

PENYEDIAAN PELAN TINDAKAN PERBANDARAN RENDAH KARBON BANDAR BARU BANGI 2035

Strategies, implementation & Project Outcomes



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MOVING FORWARD FROM POLICY TO IMPLEMENTATION

PELAN TINDAKAN TEKNOLOGI HIJAU NEGERI SELANGOR 2016 - 2018

PERBANDARAN HIJAU MELALUI KERANGKA BANDAR RENDAH KARBON

Selangor akan menerima pakai Kerangka Bandar Rendah Karbon atau Low Carbon Cities Framework and Assessment System (LCCF)



Menjelang 2020



Menjelang 2030



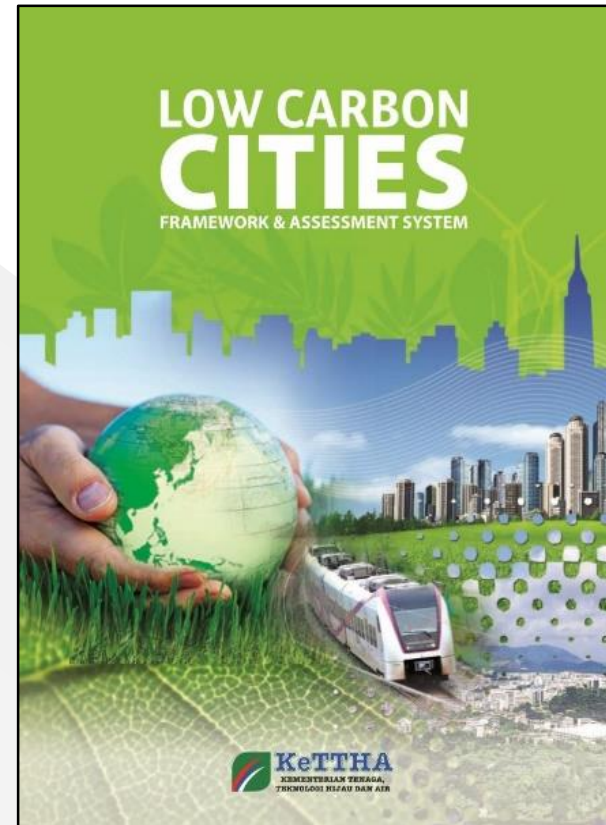
LOW CARBON CITIES FRAMEWORK & ASSESSMENT SYSTEM

Target: To guide stakeholders to lead by example & implement low carbon cities effort.

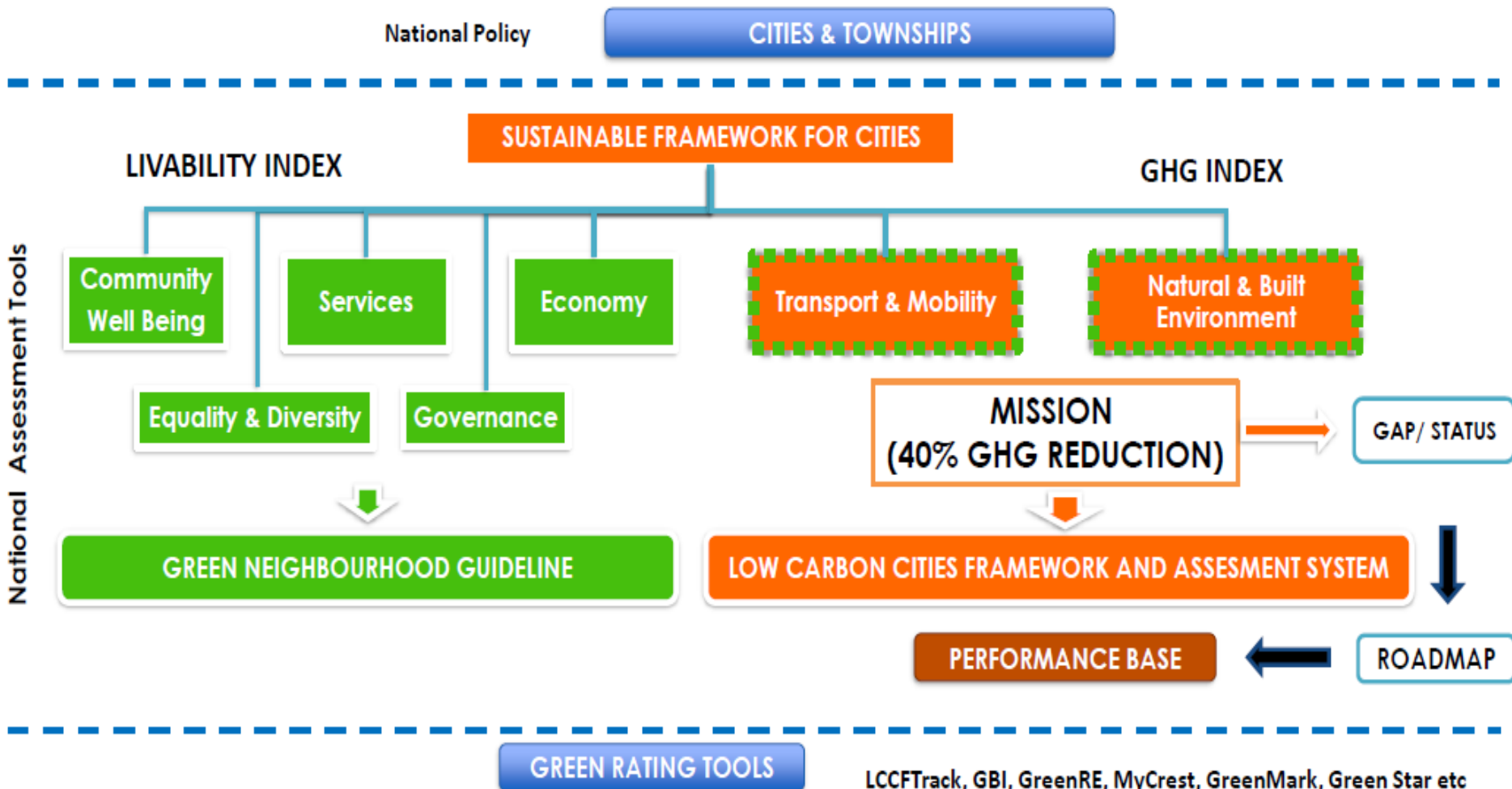
Obj1: To encourage & promote the concept of low carbon cities townships in Malaysia.

