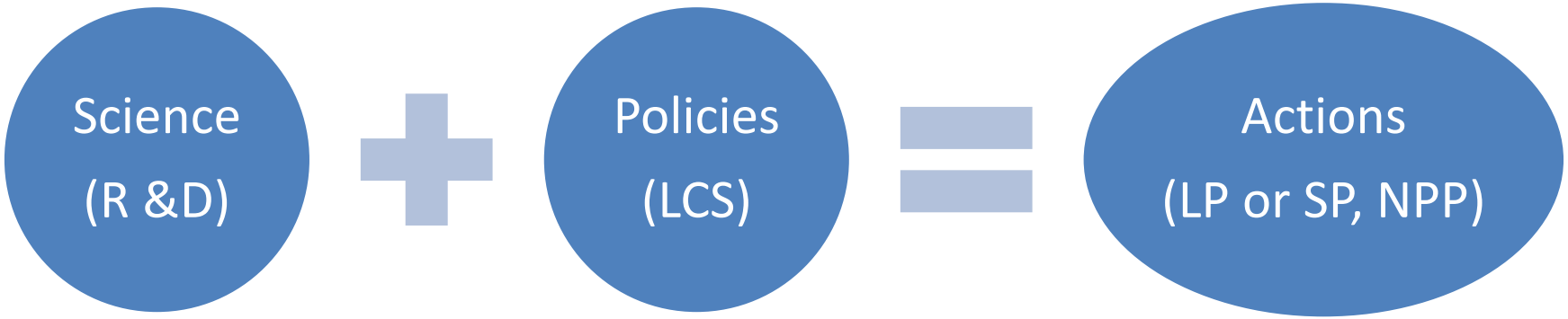
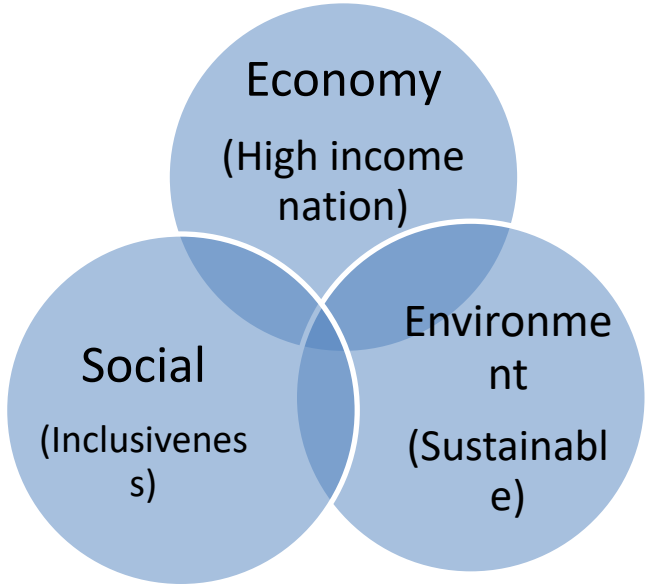
SATREPS Iskandar Malaysia Project and afterwards

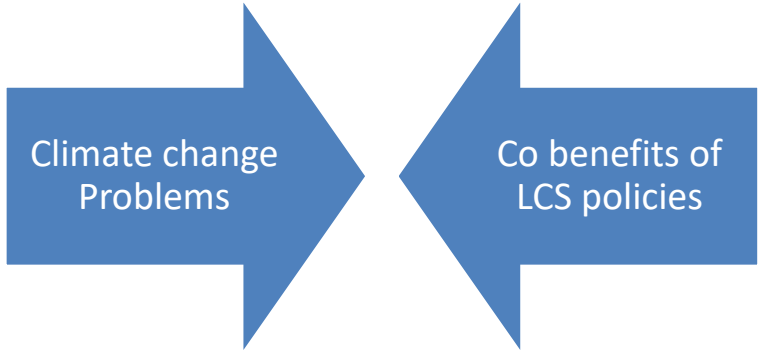
Junichi Fujino
(IGES)

Low carbon sustainable development approach

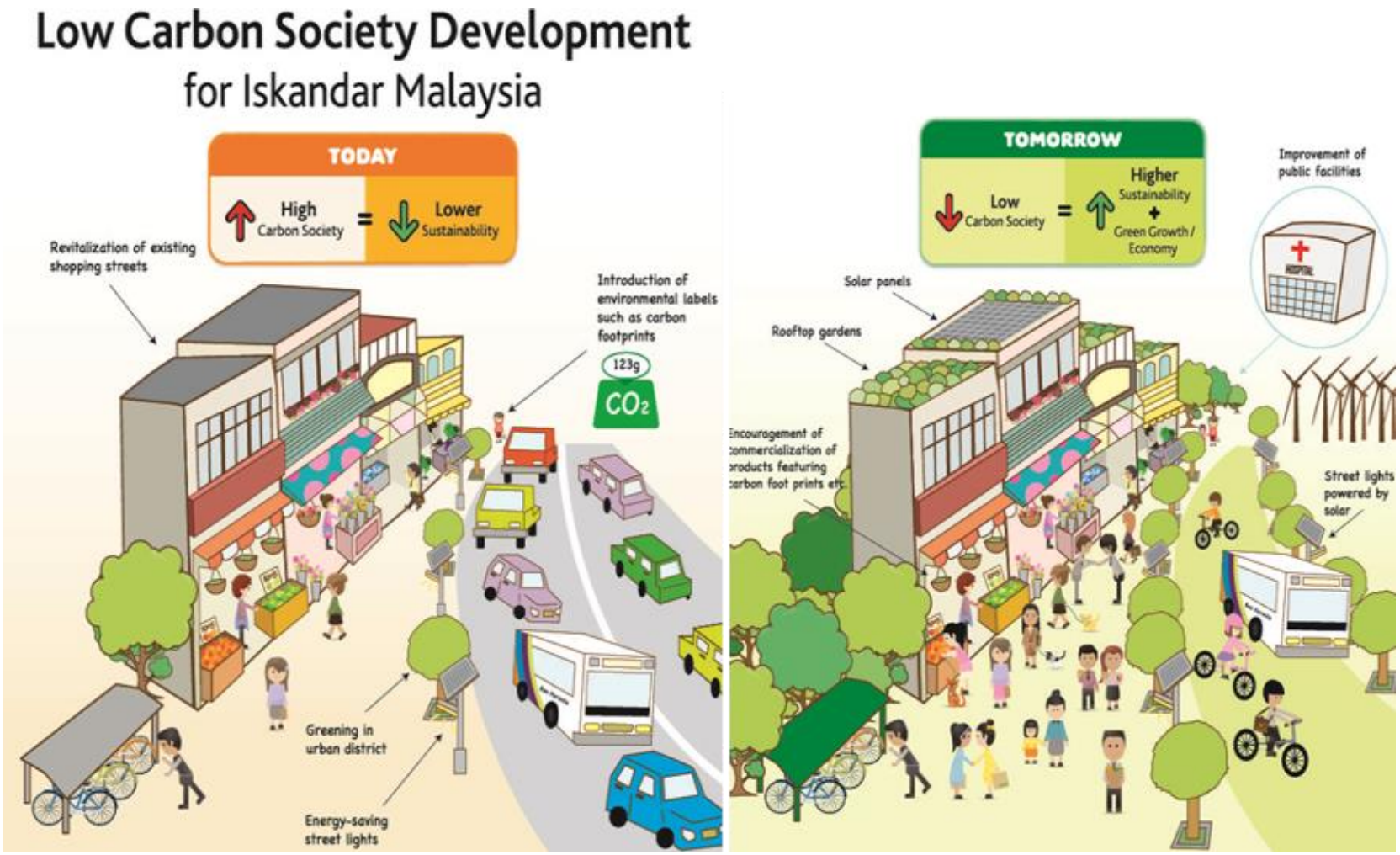


Key element Sustainable development = PRO GROWTH, PRO JOB , PRO POOR and PRO ENVIRONMENT





