Overview: Cities & Climate Change

WHY CITIES?

ENDING CLIMATE CHANGE BEGINS IN THE CITY

Cities have the power to change the world.

But cities are as vulnerable as they are powerful.

Climate change causes financial damage too.

Urban growth shows no sign of slowing.

FOSSIL BASED ENERGY

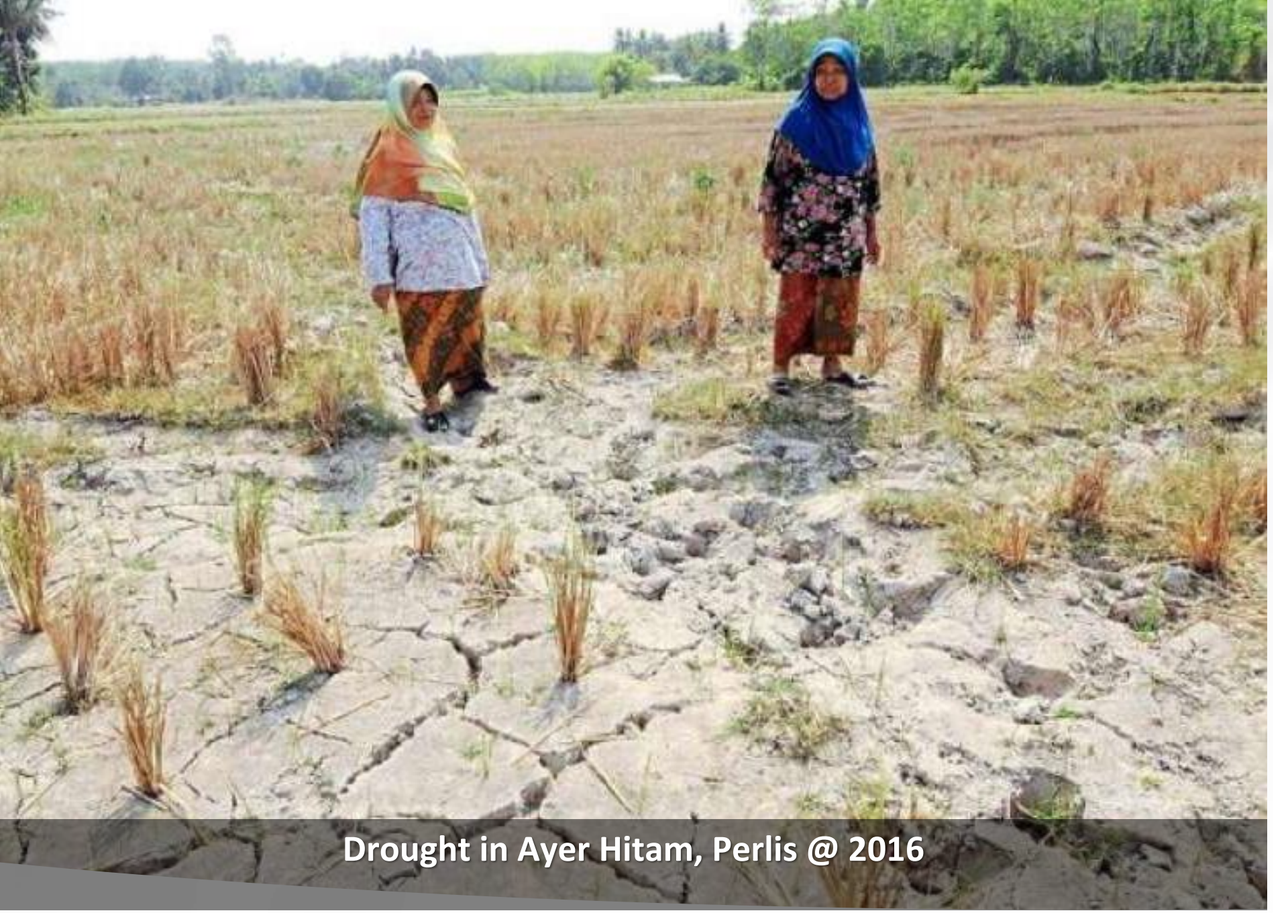
WASTE IN LANDFILLS

THE CAUSE

WE ARE EMITING MORE CARBON INTO THE ATMOSPHERE THAN THE EARTH'S NATURAL SYSTEM CAN REGULATE.

PRIVATE VEHICLE USE

MASS DEFORESTATION



Drought in Ayer Hitam, Perlis @ 2016

Floods in Georgetown, Penang @ 2017, Floods in Malaysia @ December 2021

IMPACT OF CLIMATE CHANGE ON MALAYSIA

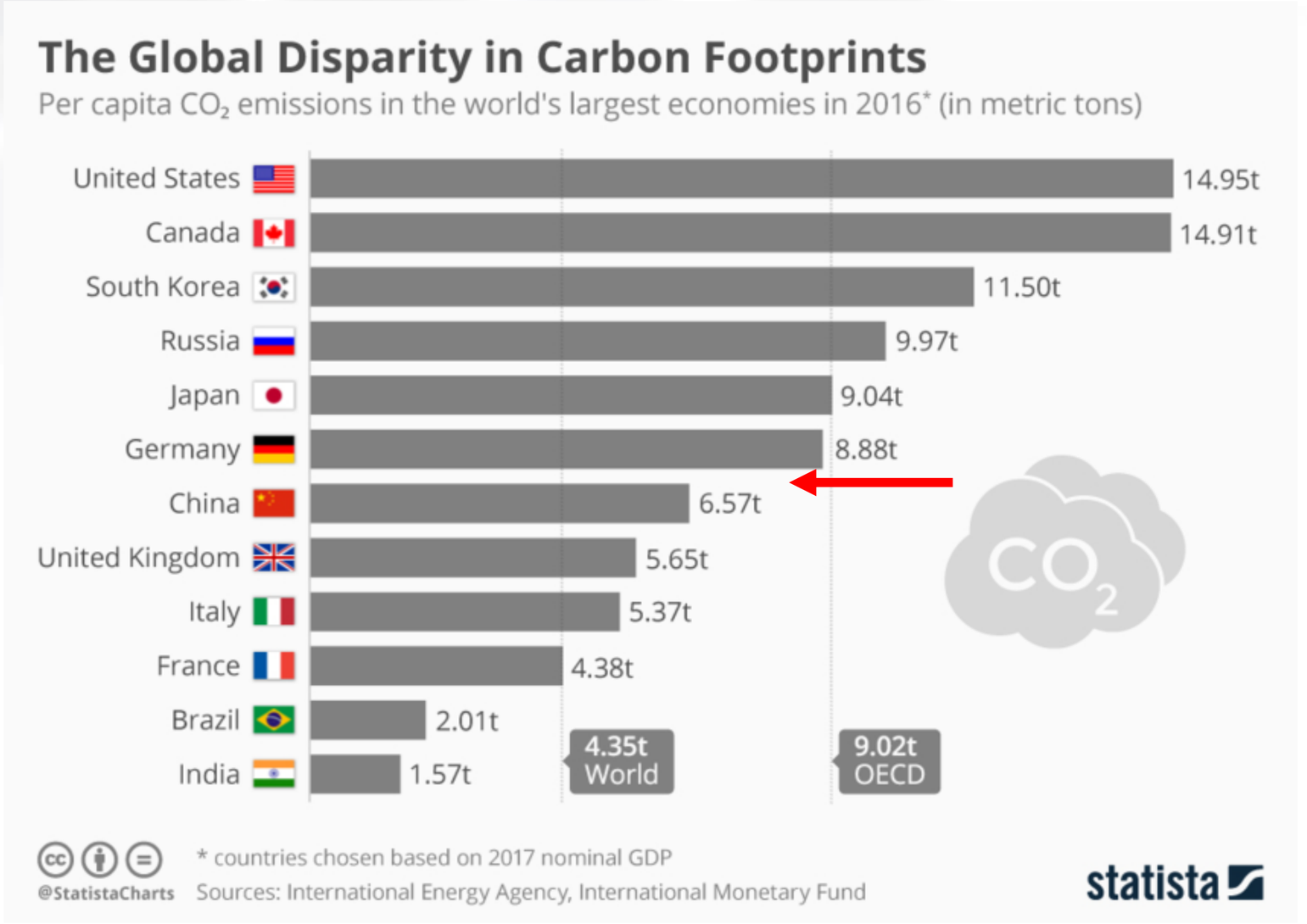
- FOOD SECURITY
- HEALTH IMPACT
- COASTAL SAFETY
- COST OF BUSINESS
- EXTREME WEATHER EVENTS

