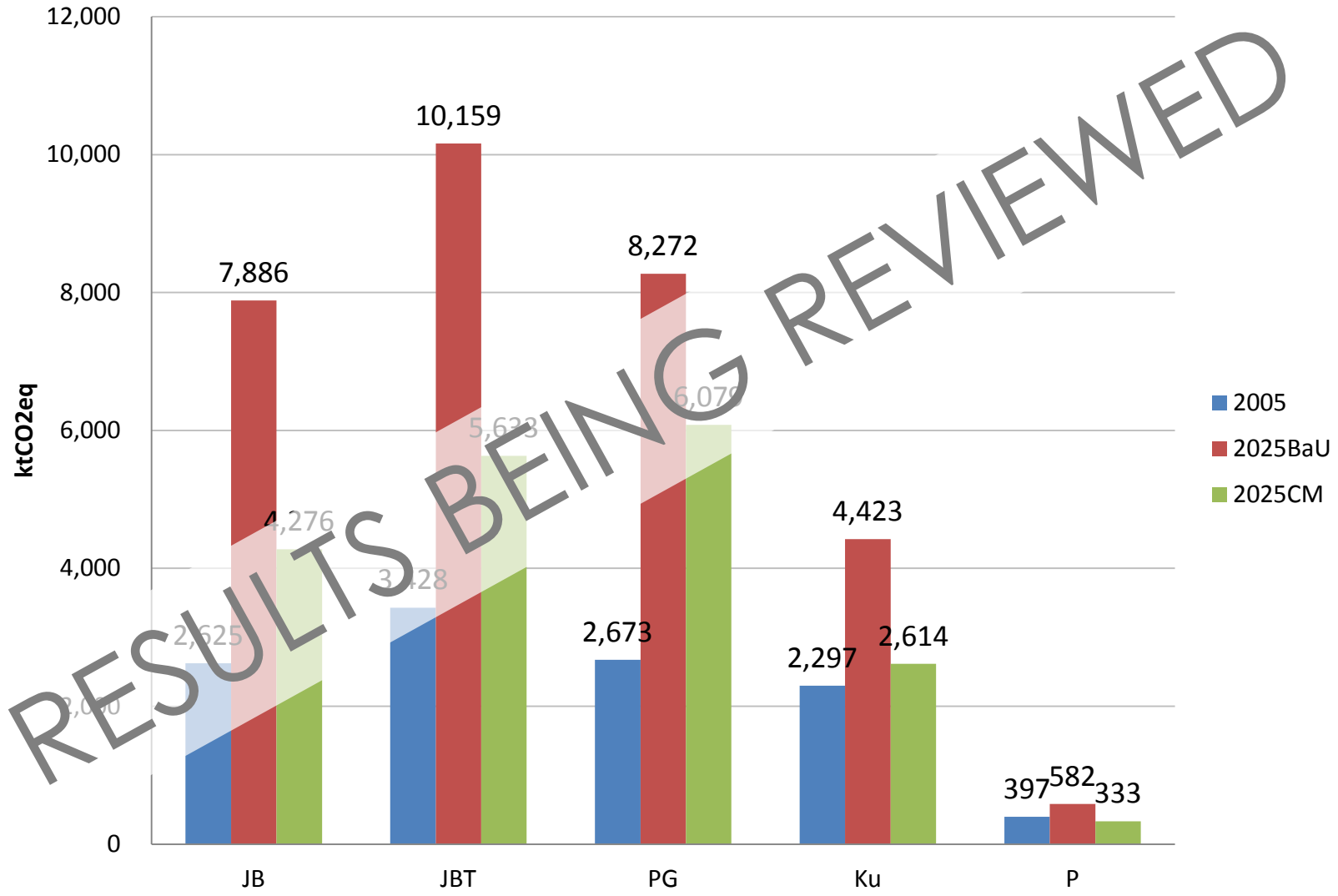

Pontian

Pending FGD

# Low Carbon Society Scenarios for Iskandar Malaysia

## NOW ONGOING...Local Authority LCS Blueprints

### GHG Emissions among 5 LA of Iskandar Malaysia





# Low Carbon Society- Project updates and status



**Integrated Green Transportation – Mobility Management System**

<http://www.jomlah.com.my/>



**Green Economy Guidelines**

**Status: Completed**



**Eco life Challenge Programmes**

**Status: In year 3, target 198 primary schools in Iskandar Malaysia in 2015**



**Low Carbon Village Felda Taib Andak**

**Status: In phase 2 of programme implementation**



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

**Status: Completed**



**Responsible Tourism Development And Biodiversity Conservation**

**Status: Now in year 3**



**Trees planting programme**

**Status:**

**Planted 1000 trees in Pasir Gudang- 2014; 1000 trees in Seri Alam; 218 Trees in Rumah Iskandar Malaysia**



**LCCF Pilot Project in Rumah Iskandar Malaysia**

**Status: Completed baseline report**



**Developing cycling lane**

**Satus: Seri Austin- 17 KM (15 Feb'14) & Seri Alam 33KM (18 May'14) under Smart Healthy City & Community programme**



**1. Integrated Coastal Erosion Prevention Plan for Tanjung Piai; 2. Gazettement of Sg Pulau Forest Reserve as a State Park; 3.Planned strategic enhancement of Pulau Kukup as a premier ecotourism destination in Iskandar Malaysia**

# Media Highlights 2012-2013 (LCS AND IM)



## 日マ共同研究で施策12件発表 イスカンドラの低炭素化を支援

イスラマ共同研究（JMDI）とマレーシアエネルギー（MEM）が、日マ共同研究で、イスラマ共同研究の成果として、12件の施策を発表した。イスラマ共同研究は、イスラマ共同研究の成果として、12件の施策を発表した。イスラマ共同研究は、イスラマ共同研究の成果として、12件の施策を発表した。



日マ共同研究のメンバーが記者会見で成果を発表している様子。



## 依斯干達 新書「今年度11月」

依斯干達の新書「今年度11月」が、今年度11月に出版される。この新書は、依斯干ダの発展と持続可能な社会の実現について詳しく解説している。

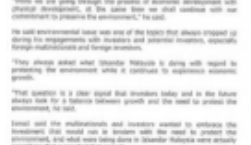


依斯干ダの新書「今年度11月」の出版記念イベントの様子。

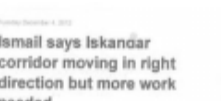


## Iskandar Malaysia Launches Law-carbon Society Meeting

Iskandar Malaysia has launched the Law-carbon Society Meeting, a platform for legal professionals to discuss and address carbon-related issues in the region.



