



10th Conference of the
Pacific Rim Community Design Network
Agency and Resilience

December 2016

The Black-faced Spoonbill in Xinghua Bay

A Catalyst for Responsible Development

興化灣的黑面琵鷺:一次負責任開發的催化劑

by SAVE International and University of California Berkeley

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who is SAVE International? 我們是誰

SAVE International is a project of Earth Island Institute, based in Berkeley, California.

SAVE國際是地球島協會下的一個機構，以美國加利福尼亞州伯克利為主要陣地。

We began in 1997 as a volunteer group of professors, students, and staff from the University of California - Berkeley and National Taiwan University.

我們始於1997年，是由加利福尼亞大學伯克利分校和台灣國立大學的教授、學生和員工組成的志願者團體。

Today, our Executive Committee and Advisory Committee include planners, landscape architects, and scientists from the United States, Taiwan, Japan, mainland China, and South Korea.

發展至今天，來自美國、台灣、日本、中國大陸和韓國的城市規劃師、景觀建築師和科學家等共同組成了我們的執行委員會和顧問委員會。



our mission 我們的使命

The purpose of Spoonbill Action Voluntary Echo (SAVE) International is to protect the endangered Black-faced Spoonbill (*Platalea minor*) and its habitat throughout its flyway, by promoting alternative economic development and long-term sustainability of the ecosystems and local communities.

國際組織「琵鷺行動志願者之聲」，希望通過促成備選經濟開發方案和生態與社區的遠期可持續發展方案，保護瀕危物種黑面琵鷺及其遷徙途徑中的棲息地。

- **campaign** against threats to spoonbills' habitat
- **research** habitat requirements for a viable spoonbill population
- apply international **pressure**
- **promote** sustainable economic development and local job creation development
- **collaborate** with local groups to develop plans



SAVE members 我們的成員



Black-faced Spoonbill 黑面琵鷺

Platalea minor



Habitat:
棲息地

Coastal wetlands 濱海濕地

Shallow water and large spaces free from disturbance
無干擾的淺水域開闊空間

Diet:
食物

Small fish and crustaceans

小體積魚類及甲殼綱動物

Status:
物種現狀

Endangered (3,356 birds in January 2016)
瀕危（根據2016年1月數據全球共計3356隻）

Threats:
威脅

Habitat loss

棲息地喪失

Disease

疾病

Pesticides

殺蟲劑

Noise/disturbance

噪聲干擾

Predation

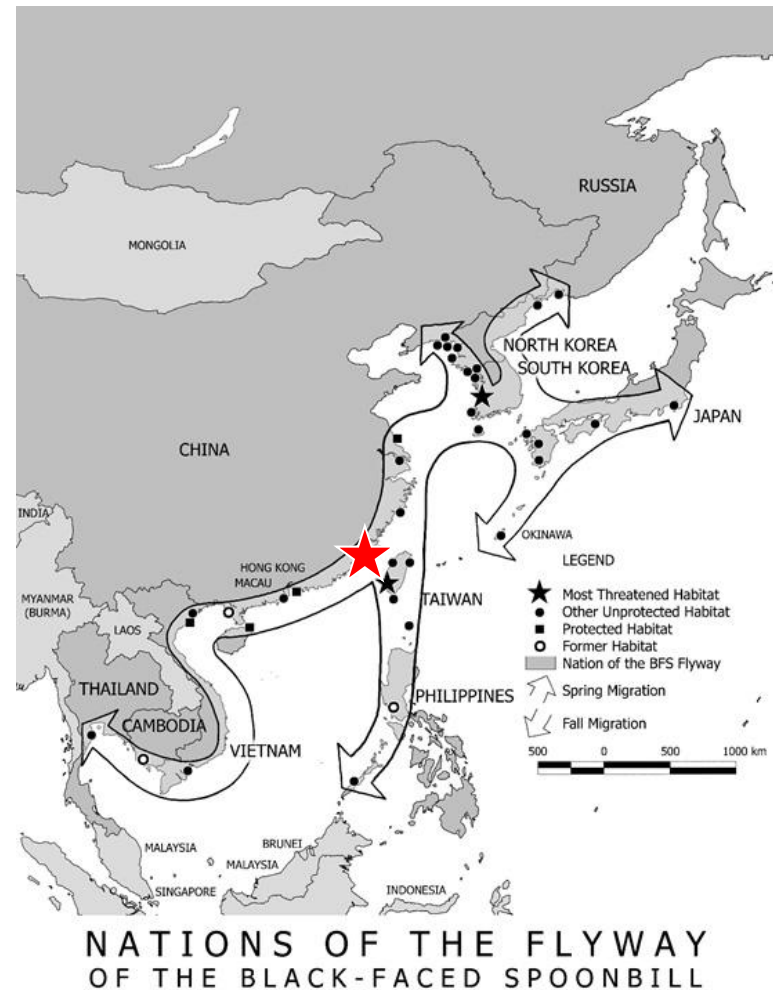
捕掠



migratory route 遷徙路線

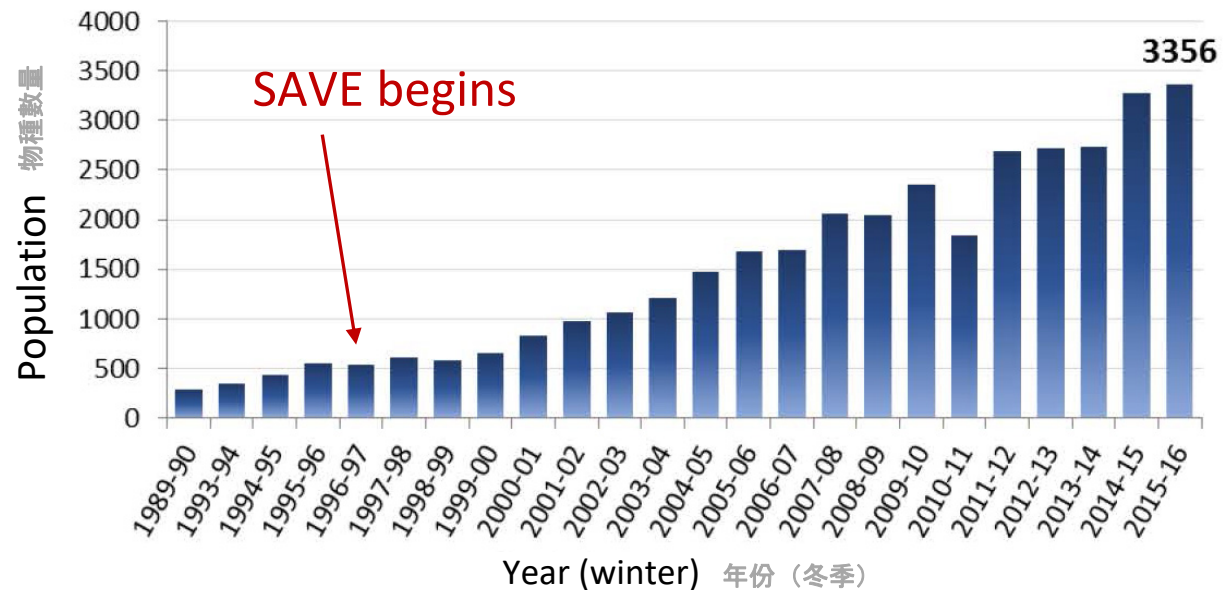


The black-faced spoonbill lives and migrates along the **East Asian - Australasian Flyway**, in North and South Korea, Japan, Taiwan, coastal China, Hong Kong, Macau, Vietnam, the Philippines, and Russia; also Cambodia and Thailand (some years).



population

物種數量



“Ramsar Convention” (Convention on Wetlands, 1971):

An individual site is eligible for Ramsar protection if it hosts more than **1% of a species**.

Number of BFS required = 1% of 3,356 = **34**.

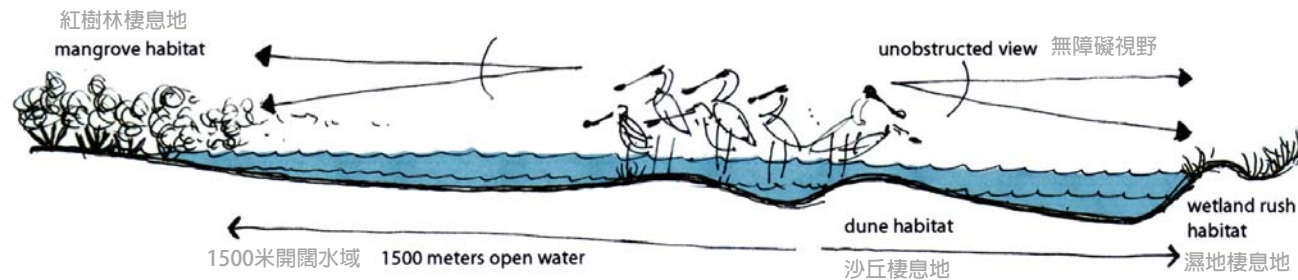
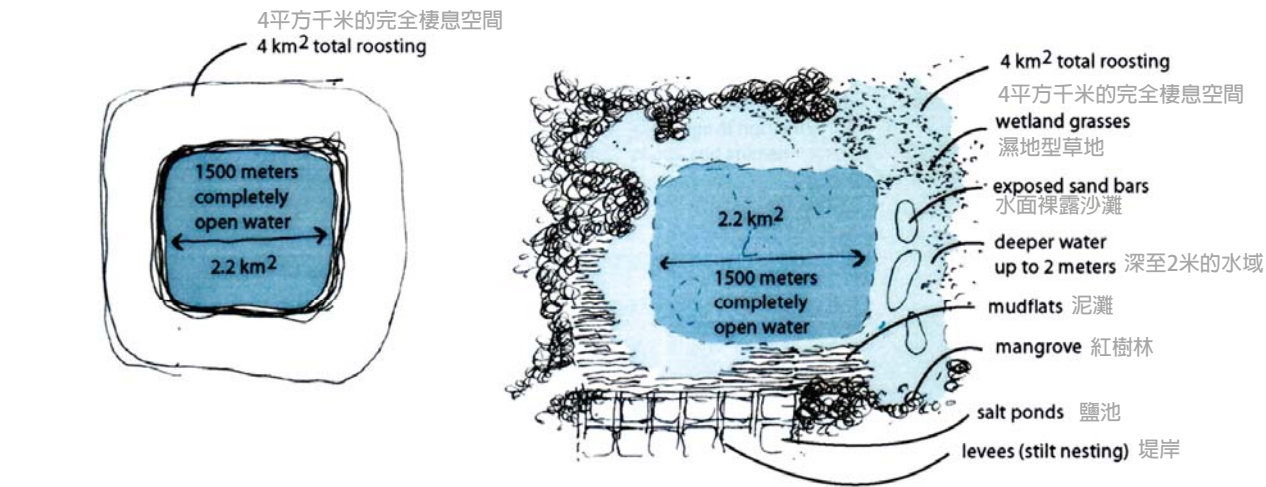
Number of BFS at Xinghua Bay (in 2016) = **122**. **Qualifies!**

40 or more BFS each year since 2006 (except 2015: only 10). Highest number: 141 in 2013.

拉姆薩爾濕地公約 (1971)：一塊場地如果承載超過某種物種總量的1%，則滿足拉姆薩爾濕地保護條件。黑面琵鷺的數量要求為34隻。興化灣的黑面琵鷺數量為122隻，滿足條件。自2006年起（除去2015年），每年有超過40隻黑面琵鷺在興化灣遷徙越冬。在2013年數量達到141隻。

spoonbill geometries: sizes and shapes of suitable habitat

適合琵鷺的棲息地：合適的面積及形狀

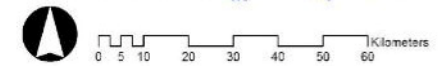


study area 研究區域



study area: Xinghua Bay

研究區域：興化灣



Adjacent Cities 鄰市:

Fuzhou and Putian 福州、莆田



endangered birds at Xinghua Bay 興化灣瀕危鳥類

(north end also called Donggang Harbor)...

東港水港

Jiangjing Huaqiao Farm
江鏡華僑農場

數量已達到標準可申請拉姆薩爾國際重要濕地

...enough to qualify as “Wetland of International Importance” (**Ramsar Site**)

government proposals 中國政府規劃

2015-2030 Fuzhou New Area Plan and 2012-2030 Blue Economy Industrial Park Plan

2015至2030年福州新區總體規劃和2012至2030年藍色經濟工業產業園規劃

福州新区总体规划 (2015-2030)
Overall planning of Fuzhou New Area



福州市人民政府 • 二〇一六年 一月

07



Industry, commerce,
high-density residences
工業、商業、高密度住宅

+180,000 people
新增就業人口180萬人

Economic competition
with Taiwan, but severe
environmental
destruction
與台灣進行經濟競賽，嚴重干預自然環境

Fill huge areas of
bayfront wetlands
大面積填埋濕地



unanswered questions 未知問題

Impacts on... 影響方面

- cultural resources 關鍵資源
- local jobs 當地工作崗位
- traditional fisheries 傳統漁業
- agriculture and food security 農產品與食品安全
- endangered species and important wetlands (potential Ramsar Site) 瀕危物種和其他重要濕地

Population projections (+180,000 people) 人口預測，新增180萬人

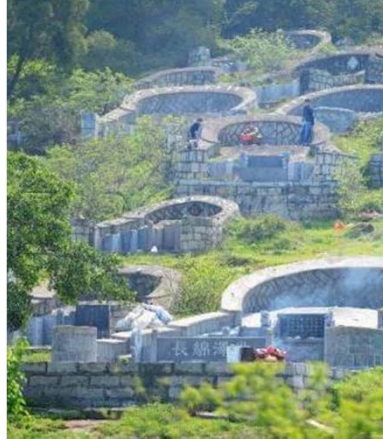
Voice of the local residents in Fuzhou, Fuqing, and Putian 福州、福清、莆田當地居民的呼聲

Sea-level rise 海平面上升

SAVE asks the Community Design Network SAVE的提問:

- **What should we do next?**
我們下一步應該怎樣做？

existing landscapes of Xinghua Bay 興化灣現狀景觀



historic village core & new urban growth:

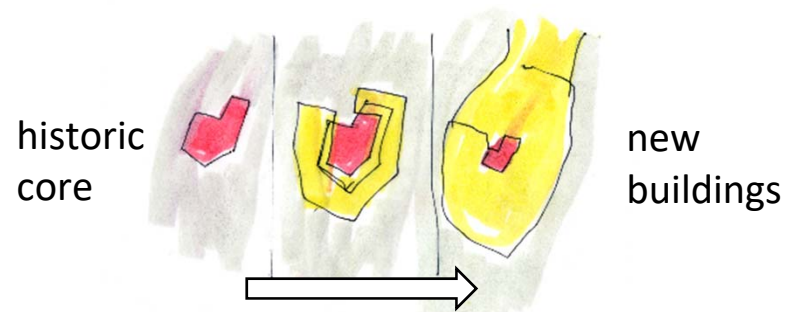
around Xinghua Bay

傳統村落與新城增長:興化灣周邊地區



disappearance of traditional villages : 傳統村落的消失

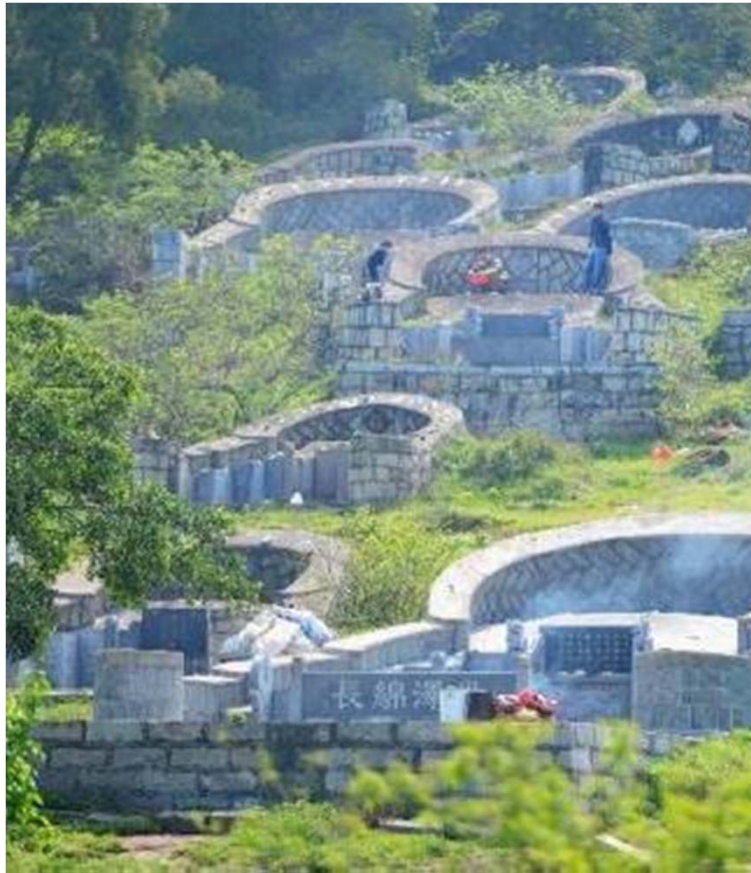
Nanzhengcun in 2000 and 2015 2000年和2015年的福清港頭鎮南鄭村



