Development of
Low Carbon Scenarios for Asia Regions

6-9 Feb 2017 AIT Bangkok

APN, LoCARNet and AIT/RRC, AP

Capacity Workshop and Science to Policy Dialogue on Low Carbon Development

Capacity Building Needs for Low carbon Development at SubNational Level: Experience from Iskandar city Project

Project for Development of Low Carbon Society Scenarios for Asia Regions

Ho Chin Siong

NATIONAL AGENDA- S2A

Development of a Low Carbon Iskandar Malaysia

ISKANDAR REGIONAL DEVELOPMENT AUTHORITY

ISKANDAR MALAYSIA 2006 – 2016

COP15 COPENHAGEN

Malaysia's Commitent on climate: COP15 Copenhagen (17 Dec 2009)

YAB Datuk Seri Najib Tun Razak, Prime Minister: "voluntary reduction **up-to-40%** in terms of emission intensity of GDP by the year 2020 compared to 2005 levels". COP 21 Paris - Reduction up to **45% in terms of emission intensity of GDP** by 2030 compared to 2005 levels.

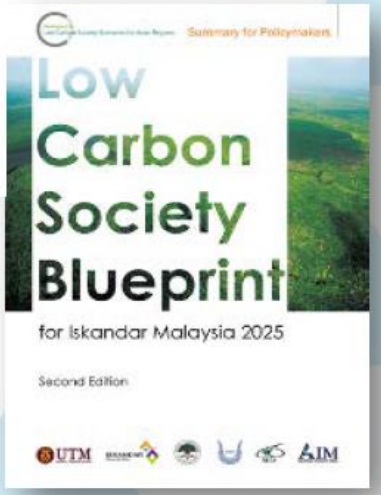
Low Carbon Society Blueprint for Iskandar Malaysia 2025 – 1st global launching at COP18 (Doha, 2012)

COP19 Warsaw (Nov 2013) - LCSBPIM Roadmap & Book "Actions for a Low Carbon Future" (programme implementation)

COP20 Lima (Nov 2014) - Low Carbon Society Brochures for 5 Local Authorities in Iskandar Malaysia

COP21 Paris (Nov 2015) - Low Carbon Society Action Plan 2025 for 5 Local Authorities in Iskandar Malaysia

COP17/CMP7 UNITED NATIONS DURBAN, SOUTH AFRICA



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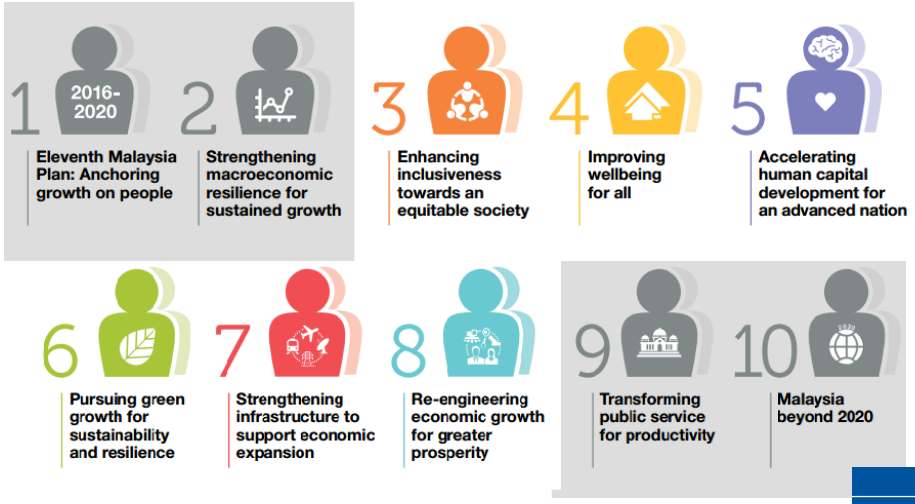
ISSUES AND VISION

CURRENT
ELEVENTH MALAYSIA PLAN 2016-2020

Eleventh Malaysia Plan 2016-2020



This word cloud captures important concepts and themes, and terms commonly used in the Eleventh Malaysia Plan

Pursuing green growth for sustainability and resilience

- Green growth
- Competitive cities
- Inclusiveness society
- Consumption & Production (SCP)
- Digital nation

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?

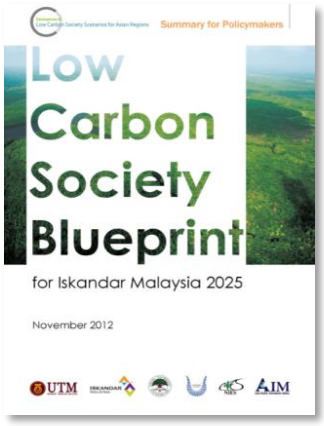
A successful green growth trajectory will ensure:

- 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.

FROM POLICY BLUEPRINT TO LOCAL ACTION PLAN



Present Action Plans

Preliminary Study
Year: 2008 - 2009

Low Carbon City 2025: Sustainable Iskandar Malaysia

Policy Design
Year: 2011 - 2013

Low Carbon Society Blueprint for Iskandar Malaysia 2025

A Roadmap towards Low Carbon Iskandar Malaysia 2025

Iskandar Malaysia: Actions for a Low Carbon Future

Implementation
Year: 2014-2016

Low Carbon Society Action Plan for

Johor Bahru 2025
Johor Bahru Tengah 2025
Pasir Gudang 2025
Kulai 2025
Pontian 2025