Low carbon society



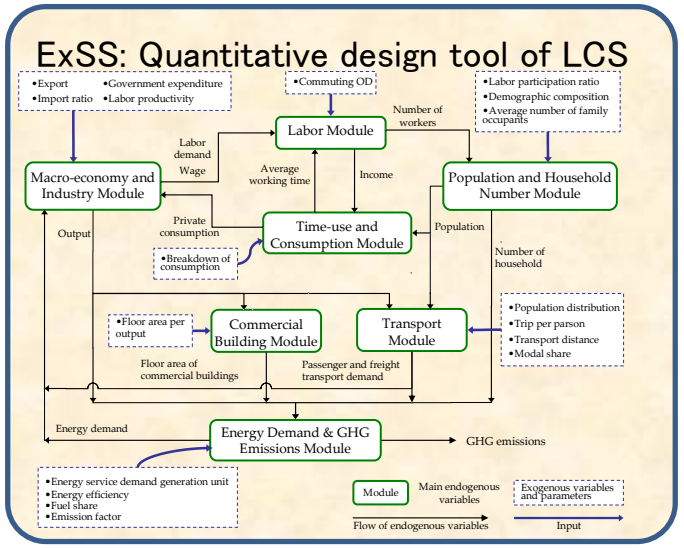
LCS Scenarios and Plans in Asian Countries and cities

- Quantitative scenario approach with AIM has been applied to more than 20 regions in Asia, and LCS plans and roadmaps are developed for each region.
- In FY 2015 (Apr. 2015 – Mar. 2016), main target regions for development of LCS plans are Thailand, Indonesia and cities in Vietnam (Ho Chi Minh, Hai Phong and Da Nang).

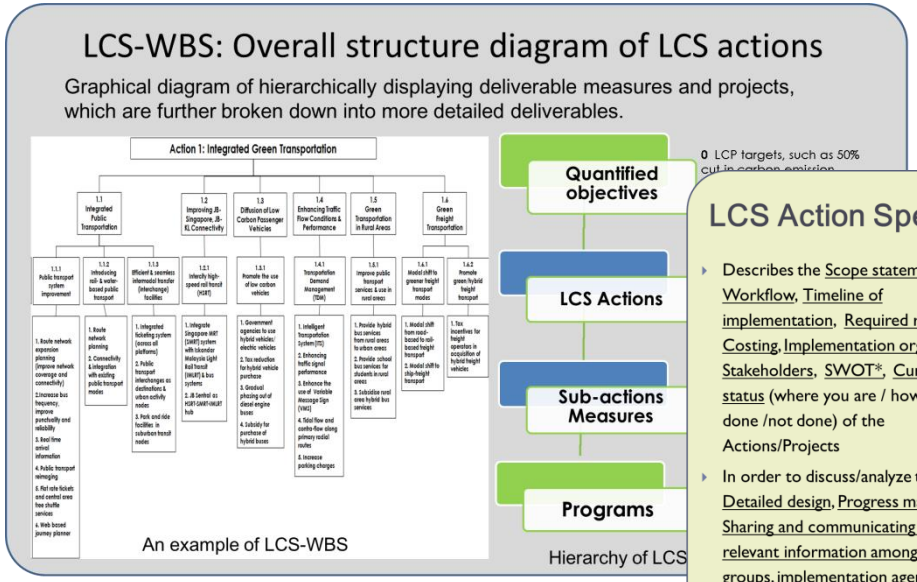
AIM
ASIA-PACIFIC INTEGRATED MODEL

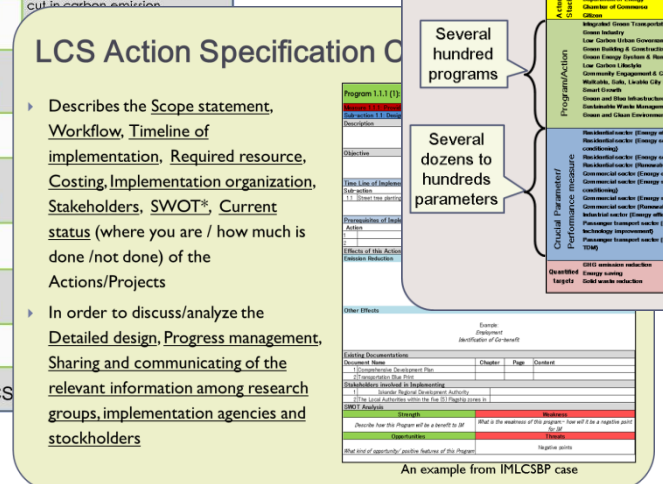
OUTPUT 1: Methodology

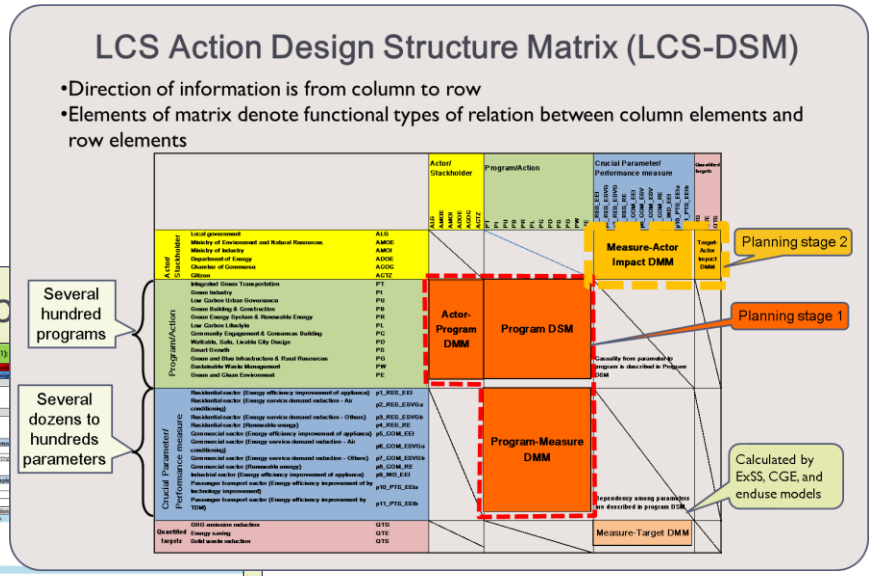
Development of supporting tools for designing and managing LCS scenarios



