

LCS-RNet 16th Annual Meeting

10 Years Since the Paris Agreement: Progress and Challenges in Climate Action

Bridging Science and Policy for Sustainable Cities in a Changing Climate - The Case of Malaysian cities



Presented by:

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Director of UTM Low Carbon Asia Research Centre

Date: 18 December 2025

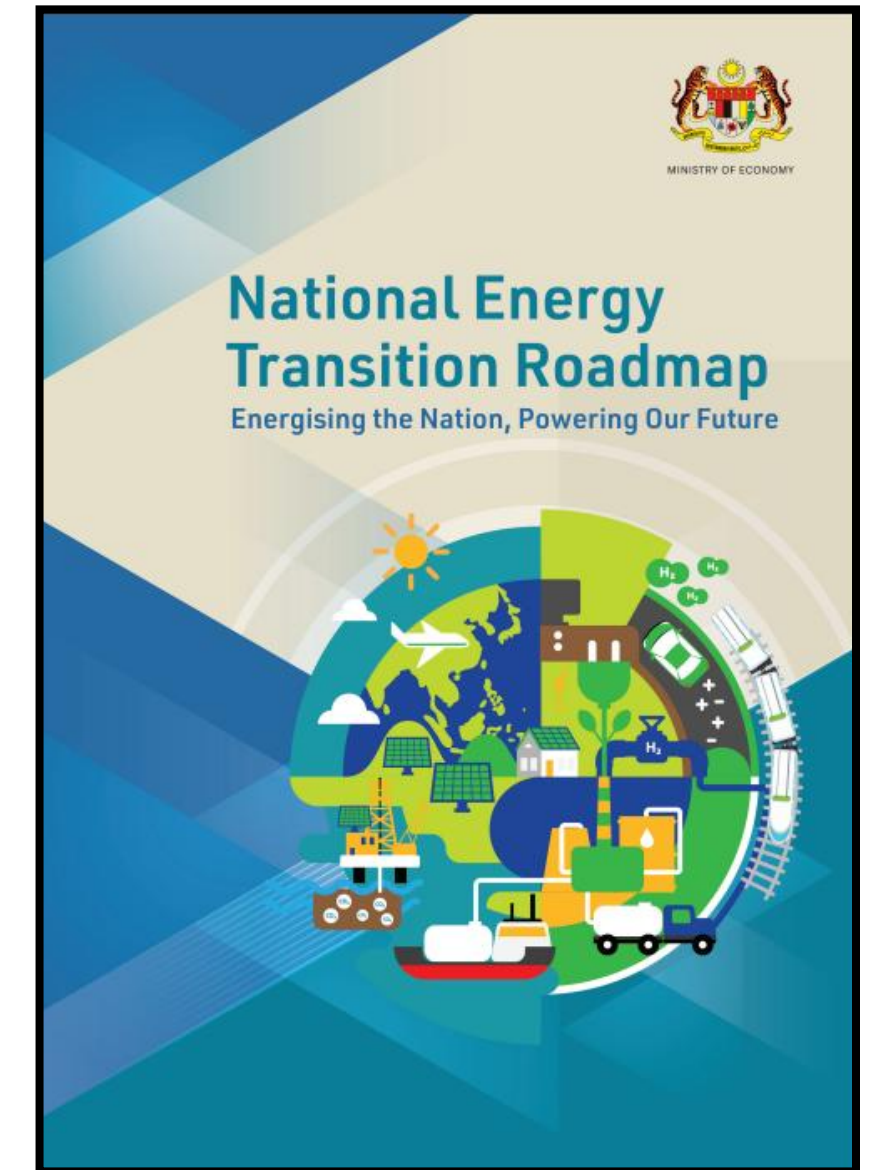
Time: 1915-2015 (KL-MY time)