S2A (SCIENCE TO ACTIONS)- CO2 MODELLING FOR POLICY DIALOGUE

Projected Greenhouse Gas Emission Reduction in Iskandar Malaysia

ISKANDAR REGIONAL DEVELOPMENT AUTHORITY

ISKANDAR MALAYSIA 2006 – 2016

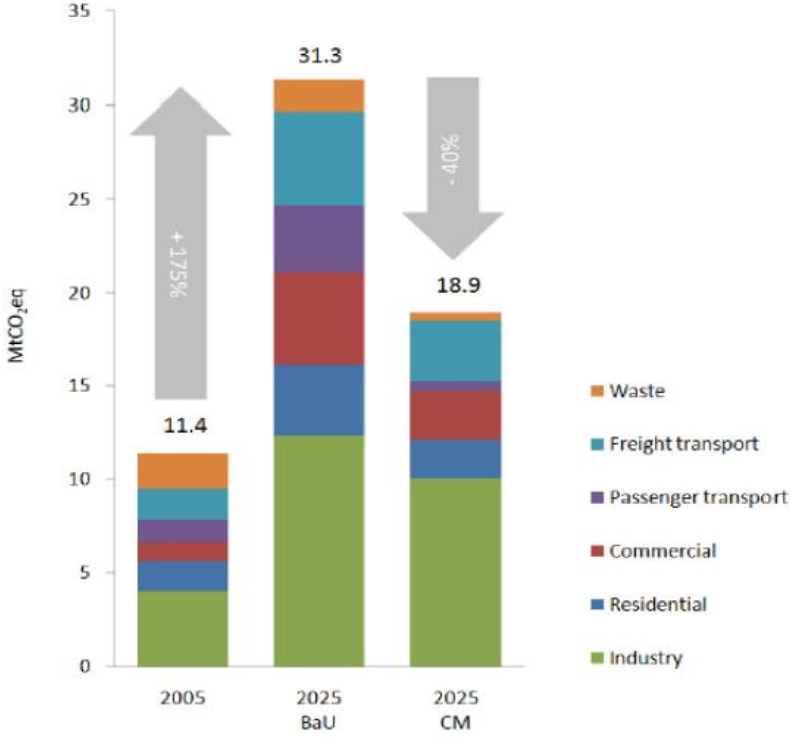


Figure 1: GHG emissions by sectors

2025

58% reduction of GHG emission intensity by 2025 (2005 base year)

40% emission reduction from BaU (business as usual) by 2025 (2005 base year)

S2A – POLICY DOCUMENTATION

Low Carbon Publications

ISKANDAR REGIONAL DEVELOPMENT AUTHORITY

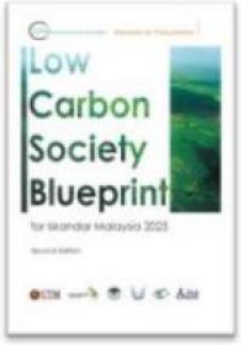
ISKANDAR MALAYSIA 2006 – 2016

2009

* Preliminary Study: Brochure Low Carbon City 2025 Sustainable Iskandar Malaysia

2012

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



2013

*Low Carbon Society Blueprint for Iskandar Malaysia 2025 - Full Report

*A Roadmap towards Low Carbon Iskandar Malaysia 2025

*Iskandar Malaysia: Actions for a Low Carbon Future

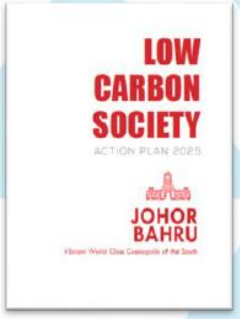
2014

*Low Carbon Society Brochures for 5 Local Authorities

*Your Guide To Low Carbon Lifestyles in Iskandar Malaysia

2015

*Low Carbon Society Action Plan 2025 for 5 Local Authorities in Iskandar Malaysia (Johor Bahru, Johor Bahru Tengah, Pasir Gudang, Kulai & Pontian)



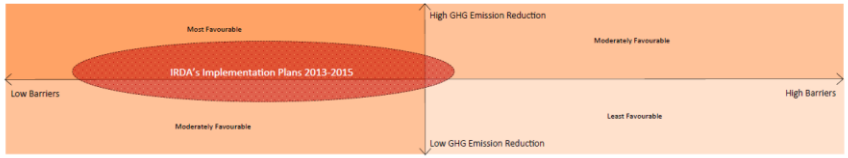
OUTPUT 2: LCS scenarios for policy development in IM

How to make the LCS happen in IM

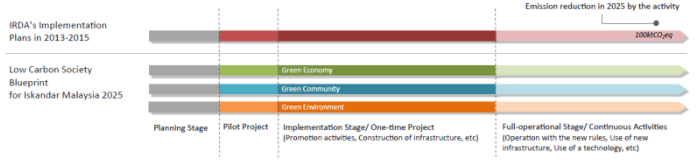
A Roadmap towards Low Carbon Iskandar Malaysia 2025

Rationales for Implementation Phasing

A good roadmap is characterised by well justified phasing of projects. Priority projects would be those that have relatively low barriers but high GHG reduction impacts (see diagram below). Implementation barriers include cost, human capital, institution and legislation framework, societies readiness (stakeholder acceptance) and technology availability.



Guide to Reading Timeline Diagram

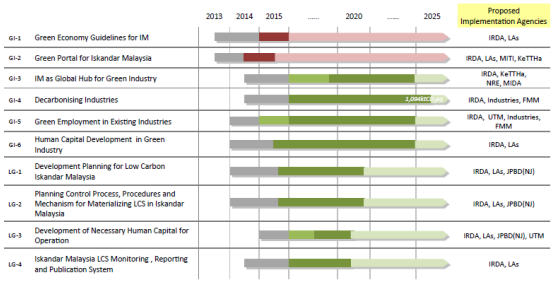


The roadmap comprises of EIGHT (8) implementation sectors demonstrating the implementation plan for TWELVE (12) key policy actions of *Low Carbon Society Blueprint for Iskandar Malaysia 2025* as well as IRDA's Implementation Plans 2013-2015. Each section breaks its policy action(s) into detail strategic plans, their implementation phases and duration and identified potential implementation agencies. These are presented in a series of timeline diagrams.

Please see "Guide to Reading Timeline Diagram" printed overleaf for clarity >>>

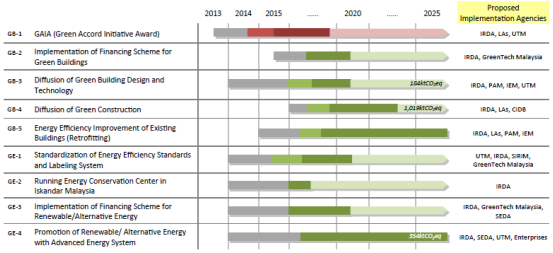
Green Industry and Low Carbon Governance (GI, LG)

Action 2 "Green Industry" (GI) and Action 3 "Low Carbon Urban Governance" (LG), IRDA's Implementation Plans; Green Economy Guidelines for IM (GI-1) and Green Portal for Iskandar Malaysia (GI-2) are covered. The main contents are establishment of planning and governance system in IRDA, dissemination activities through a website, and low-carbonizing existing industries through mainly energy efficiency improvement and to encourage production of green goods and services required in a low carbon society.



