



National Institute for Environmental Studies, Japan

LOCAL MITIGATION PLANNING AND ACTIONS FOR MALAYSIAN CITIES

PROF. DR. TPr HO CHIN SIONG, TPr CHAU LOON
WAI, and DR GABRIEL LING,
UTM-LOW CARBON ASIA RESEARCH CENTRE



Structure of Presentation

1.0 **Application of Asia Integrated Model** (AIMS) GHG Emission modelling activities in Malaysia

2.0 Malaysia **climate change effort** – Low carbon Cities Masterplan

3.0 **Local Mitigation initiatives** – 4 Global Covenant of Mayors (GCoM) pilot cities and Kuala Lumpur City Hall

4.0 **City-City collaboration** -Tokyo Metropolitan Government/ Saitama City and Kuala Lumpur for implementation of mitigation initiatives

5.0 **Conclusion.**

Malaysia- GHG Emission and AIMS modelling 2022-2023

1 Climate Action Plans for additional Four (4) Malaysia Pilot cities commissioned by Global Covenant of Mayors (GCoM-DAI) *Brussels 2022*

- i Putrajaya City Corporation
- ii Petaling Jaya City Council,
- iii Iskandar Puteri City Council and
- iv Segamat Municipal Council

2 Framework for building energy efficiency through City to City collaboration between Kuala Lumpur and Tokyo Metropolitan Government and Saitama City (3rd Year) commissioned by IGES and funded Ministry of Environment (MoEJ)JAPAN 2022-2023

3 Iskandar Malaysia Low Carbon Society Blueprint 2030 (GHG Pathway 2030-2050)

4 PNPL-UTM South East Asia Digitalization Project on Kuala Lumpur City with the use of GCAM model commissioned by Battelle US Department of Energy

UTM-LOW CARBON ASIA RESEARCH CENTRE

Department of Urban and Regional Planning, Faculty of Built Environment, Universiti Teknologi Malaysia

PROJECTS

2017
PENGERANG LOW CARBON SOCIETY 2030 INCEPTION REPORT
KUALA LUMPUR LOW CARBON SOCIETY 2030 BLUEPRINT

2016
KUALA LUMPUR LOW CARBON SOCIETY 2030 INTERIM REPORT
KUALA LUMPUR LOW CARBON SOCIETY 2030 INCEPTION REPORT
CASBEE ISKANDAR FOR BUILDING (TECHNICAL MANUAL PILOT VERSION 2016)
CASBEE ISKANDAR FOR CITY/MUNICIPAL (TECHNICAL MANUAL PILOT VERSION 2016)
CASBEE ISKANDAR FOR URBAN DEVELOPMENT (TECHNICAL MANUAL PILOT VERSION 2016)

2015
LOW CARBON SOCIETY ACTION PLAN 2025 JOHOR BAHRU 2025 : VIBRANT WORLD CLASS COSMOPOLIS OF THE SOUTH
LOW CARBON SOCIETY ACTION PLAN 2025 JOHOR BAHRU TENGAH 2025 : GREEN LIVABLE CITY AND CREATIVE INNOVATION BELT
LOW CARBON SOCIETY ACTION PLAN 2025 KUALA 2025 : SMART INTEGRATED LOGISTIC HUB
LOW CARBON SOCIETY ACTION PLAN 2025 PASIR GUDANG 2025 : GREEN AND CLEAN INDUSTRIAL CITY
LOW CARBON SOCIETY ACTION PLAN 2025 PONTIAN 2025 : SMART AND AGRO-BIODIVERSITY HUB
CASBEE-ISKANDAR PILOT PROJECT

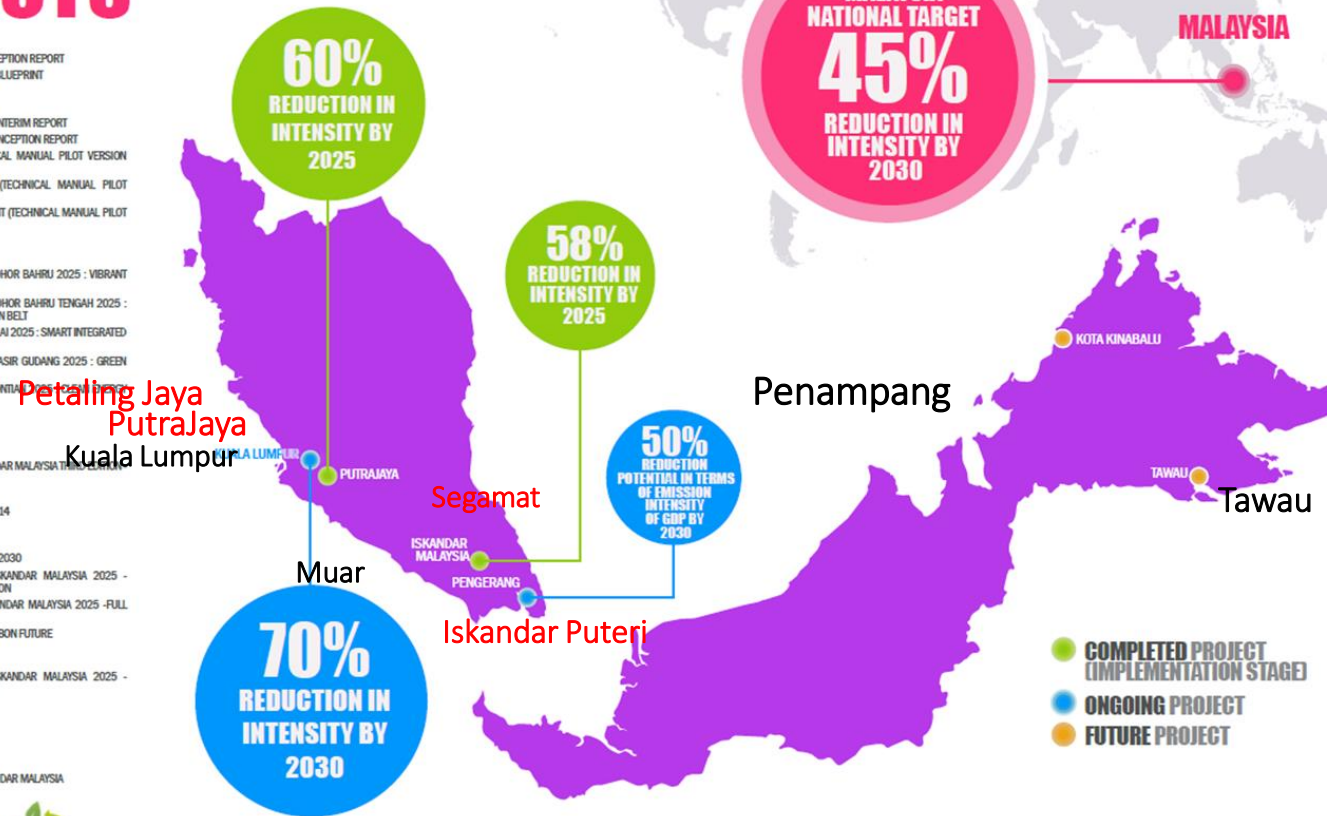
2014
LOW CARBON SOCIETY BLUEPRINT FOR ISKANDAR MALAYSIA 2030
SUMMARY FOR POLICYMAKERS
PASIR GUDANG GREEN AND SMART CITIES
ISKANDAR MALAYSIA ECO-LIFE CHALLENGE 2014

