



Renewable Energy and Energy Efficiency Development Plan and Accelerated Program

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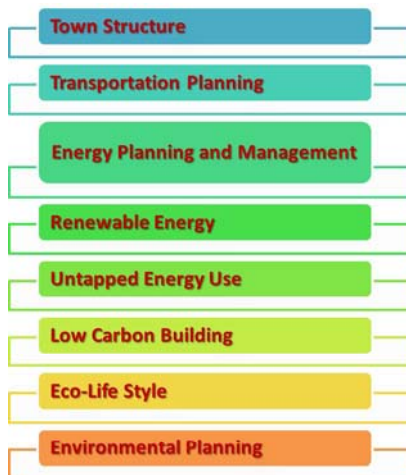
Ministry of Energy, Thailand

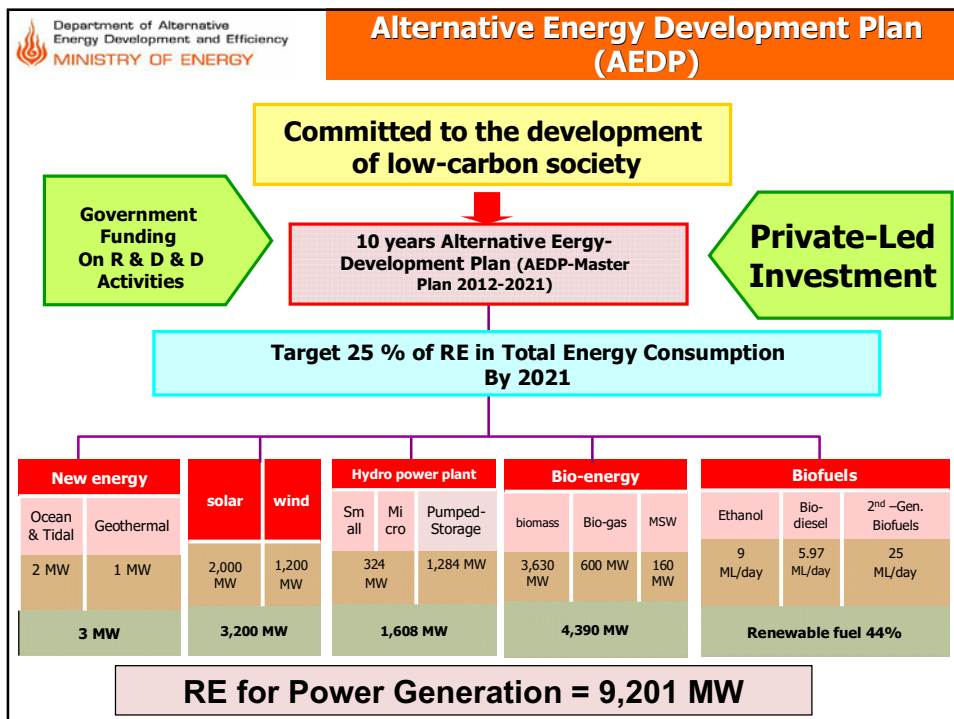
APEC Low Carbon Model Town Phase 2 (Study Group B)

Samui, Suratthani, Thailand

24th September 2012

"Samui LCMT : Strategic Theme Green Energy supports green tourism "





Department of Alternative Energy Development and Efficiency
MINISTRY OF ENERGY

Current Situations and targets (1/2)



Type	unit	Current capacity	New Target 9,201 MW	Old Target 5,607.5 MW
Electricity				
1.Wind	MW	7.28	1,200	800
2.Solar	MW	217.33	2,000	500
3.Hydro	MW	95.70	1,608	324
4.Biomass	MW	1,790.00	3,630	3,700
5.Biogas	MW	169.54	600	120
6.MSW	MW	36.33	160	160
7.Tidal & Geothermal	MW	0.35	3	3.5