Malaysia's Carbon Emission Targets NDC 3.0



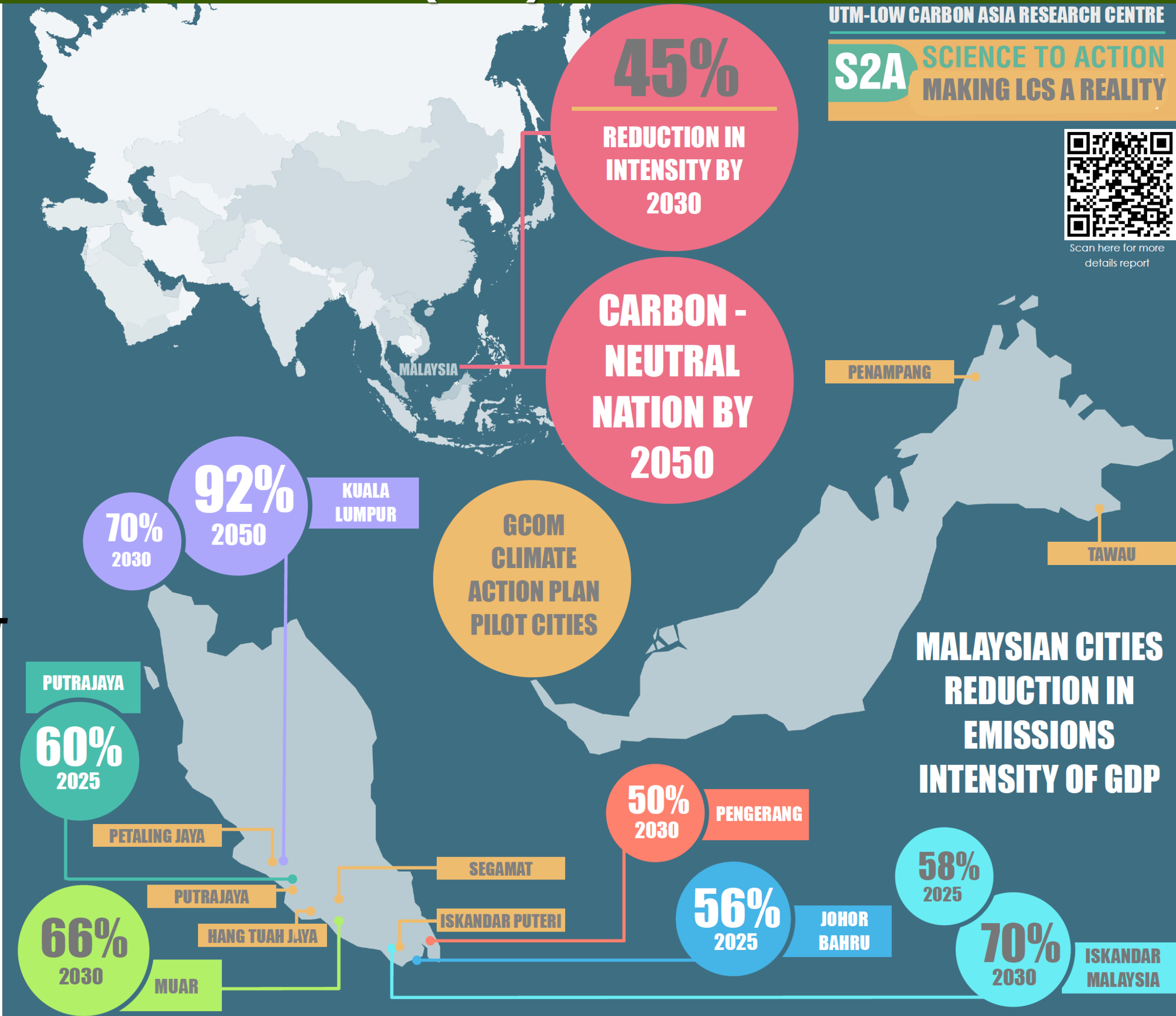
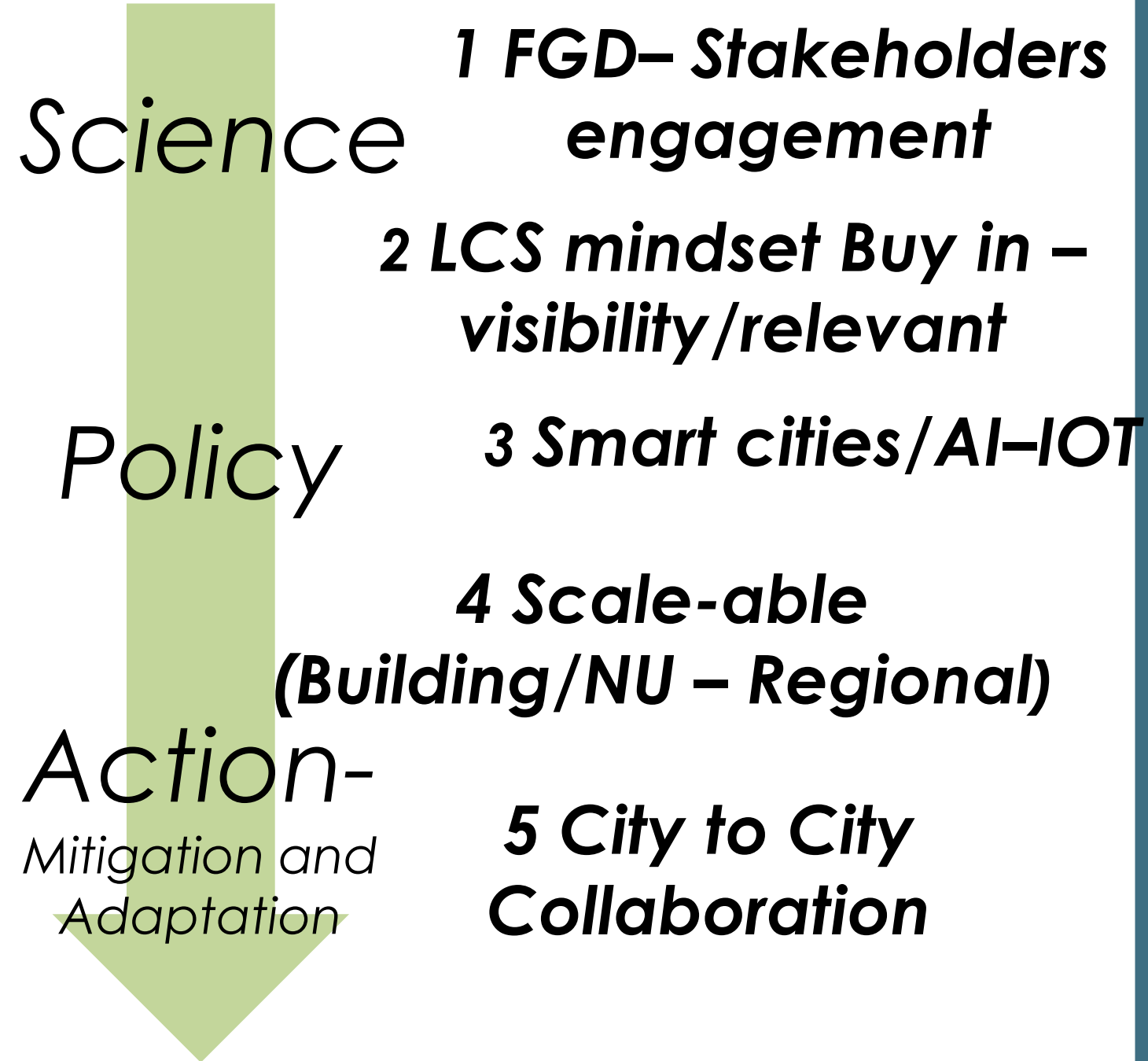
Malaysia's NDC 3.0, submitted to the [UNFCCC](#) ahead of COP30, sets a new **absolute emissions reduction target** to reduce **15 to 30 million tonnes of CO₂ equivalent (MtCO₂eq) by 2035**, based on the country's projected peak emissions level between 2029 and 2034. (UNFCCC COP30 Belem 9 Nov 2025).