2000 Historic Core Size	25.49 hectares
2015 Historic Core Size	5.63 hectares
Change	78% loss

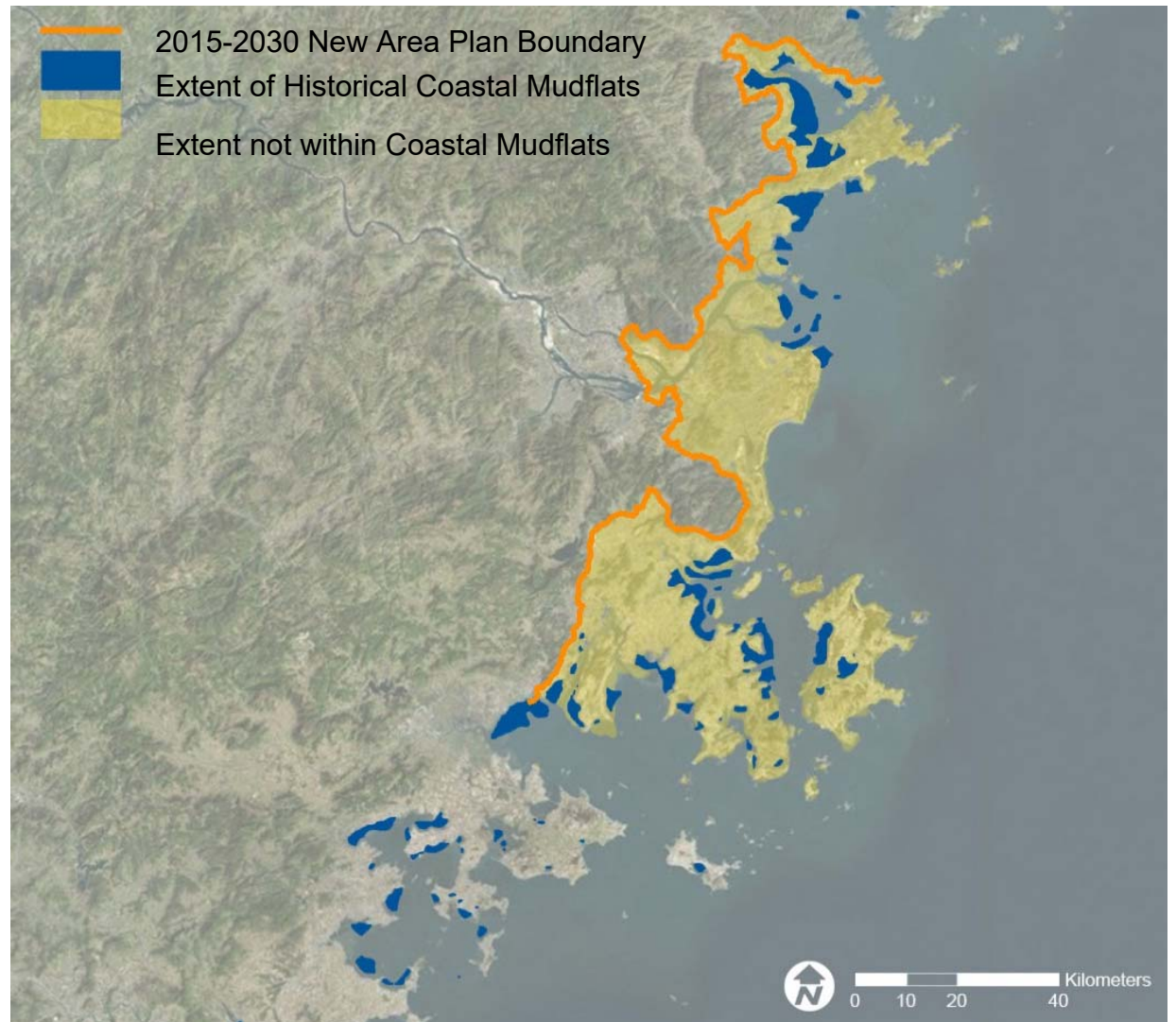
traditional graves, agriculture, aquaculture

