



“Sharing Experience in Low-Carbon Town

Meeting on APEC LCMT Project Phase II (Study Group) B

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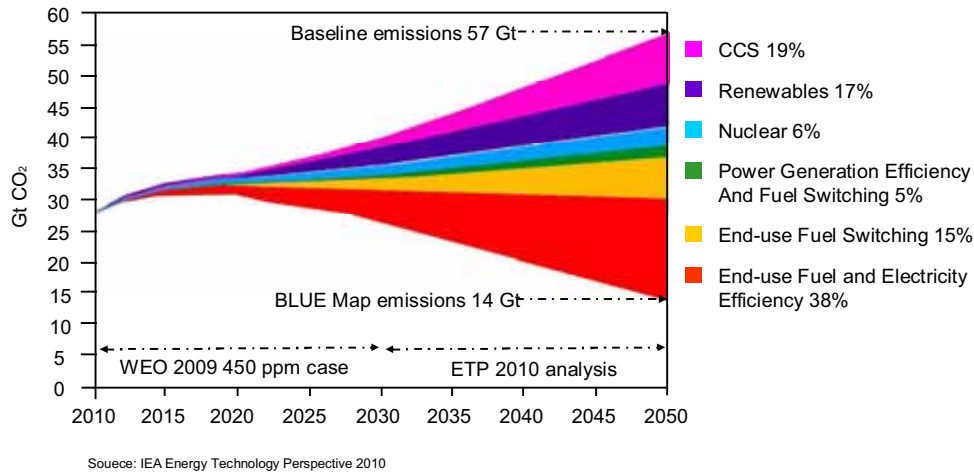


Outline

- • **Introduction**
- **Mission of the Low Carbon Town Development in APEC**
- **Current Situation of Low Carbon Town Development in APEC**
- **Concluding Remarks**

Major Technology Contribution for CO₂ Reduction

Key technologies required for CO₂ reduction of 43 Gt tons by 2050

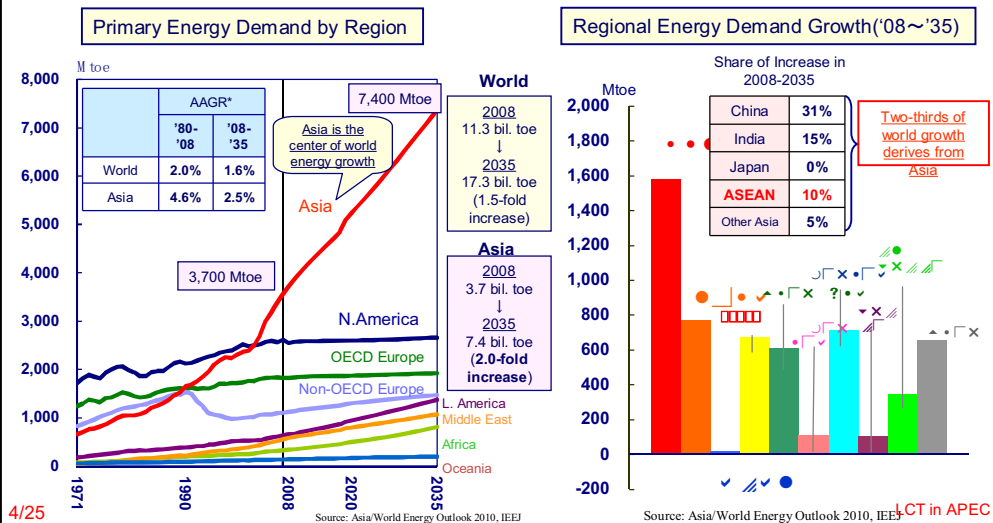


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Primary Energy Demand by Region (World)

- By 2035, primary energy demand of Asia achieves twice as much as current level, reflecting high economic growth; 3.7 billion toe(2008) → 7.4 billion toe(2035).
- Non-OECD will represent 90% of incremental growth of global energy demand toward 2035. ⇒ *Global energy demand will expand reflecting on vigorous growth in emerging Asian countries*



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Comparison of GHG Emission in 2030 under BAU

- OECD economies CO₂ emissions: 12,182 Mt
- APEC economies CO₂ emissions: 23,148 Mt
- APEC emissions expected to be greater than OECD
- *China* is predicted to be the largest *single emitter* of carbon dioxide within the APEC region under the BAU case at 9,225 Mt, accounting for 40% of total APEC emission in 2030