2013
LOW CARBON SOCIETY SCENARIOS MALAYSIA 2030
LOW CARBON SOCIETY BLUEPRINT FOR ISKANDAR MALAYSIA 2025 - SUMMARY FOR POLICYMAKERS SECOND EDITION
LOW CARBON SOCIETY BLUEPRINT FOR ISKANDAR MALAYSIA 2025 - FULL REPORT
ISKANDAR MALAYSIA : ACTION FOR A LOW CARBON FUTURE

2012
LOW CARBON SOCIETY BLUEPRINT FOR ISKANDAR MALAYSIA 2025 - SUMMARY FOR POLICYMAKERS 1ST EDITION

2011
PUTRAJAYA GREEN CITY 2025

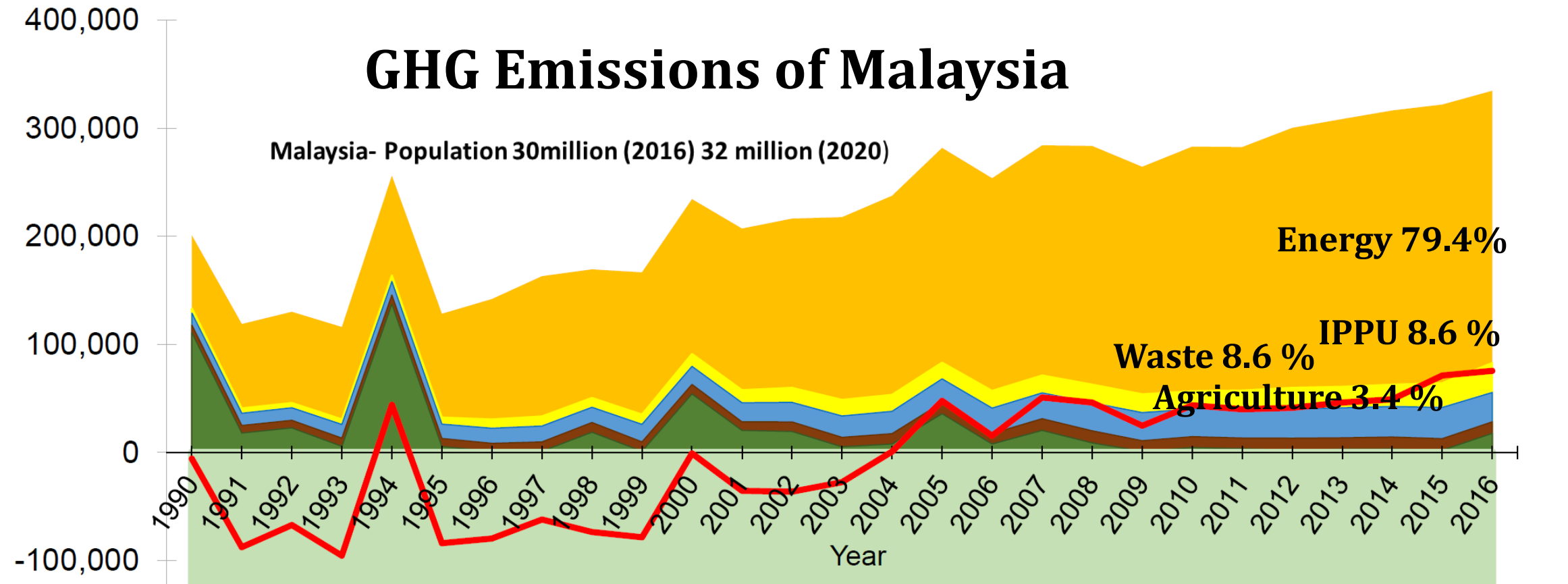
2009
LOW CARBON CITY 2025 : SUSTAINABLE ISKANDAR MALAYSIA



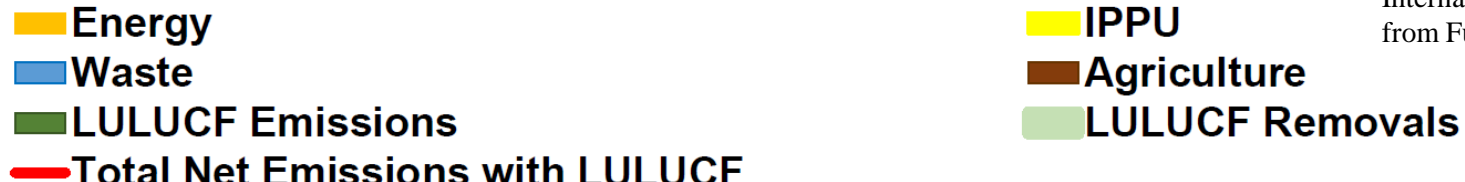
GHG Emissions of Malaysia

Malaysia- Population 30million (2016) 32 million (2020)

GHG Emissions (Gg CO₂eq)