當地傳統墓地，農業，水產養殖業



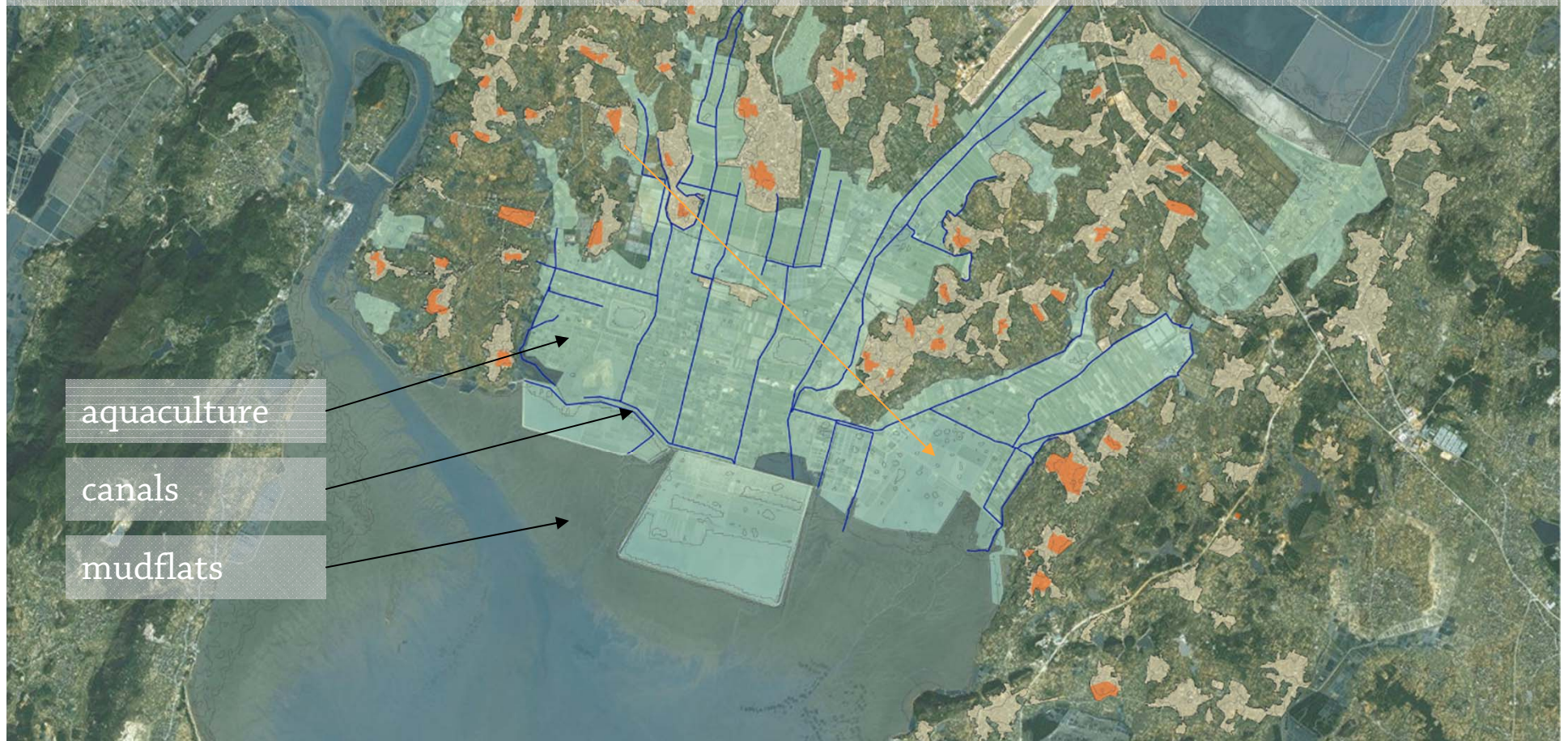
mudflats filled since 1960

自1960年被填埋的泥灘



existing conditions - Donggang Harbor 現狀：東港水港

aquaculture + mudflats 魚塘 + 泥灘



existing conditions - Donggang Harbor 現狀：東港水港

agriculture, historic villages, urban growth 農業、歷史村落、城市增長

agriculture

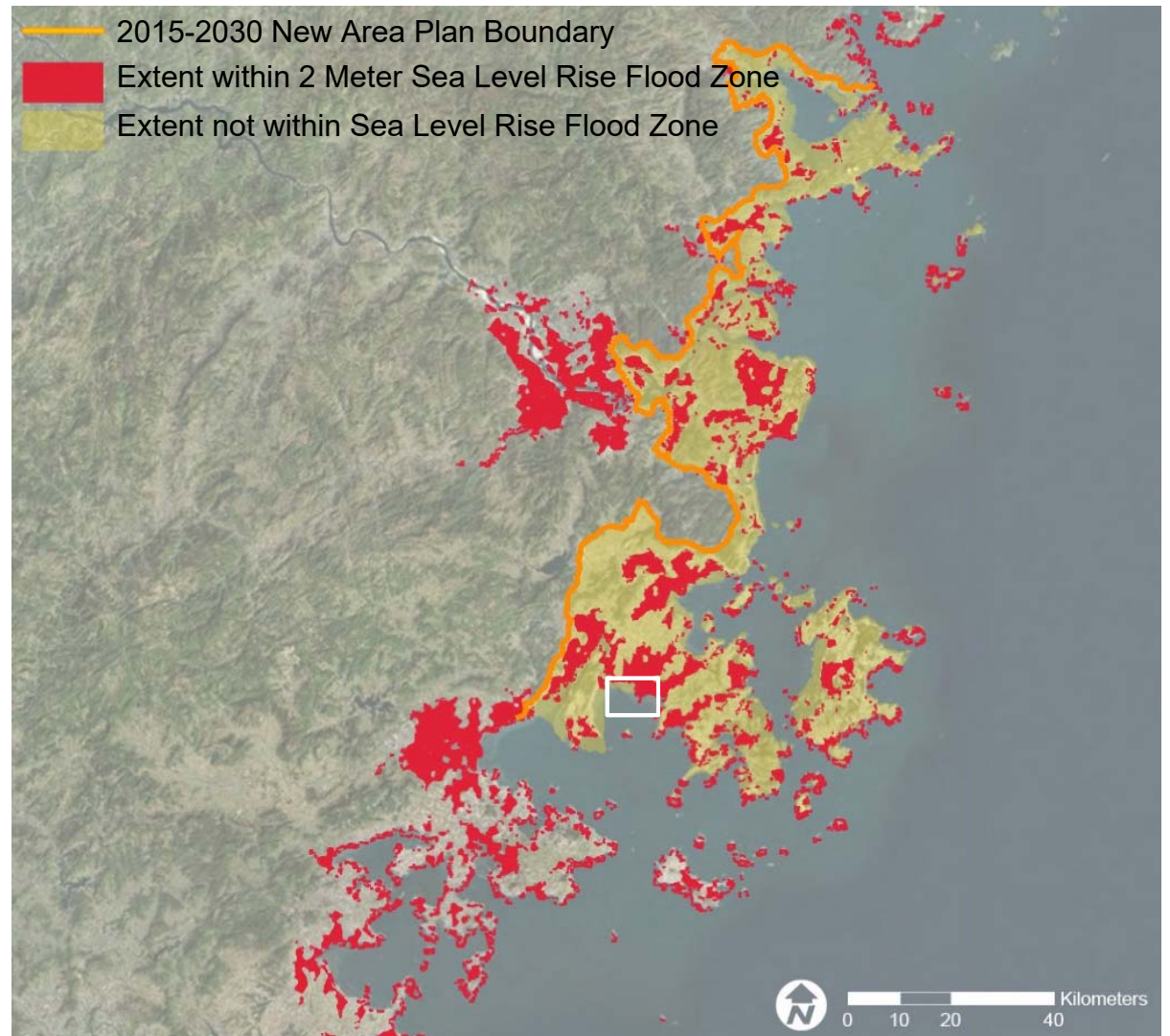
historic village

urban growth

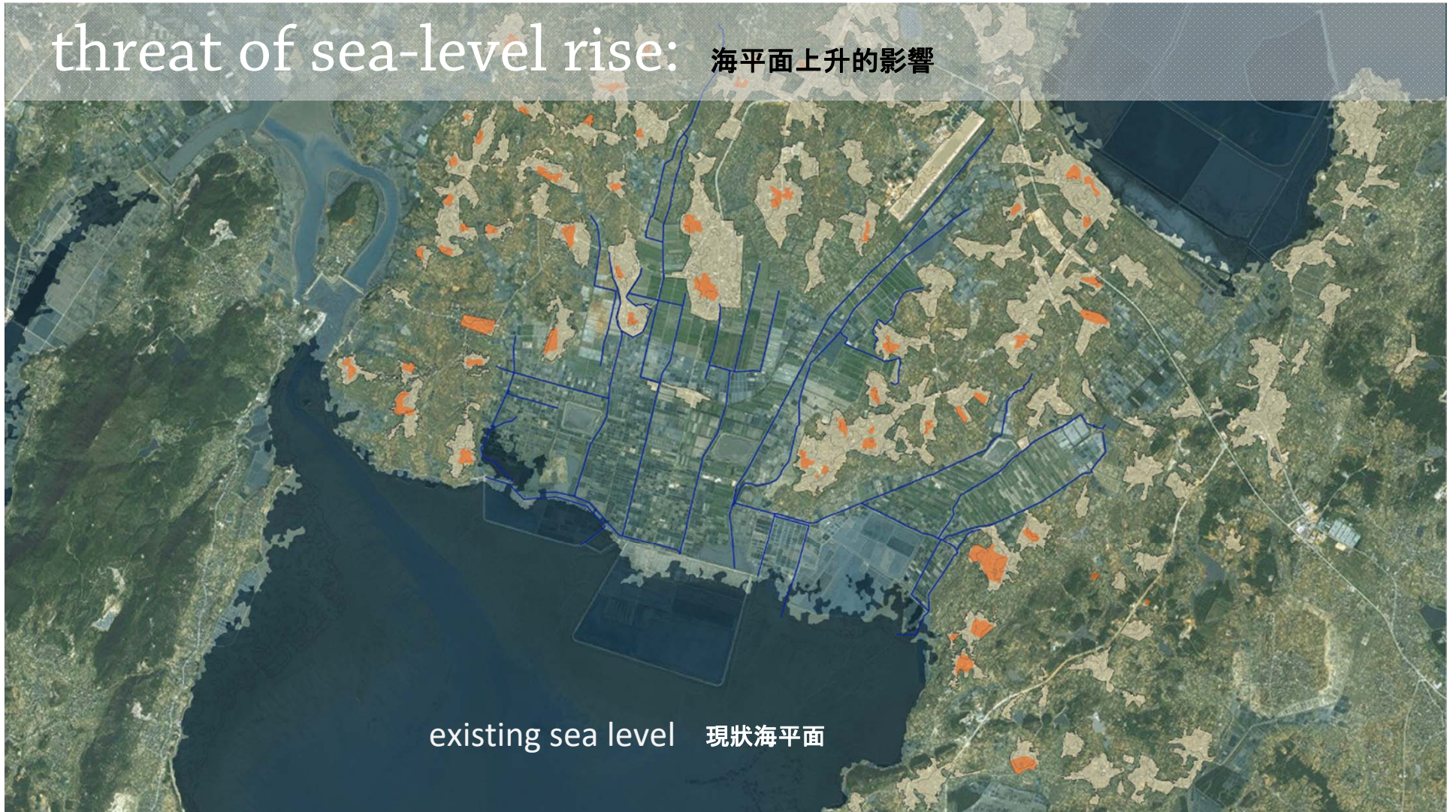


Sea Level Rise & the 2015-2030 Fuzhou New Area Plan

海平面上升對福州新區規劃的影響

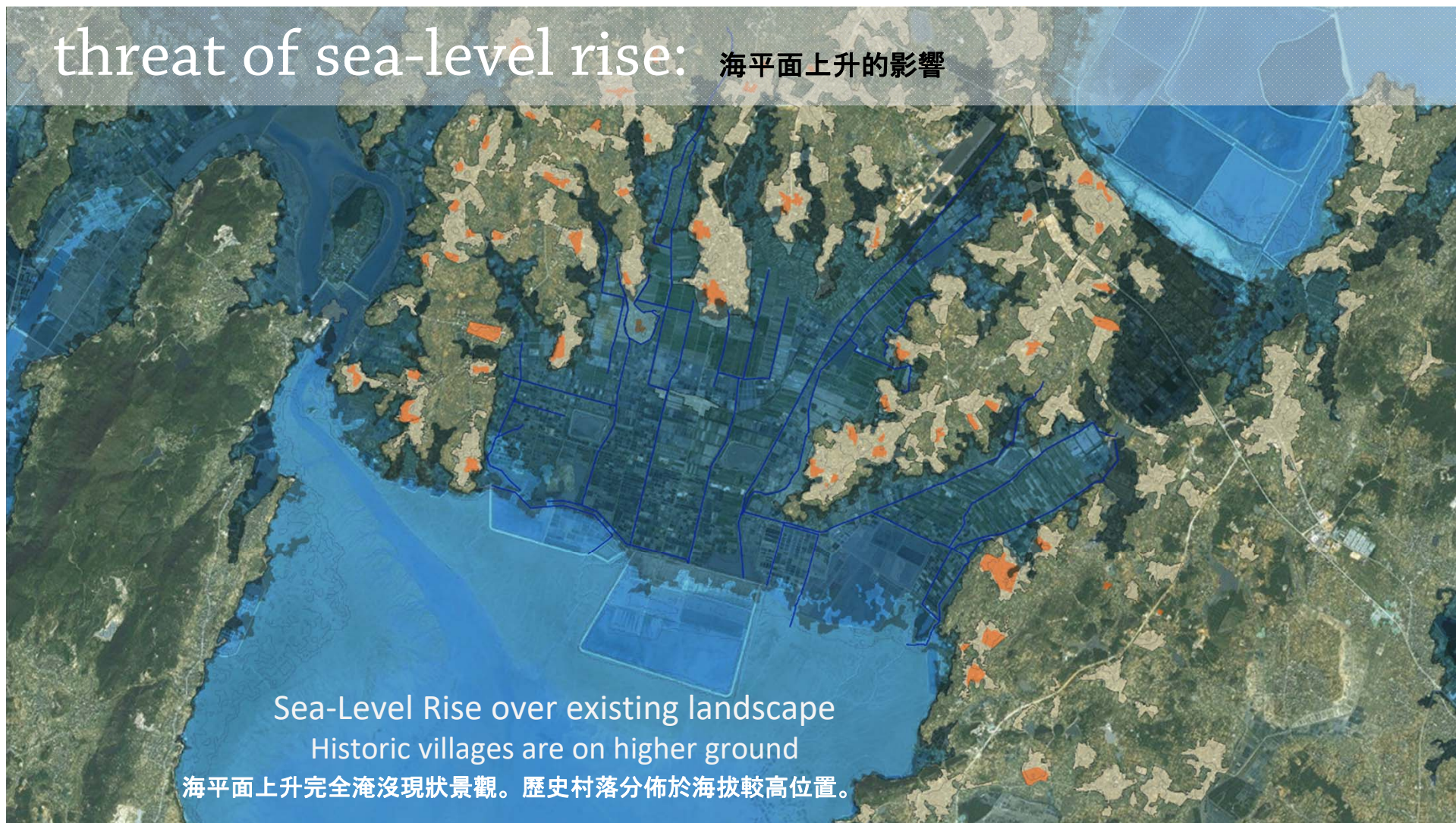


threat of sea-level rise: 海平面上升的影響



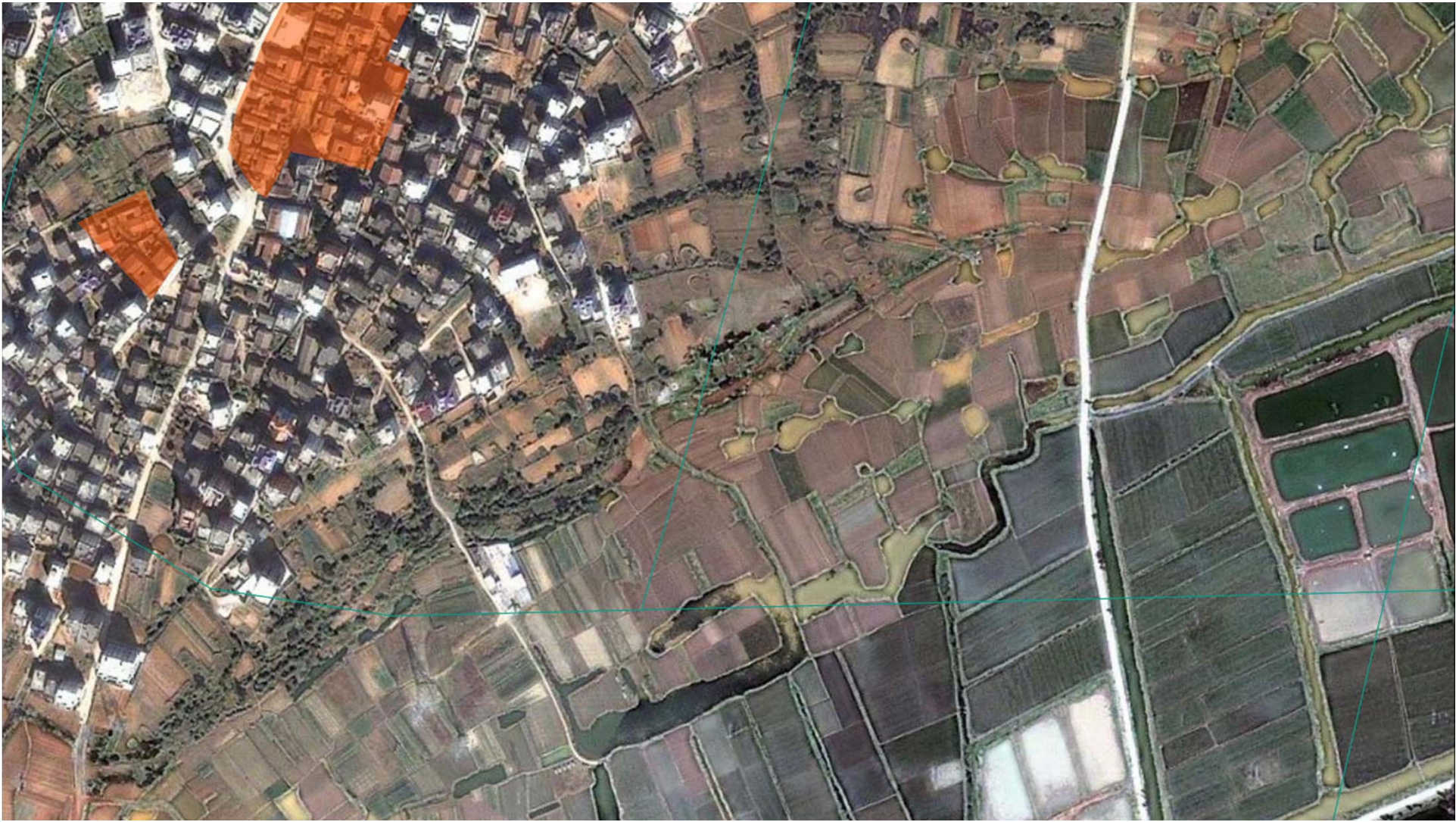
existing sea level 現狀海平面

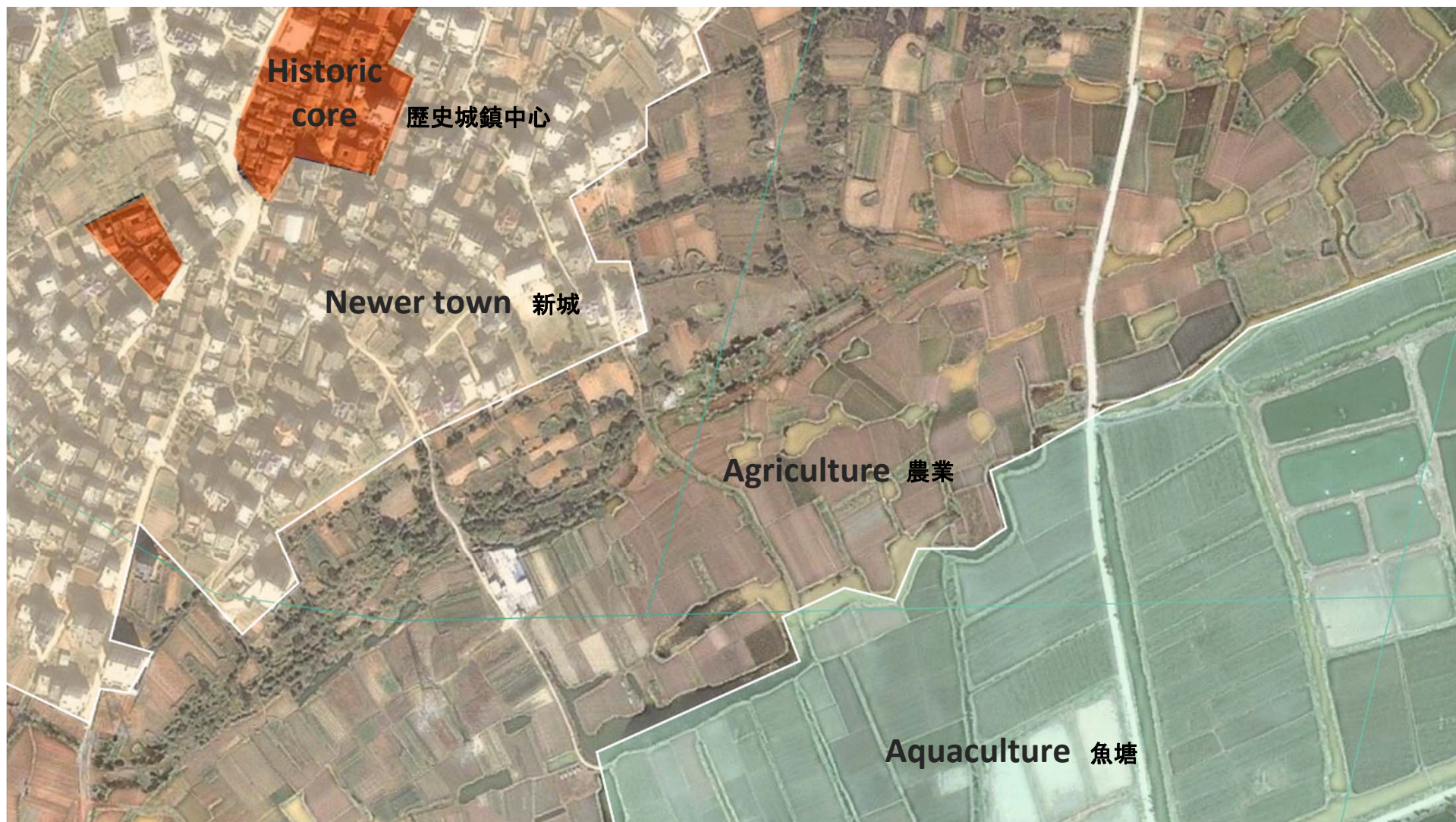
threat of sea-level rise: 海平面上升的影響





area of enlargement
放大区域







2015-2030 Fuzhou New Area Plan 福州新区规划

Industrial, commercial,
residential development

+180,000 residents

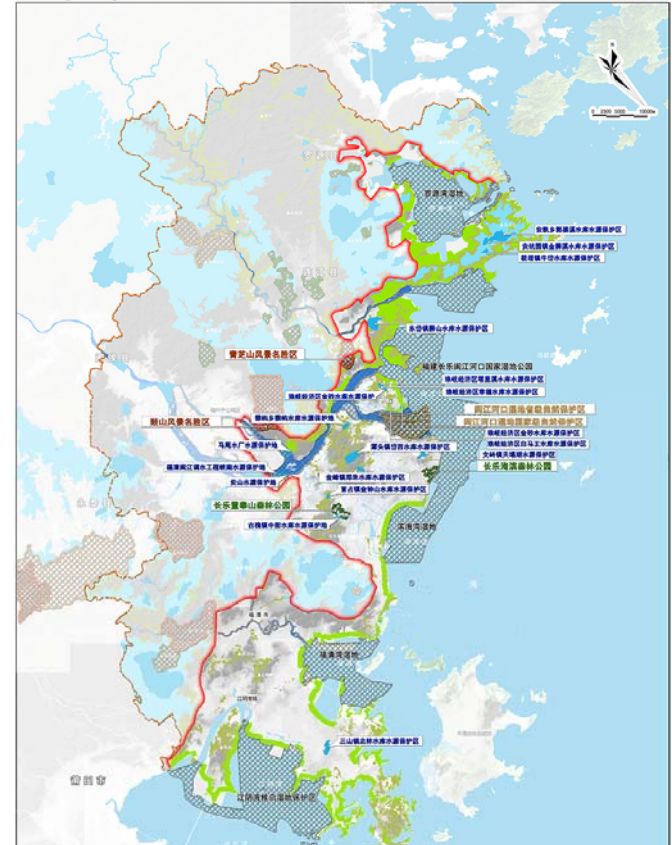
12 km² fill in Xinghua
Bay

Claims to protect
“Ecological Resources”
(wetlands, mangroves
and inland forests, and
reservoirs), but
proposes new industry
and highways near
them.