- Malaysia also aims **Net-zero commitment by 2050** (Malaysia NETR, 2023).



These goals **require action beyond government** (e.g., cities, businesses, communities, individuals).

SCIENCE TO ACTION (S2A)



Our Efforts on Bridging Science and Policy using AIM model application

1) UTM-LCARC had been involved in developing various Low Carbon Society blueprint (LCSBP) for Iskandar Malaysia



2) UTM-LCARC had been involved in developing **Climate Action Plans (CAP)**, which in each of them include **calculation for GHG emissions and target setting, mitigation measures to reduce the GHG & adaptation measures to reduce climate impacts.**



A **climate action plan** is an **organised effort and strategy by authorities to reduce greenhouse emissions and building community resilience to climate change** in the area, based on operational documents and policies drafted for it.

GHG EMISSION PROJECTIONS FOR SELECTED MALAYSIAN CITIES USING AIM



PUTRAJAYA

60%

**REDUCTION IN
INTENSITY
BY 2025**



PULAU PINANG

70%

**REDUCTION IN
INTENSITY
BY 2030**



KUALA LUMPUR

70%

**REDUCTION IN
INTENSITY
BY 2030**



SEREMBAN

75%

**REDUCTION IN
INTENSITY
BY 2035**



HANG TUAH JAYA

71%

**REDUCTION IN
INTENSITY
BY 2030**



MUAR

63%

**REDUCTION IN
INTENSITY
BY 2030**



SEGAMAT

50%

**REDUCTION IN
INTENSITY
BY 2030**



ISKANDAR PUTERI

58%

**REDUCTION IN
INTENSITY
BY 2035**



PENGERANG

50%

**REDUCTION IN
INTENSITY
BY 2030**



JOHOR BAHRU

70%

**REDUCTION IN
INTENSITY
BY 2030**

**ISKANDAR
MALAYSIA**

70%

**REDUCTION IN
INTENSITY
BY 2030**

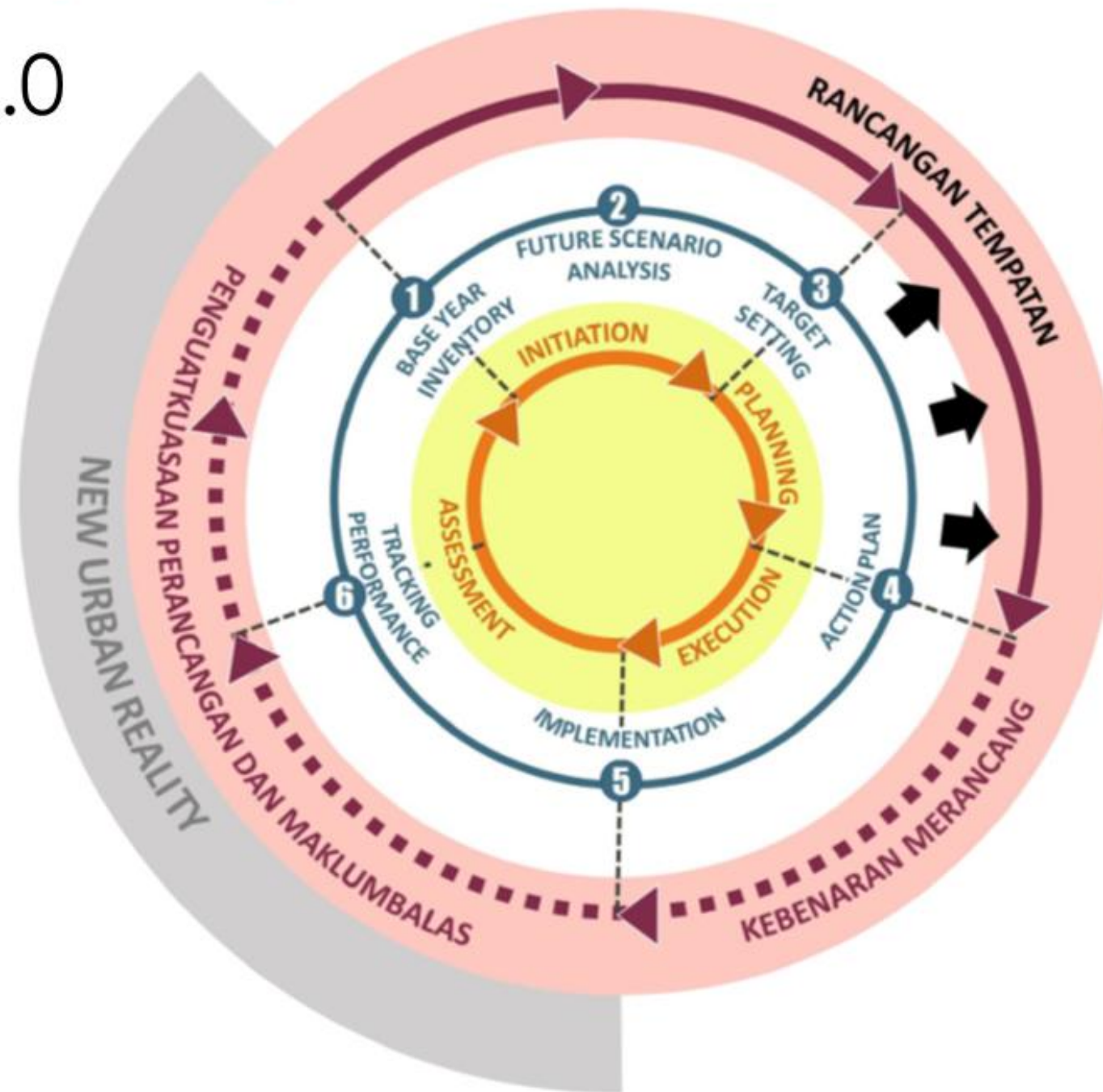
**10 Cities +
1 Economic
Region**



3) UTM-LCARC had been actively pushing for the mainstreaming of climate action plans into Malaysia's local development planning policies.

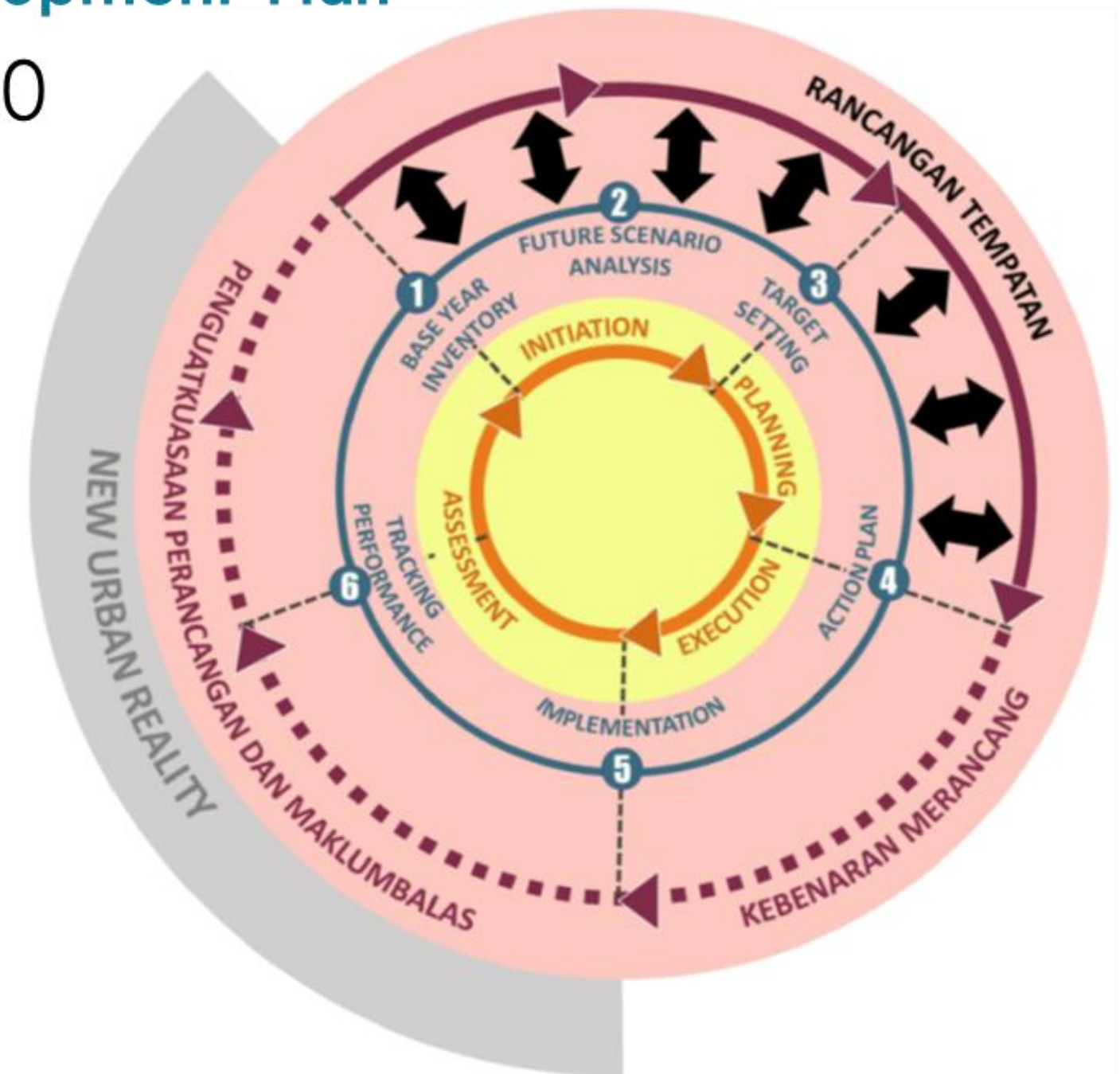
Stand alone – Decarbonize existing development plan

