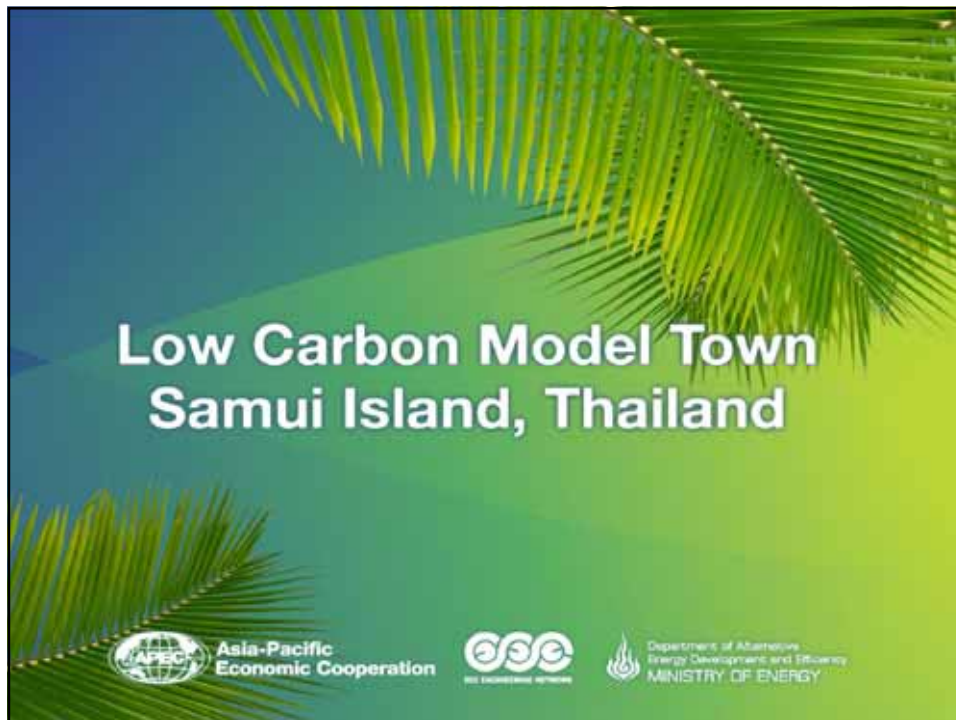




APEC Low Carbon Model Town Project Phase 2

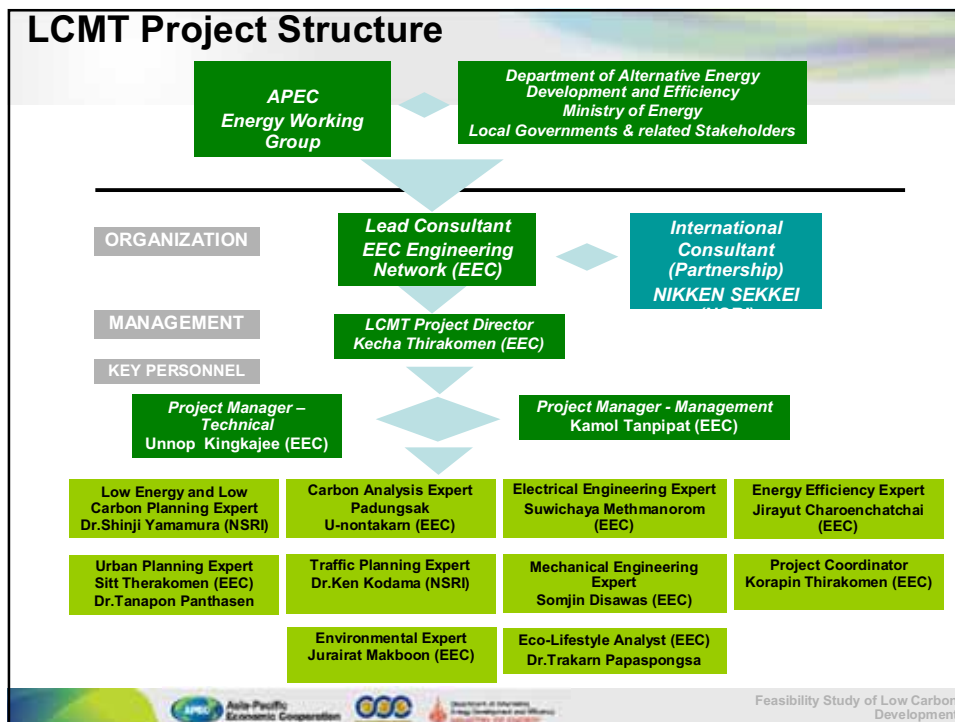
Study Group B – Meeting 25 September 2012