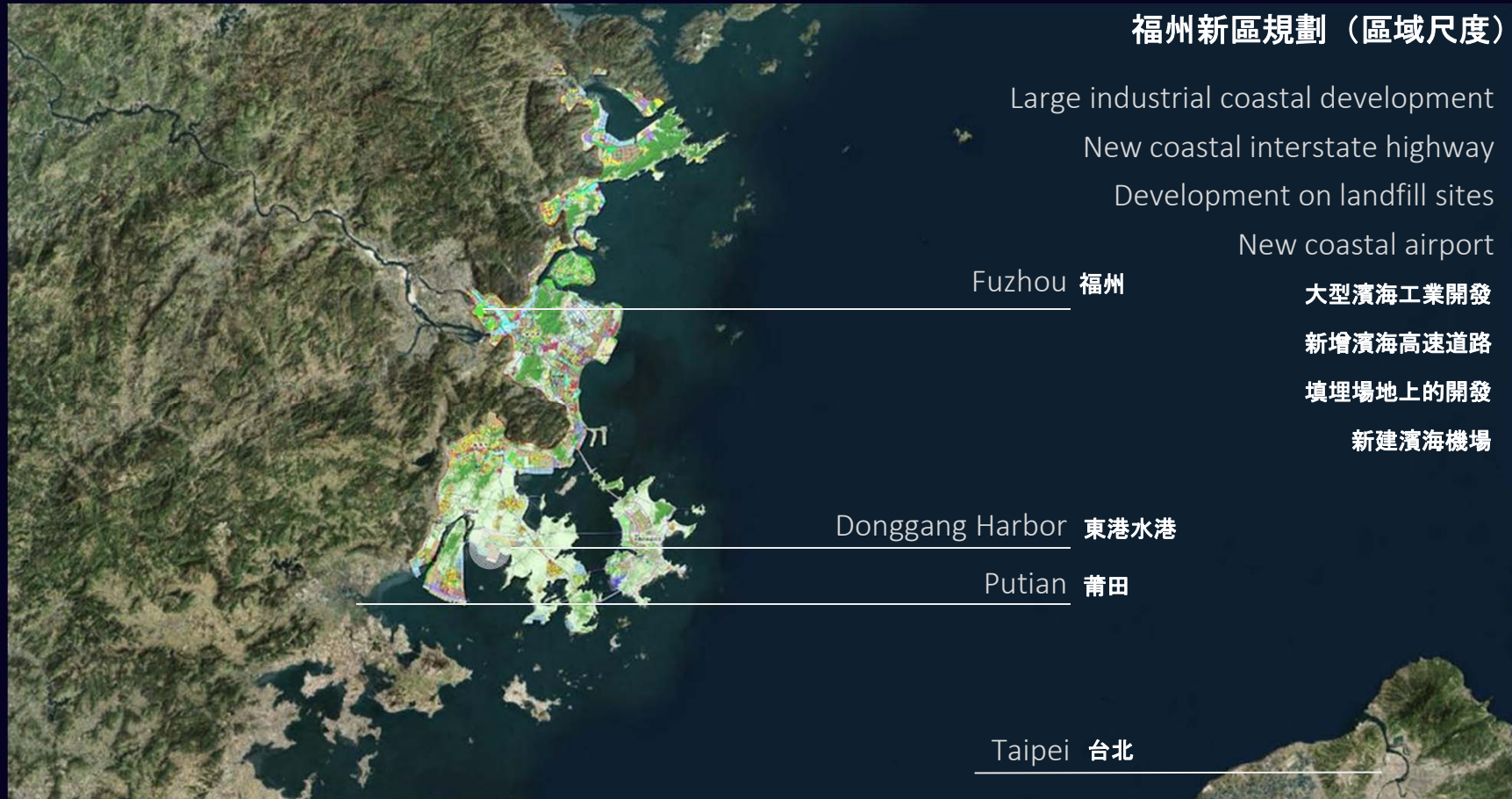
福州新区总体规划 (2015-2030) 已编(在编)城乡总体规划拼图
Overall planning of Fuzhou New Area



福州新区总体规划 (2015-2030) 生态资源现状分布图
Overall planning of Fuzhou New Area



2015-2030 Fuzhou New Area Plan: Regional Scale



city development scale comparisons

城市發展尺度對比

San Francisco,
CA
舊金山



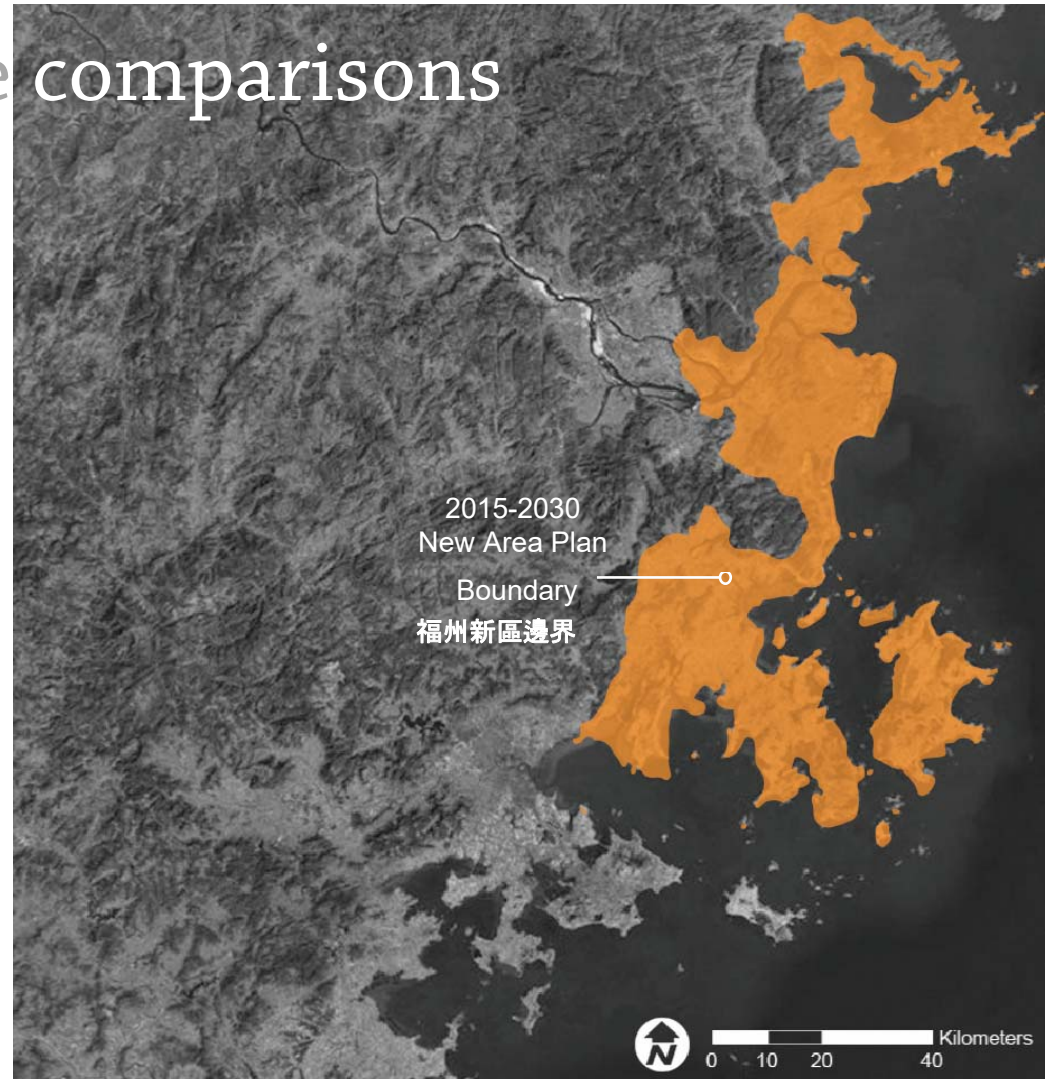
Taipei,
Taiwan
台北



Hong Kong
Island
香港

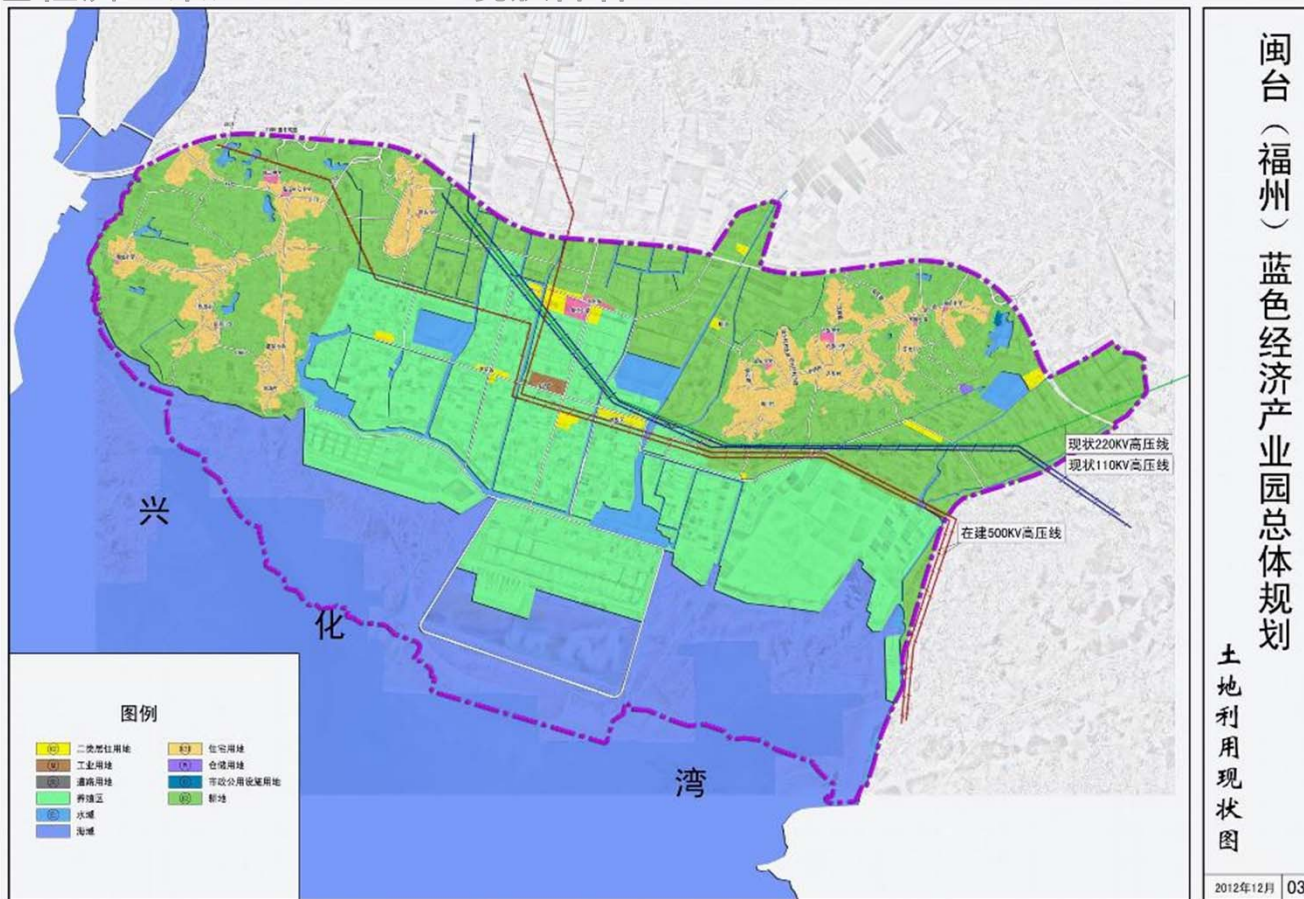


Seattle,
WA
西雅圖



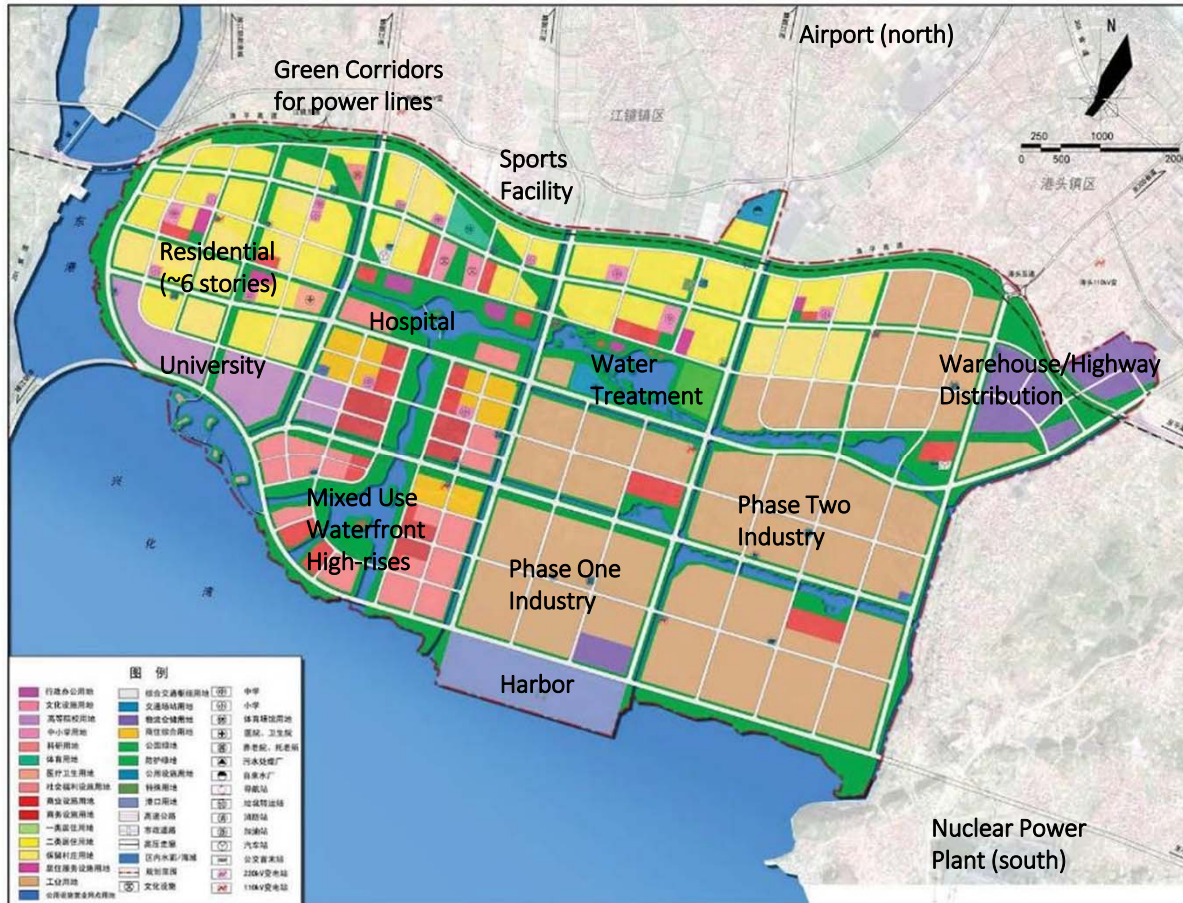
2012-2030 Blue Economy Industrial Park Plan: Existing Conditions

藍色經濟工業產業園規劃：現狀條件



2012-2030 Blue Economy Industrial Park Plan: Proposal

藍色經濟工業產業園規劃：規劃方案



闽台（福州）蓝色经济产业园总体规划

土地利用规划图

2012年12月 11

Aims to attract Taiwanese investors in various types of marine extraction, desalination, and aluminum refinement.

吸引台商投資，發展海洋經濟、鹽水淡化工業、精鋁加工工業

Extensive fill.

大面積填海

Concepts not fully adopted in 2015-2030 Fuzhou New Area Plan.