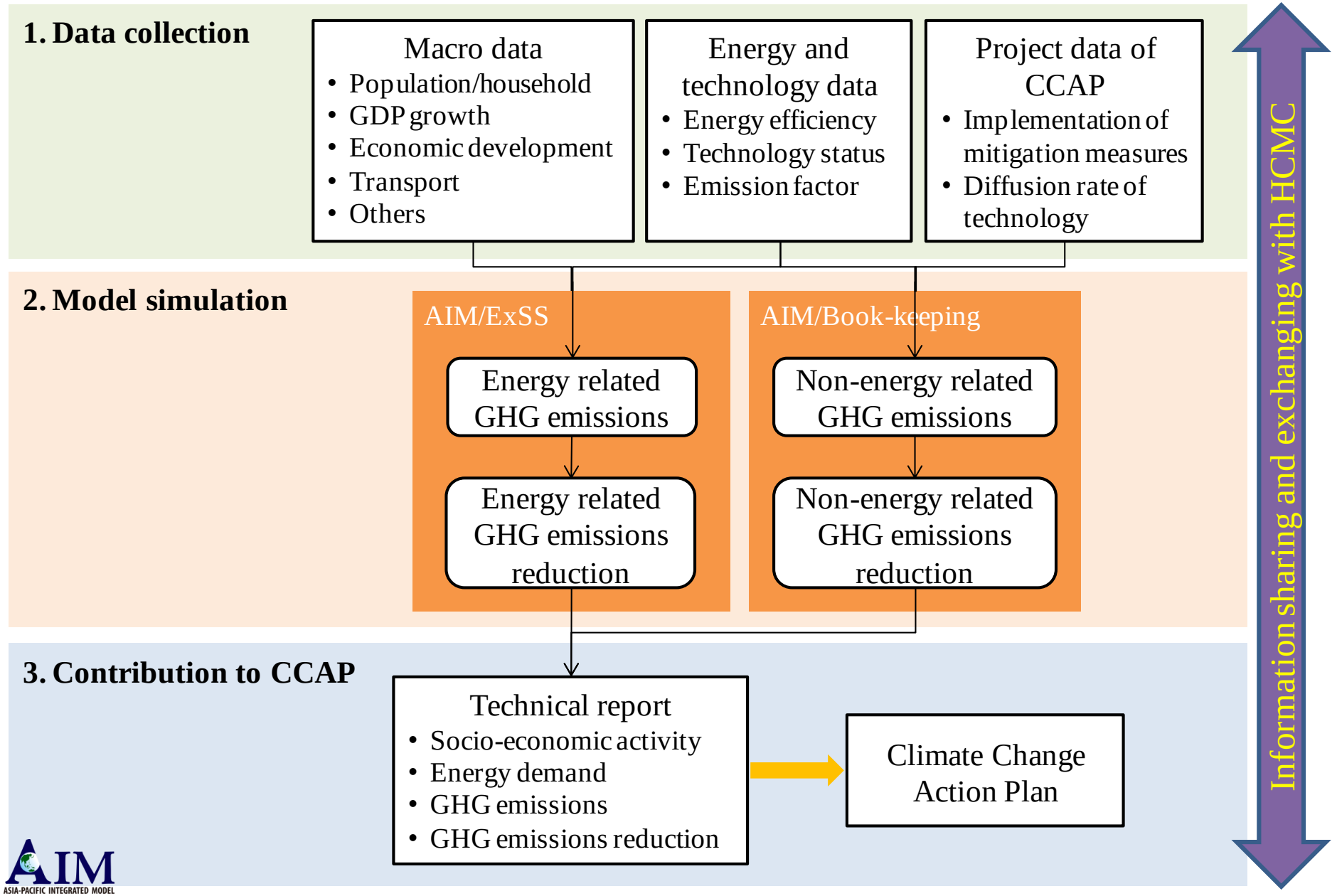
- Extended SnapShot model (ExSS)
- LCS Action Reference Database
- LCS Action Work Breakdown Structures(LCS-WBS)
- LCS Action Specification Cards(LCS-ASC)
- LCS Action Design Structure Matrix (LCS-DSM)
- Tool for attributing the Efforts towards Quantified targets to each Action/program (ARIPPLE)
- LCS Action Backcasting tool (LCS-BCT)







Methodology of LCS scenario development



AIM
ASIA-PACIFIC INTEGRATED MODEL

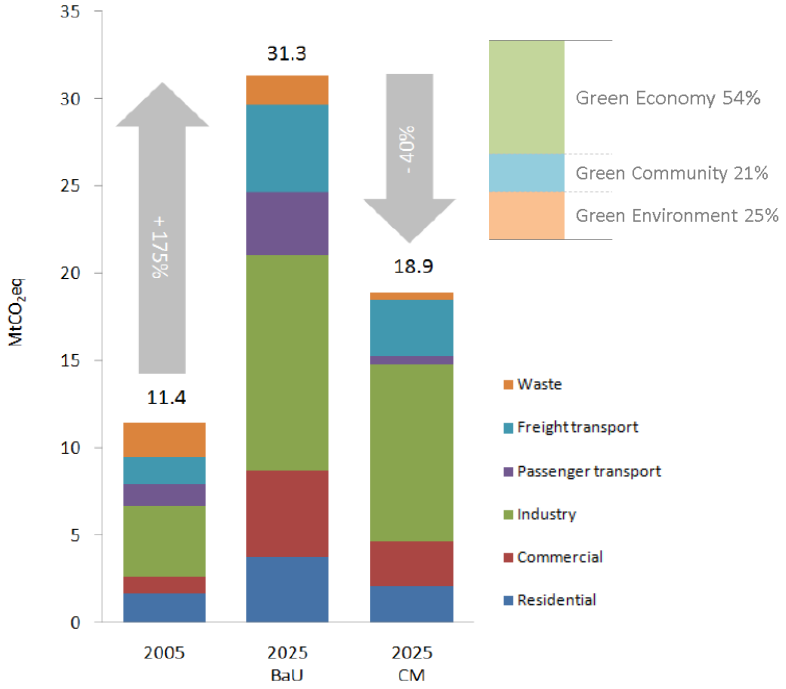
OUTPUT 2: LCS scenarios for policy development in IM

The *Low Carbon Society Blueprint for Iskandar Malaysia 2025*

- ✓ Document that presents comprehensive climate change mitigation policies and detailed strategies to guide development of Iskandar Malaysia
- ✓ Stress on the **holistic and integrated approach to decouple economy and environment development**
  Comprise of two principal components:

  I) Narrative on growth scenarios, policies, measures and programs to achieve a minimum targeted 40**% reduction in carbon emission by 2025** based on the 2005 level and;

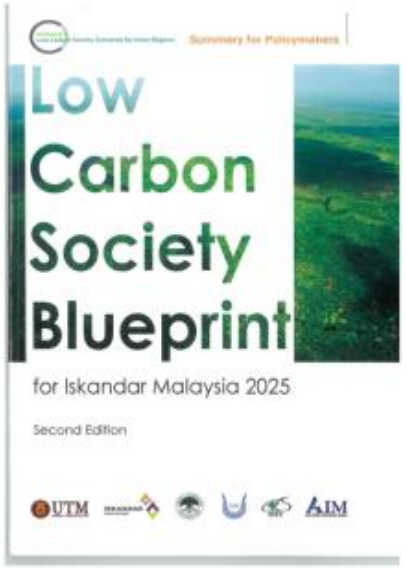
  II) **scenario-based modelling** and projection of carbon emission reductions achievable.

