METI
Ministry of Economy, Trade and Industry

APEC
Energy Working Group

Progress of The APEC Low-Carbon Model Town (LCMT) Project

20 March 2019

Agency for Natural Resources and Energy
METI, Japan

- Outline of the LCMT Project
- LCMT Project Dissemination Phase 1
  - Banda Aceh City, Indonesia
  - Shah Alam City Center Section 14, Malaysia
  - Hang Tuah Jaya City, Malaysia
  - 2nd LCMT Symposium (Da Nang, Viet Nam, Sept. 2018)
- LCMT Project Dissemination Phase 2
  - Davao City, The Philippines
  - Da Lat City, Viet Nam
- LCMT Project Dissemination Phase 3

➢ Outline of the LCMT Project

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Background of the LCMT Project

Declaration of the 9th APEC Energy Ministerial Meeting (Fukui, Japan, June 2010)

➢Establish a Task Force (LCMT-TF)

➢ The LCMT-TF should

1. develop the concept of a Low Carbon Town,
2. conduct feasibility studies to encourage creation of low-carbon communities in urban development plans, and
3. share best practices for making such communities a reality.

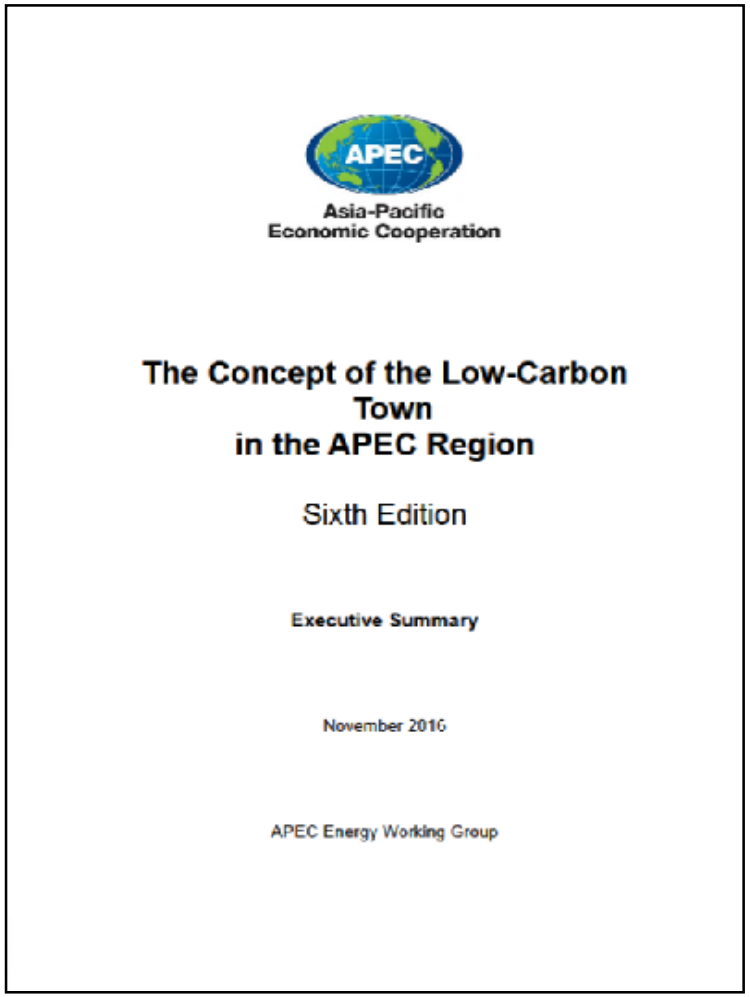
Key Activities of the Project in Phase 1-7

1. Development and refinement of the “Concept of the Low-Carbon Town in the APEC Region (Concept)”
   - ➢ The Concept shows a basic idea/principle of a low-carbon town and provide guidance.
   - ➢ The APEC Low-Carbon Town Indicator (LCT-I) System has been developed based on the Concept.