2015-2030福州新區規劃中沒有完全採納實行的概念

2012-2030 Blue Economy Industrial Park Plan: Proposal

藍色經濟工業產業園規劃：規劃方案



2012-2030 Blue Economy Industrial Park Plan: Proposal

藍色經濟工業產業園規劃：規劃方案



江阴港城

2015-2030 Fuzhou New Area Plan
at the Harbor Scale

龙田机场

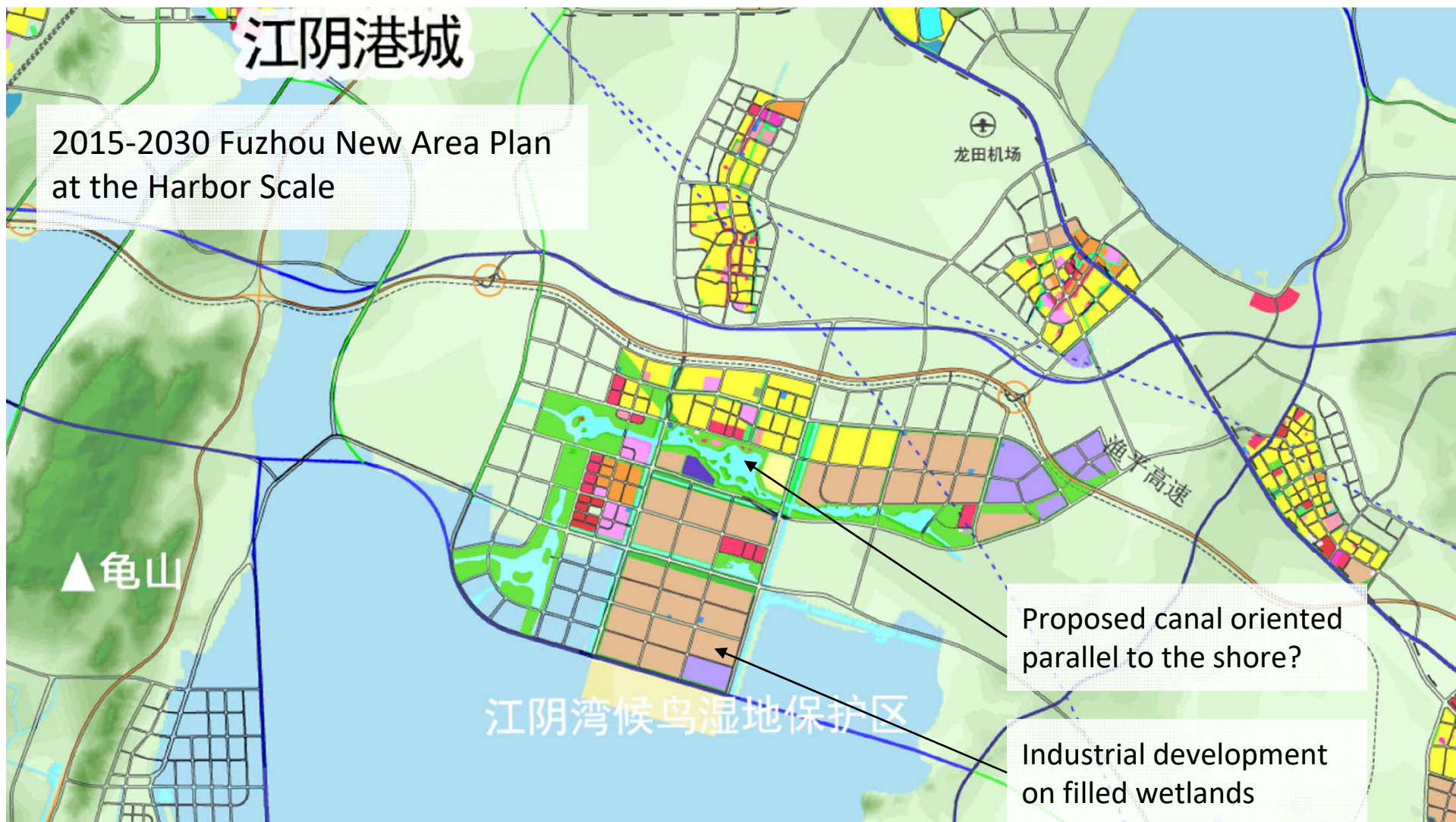
▲ 龟山

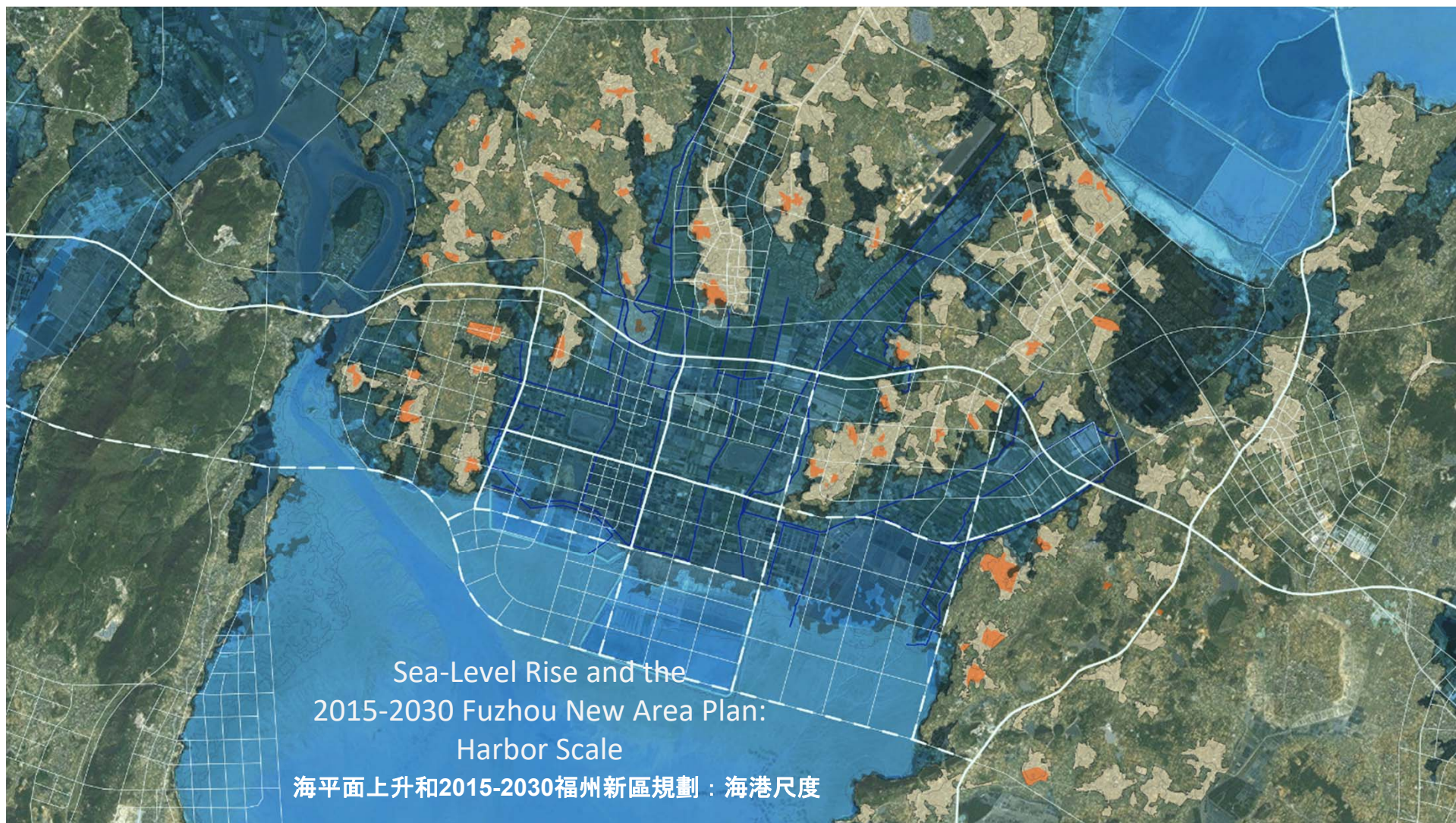
渔平高速

江阴湾候鸟湿地保护区

Proposed canal oriented
parallel to the shore?

Industrial development
on filled wetlands





environmental policy in china 中國的環境政策



RAPID INDUSTRIALIZATION AND URBANIZATION 快速工業化和城鎮化



AIR AND WATER POLLUTION 空氣和水污染



?

Strengthened environmental protection laws
should change industry behavior and realign
administrative priorities

應加強環境保護立法，改善工業行為，重設行政管理優先權

Article 29 calls for the establishment of **ecological red lines** for areas with rare and endangered species and ecologically sensitive zones.

Updated 2015
Environmental
Protection Law

2015年修正版環境保護法

Article 21 requires that **all environmental impact reports be open to public report and contestation.**

Article 28 establishes basis for **legal liability for untruthful environmental impact appraisals.**

Law on Appraising
Environmental
Impacts (2002)

環境影響評價法

Article 20: “The coastal local people's governments shall adopt effective measures to **protect typical and representative marine ecosystems** such as mangroves, coral reefs, coastal wetlands, islands, bays, estuaries and important fishery waters...”

Marine Environment
Protection Law

海洋環境保護法

environmental policy in china 中國的環境政策

conflict between national policy & provincial goals 國家政府和地方發展目標的衝突

“Enforcement and implementation of the law may be foiled by a lack of capacity and by conflicts of interest... Local governments (which are often more interested in economic growth) keep a firm grip on the staffing and financing of the environmental protection bureaus and hence on their decision-making.”

Updated 2015
Environmental
Protection Law

Law on Appraising
Environmental
Impacts (2002)

Marine
Environment
Protection Law

Alex Wang, *The Development of Environmental Courts in China*



National-level policy

VS.



Provincial goals
and interests

\$



?

alternative master plan proposal: considerations

備選規劃方案：考慮因素

Ecological boundaries: Hydrology,

topography, wind, climate
生態邊界：水文、地形、風、氣候

Sea level rise projections

海平面上升

Endangered species

瀕危物種

Cultural/historic land use traditions:

Vernacular architecture, farming
traditions

文化歷史土地利用傳統：本土建築、農耕傳統

Industrial/economic interests

工業、經濟效益

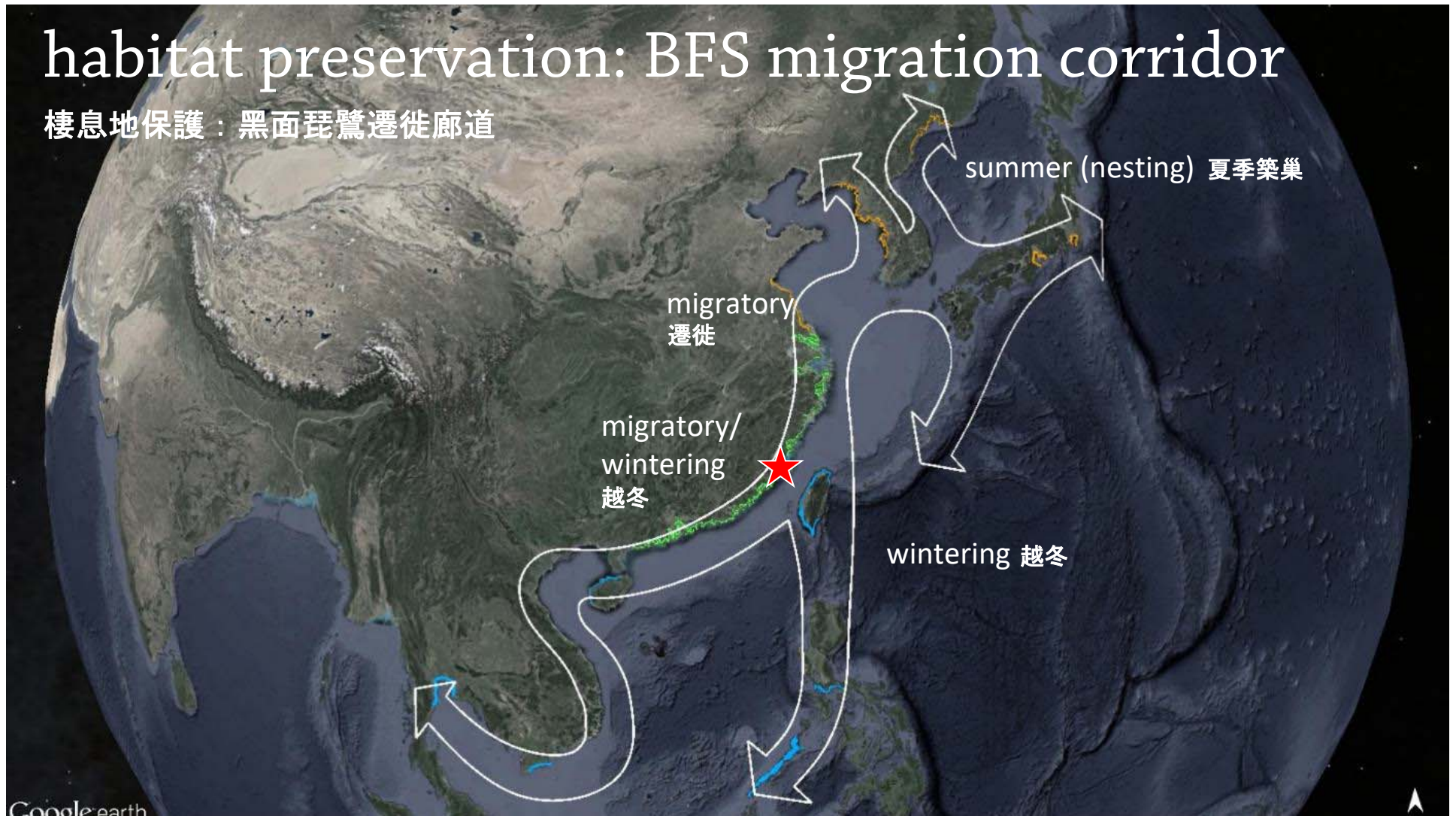
Highways

高速公路



habitat preservation: BFS migration corridor

棲息地保護：黑面琵鷺遷徙廊道



habitat preservation: ramsar-eligible sites

棲息地保護：拉姆薩爾濕地



26 coastal sites in China supporting at least one species for which the number of birds met the 1% criteria (NR = Nature Reserve).

8 have more than 1% of the total Black-faced Spoonbill population.

13 have some level of protection, but only 4 are Ramsar Sites.

Source: "Identification of Coastal Wetlands of International Importance for Waterbirds: A Review of China Coastal Waterbird Surveys" (2005-2013)

habitat preservation: BFS at Xinghua Bay 12/14/16



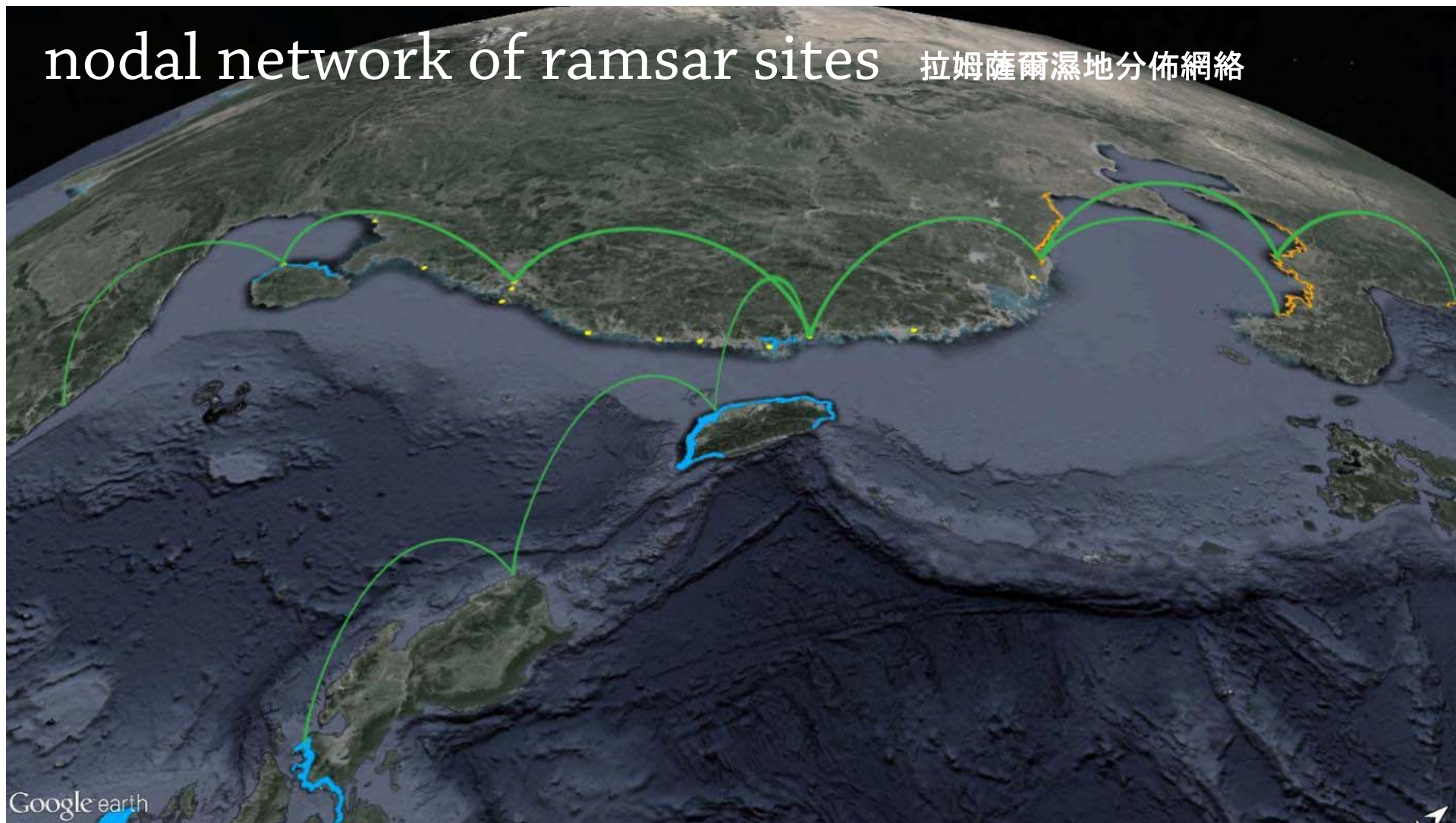
habitat preservation: BFS at Xinghua Bay 12/14/16