BUR3 Report (2020) Total emission 2016	CO2 emission (‘000metri tons	CO2 per capita metric ton (Pop 30.68mil)
without LULUCF	316,833.23	10.32
With LULUCF	75,488.48	2.46



International Energy Agency (2018) CO₂ Emissions from Fuel Combustion – 2018 Highlights

Malaysia Commitment to the Paris Agreement (COP21 Paris) – Carbon Neutral 2050

Malaysia signed and ratified the Paris Agreement in 2016 and submitted the first NDC., *Malaysia pledged its intention to reduce the GHG emissions intensity of GDP up to 45% by 2030 compared to the emissions intensity of GDP in 2005.*



- To address climate **change across all** GHG emitting sectors, namely energy, transport, IPPU, waste management, agriculture, forestry and land use.
- **Collaborative efforts** among Federal, state and local governments as well as the **private sector and CSOs** will be intensified to support the **transition to a low-carbon nation**
- Malaysia's commitment to the Paris Agreement of the UNFCCC to reduce up to 45% GHG emissions intensity to GDP by 2030 based on emissions intensity in 2005, the focus will be on **developing enabling instruments for climate action, including carbon pricing.**
- Promoting **green and resilient cities and townships**, enhancing green mobility and augmenting the consumption of low carbon energy as well as expanding the green market and GGP.
- Aim for a **more ambitious climate outcome** and collaboration among all stakeholders towards a more sustainable future and contribute to the achievement of Goals **7, 11, 12 and 13 of the 2030 Agenda.**

45%

Reduction in GHG Emissions Intensity of GDP by 2030



This is Malaysia's Third Biennial Update Report submitted to the United Nations Framework Convention on Climate Change in December 2020.

Carbon Neutral by 2050

TWELFTH MALAYSIA PLAN

2021-2025
A PROSPEROUS, INCLUSIVE, SUSTAINABLE MALAYSIA

Current Climate Change Efforts of in Malaysia

Twelfth Malaysia
Plan 2021-2025

Initial National Communication (NC1) was presented to the United Nations Framework Convention on Climate Change (UNFCCC).

National Policy on Climate Change is formulated in 2009.

(COP15 Copenhagen) Malaysia is aspired to voluntarily cut down 40% greenhouse gas (GHG) emissions intensity of GDP by 2020 as compared to 2005 level.

(COP21 Paris, 2015) Submitted 1st NDC to the UNFCCC

Malaysia intends to reduce the GHG emissions intensity of GDP up to 45% by 2030 relative to the emissions intensity of GDP in 2005.

(2021) Updated NDC The unconditional NDC target is increased from 35% to 45%, up by 10% from the Intended NDC target made in 2015. It encompasses an expansion of the scope of greenhouse gases (GHG) to seven types compared to only three previously,

(Tentative 2024) Submission of 1st Biennial Transparency Report (BTR) and National Inventory Report (NIR)

(Tentative 2025) Updated NDC to the UNFCCC

2000

National Biofuel Policy 2006

Five-Fuel Diversification Policy 2001

2010

National Renewable Energy Policy and Action Plan (2010)

Second National Communication (NC2)(2011)

Low Carbon Cities Framework (2011)

Sustainable Development Goals (SDGs) (2015)

Sendai Framework for Disaster Risk Reduction 2015-2030 (2015)

Green Technology Master Plan Malaysia (2017)

Third National Communication (NC3)(2018)

(COP 24 Katowice, 2018) The Paris 'Rulebook' (ETF)

2020

COP 25 Madrid 2019

(COP 26 Glasgow 2021)

COVID-19 Pandemic, (2020)

National Low Carbon Cities Masterplan (2021 launched)

2030

On-going: Climate Change Act, National Adaptation Plan, National Mitigation Plan, NDC Roadmap

Shared Prosperity Vision 2030 (SPV 2030)

Timeline

Local Actions Support National Commitment

National Low Carbon Cities Masterplan (first edition 2021- Malaysia)

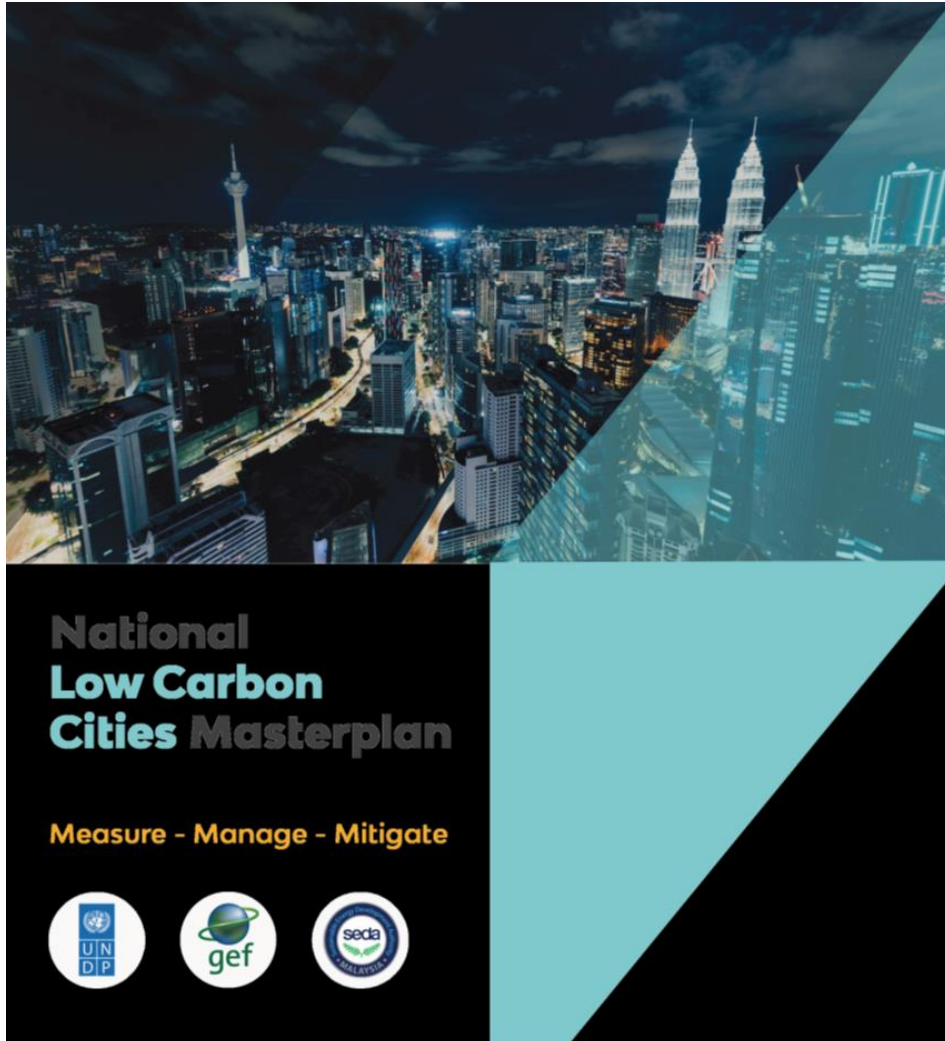
The ultimate goal of the preparation of the National Low Carbon Cities Masterplan (NLCCM) is to help **guide the implementation** of low carbon developments and initiatives in Malaysia.