Background Information

Index and target : Moving SAMUI to Low Carbon



September 25, 2012



Presentation Topics

1. Introduction of SAMUI Island
2. SAMUI at Present
3. Project timelines and major activities
4. Index and Target – Moving SAMUI to Low Carbon

Introduction of SAMUI Island



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Thailand is a member
of the G20 (Group of 20)
Leaders of Economies

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SAMUI Information



SAMUI Information

- Area 227 km²
- Population >50,000
- Immigrant 100,000
- Tourist 1,000,000/year

- 54% mountain and hilly area in the central part and uninhabitable
- 33% plane area
- 8% beaches
- 5% low land

Climate

- Tropical weather
- Averaged temperature 29 °C with
- Highest averaged temperature 37 °C in April and May
- Lowest averaged temperature 21 °C in December and January



Commercial Buildings

- Hotels and Resorts ~15,000 rooms, Stores, residence

Economics Values

- Rely on tourism industry
- The averaged visitors and tourists' expenditure is 100 USD/person/day



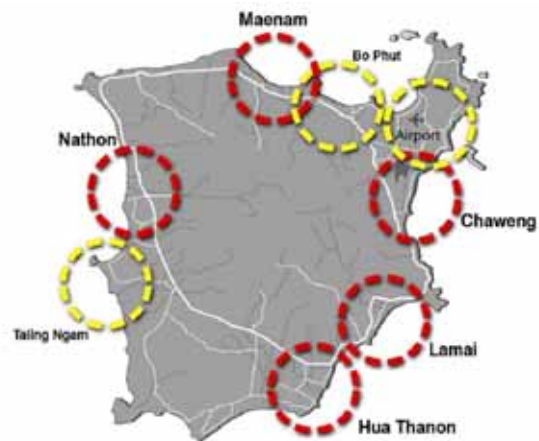
SAMUI Information

Communities in SAMUI Island

Existing Communi

5 major communities

3 potential towns



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SAMUI @ “Present”



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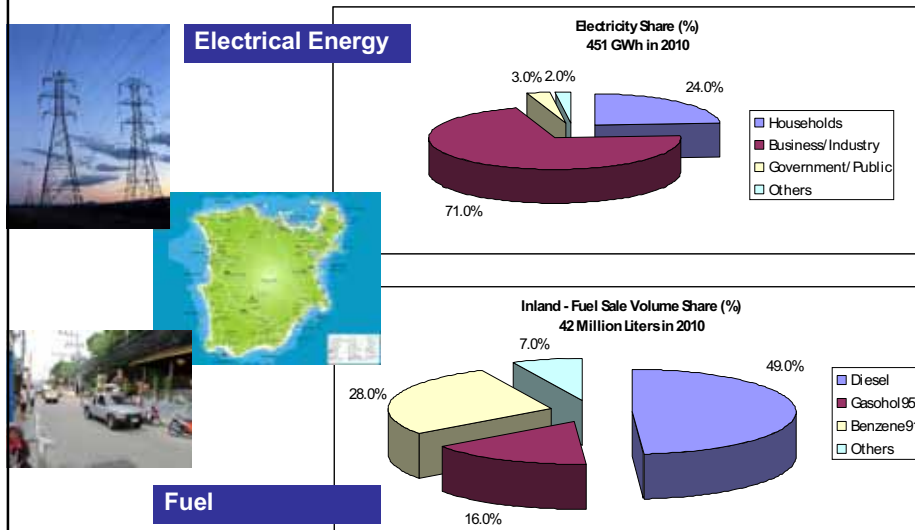
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Existing Traveling and Staying Model



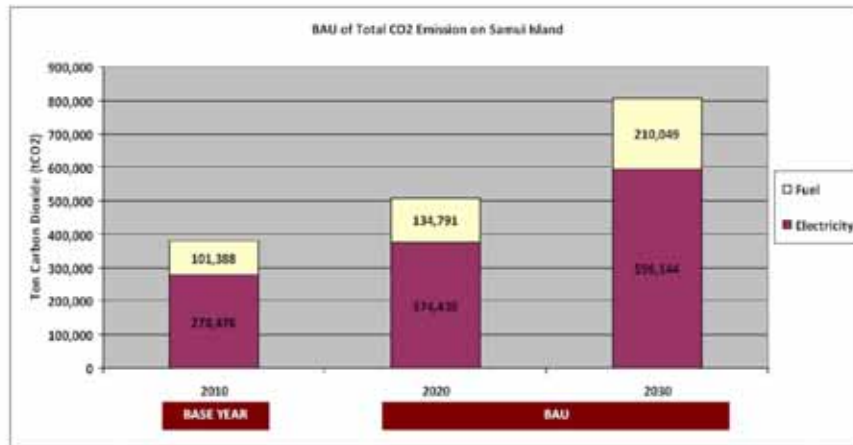
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 60th Anniversary
 Partnership at the Heart of Asia
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Energy Consumption Data of SAMUI