habitat preservation: BFS at Xinghua Bay 12/14/16



nodal network of ramsar sites 拉姆薩爾濕地分佈網絡

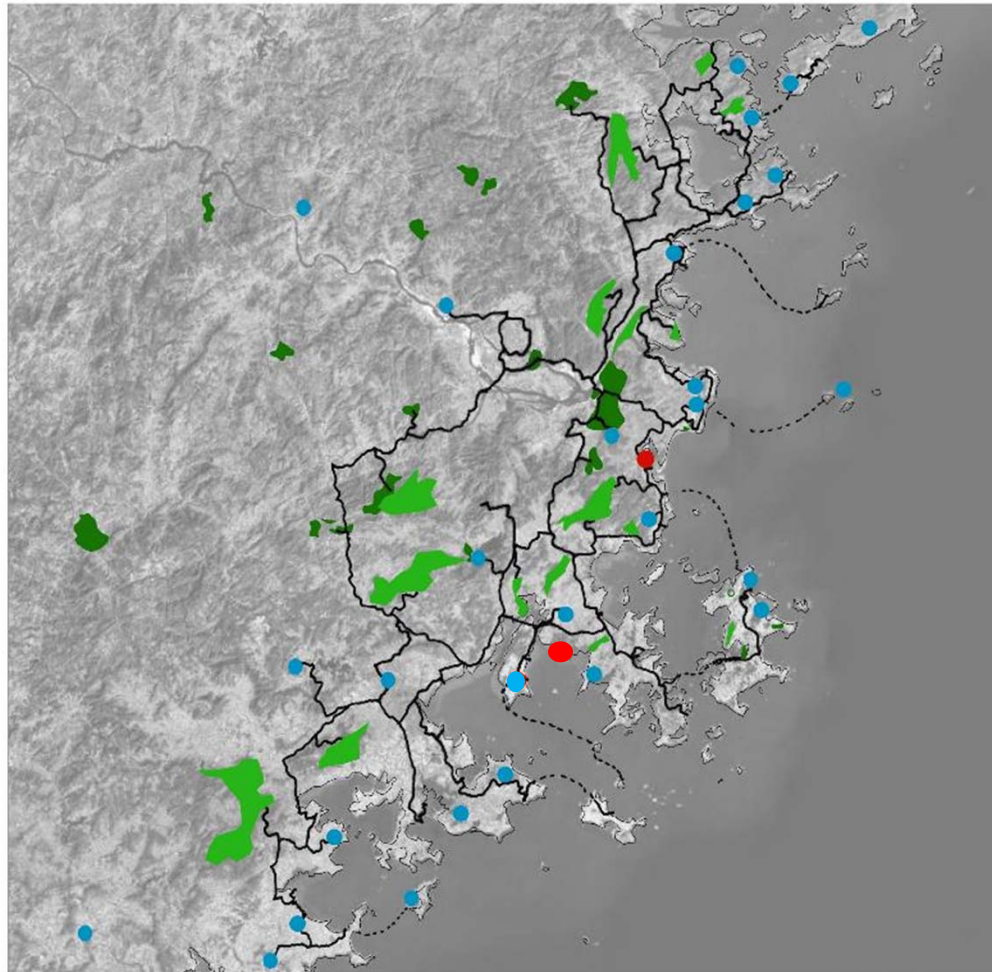


ecotourism:

Fujian scenic route & wetland plan

生態旅遊生態旅遊

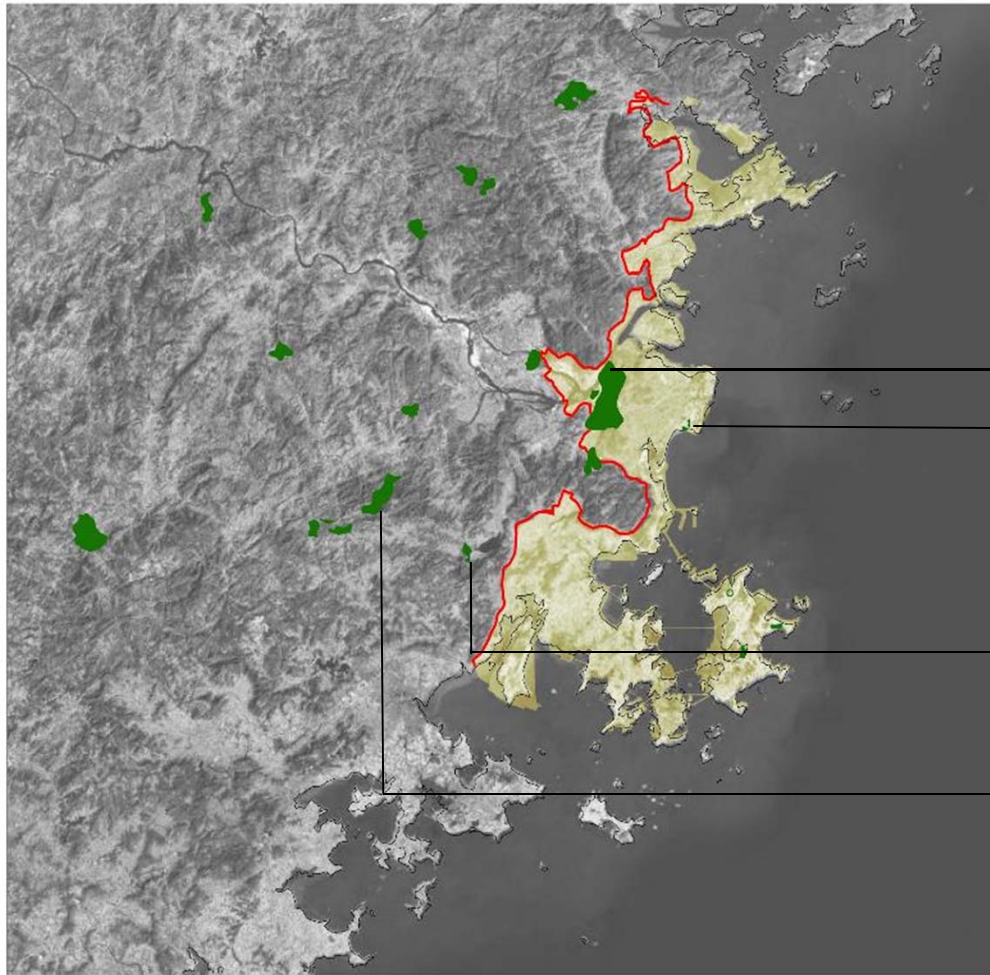
福建景區路線與濕地規劃



- NEW SCENIC ROUTE 新增景點游線
- NEW SCENIC AREAS 新增景區
- TOURISTIC SITES 旅遊點
- SCENIC AREAS 風景區
- POSSIBLE RAMSAR SITE (BFS) 潛在拉姆薩爾濕地

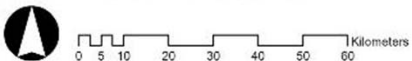
existing national parks & scenic areas

現狀國家公園景區



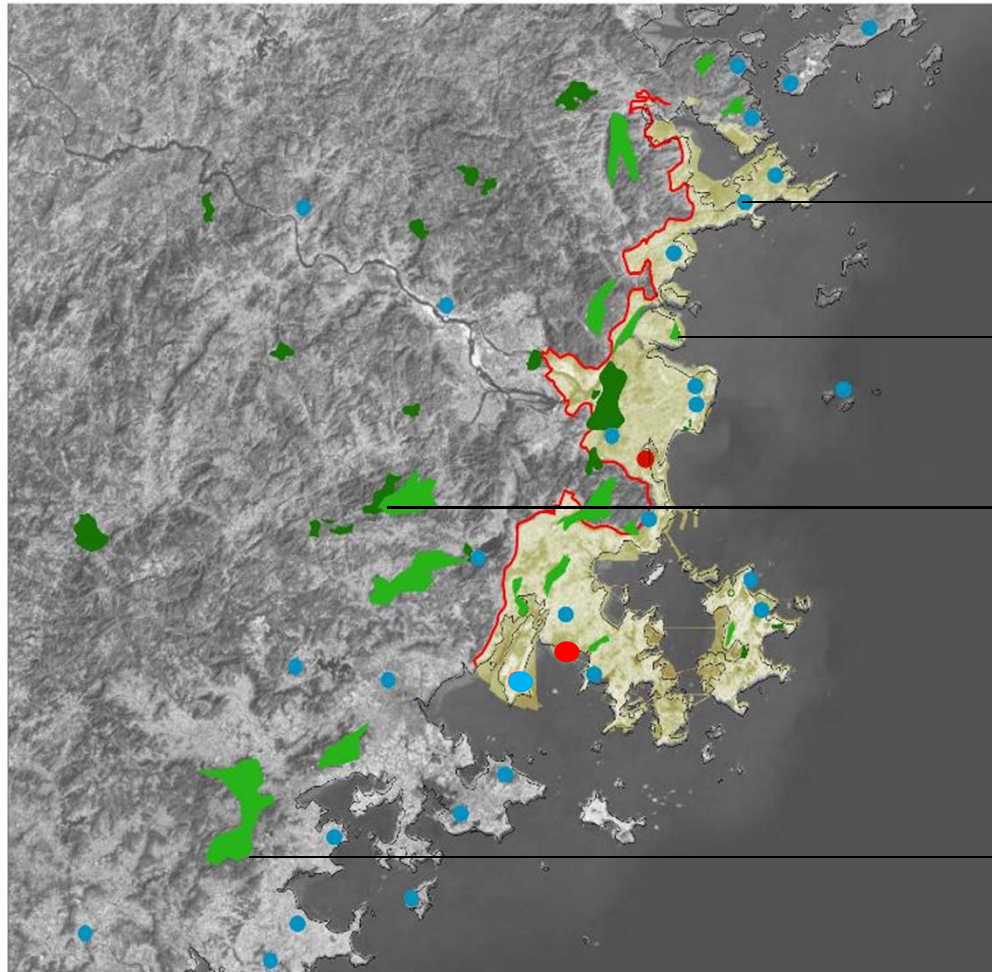
FUZHOU NEW AREA

SCENIC AREAS



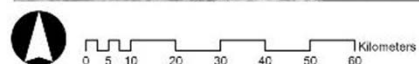
designation of new scenic areas

選定新景區

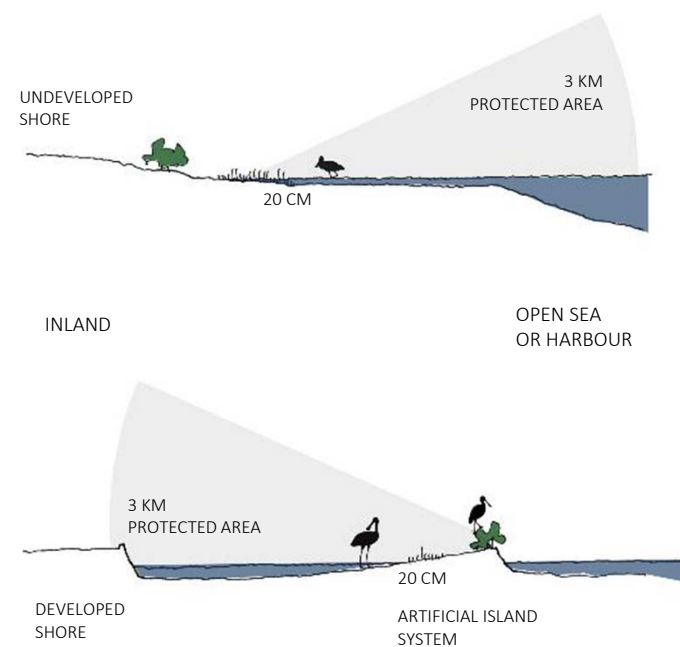


- NEW SCENIC AREAS
- TOURISTIC AREAS
- FUZHOU NEW AREA
- SCENIC AREAS
- POSSIBLE RAMSAR SITE



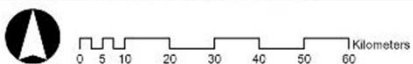
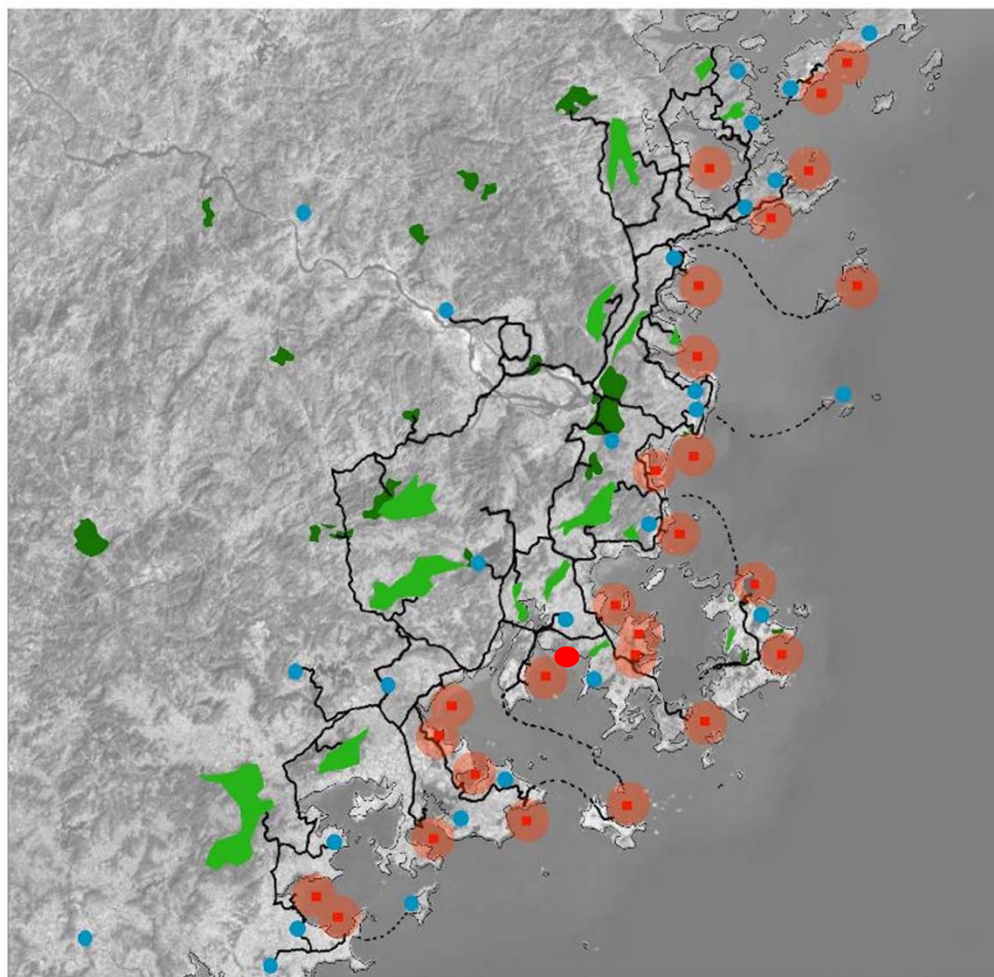