RT 2.0



Integrate Climate Action plan into Development Plan

RT 3.0



Spatial Planning

Climate Policy Making

Low Carbon Development Process

Mainstreaming (one-way)

Mainstreaming (two-way)

Example I: Mainstreaming of Muar Climate Action Plan into Muar District Local Plan 2030

MUAR DISTRICT LOCAL PLAN 2030
the first statutory development plan to incorporate low carbon city measures into local spatial planning based on scientifically estimated baseline emissions



GOAL

'Leading District for economic development of the Northern Johor Region – based on Heritage, Smart Technology and Low Carbon Sustainable Society'

MUAR DISTRICT LOCAL PLAN 2030
The first local plan integrated with LCS



SPECIAL, SUSTAINABLE
LIVEABLE, LEADING

MUAR 2 to LCS

COMPETITIVE, CONNECTED

LOW CARBON PROPOSALS IN MUAR DISTRICT LOCAL PLAN:

13

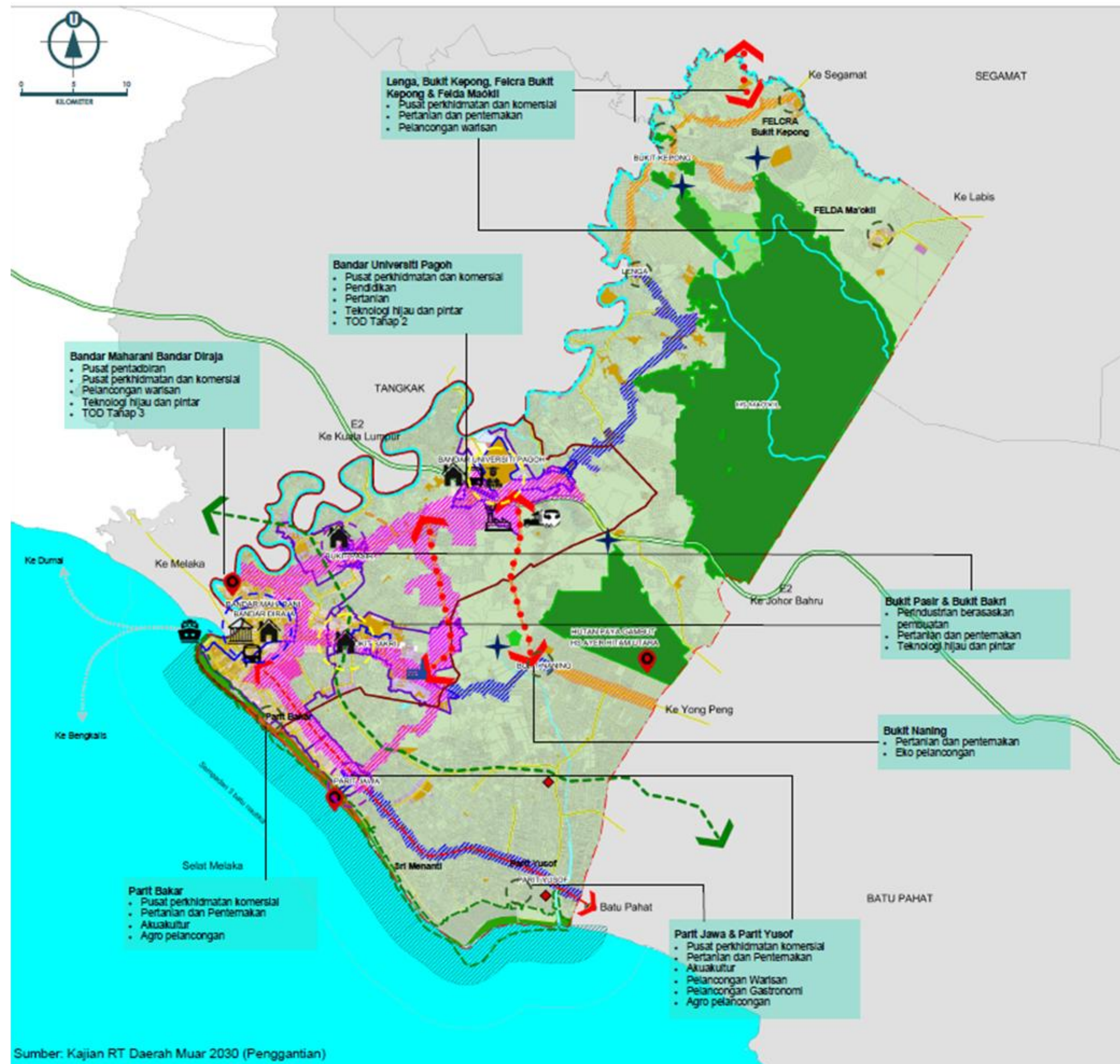
MAIN SECTORS

58

PROPOSALS

Population and Socioeconomic 1 Proposal	Land Use, Physical Characteristics and Urban Settlement 6 Proposals	Commercial and Services 3 Proposals	Industrial 5 Proposals	Tourism 6 Proposals	Agriculture and Fisheries 4 Proposals
City Center, Heritage Conservation, Urban Design and Landscape 3 Proposals	Environment, Natural Resource Management, Forestry and Geohazards 3 Proposals	Housing 9 Proposals	Institutions, Community Facilities and Open Spaces 2 Proposals	Rural and Outskirts Settlement 2 Proposals	Transportation and Communication Network 8 Proposals
Infrastructure and Utilities 6 Proposals					