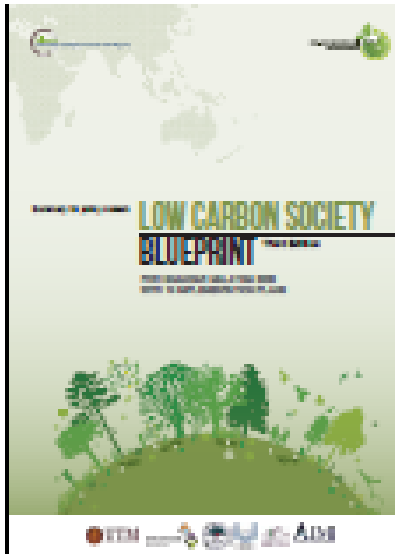


GHG reductions by Actions

Mitigation Options	$ktCO_2$ Reduction	%
Green Economy	6,937	54%
Action 1 Integrated Green Transportation	1,916	15%
Action 2 Green Industry	1,094	9%
Action 3 Low Carbon Urban Governance**	-	-
Action 4 Green Building and Construction	1,203	9%
Action 5 Green Energy System and Renewable Energy	2,725	21%
Green Community	2,727	21%
Action 6 Low Carbon Lifestyle	2,727	21%
Action 7 Community Engagement and Consensus Building**	-	-
Green Environment	3,094	25%
Action 8 Walkable, Safe and Livable City Design	263	2%
Action 9 Smart Urban Growth	1,214	10%
Action 10 Green and Blue Infrastructure and Rural Resources	392	3%
Action 11 Sustainable Waste Management	1,224	10%
Action 12 Clean Air Environment**	-	-
Total	12,467**	100%

Low Carbon Society Blueprint for Iskandar Malaysia 2025



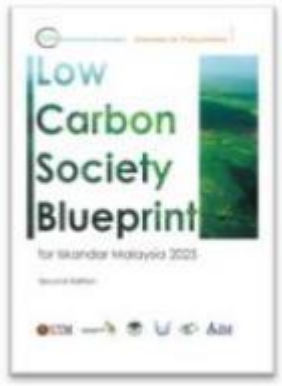


- The LCSBPIM– a quick reference for all policy-makers in both public and private sectors as well as IRDA;
- 12 Actions grouped in 3 parts namely: (Green Economy), (Green Community), and Green Environment);281 programmes;
- Each Chapter contains an analysis, list of programmes and the potential GHG emissions reduction;
- IRDA launched its Low Carbon Society Blueprint for Iskandar Malaysia 2025 on 30 November 2012 at the United Nations Climate Change Conference in Doha, Qatar. The ultimate goal is to reduce Iskandar Malaysia's carbon intensity emissions by 50 per cent by 2025.
- The Blueprint was subsequently endorsed by the Prime Minister of Malaysia in December 2012

	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	

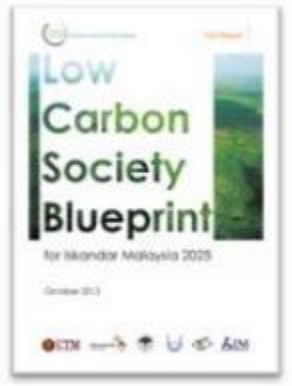
Low Carbon Society for Iskandar Malaysia Publications

2012



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

2013



Low Carbon Society Blueprint for Iskandar Malaysia 2025- Full Report

2013

A Roadmap towards Low Carbon Iskandar Malaysia 2025

2013

Iskandar Malaysia: Action for a Low Carbon Future

2014

Low Carbon Society Brochures for 5 Municipalities within IM

COP 18, Doha

MOA, 2012

MOA, 2013

COP 19, Warsaw

COP 20, Lima

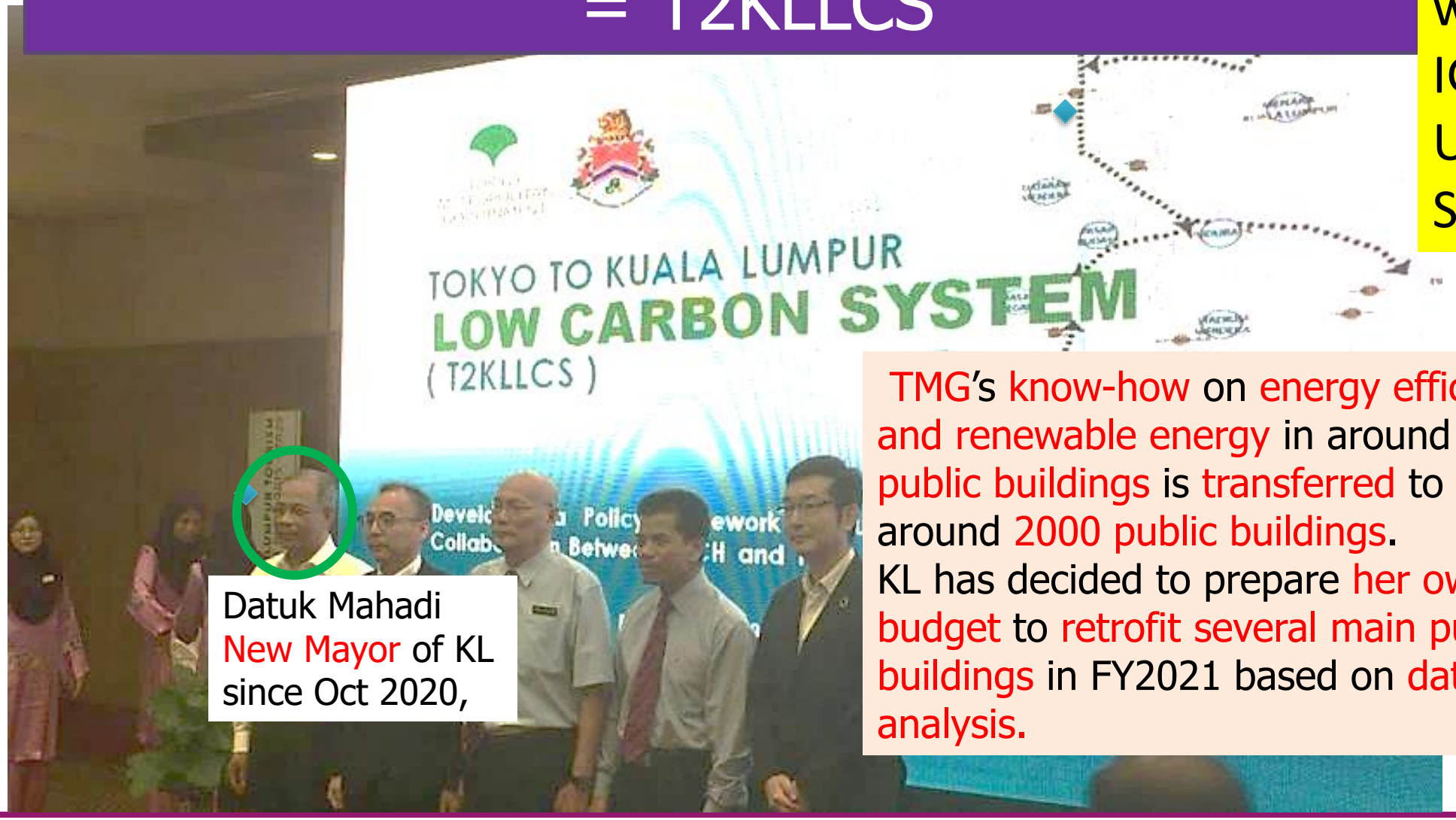
11th December 2012
The PM endorses the launching of LCSBPIM at COP 18 during MoA