Iskandar Malaysia Law-carbon Society Meetingの開催風景。



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

Prime Minister Ismail Sabri Pasolun has stated that the Iskandar Malaysia corridor is moving in the right direction, but more work is needed to fully realize its potential as a sustainable living place.



Iskandar Malaysiaの風景。



## PM Najib: Iskandar Malaysia has exceeded expectations

Prime Minister Najib Razak has announced that Iskandar Malaysia has exceeded expectations in its first year, with significant progress in infrastructure and economic growth.



首相ナジブが記者会見で Iskandar Malaysia の進捗を発表している様子。

## 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.

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

Prime Minister Najib Razak has expressed confidence in Iskandar Malaysia's ability to attract investment and create jobs, highlighting the region's strategic location and infrastructure.

## This is our place

Iskandar Malaysia is a place where innovation and sustainability meet. We are committed to creating a high-quality living environment for all.

## Cooperate to transform Iskandar Malaysia for sustainable living

Stakeholders from various sectors are working together to transform Iskandar Malaysia into a sustainable living place, focusing on green infrastructure and social inclusivity.

## Balanced approach

### Cooperate to transform Iskandar Malaysia for sustainable living

The Iskandar Malaysia Development Authority (ISMA) is committed to a balanced approach in transforming the region, ensuring economic growth, environmental sustainability, and social inclusivity.

## マレーシアに日本企業、環境省と「CO2削減」

Japanese companies and the Japanese Ministry of the Environment are collaborating with Malaysia to reduce CO2 emissions and promote sustainable development.

## Iskandar Malaysia Law-carbon Society Meeting

The meeting brought together legal experts to discuss the challenges and opportunities of a low-carbon society in Iskandar Malaysia.