Source: IEA World Energy outlook 2010
APREC Pathway to Energy Sustainability report 2010



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Actions by APEC Economics

- **2007 Sydney APEC Leaders' Declaration on Climate Change, Energy Security and Clean Development**

Agree to work towards achieving an APEC-wide regional aspirational goal of a reduction in **energy intensity** of at least 25 per cent by 2030 (with 2005 as the base year) → **APEC Leader Summit 2011 (Hawaii) → 45% EI Reduction by 2030**

- **APEC Leaders' 2010 Yokohama Declaration:**

We will promote the deployment of **low-emission power sources** – **renewables, nuclear and fossil fuels with carbon capture and storage (CCS)** - to make our energy supply cleaner. We will create **low-carbon communities** in the region

- **ESCI (Energy Smart Community Initiative) in APEC**

ESCI aims to foster green growth, sustainable development and long-term job creation across the Asia-Pacific. The elements for ESCI are **Low Carbon Model Town (LCMT)**, *Smart Transport, Smart Buildings, Smart Grids*, and *Smart Jobs*.

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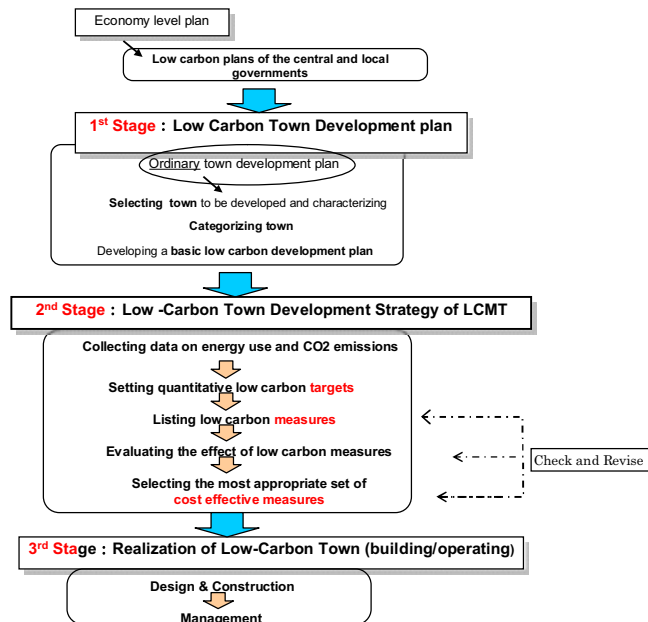
Objective of LCMT Project

- Develop the *concept* of a Low-Carbon Town, conduct *feasibility studies* and encourage the creation of *low-carbon communities* in urban development plans, and share *best practices* for making such communities a reality.
- Evaluate the *best* low-carbon technology & technology integration for the implementation in the LCT.
- Conduct the *policy review* for the LCMT to set up the standard procedure that can be implemented in the APEC region.

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Approach for LCT Development in APEC



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Measures to Achieve a Low Carbon Town

- **Smart Transportation**
Energy-efficient urban transport / freight system, electric / hybrid / vehicle, fuel-efficient vehicle, etc.
- **Smart Building**
Envelop material / appliance, high-efficient A/C and lighting, energy management system, etc.
- **Smart Grid**
Clean/low emission energy supply, clean coal (with CCS), energy storage, smart meter, etc.
- **Smart Jobs and Education**
Training programs within the school curriculum as well as within the workplace
- **Environment**
Heat island, urban planning, resource recycling, pollution control, IAQ, etc.
- **Water System**
Rain water, water reuse, cooling water, etc.

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Aims of Low Carbon Town Development

Supply + Demand ➔ **Economic growth**

- Improve **energy efficiency** to realize the target for the reduction of energy intensity
- Promote **clean / low emission energy supply** and introducing **low-carbon technology** to support the sustainable development
- Achieve *economic growth* in an *environmentally sustainable way*, and create new opportunities for **green industries**
- **Enhance cooperation** with other *multilateral organizations* and with the *private sector*