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Estimation of Carbon Emission for SAMUI



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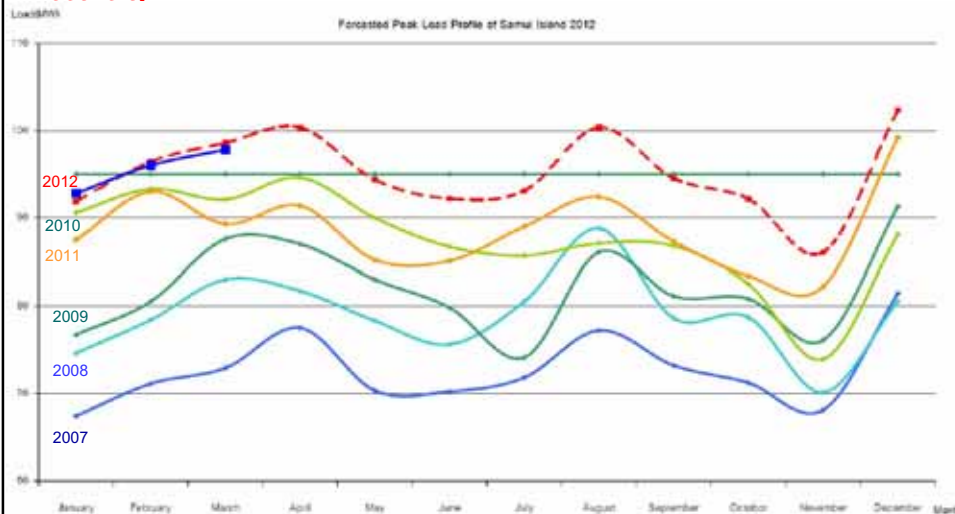
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A.4.1 Data Collection

Energy Data Collection for SAMUI :

Electricity



Maximum Load Carrying Capacity 33 kV and 115 kV = 95 MW (115 kV = 75 MW, 33 kV = 20 MW)



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A.4.1 Data Collection

Energy Data Collection for SAMUI : **Fuel – inland (Exclude Ferry and Airplane)**

Sales volume of fuel on Samui Island, Surat Thani							
Trademark	Sales (litre/day)						Total
	Gasohol 91	Gasohol 95	Gasohol E20	Diesel	Benzene 91	Benzene 95	
PTT	5,000	12,633	1,233	37,700	20,600	-	77,167
Caltex	1,000	2,472	-	8,279	4,432	-	16,183
Bangchak	-	253	-	2,145	2,221	-	4,619
Shell	-	2,300	-	5,000	2,300	-	9,600
Esso	50	150	-	100	300	-	600
Susco	-	580	-	2,800	2,450	50	5,880
Total	6,050	18,388	1,233	56,024	32,303	50	114,049

A.4.1 Data Collection

Energy Data Collection for SAMUI : *Inland Vehicle*

Category	2010		2011		2012 Until May 30,2012	
	Register in Samui (Number)	Register in other provinces (but use in Samui) - (Number)	Register in Samui (Number)	Register in other provinces (but use in Samui) - (Number)	Register in Samui - (Number)	Register in other provinces (but use in Samui) - (Number)
Private Car	8,743	5,261	9,600	5,648	10,050	2,118
Rental Car	N/A					
Private Motorcycle	19,382	5,297	20,551	5,595	21,130	1,923
Rental Motorcycle	N/A					
Public Transportations						
Minibus (two Rows)	167		167		167	
Public Bus	50		50		50	
Minivan	80		100		120	
Taxi	379		397		400	
Motorcycle Taxi	50		50		50	