It has **5 main chapters**

1. Introduction on climate change and efforts at global and national level
2. Defining Low Carbon Cities
3. Low carbon Pathways
4. Key Action Plans
5. Implementation Plans

Table of Contents

Acknowledgements	07
Abbreviations and Acronyms	08
Executive Summary	11
<hr/>	
CHAPTER 01	
Introduction	
1.1 Climate Change and Its Impact	23
1.2 Cities, Urbanization and GHG Emissions	25
1.3 Global Efforts in Addressing Climate Change	27
1.4 Malaysia's Efforts in Addressing Climate Change	31
<hr/>	
CHAPTER 02	
Defining Low Carbon Cities	
2.1 Definition	39
2.2 The 3M Approach	41
2.3 Focus Sectors of Low Carbon Cities	43
<hr/>	
CHAPTER 03	
Low Carbon Pathway for Malaysian Cities	
3.1 Recognizing the Challenges	45
3.2 Shaping the Pathway of Low Carbon Development in Malaysia	52
<hr/>	
CHAPTER 04	
Key Action Plans	
4.1 Framework of National Low Carbon Cities Masterplan	55
4.2 Key Directions and Targeted Outcomes	57
4.3 Summary of Key Actions	60
4.4 Details of Key Actions Under Key Drivers	63
4.5 Details of Key Actions Under Key Enablers	87
<hr/>	
CHAPTER 05	
Implementation Plans	
5.1 Timeline for Key Actions	113
5.2 Target Cities (Local/Regional Authorities)	116
5.3 Other Cities	118
5.4 Absolute VS Intensity Reduction	119
5.5 Absolute Carbon Reduction Targets	120
5.6 Managing Implementation	122
5.7 Critical Success Factors	124



Source: National Low Carbon Cities Masterplan (2021)

The 3M Approach Vs MRV approach

The 3M Approach is introduced to guide cities to position themselves as major players in climate change Mitigation.

Measure/inventory , Document / Strategies and Actions
Measure, Record and Verify

Seven (7) Key Challenges were recognized as barriers to low carbon pathway in most Malaysian cities.

1. Policies and Direction
2. Implementation and Execution
3. Source of Funding and Financing
4. Low Carbon development in Planning
5. Community Participation
6. Capacity and Capability Readiness
7. Data and Inventory

Source: National Low Carbon Cities Masterplan (2021)

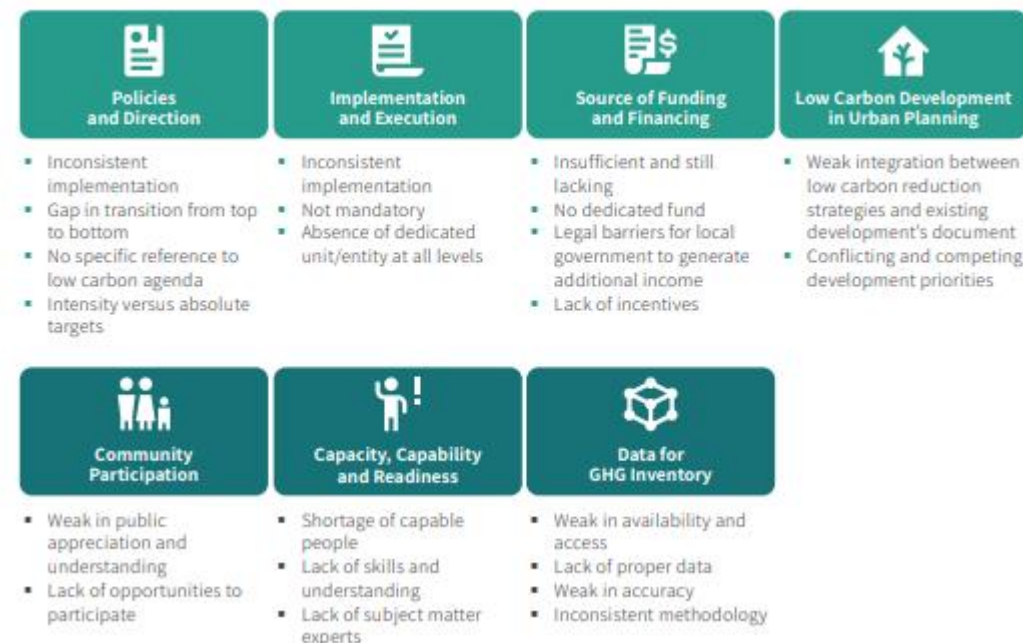
3.0 The 3M Approach

The 3M Approach is introduced to guide cities to position themselves as major players in climate change mitigation, as well as set an example for the development of emission reduction strategies at the local level. The 3M Approach consists of three (3) actions below:



4.0 Key Challenges

Seven (7) Key Challenges were recognized as barriers to low carbon pathway in most Malaysian cities:



Target Cities

A total of 33 local and regional government has been selected as Target Cities. The main criteria for the selection is the total number of population in the city/area must exceed 300,000 - based on the 2010 census data by the Department of Statistics of Malaysia

- with exception for Putrajaya Corporation, Kulai Municipal Council, Pasir Gudang City Council, Pontian District Council, Sepang Municipal Council and Hang Tuah Jaya Municipal Council