Obj2: To increase the compatibility of cities/townships with their local natural system.

Obj3: To guide cities in making choice/decisions towards greener solutions.



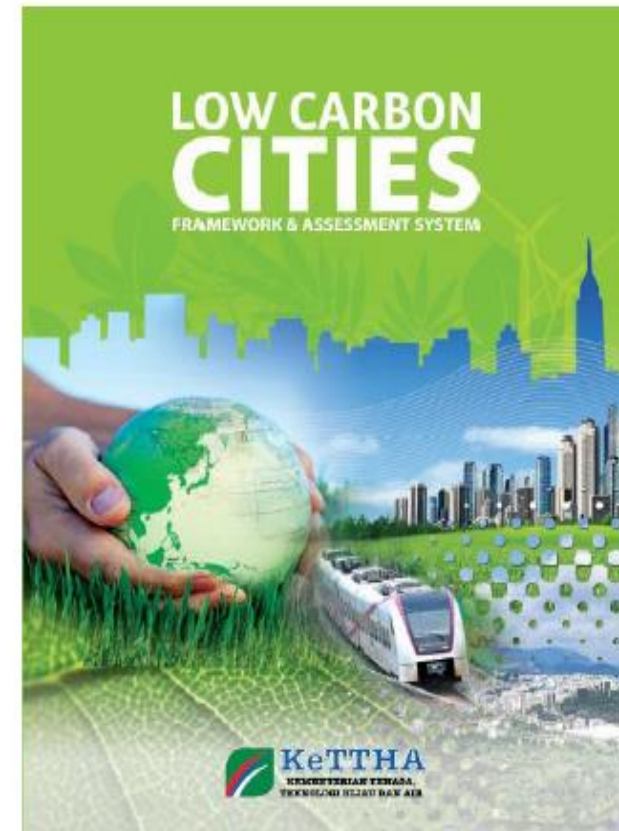
OUTLINE FOR SUSTAINABLE FRAMEWORK FOR CITIES



GNG-LCCF GUIDELINE CO-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.



Source: Greentech Malaysia

WHAT IS LOW CARBON CITIES

Low carbon cities is 'a city that comprises of societies that consume **green technology**, **green practices** and **emit relatively low carbon** or GHG as compared with present day practice to avoid the adverse impacts on climate change'

PERFORMANCE CRITERIA FOR LCCF

4 Elements for GHG Reductions in Cities and Townships



Urban Environment



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



Urban Transportation



- Shift of Transport Mode
- Green Transport Infrastructure
- Green Vehicles
- Traffic Management



Urban Infrastructure



- Infrastructure Provision
- Waste
- Energy
- Water



Buildings



- Low Carbon Building
- Community Service

Elements Contribute to
GHG emission

13 Performance Criteria*

35
Sub-Criterias

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

ASSESSMENT APPROACH TO ENCOURAGE IMPLEMENTATION

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



A One System Approach

A City Based Approach



A One System Approach

- 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 CO₂)



A City Based Approach

- 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)

PELAN TINDAKAN PERBANDARAN RENDAH KARBON BANDAR BARU BANGI

VISI:

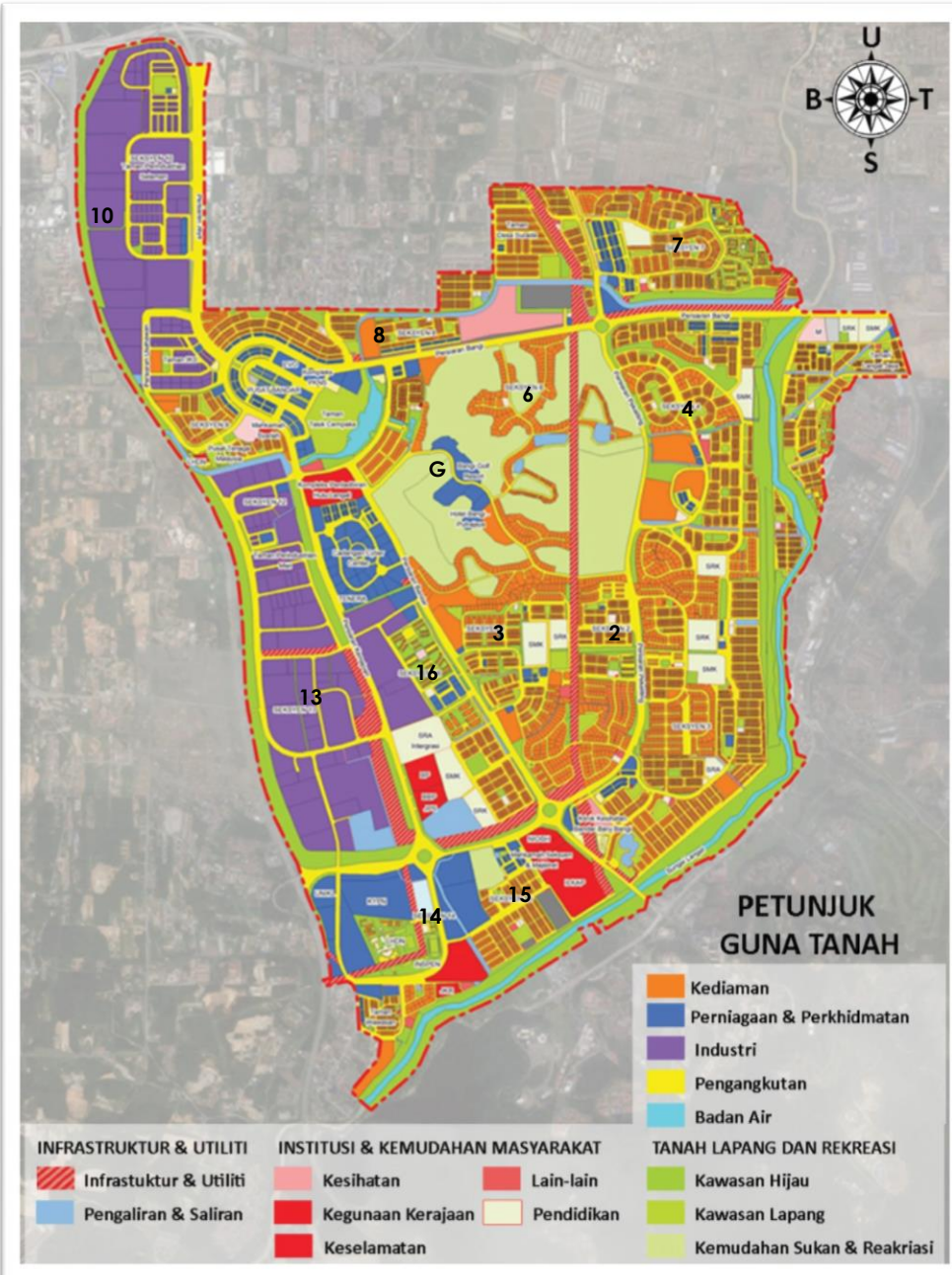
**BANDAR BARU BANGI RENDAH
KARBON DAN SELESA DIDAMI**

Strategy

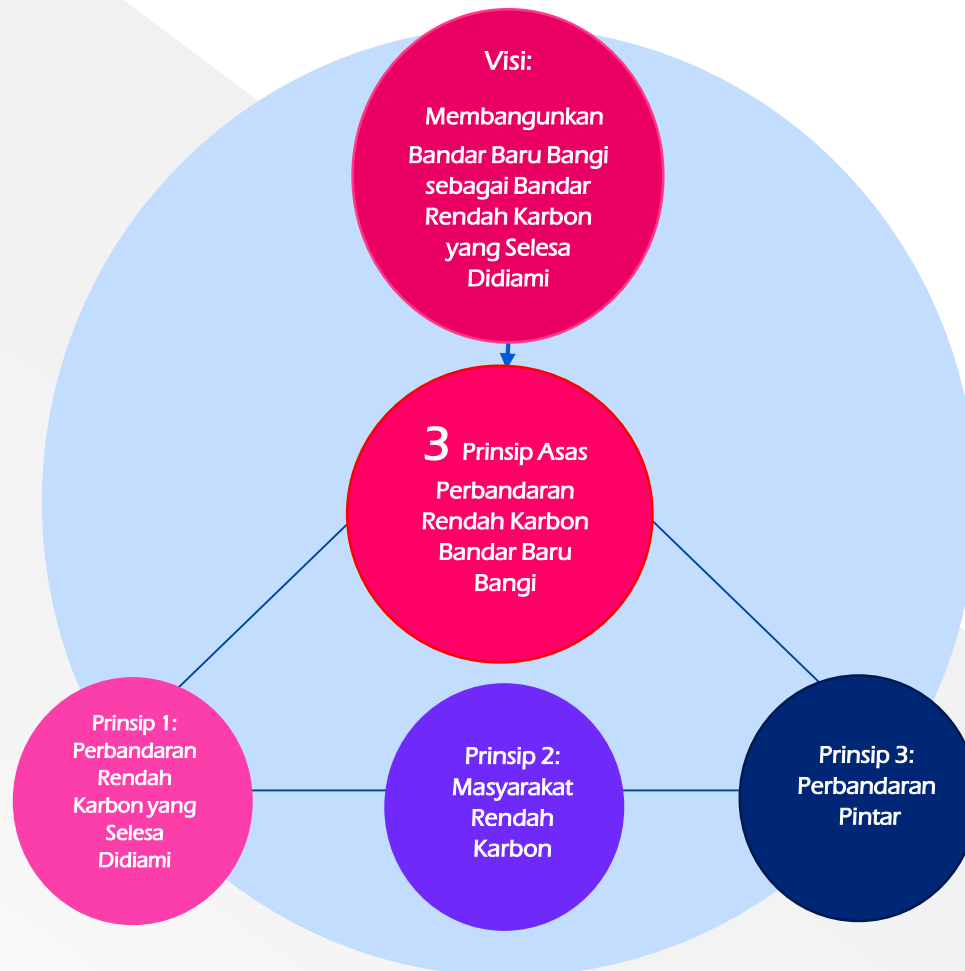
Urban
Infrastructure

Building

BANDAR BARU BANGI



PRINSIP ASAS PERBANDARAN RENDAH KARBON BANDAR BARU BANGI



4 FOKUS PENILAIAN

4 Elemen
13 Kriteria
35 Sub kriteria

Persekitaran
Bandar
(UE)

Pengangkutan
Bandar
(UT)

Infrastruktur
Bandar
(UI)

Bangunan
(B)

1. PERSEKITARAN BANDAR (UE)



UE1 - PEMILIHAN TAPAK

UE1-1: Pembangunan dalam Sempadan Jejak Bandar (*Development within Defined Urban Footprint*)

UE1-2: Pembangunan Tanah Kosong (*Infill development*)

UE1-3 - Pembangunan antara Nod dan Koridor Transit (*Development within Transit Nodes and Corridor*)

UE1-4: Pembangunan Semula Bandar (*Brownfield and greyfield redevelopment*)

UE1-5: Pembangunan Cerun Bukit (*Hill Slope development*)

UE2 - BENTUK BANDAR

UE2-1: Pembangunan Guna Tanah Pelbagai (*Mixed-use development*)

