



# Taiwan

PRAGMA + WORLD BAYS

## Penghu Bay

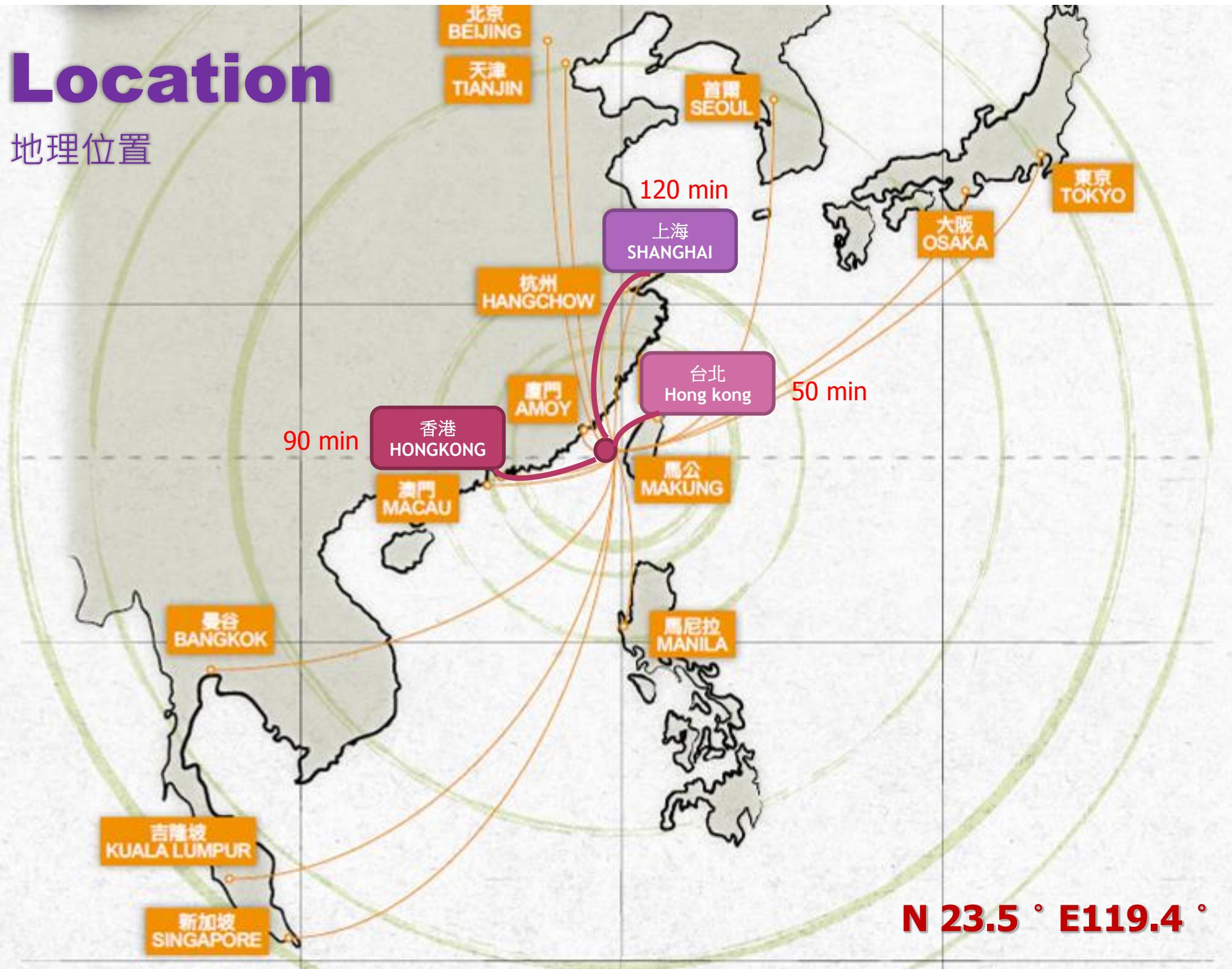
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May 11<sup>th</sup> 2018