Total local authorities 154 (selected 33)
18 City Council
36 Municipal Council
95 District Council
5 Economic Region
5 Modified Local Authority

Source: National Low Carbon Cities Masterplan (2021)

7.0 Target Cities

A total of 33 local and regional government has been selected as Target Cities. The main criteria for the selection is the total number of population in the city/area must exceed 300,000 - based on the 2010 census data by the Department of Statistics of Malaysia - with exception for Putrajaya Corporation, Kulai Municipal Council, Pasir Gudang City Council, Pontian District Council, Sepang Municipal Council and Hang Tuah Jaya Municipal Council

Category	Selection	Justification
City Council	18 out of 18	<ul style="list-style-type: none">All City Councils are selected as they meet the 2010 census data criteria of population exceeding 300,000Under the Ministry Of Housing & Local Government requirement, City Council must have a total number of population exceeding 500,000
Municipal Council	12 out of 36	<ul style="list-style-type: none">12 local authorities are selected based on the selection criteria - with the exception of Kulai Municipal Council, Pasir Gudang City Council, Hang Tuah Jaya Municipal Council and Sepang Municipal Council.
District Council	1 out of 95	<ul style="list-style-type: none">Pontian District Council (part of Iskandar Malaysia and participating city of the GTALCC project).
Economic Region	1 out of 5	<ul style="list-style-type: none">Iskandar Malaysia (participating city of the GTALCC project).
Modified Local Authority	1 out of 5	<ul style="list-style-type: none">Putrajaya Corporation (participating city of the GTALCC project).
Total Number Selected	33	<ul style="list-style-type: none">Note: The source for the population criteria is based on the number of population retrieved from Key Summary Statistics For Local Authority Areas, Malaysia, 2010.

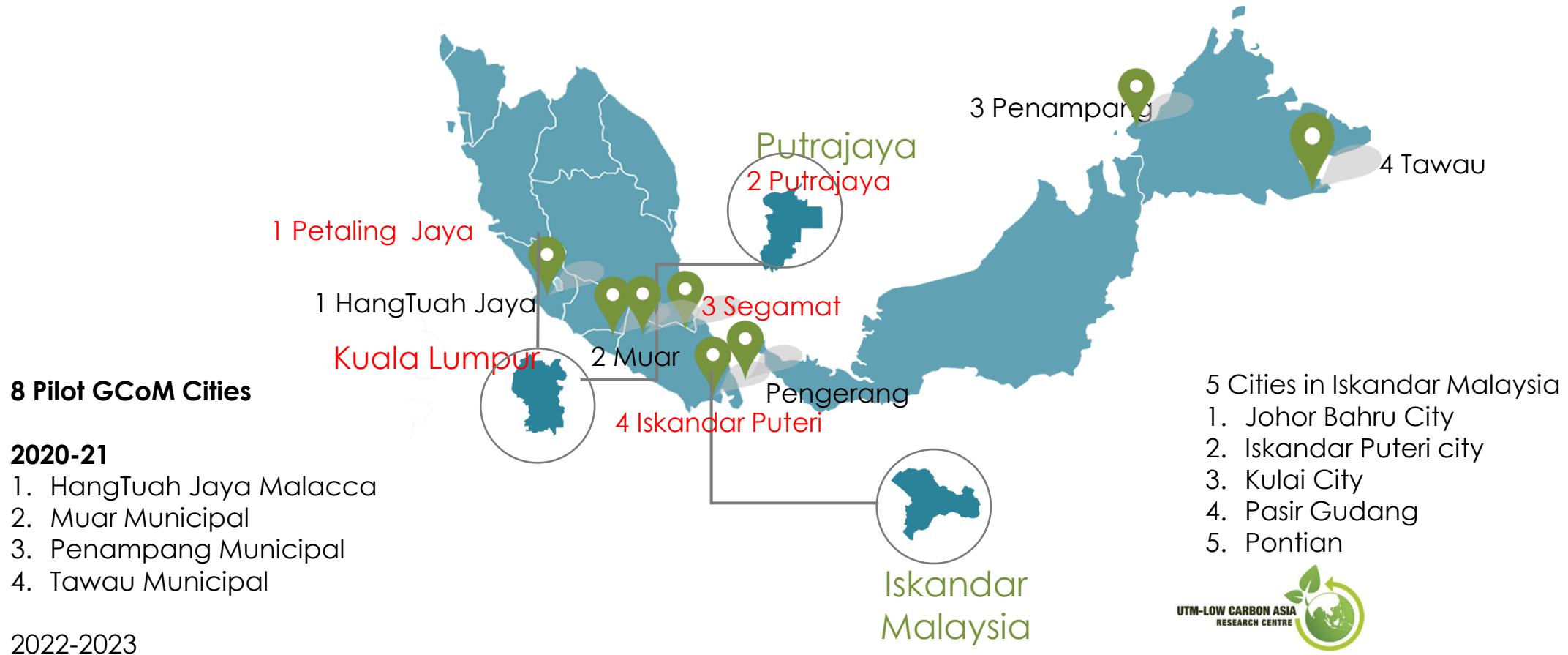
Details of 33 Selected Target Cities

Group 1	Group 2	Group 3
<ol style="list-style-type: none">1. Hang Tuah Jaya Municipal Council2. Iskandar Malaysia3. Iskandar Puteri City Council4. Johor Bahru City Council5. Kuala Lumpur City Hall6. Kulai Municipal Council7. Melaka Historic City Council8. Pasir Gudang City Council9. Penang Island City Council10. Petaling Jaya City Council11. Pontian District Council12. Putrajaya Corporation13. Seberang Perai City Council14. Sepang Municipal Council15. Shah Alam City Council	<ol style="list-style-type: none">1. Alor Setar City Council2. Ampang Jaya Municipal Council3. Ipoh City Council4. Kajang Municipal Council5. Klang Municipal Council6. Kuching North City Hall7. Kuching South City Hall8. Miri City Council9. Selayang Municipal Council10. Seremban City Council11. Subang Jaya City Council	<ol style="list-style-type: none">1. Kota Bharu Municipal Council2. Kota Kinabalu City Hall3. Kuala Terengganu City Council4. Kuantan City Council5. Sandakan Municipal Council6. Sungai Petani Municipal Council7. Tawau Municipal Council



Target:
33 local and regional governments

Empirical cases of Malaysian cities with Low Carbon Society blueprints/ Climate action Plans prepared under Global Covenant of Mayors funding



Kuala Lumpur as case study for city to city collaboration with TMG/
Saitama City to implement Low carbon initiatives to achieve carbon
Neutral by 2050.