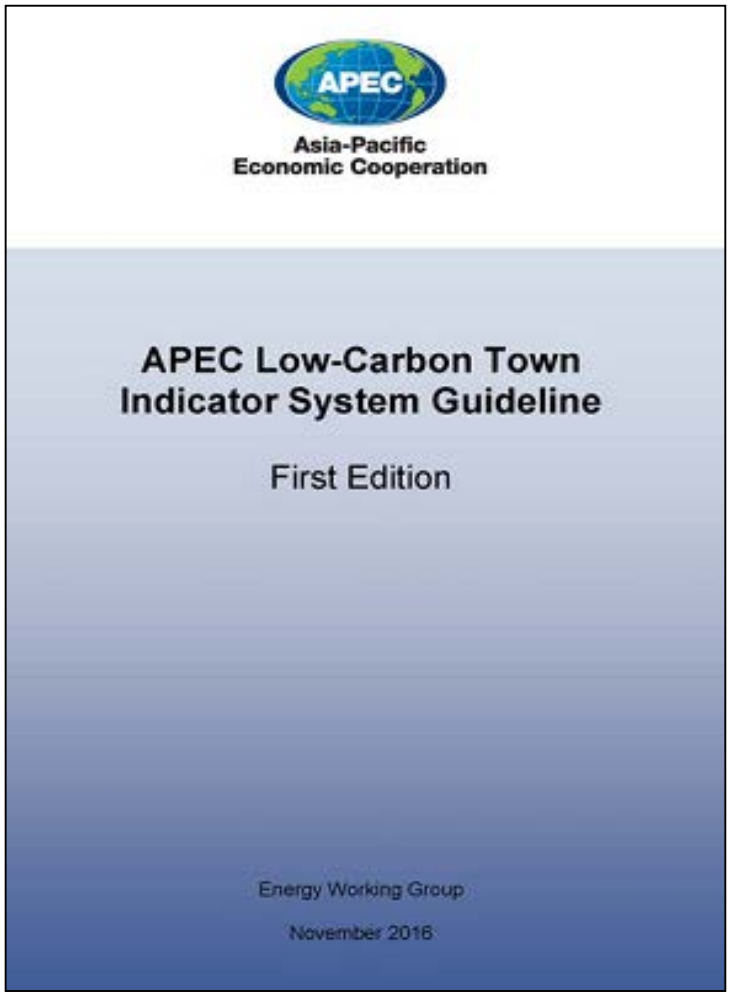
2. Feasibility Study for a Case Town

3. Policy Review for a Case Town

The Concept and the LCT-I System

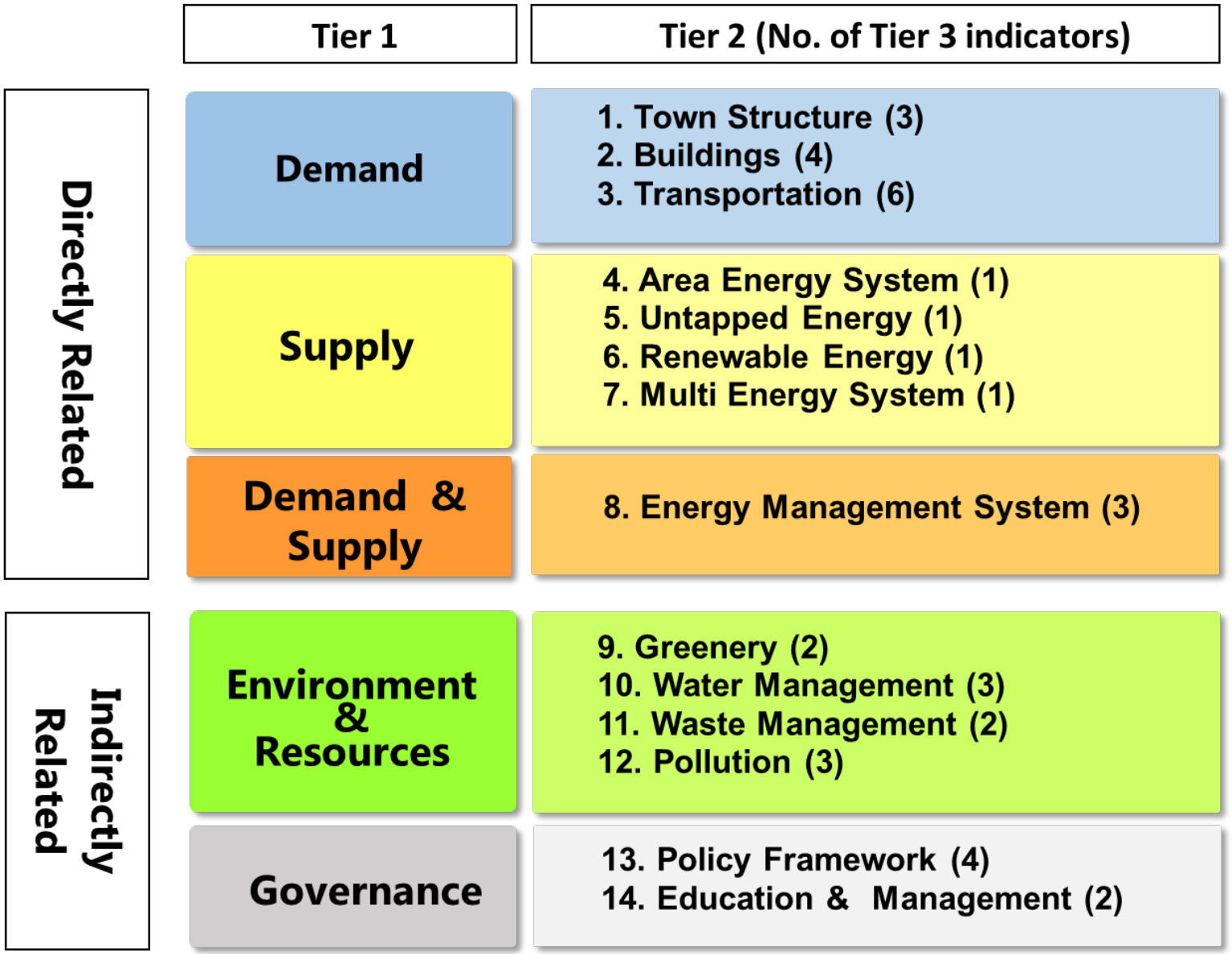


The Concept of the Low-Carbon Town in the APEC Region (Sixth Edition)
http://publications.apec.org/publication-detail.php?pub_id=1796



APEC Low-Carbon Town Indicator System Guideline (First Edition)
http://publications.apec.org/publication-detail.php?pub_id=1797

Assessment Framework of LCT-I System



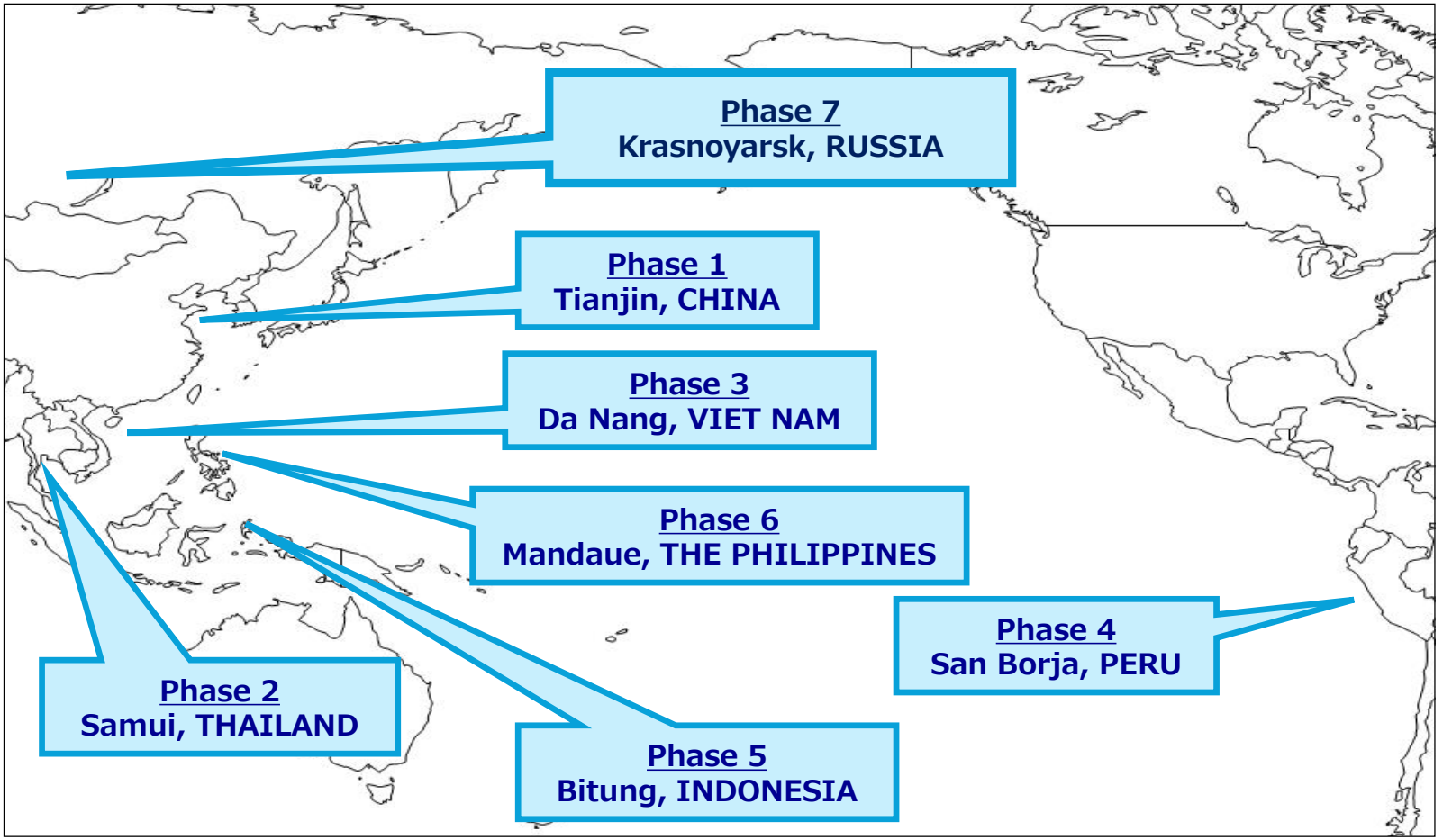
Case Towns of Feasibility Study and Policy Review

1. Feasibility Study (F/S)

- Develop low-carbon strategies for selected towns

2. Policy Review

- Policy review to realize low-carbon town development conducted by experts



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LCMT Project Dissemination Phase

Instructions from APEC Energy Ministers, the 12th APEC EMM(Cebu, Oct. 2015)

"We instruct the LCMT-TF to move the current LCMT Project into the next stage in order to disseminate Low-Carbon Towns in the Asia-Pacific region. "

Key Objective of Dissemination Phase

- To disseminate the basic ideas and effective approaches of the Concept through utilizing the LCT-I System, which helps evaluate the progress and status of low-carbon development of various area in the APEC region;
- To provide Feasibility Studies of a specified area of low-carbon development projects selected as the LCT-I volunteer towns in the LCMT Project and identify how to improve the low-carbon development plans through the Feasibility Studies; and
- To share best practices and real-world experiences of low-carbon town design with planners and policy makers throughout the APEC region.

LCMT Phase 1 to 7

- Perform FS in shallow and wide viewpoints, including grasping CO2 emissions in target areas.
- Objective only one city

Study of method is comprehensive

LCMT Dissemination Phase

- DISSEMINATION will examine realistic viability to realize a low-carbon town.
- Objective 3 cities with different characteristics.