# Location

地理位置





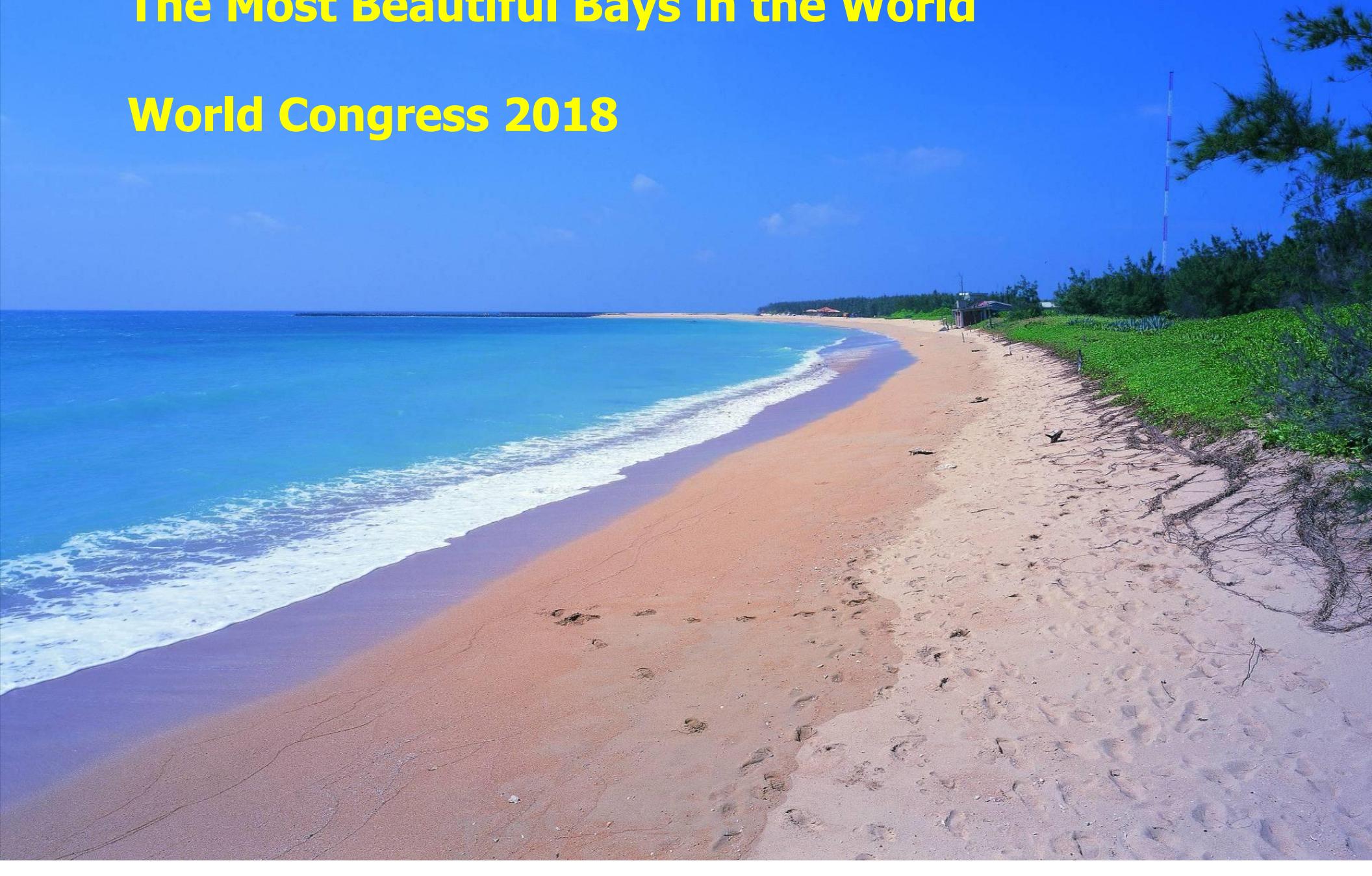


# Top 10 World Secret Island

## Lonely Planet 2010

**Member of World Bays 2014  
The Most Beautiful Bays in the World**

**World Congress 2018**



# **Geopark – Tongpanyu Basalt columns**

地質公園-桶盤柱狀玄武岩

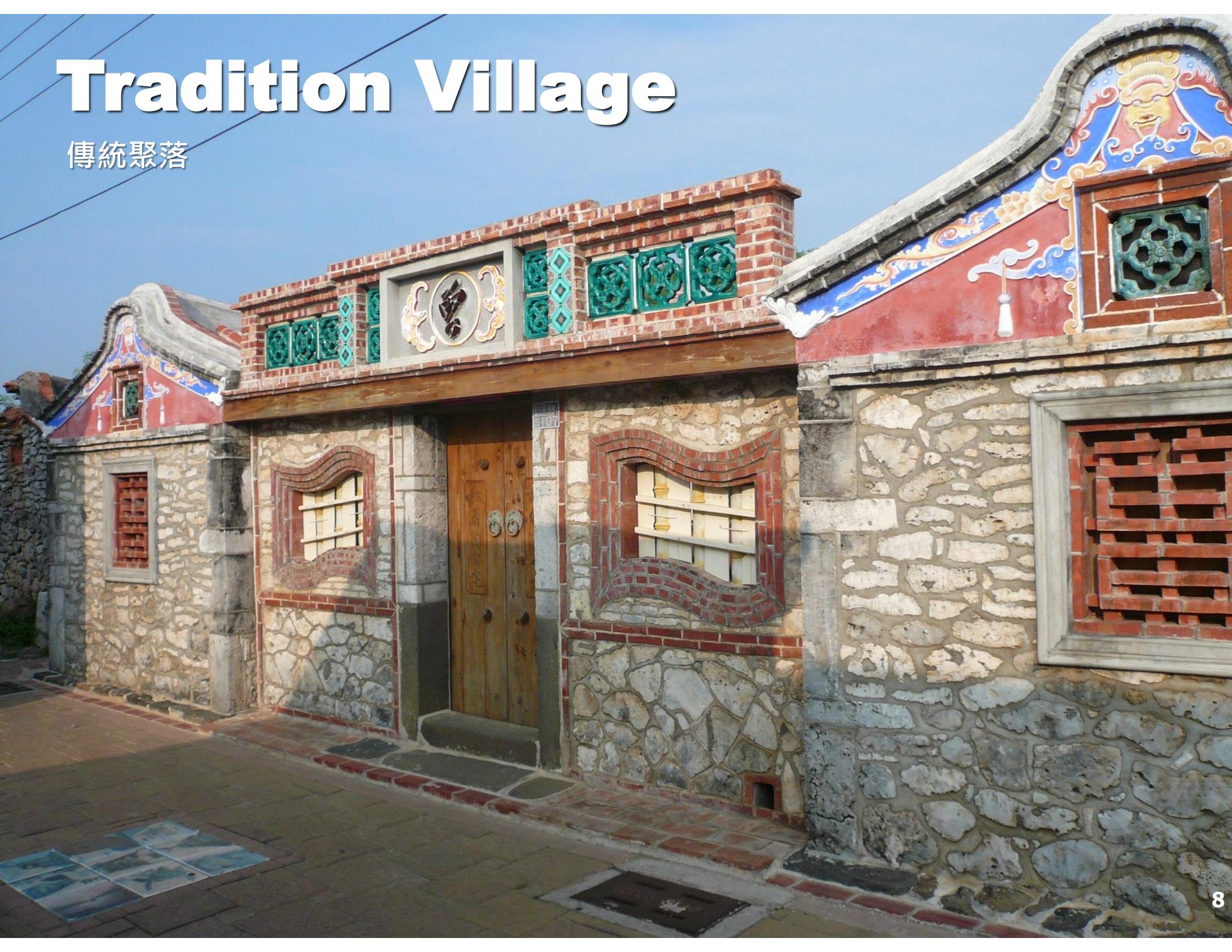


**Tongpanyu**



# Tradition Village

傳統聚落



# Penghu Bay

Length : 75 km  
Area : 60 km<sup>2</sup>



**Islands** 90  
**Land Area** 127 km<sup>2</sup>  
**Sea Jurisdiction** 7,936 km<sup>2</sup>  
**Population** 103,000 (2017)



