7th Annual LoCARNet Meeting
On 21-22 November 2018 at Arya Duta Hotel Jakarta
Parallel Session 1-2A Urban and Rural Low Carbon Climate Resilience Development

Low carbon climate change actions in Malaysia

Chin Siong Ho
UTM-Low Carbon Asia Research Centre
Department of Urban and Regional Planning
Faculty of Built Environment
Universiti Teknologi Malaysia
Background
Malaysia cities: Key Challenges on SDG goals and LCS

Size: 330,803 km²
Population: 32 mil. (2016) 1.32%pa growth rate
GDP: 1.321 tril. RM (2016) 5% p.a growth rate

Issues
• Rapid urbanization and industrialization (7%pa)
• Relatively high carbon intensity dependence on fossil fuel (80%\text{\textsuperscript{a}})
• High private car ownership (15% public)
• Low density development and urban sprawl
• Low efficiency appliances and Renewable energy (5%)

Government Policy Directions
➢ National Green Technology Policy
➢ National Policy on Climate Change
➢ National Renewable Energy Policy and Action Plan
➢ National Policy on the Environment
➢ 11\textsuperscript{th} Malaysia Plan (2016-2020) Mid term review
➢ Green Neighborhood Planning Guideline
➢ Low Carbon Cities Framework and Assessment System

Alignment to SDG2030 and New Urban Agenda

Voluntary 45% reduction CO\textsubscript{2} emission intensity 2030
UTM-LOW CARBON ASIA RESEARCH CENTRE
Department of Urban and Regional Planning, Faculty of Built Environment, Universiti Teknologi Malaysia

PROJECTS

2017
- PENGEKIRAN LOW CARBON SOCIETY 2030 INCEPTION REPORT
- NUALA LUMPUR LOW CARBON SOCIETY 2030 BLUEPRINT

2016
- NUALA LUMPUR LOW CARBON SOCIETY 2030 INTERIM REPORT
- NUALA LUMPUR LOW CARBON SOCIETY 2030 INCEPTION REPORT
- CASEST STUDY FOR BUILDING (TECHNICAL MANUAL PILOT VERSION 2016)
- CASEST STUDY FOR CITY/COMMUNAL (TECHNICAL MANUAL PILOT VERSION 2016)
- CASEST STUDY FOR URBAN DEVELOPMENT (TECHNICAL MANUAL PILOT VERSION 2016)

2015
- LOW CARBON SOCIETY ACTION PLAN 2025: KUANTAN MALAYSIA - VIBRANT WORLD CLASS COMMUNITY OF THE SOUTH
- LOW CARBON SOCIETY ACTION PLAN 2025: JOHOR BAHRU 2025 - GREEN, REABLE AND CREATIVITY INNOVATION BELT
- LOW CARBON SOCIETY ACTION PLAN 2025: KUALA LUMPUR 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 - CLEAN ENERGY AND AGRO BIOVULARITY HUB
- CASEST STUDY FOR PILOT PROJECT

2014
- LOW CARBON SOCIETY BLUEPRINT FOR ISKANDAR MALAYSIA THIRD EDITION - 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 FIRST EDITION

2011
- PUTRAJAYA GREEN CITY 2025

2009
- LOW CARBON CITY 2025: SUSTAINABLE ISKANDAR MALAYSIA
Malaysia

Land Area: 332,000 km²
GDP: 247.5 billion USD (2010)

45%
Reduction in GHG Emissions Intensity of GDP by 2030
Malaysia - background

Journey realizing Vision 2020 - A fully developed nation along all dimensions – economically, politically, socially, psychologically and culturally by 2020.

Themes related to low carbon development
- Digital nation,
- Green growth cities
- Competitive cities
- Promote biodiversity
- Environmental awareness,
- Enable energy plan,
- Inclusiveness,
- Enable energy plan

<table>
<thead>
<tr>
<th>Year</th>
<th>CO2 emission ('000metric tons)</th>
<th>CO2 per capita metric ton</th>
<th>Carbon intensity Kg / kg oil equiv</th>
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</table>
Eleventh Malaysia Plan 2016-2020

Green Growth Policy

INVESTING IN COMPETITIVE CITIES- Major Shifts

- Economic Density
  - Increase Density
- Urban Form
  - Transit Oriented Development (TOD)
- Resource usage
  - Efficient SWM
- Housing
  - Quality and Affordable
- Industry Focus
  - Knowledge Intensive Industries
- Role of Local authorities
  - Strategic drivers of local economy and social development

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

Why is green growth important for Malaysia?