景區游線/濕地規劃 scenic route/ the wetland plan

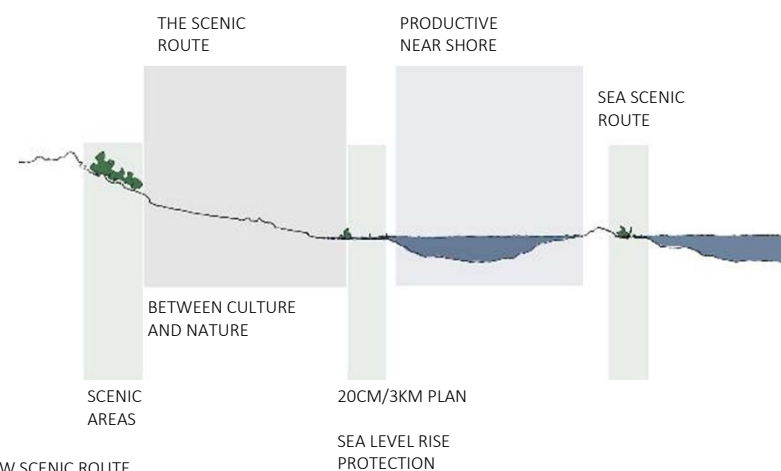


- BFS POSSIBLE RAMSAR SITE
- PROPOSED PROTECTED AREA

The '20 cm and 3 km' Plan preparing
for sea-level rise

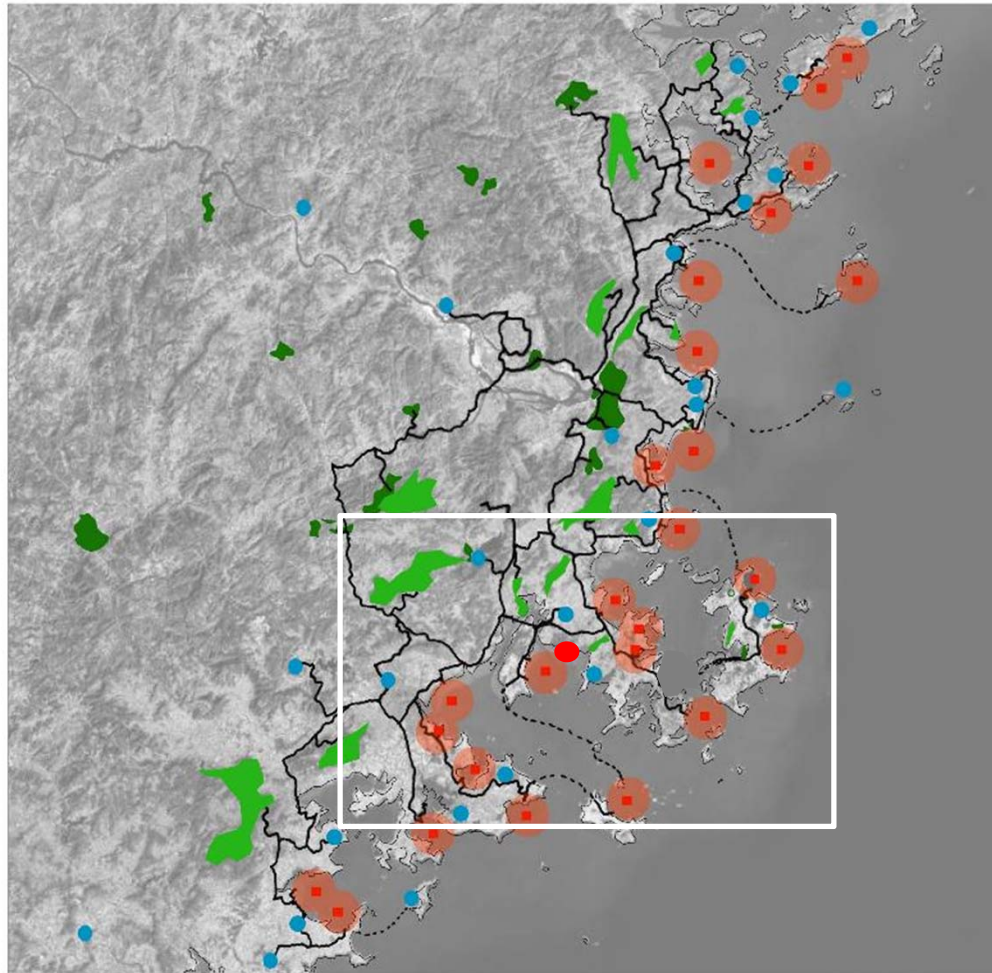


景區游線/濕地規劃 scenic route/ the wetland plan

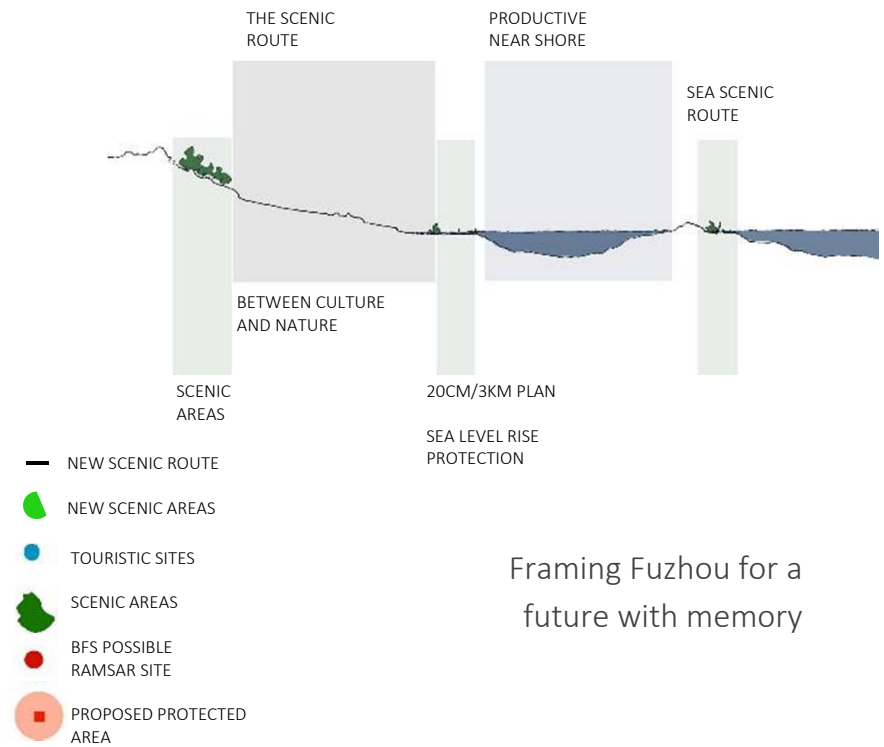


- NEW SCENIC ROUTE
- NEW SCENIC AREAS
- TOURISTIC SITES
- SCENIC AREAS
- BFS POSSIBLE RAMSAR SITE
- PROPOSED PROTECTED AREA

Framing Fuzhou for a
future with memory



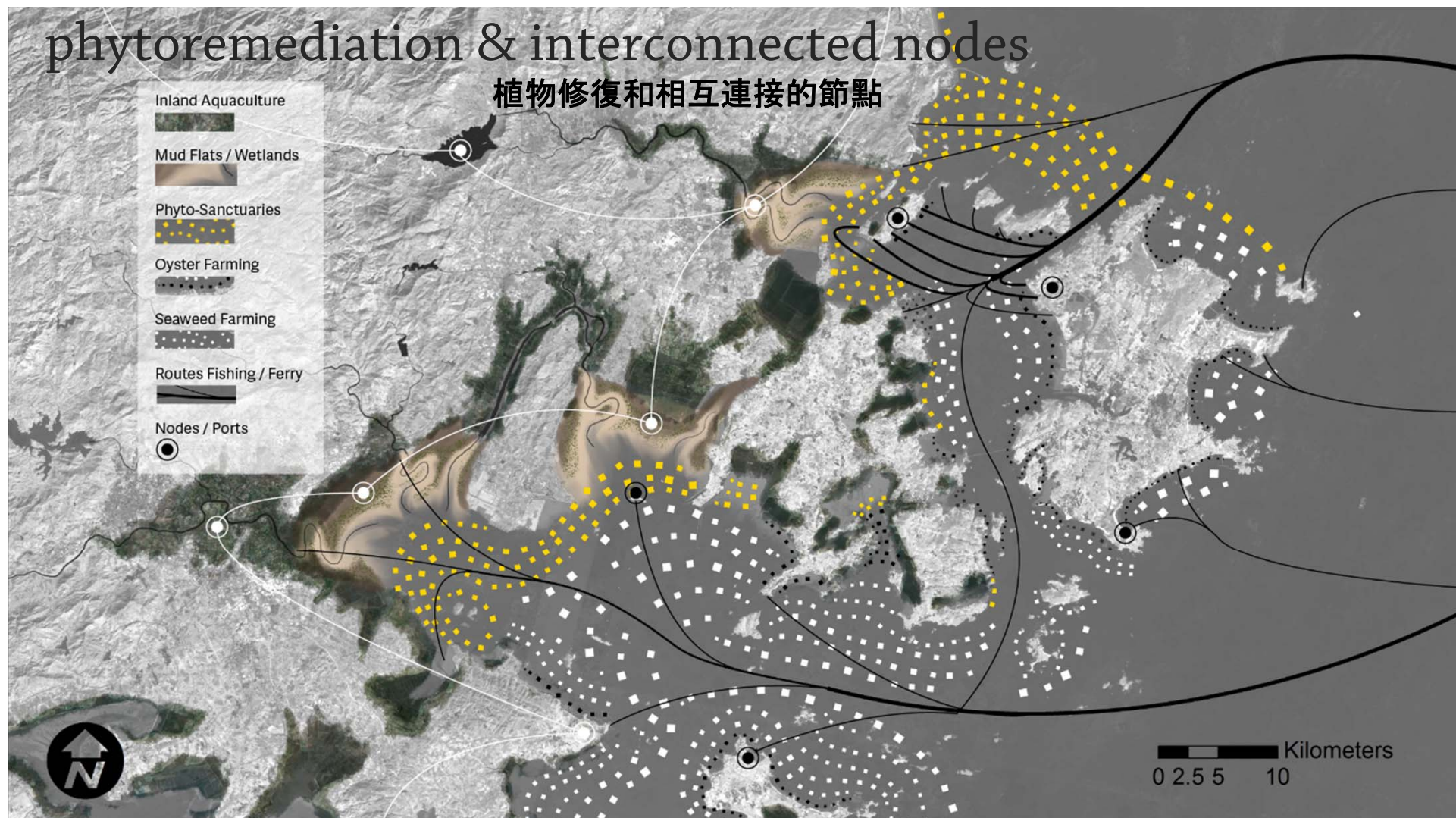
景區游線/濕地規劃 scenic route/ the wetland plan



Framing Fuzhou for a
future with memory

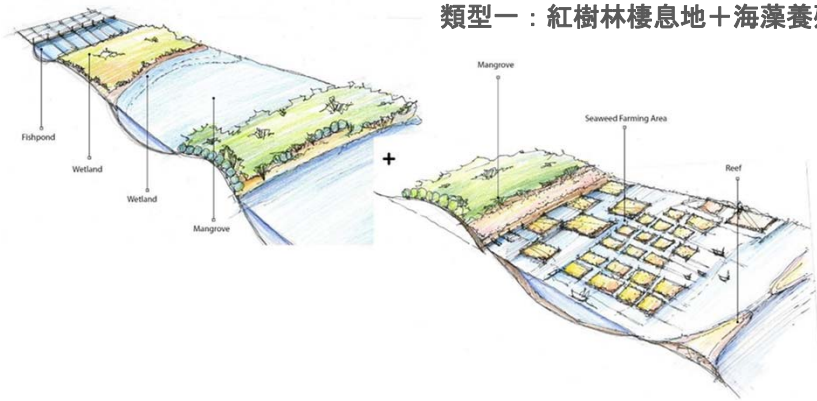
phytoremediation & interconnected nodes

植物修復和相互連接的節點



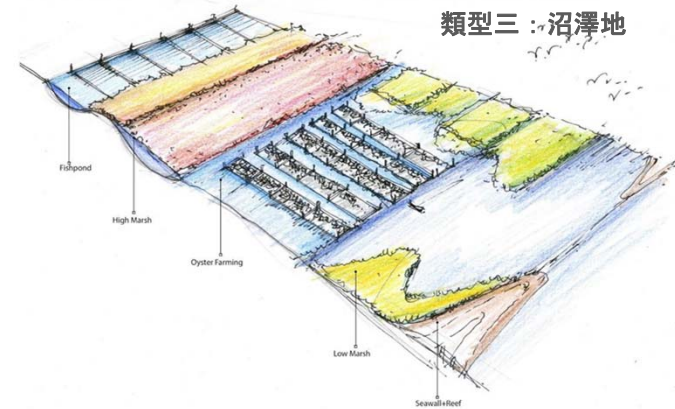
Type 01: Mangrove Habitat + Seaweed Farming

類型一：紅樹林棲息地+海藻養殖



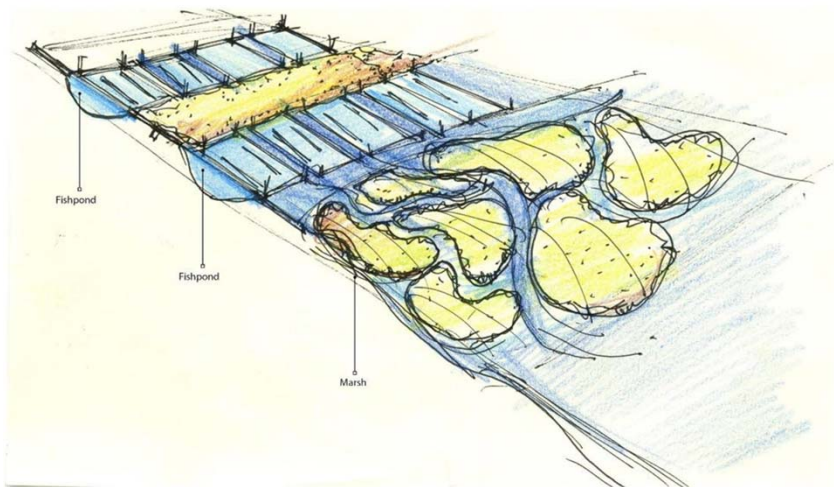
Type 03: Marsh Land + Oyster Farming

類型三：沼澤地



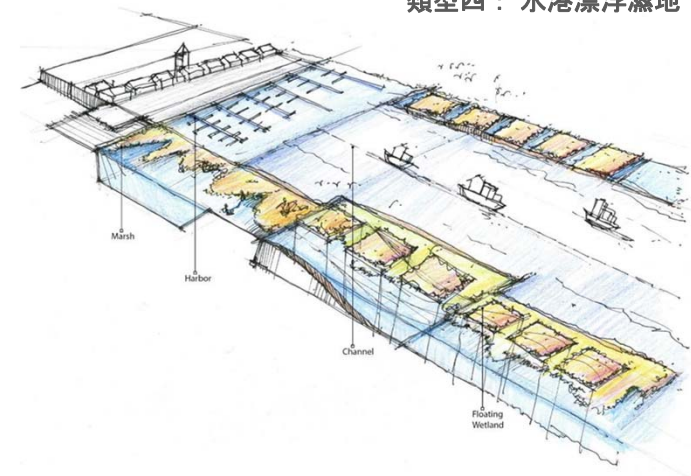
Type 02: Marsh Land

類型二：沼澤地+牡蠣養殖



Type 04: Harbor/ Floating Wetland

類型四：水港漂浮濕地



agricultural & aquacultural preservation

農業與水產養殖業保留

United Nations Sustainability Development Goals

1. End poverty in all its forms everywhere
2. End hunger, achieve food security and improved nutrition, and promote sustainable agriculture
3. Ensure healthy lives and promote well-being for all at all ages
4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
5. Achieve gender equality and empower all women and girls