UE2-2: Pembangunan Padat (*Compact development*)

UE2-3: Jalan dan Parkir (*Road and parking*)

UE2-4 Rangkaian Pejalan Kaki yang Komprehensif (*Comprehensive Pedestrian Network*)

UE2-5 Rangkaian Laluan Basikal yang Komprehensif (*Comprehensive Cycling Network*)

UE2-6 Kesan Pulau Haba Bandar (*Urban Heat Island (UHI) Effect*)

UE3 - KUALITI PERSEKITARAN DAN PENGHJAUAN BANDAR

UE3-1: Pemeliharaan Ekologi Semulajadi, Badan Air dan Biodiversiti (*Preserve natural ecology, water body and biodiversity*)

UE3-2: Ruang Terbuka Hijau (*Green open space*)

UE3-3: Kuantiti Pokok (*Number of trees*)

2. PENGANGKUTAN BANDAR (UT)



UT1 –PERTUKARAN MOD PENGANGKUTAN

UT1-1: Kebergantungan Terhadap Kenderaan Milikan Tunggal (Single Occupancy Vehicle (SOV) dependency)

UT2 – INFRASTRUKTUR PENGANGKUTAN HIJAU

UT2-1: Pengangkutan Awam (*Public Transport*)

UT2-2: *Walking and Cycling*

UT3 – KENDERAAN BERSIH/ RENDAH KARBON

UT3-1: Pengangkutan Awam Rendah Karbon (*Low Carbon Public Transport*)

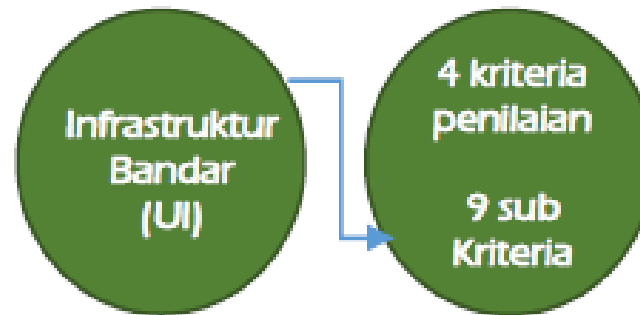
UT3-2: Kenderaan Persendirian Rendah Karbon (*Low Carbon Private Transport*)

UT4 – PENGURUSAN TRAFIK

UT4-1: Pengurusan Kelajuan Kenderaan (*Vehicle Speed Management*)

UT4-2: Kesesakan Lalu lintas dan Pengurusan Aliran Trafik (*Traffic Congestion and Traffic Flow Management*)

3. INFRASTRUKTUR BANDAR (UI)



UI1 - PENYEDIAAN INFRASTRUKTUR

UI1-1: Pengambilan Tanah untuk Infrastruktur dan Perkhidmatan Utiliti (*Land Take for Infrastructure and Utility Services*)

UI1-2: Pengurusan Kerja Tanah (*Earthwork Management*)

UI1-3: Pengurusan Air Larian Bandar dan Mitigasi Banjir (*Urban Storm Water Management and Flood Mitigation*)

UI2 - SISA PEPEJAL

UI2-1: Pengurusan Sisa Pembinaan dan Perindustrian (*Construction and Industrial Waste Management*)

UI2-2: Pengurusan Sisa Pepejal Isi Rumah (*Household Solid Waste Management*)

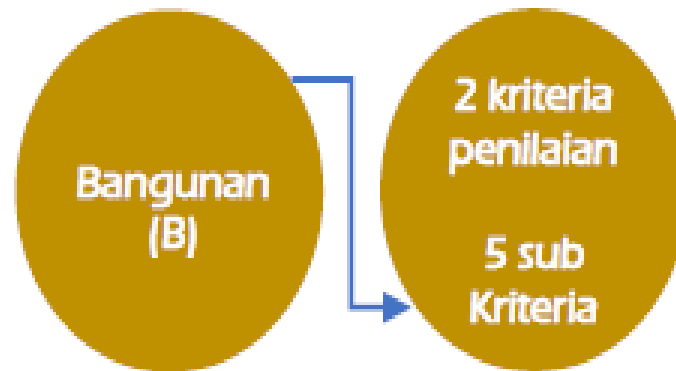
UI3 - TENAGA

UI3-1: Pengoptimuman Tenaga (*Energy Optimization*)

UI3-2: Tenaga Boleh diperbaharui (*Renewable Energy*)

UI3-3: Sistem Penyejukan Daerah (*Site-Wide district Cooling System*)

4. BANGUNAN



B1 – BANGUNAN RENDAH KARBON

B1-1: Pelepasan oleh Operasi Penggunaan Tenaga (*Operational Energy Emissions*)

B1-2: Pelepasan oleh Operasi Penggunaan Air (*Operational Water Emissions*)

B1-3: Pengurangan Pelepasan Melalui Pengubahsuaian (*Emission Abatement through retrofitting*)