**Tourists**    **540,000(2005)**  
**1,080,000(2016)**  
**1,150,000(2017)**



# Infrastructure

基礎建設



# Penghu airport



# Flight

130

regular flights /two ways/per day





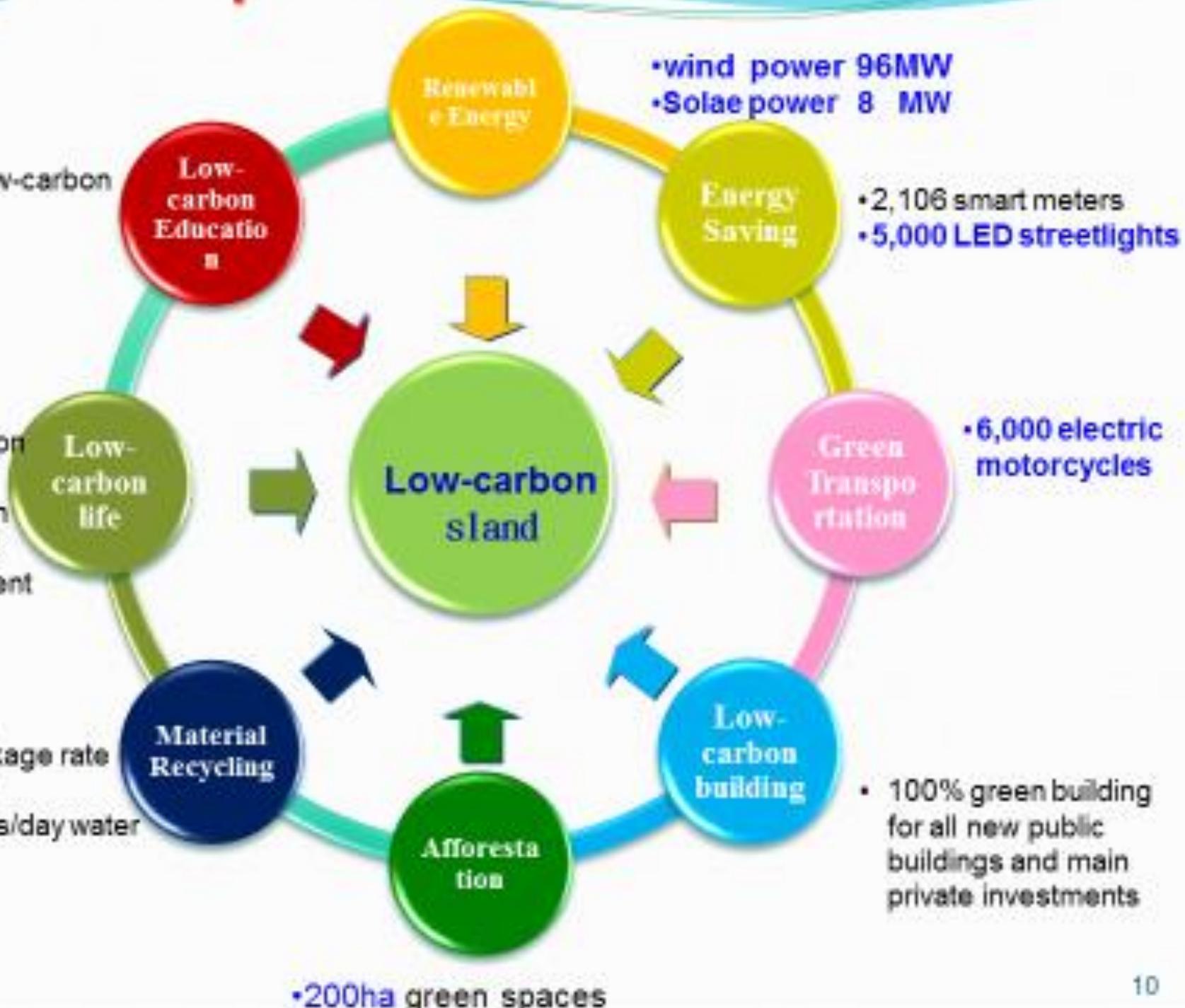
# **Electricity 120MW fire power plant 10.2 MW wind power energy**

電力設施



# Comprehensive Framework

- Promote low-carbon education
- Promote low-carbon community