CASE STUDIES – SMALL MEDIUM SIZE CITIES GCOM PILOT CITIES 2022/23



PetalingJaya



Population: 793,636 (2021)
Land Area: 97.2 km²
Function: State Growth centre
Service, Industry



Putrajaya

Population: 134,391 (2021)
Land Area: 49 km²
Function : Central Government
Administrative centre



Segamat

Population: 213,900 (2021)
Land Area: 1416km²
Function: District
administrative centre
Agriculture, Service



Iskandar Puteri

Population: 682,527 (2021)
Land Area: 402.96 km²
Function: Johor State
Administrative centre

THE CASE STUDY - Capital city KUALA LUMPUR

70 BY 30
A GREENER BETTER
KUALA LUMPUR



DRAFT KUALA LUMPUR
LOW CARBON SOCIETY BLUEPRINT 2030



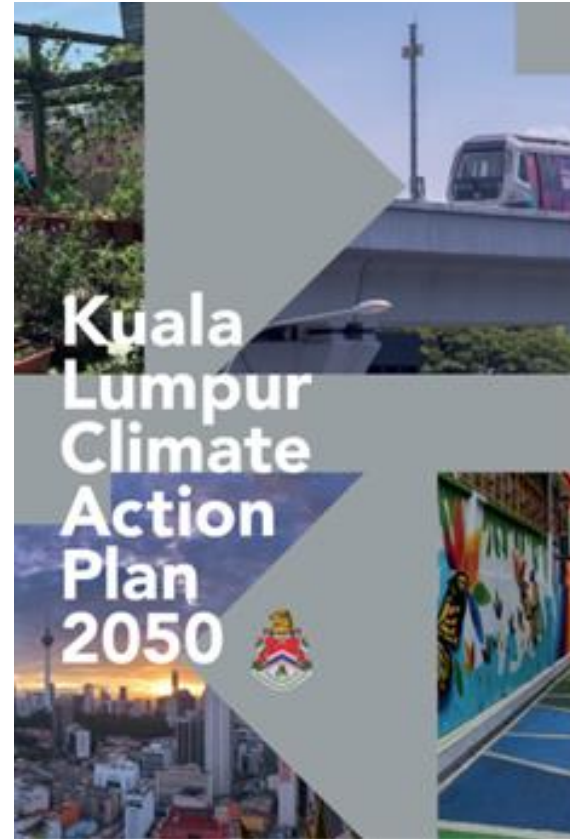
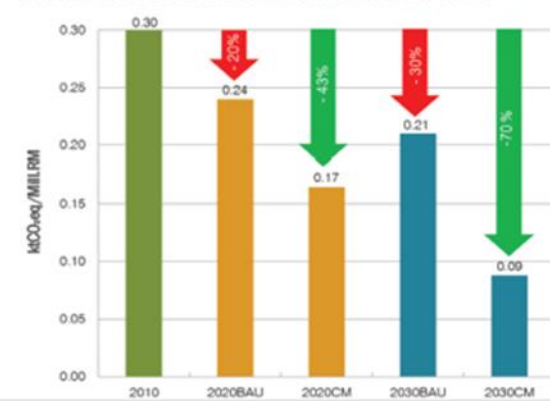
KUALA LUMPUR LOW CARBON SOCIETY BLUEPRINT 2030

3 Thrusts 10 Actions 37 Sub-actions 82 Measures 245 Programs

ROAD TO ACHIEVING 70 BY 30 GOAL

Current Vision KLSP 2020 Draft KLCP 2020	WORLD CLASS CITY 2020		
LCS Vision for Kuala Lumpur	WORLD CLASS SUSTAINABLE CITY 2030 70 by 30: A Greener Better Kuala Lumpur		
Triple Bottom line of sustainability	Economy	Social	Environment
Thrusts	Thrust 1 Prosperous, Robust and Globally Competitive Economy	Thrust 2 Healthy, Creative, Knowledgeable and Inclusive Community	Thrust 3 Ecologically Friendly, Liveable and Resilient Built Environment
Sustainable Development Goals 2030	Goals: 1,2,7,8,9,11,12,13,17	Goals: 3,4,5,10,11,12,13,14,17	Goals: 6,11,12,14,15,17
New Urban Agenda Transformative Commitments	Sustainable and inclusive urban prosperity and opportunities for all	Sustainable urban development for social inclusion and ending poverty	Environmentally sustainable and resilient urban development
Key Principles Draft KL City Plan 2020	World-class Business Environment	World-class Working Environment	World-class Living Environment
KL Low Carbon Society Actions	World-class Governance		
	Green Growth Energy Efficient Spatial Planning Green Mobility Sustainable Energy System	Community Engagement and Green Lifestyle	Low Carbon Green Buildings Green and Blue Network Sustainable Waste Management Sustainable Water and Wastewater Management
	Green Urban Governance		