- Increasing intensity and frequency of extreme weather events.
- Malaysia’s commitment to renew and increase its commitment to the environment and long-term sustainability.
- Application of Green Technology as Strategic industry
FOCUS AREA OF GREEN SUSTAINABILITY

1. CC and Disaster Management
   Strengthening resilience against climate change and natural disasters
   • Strengthening disaster risk management
   • Improving flood mitigation
   • Enhancing climate change adaptation

2. Enabling environment for Green Growth
   Strengthening the enabling environment for green growth
   • Strengthening governance to drive transformation
   • Enhancing awareness to create shared responsibility
   • Establishing sustainable financing mechanism

3. Sustainable Consumption & Production
   Adopting the sustainable consumption and production concept
   • Creating green markets
   • Increasing share of renewable in energy mix
   • Enhancing demand side management
   • Promoting low carbon mobility
   • Management waste holistically

4. Conservation for future generation
   Conserving natural resources for present and future generations
   • Ensuring natural resources security
   • Enhancing alternative livelihood for indigenous and local communities
how do we see science technology and innovation as key drivers and enablers of sustainable urban development?

- SOCIETY AT THE CORE
- Decoupling, decarbonising + co-benefits
- Holistic: techno-fixes + people-centric, socially-rooted programs + environmental countermeasures
Harnessing contribution of Science and Technology
Sustainable development approach/ Climate Actions

Science (R&D) + Policies (LCS) = Actions (LP or SP, NPP)

Key Elements of Sustainable Development
= PRO GROWTH, PRO JOB , PRO POOR and PRO ENVIRONMENT

Economy (High income nation)
Social (Inclusiveness)
Environment (Sustainable)

Climate change Problems
Promoting resilient, low carbon, resource efficient and socially inclusive development

Co-benefits of LCS policies
Low Carbon Society Blueprint 2030

THE SCENARIO DEVELOPMENT

1. Setting Framework
2. Description of socio-economic assumption
3. Quantification of socio-economic assumption
4. Collection of low carbon measures
5. Setting introduction of measures in target year
6. Estimation of GHG emissions in the target year
7. Confirming measures set and suggestion of policy recommendations

CO₂ Emission Modeling – ExSS (AIM model)
Development of Low Carbon Society Scenarios for Asian Regions

IMLCSBP 2025: Science to Action

LCS SCIENCE / RESEARCH REALM

LCS ASIA RESEARCH TEAM

Research Institutions

Japan Counterparts
Kyoto University
Okayama University
National Institute for Environmental Studies (NIES)

(Forming 6 Cross-discipline Teams)

Malaysia Counterparts
Universiti Teknologi Malaysia (UTM)
IRDA Officials

Gathering, Analysing, Assessing Information: Current Political Context, Evidence, Links

Iskandar Malaysia LCS Goals & CO2 Emission Reduction Targets

Asia-Pacific Integrated Model (AIM)

Meet Targets?

Yes

IMLCSBP 2025 Drafts

No

LCS Policy Actions, Sub-actions, Measures, Programs

Input & Comments

FGDs

POLICYMAKERS / IMPLEMENTATION AUTHORITIES

Iskandar Regional Development Authority (IRDA)

Federal / State Level Development Policies

Act 664

5 Local Planning Authorities (LPAs) in Iskandar Malaysia

Act 172

Act 664

Iskandar Malaysia Development Vision in the Comprehensive Development Plan (CDP)

Mainstreaming into Existing Development Planning Framework

State Planning Committee (SPC) Approval

Planning & Development Control in Iskandar Malaysia

Johor Bahru and Kulaijaya Districts Local Plan 2020

Act 172

Implementation, Monitoring, Enforcement

IMLCSBP 2025
EMPIRICAL CASES FOR MALAYSIAN LOW CARBON CITIES

-One of Fastest growing Economic corridor regions – Iskandar Malaysia
-Federal Government Administrative centre of Putrajaya
-National Capital of Kuala Lumpur
-Integrated Oil and Gas Hub city of Pengerang
EMPIRICAL CASES FOR MALAYSIAN LOW CARBON CITIES