- Public participation
- Carbon labels and energy management
- Reduce water leakage rate from 32% to 25%
- Reduce 2,070 tons/day water supply



# Low Carbon Island

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Wind Power

2017

10.2MW

2018

28.2MW



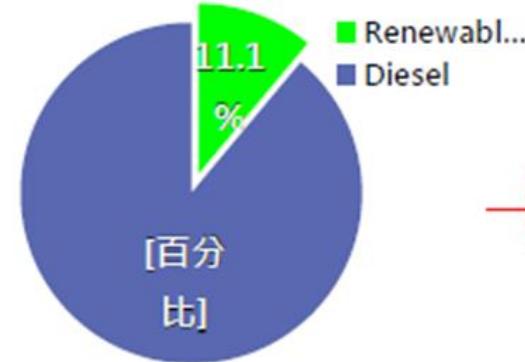
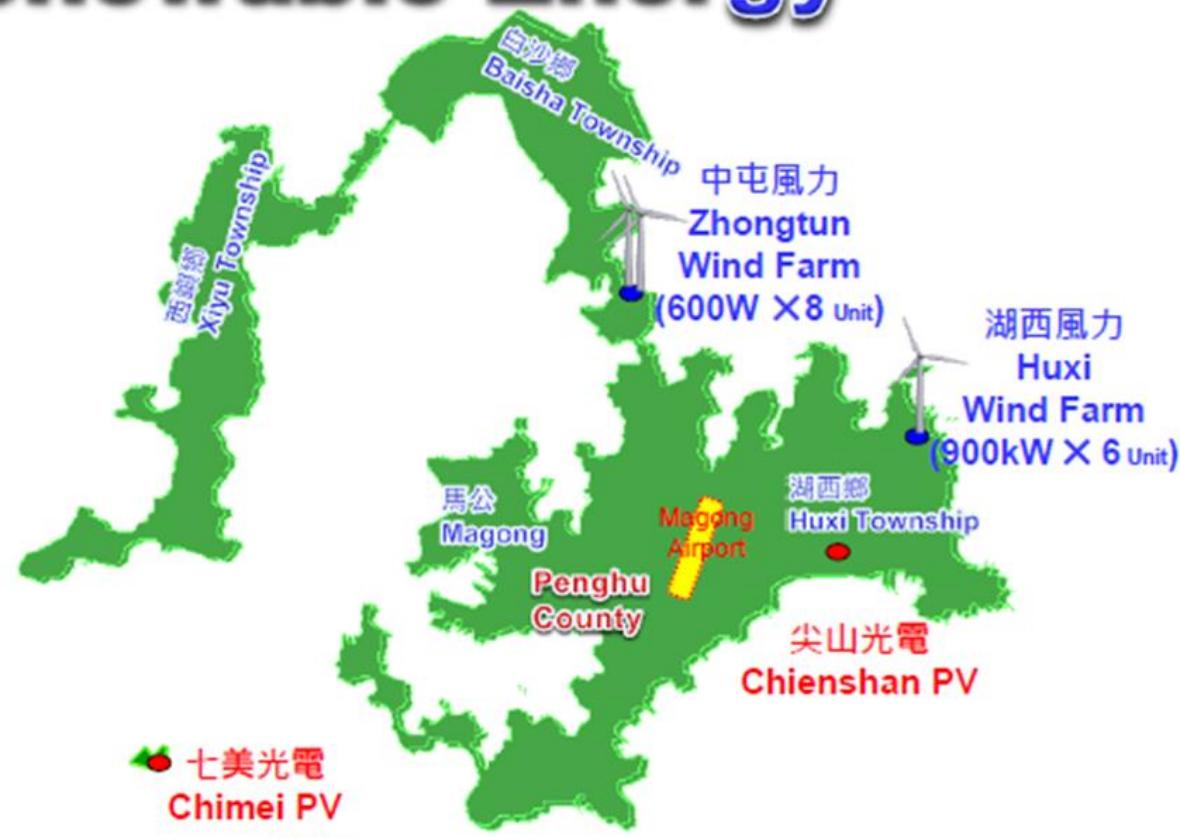
# 1. In Operation Renewable Energy