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A.4.1 Data Collection

Energy Data Collection for SAMUI : *Inland Vehicle*



Existing Road System

- Highway Road No. 4169, Ring Road, total distance 50.1 kilometers, the most traffic
- Highway Road No. 4170 Connecting road from Barn Saket-Hua Thani, total distance 16.3 km
- Highway Road No. 4171 Bo Phut Junction-Chaeng Besch Road, total distance 4.3 km, the second most traffic
- Highway Road No. 4173 Connecting Road between Ring Road and Highway No. 4170, total distance 3.3 km
- Highway Road No. 4174 Lipa Noi Junction - Ferry port Road, total distance 3.4 km, the third most traffic
- Rural Road, Wat Samuttham-Hospital Entrance Junction Road, total distance 1.5 km
- Rural Road, Tong Tanode - Barn Pung Ku, total distance 1.317 km
- Rural Road, Pru Kuri - Barn Mae Nam, total distance 1.20 km



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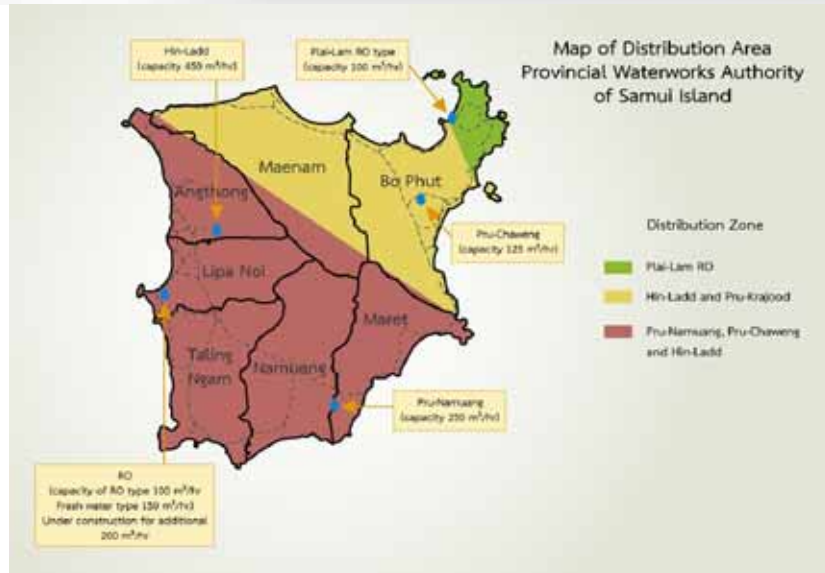


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A.4.1 Data Collection

Water Supply System



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A.4.1 Data Collection

Water Supply System



FIGURE 13-1 Chaweng Reservoir



FIGURE 13-2 Na Muang Reservoir



FIGURE 13-3 Krajud Reservoir

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A.4.1 Data Collection

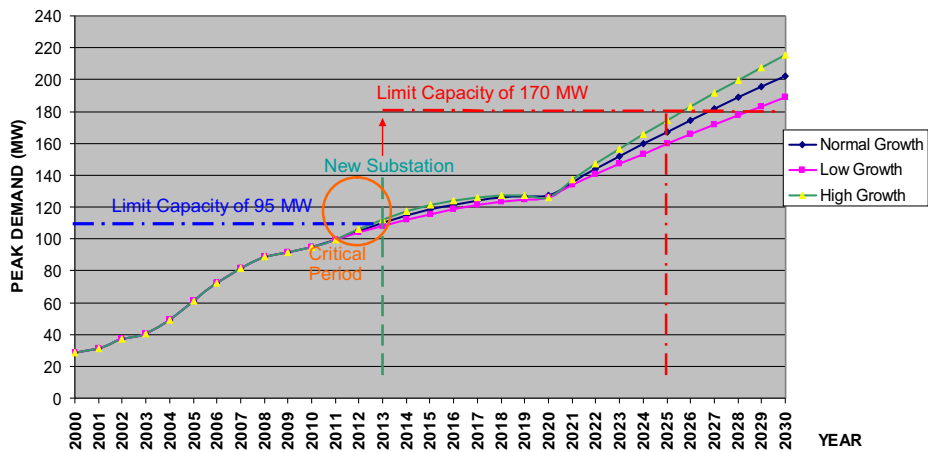
Waste Water Treatment Plant



SAMUI - Projection

Electricity Demand Projection

PEAK DEMAND FORECAST FOR SAMUI ISLAND (2000-2030)