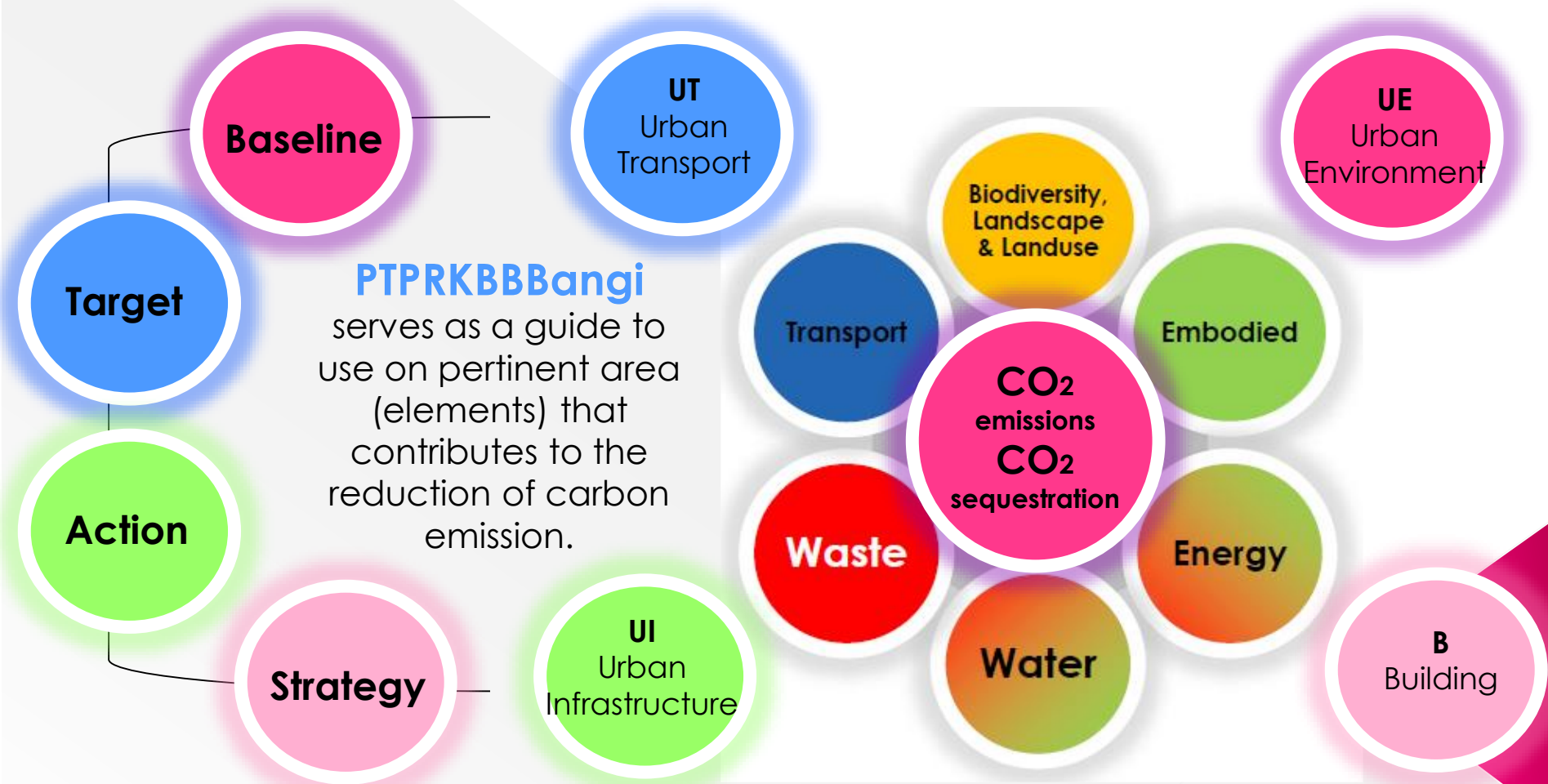
B1-4: Orientasi Bangunan (*Building Orientation*)

B2 – PERKHIDMATAN KOMUNITI

B2-1: Perkongsian kemudahan dan utiliti dalam Bangunan/ Penggunaan Bangunan secara Bersepadu (*Shared Facilities and Utilities within Building*)

PELAN TINDAKAN PERBANDARAN RENDAH KARBON BANDAR BARU BANGI

LAPORAN PENUH



PELAN TINDAKAN PERBANDARAN RENDAH KARBON BANDAR BARU BANGI

LAPORAN INTERIM

Baseline

UT
Urban
Transport

UE
Urban
Environment

- LCCF Standard
- Carbon Calculation LCCFTrack

Biodiversity,
Landscape
& Landuse

Transport

Embodied

CO₂
emissions
CO₂
sequestration

Waste

Energy

UI
Urban
Infrastructure

Water

B
Building

SOURCES OF CARBON

Baseline

Total Area :	1881.79 ha
Sub-total Landuse (Buildings & Infrastructure) :	1328.64 ha (70%)
Open space (not developed/open space) :	553.15 ha (30%)
Landscape :	513.59 ha (including 1816 trees)
Embodied/Building Footprint :	4,563,495.18 m2
Waste :	10,198.010 tonnes
Energy :	Pending
Water :	Pending
Transport :	Need TIA/ Transport Survey

LCCF STANDARD OF BBBANGI



KRITERIA	BILANGAN LCCF	KRITERIA BERKAITAN	SKOR	PERATUS SKOR	PENCAPAIAN
PERSEKITARAN BANDAR (UE)					
UE 1	16	8	8	86%	
UE 2	19	19	14		
UE 3	10	9	9		
SKOR UE	45	36	31		
PENGANGKUTAN BANDAR (UT)					
UT 1	5	5	1	48%	
UT 2	6	6	4		
UT 3	5	5	2		
UT 4	5	5	3		
SKOR UT	21	21	10		
INFRASTRUKTUR BANDAR (UI)					
UI 1	9	9	8	54%	
UI 2	8	8	2		
UI 3	7	6	3		
UI 4	4	4	2		
SKOR UI	30	27	15		
BANGUNAN (B)					
B 1	10	8	2	22%	
B 2	1	1	0		
SKOR B	11	9	2		
JUMLAH SKOR	105	93	58	62%	BAIK

Total scores from each element will be combined in this section to produce a LCCF rating. The rating benchmarks for the LCCF are as follows:

LCCF RATING	% SCORE
Outstanding	>90
Excellent	80 - 89
Very Good	70 - 79
Good	60 - 69
Pass	50 - 59
Unclassified	<50

An unclassified rating represents performance that is not compliant with the LCCF Standard. This may be due to failure to meet the key assessment or the overall threshold score required for baseline carbon emission calculation.