## ■ Wind Power

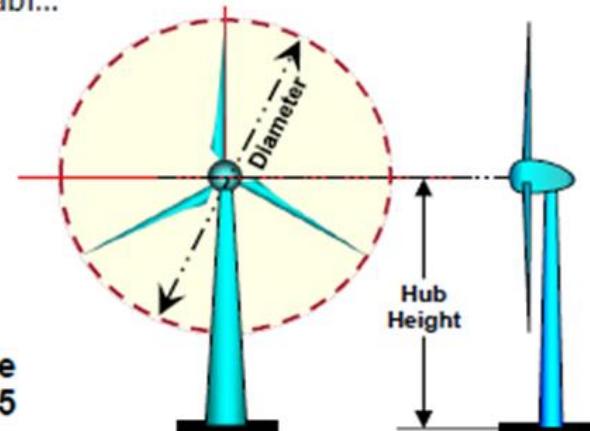
Site	Zhongtun (I)	Zhongtun (II)	Huxi
Turbine Type	Enercon E40	Enercon E44	
Rated Power (kW)	600	900	
Number	4	4	6
Capacity (MW)	2.4	2.4	5.4
Hub Height (m)	46	45	
Rotor Diameter(m)	40.3	43.7	44
rpm	18~34	16 ~ 34.5	
Cut In Speed (m/s)	2.5		
Cut Out Speed (m/s)	34		
Commercial Date	9/13/2001	6/30/2005	12/31/2010
Year	14.6	10.9	5.4
Production (kWh)	<u>103.48M</u>	<u>72.93M</u>	<u>95.39M</u>

## ■ PV

Site	Chienshan	Chimei
Capacity (kW)	71	155
Commercial Date	11/21/2012	11/23/2012
Year	3.5	3.5
Production (kWh)	418,000	588,000



The percentage of renewable power in Penghu in 2015



## 2. In Construction Projects

### ■ Wind Power

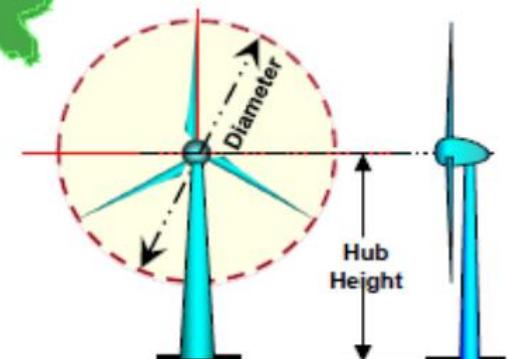
Site	Longmen	Jiagmei	Dachikan
Turbine Type	Enercon E82		
Rated Output(kW)	3,000		
Number	6	2	3
Capacity(MW)	18	6	9
Hub Height(m)	78.33		
Rotor Diameter (m)	82		
Rotor Speed (rpm)	5 ~ 20.8		
Cut In Speed (m/s)	3		
Cut Out Speed (m/s)	34		
Commercial Date	12/2018		
Estimated AEP(kWh)	62.97M	21.96M	31.32M