Policy & Concept



Low Energy Architecture



Heat Pump & Energy Efficiency



Grid & Mobility Society



Wind Energy



Small Hydro & Non-Conversional Energy



Photovoltaic



Hydrogen & Fuel Cell



Biomass Utilization & Conversion



Geothermal Energy

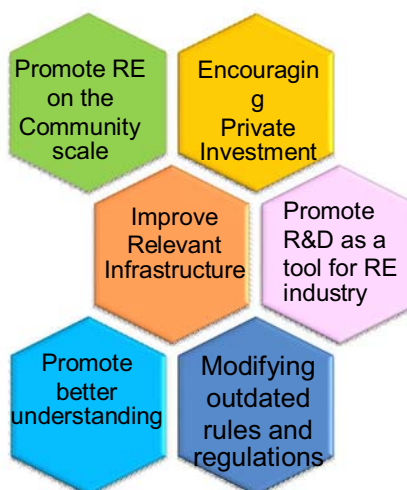
Current Situations and targets (2/2)

Type	Unit	Current capacity	New Targets	Old Targets
Heating				
8. Solar	Ktoe	3.25	100	35
9. Biomass	Ktoe	4,493.00	8,200	6,760
10. Biogas	Ktoe	421.34	1,000	600
11. MSW	Ktoe	79.00	35	35
Biofuel				
12. Ethanol	ML/Day	1.24	9.0	9.0
13. Biodiesel	ML/Day	2.78	5.97	4.5