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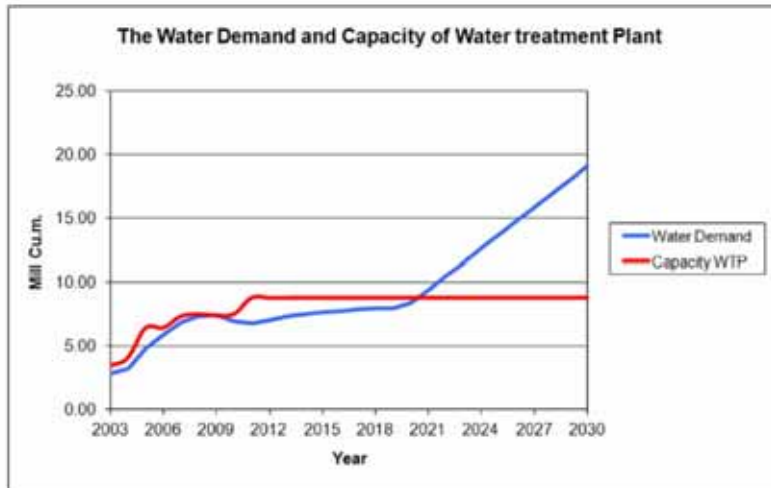


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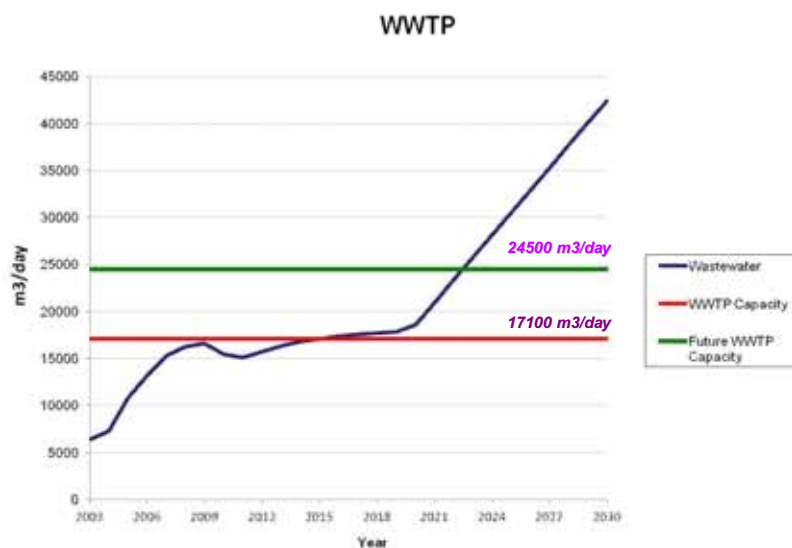