Fast growing region – Iskandar Malaysia

- 5 Local authorities / cities in Iskandar
  - Johor Bahru (Vibrant World class Cosmopolitan)
  - Puteri Iskandar (Green Livable city & Creative innovation Belt)
  - Kulai (Smart Integrated Logistic Hub)
  - Pasir Gudang (Green & clean industry city)
  - Pontian (Clean energy & Agro Bio Hub)
Iskandar Malaysia LCS 2025 Background
Iskandar Malaysia LCS Blueprint 2025

12 Actions

281 Programs
Iskandar Malaysia

2,216 km²
1.64 million people (2010)
3 million people (2025)

58%
Reduction in GHG Emissions Intensity of GDP by 2025

Iskandar Malaysia
main southern development corridor in Johor, Malaysia
Iskandar Malaysia LCS Blueprint 2025

Officially launched @ COP 18, Doha, Qatar on 30 Nov. 2012

Launching officially endorsed by the R.H. Prime Minister of Malaysia on 11 Dec. 2012
Iskandar Malaysia
(5 Local Authorities)

Iskandar Malaysia
main southern development corridor in Johor, Malaysia
Iskandar Malaysia
main southern development corridor in Johor, Malaysia
Iskandar Malaysia
main southern development corridor in Johor, Malaysia
A metropolis with 1st class infrastructure requires 1st class Mentality of its people to be sustainable.

Mindset Change Through Sustainability

Below: Social Development Intervention Strategy

Sustainability of a nation is driven by its most important resource… the people of Iskandar Malaysia.
Model to inculcate ESD through formal education

Johor State Education Dept. (JPNJ)

Government Agencies (IRDA, JAS, PPSPPA, LA, etc.), NGO

FGD
Training/module
Talk/Campaign
Competition
Society/Club

Principals (Management)

Champion

Teachers

Champion

Students

Green Ambassador

Parents (Public)

Research & Recognition
Objectives

• Understand local, national and international dimensions of problems in an increasingly complex and globalised world
• Familiarize students with the United Nations system
• Develop awareness of the importance of international cooperation when searching for possible solutions

22 Iskandar Malaysia-based schools received official Aspnet (UNESCO) certification (Primary School category)
Iskandar Malaysia Ecolife Challenge

- **Companies (CSR)**
  - Initiate project
  - Source funding
  - Coordinate

- **IRDA**
  - Source funding
  - Coordinate

- **Jabatan Pelajaran Johor, JPNJ (State Education Department)**
  - Directives
  - Permission
  - School selection

- **SATREPS Researchers**
  - Directives
  - Permission
  - School selection

- **KIKO Network**
  - Prepare module & workbook
  - Provide training
  - Module & workbook evaluation

- **Schools**
  - Teachers
  - Students

  - Lessons

  - LCS survey
    - Observation
    - Interview

  - Training
IMELC 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.
Sustainable & Low Carbon Schools Exhibition
## PERINGKAT TINGGI

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### Notes
- The table appears to be summarizing data related to Felda Taib Andak, possibly pertaining to carbon footprint or sustainability initiatives. The data includes various columns for months and possibly different categories or groups within the community. The values range from 0 to 1546 and suggest a comprehensive approach to tracking or monitoring carbon-related metrics.
GREENER BETTER KUALA LUMPUR 70BY30

KUALA LUMPUR LOW CARBON SOCIETY BLUEPRINT 2030

ROAD TO ACHIEVING 70 BY 30 GOAL

Current Vision: KLPC 2030
Draft KLPC 2030

World Class GCTV 2030

LCS Vision for Kuala Lumpur
World Class Sustainable City 2030

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

Triple Bottom Line of sustainability

Economy
Social
Environment

WORLD CLASS GCTV 2030

Thrust 1: Prosperity, Shifting Fuel and Shifting Land Use
Thrust 2: Healthy, Green, Beautiful and Inclusive Community
Thrust 3: Livelihoods, Livable and Resilient Built Environment

Sustainable Development Goals

Goal: Zero

New Urban Agenda Transformations

Sustainable and inclusive urban project opportunities for all

Enduring land Use

World-class Environment

World-class Working Environment

World-class Living Environment

KL Low Carbon Society Actions:

- Green Growth
- Energy Efficient Spatial Planning
- Green Mobility
- Renewable and Low-Carbon Energy Systems
- Community Engagement and Green Lifestyles
- Low Carbon Wastewater Systems
- Green and Blue Network
- Sustainable Urban Development
- Inclusive and Resilient Urban Development

Emission Reduction Contribution by Action

Action 1: Green Growth 1.1%
Action 2: Energy Efficient Spatial Planning 14.2%
Action 3: Low Carbon Green Building 30.1%
Action 4: Community Engagement and Green Lifestyles 19.7%
Action 5: Renewable and Low-Carbon Energy Systems 30.5%
Action 6: Green and Blue Network 0.7%
Action 7: Green and Blue Network 2.7%
Action 8: Sustainable Waste Management 0.2%
Action 9: Sustainable Waste Management 6.2%

GHG EMISSION INTENSITY BY GDP

EMISSION REDUCTION CONTRIBUTION BY ACTION

-48,206 MtCO2eq

(Equivalent to 70% reduction in emission intensity of GDP compared to 2010)

70% Reduction in GHG Emission Intensity of GDP by 2030

MITIGATION POTENTIAL OF KUALA LUMPUR 2030

BASIC PROFILE

Area: 242km² (94,221 hectares)
Population: 2.4M (2010), 3.5M (2020), 4.6M (2030)
Gross Domestic Product: RM 64.6 billion (2010), RM 119.6 billion (2020), RM 299.6 billion (2030)

Location: On the central west coast of Peninsular Malaysia, enclave within the State of Selangor and Klang Valley
Function: National capital of Malaysia, one of the major cultural, commercial, education, entertainment, financial, healthcare and tourism centres of Asia.
LOW CARBON BEST PRACTICES – C40 CITIES

Zero Net Melbourne 2020
Size: 9990 km²
Population: 4.53 mil
GDP: 178,000 mil USD

The Climate Plan Copenhagen 2025
Size: 86 km²
Population: 590,000
GDP: 127,000 mil USD

The Greenest City Action Plan 2020 Vancouver
Size: 115 km²
Population: 600,000
GDP: 64,600 mil USD

One City Built to Last New York 2050
Size: 790 km²
Population: 8.55 million
GDP: 778,000 mil USD

The London Carbon Plan 2050
Size: 1,595 km²
Population: 8.54 mil
GDP: 511,000 mil USD

Tokyo Climate Change Strategy 2020
Size: 2,188 km²
Population: 13.5 mil
GDP: 925,500 mil USD

Putrajaya Green City 2025
Size: 49 km²
Population: 49,452
GDP: 20,275 mil USD

Low Carbon Society Blueprint Iskandar Malaysia 2025
Size: 2,216.34 km²
Population: 1.35 mil
GDP: 8,921 mil USD
Malaysia’s global commitment to reducing 45% CO₂ emission intensity by 2030 (based on 2005)

Climate Change /Low Carbon Initiatives

Kuala Lumpur Low Carbon Society 2030 Blueprint
SDG’s creates the foundation for the triple bottom line of sustainability and act as guideline for implementation of the Kuala Lumpur World Class Sustainable City 2030.
FRAMEWORK OF KL LCSSBP 2030

WORLD CLASS CITY 2020

WORLD CLASS SUSTAINABLE CITY 2030
70 by 30: A Greener Better Kuala Lumpur

Economy
- Thrust 1
  - Prosperous, Robust and Globally Competitive Economy

Social
- Thrust 2
  - Healthy, Creative Knowledgeable and Inclusive Community

Environment
- 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, 16, 17
- Goals: 6, 11, 13, 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

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
## Emission Reduction Contribution by Action

<table>
<thead>
<tr>
<th>Thrusts</th>
<th>Actions</th>
<th>Reduction (ktCO₂eq)</th>
<th>Share (%)*</th>
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<td>Economy (59%)</td>
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<td>Action 4 Sustainable Energy System (SE)</td>
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<td>Social (19%)</td>
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<td>Environment (22%)</td>
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<td><strong>Total</strong></td>
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<td><strong>48,206</strong></td>
<td><strong>100</strong></td>
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</table>
KL can reduce its carbon emission intensity by as much as 70% by 2030 (based line 2010).