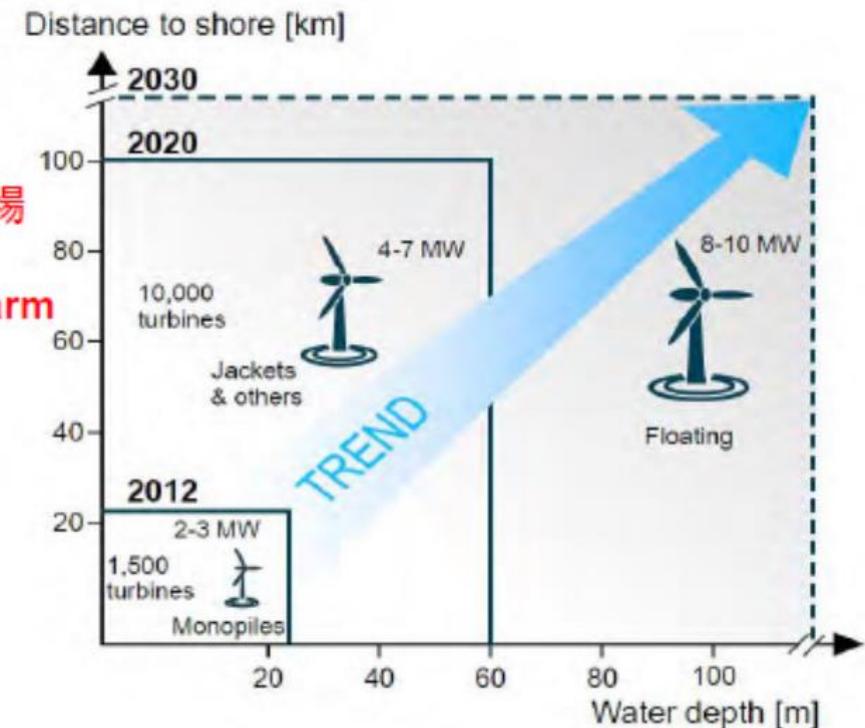
### ■ PV

Site	Chimei(II)
Capacity(kW)	200
Estimated AEP (kWh)	262,800

七美增設光電  
Chimei(II)



### 3. Penghu Offshore Wind Plan



Foundation Installation   Turbine Installation

Farm	Rated Power	No.	Installed Capacity	Area
Penghu Huxi	7MW	20	140MW	30KM <sup>2</sup>



## 2. In Construction Projects



Taiwan~Penghu 161kV Marine Cable

### ■ On Land Cable :

1. Penghu Side(300m) : Finished(Cable Tunnel) .
2. Taiwan Side(8.8km) : Under Construction

### ■ Marine cable :

1. Production of marine cable is completed .
2. First cable circuit : Cabling from Penghu side to Taiwan side(3km from landing point).

■ Schedule : 70.47% done.

Budget: 400 million USD  
Period : 2015~2018





Total Solar Power on the island 10.8M (2017)



5309 LED Energy Saving Street Lights

2011 12 27

# Green Vehicle



Electric Motorcycle  
Rental

1

Battery Charging Points

45

Electric Motorcycle

700

2011



Small Island 100%  
Electric  
Motorcycle

Battery Charging  
Point  
612

Electric Motorcycle  
Rental  
8

Electric Motorcycle  
4194

2017



澎湖縣政府環境保護局

# Small Island Micro Grid Energy Management System (東吉嶼微電網系統)

- 2015 : Solar Power combines with Diesel Generator  
2016 : Smart Inverter Innovation  
2017 : Micro Grid Energy Management System