Water Supply System

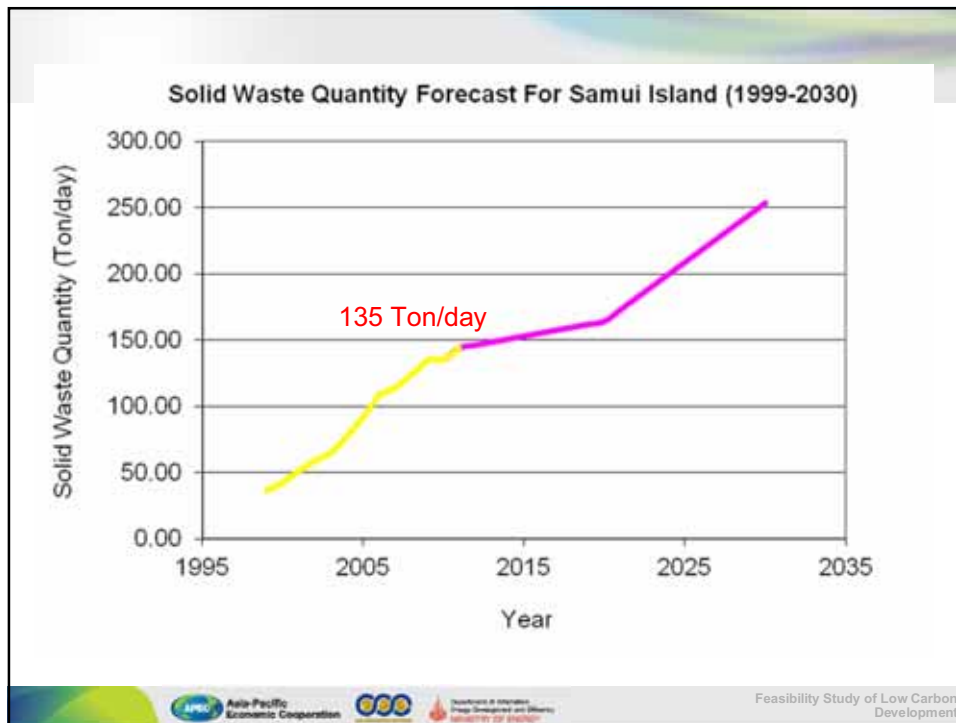


810,000 m³/month

Waste Water Treatment System

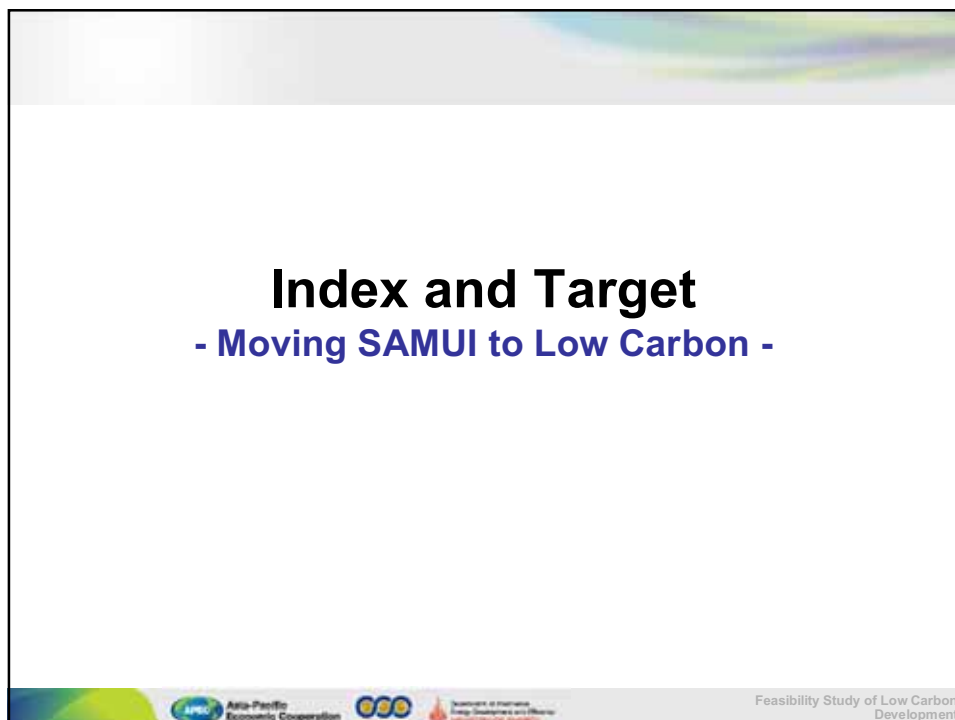
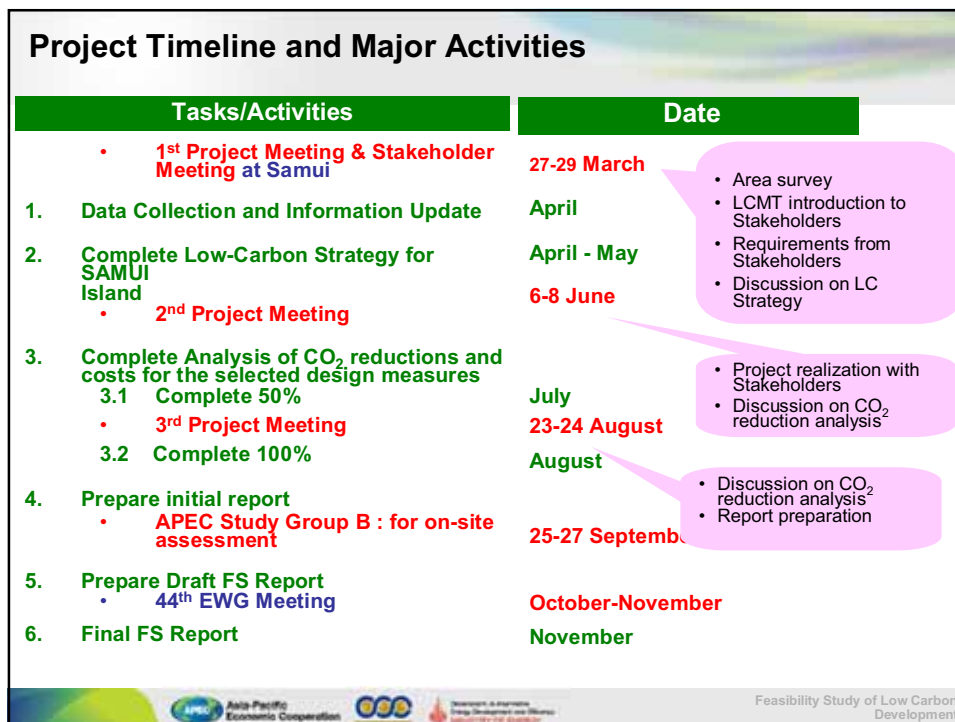