OUR CONTRIBUTION

ASEAN EMISSIONS PER CAPITA 2014 (tCO_2/capita)	
BRUNEI	22.12
SINGAPORE	10.31
MALAYSIA	**8.03**
THAILAND	4.62
INDONESIA	1.82
VIETNAM	1.80
PHILIPPINES	1.06
CAMBODIA	0.44
MYANMAR	0.42
LAOS	0.3

MALAYSIA IS RANKED 44TH IN THE WORLD IN PER CAPITA EMISSIONS.

Source: World Bank



OUR CONTRIBUTION

EACH OF US EMIT

EIGHT (8)

OF THESE 10m DIAMETER BALLS OF CARBON EMISSIONS EVERY YEAR.

KEMENTERIAN ALAM SEKITAR DAN AIR
Ministry of Environment and Water

MGTC

LCCF

LOW CARBON CITIES FRAMEWORK
& ASSESSMENT SYSTEM

LOW CARBON CITIES FRAMEWORK (LCCF)

SUSTAINABLE DEVELOPMENT GOALS

Guiding International Community over 2016 - 2030

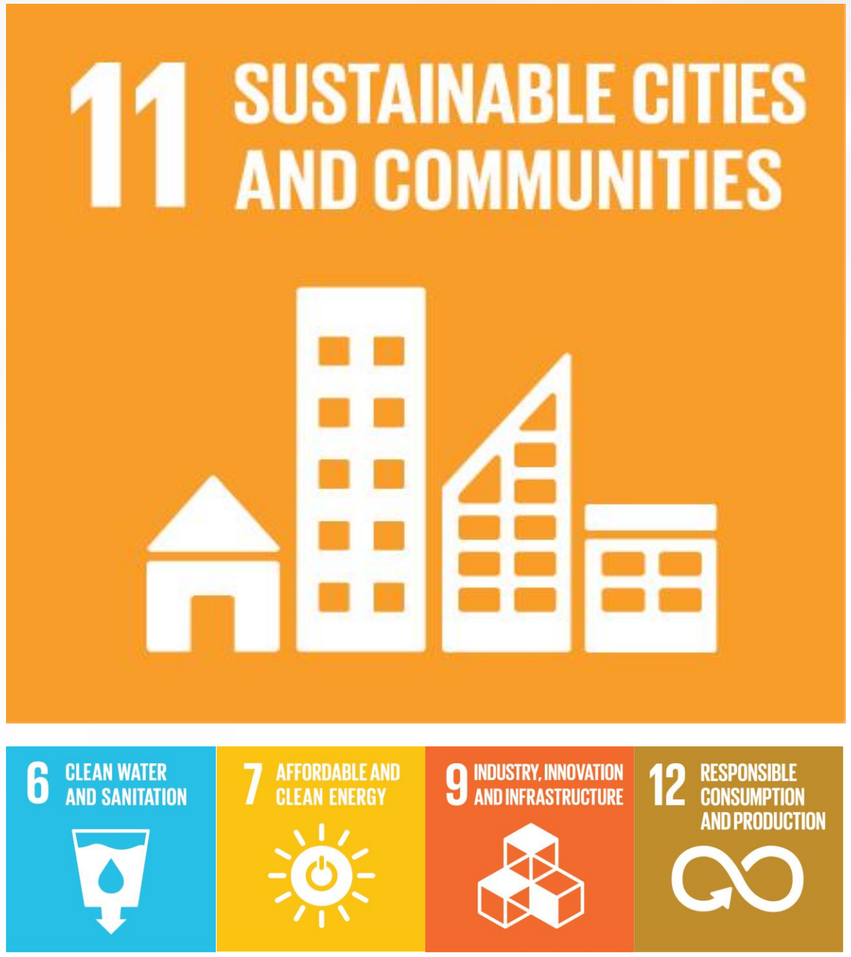
THE GLOBAL GOALS
For Sustainable Development

17 Goals, 169 targets covering 3SD dimensions (Economic, Social and Environment)

Inter-governmentally negotiated, agreed to by all Member States

Universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity.

Goal 11: Sustainable Cities and Communities



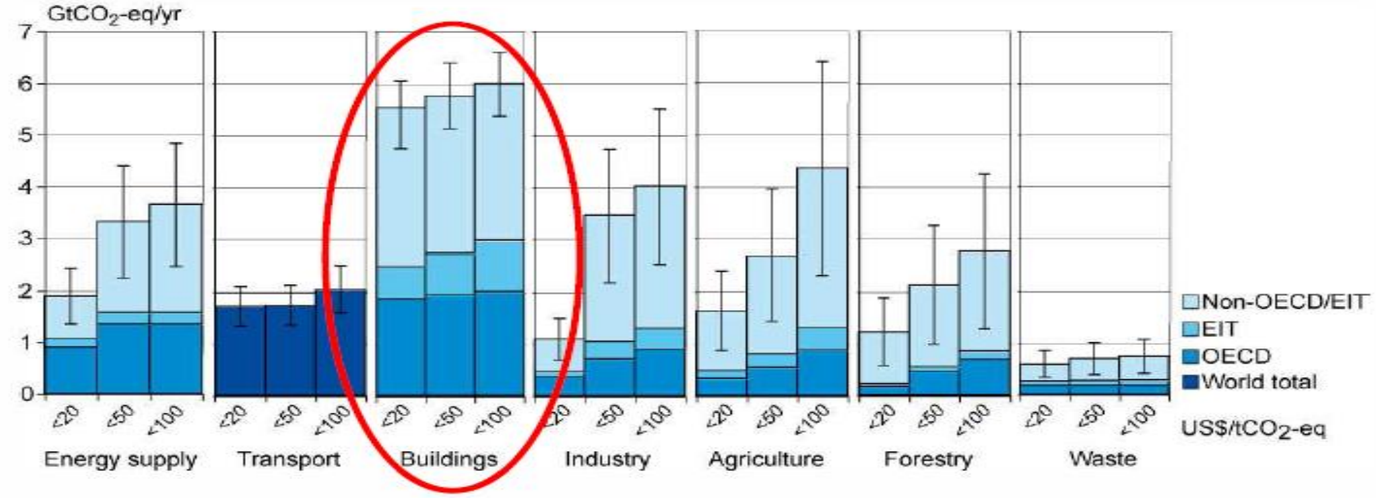
MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE

- With the rapid development that Malaysia is undergoing, the need to adopt low carbon cities is becoming increasingly crucial to ensure sustainable economic growth

- Cities are currently projected to contribute 70 percent of the global greenhouse gas emissions.

CITIES & GHG EMISSION

Cities/Urban Areas Emit GHG : Sources of Green House Gas



If you want to tackle Climate Change –

Tackle the Cities

More than 50% of world's population Consumes for 75% of world's energy consumption

Responsible for 80% of GHG emission

Energy Consumption

Building sector represents 40% of the world's energy consumption and contributes to one-third of GHG emissions.

"CO2 is the most important anthropogenic of GHG and the main sources of atmospheric CO2 is from burning of fossil fuels – 75% of increase in atmospheric CO2 since industrial times

(Source: Cities and Climate Change – Global Report on Human Settlements 2011, UN-Habitat).