GHG EMISSION INTENSITY BY GDP



KUALA LUMPUR CARBON NEUTRALITY 2050 SCENARIO

SUMMARY FOR POLICYMAKERS
WITH LIST OF POTENTIAL PROJECTS
IN WANGSA MAJU GROWTH CENTRE

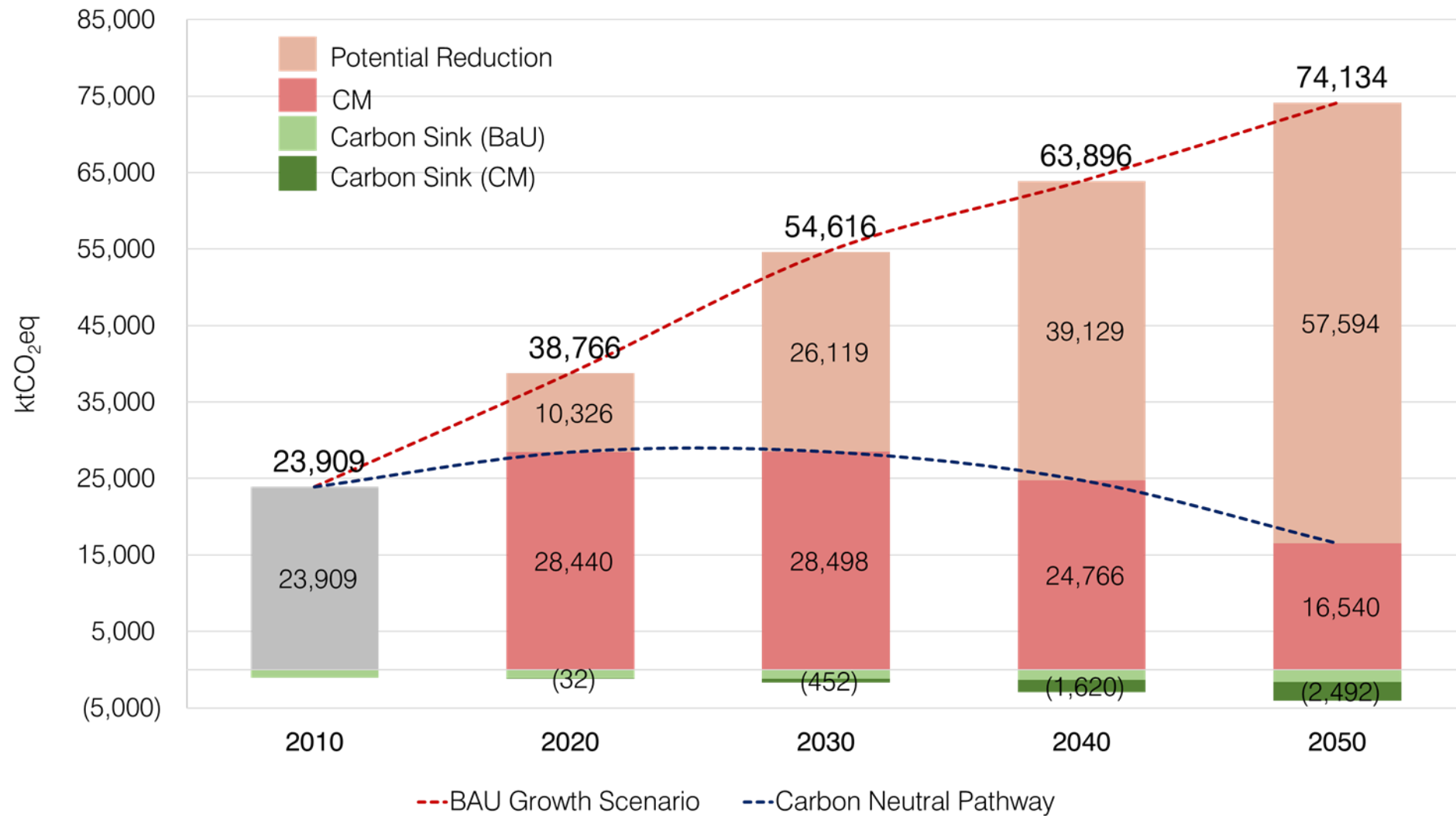
A FRAMEWORK FOR WANGSA MAJU CARBON
NEUTRAL GROWTH CENTRE 2050 ACTION PLAN

OCTOBER 2021

Carbon
Neutral
by 2050



Reduction in GHG
Emissions Intensity
of GDP by 2030



Kuala Lumpur Carbon Neutral Pathways (Preliminary Result)

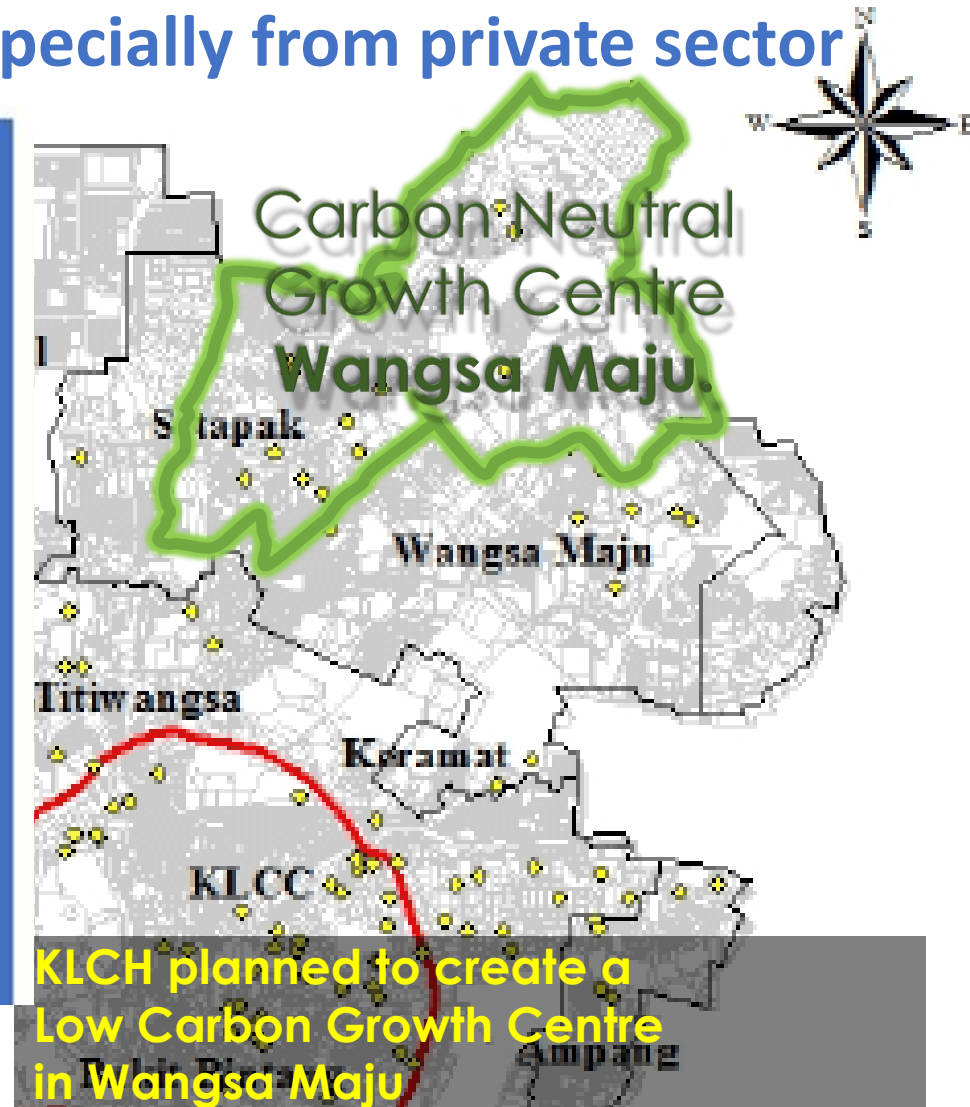
Source: KLLCSBP2030, Wangsa Maju Carbon Neutral Growth Centre 2050 Action Plan