6th November 2013
The PM launched Actions for a Low Carbon Future during MoA

Tokyo to Kuala Lumpur Low Carbon System = T2KLLCS

FY2019

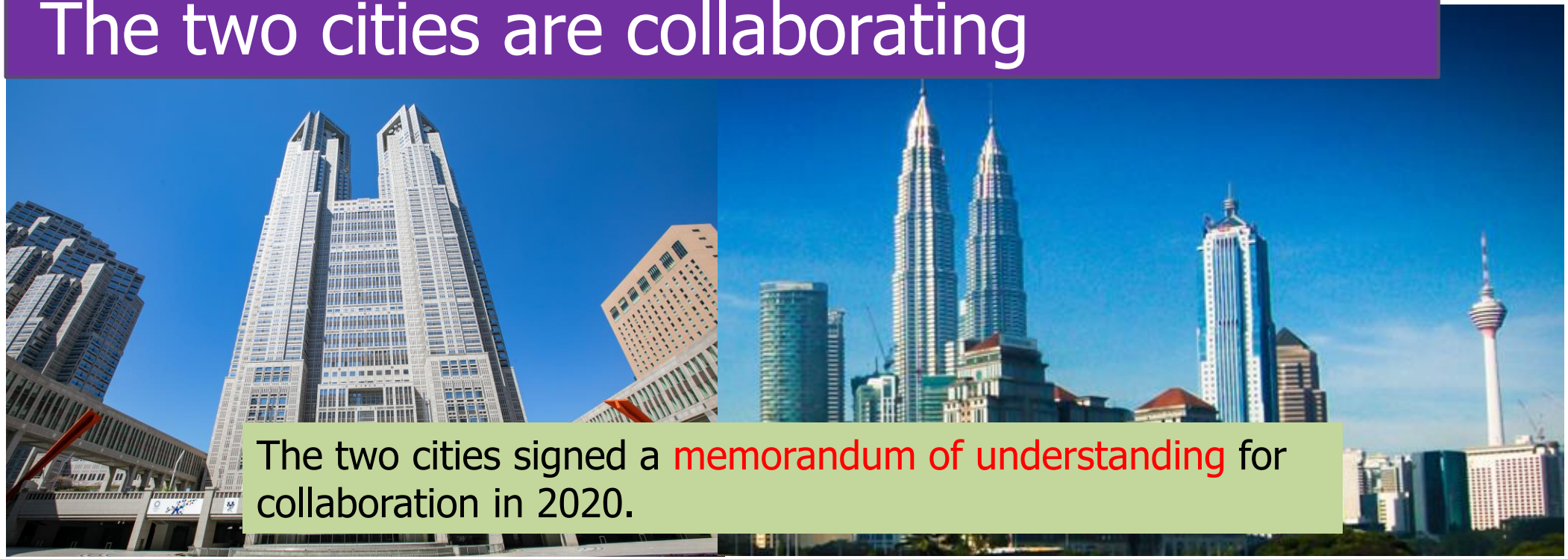
with IGES, UTM, SEDA



Datuk Mahadi
New Mayor of KL
since Oct 2020,

TMG's know-how on energy efficiency and renewable energy in around 4000 public buildings is transferred to KL for around 2000 public buildings.
KL has decided to prepare her own budget to retrofit several main public buildings in FY2021 based on data analysis.

The two cities are collaborating



The two cities signed a memorandum of understanding for collaboration in 2020.

Tokyo Metropolitan Government

Tokyo declares that it will seek to become a **Zero Emission Tokyo** by 2050

Kuala Lumpur City Hall

Kuala Lumpur aims to become carbon neutral Kuala Lumpur by 2050

Developing a policy framework for building energy efficiency through city to city collaboration between Kuala Lumpur Government and Tokyo Metropolitan Government (FY2019-2021)

Tokyo Metropolitan Government (TMG)	**Contribute to targets and strategies placed in the LCSBP 2030 (Kuala Lumpur Low Carbon Society Blueprint 2030)**	Kuala Lumpur City (KL)
Support KL city in streamlining their sustainable building policy framework		Streamline and enhance green building policies

Building Schem developed by TMG:
- Existing building (large)
Cap & Trade Scheme
- Existing building (small-medium) +
CO2 emission reporting program
- New building
Green building program

Support by business companies who contribute GHG reduction in building by energy efficient technology diffusion

① Share experience and knowledge on energy savings through personnel exchange

② Survey on the GHG emissions reductions and associated costs: especially air-conditioner

IGES: main coordinator
Already conducted transfer of TMG building scheme to Malaysian cities, several JCM City-City FS projects

University Technology Malaysia:
Local coordinator
Jointly developed KL LCSBP 2030, TMG building scheme transfer project