Dasar Teknologi Hijau Negara

National Green Technology Policy

2009

Dasar Perubahan Iklim Negara

(National Policy on Climate Change)

2009

GREEN TECHNOLOGY MASTER PLAN MALAYSIA 2017 - 2030

7 AFFORDABLE AND CLEAN ENERGY

11 SUSTAINABLE CITIES AND COMMUNITIES

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

13 CLIMATE ACTION

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

SUSTAINABLE DEVELOPMENT GOALS

RFN3 Rancangan Fizikal Negara 3 *(National Physical Plan 3)*

dpn2 Dasar Perbandaran Negara 2 *(National Urbanization Policy 2)*

Rancangan Struktur Negeri *(State Structure Plan)*

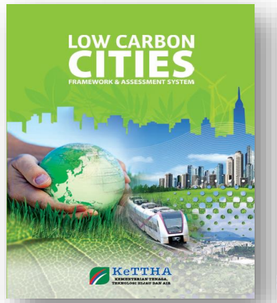
Rancangan Tempatan Daerah *(District Local Plan)*

Garis Panduan Perancangan Bandar Rendah Karbon *(Low Carbon City Planning Guidelines)*

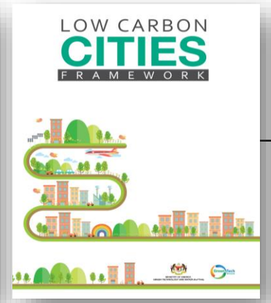
PLANMalaysia (JABATAN PERANCANGAN BANDAR DAN DESA)

Low Carbon City Action Plan / City Climate Action Plan (Guided by / Aligned with NLCCMP)

LOW CARBON CITIES FRAMEWORK



Version 1: 2011



Version 2: 2017

LOW CARBON CITIES MASTERPLAN

2020/21

LOW CARBON CITY CHALLENGE 2030 (LCC2030)

Policy Context on Low Carbon Cities in Malaysia

(aligned with existing policies & plans)

LCCF:: WHAT IS IT ALL ABOUT?

TO GUIDE STAKEHOLDERS TO LEAD BY EXAMPLE & IMPLEMENT LOW CARBON CITIES EFFORT

All cities in Malaysia: **Municipalities, Developers, Universities**

LCCF

TARGET: To reduce carbon emission intensity by **45% per GDP per capita by the year of 2030**

OBJECTIVE

- **To encourage & promote the concept of low carbon cities and townships in Malaysia.**
- **To increase the compatibility of cities/townships with their local natural system.**
- **To guide cities in making choice/decisions towards greener solutions.**

LCCF Version 1 launched : 8 September 2011

LCCF Version 2 released October 2017

Dokumen LCCF boleh dimuatturun di pautan: LCCF_Book-Version-2-2017.pdf

DEFINITION of LOW CARBON CITY

(according to National Low Carbon Cities Masterplan, NLCCM)

- A Low Carbon City is a city **that implements low carbon strategies** to meet its environmental, social and economic needs.
- A low carbon city **measures, manages and mitigates** its carbon emissions to reduce its contribution to climate change.

WHAT DOES A LOW CARBON CITY LOOK LIKE?

Renewable Energy for decentralise energy generation

Solar Township/ Buildings

Energy Efficient/ Low Carbon Buildings

Energy & Water consumption reduction

Reduction of Municipal Waste

Transit Oriented Development – reachable by walking

Lesser/ negligible traffic congestion

Positioning Malaysia in the forefront of low carbon cities development

Urban Environment

Urban Transportation

Urban Infrastructure

Building

Efficient & Effective Mass Public Transport

Electric Vehicles/ Energy Efficient

More Green Spaces & Green Connectors

Plant more high sequestration trees

Low carbon emission

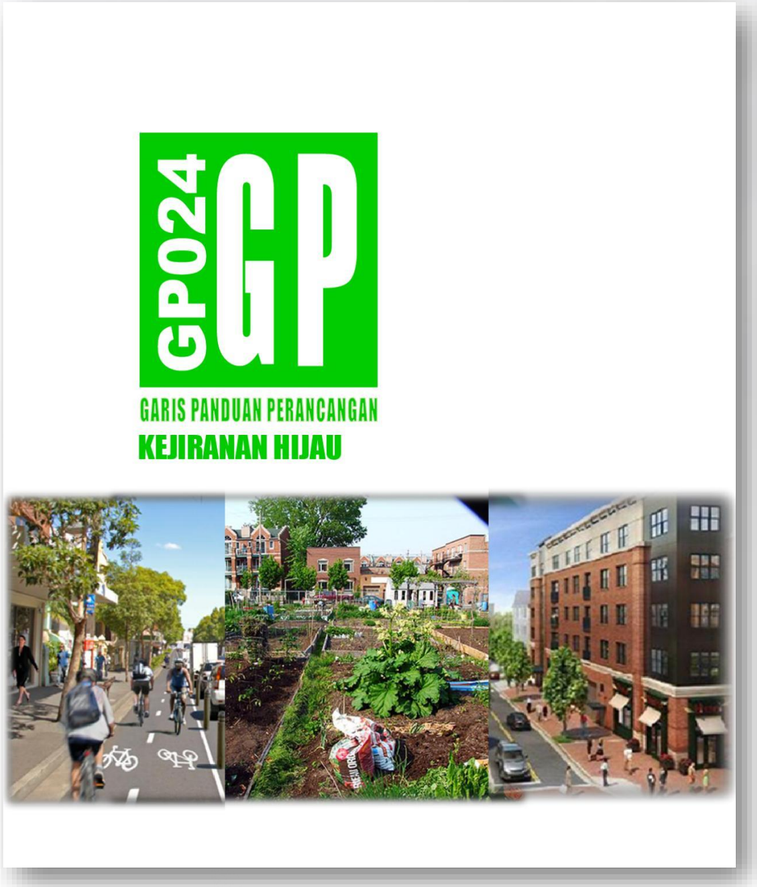
Improve standard of living

Government effort is visible & motivates people to value the Environment

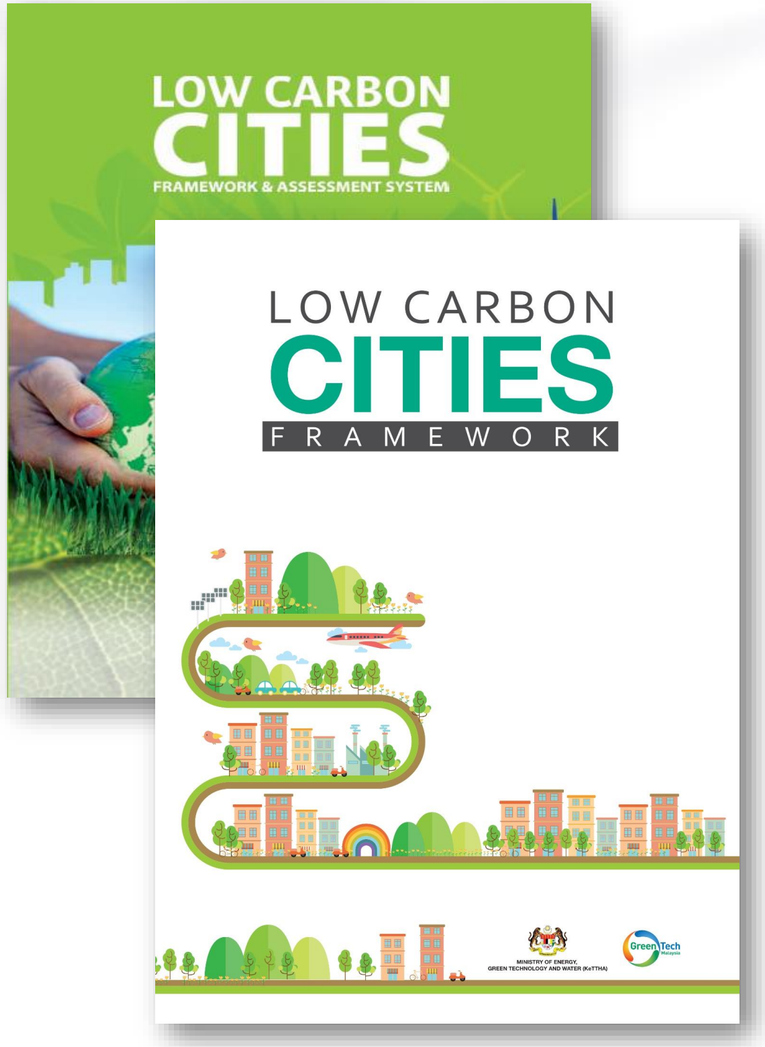
Malaysia's Inspiration

Catalyst of Change and Inspiration to other cities and communities

GNG – LCCF GUIDELINE JOIN USAGE



LCCF is used together with **Green Neighbourhood Guideline (GNG)** of the Town and Country Planning Department Peninsular Malaysia specifically to measure carbon emission value of the municipalities.