CARBON EMISSION

SEKTOR	JUMLAH PEMBEBASAN (tCO ₂ /TAHUN)	JUMLAH PEMBEBASAN (%)
GUNA TANAH		
Penyimpanan karbon dalam tanah	544.74	1.4
Penyerapan karbon oleh tumbuhan	0.00	0.00
Jumlah karbon	544.74	1.4
TENAGA TERKANDUNG (EMBODIED)		
Pembinaan bangunan	19,955.68	52.8
Pembinaan infrastruktur	14,313.97	37.8
Jumlah karbon	34,269.64	90.6
KARBON OPERASI		
Tenaga	Dalam proses perolehan	
Air	Dalam proses perolehan	
Sisa buangan	3,011.84	8.0
Jumlah karbon	3,011.84	8.0
PENGANGKUTAN		
Pengangkutan bandar	Kajian Penilaian Impak Trafik perlu dilakukan untuk memperolehi data ini	0.00
JUMLAH KESELURUHAN KARBON	37,826.23	100

Baseline

CARBON SEQUESTRATION

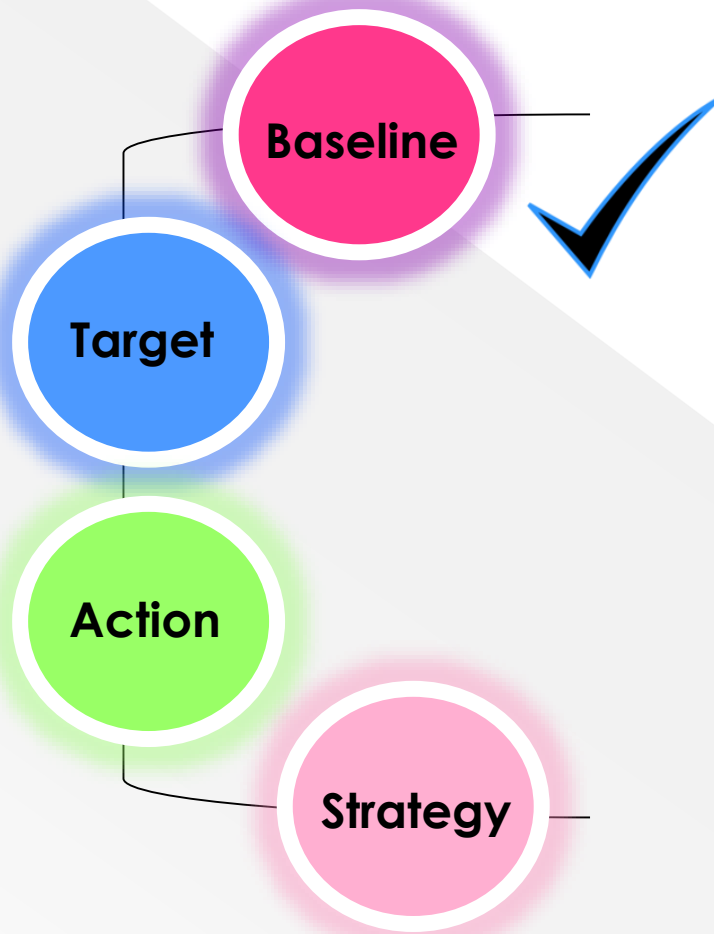
14%
sequestration

Baseline

SEKTOR	JUMLAH PENYERAPAN (tCO ₂ / SETAHUN)	JUMLAH PEPENYERAPAN (%)
LANSKAP		
Penyimpanan karbon dalam tanah (hilang)	-329.62	6.0
Penyerapan karbon oleh tumbuhan (hilang)	-2,274.49	41.4
Penyerapan karbon oleh pokok (hilang)	-2,891.62	52.6
Jumlah karbon	-5,495.73	100

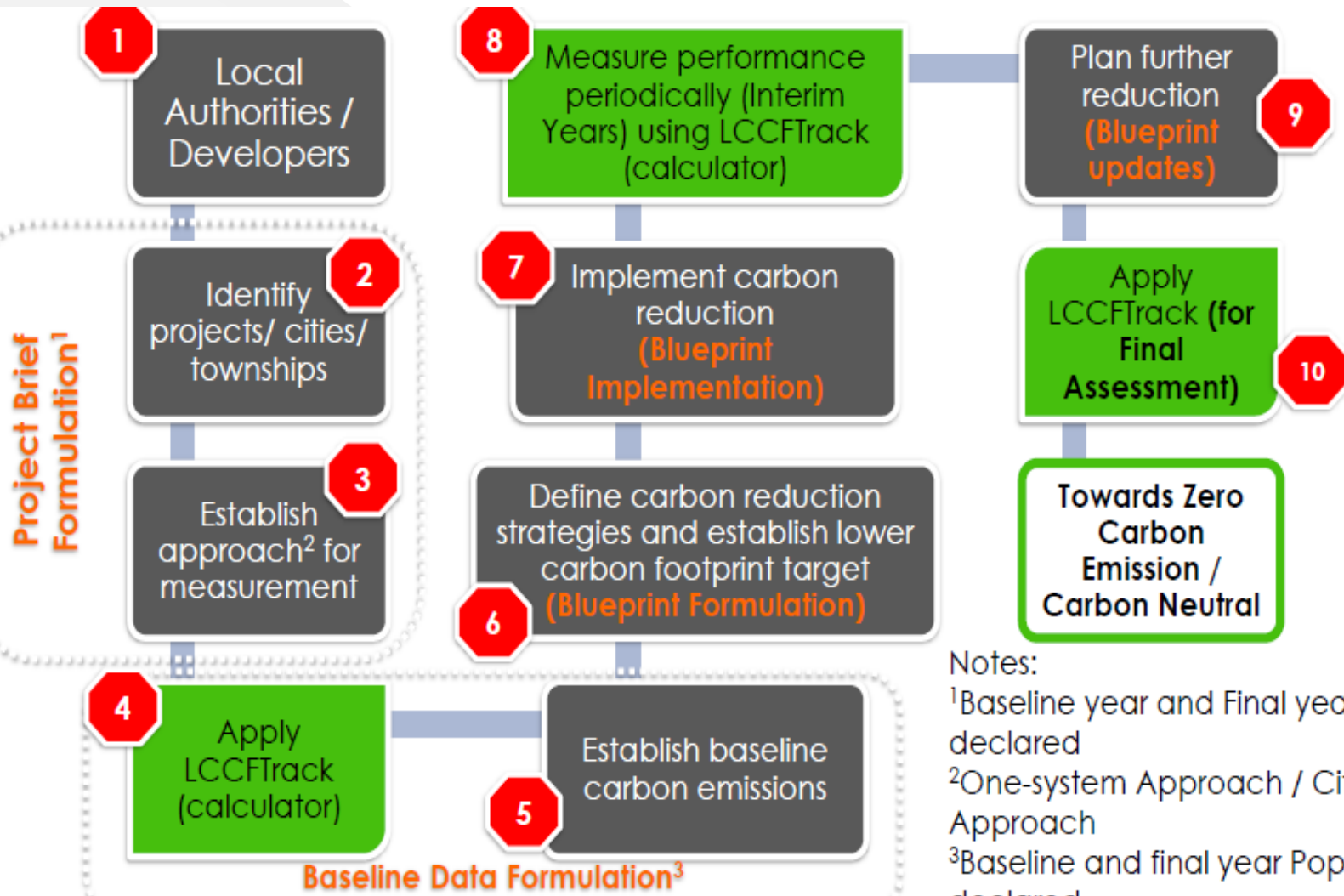
$37,826.23 \text{ tCO}_2 - 5,495.73 \text{ tCO}_2 = \mathbf{32,330.49} \text{ tCO}_2/\text{year}$