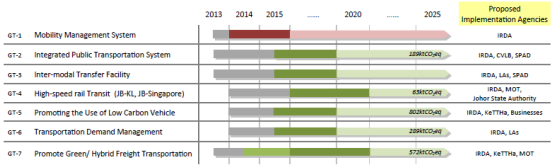
Green Building and Energy System (GB, GE)

This roadmap describes implementation of Action 4 "Green Building and Construction" (GB) and Action 5 "Green Energy System and Renewable Energy" (GE) with IRDA's implementation plan of GAIA (Green Accord Initiative Award) (GB-1). The roadmap includes implementation of GAIA in IM, establishment of green building design, technology and construction, and its standardization in IM with financial scheme. At the same time, the roadmap covers diffusion of renewable and alternative energies in IM through strengthening financial support scheme for the energies and encouraging public awareness by Energy Conservation Center in Iskandar Malaysia.



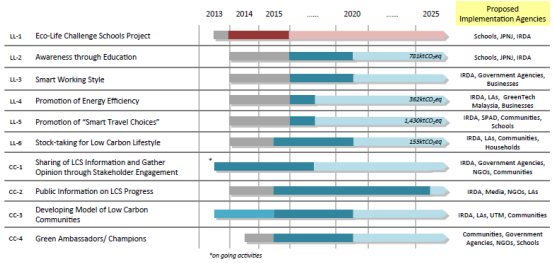
Green Transportation (GT)

Action 1 "Green Transportation" (GT) and Mobility Management System (GT-1), IRDA's Implementation Plan are covered. The main contents are development of the integrated public transportation system, high-speed rail connection between Johor Bahru (JB)-Kuala Lumpur (KL) and JB-Singapore, development of inter-modal transfer facility and promotion of the use of low carbon passenger vehicle and freight transport.



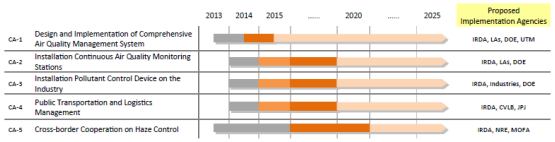
Green Community (LL, CC)

This roadmap describes implementation of Action 6 "Low Carbon Lifestyle" (LL) and Action 7 "Community Engagement and Consensus Building" (CC) with IRDA's Implementation Plan, Eco-Life Challenge Schools Project (LL-1). Strong connections among people or communities forms an indirect support for direct impact inducing change to low carbon lifestyle.



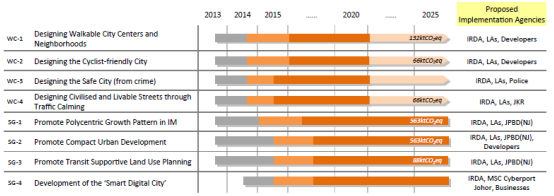
Clean Air Environment (CA)

Action 12 "Clean Air Environment" (CA) is covered. The main contents are establishment of comprehensive air quality management system, installation of air quality monitoring station and pollutant emission control device in the industry sector. Green passenger and freight transportation are also considered. Cross-border cooperation to avoid regional haze pollution from open biomass burning is tightened.



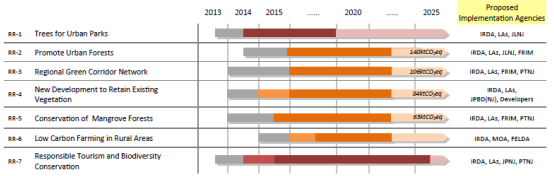
Green Urban Design (WC, SG)

Action 8 "Walkable, Safe and Livable City Design" (WC) and Action 9 "Smart Urban Growth" (SG) are covered. The main contents for walkable city are establishment of walkable city centers and neighborhoods, cyclist-friendly city, safe city from crime, and civilized and livable streets through traffic calming. The main contents for smart urban growth are promotion of the polycentric growth pattern in IM, compact urban development, transit supportive land use planning and smart digital city.



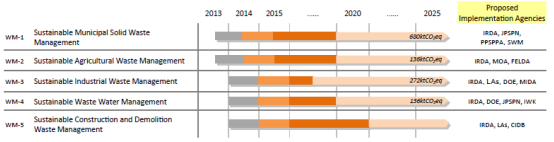
Green and Blue Infrastructure, and Responsible Tourism (RR)

This roadmap describes implementation of Action 10 "Green and Blue Infrastructure and Rural Resources" (RR) with IRDA's Implementation Plans; Trees for Urban Parks (RR-1) and Responsible Tourism and Biodiversity Conservation (RR-7). The main contribution of this roadmap to emission reduction is enhancement of carbon sink by forests, including conservation of natural forests, such as mangrove forests, and tree planting in urban area.

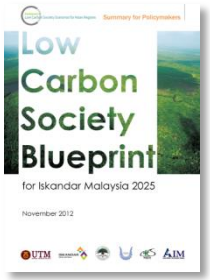


Sustainable Waste Management (WM)

This roadmap covers Action 11 "Sustainable Waste Management" (WM) that includes five sub-actions which cover waste from five different sectors - municipal (household and commercial), agriculture, industry, waste water, and construction and demolition. IRDA implementation plan of *Nafas Baru* Pasir Gudang will become the platform for promoting Sustainable Municipal Solid Waste Management through pilot project of waste separation at source and also focusing on upgrading of landfill management.



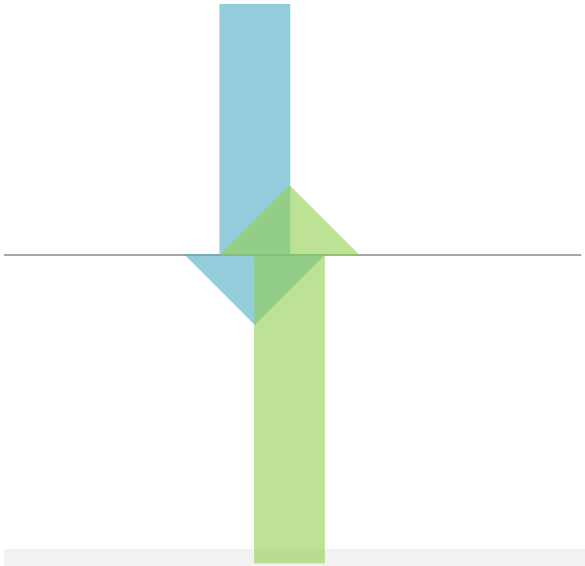
ACCELERATING THE IMPLEMENTATION of DECARBONISATION ISKANDAR MALAYSIA



Iskandar Malaysia

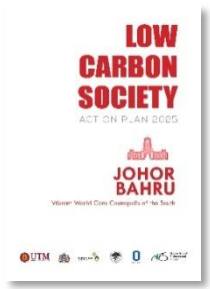
A Strong Sustainable Metropolis of International Standing