LCCF OVERVIEW

Part 1: Framework

Serves as a guide to uses on pertinent areas (elements) that contributes to the reduction of GHG emission. It comprises 4 key elements, 15 criteria and 41 sub-criteria. This information would help the user identify areas in which they could target an overall carbon reduction.

Screening Process (LCCF Checklist)

i. >80% : Outstanding
ii. 70 – 79% : Excellent
iii. 60 – 69% : Very Good
iv. 50 – 59% : Good
v. 40 – 49% : Pass
vi. <40% : Unclassified

Part 2: Assessment System

LCCFTRACK

An in built carbon calculator will help a user determine their current baseline. The user will then apply the various strategies recommended in the framework to achieve a reduction level.

Carbon Calculation (LCCF Track)

i. 100% : Carbon Neutral
ii. 70 – 99% : Best Practice 5
iii. 50 – 69%: Best Practice 4
iv. 30 – 49%: Best Practice 3
v. 10 – 29% : Best Practice 2
vi. 1 – 9% : Best Practice 1

LOW CARBON CITIES FRAMEWORK

4 Elements for GHG Reductions in Cities

15 Performance Criteria*

41 Sub-Criteria

* Performance Criteria are **measurable strategies** to **reduce carbon emission** through:-
Policy control, technological development, better process & product management, change in procurement system, carbon capture, consumption strategies & others.

Urban Environment

UE

- Site Selection
- Urban Form
- Urban Greenery & Air Quality

Buildings

B

- Low Carbon Building
- Community Service

LOW CARBON CITIES FRAMEWORK AND ASSESSMENT SYSTEM

UI

- Infrastructure Provision
- Waste
- Energy
- Water Management

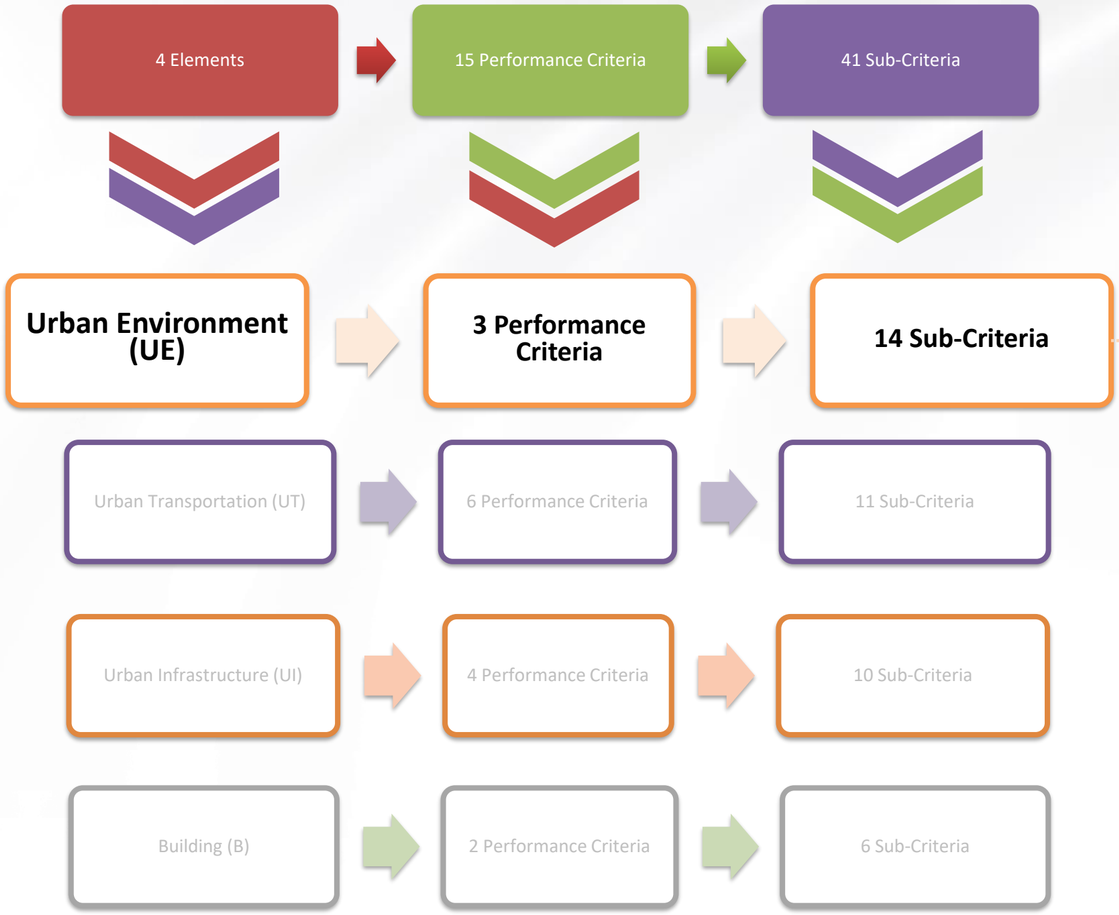
Urban Infrastructure

UT

- Reduction Use of Private Motorised Transport on Urban Road
- Increase in Public Transport
- Mode Shift from Private to Public Transport and Non-Motorised Transport
- Use of Low Carbon Transport
- Improvement to Level of Service of Road Links and Junctions
- Utilisation of Transit-Oriented-Development (TOD) Approach

Urban Transportation

ELEMENT 1: URBAN ENVIRONMENT



Site Selection

1-1: Development within defined urban footprint
1-2: Infill development
1-3: Development within transit nodes and corridor
1-4: Brownfield and greyfield redevelopment
1-5: Hill slope development