## 18 MW Wind power



## Water-saving

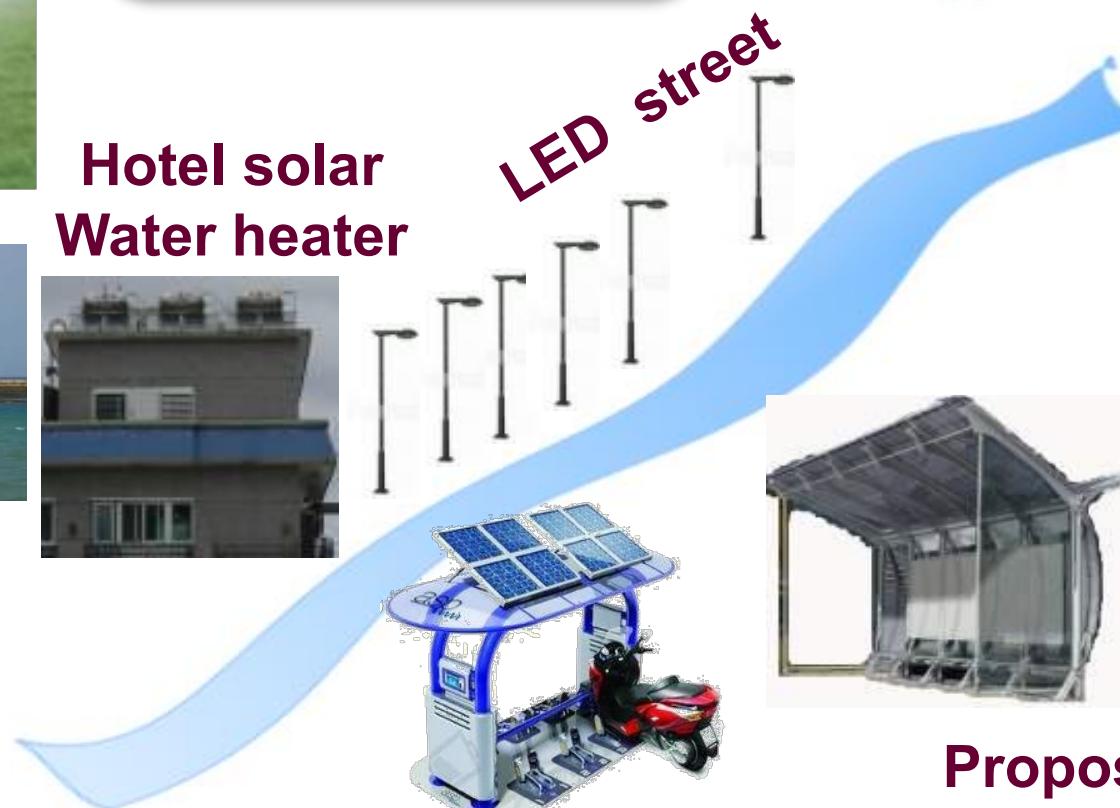


## Hotel solar Water heater



## LED bridge light

## Magong city



## 4100 electric motorcycles

## Green Building Design Standards

## Solar power



## Airport solar energy panel



## Planting trees

## Proposed electric city bus

# The Project 2018-2021

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## Main Industries of Penghu

- 1 Renewable Energy and Smart Technology related**
- 2 Marine Resources Management**
- 3 Bay Life and Tourism Service**



七美嶼

# Cimei Island



# Cimei Low Carbon Island Romantic and Green Energy



- 
- 1 Increasing Solar Power 34.6 MW (2021)**
- 2 Increasing Wind Power 173 MW (2025)**
- 3 100 % Green Energy Supply (2025)**
- 4 Starting first offshore wind farm project 150 MW 2019**

- 
- 5 Small island Smart Grid EMS**
  - 6 Smart Water Management System**
  - 7 Electric Motorcycle Demonstration Zone**
  - Smart Transportation and tourism service**
  - 8 Marine and Bay resources Conservation**

A scenic landscape featuring a large, vertical rock formation with distinct columns reflected in a body of water under a blue sky with white clouds.

**World Congress  
The Most Beautiful Bays in  
The World**

**Taiwan  
Sept. – Oct 2018**

# 2012 Bodrum Turkey



A man in a dark suit and tie stands at a wooden podium, speaking into a microphone. He is gesturing with his hands as he speaks.



[www.bodrum.bel.tr](http://www.bodrum.bel.tr)



臺灣觀光年曆  
Time for Green



2014 ITB Berlin

# **Board members meet UNESCO 2016 in Paris**



UNESCO

ORGANISATION DES NATIONS UNIES POUR L'EDUCATION, LA SCIENCE ET LA CULTURE  
NATIONALS AND INTERNATIONAL ORGANISATION FOR EDUCATION, SCIENCE AND CULTURE



## EILAT BAY, ISRAEL



# **PRAGMA + World Bays**

- PRAGMA AI in Data Connected Communities
- World Bays Sustainable Development
- Smart World Bays Platform and Initiation  
(By PRAGMA + World Bays)
- Government stakeholders Citizen  
(university , academic , private sector , the  
youth generation)

# **PRAGMA + World Bays**

- Bay environment sustainable development
- Bay ecosystem management
- Bay economy development
- Bay life and tourism service
- Apply the proper smart solutions to world bay areas
- Create a new future for both PRAGMA and World Bays

### **Smart Economy** (Competitiveness)

- Innovative Spirit
- Productivity
- Flexibility of labour market

### **Smart People**

(Social/Human Capital)

- Affinity for life-long learning
- Participation in public life
- Creativity and flexibility