MUAR DISTRICT LOCAL PLAN 2030: OVERALL SPATIAL CONCEPT



Rajah 3.28

Konsep Pembangunan RT Daerah Muar 2030
(Penggantian)



PETUNJUK:

HIERARKI PETEMPATAN



- Pusat Wilayah Negeri
- Pusat Separa Wilayah Negeri
- Pusat Petempatan Utama
- Pusat Petempatan Kedi

KAWASAN FOKUS PEMBANGUNAN

- | | | | |
|---|------------------------------|---|--|
|  | Kawasan tepu bina |  | Muar Furniture Park 2.0 |
|  | Koridor Perbandaran Utama |  | Free Industrial Zone (FIZ) |
|  | Koridor Perbandaran Sekunder |  | Hab Pendidikan Tinggi Pagoh |
|  | Koridor Perbandaran Tertier |  | Pusat Pentadbiran Baharu |
|  | Zon Promosi Pembangunan |  | Sklm Perumahan Mampu Milik dan Mampu Blaya |
|  | Cadangan sempadan UGB | | |
|  | Sempadan bandar | | |

KAWASAN PENGEKALAN DAN PEMELIHARAAN

-  HSK sedia ada
 Badan air
 Cadangan Empangan Meda


KAWASAN TERKAWAL

-  Pertanian  Eiko pelancongan
 Zon penampungan 20 meter HSK  Agro pelancongan
 Zon penampungan 50 meter Sg Muar
 Taman Kekal Pengeluaran Makanan (TKPM)
 Zon Pengeluaran Makanan (ZPM)
 Zon Industri Akuakultur (ZIA)

SISTEM RANGKAIAN DAN PERHUBUNGAN

- | | | | |
|---|---------------------------------|---|---|
|  | Jalan sedia ada |  | Terminal Kendaraan Berat |
|  | Lebuhraya sedia ada |  | Terminal Feri |
|  | Cadangan jalan baru |  | Terminal Pengangkutan Awam
Bersepadu |
|  | Cadangan Lebuhraya Pantai Barat | | |
|  | Cadangan naik taraf Lebuhraya | | |
| | Cadangan naik taraf Lebuhraya | | |

LAIN-LAIN PETUNJUK

- Sempadan Negeri
 Sempadan Daerah

Sumber: Kajian RT Daerah Muar 2030 (Penggantian)

Example 2: Mainstreaming of Johor Bahru Climate Action Plan into Johor Bahru District Local Plan 2035

JOHOR BAHRU LOCAL PLAN 2035 INCORPORATED ONE SPECIAL CHAPTER FOR SMART AND LOW CARBON CITY



4 DIMENSIONS:

DIMENSION 1:
Greenhouse Gas Emissions

DIMENSION 2:
Land Use Land Cover Change

DIMENSION 3:
Community

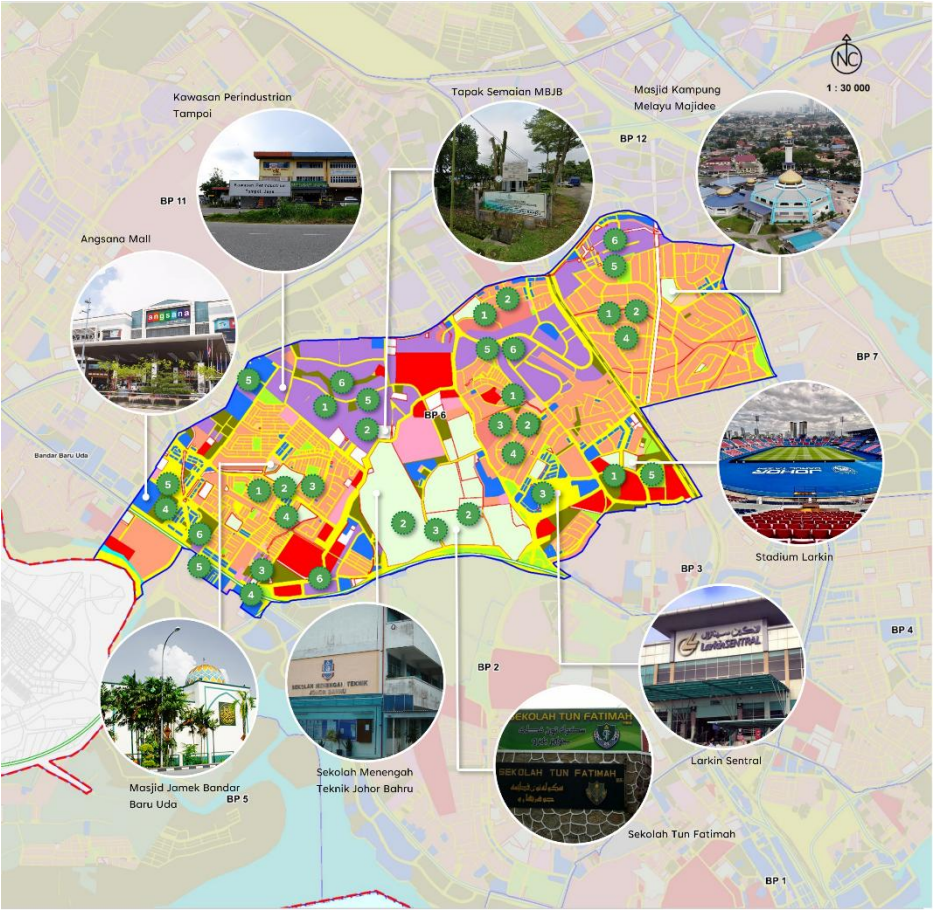
DIMENSION 4:
Smart City as LCS Solution

JOHOR BAHRU LOCAL PLAN 2035

LOW CARBON DEVELOPMENT PILOT ZONES (ZON PERINTIS)