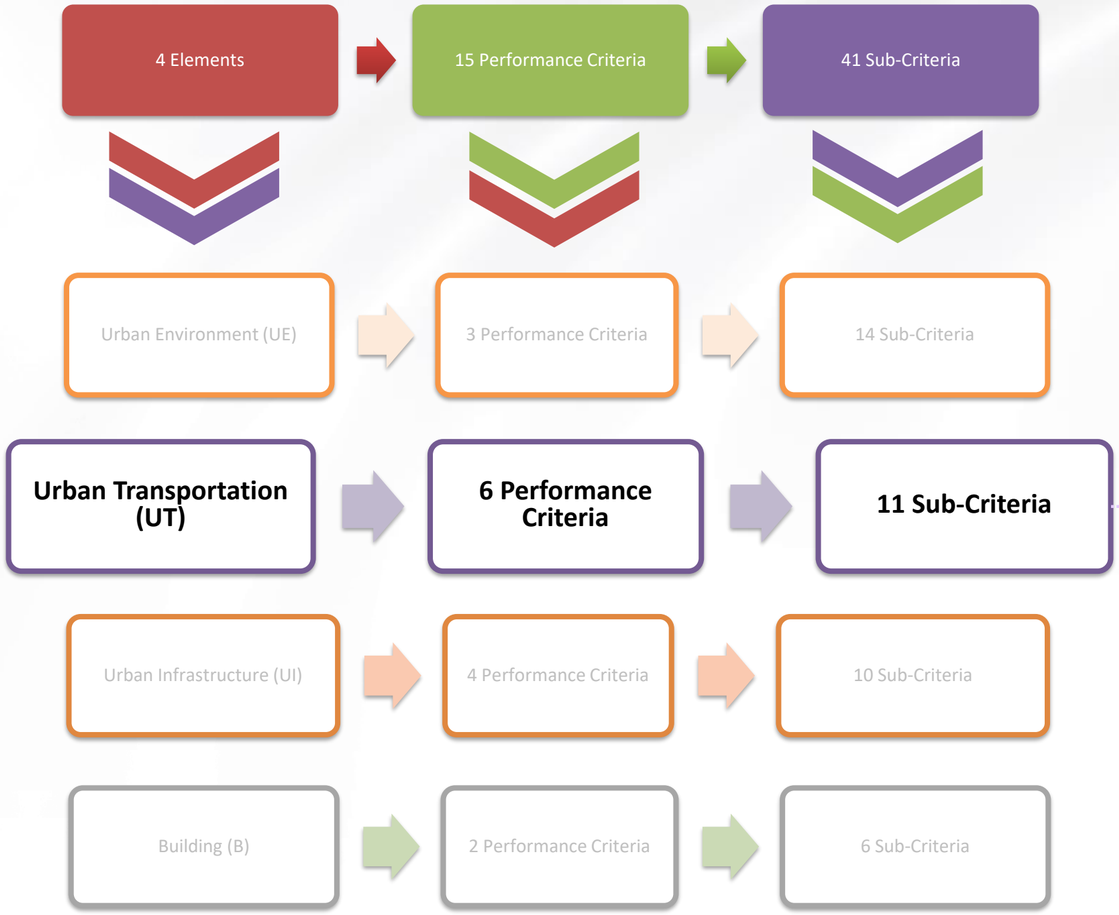
Urban Form

2-1: Mixed-use development
2-2: Compact development
2-3: Road and parking
2-4: Comprehensive pedestrian network
2-5: Comprehensive cycling network
2-6: Urban Heat Island (UHI) effects

Urban Greenery & Environmental Quality

3-1: Preserve natural ecology, water body and bio-diversity
3-2: Green open space
3-3: Number of trees

ELEMENT 2: URBAN TRANSPORTATION



- **Reduction in Use of Motorised Transport on Urban Road Network**
  - 1-1: Classified traffic volume on urban network
  - 1-2: Vehicle-km of travel by modes
- **Increase in Public Transport Use**
  - 2-1: Public transport ridership
  - 2-2: Public transport system improvement and coverage
- **Mode Shift from Private to Public Transport and Non-Motorised Transport**
  - 3-1: Modal share of private, public, and non-motorized transport
- **Use of Low Carbon Transport Modes**
  - 4-1: Use of more fuel-efficient passenger vehicles and green freight transport
  - 4-2: Number of charging stations
- **Improvement to Level-of-Service of Road Links and Junctions**
  - 5-1: Performance of Road Links and Junctions
  - 5-2: Average link speeds and journey speeds
- **Utilisation of Transit Oriented Development**
  - 6-1: New development and redevelopment schemes incorporating TOD concept
  - 6-2: Walking and cycling facilities to support access and mobility to/from public transit nodes

ELEMENT 3: URBAN INFRASTRUCTURE

Infrastructure Provision

1-1: Land take for infrastructure and utility services
1-2: Earthworks management
1-3: Urban storm water management and flood mitigation

Waste

2-1: Construction waste management
2-2: Industrial waste management
2-3: Household solid waste management

Energy

3-1: Energy Optimisation
3-2: Renewable Energy
3-3: Site wide district cooling system

Water Management

4-1: Efficient Water Management

ELEMENT 4: BUILDING

Sustainable Building Management System

1-1: Energy management system
1-2: Facility management

Low Carbon Building

2-1: Passive and active designs
2-2: Operational energy consumptions
2-3: Operational water consumptions
2-4: Preserve existing building stock by retrofitting

IMPLEMENTATION APPROACH

User can opt to undertake a One-System Approach or a City-based Approach depending on their objective and capacity.

One System Approach

Mitigating one or more performance criteria (≤ 10 Sub Criteria) as stated within the LCCF, regardless of elements selection

A One System

- Mitigating a particular selected sector as described in the main criteria and not all the criteria in the LCCF will be considered and mitigated
- E.G.: Yokohama waste reduction programme (estimated total waste reduction for fiscal years 2001-2007 is 623,000 tons which leads to reduction of 840,000 tons of CO_2

OR

City Based Approach

Mitigating certain performance criteria (>10 Sub Criteria) as stated within the LCCF, regardless of elements selection

A City Based

- A holistic view where all criteria are considered and mitigated as stated within LCCF
- E.G.: Stockholm (an old inner city industrial area transform into an attractive and ecologically sustainable district through an integrated and collaborative planning and management)

MALAYSIAN GREEN TECHNOLOGY AND CLIMATE CHANGE CORPORATION

LOW CARBON CITIES 2030 CHALLENGE

Launched on 23 July 2019 by the Ministry of Energy, Science, Technology, Environment & Climate Change (MESTECC)

ABOUT LCC2030 CHALLENGE

Reducing emissions in cities is key to meeting Malaysia's commitment to the Paris Climate Agreement & becoming a carbon neutral nation by 2050

WHAT

Accelerate the Transformation Towards Low Carbon Cities

WHY

Cities are responsible for up to 70% of GHG emissions

HOW

Establish Low Carbon Zones in State Capitals & Major Urban Areas

WHO

Local Authorities, Universities, Economic Zones, Companies

GOAL: 200 LOW CARBON ZONES & 1,000 LOW CARBON PARTNERS

LOW CARBON ZONES
50 by 2021
100 by 2025
200 by 2030

LOW CARBON PARTNERS
100 by 2021
500 by 2025
1,000 by 2030

KEY BENEFITS OF LOW CARBON CITIES

Low carbon cities have multiple direct and indirect benefits to the residents, businesses and the city.

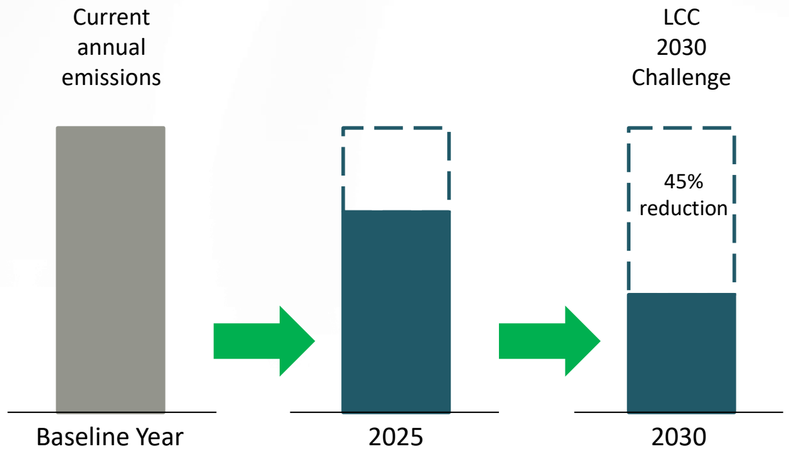
CLEAN	COOL	HEALTHY	LIVEABLE	VIBRANT
Clean Air ➢ Reduced air pollution from fossil fuel vehicles **Clean Water** ➢ Reduced pollution that is discharged into the rivers **Clean Land** ➢ Reduced amount of waste that goes to landfills	**Cool Trees** ➢ Extensive greenery and tree cover provide shade **Cool Buildings** ➢ Green buildings and homes retain less heat **Cool City** ➢ The overall urban heat island effect is reduced	**Healthy Environment** ➢ Reduced pollution and contamination of the environment **Healthy People** ➢ Increased outdoor activity in walking and cycling **Healthy Business** ➢ Healthier workforce have increased productivity	**Affordability** ➢ Reduced cost from increased utility efficiency **Accessibility** ➢ Multiple mobility options and connectivity **Resilience** ➢ Minimal disruption to shocks and stresses	**People Focused** ➢ Smaller city blocks that are pedestrian friendly **Integrated** ➢ Amenities and services to facilitate a green lifestyle **Urban Biodiversity** ➢ The incorporation of nature into the city development