### **Smart Governance**

(Participation)

- Participation in Decision-making
- Transparent Governance

### **Smart Mobility**

(Transportation and ICT)

- Local Accessibility
- ICT infrastructure
- Sustainable, innovative and safe transport systems

### **Smart Environment**

(Natural Resources)

- Attractiveness of natural conditions
- Environmental protection
- Sustainable resource mgmt

### **Smart Living**

(Quality of Life)

- Cultural Facilities
- Health Conditions
- Housing Quality
- Social Cohesion

*Figure 1.2 Six Characteristics of the Smart City Model (Giffinger et al. 2007)*

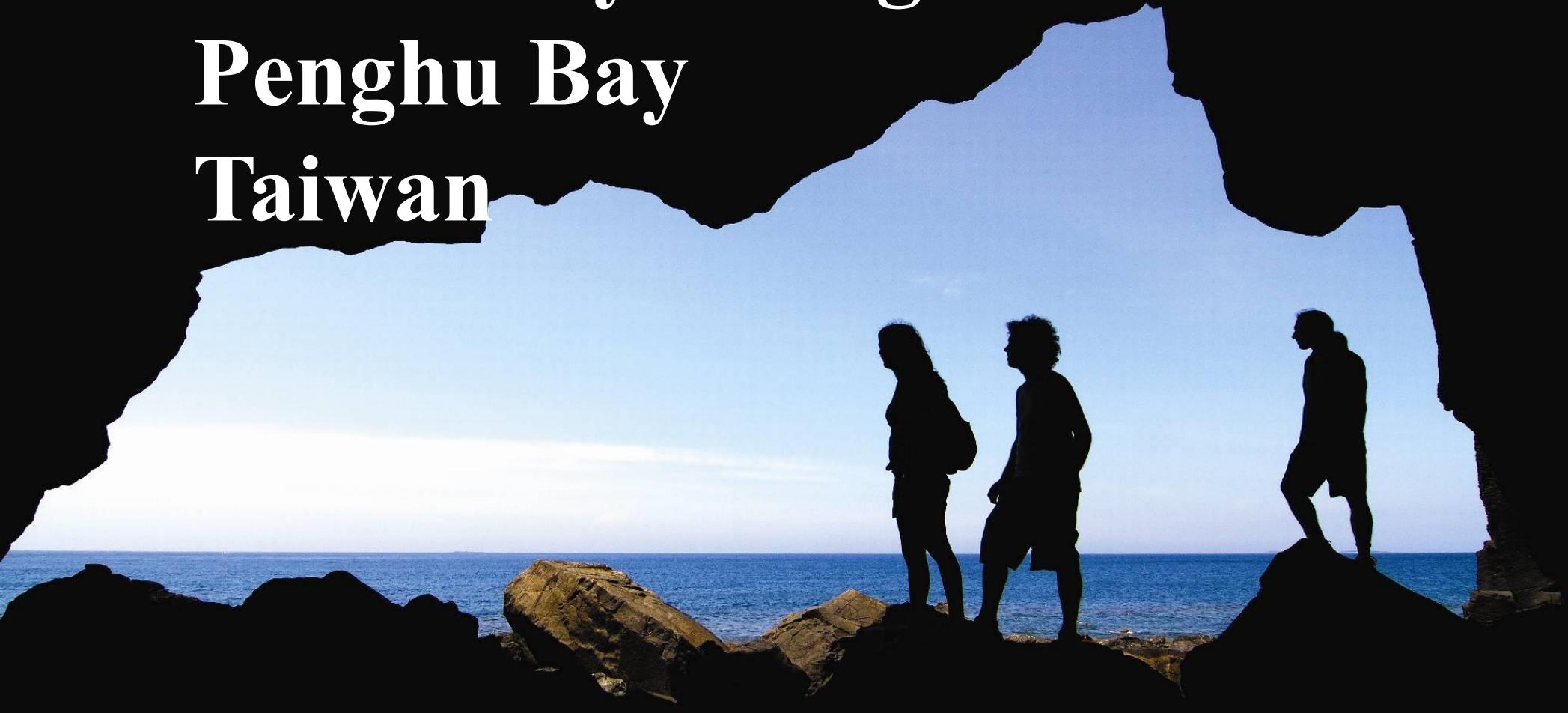
- Smart Cities and Communities (SSC1) focusses on demonstrating sustainable, cost-effective and replicable district-scale solutions at the intersection of energy and transport enabled by ICT. They should integrate smart homes and buildings, energy efficiency measures, very high shares of renewables, smart energy grids, energy storage, electric vehicles and smart charging infrastructures.
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# Welcome your participation

# World Bays Congress 2018

## Penghu Bay

## Taiwan



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