- **Direction, Guide and Policy**

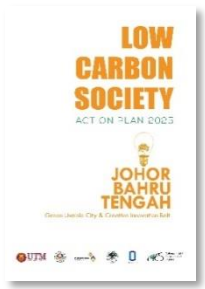


Johor Bahru

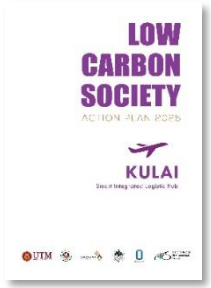
(Jeram Batu, Serkat & Sg. Karang Sub-districts)



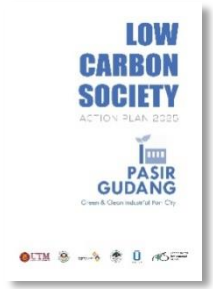
Vibrant World Class Cosmopolis of the South



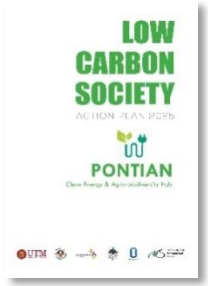
Green Livable City & Creative Innovation Belt



Smart Integrated Logistic Hub



Green & Clean Industrial City



Clean Energy and Agro-Biodiversity Hub

1) Detailed Local Actions
2) Priority and Preference
3) Accurate Data through Survey
4) Choose Implementable Measures on the Ground
5) Pioneering Activities through Pilot Projects

Organizational Arrangement

UTM-Low Carbon Research Centre

CASBEE ISKANDAR CENTRE 2017
Supported by IBEC/ MILT Japan ??

RCE Iskandar

UNITED NATIONS UNIVERSITY

UTM-LOW CARBON ASIA RESEARCH CENTRE

LCS Research & Training Hub in Asian Region

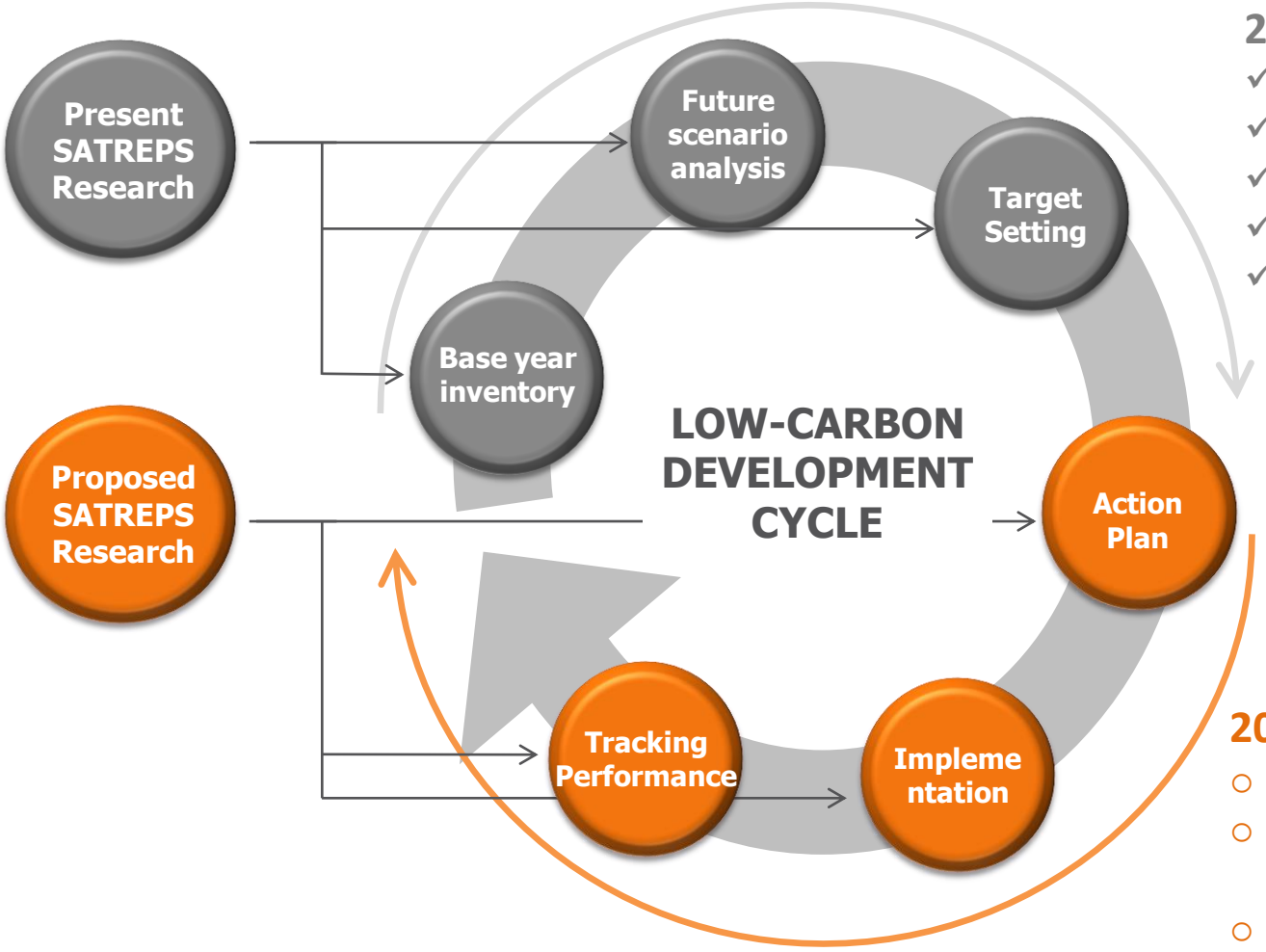
PM and MB Johor launched the Low Carbon Action Plans on Dec 15 2015 during Meeting of Authority in Putrajaya

The 5 local authorities in Iskandar region - Low Carbon Society in the Making

Low Carbon Action Plans for 5 local authorities in Iskandar Malaysia @ Kota Iskandar Officially Handed Over to Datuk Bandar and YDPs of 5LAs/PBTs

By MB Johor – 25 Feb 2016

PDCA CYCLE Implementation and Monitoring - Business matching Japanese investors/ Malaysian counters



2011 - 2016

- ✓ LCS baseline study
- ✓ LCS scenario development
- ✓ GHG modelling
- ✓ LCS policy design
- ✓ IM (regional) level action plan

2016 - 2021

- ○ City level detailed action plan
- ○ Sectorial specific strategic mitigation
- ○ Adaptation
- ○ Carbon monitoring