FOCUS ACCELERATION BY PILOT CARBON NUETRAL GROWTH CENTRE

- Decarbonising Energy, mobility and waste sectors with 25 projects
- Pilot Carbon Neutral Precinct promote buy in especially from private sector



Kuala Lumpur EV Bus



KUALA LUMPUR SOLAR PV AND RENEWABLE ENERGY

LOW CARBON INITIATIVES- CITY HALL OWN ASSETS



Priorities of Low Carbon Initiatives are on City Hall assets – Office Buildings, Training centre, Public market, Mall and Stadium as well as walkway cover

LOW CARBON INITIATIVES- PRIVATE SECTOR ASSETS

Regulation for real estate developers to utilise at least 30% of Renewable Energy (RE) in their projects



PROMOTING PRIVATE SECTOR INVOLVEMENT

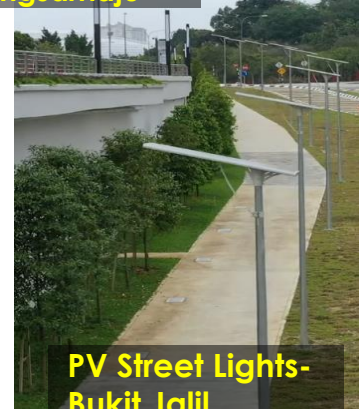
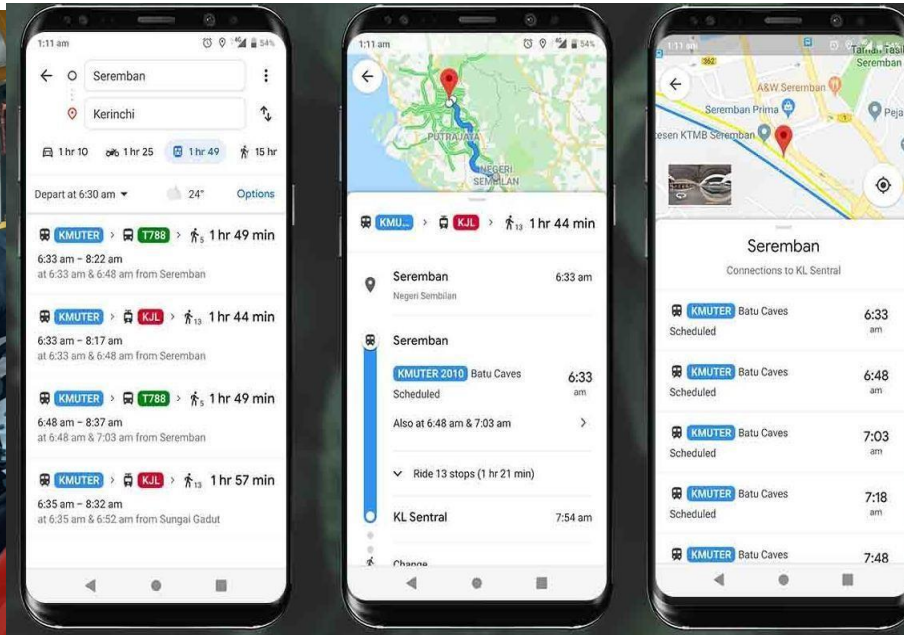
LOW CARBON INITIATIVES- GREEN MOBILITY



Provision of bike/pedestrian walkway



PV Street Lights-Sungai Bonus bike/pedestrian Walkway link ing CBD- suburbs WangsaMaju



PV Street Lights- Bukit Jalil

Priorities given to active mobility and public transport by providing E buses, smart mobility information, network pedestrian and bike lanes



KUALA LUMPUR – LOW CARBON INITIATIVES- COMMUNITY BUY IN



3 MILLION TREES TARGET



KL CITY HALL SDG GALLERY



1 COMMUNITY 1 RECYCLE PROGRAMME



Community buy in low carbon initiatives in 3Rs, Composting, Urban farming , tree plantings, and SDG campaigns in Kuala Lumpur.

CITY TO CITY COLLABORATION –

TOKYO METROPOLITAN GOVERNMENT-SAITAMA CITY AND KUALA LUMPUR CITY HALL 2022-2023



さいたま市

Smart
City
Saitama
Model



TOKYO
METROPOLITAN
GOVERNMENT

Zero Emission Tokyo
Strategy 2050



Wangsa Maju
Carbon Neutral
Growth Centre



Carbon Neutral
Kuala Lumpur Vision
2050

CONCLUDING REMARKS

Climate Actions Now to promote community/
private sector buy in in local mitigation initiatives

1 National policy support mitigation masterplan

2 Local authorities should have a **Climate Action Plan (CAP)**

3 Effective Planned actions – **good governance, community buy in and private sector involvement**

4 **City to city collaboration** is crucial

THANK YOU FOR YOUR ATTENTION

our activities



SPONSORS



RESEARCH PARTNERS



CLIENTS



RESEARCH ALLIANCES



UTM-Low Carbon Asia Research Centre
Faculty of Built Environment and Surveying,
Universiti Teknologi Malaysia,
81310 Johor Bahru, Johor
Tel: 07-555 7359
Email ho@utm.my



We believe in
S2A Science to Action
in making
Low Carbon Society
a Reality