LCC 2030 CHALLENGE

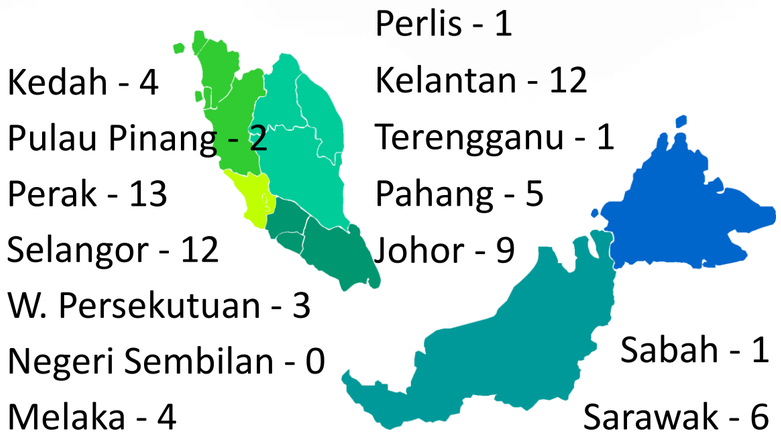
ACHIEVEMENTS (2011 – 2020)

- 70 Local Authorities trained
- 41 Local Authorities actively participating
- 5 Universities actively participating
- 43 Low Carbon Zones
- 69 Low Carbon Partners
- 291,865.42 tCO_2e reduced

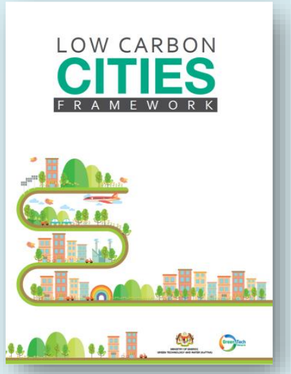
45% GHG EMISSIONS REDUCTION BY 2030



LOCAL AUTHORITY PARTICIPATION BY STATE



LCC 2030 Challenge is based on Low Carbon Cities Framework (LCCF).



V1: 2011; V2: 2017; V3: est 2022

OBJECTIVES OF LCCF

- Measure GHG emissions of Cities
- Guide for Local Authorities to transform to Low Carbon Cities
- Capacity building for Local Authorities

FOCUS ON 5 ELEMENTS

The LCC 2030 Challenge targets a total of **45% CO_2 emissions reduction** by focusing on these five elements:

<u>Reducing</u> CO_2 emissions from:

- Energy:
  Maximize building energy efficiency and increasing adoption of renewable energy

- Mobility:
  Increasing the use of public transport (bus), cycling, walking and other low carbon modes

- Waste:
  Reduce the amount of waste that goes to the landfills

- Water:
  Maximize water efficiency and increase adoption of rainwater harvesting

<u>Increasing</u> CO_2 sequestration from:

- Greenery
  Maintain or increase the number of trees and green spaces in the city

Energy Initiatives Examples

ENERGY
LCC PARTNER
PBT
2019
SN:001

Maximize building energy efficiency and increasing adoption of renewable energy


ENERGY AUDIT

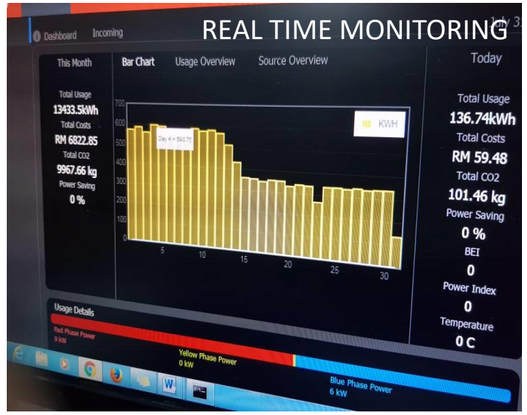

ACMV UPGRADE


LIGHTING RETROFIT

AWARENESS


SOLAR STREET LIGHTS


GREEN DATA CENTRE



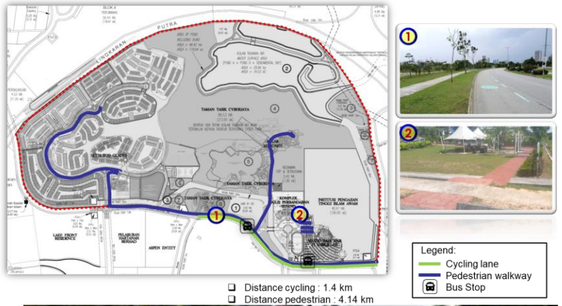
REAL TIME MONITORING


ROOFTOP SOLAR PV

Mobility Initiative Examples

MOBILITY
LCC PARTNER
PBT
2019
SN:001

Increase the use of public transport (bus), cycling lanes, walking trails and other low carbon modes



Waste Initiative Examples

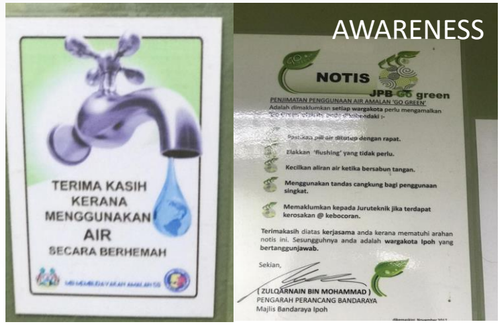
WASTE
LCC PARTNER
PBT
2019
SN:001

Reduce the amount of waste that goes to the landfills

Water Initiative Examples

WATER
LCC PARTNER
PBT
2019
SN:001

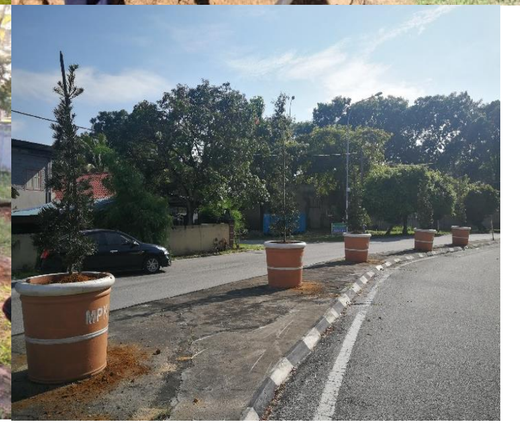
Maximize water efficiency and increase adoption of rainwater harvesting



Greenery Initiative Examples

GREENERY
LCC PARTNER
PBT
2019
SN:001

Maintain or increase the number of trees and green spaces in the city



LCC2030 CHALLENGE CATEGORIES

LOW CARBON ZONE

Applicable for

(area ≥ 50 hectares):

- Local Authorities
- Universities
- Industrial & Commercial Parks
- Economic Corridors
- Townships
- Naval & Army Base