LOCAL AUTHORITIES AS IMPLEMENTORS

Low Carbon Society-List of ongoing project by Local Authorities

	Action Names	List of project
1	Integrated Green Transportation	Bas Iskandar Malaysia, Trans Iskandar, Bas Muafakat Johor
2	Green Industry	Green Economy Guidelines
3	Low Carbon Urban Governance	Low Carbon Society Action Plan 2025
4	Green Buildings & Construction	CASBEE, GAIA, **BERMS**
5	Green Energy System & Renewable Energy	CASBEE, GAIA, **BERMS**
6	Low Carbon Lifestyle	Iskandar Malaysia Ecolife Challenge, Cabaran Jimat Elektrik dan Air
7	Community Engagement & Consensus Building	Iskandar Malaysia Ecolife Challenge, Cabaran Jimat Elektrik dan Air
8	Walkable, Safe, Livable City Design	Provide pedestrian path and cycling lane, Bandar Selamat program.
9	Smart Growth	
10	Green and Blue Infrastructure & Rural Resources	Adopt a park programme, Hutan Kita-trees planting, urban farming , ramsar conservation and protection
11	Sustainable Waste Management	3R
12	Clean Air Environment	

FROM POLICY TO MONITORING GOVERNANCE - BERMS

Development of the Building Energy Monitoring & Reporting System In Iskandar Malaysia

ISKANDAR REGIONAL DEVELOPMENT AUTHORITY

ISKANDAR MALAYSIA 2006 – 2016

BEMRS is one of the key actions in the **LCSBPIM** under Action 3: **Low Carbon Urban Governance**

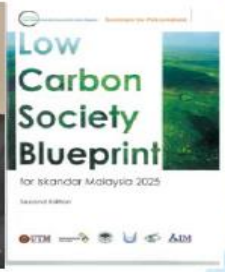
Planning and Target timelines

Pilot Project 1-2 Energy Audit Showcases in Government (each LAs) / IRDA Building and Develop a friendly template (Timeline: 2017)

Phase 1 All Government Buildings (Timeline: 2018-2022)

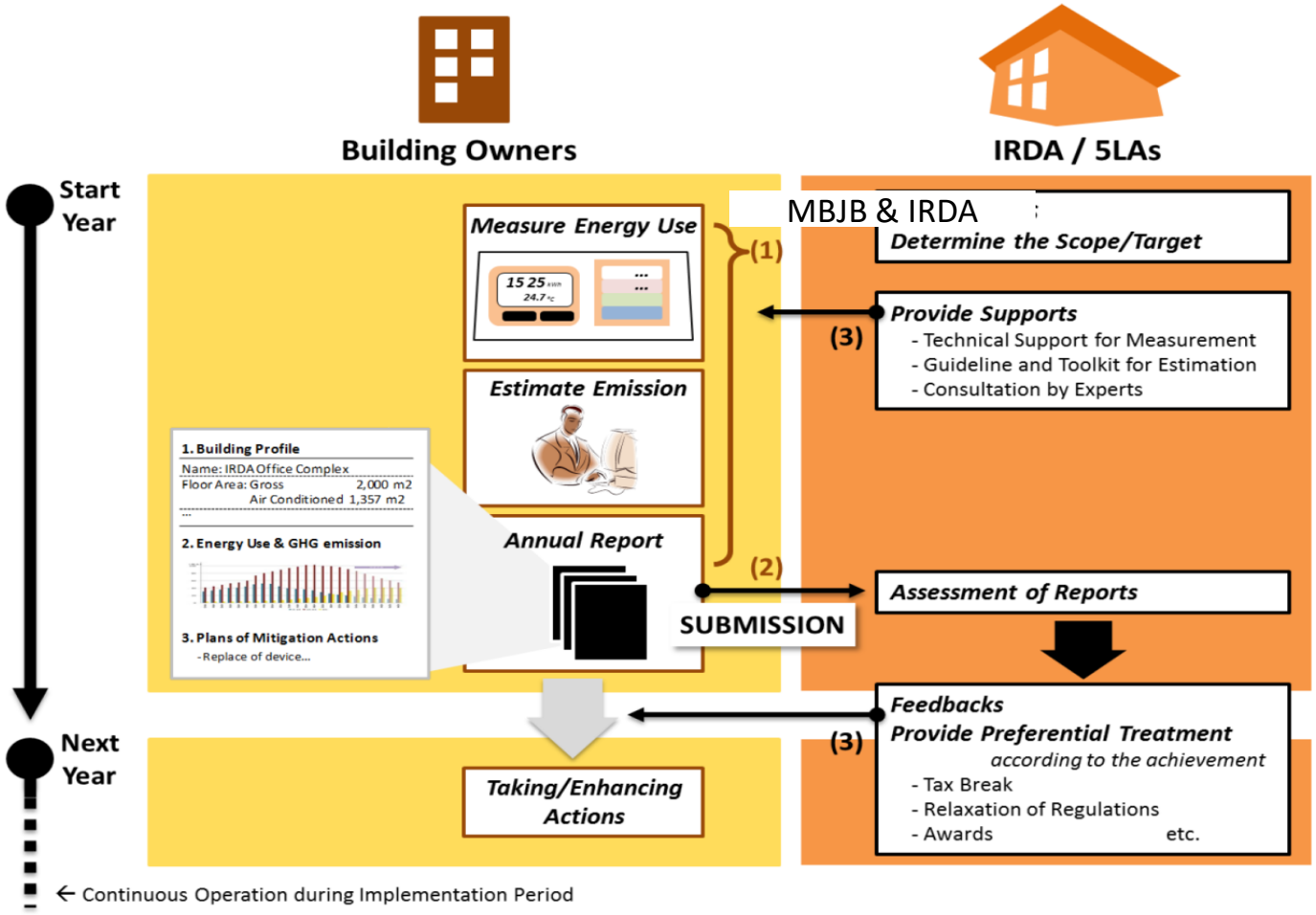
Phase 2 All Main Commersial Buildings (Timeline: 2022-2025)

Phase 3 **Other Buildings** (Timeline: 2026-2029)



	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	

CURRENT PROJECT 1 :
Inventory - Building energy reporting system (BERMS)
- Low Carbon Society Iskandar at all 5 local authorities



(1) The proposed system requests building owners to measure their energy consumption, estimate emissions and create action plans for mitigation.
(2) Building owners submit reports summarizing their energy usage, emissions and actions to the authorities annually.
(3) IRDA and/or 5LAs assess(s) the achievements of actions, provide(s) feedbacks and supports to encourage building owners to take actions.