Create Low-Carbon business plan and build a business model

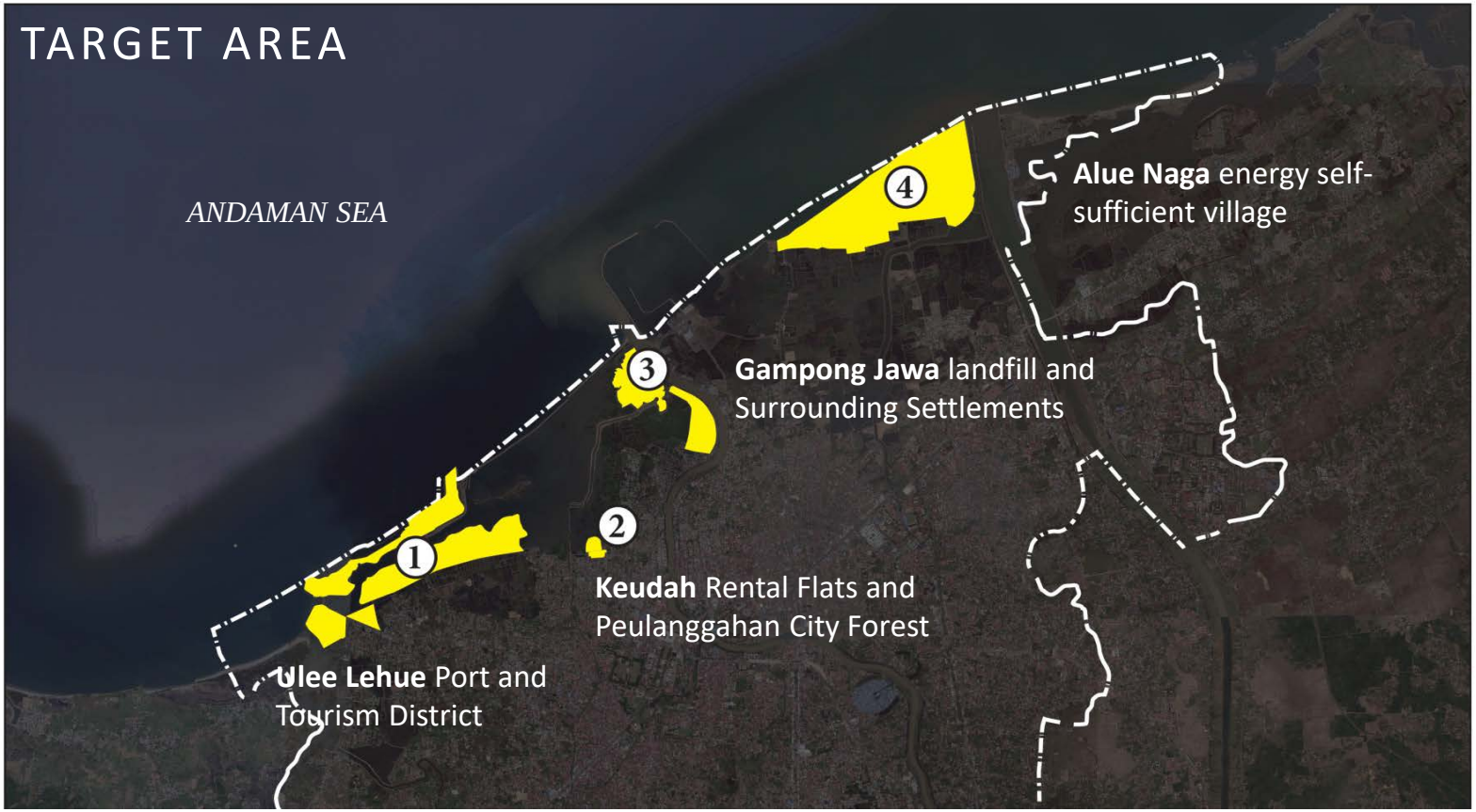
CONTENTS

- ✓ LOW-CARBON MEASURES AND IMPLEMENTATION SCENARIOS
- ✓ LOW-CARBON MEASURES FOR ENERGY AND TRANSPORTATION
- ✓ BUSINESS SCHEME OF THE THREE VOLUNTEER TOWNS
- ✓ FUTURE STEP

Low-Carbon Measures and Implementation Scenarios -Banda Aceh City-

ABOUT BANDA ACEH CITY, INDONESIA

- From Jakarta: 1,840km
- Area: 61.36km2
- Population: 254,904
- Sub district: 9
- GDP Per Capita: 4,712 USD
- Economic Growth: 5.01%



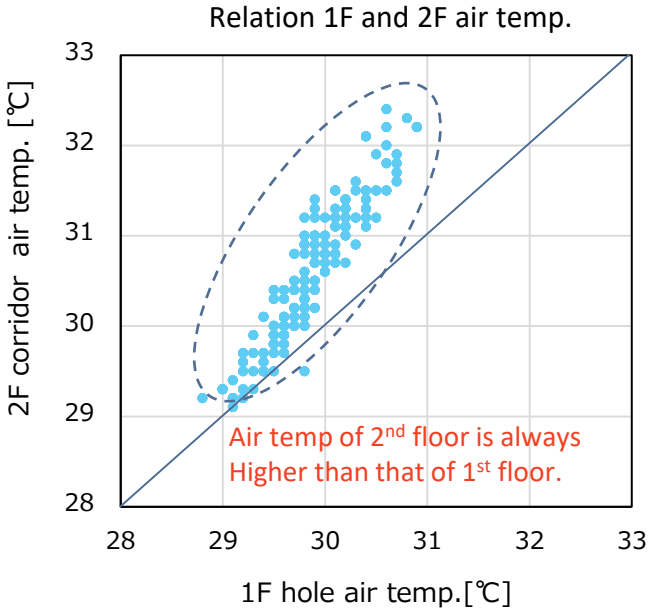
Low-Carbon Measures and Implementation Scenarios -Banda Aceh City-

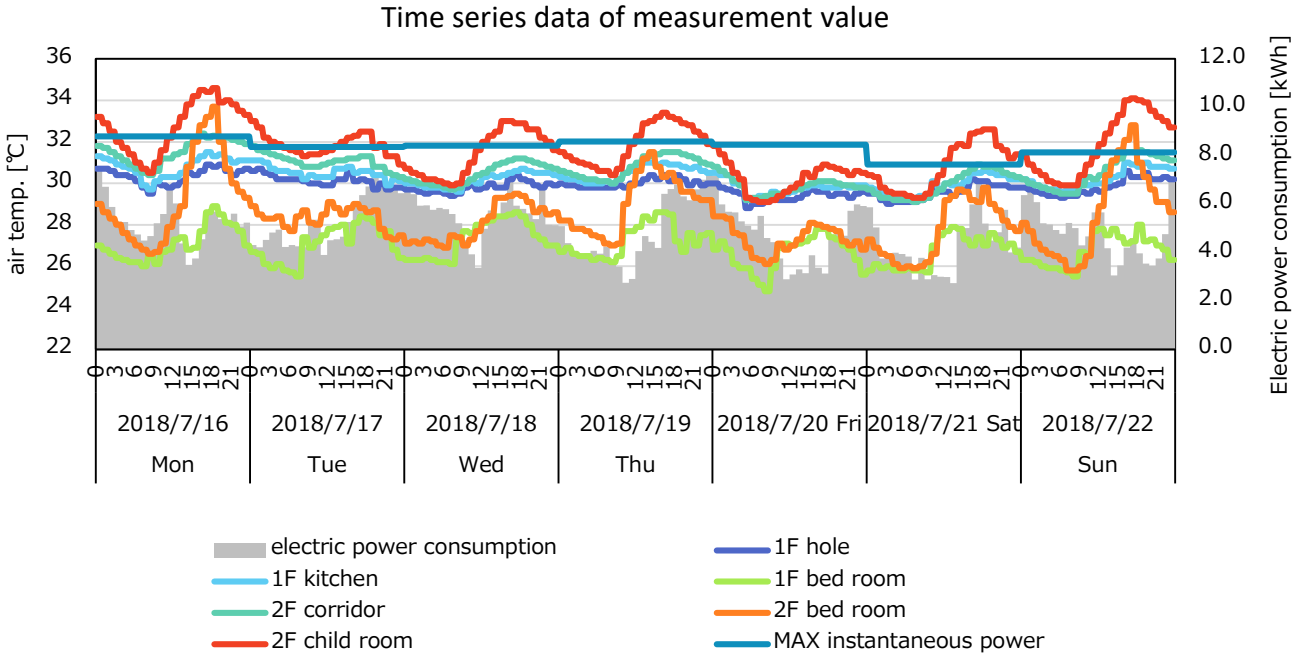
PROPOSALS TECHNICAL SUMMARY

Target Area	Low-Carbon Technology								
	Town Structure	Buildings		Renewable Energy			Untapped Energy	EMS	＋α
	Accessibility	Passive design	Active	Wind power system	Roof PV	(Mega) Solar	Waste power generation		Water management
1. Ulee Lehue	△	○	○（LED）	○	△			○	○
2-1. Keudah Social Housing (Rusunawa) and BNI Trembesi City Forest – Peulangghan		○			△	△			○
3. Alue Naga, Kecamatan Siyah Kuala		○	○	○	○	△		○	○
4. Gampong Jawa, Juta Raja District							○		
Whole City			○（LED）						