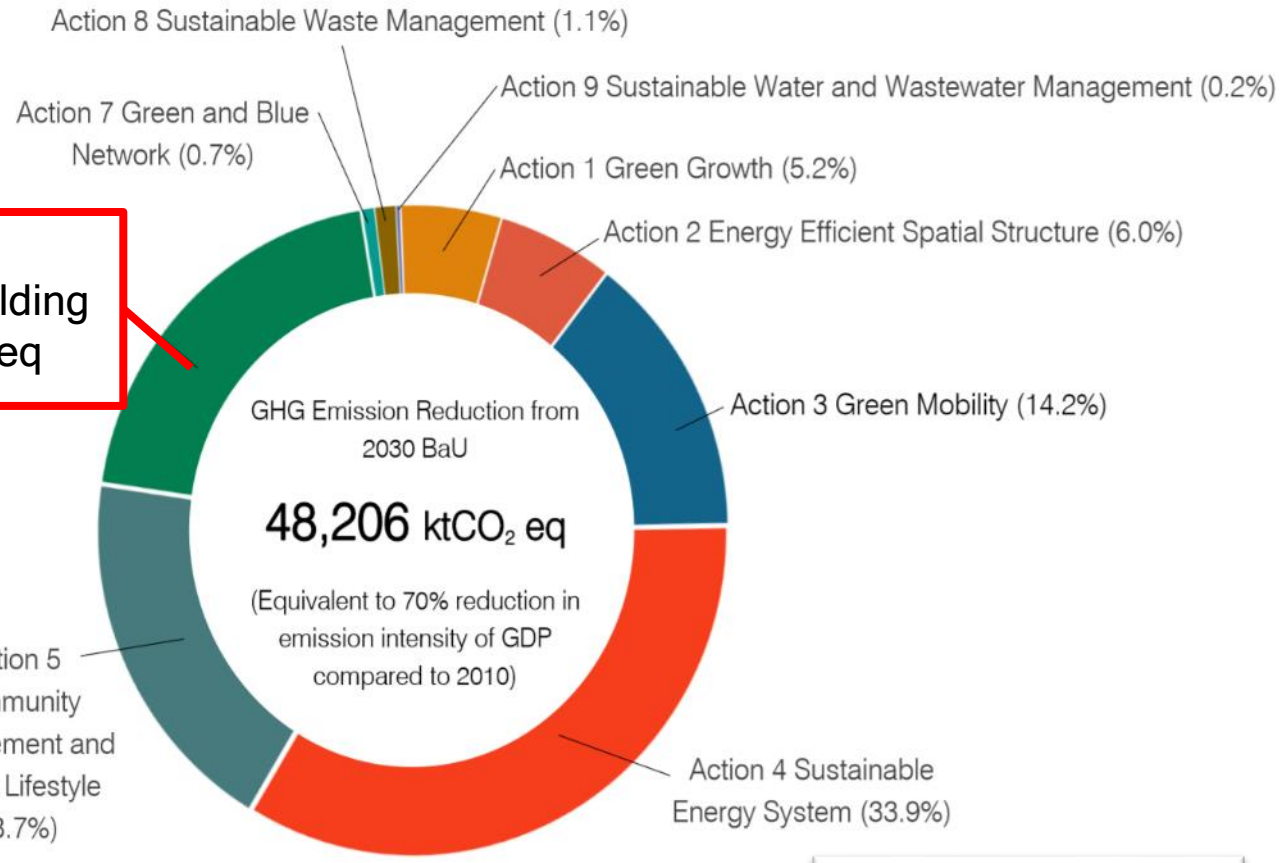
SEDA（Sustainable Energy Development Authority）: Support survey on buildings
Leading organization to conduct energy saving and renewables in Malaysia and in KL buildings

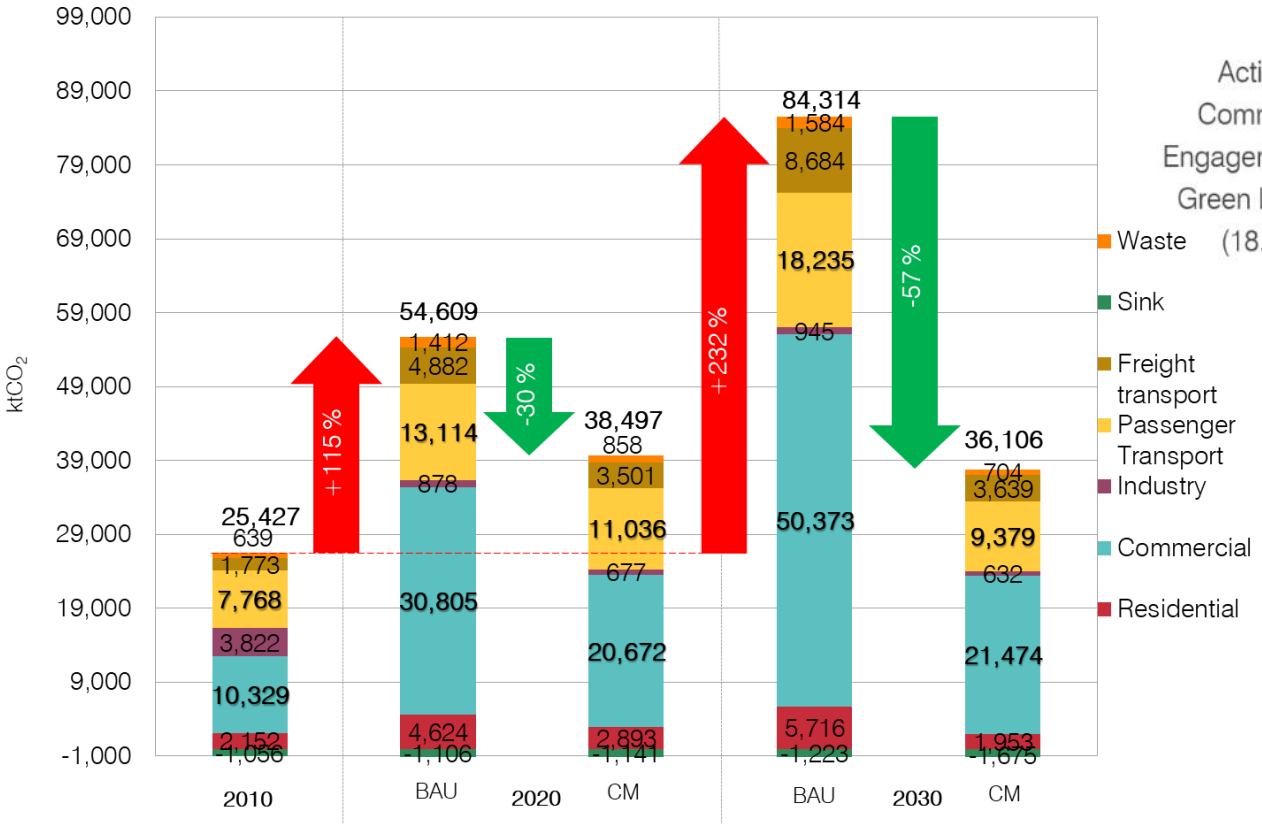
1 year: Introduction of TMG scheme and JCM estimation
2 year: Develop prototype of building scheme
3 year: **Implement building scheme**
+ continuous survey on JCM implementation every year

Support to JCM agreement with Malaysia

Buildings contribute up to 49% of total GHG emissions in Kuala Lumpur

Action 6
Low Carbon Green Building
(20.1%) = 9,673 $ktCO_2eq$





Interim output from T2KLLCS project

FY2019

Government building profiling is made

T2KLLCS: Analysis shows that 405 units of buildings consumed 77% of total electricity bill

80% by 20%!