BERMS
(Building Energy Reporting and Monitoring System)

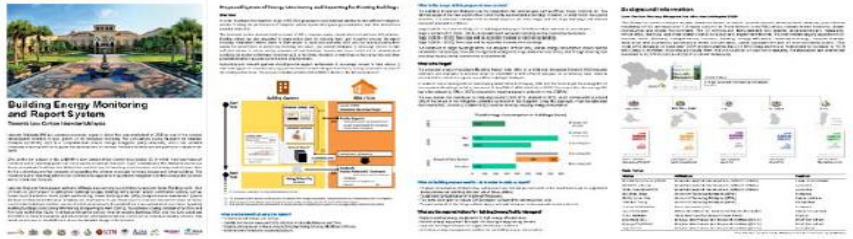
BERMS

Development of the Building Energy Monitoring & Reporting System In Iskandar Malaysia

ISKANDAR REGIONAL DEVELOPMENT AUTHORITY

ISKANDAR MALAYSIA 2006 – 2016

Background



COP 21 Paris (Nov 2015) –a Brochure" Building Energy Monitoring towards Low Carbon Iskandar Malaysia" was launched by IRDA with targeted greenhouse gas emission reductions in building sector

2ND Training Workshop organised by TMG & MHIR on 17-18 Oct 2016

- Crystalized energy audit as pilot project and identified the challenges.

1st Training Workshop organised by TMG & MHIR on 24-46 Feb 2016

- Learned the TMG's experience in Implementation of BEMRS.

STARTS FROM GOVERNMENT ASSETS

Way Forward

3 Government Buildings are proposed to conduct Energy Audit programs and designed a reporting template as well as BEMRS Manual.

Location: Kota Iskandar
4 main administrate Buildings

Location: Pontian Municipal Council's Building

Location: Kulai Municipal Council's Building

PROJECT 2
CASBEE : PILOT PROJECT

CASBEE Japan → Adaptation / Customisation → Assessment criteria → **CASBEE Iskandar**

Local Context
- Climate
- Socio-cultural
- Technology
- Governance

CASBEE

CASBEE Pilot Project – Iskandar Malaysia

A. Review & compare CASBEE Japan & other assessment tools (GBI, LEED)
B. Adapt Japanese version to suit local context & develop CASBEE Iskandar manuals.

(4) Four Buildings	Scoring
1. J.S.T. Connectors (M)	★ ★ ★ ★
2. Heng Hiap Industries	★ ★ ★
3. JBCC Komtar JBCC	★ ★ ★
4. Molek Pine 4	★ ★ ★ ★

(2) Urban Development	Scoring
1. The Seed, Tmn Sutera Utama	★ ★ ★ ★
2. Bandar Dato' Onn, Johor Bahru	★ ★ ★ ★

(3) Cities	Scoring
1. Johor Bahru	B+
2. Johor Bahru Tengah	B+
3. Kulai	B-

Setting up CASBEE ISKANDAR CENTRE

CIC Objectives & Functions

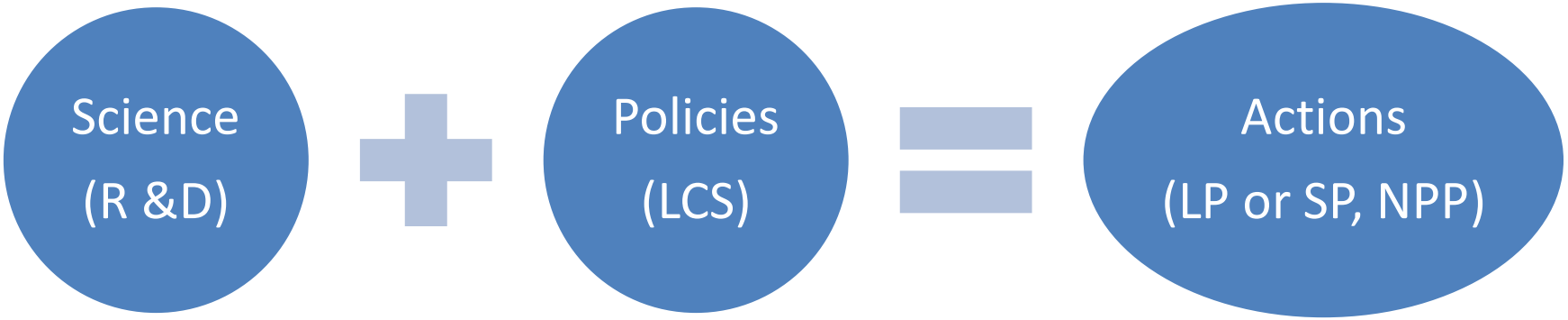
ISKANDAR REGIONAL DEVELOPMENT AUTHORITY

ISKANDAR MALAYSIA 2006 – 2016

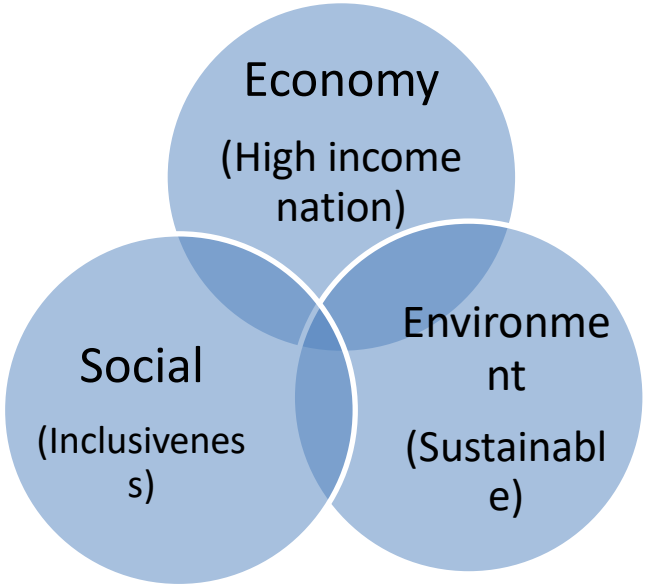
To establish "CASBEE Iskandar Centre" (CIC)