ROAD TO ACHIEVING 70 BY 30

10 Actions
37 Sub actions
82 Measures
245 programs

3 Thrust

KL LCSBP2030
Date: November 2017

70 by 30
OUTCOME FROM Focus Group Discussion 1
PROJECT EVALUATION THROUGH FGD

To improve list:
- Traffic congestion
- Public transportation & connectivity
- Cleanliness and pollution
- Management and maintenance of spaces & facilities (e.g. Park, roads)
OUTCOME FROM FGD2 – Wish list/ programs 
ROADMAP OF KL LCSBP 2030

WHAT? Action, sub-action, measures and programs in Kuala Lumpur Low Carbon Society Blueprint 2030

WHEN? To identify implementation timeline for each program based on the result of ranking in the previous FGD (FGD2).
The timeline of implementation are arranged into three; short term (2015-2020), medium term (2021-2025) and long term (2026-2030)
Based on FGD2 feedbacks, the result of ranking are use to indicate the scores (high, medium, low) for each program.

WHO? To identify potential actor/ caretaker for each program and supporting agencies (Office in charge/ Supporting agency/ implementer.)
Responsible KLCH Dept.:
KLCH department with primary responsibility for initiating, coordinating, liaising with relevant external agencies, monitoring, and/or approving implementation of programs

Partners:
Technology providers, funding agencies or entities, and relevant government agencies with approving authority for, and/or statutory duty of regulating, facilitating and overseeing implementation of programs

Implementers:
Agencies, entities and/or parties that implement, or are needed to implement, programs due to the statutory duty, ownership rights, institutional responsibility, and/or effective serving of communal interests
KUALA LUMPUR: LOW CARBON SOCIETY’S PROGRAMMES

**Transportation**
- Rail system
- Bicycle lane
- Bus system
- Pedestrian Network

**Buildings**
- Green Building Index (GBI)
- Energy Management (KLCH Tower 1)

**Solid Waste**
- Reduce Reuse Recycle (3R) program

**Energy**
- Energy-efficient buildings
- Euro5 NGV for Public Transport
- B10 Trial Project

**Infrastructure & Digital Technology**
- Integrated Transport Information System (ITIS)
- LED Street Lanterns

**Water**
- River of Life (ROL)
- Rain water harvesting

**Environment**
- Open spaces
- Tree Planting
- Vertical green
- Community garden
- Preserving Forest
- Laneway projects
THE IMPORTANCE OF IMPLEMENTATION AND MONITORING

Present SATREPS Research

Future scenario analysis

Target Setting

Low-Carbon Development Cycle

Action Plan

Tracking Performance

Implementation

Base year inventory

Future scenario analysis

2011 - 2016
✓ LCS baseline study
✓ LCS scenario development
✓ GHG modelling
✓ LCS policy design
✓ IM (regional) level action plan

Proposed SATREPS Research

2016 - 2021
○ City level detailed action plan
○ Sectorial specific strategic mitigation
○ Adaptation
○ Carbon monitoring

The Importance of Implementation and Monitoring

The Low-Carbon Development Cycle

Present SATREPS Research

Future scenario analysis

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Action Plan

Tracking Performance

Implementation

Base year inventory
FINDINGS

The findings showed that there is a concrete and practical steps for low carbon transformation for developing countries.

Low carbon and resilient development initiatives can be strategically integrated with the existing development agenda to further promote urban sustainability.

"Science to Action" (S2A) is the way forward towards creating low carbon futures, i.e. ensuring good, scientifically grounded and community-rooted LCS policies are materially acted upon, yielding real cuts in GHG emissions with simultaneous socioeconomic co-benefits for the people.

Consideration are

- existing policy direction, geographical setting, political cultural, socio-economic, financial capacity and human capital are essential for climate change plan formulation.
PM and MB Johor launched the Low Carbon Action Plans on Dec 15 2015 during Meeting of Authority in Putrajaya
Johor Bahru Low Carbon Society in the Making (2015 Flashback)

Low Carbon Action Plans for 5 local authorities in Iskandar Malaysia @ COP 21, Paris
Placing 5 LAs of Iskandar Malaysia in world agenda
*By CE IRDA on behalf of MB Johor – 7 Dec 2015*
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
Thank you for your attention!

Thank You Terima Kasih 谢谢 धन्यवाद ありがとう
Please contact us

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