LOW CARBON PARTNERS

Applicable for

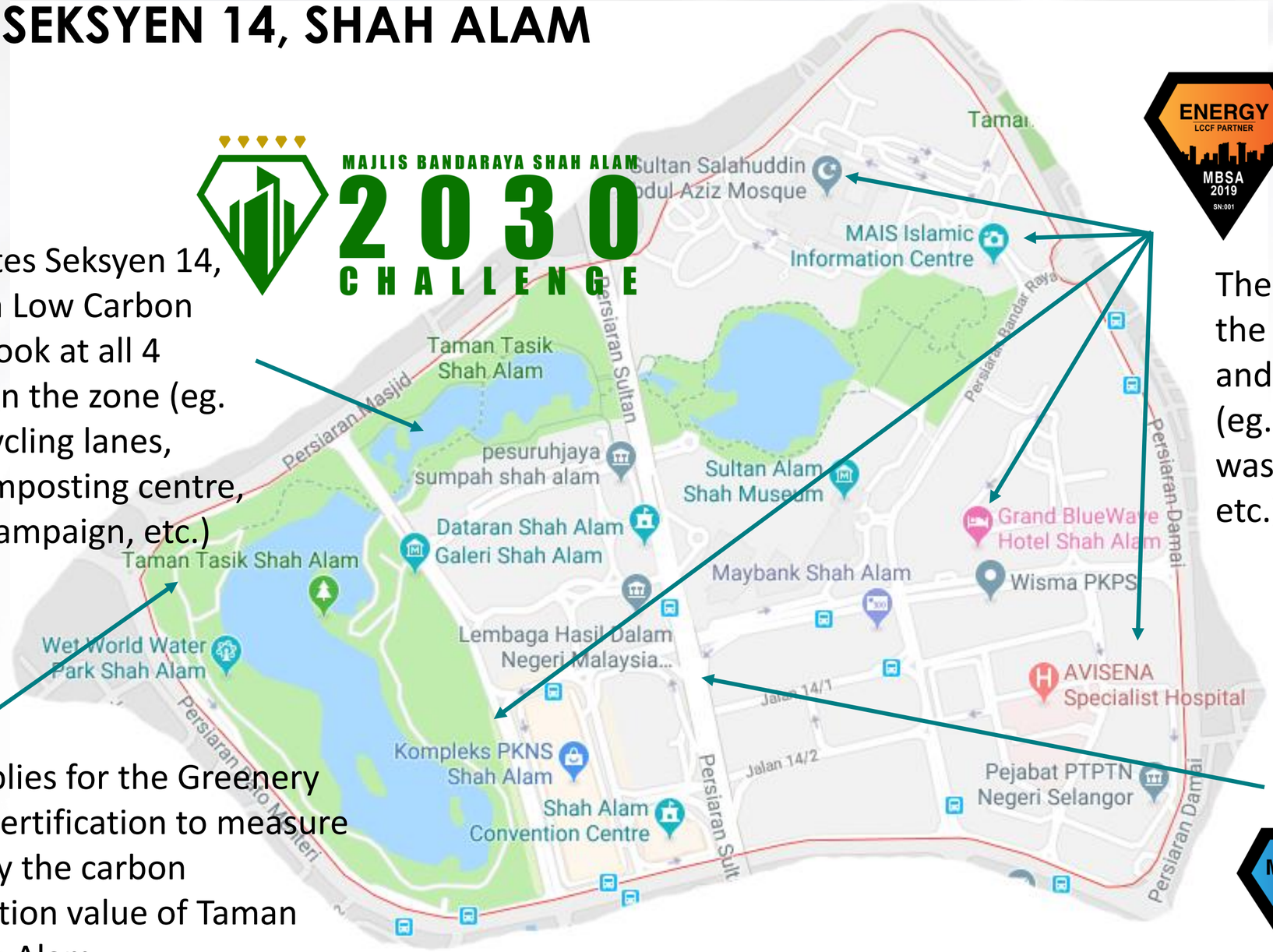
(area < 50 hectares):

- Commercial Buildings (office, malls, hotels, etc.)
- Hospitals
- Schools
- Ports & Terminals
- Sports Complex
- Parks

EXAMPLE – SEKSYEN 14, SHAH ALAM

MAJLIS BANDARAYA SHAH ALAM 2030 CHALLENGE

MBSA designates Seksyen 14, Shah Alam as a Low Carbon Zone and will look at all 4 elements within the zone (eg. street lights, cycling lanes, recycling & composting centre, tree planting campaign, etc.)



ENERGY LCCF PARTNER MBSA 2019 SN:001

WASTE LCCF PARTNER MBSA 2019 SN:001

The individual buildings within the zone applies for the Energy and Waste Element certification (eg. building energy efficiency, waste reduction or recycling, etc.)

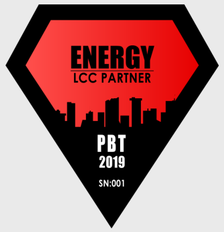
PARKS LCCF PARTNER MBSA 2019 SN:001

MBSA applies for the Greenery Element certification to measure and certify the carbon sequestration value of Taman Tasik Shah Alam.

Rapid KL starts an electric bus route to service Seksyen 14, and measures the avoided emissions.

MOBILITY LCCF PARTNER MBSA 2019 SN:001

DATA REQUIRED (GHG PROTOCOL COMPLIANT)



ENERGY

Monthly TNB Bill

GHG Protocol for Cities Reference:

Stationery Energy Sources

Scope 2

Emissions from consumption of grid-supplied energy

WATER

Monthly Water Bill

GHG Protocol for Cities Reference:

-

-

Emissions from consumption of municipal supplied treated water

WASTE

Monthly Waste Disposal

GHG Protocol for Cities Reference:

Waste

Scope 3

Emissions from waste generated within but treated outside of the boundary

MOBILITY

Traffic Count Survey

GHG Protocol for Cities Reference:

Transportation

Scope 1

Emissions from inboundary transport

GREENERY

Landscape Inventory

GHG Protocol Reference:

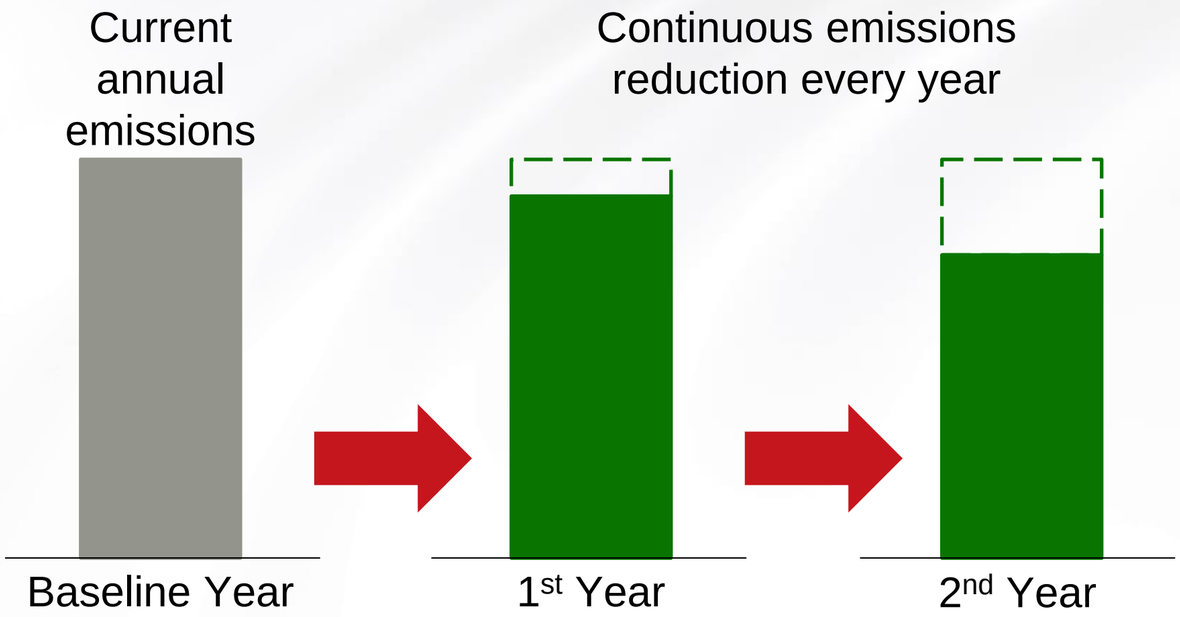
Forestry

-

Carbon sink

ASSESSMENT & RECOGNITION

ASSESSMENT



4 step process:

MEASURE → MANAGE → REDUCE → CERTIFY

RECOGNITION

Provisional Certificate

Develop baseline and pledge commitment to reduce emissions

Diamond Recognition

Achieve emissions reduction based on the scale below:

1 Diamond	1% reduction
2 Diamonds	5% reduction
3 Diamonds	10% reduction
4 Diamonds	25% reduction
5 Diamonds	45% reduction

LOW CARBON CITIES 2030 CHALLENGE

Provisional Certificate


LCC-P-B100-09-0001 / 2019

CERTIFICATE

PROVISIONAL

THIS CERTIFICATE IS PROUDLY PRESENTED TO

Majlis Daerah Hulu Selangor

In recognition of their commitment to reduce their carbon emissions under the

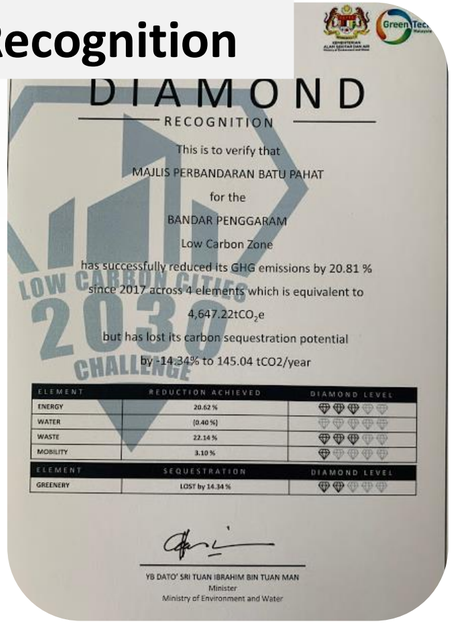
LOW CARBON CITIES 2030 CHALLENGE

Location : Ibu Pejabat MDHS
Baseline Year : 2017
Baseline tCO_2 : 266.87
Elements : Energy, Water, Waste, Greeneries

TUAN SYED AHMAD SYED MUSTAFA
ACEO / COO
Malaysian Green Technology Corporation

A Provisional Certificate is awarded to those who have established their emissions baseline and are now working on their low carbon plans

Diamond Recognition


DIAMOND

RECOGNITION

This is to verify that

MAJLIS PERBANDARAN BATU PAHAT

for the

BANDAR PENGGARAM

Low Carbon Zone

has successfully reduced its GHG emissions by 20.81 %

since 2017 across 4 elements which is equivalent to

4,647.22tCO_2e

but has lost its carbon sequestration potential

by -14.34% to 145.04 tCO2/year

ELEMENT	REDUCTION ACHIEVED	DIAMOND LEVEL
ENERGY	20.62 %	
WATER	[0.40 %]	
WASTE	22.14 %	
MOBILITY	3.10 %	

ELEMENT	SEQUESTRATION	DIAMOND LEVEL
GREENERY	LOST by 14.34 %	

YB DATO' SRI TUAN IBRAHIM BIN TUAN MAN
Minister
Ministry of Environment and Water

A Diamond Recognition is awarded to those who have successfully achieved actual reduction in carbon emissions based on their comprehensive action plan.

FEES

ONE-TIME REGISTRATION FEE

LC Zone (cities, university, industrial zones, etc)	: RM 5,000
LC Partner (building, park, company, etc)	: RM 1,500

AUDIT FEE

Provisional Audit	: RM 2,000
Diamond Audit (1D to 5D)	: RM 3,000

SUPPORT & GUIDANCE

LCC Help Desk @ MGTC Meet & Greet Day	: FREE
LCC Clinic Sessions	: FREE

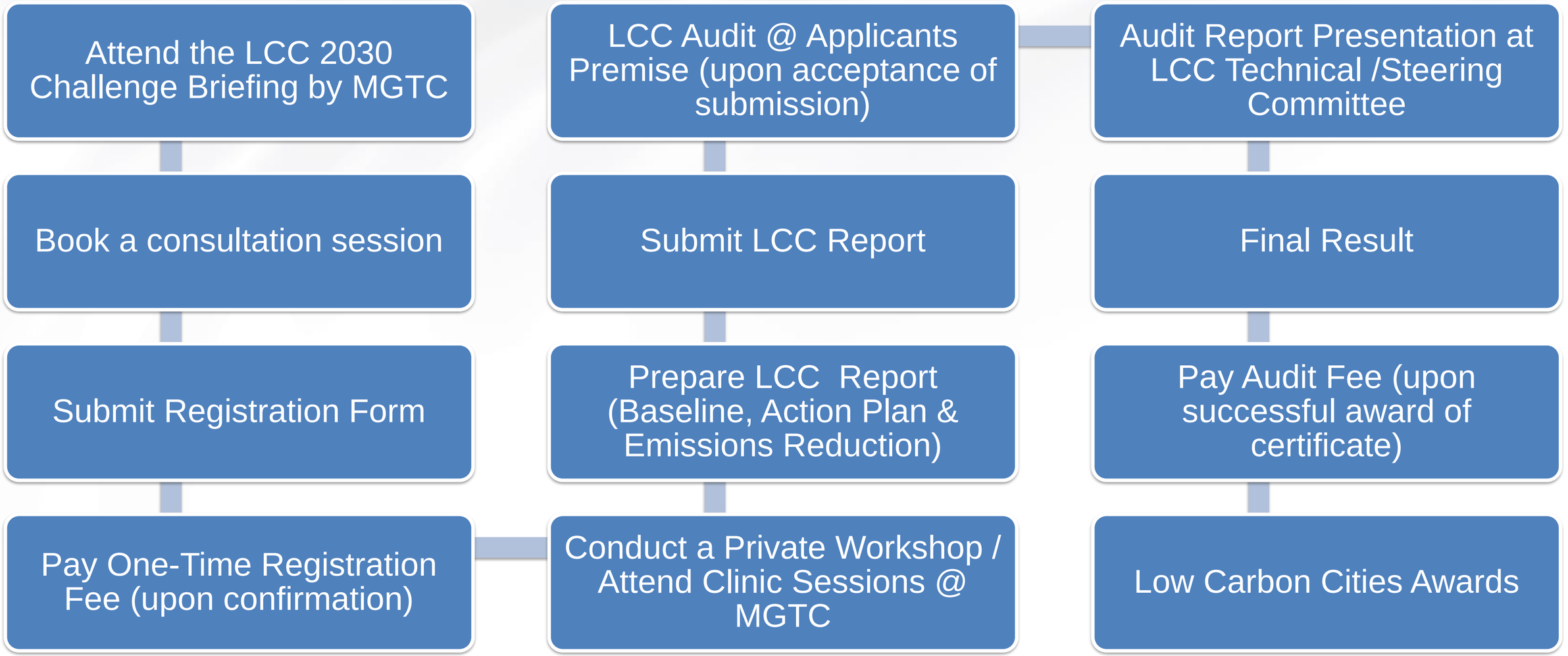
EXCLUSIVE SERVICES

LCC Private Workshop Facilitation	: RM 10,000
Low Carbon Cities Private Training	: RM 10,000

Note:

1. The Low Carbon Cities program is partially funded by the Government of Malaysia.
2. The fees charged is to cover the costs involved in delivering the program.
3. This is to ensure the continuity and sustainability of the program until 2030 and beyond.
4. Free support and guidance by MGTC will always be available as detailed out in the offered programs.

The LCC 2030C Process



Thank You

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