14. 2 nd Gen. Biofuels for Diesel market	ML/Day	-	25.0	-



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Strategies for AEDP



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STRATEGIES: MOVING FORWARD

Solar

- Promote solar PV rooftop
- Develop “Smart-grid” system

Wind

- Small-wind for community
- Promote wind for water- pumping in Agri-sector

Hydro

- Promotion Pico & Micro hydro turbine
- New pumped storage facilities by EGAT



STRATEGIES: MOVING FORWARD

MSW

- Focusing on household and community waste
- Promoting RDF & Pyrolysis oil

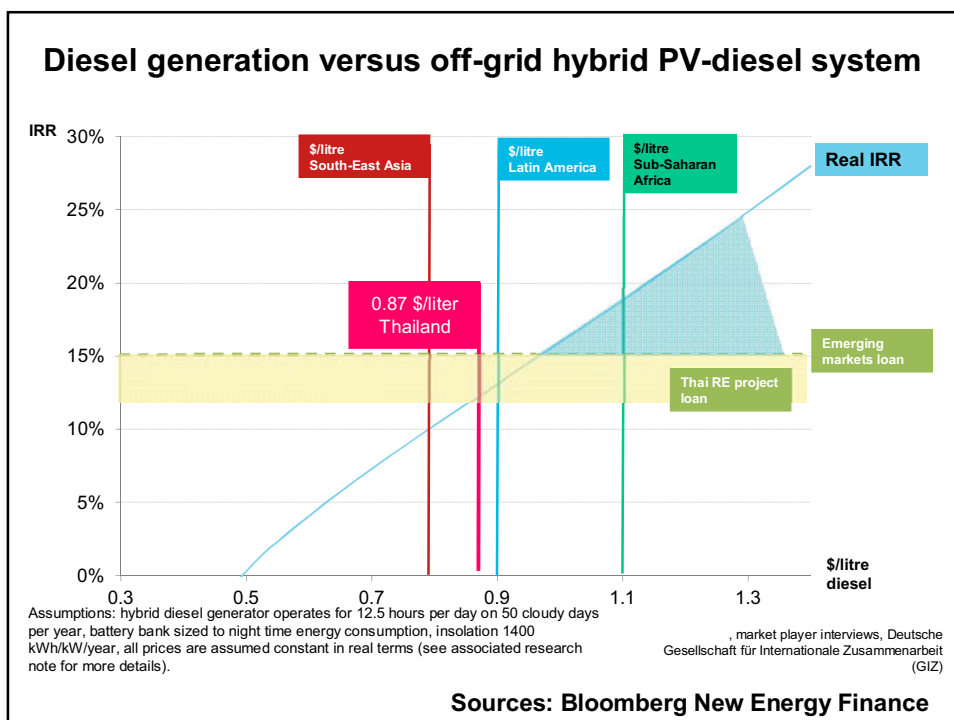
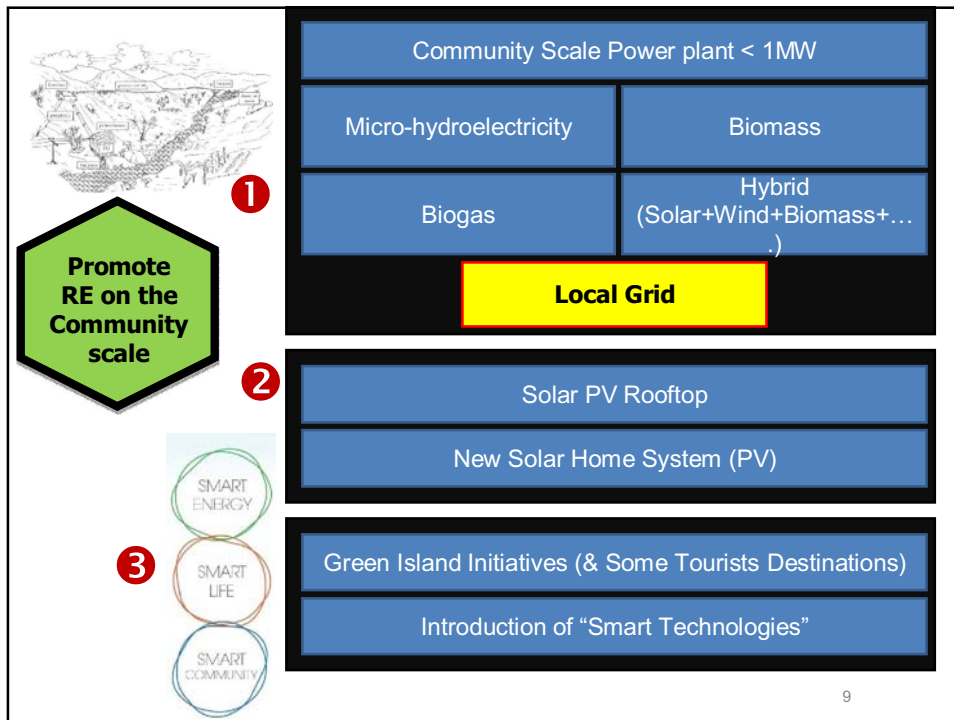
Biomass