WHAT' NEXT?

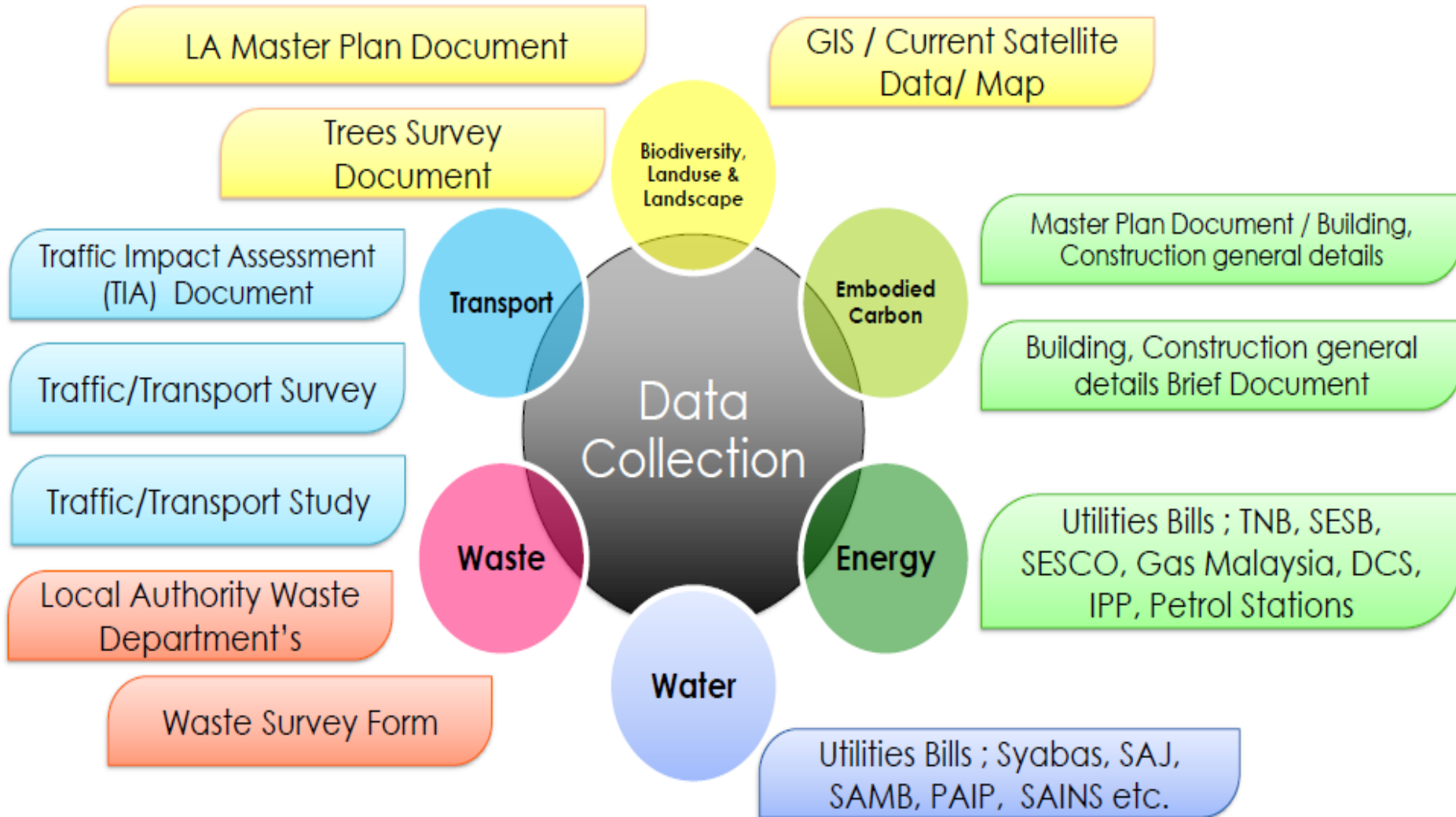


HOW TO GET RECOGNIZED AS A LCC?