ACTUAL MEASUREMENT SURVEY IN BANDA ACEH

NSRI measured two-story house in Banda Aceh. Air temperature of the hall (living room) on the first floor is always lower than the corridor on the 2nd floor but it was always over 29 degree.

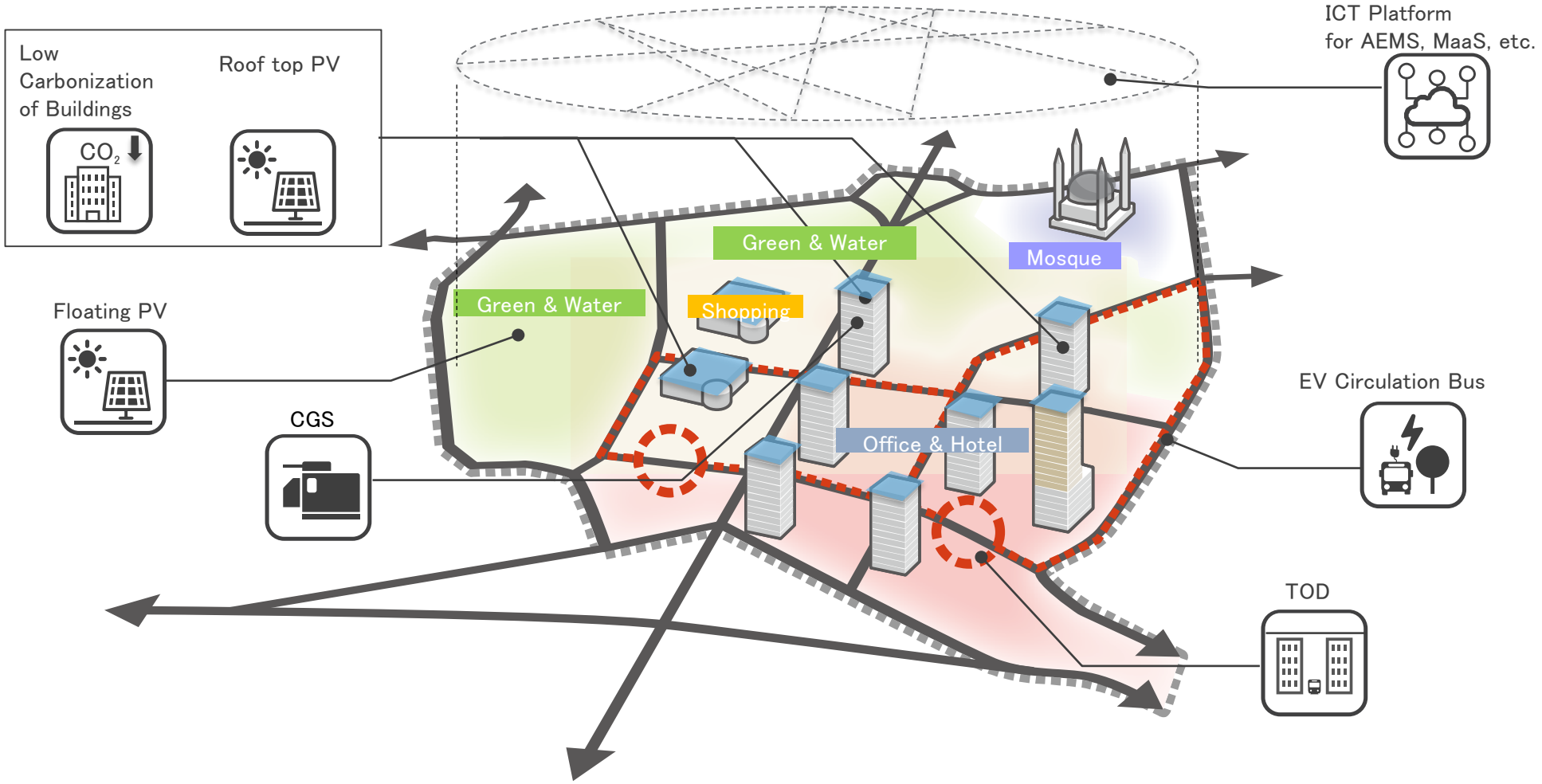




Low-Carbon Measures and Implementation Scenarios -Shah Alam City-

- From Kuala Lumpur: 20km
- Area: 290.3km2
- Population: 740,750
- Section: 56

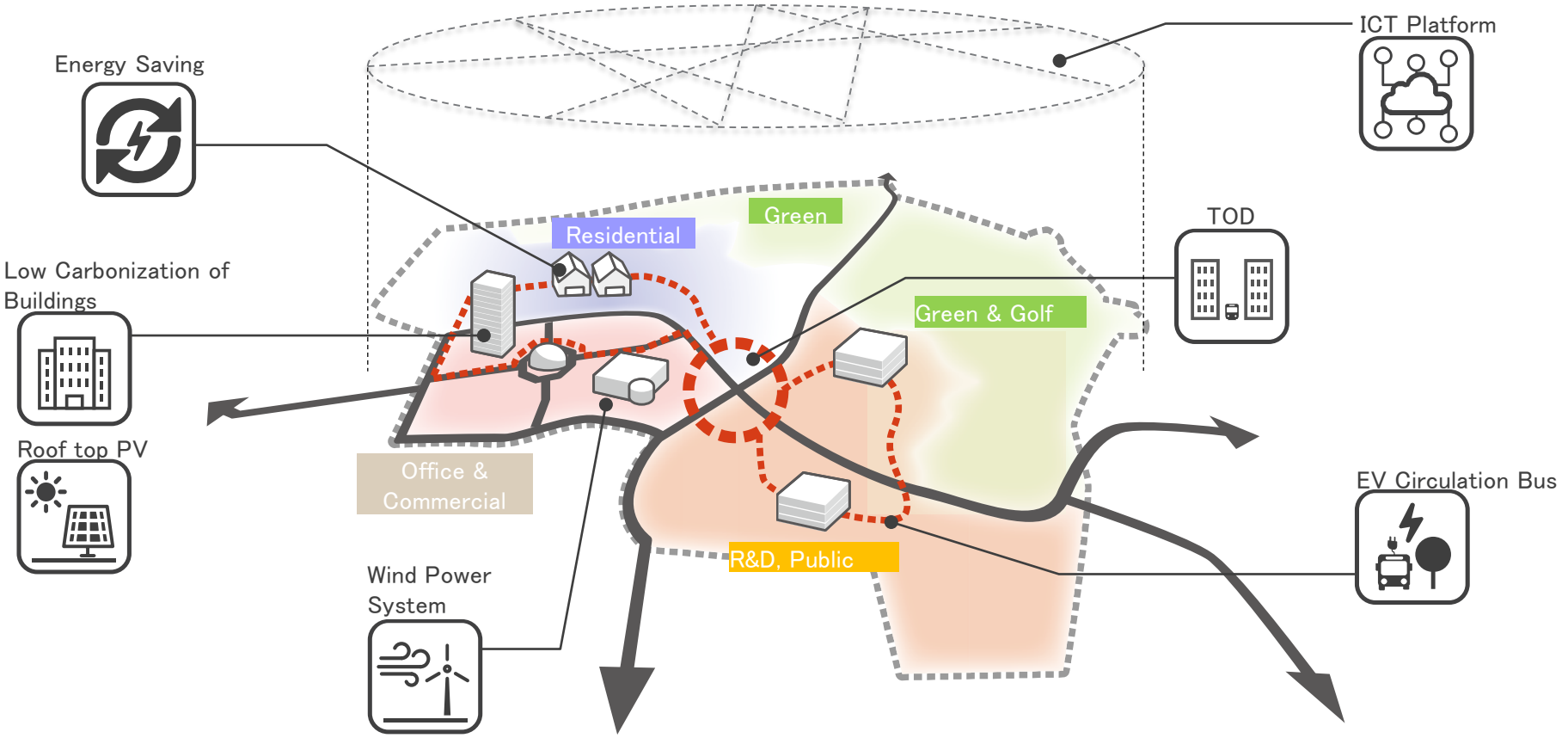
LOW-CARBONIZATION PLAN



Low-Carbon Measures and Implementation Scenarios -Hang Tuah Jaya City-