## Cooperate to transform Iskandar Malaysia for sustainable living

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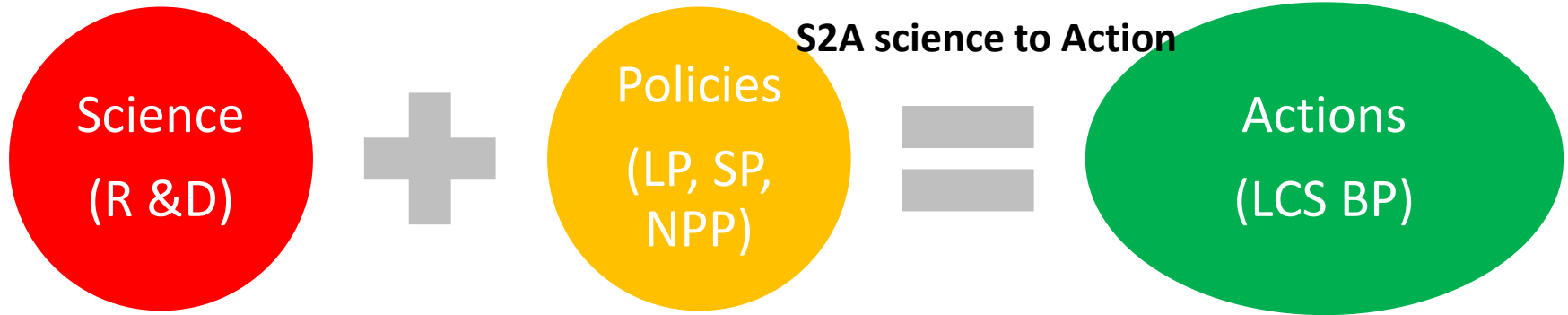




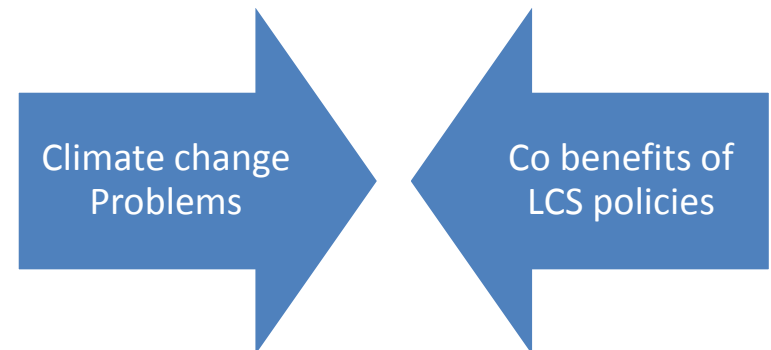
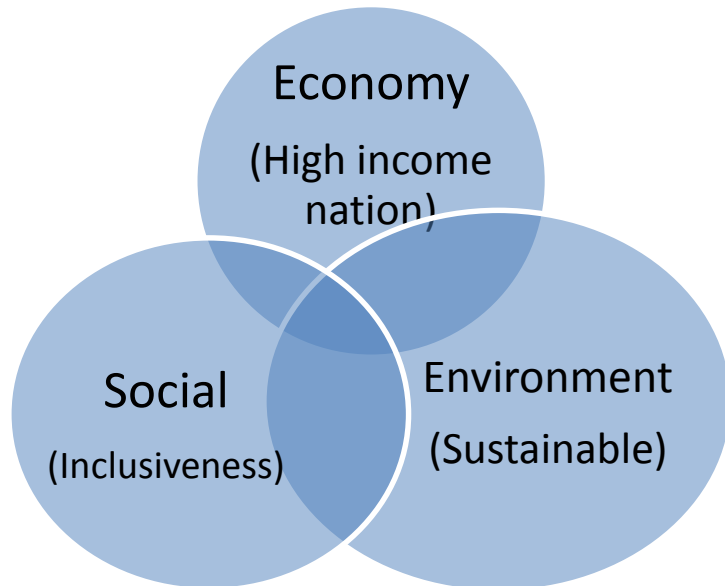