APPLY FOR (LCCFTrack CALCULATOR)



DATA SOURCES FOR LCCFTrack



DIAMOND RECOGNITION



PERFORMANCE
CRITERIA AND SUB
CRITERIA



INDIVIDUAL SUB CRITERIA
CALCULATOR



SUMMARY
SHEET



Achievement/
Recognition

UE



UE 1-1 to UE 3-3

UT



UT 1-1 to UT 4-2

UI



UI 1-1 to UI 4-1

B



B 1-1 to B 2-1

1. Sum of reduced
emissions
2. Reduction
Percentage

Carbon Reduction Level	Level of Achievement
100%	Carbon Neutral
70-99%	Best Practice 5 (BP5)
50-69%	Best Practice 4 (BP4)
30-49%	Best Practice 3 (BP3)
10-29%	Best Practice 2 (BP2)
1-9%	Best Practice 1 (BP1)



GANTT CHART

L1

LAPORAN INTERIM

3 BULAN

L2

DRAF LAPORAN AWAL

6 BULAN

L3

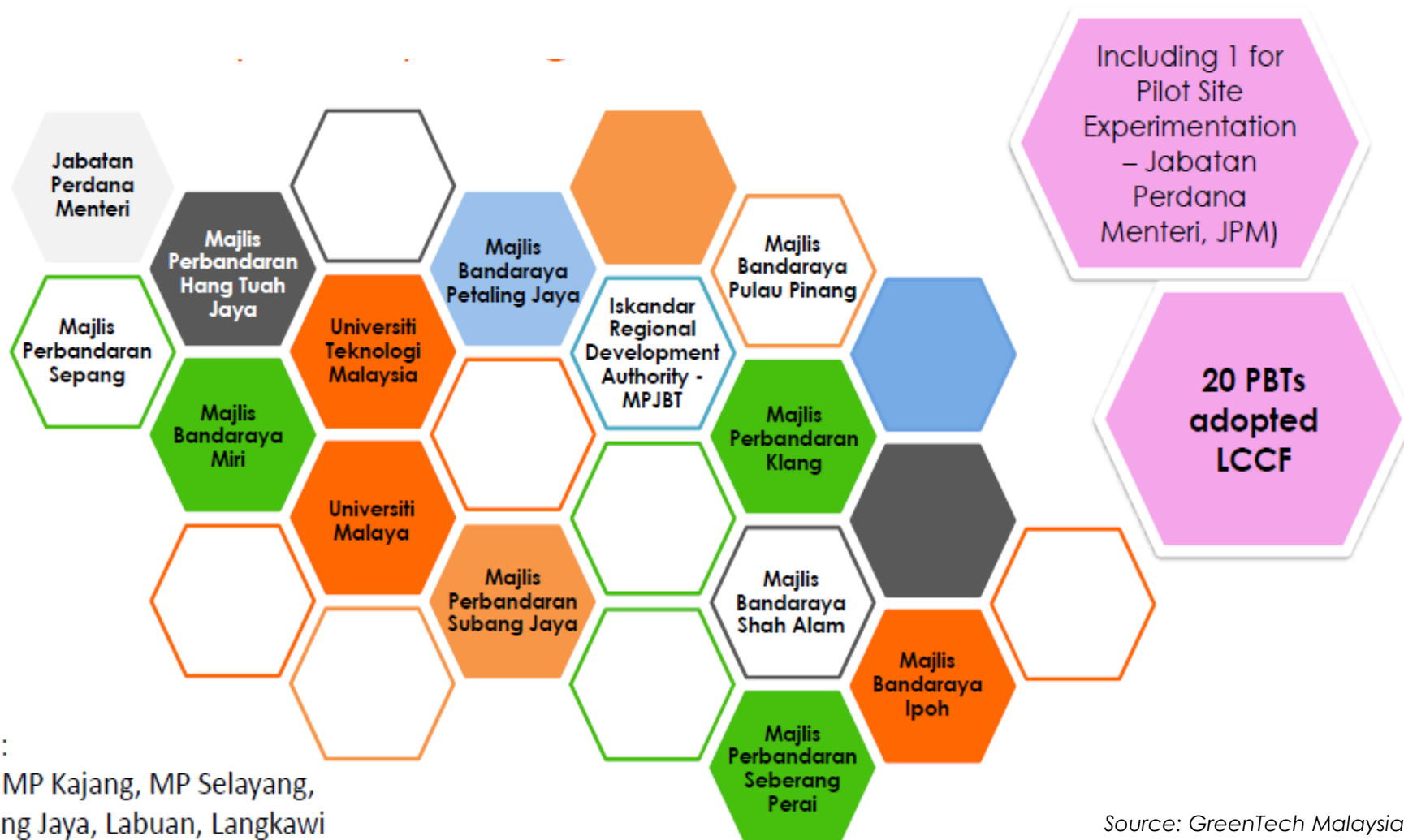
PENGEMUKAAN
LAPORAN AKHIR

3 BULAN

November	Disember	Januari	Februari	Mac	April	Mei	Jun	Julai	Ogos	September	Oktober	
			• Pembentukan Strategi & Cadangan Tindakan Awal							• Penambahbaikan Pelan Tindakan		
	• Pengumpulan Data			• LCCF Carbon calculator						• Maklumbalas & mesyuarat Agensi Pelaksana (MPKJ) [4/9/2018]		
		• Kajian Benchmarking			• Input daripada MPKJ (FGD1) [4/4/2018] – Venue?					• Penyediaan Laporan Akhir		
		• Pembentangan Laporan Awal di MPKJ (20/12/2017)			• Pindaan Cadangan Tindakan Fasa 1					• Pengemukaan Laporan Akhir		
		• Analisis Data & Ukuran Awal (baseline) Pendeluaran Karbon			• Input daripada Stakeholders FGD2 [3/5/2018]							
						• Pindaan Cadangan Tindakan Fasa 2						
	• Pengemukaan Laporan Interim ke MPKJ (31/1/2018)						• Pengemukaan draf Laporan Pelan Tindakan					

*****Subject to change

LIST OF CURRENT PARTICIPATING LOCAL AUTHORITIES



Incoming :
MP Jasin, MP Kajang, MP Selayang,
MP Ampang Jaya, Labuan, Langkawi

Source: GreenTech Malaysia