510,000 m³/month



Project timelines and major activities

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LCMT Project Development Steps

1. Data Collection and information update
2. Prepare a Low-Carbon Strategy for *SAMUI* Island low carbon town development project
 - 2.1) Develop a **high-level vision**
 - 2.2) Define the CO₂ reduction and environmental **targets** of the low-carbon town
 - 2.3) Prepare a Low-Carbon **Guideline** for categories of low carbon town design challenges
 - 2.4) Select **CO₂ reduction measures** in each design category
3. Analyze CO₂ reductions and costs for the selected design measures
4. Prepare a report

Low Carbon Methodology

High Level Vision – “People Oriented” The First Low Carbon Island in Asia-Pacific

Social & Human Value



- Local culture and life-style well mixed with modern life-style
- Improve quality of life with eco-lifestyle
- Tourists satisfaction with low carbon lifestyle

Environment and Resources Value

- Natural resources well preserved and undamaged
- Green environment enhancement (green products)
- Low carbon emission for;
 - ☐ Hotels, resorts, schools, houses etc.
 - ☐ Transports etc.



Economic Value

- High value of land and economy
- Investment attraction

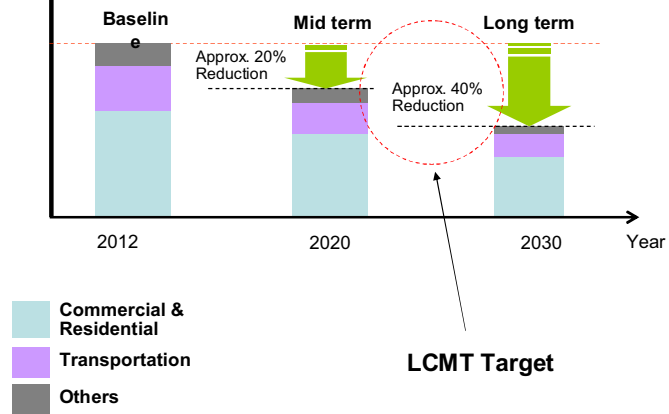


Low Carbon Methodology

Target Setting

Emission Intensity
(t CO_{2e}/GDP)

SAMUI carbon Index



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Development is a continuous
process. It requires a long-term
strategy and vision.

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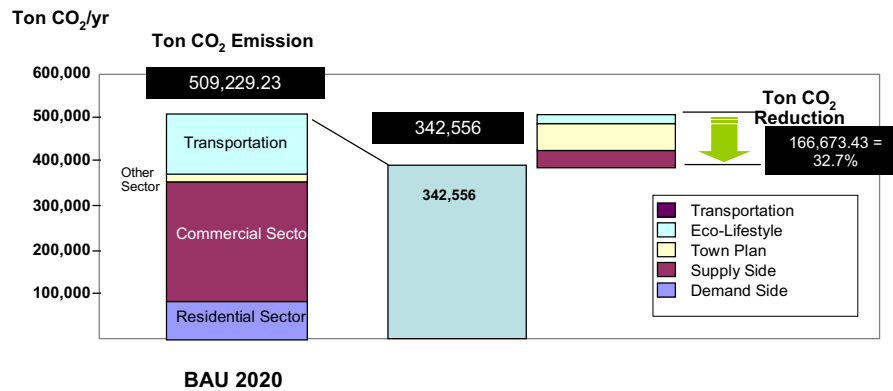
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Development is a continuous
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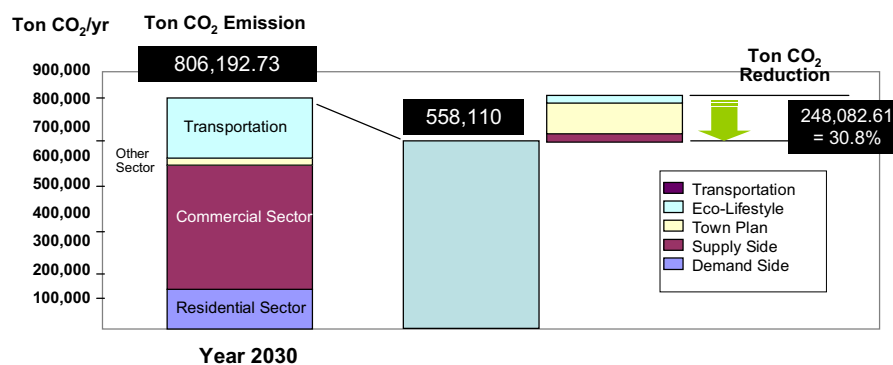
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Carbon Emission Reduction on Samui Island (Y2020) – Main Index