- From Kuala Lumpur: 120km
- Area: 144.61 km2
- Population: 197,405

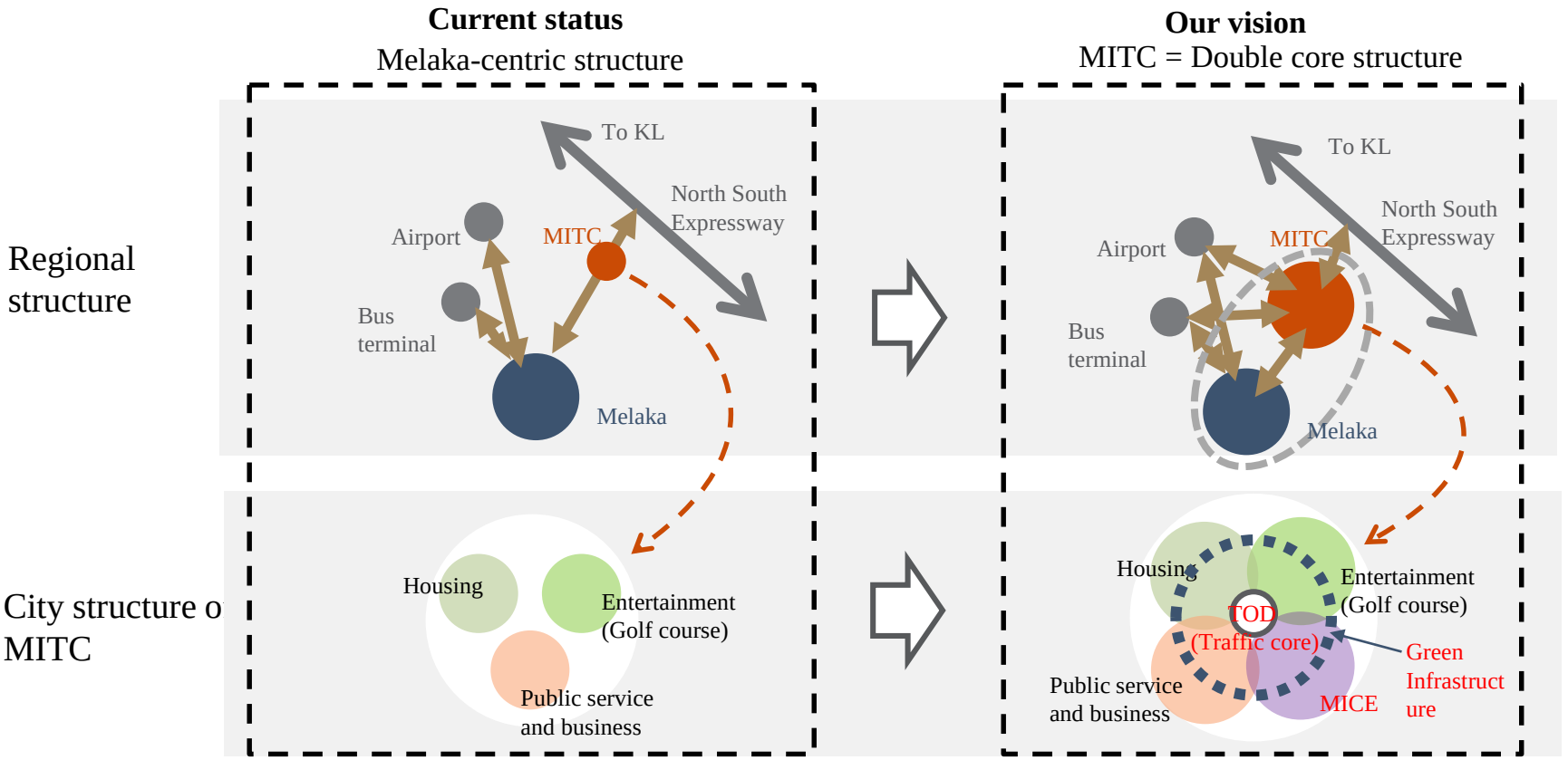
LOW-CARBONIZATION PLAN



Low-Carbon Measures and Implementation Scenarios -Hang Tuah Jaya City-

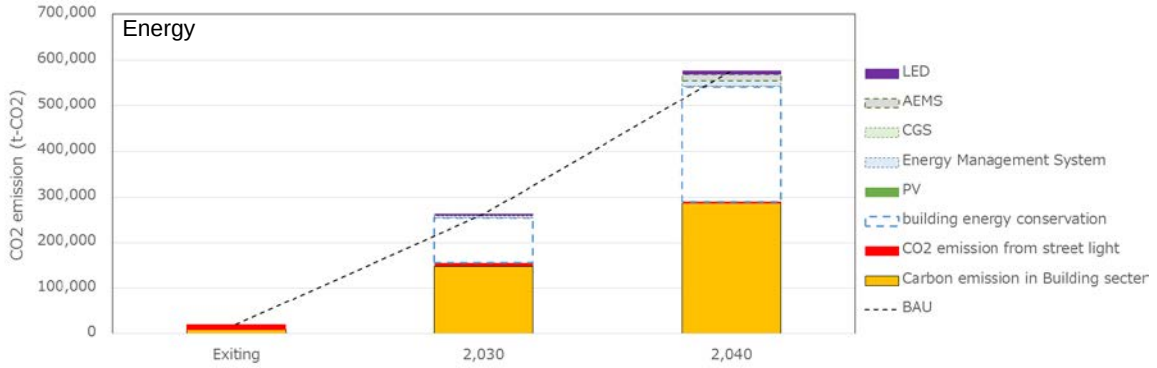
LOW-CARBONIZATION PLAN

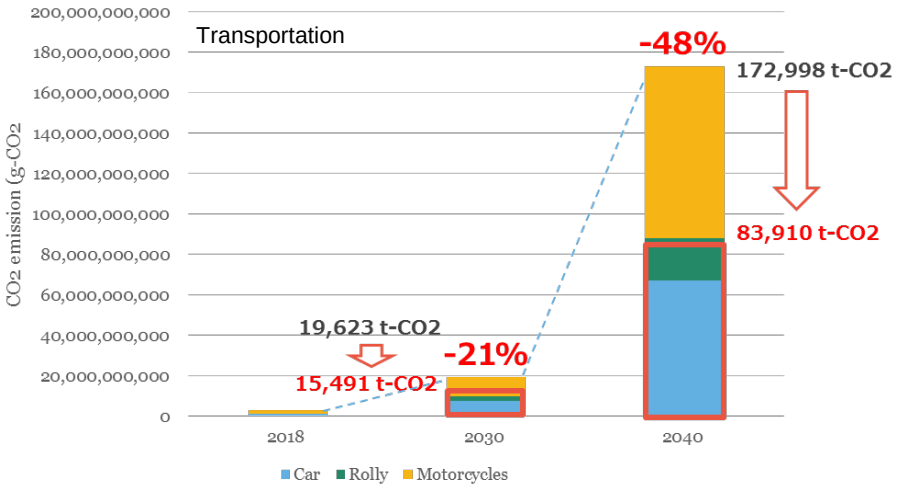
Upgrading business functions of MITC, it will form a new core in Melaka state. By moderating the traffic volume concentrating on Melaka, NSRI will encourage sustainable development of the World Heritage Area and aim to realize Innovative Tourism.