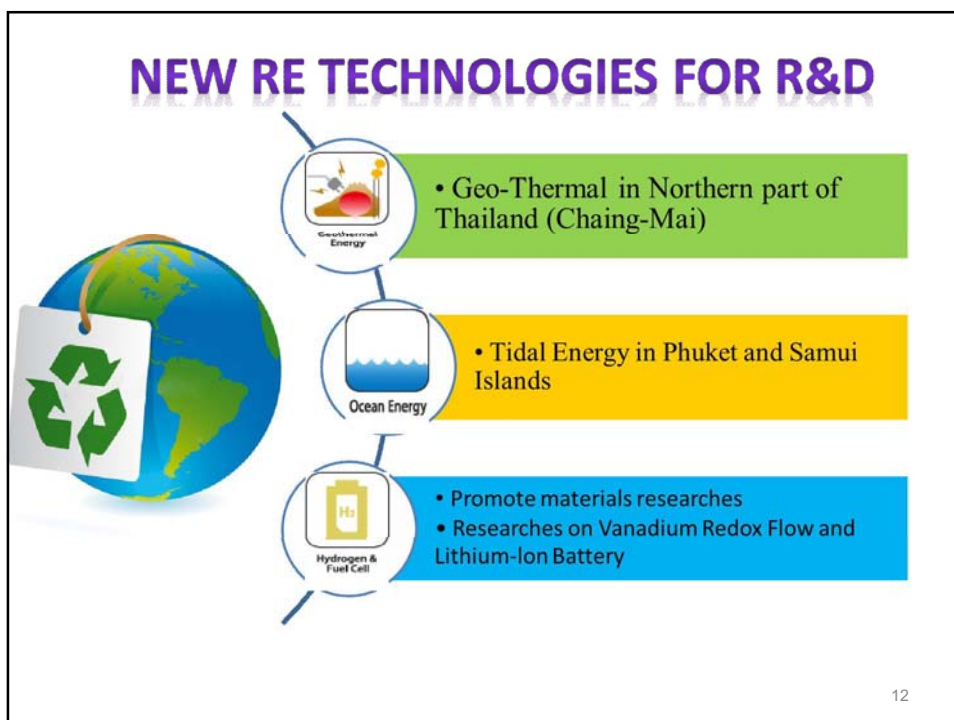
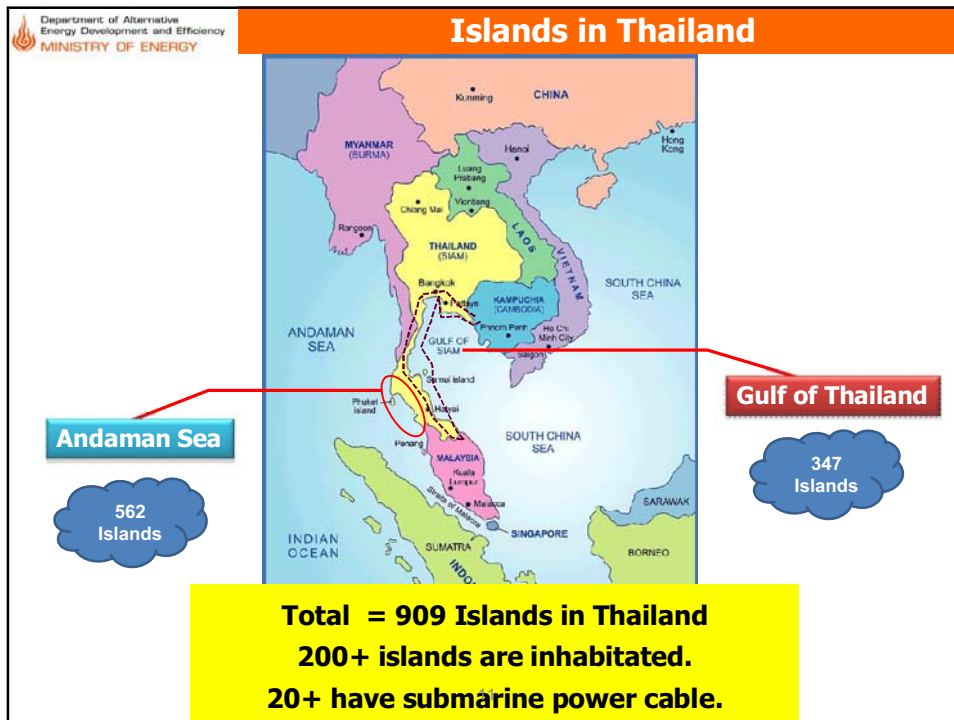
- Dedicated Energy Crops
- Agricultural wastes → Focusing on “Bagasse” from Sugar Mills