Summary of Current LCT Development in APEC

Economic	Project	Population	Type of Town
China	Yujiapu CBD, Tianjin	500,000	Urban Type1
China	Sino-Singapore Tianjin Eco City	350,000	Urban Type1
Indonesia	Surabaya (Pilot City of WB Eco2 Cities Project)	2.8 millions	Urban Type2
Japan	Yokohama Smart City Project	3.7 millions	Urban Type2
Korea	Jeju Island Smart Green City	6,000 Household	Village Type
Malaysia	Putrajaya Green City	68,000 (300,000 planned)	Urban Type2
Philippine	Cebu City (Pilot City of WB Eco2 Cities Project)	820,000	Urban Type2
Philippine	Quezon City Green CBD		Urban Type1
Singapore	Plunggol Eco Town		Residence Type
Chinese Taipei	Low Carbon Island (Penghu Island and Others)	88,000	Village Type
Thailand	Samui	50,000	Village Type
Vietnam	Da Nang (Pilot City of WB Eco2 Cities Project)	1 million	Urban Type2

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Example of LCT Development Project in APEC

Tainjin Yujiapu CBD, China

The First Low carbon CBD not only in APEC but also in the World



Major measures

- *Demand side*: low carbon urban structure, low carbon building, low carbon traffic
- *Supply side*: district energy system, untapped energy, renewable energy
- Area energy management system
- Urban micro-climate
- Waste and water management

Target

- CO₂ reduction of 50% by 2030 (based on 2010)
- Greenery ratio of over 50%
- Lowering the cool spot temperature approximately 1.5-2.0° C than BAU
- Collection ratio of waste plastic over 40%, kitchen waste over 40%, paper over 40% (commit to collect over 80% in 2030)
- Reuse ratio of waste water from building is 50%

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Example of LCT Development Project in APEC

Sino-Singapore Tianjin Eco City, China



- Site area : 30km²
- Land use : residential oriented
- Population : 350,000
- Environmental and Low carbon
Targets are set on 22 Categories.

Targets by 2020

- CO₂/GDP: 150t-CO₂/million\$
- Renewable energy : over 20%
- Recycle use of water : over 50%
- Green transport : 90%
- Green architecture : 100%
- Recycle of waste : 100%

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Example of LCT Development Project in APEC

Yokohama Smart City, Japan



Major measures

- Introduction of renewable energy
- *Smart grid* and energy management system (HEMS, BEMS, CEMS)
- Next generation transportation
- Lifestyle change
- Promote 3R for waste

- Site area : 60km²
- Population : 420,000

Target

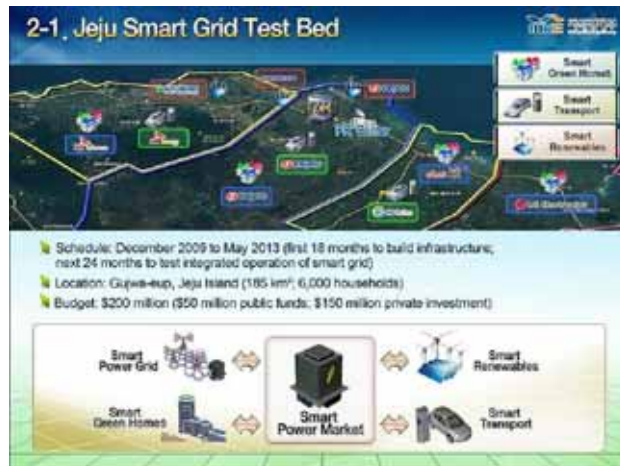
- CO₂ reduction 30% by 2025
- 27 MW of PV, 4000 HEMS, 2000 units of Evs by 2014

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Example of LCT Development Project in APEC

Jeju Island Smart Green City, Korea



Features

- Close collaboration between *public and private sectors*
- Verification of different *power market models*
- Participants: KEPCO, telecommunications companies and home appliance manufacturers, such as LG, SKT, KT and Samsung
- Open to foreign companies

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Example of LCT Development Project in APEC

Plunggol Eco Town, Singapore

First Eco-Town in Singapore, for the tropics



Measures and target

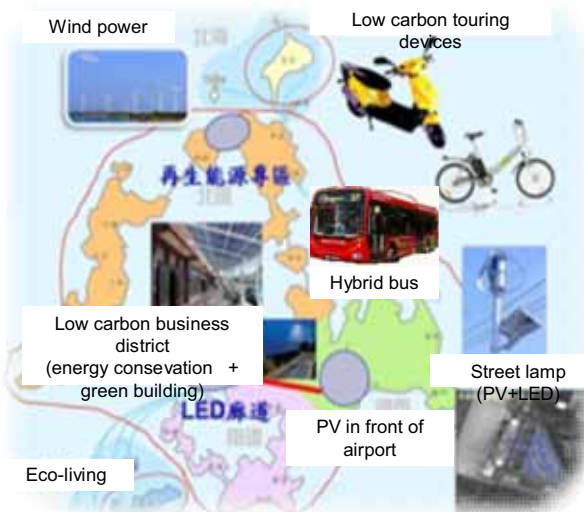
- Energy consumption reduce 20% by 2015 (PV, lighting, smart grid/meter, waste energy recovery)
- Employ of SPV
- Infrastructure for EV and charging point
- Reduce water consumption 10% by 2015
- 3 times increase in recyclable by 2015
- Eco-living