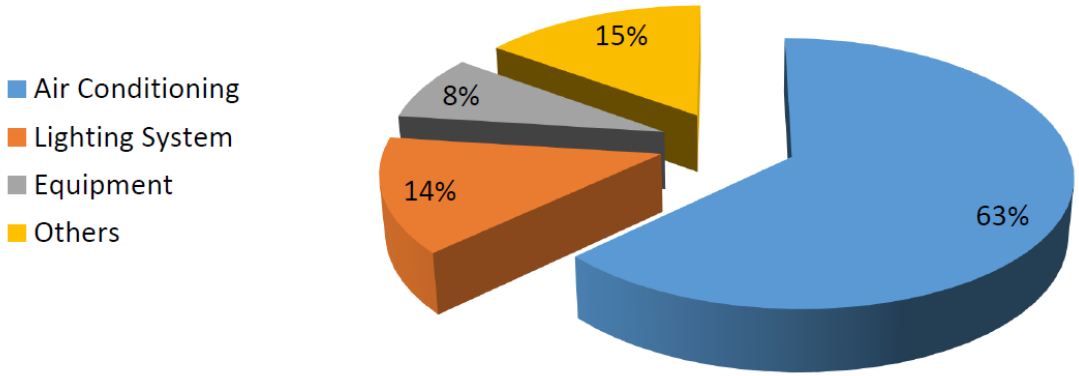
405 units out of 1,955

111.8 million kWh
energy consumption

77.6 million kg
CO_2e/year

T2KLLCS: **63%** OF POWER CONSUMPTION BY KLCH BUILDINGS IS FROM

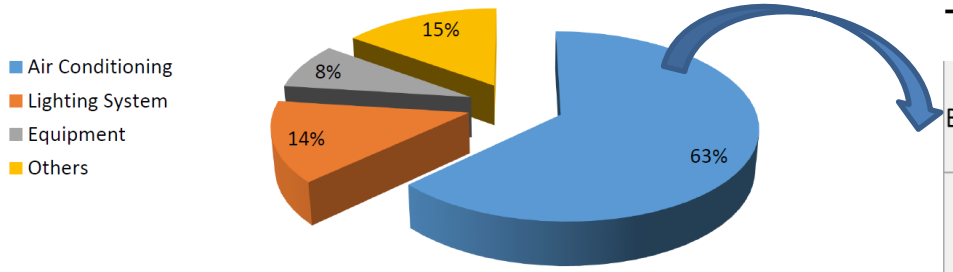
AIR CONDITIONING SYSTEM



First year: Introduction of TMG scheme

FY2019

Air conditioning is the largest energy use !



Reduction potential based on the solutions !

	Scenario 1	Scenario 2
CO_2 EMISSION IMPROVEMENT	35%	47%
Approach	Moderate	Aggressive
CO_2 EMISSION REDUCTION	12.5 million kgCO2e/year	16.9 million kgCO2e/year
Monetary saving	MYR 7 million/year	MYR 9 million/year

Technological solutions **with TMG suggestion**

Building Envelope	1	Infiltration - Airtight Building Envelope
	2	Reduce Direct Sunlight - Shading, Window Blind
	3	Insulation - Green Roof, Roof Insulation, Wall Insulation, Window Tinted, Window Glass
Air-Conditioning System	4	Outdoor Air Ventilation Control
	5	Zoning & Control of Air Distribution System - VAV, Temperature & Humidity Control, Setback & Shut-off Control, Off-hour control
	6	High Efficiency Fan System
	7	High Efficiency Air Filtration
	8	Effective Piping & Ducting Insulation
	9	High Efficiency Unitary Air Conditioning System - Single Split, Package, Multi Split, VRF
	10	High Efficiency Centralized Air Conditioning System - Chiller, Hydronic System, Cooling Tower
	11	Control of Centralized Air Conditioning System - Automation & Optimization
Lighting	12	Lighting Control - Daylight Control, luminance Control, Zoning Control, Motion Control, Off-hour Control
	13	High Efficiency Lighting System - Indoor & Outdoor
Energy Management Control System	14	Control of Equipment, Monitoring of Equipment, Integration of Equipment and Other Sub-systems, Energy related Data Collection and Analyses
Renewable Energy	15	Solar PV

Mainly TMG's zero or low cost solutions !

FY2020: Budgeting retrofits

FY2020

Budgeting the retrofits for **energy efficiency** using rough estimation of energy savings, CO_2 emission reduction!

City Hall Tower 1

City Hall Training Centre


City Hall Tower 2


City Hall Tower 3

Key steps for budgeting retrofits

- **Identify the energy bill for all buildings**
- **Identify the energy guzzlers (buildings with large energy consumption)**
- **Create an overview of building's energy use (appliances, BEI, building use)**
- **Identify appliances with large energy consumption coming up for renewal**
- **Roughly estimate energy-saving potential for those retrofits**
- **Create a procurement plan**

FY2020 : Secure budget for EE retrofitting

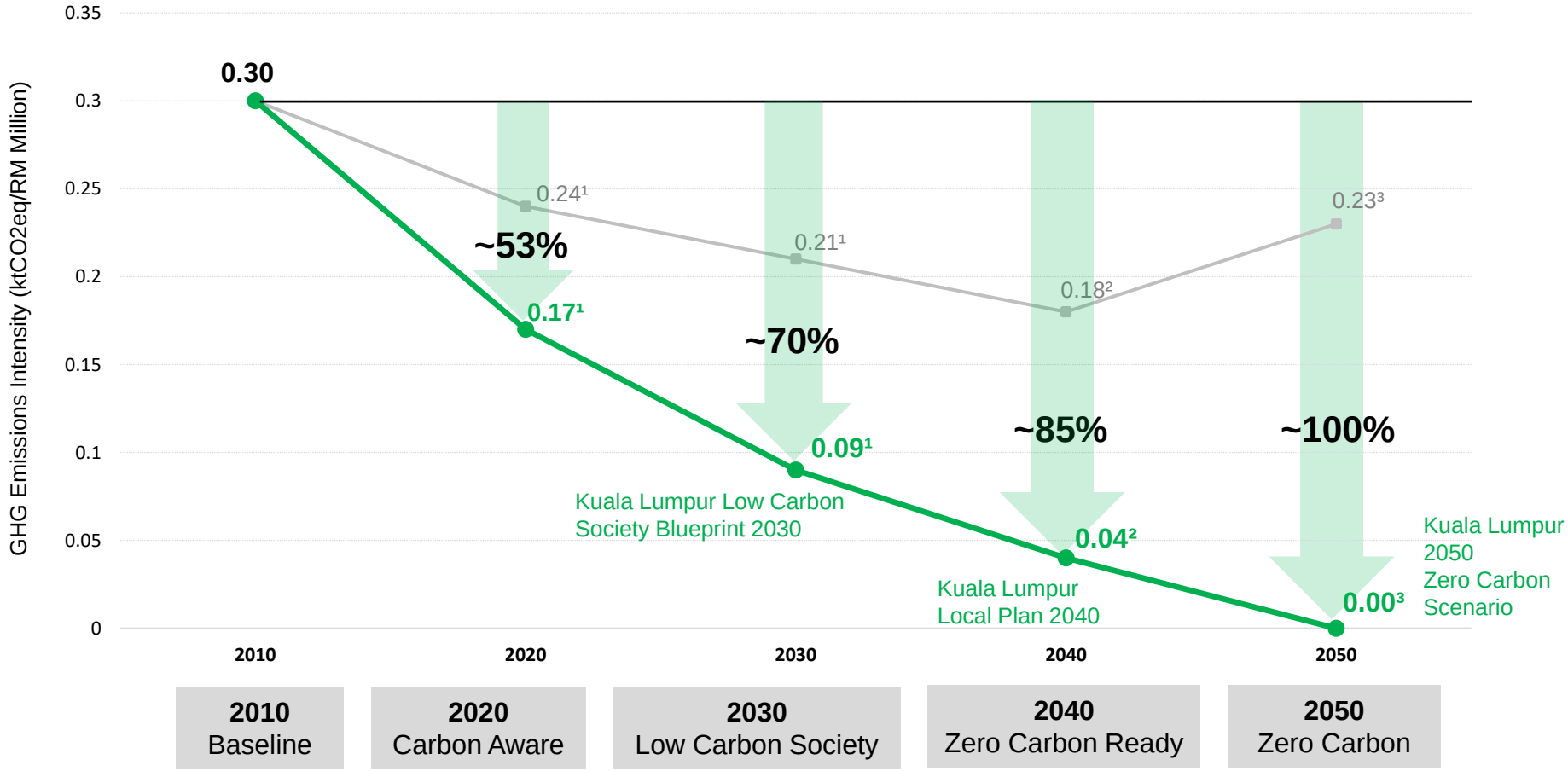
FY2020

Buildings	Retrofitting instruments	Budget	Year
Menara1 Tower	AHU	4,000,000 RM	2021
Menara1 Auditorium	Heat source, cooling tower, pumps, AHU	3,500,000 RM	2021
Menara3	Heat source, cooling tower, pumps, AHU	10,000,000 RM	2022
IDB training center	VRF	2,500,000 RM	2021