1. BANDA ACHE CITY, INDONESIA

Low-Carbon Effect of Energy and Transportation



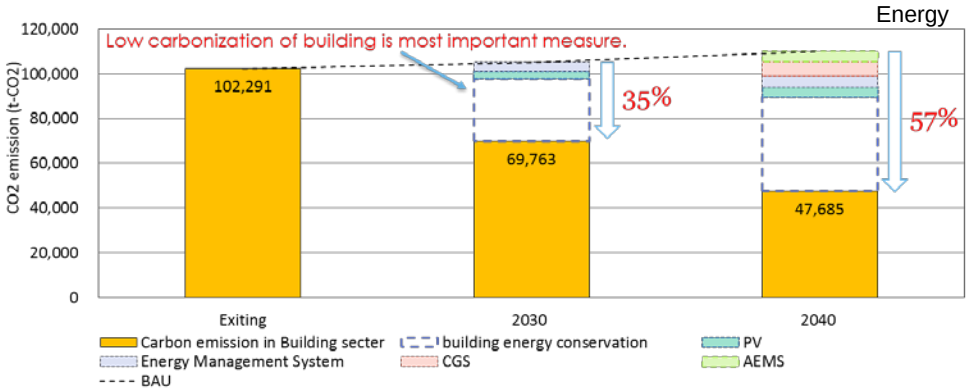


NSRI estimated the CO2 emissions in 2018 (BAU) to be 3,061 t-CO2 as follows. Although it will be 172,998 t-CO 2 considering the urban development by 2040, it can be expected to be reduced to 83,910 t-CO 2 (48% reduction) by promoting the use of public transportation and Electric vehicle.

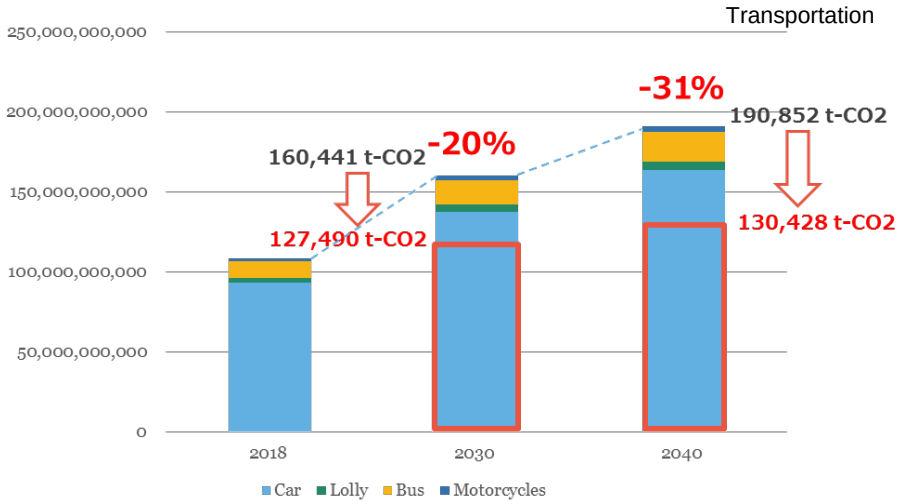
2. SHAH ALAM CITY CENTER SECTION 14, MALAYSIA

Low-Carbon Effect of Energy and Transportation

Although BAU is expected to increase as GDP increases, by executing our proposed method, it is possible to reduce 57% of CO2 by 2040.



NSRI estimated the CO2 emissions in 2018 (BAU) to be 108,701 t-CO2 as follows. Although it will be 190,852 t-CO 2 considering the urban development by 2040, it can be expected to be reduced to 130,428 t-CO 2 (31% reduction) by promoting the use of public transportation and Electric vehicle.

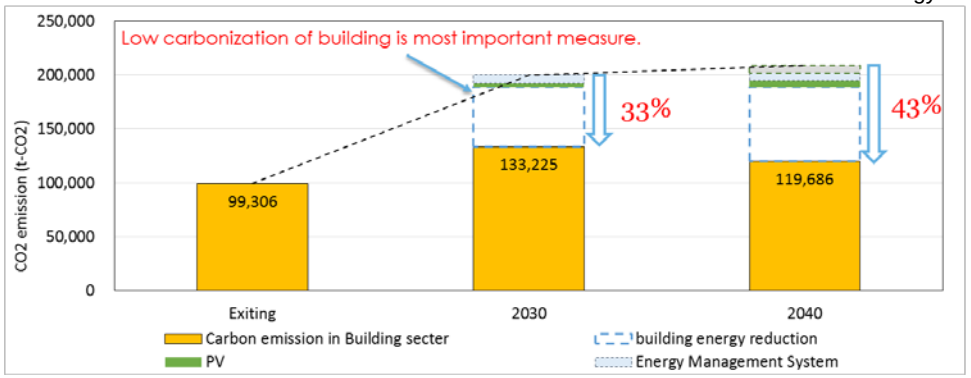


3. CITY OF HANG TUAH JAYA, MALAYSIA

Low-Carbon Effect of Energy and Transportation

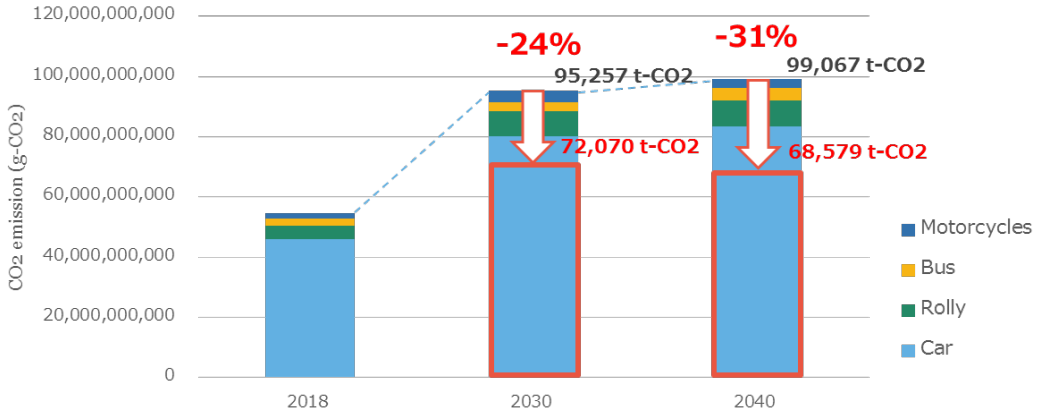
Although BAU is expected to increase as population increases, by thorough energy saving of the building and installation of PV, it is possible to reduce 43% of CO2 by 2040.

Energy



NSRI estimated the CO2 emissions in 2018 (BAU) to be 13,205 t-CO2 per year as follows. Although it will be 99,067 t-CO 2 considering the increase rate of automobile by 2040, it can be expected to be reduced to 72,175 t-CO 2 (39% reduction) by promoting the use of public transportation.