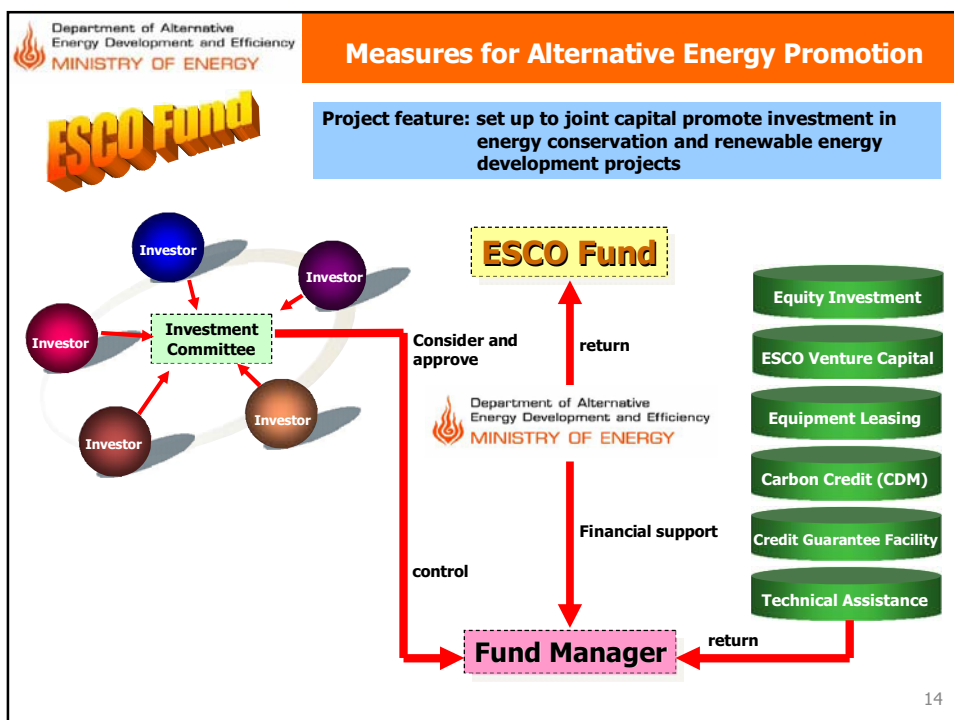
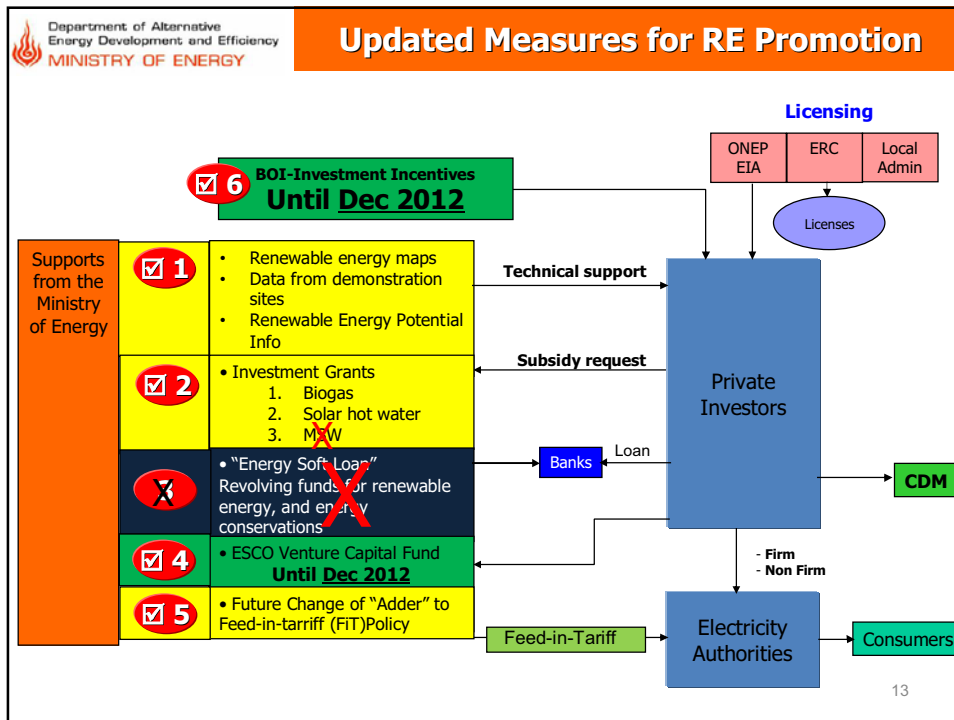
Biogas