As of Progress Report No.2 – September 2012, under discussion with DEDE

Carbon Emission Reduction on Samui Island (Y2030) – Main Index



As of Progress Report No.2 – September 2012, under discussion with DEDE

Carbon Emission Reduction on Samui Island (tCO₂/million USD) – Main Index

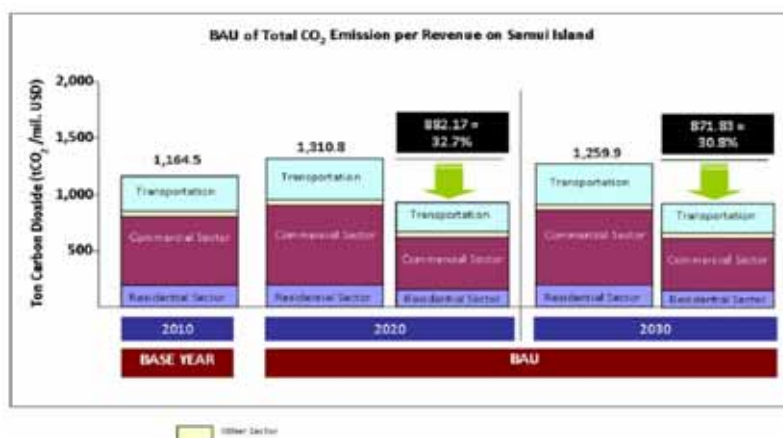


FIGURE 3-16b : Main Target for SAMUI LCMT - Carbon Emission per revenue

As of Progress Report No.2 – September 2012, under discussion with DEDE

Carbon Emission Reduction on Samui Island (Indirect Index) - Draft

C1 : Town Structure Planning for Low-Carbon Development

No.	Sub-indexes	Unit	2020	2030
1	Forestation	Rais (Acres)	1,000 (395.4)	1,500 (593.1)
2	Public Green Space	% Increase	10%	20%

C2 : Area Energy Planning

No.	Sub-indexes	Unit	2020	2030
1				

C3 : Low Carbon Building

No.	Sub-indexes	Unit	2020	2030
1	Green Building s Certified (Hotels)	% Increase	30%	60%
2	Areas of green space (resorts)	% of total area	?	?
3	Water reuse	% Increase	?	?



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Carbon Emission Reduction on Samui Island (Indirect Index) - Draft

C4 : Renewable Energy

No.	Sub-indexes	Unit	2020	2030
1	Power production from renewable energy	% Increase (compared to total power)	7.2%	15%

C5 : Untapped Energy Use Planning

No.	Sub-indexes	Unit	2020	2030
1	Power production from untapped energy	% Increase (compared to total power)	3%	10%

C6 : Area Energy Management

No.	Sub-indexes	Unit	2020	2030
1	Smart Grid	% Increase	5%	15%

C7 : Transportation Planning

No.	Sub-indexes	Unit	2020	2030
1	Public transportation	% Increase of use	?	?
2	No. of Bicycles Rental	% increase	15%	30%
3	No. of EV cars, buses	% increase	5%	15%



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Ministry of Energy

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Carbon Emission Reduction on Samui Island (Indirect Index) - Draft

C8 : Eco-Life Style

No.	Sub-indexes	Unit	2020	2030
1	Water consumption	% Reduction	10%	12%
2	Material consumption (Other materials excl. fuels and water)	% Reduction	15%	17%
3	Social and cultural value	Number of eco-services and eco-activities which provide a program/tour for visitors to gain social and cultural value from local communities in SAMUI Island	50 Eco-services & 50 Eco-activities	100 Eco-services & 100 Eco-activities in 2050
4	Community participation	Number of SAMUI Citizens involving in eco-services, eco-hotels and eco-activities	20,000 SAMUI population	30,000 SAMUI population



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Low Carbon Map for SAMUI Island – (as of Sep'12)