Transportation

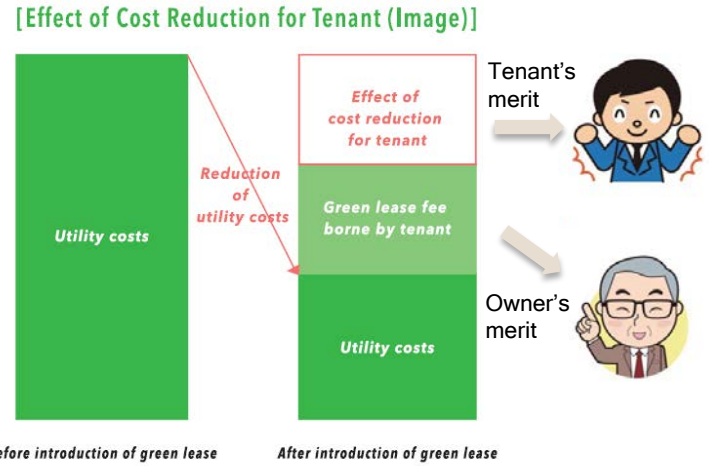


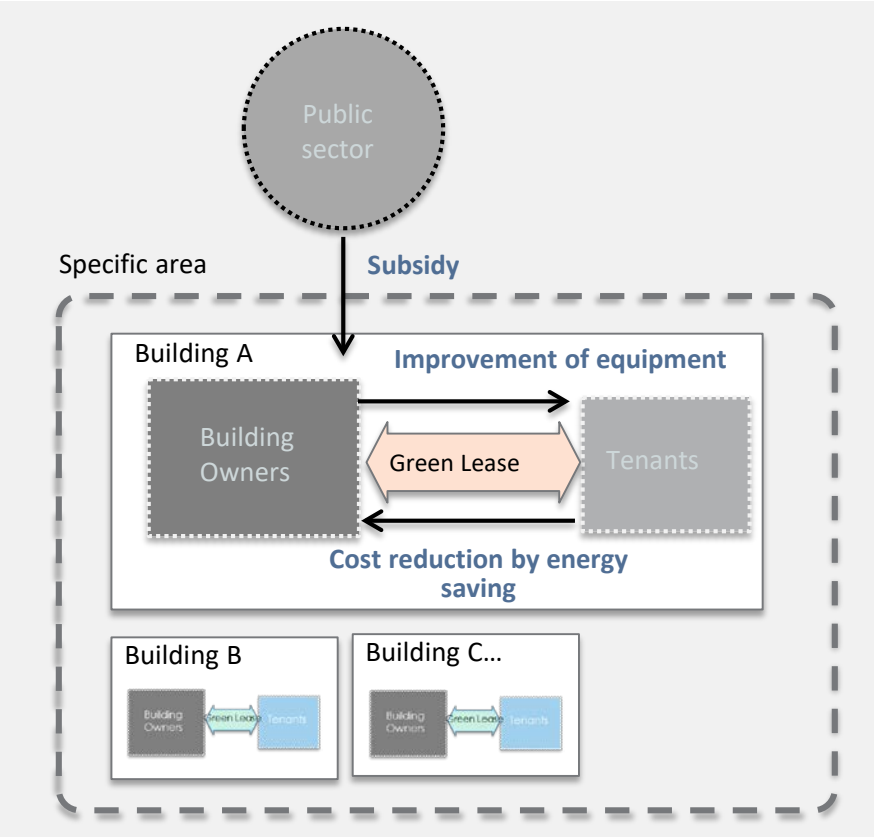
Business Scheme of the Three Volunteer Towns

Potential business scheme		Banda Aceh	Section 14	Hang Tuah Jaya
Energy	Area-based Green Lease	- (few apartment, office)	●	●
	Neighborhood Solar Farm	●	●	●
Transportation	EV Circulation Bus Service	●	●	●
	Area-based MaaS	●	●	●
Capacity Building		●	●	●

Energy: Area-based Green Lease

- If building owner and tenants sign a contract of “Green Lease” inside of the designated area, public sector (local municipality, etc.) provide subsidy to building owner as a part of additional cost for low carbonization.
- After building owner improves building equipment, reduction of utility costs caused by the above improvement, is divided by tenants and owner as an incentive of low carbonization for both sides.





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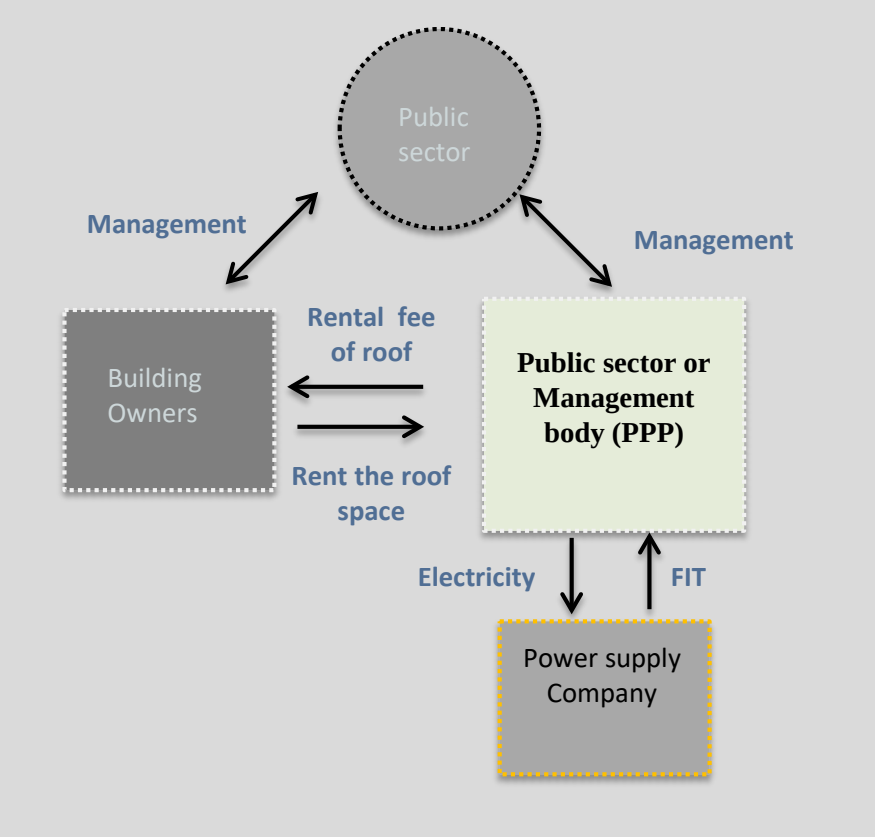
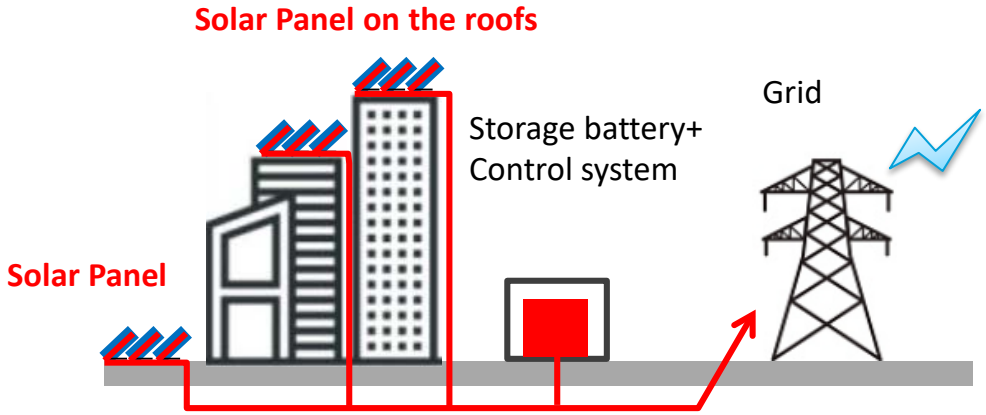
Energy: Neighborhood Solar Farm



- Local municipality or area management body installs solar panels by utilization of rooftop of building and unused land / open space within the designated area, and gain an income by selling electricity through the FIT system.
- In case the FIT system is terminated, Virtual PPA should be considered as an alternative scheme.