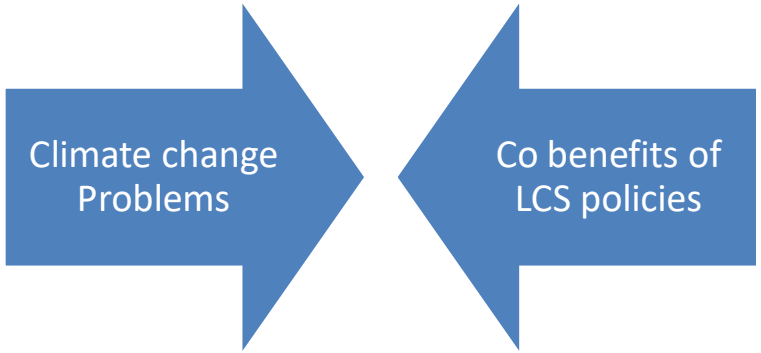
- Promote, implement & manage CASBEE ISKANDAR development
- Platform to network and share technical resources and expertise
- Conduct various activities to further promote greening of built environment

Low carbon sustainable development approach



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





WAYS FORWARD

- **Capacity building involves** implementers is by **collaborating with policy makers with good methodology, baseline study with models and develop scenarios for policy makers to make better objective decision.**

- Effective implementation of low carbon measures at city level needs **multi disciplinary professional input and multi stakeholders** and **buy in.**

- 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)

- **S2A (Science to Action) paradigm** can facilitates the formulation and implementation of **science-based policies for low-carbon developme**nt in th Asian region order to realise a sustainable future based on a stabilised climat

- **Monitoring PDCA cycle involving inventory and reporting system** are important component of S2A

Concluding remarks

- **Role of research communities** towards NDC development and implementation is by working **collaborating with policy makers with good methodology, baseline study with models and develop scenarios for policy makers to make better objective decision.**

- AIMS contribution to science based policy making and implementation of **LCS blueprint / LCS action plan with the help of AIMs models**

- Effective implementation of low carbon measures at city level needs **multi disciplinary professional input and multi stakeholders** and **buy in.**

- 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)

- **S2A (Science to Action) paradigm** can facilitates the formulation and implementation of **science-based policies for low-carbon developme**nt in the Asian region order to realise a sustainable future based on a stabilised climate.

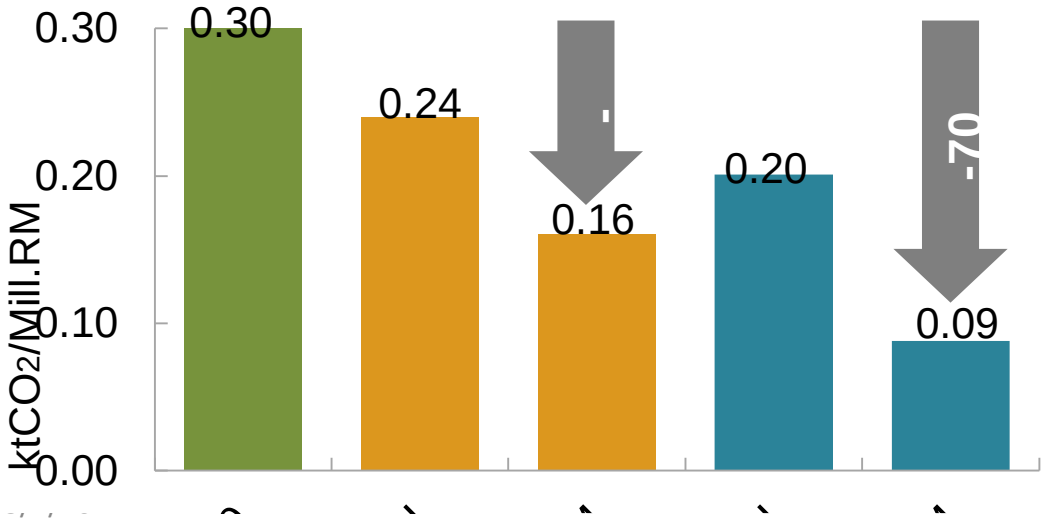
- **Monitoring PDCA cycle involving inventory and reporting system** are important component of S2A

WAYS FORWARD FOR ISKANDAR

- *Intensifying Implementation of decarbonisation by Dissemination CASBEE by setting up CASBEE ISKANDAR CENTRE (CIC) and working together with IBEC and MILT japan*
- *Promoting city – city collaboration between Japanese cities with 5 local authorities in Iskandar*
  - *Toyama city with Pontian Municipality on Mini hydro*
  - *Tokyo Metropolitan Government – with all on BERMS*
  - *Tsukuba city – JB Tengah City Council*
  - *Kitakyushu city – Pasir Gudang Municiaplity*
  - *Okayama city – Kulaijaya Municipality*
- *Promoting Green economy / Green technology by business matching Japanese investors and Malaysian business on*
  - *Transportation sector – HSRT/ trams/ TOD system*
  - *Photovoltaic (PV) technology*
  - *Halal industry - eg Toyama traditional medicine/ pharmaceutical*
  - *Biomass – Takakura compost/EM*