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Example of LCT Development Project in APEC

Low Carbon Island (Penghu Island and Others), Chinese Taipei



Major measures and Target

- Energy conservation + renewable energy + environment + water
- Touring island
- Building remodeling and urban re-planning
- Carbon reduction: 332,000 ton (62% compared with BAU) in 2013
- Average emission down from 5.4 ton/person-year to 2.1 ton/person-year-timeframe
- *Electricity from renewable is more than demand*

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Example of LCT Development Project in APEC

Surabaya in Indonesia

Background information

- Area covered: 330km²
- Population in this area: 2,800,000
- Major function or economic activities in this area: business

Vision or target of this project

Waste reduction 20% (from 2004 ~ 2008)

Focus points in this project

waste management

Measures employed in this project

- Building community based self preserved waste management
- Implementation of **3R** (Reduce, Reuse, Recycle) program



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Example of LCT Development Project in APEC

Putrajaya in Malaysia

the city in the garden and the intelligent city

Background information

- Area covered: 19.72 km²
- Population in this area: 320,000 (500,000 for day time)
- Major function or economic activities in this area: business



Vision or target of this project (2025)

- reduce GHG emission intensity *by 60%*
- reduce peak temperature by 2 degree Celsius
- reduce final disposal of solid waste and GHG emission per waste generation by 50%

Focus points in this project:

Energy, environment, waste treatment, eco-living

Measures employed in this project

- cutting edge sustainable buildings
- low carbon transportation
- integrated city planning and management



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Example of LCT Development Project in APEC

Cebu City in Philippine

Background information

- Area covered: 291.2 km² with 55.9 km² classified as urban
- Population in this area: 820,000
- Major function or economic activities in this area: business, industry, shipping port



Vision or target of this project:

- 10% ethanol (**E10**) and 5% biodiesel blend (**B5**) by 2011
- Reduce the carbon emission to 30% of the BAU level in 2030 for *power sector*
- Reduce the carbon emission to 38% of the BAU level in 2030 for *transportation sector*

Focus sectors in this project:

Transportation and power sectors

Measures employed in this project

- Public mass transport systems (BRT, Metro) and traffic demand management, advanced vehicle technology, and fuel switching
- Energy conservation and introduction of more more renewable energy

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Example LCT Development Project in APEC

Samui Island in Thailand

Background information

- Area covered: 228.7 km²
- Population in this area: >50,000 (but may increase to million during peak season)
- Major function or economic activities in this area: farming, fishing, and resort (tourism)



Vision or target of this project

Foster the sustainable development of Samui Island to attract *more visitors & Service Industry*

Focus points in this project

Energy, water & environment

Measures employed in this project

- Energy – high-efficient appliance, increase capacity from mainland and add one more sub-marine cable to the already existing one; employment of renewable energies
- Water - more efficient and rational operation of existing wells; desalination
- Waste and wastewater management

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Example of LCT Development Project in APEC

Da Nang in Viet Nam – Golden Hill

Eco-living environment

Background information

- Area covered: 3.75 km² (at the northern edge of the City of Danang)
- Population in this area: 30,000
- Major function or economic activities in this area: business, residential and resort (tourism)

Vision or target of this project

eco-urban living environment to reduce energy needs and carbon emissions

Focus sectors in this project

expands and reinforces the local green character of Danang to create eco-living environment

Measures employed in this project

- Storm water management
- *Eco-Urban* : promote a diverse living community with integrated local services accessed via sheltered and shaded walkable streets



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Conclusion Remarks

- Low carbon town should consider the implementation of both **energy conservation** and **renewable energy** through *low carbon building, green transportation, smart grid, and low carbon living environment* (includes *smart job & education*).
- High *urbanization* in the APEC region needs a more aggressive approach and efforts for the development of low carbon town.
- Low carbon town development is a *non-regret* policy for the sustainable development in APEC region.



Thank you

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