LARKIN



BANDAR DATO' ONN/ SETIA TROPIKA



Example 3: Mainstreaming of Iskandar Puteri Climate Action Plan into Iskandar Puteri Local Plan 2035

ISKANDAR PUTERI LOCAL PLAN 2035 INCORPORATED ONE SPECIAL CHAPTER FOR MANAGEMENT OF LOW CARBON CITY



3 OBJECTIVES:

Identify the **current carbon footprint** of Iskandar Puteri City and establish a baseline for future reference

Setting a target to reduce Iskandar Puteri City's carbon emissions by 2035 towards achieving carbon neutral status by 2050

Provide **spatial solutions** to identify proposed programs to improve energy efficiency and reduce carbon emissions in Iskandar Puteri City in line with set targets

LOW CARBON SUGGESTIONS IN ISKANDAR PUTERI LOCAL PLAN:

4

STRATEGIES

18

PROPOSALS

**Strategy 1:
Renewable Energy
Resources and
Energy Efficiency**

5 Proposals

**Strategy 2 : Green
Transportation and
Pedestrian Priority**

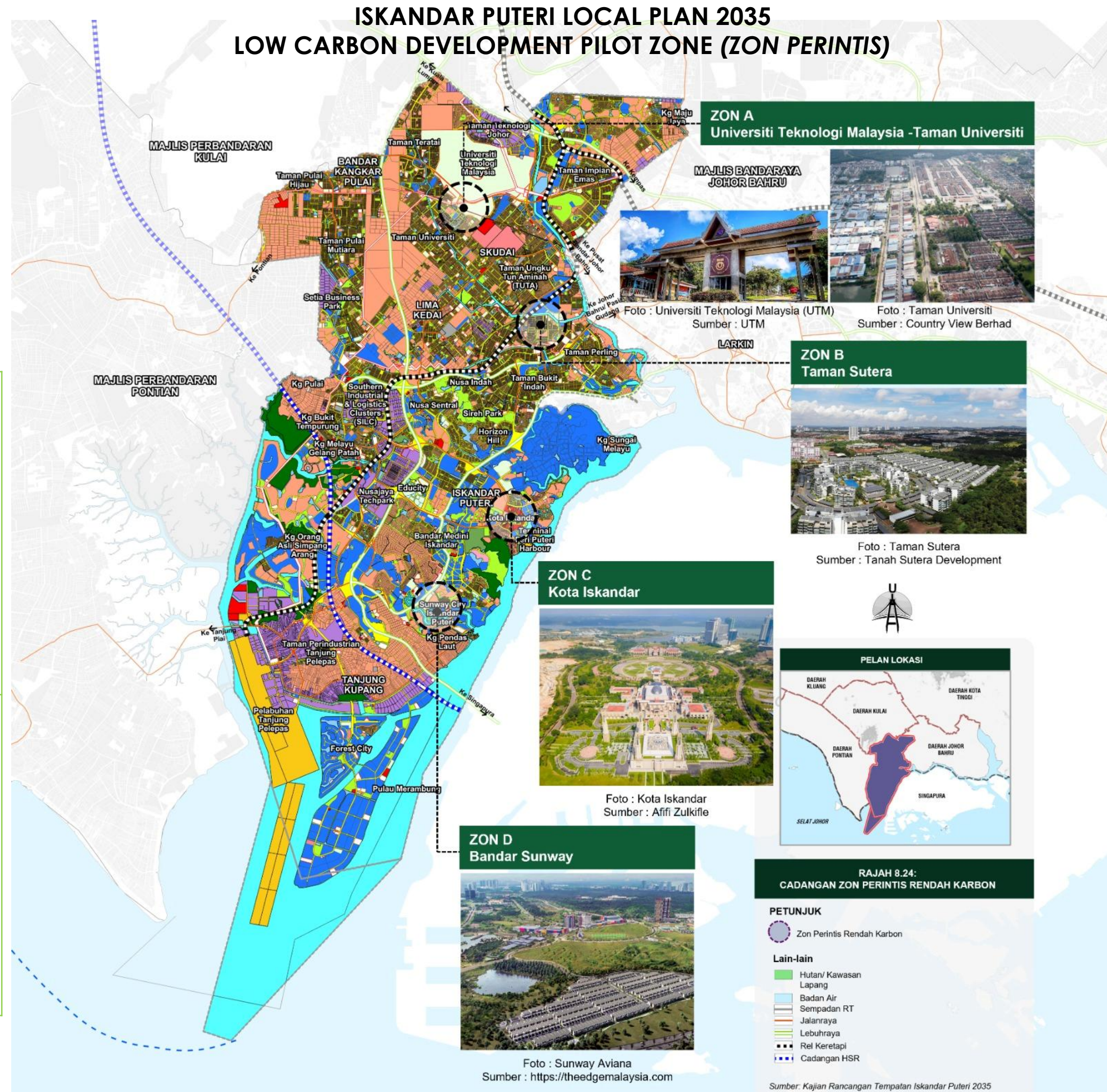
4 Proposals

**Strategy 3: Green
Space Planning
and Management**

4 Proposals

**Strategy 4: Social
Empowerment
and Community**

5 Proposals



Example 4: Mainstreaming of Hang Tuah Jaya Climate Action Plan into Hang Tuah Jaya Local Plan 2035