- Waste-water and animal farms
- Biogas network
- CBG-Compressed Biogas-for transportation









"Adder" : Feed-in Premiums

Thailand's RE Private Power Producers

- less than 5 years contract
 - can be
 - Combustible fuels form
 - Residue Energy
 - conventional energy
 ex. Wind turbine, Solar, Mini hydro
 - Price structure = Wholesale Tariff @11-33 kV
+ Ft + Adder
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Key Takeaways

- Many achievements on Rural Electrification in Thailand should be noted.
 - 99+% electrification rate
 - PEA and DEDE are key driving forces
- By integrating Renewable Energy → enabling new policy platforms
 - Hybrid RE system → Community-scaled focus
 - Smart + Local Grids Technology
- **"Sustainable & Green Energy Access for All"**

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Energy Efficiency Policy and Measures

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Energy Conservation

Target 20 Year Energy Efficiency and Development Plan;
Reduce energy intensity (EI) 25% by 2030

Legal Measures

- Energy Management Standard in designated factories/buildings
- Building Energy Code
- Machinery, energy saving equipment standards /labeling

Promotional and Supporting Measures

- Investment promotion
- Tax exemption
- Other financial supports

Social Measures

- Technology demonstration and dissemination
- Developing and training manpower
- The creation of public relations and public awareness



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Legal Measures

Energy Management Standard in designated factories/buildings

- Designated factories/buildings : 5,564
- Appointment of Personnel Responsible for Energy(PRE) : 3,904
- Submission of energy management reports 4,271

Building Energy Code

- MOU signed with 7 local administrations e.g. Bangkok Metropolitan Administration, Chiang Mai Municipality Pattany Municipality etc.
- 2E Building Center/training related stakeholders
- Inspecting 108 Building Plans

Energy saving equipment/ machinery standards/labeling

- Announcement of Ministerial Regulations for 8 types of HEPs i.e. air conditioner, glass, refrigerator
- Completion of 27 drafts of Ministerial Regulations/ 22 products for MEPs
- 4 product labels were issued in 2007-2010 (household cooking stove using LPG, glass, micro fiber insulation and VSD)



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Energy Conservation

Financial Mechanism

Revolving fund

Implemented since 2003
Cooperation with 13 Financial Institutions

Scope of Work
Credit at low interest rate through financial institutions to RE+EE operations and consulting service on technical issues.

Performance
Allocated Loan : 7,843 mil.Baht
Funded projects : 295 Total Investment 8,727 mil.Baht
Saving 7,730 mil.Baht or 320 ktoe/year












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Energy Conservation

Financial Mechanism (contd.)

Tax Incentives: Income Tax Exemption from the Excise Department

Scope of Work
Privilege on income tax exemption from expenditures on purchasing materials/equipment/machineries for individuals and corporate, resulting in energy saving at 25% of the total expenditures. It was implemented from 19 May 2009-31 December 2010
***The Cabinet extended its scheme for another 2 years (1 January 2011 – 31 December 2012)**

Performance
19 types of energy saving equipment were certified with 230 brands (3,892 models)
Cost of purchased equipment : 121 million/year, tax deduction claims 30.25 million Baht
Money saving : 19.96 million Baht/year, or accounted for 0.57 ktoe/year




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Financial Mechanism (contd.)

Direct Subsidy 20%

► Scope of Work

Subsidy **20%** of capital investment for high efficient equipment/machineries i.e. High Frequency Electronic ballast, Variable Speed Drives for Water Pumping, High Efficient Motor). The subsidy per application was **50,000** Baht at the minimum and **3** million Baht at the maximum with **7** years payback period.



► Performance

Allocated fund : 130 million Baht

Subsidize measures : 313 (230 cases), private investment : 877 million Baht

- Money saving 350 million Baht/or accounted for 13.43 ktoe/year



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Human Resource Development and Public Relations

Technology Dissemination : Energy Display Center

- Demonstration/workshop on energy management of 54 technologies at the center (37 for industries, 10 for commercial buildings and 7 for residential)



Human resource development and training

PRE training

Energy Building Code training

RE personnel training

Training on energy conservation technology focusing on equipment system regularly operated in buildings/factories



Public relations and public awareness

- Thailand Energy Awards (usually presided by PM at the Government House, ASEAN Energy Awards in Brunei 20 September 2011)
- Establishment of technical and vocational team for energy saving
- Advisory service/brochures/information service



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Problems, Barriers/Issues to be pursued

Budget allocation

- Pushing/supporting budget allocation sufficient to work in line with targeted.

Building Energy Code

- Law Enforcement under Energy Conservation Promotion Act

Energy Efficiency in Government Building

- ESCO System Application with MEA and PEA, investment deduction from electricity bill

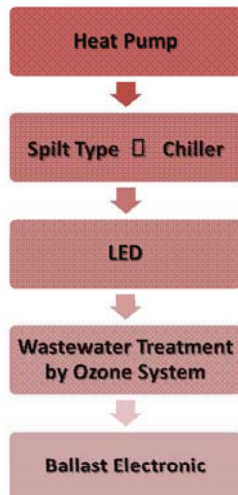


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Site Visit at Green Hotel



**Intercontinental Samui Baan Taling Ngam Resort & Spa
(Green Hotel)**



**"Samui LCMT : Strategic Theme
Green Energy supports green tourism "**