KL scenarios towards Zero Carbon by 2050

FY2020

Key countermeasures of commercial sector: Energy Efficient Device (Cooling, Heating) and PV (Solar Renewable Energy)



Source:
[1]Kuala Lumpur Low Carbon Society Blueprint 2030 (2016) – inclusive of non-energy related GHG emissions (waste and carbon sink)
[2]Draft Kuala Lumpur Local Plan 2040 (2020) – inclusive of non-energy related GHG emissions (waste and carbon sink)
[3]Kuala Lumpur 2050 Zero Carbon Scenario (2021) – mainly energy related GHG emissions

Zero Carbon City International Forum (March 2021)

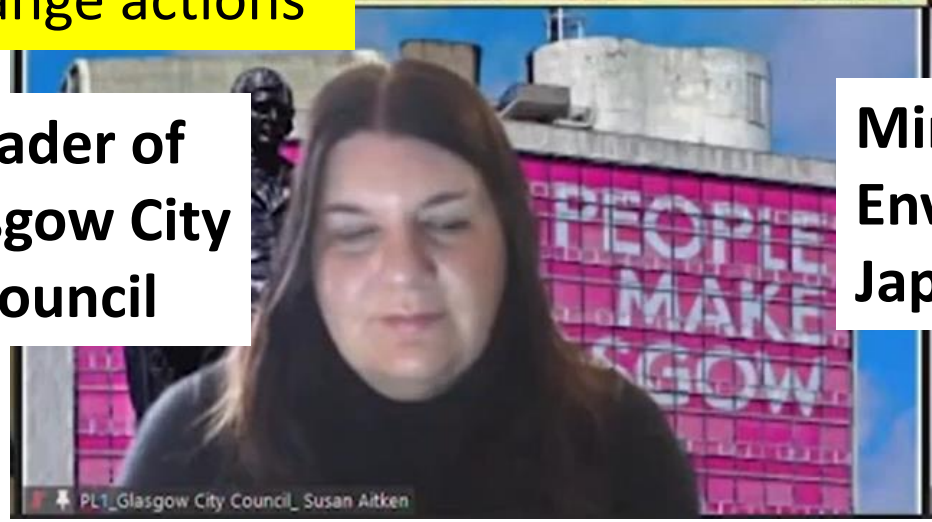
Governor of TMG Madame Koike

Reduce TMG's carbon and support KL's buildings Climate change actions

Mayor of KL Datuk Seri Mahadi

Declare Carbon Neutral KL by 2050 with technical support of TMG

Leader of Glasgow City Council

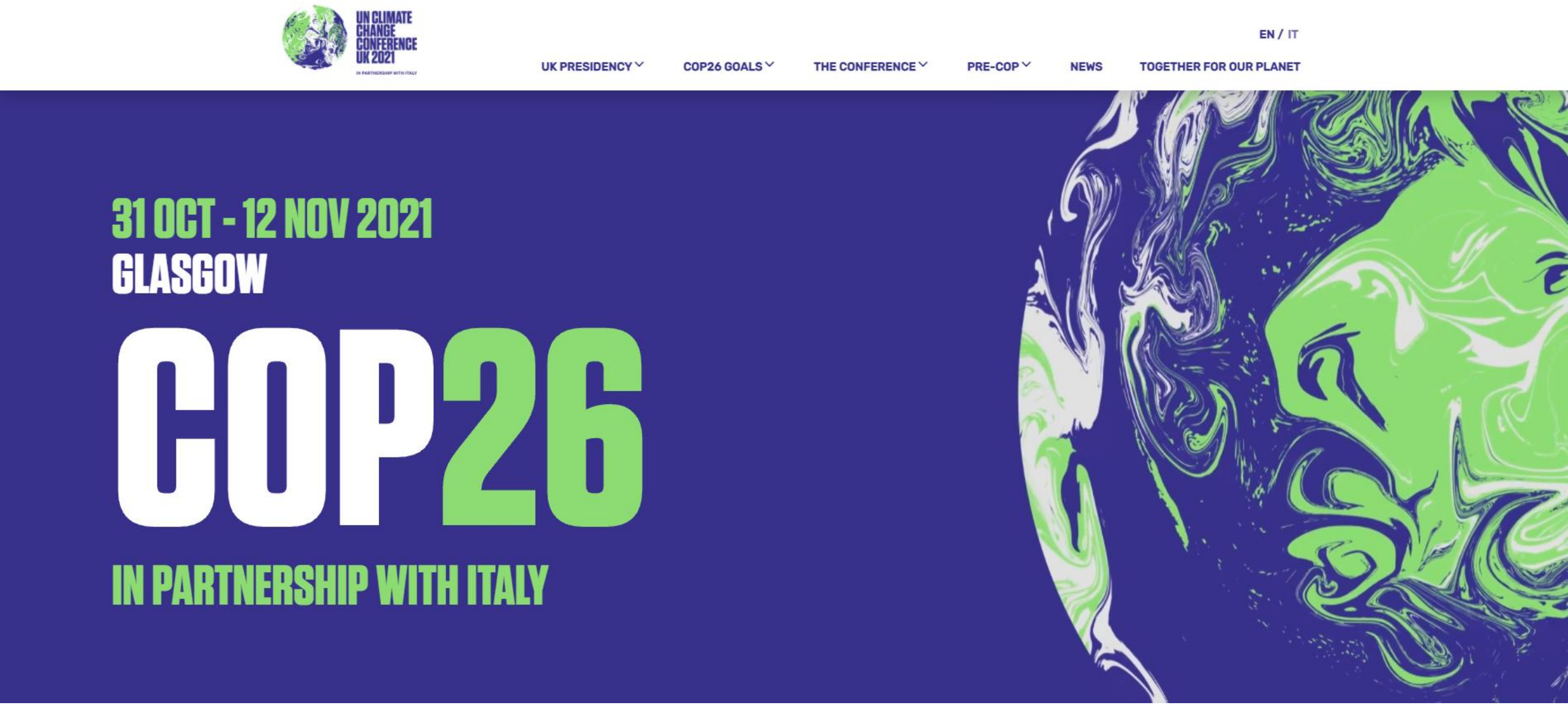


Minister of Environment, Japan

TMG-KL collaboration is the first decarbonization domino from Japanese cities to oversea cities.
I would like to spread out this best practice.

https://www.iges.or.jp/en/events/20210317

https://events.wbcsd.org/virtual-meetings/cop26/



Nov 11, 2022
AIM side event