HANG TUAH JAYA LOCAL PLAN 2035 INCORPORATED ONE SPECIAL CHAPTER FOR LOW CARBON CITY DEVELOPMENT FRAMEWORK



4 MAIN AREAS:

Low Carbon Development Pilot Zone

Implementation of Low Carbon **Transport System** in Hang Tuah Jaya

Energy Generation in Hang Tuah Jaya

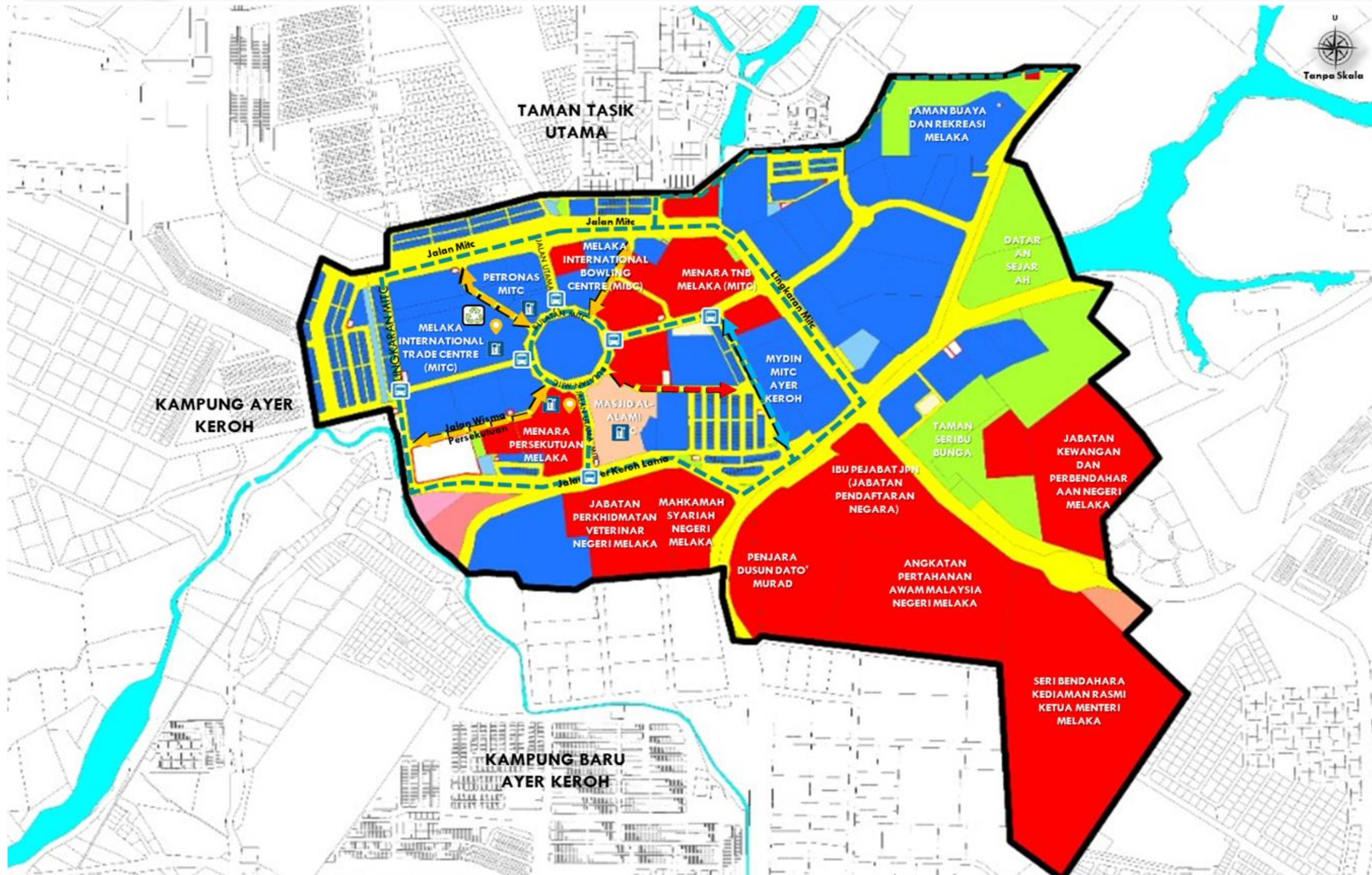
Pioneering **Green Waste Management & Carbon Sink**

HANG TUAH JAYA LOCAL PLAN 2035

LOW CARBON DEVELOPMENT PILOT ZONE (ZON PERINTIS)

RAJAH 5.4

PELAN CADANGAN ZON PERINTIS RENDAH KARBON DI HANG TUAH JAYA




Key Takeaways

1 Ensuring the immediate mainstreaming and strict enforcement of Low Carbon Action Plans across all national and local development policies.

2 Utilize detailed GHG inventories and scenario planning to de-risk and accelerate capital investments in circular design, operational energy reduction, and low-carbon building practices.

3 Commit to sustained, inclusive community pilot projects that actively engage and mobilize citizens. This is the critical step to overcome low public awareness and ensure the low-carbon transition delivers social equity

A decorative green organic shape, resembling a stylized leaf or a cloud, is located in the bottom right corner of the slide. It has a dark green color and a wavy, irregular edge.

OUR PARTNERSHIPS:

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Clients:



Research Alliances:



Innovating Solutions

Thank You



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