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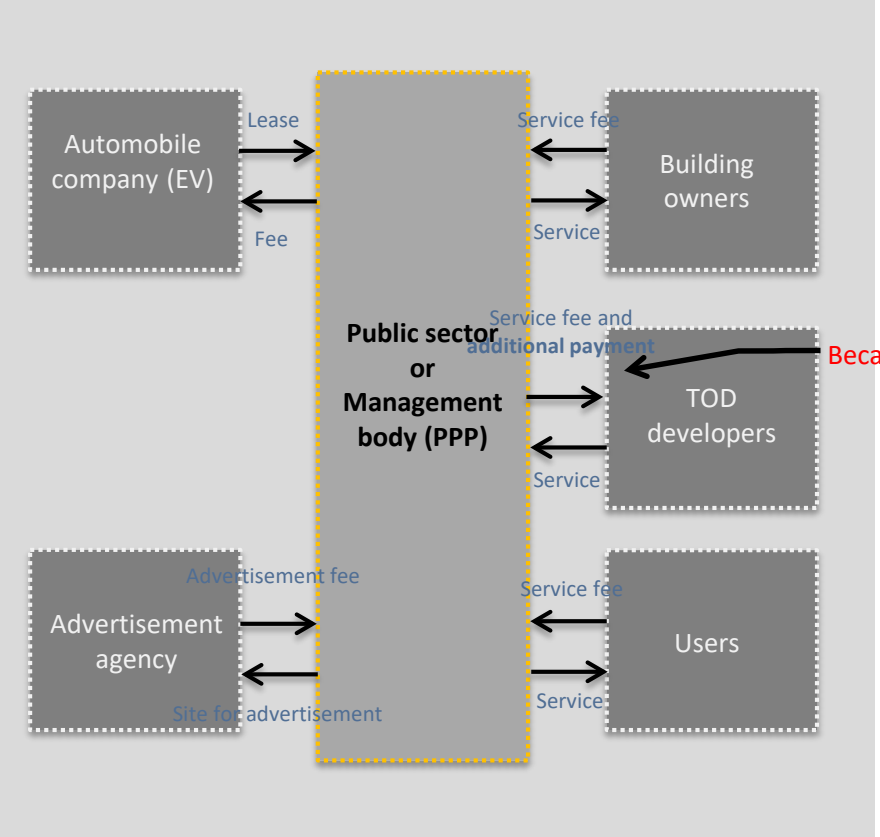
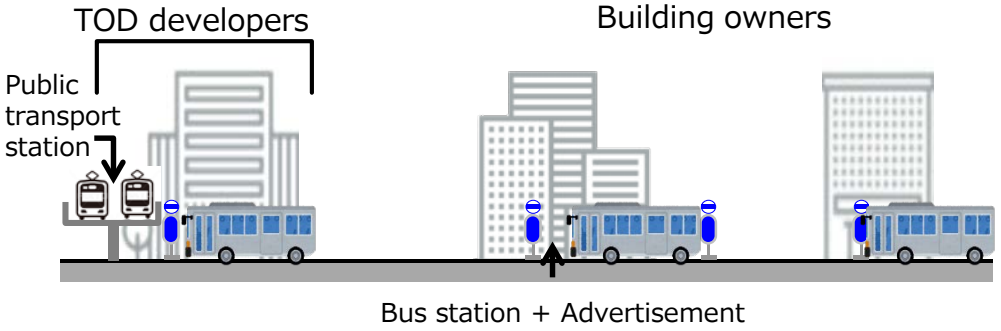
Transportation: EV Circulation Bus Service



- Public sector or area management body leases EV bus from the company and manages circulation bus service inside of the designated area.
- Management body gains basic service fee from building owners who benefit from the service, and advertisement fee caused by ads put at the bus body and bus station.

Because of proximity to LRT, etc.



Bus station + Advertisement

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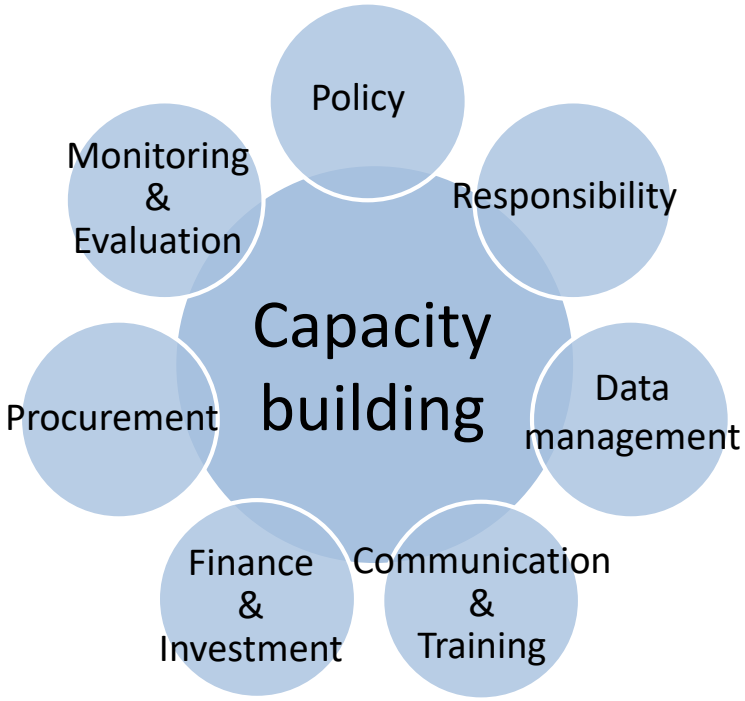
CAPACITY BUILDING

Capacity building occurs through the mediums of skills, knowledge, tools, equipment or other resources required to complete the task at hand to a high standard and further impact. Although training is an essential part of achieving this, capacity building extends far beyond just this activity:

- **Human resource development**, the process of equipping individuals with the understanding, skills and access to information, knowledge and training that enables them to perform effectively;
- **Organizational development**, the elaboration of management structures, processes and procedures, not only within organizations but also the management of relationships between the different organizations and sectors (public, private and community);
- **Institutional and legal framework development**, making legal and regulatory changes to enable organizations, institutions and agencies at all levels and in all sectors to enhance their capacities.



Future Steps

- This study is considered as the first step in aiming for Low Carbon Model Town. In the future, in order to implement these plans, it is necessary for local governments to proceed more concrete actions.
- In Banda Aceh, since development of coastal target areas has not been undertaken, first of all, development of traffic infrastructure will be necessary. After that, measures to induce low carbonization are prepared in advance as a low carbon guideline for urban development.
- In Shah Alam, since they have already made efforts to reduce the carbon emission to some extent, it is a challenge how to set incentives for low carbonization, including private enterprises and citizens in the area. Legal institutionalization will take much time, so it is necessary to improve public-private collaboration-type low carbonization while taking deregulation etc.
- In Hang Tuah Jaya, it is necessary to prepare measures to induce low carbonization beforehand, as urban development including the surrounding areas will be promoted in the future.
- From the viewpoint of economic support, the possibility of diversified financing through international organizations and social media, etc. based on the concept of SDGs, by appealing low-carbonization with the area through those measures and ecosystem. At the same time, capacity building of municipal officials is also a necessary element. It is necessary for municipalities to lead the way toward lowering the carbon emission, and incorporate companies / citizens accordingly through various dissemination enlightenment, workshops, etc.

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➢ LCMT Project Dissemination Phase 3

The 2nd LCMT Symposium

- The Symposium was held in September, 2018 in Da Nang, Viet Nam.
- The main purpose is to disseminate LCT in the APEC region through the utilization of the LCT-Indicator system, sharing information on advanced LCT projects in the world.
- 31 participants from 7 APEC economies, 2 volunteer towns, 4 review experts, ADB, International Council for Local Environment Initiative (ICLEI), APERC.

Dissemination Phase 2 and 3

(Phase 2)

- Carry out the 2nd in-depth feasibility study for the 2 volunteer towns, Davao City, The Philippines and Da Lat City, Viet Nam.
- Invite the 3rd nomination for the LCT-I volunteer town & select 3 towns
- Hold the 3nd symposium

(When necessary budget is approved in Phase 3)

- Carry out the 3rd in-depth feasibility study for the 3 volunteer towns
- Hold the wrap-up symposium