# 02 Low Carbon Society Movement in Malaysia

Sustainable development and Climate change actions

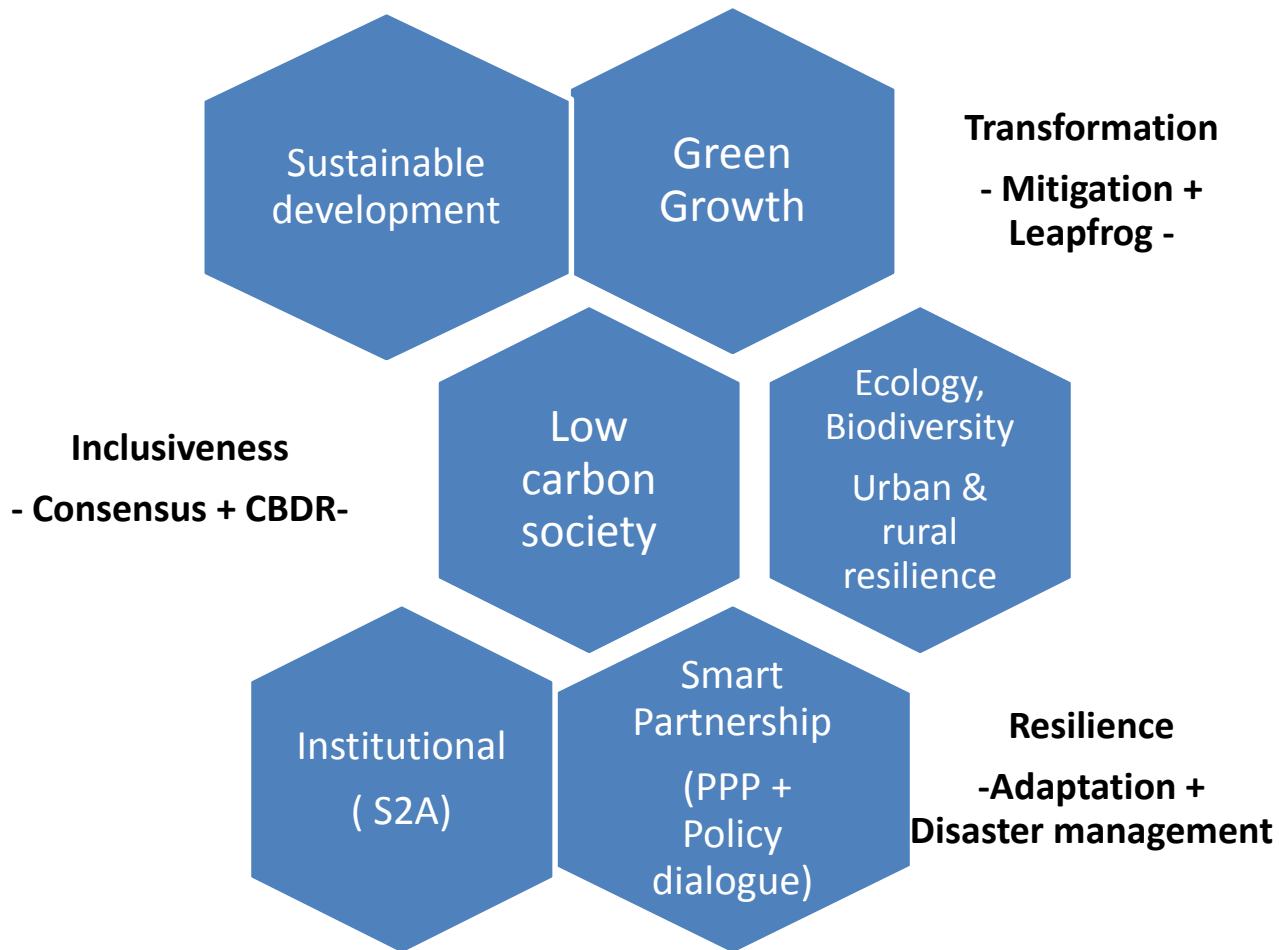


Key element Sustainable development = **PRO GROWTH, PRO JOB , PRO POOR and PRO ENVIRONMENT**



**Promoting Resilient, low carbon, resource efficient and socially inclusive development**

# Green Development agenda





# Concluding remarks

1. **Cities as main CO<sub>2</sub> emitters** will continue be competitive and engine of growth. We should aims at **decoupling CO<sub>2</sub> reduction and economic growth..**
2. Effective implementation of low carbon measures **at city level** needs **multi disciplinary professional input and multi stakeholders and buy in.**
3. Low carbon measures has to **relate to local co benefits ( safety, income generation or increase in property value, health improvement, better air quality, saving from commuting, stronger community engagement and interaction)**
4. S2A ( Science to Action) paradigm can facilitates the formulation and implementation of **science-based policies** for low-carbon development in the Asian region order to realise a **sustainable future based on a stabilised climate.**
5. A **network and collaboration** of researchers such as **LoCARNet/ LCS R net** are important to reflect research findings into actual policies to achieve low-carbon growth.
6. **Needs close collaboration between Researchers and Policy makers will continue to seek knowledge for more effective climate action plan** due to knowledge gaps exists.

# Malaysia on track for sustainable development

- **UN2030 Agenda – Priority for people economy**
- Malaysia **reaffirms its commitment** to meet UN 2030 Agenda for Sustainable development
- **Inclusiveness and sustainable development** has long been the heart of Malaysia transformation from **developing economy to achieving high income status by 2020**



United Nations Sustainable Development Summit 2015  
25 – 27 September 2015, New York

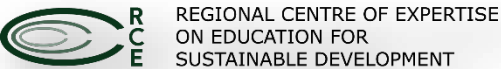


Malaysia on track to become high-income nation by 2020: 29 SEPTEMBER 2015  
: <http://www.nst.com.my/news/2015>



Thank You Terima Kasih 谢谢 धन्यवाद ありがとう

*Thank you for your attention!*  
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