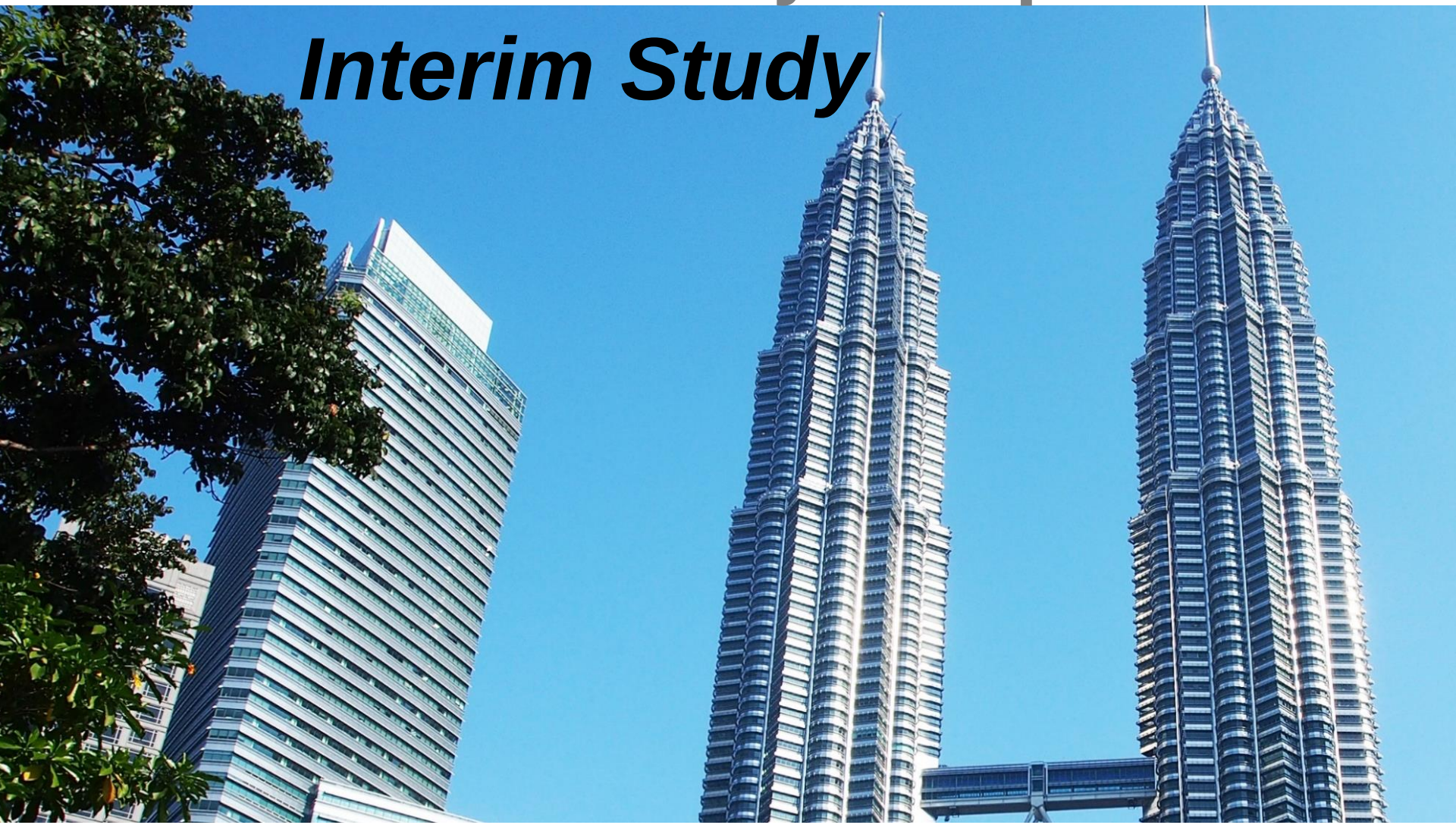
ON GOING MALAYSIAN LOW CARBON PROJECTS – KL CITY

CO2 intensity REDUCTION BY 70%



LAUNCHING KL LCS 2030 at MOROCCO COP22

Kuala Lumpur
Low Carbon Society Blueprint 2030



Interim Study

UTM RESEARCH UNIVERSITY
UTM-LOW CARBON ASIA RESEARCH CENTRE
IGES Institute for Global Environmental Strategies
E KONZAL

04 Greener and Better Kuala Lumpur

Kuala Lumpur Low Carbon Society 2030 Theme

World Class City 2020

Kuala Lumpur Vision:
World Class Sustainable City 2030

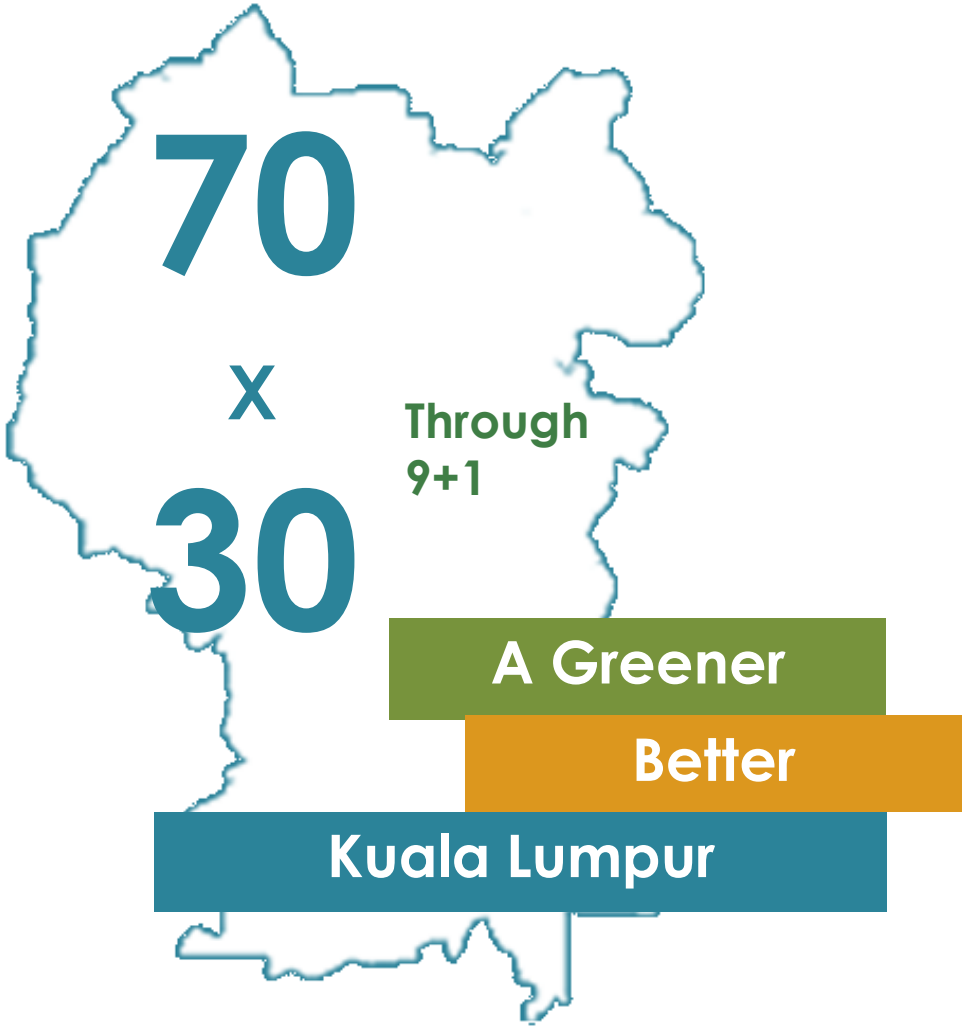
Thrust 1	Thrust 2	Thrust 3
Prosperous Robust and Globally Competitive Economy	Healthy, Creative, Knowledgeable, Inclusive Community	Ecologically Friendly, Livable and Resilient Built Environment
Economy	Social	Environment

FGD

Greener and Better Kuala Lumpur

04 Greener and Better Kuala Lumpur

Kuala Lumpur Low Carbon Society 2030 Theme



KL70by30:

KL CAN REDUCE ITS CARBON INTENSITY 70% BY 2030