Food and Agriculture Organization (FAO) of the United Nations,

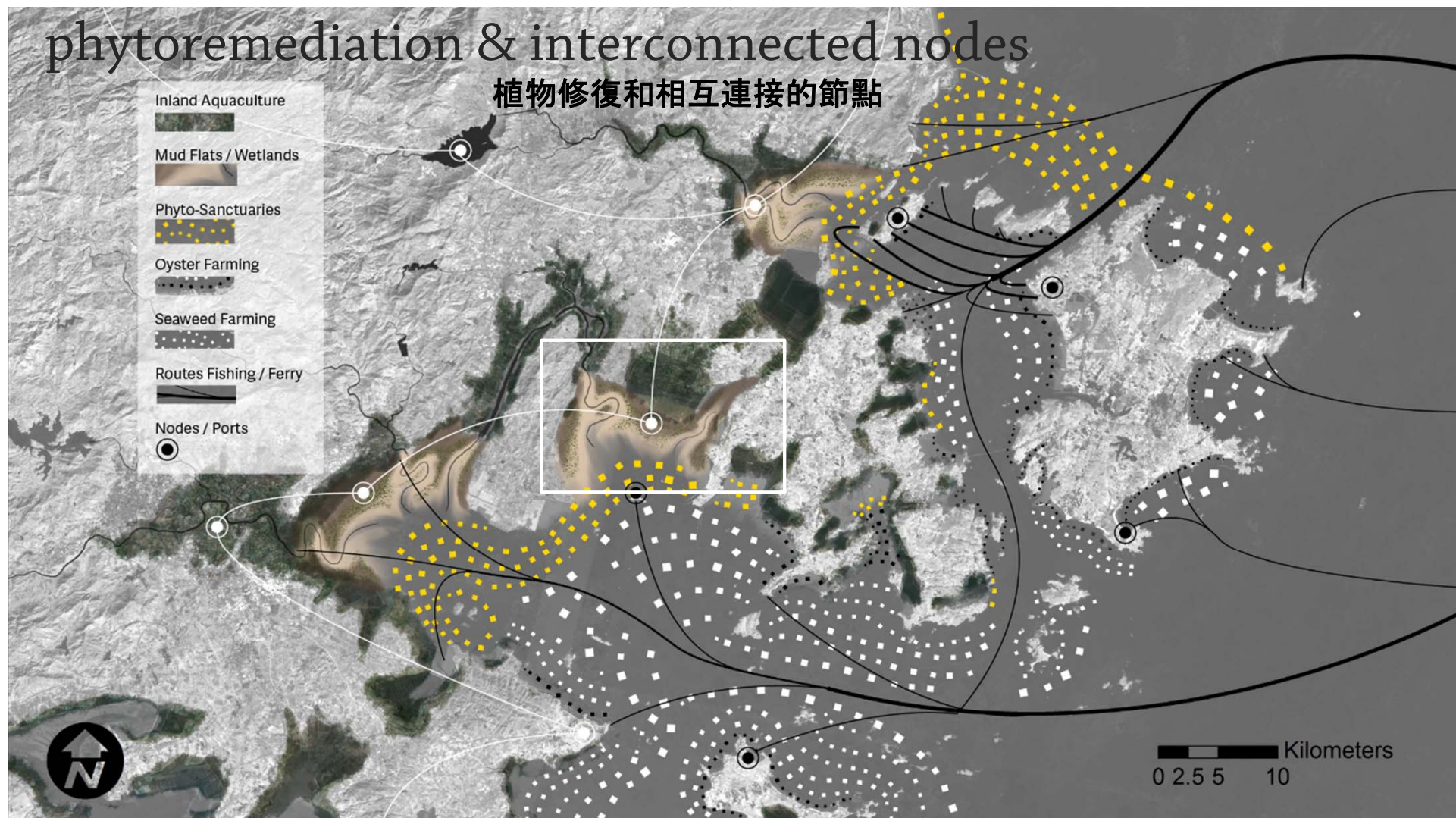
Globally Important Agricultural Heritage Systems (GIAHS):

“...traditional practices or models are not only manifestations of traditional philosophy but also the foundation of modern ecological agriculture, and these models have much positive influence on the sustainable agriculture movement throughout the world.” –Li (2001)



phytoremediation & interconnected nodes

植物修復和相互連接的節點



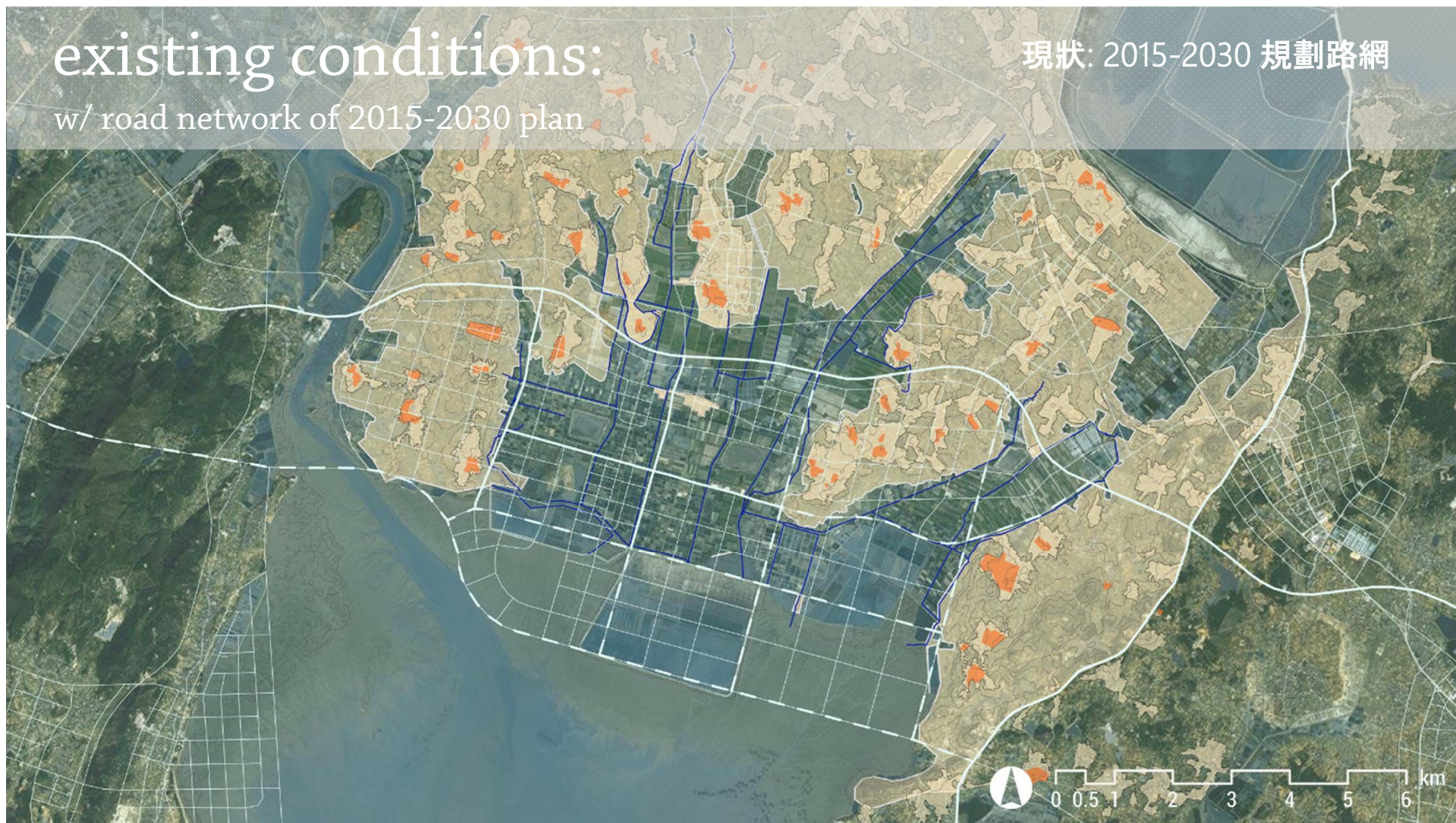
alternative master plan proposal: principles

備選規劃方案：原則

1. HISTORY: Preserve historic village architecture
2. TOPOGRAPHY: Coordinate land use according to topographic character
3. WATER: Preserve hydrologic function by maintaining canals and buffer zones
4. SEA LEVEL RISE: Build defensible development, not on high-risk land
5. HIGH-VALUE PROPERTIES: Maximize building along canals, around historic neighborhoods, and around the spoonbill reserve to increase high-value properties
6. ACCESS ROADS: Use the new highways to protect development and spoonbill habitat from sea-level rise
7. BUFFER: Use agriculture or canals as a buffer between industry and residences
8. ADJACENCIES: Keep local farms near historic courtyard homes
9. ECONOMIC DIVERSITY: Offer opportunities for multiple economies, industry AND ecotourism AND agriculture

existing conditions:
w/ road network of 2015-2030 plan

現状: 2015-2030 規劃路網



alternative a:

urbanized canals + inland industry

備選a: 城市化的輸水渠+內陸工業



precedent: urbanized canals

案例借鑒：城市化的輸水渠

Wuzhen, China, “Venice of the East”

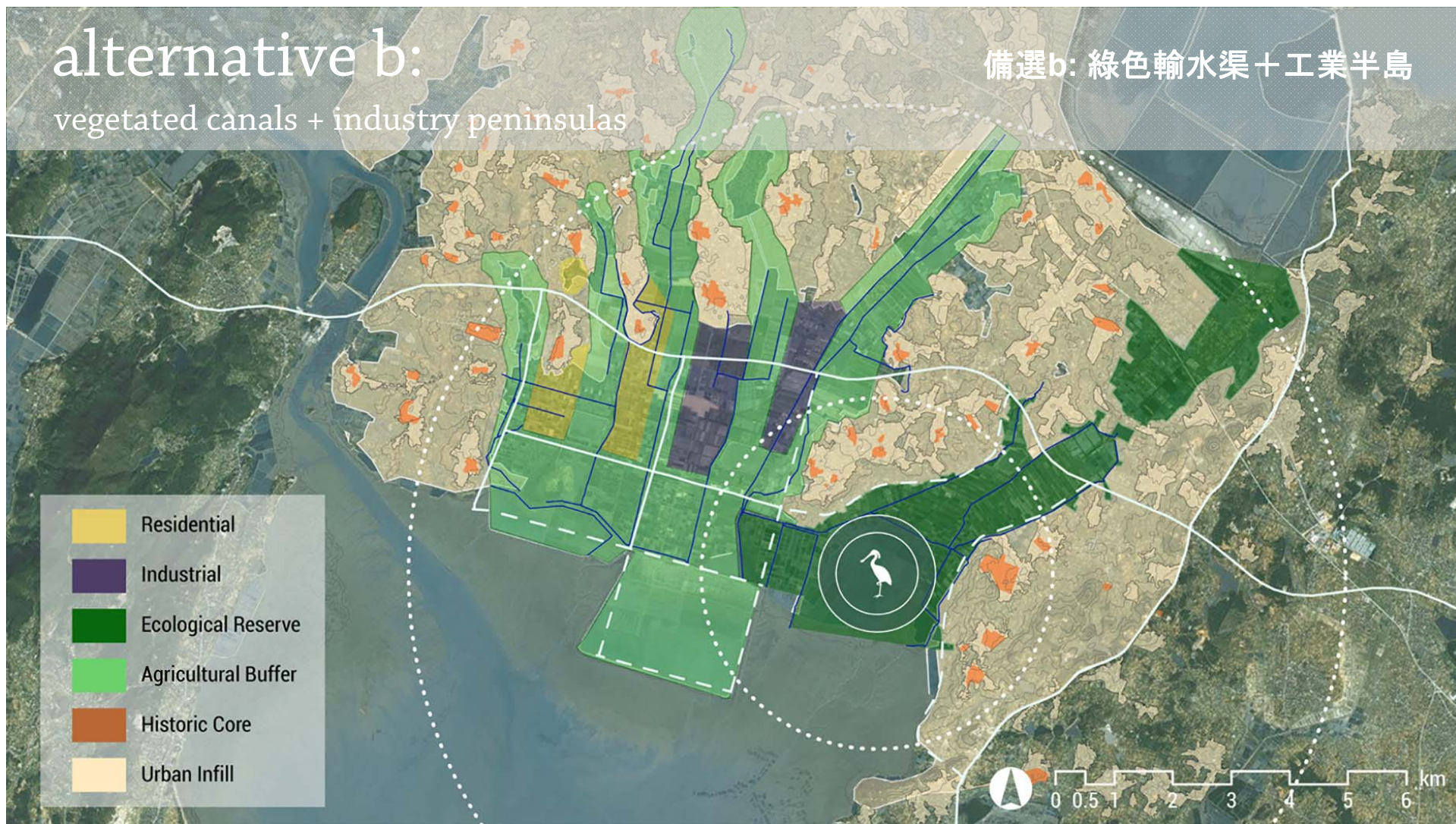
中國烏鎮，東方威尼斯



alternative b:

vegetated canals + industry peninsulas

備選b: 綠色輸水渠+工業半島



alternative c:

urban growth boundary + decentralized/ relocated industry

備選c: 城市增長邊界+去中心的工業布局



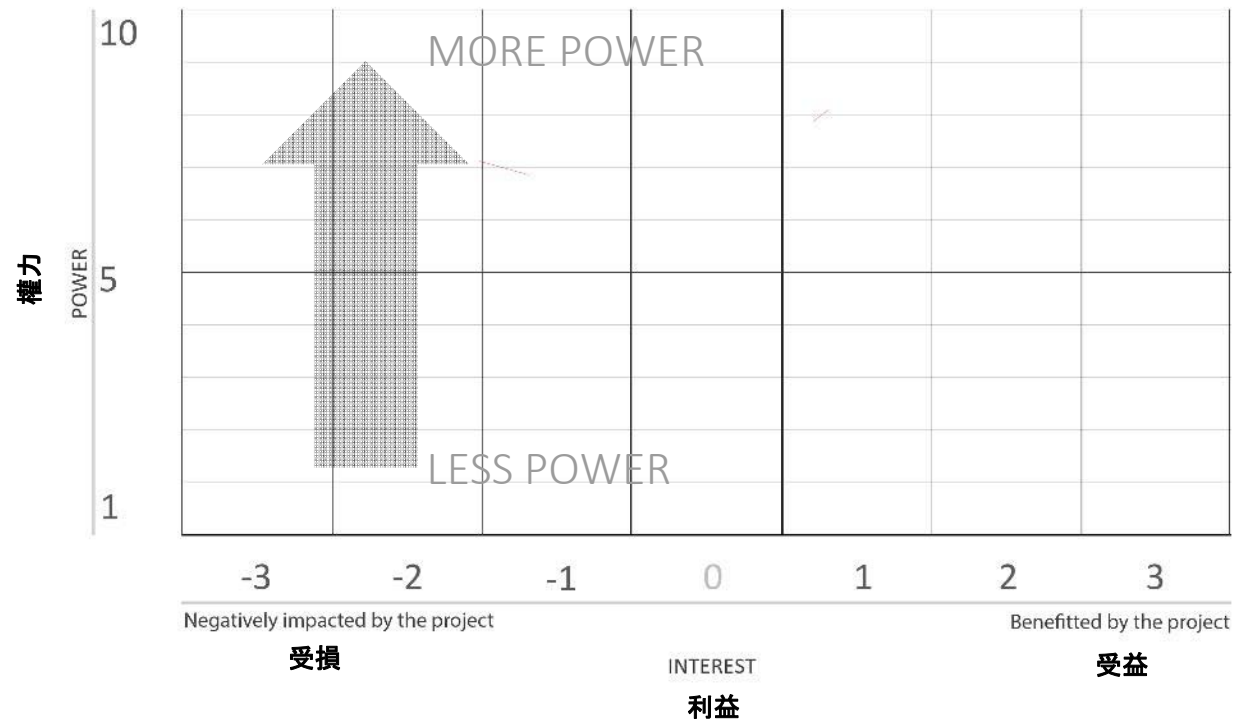
precedent: ecological reserve

案例借鑒：生態保護區

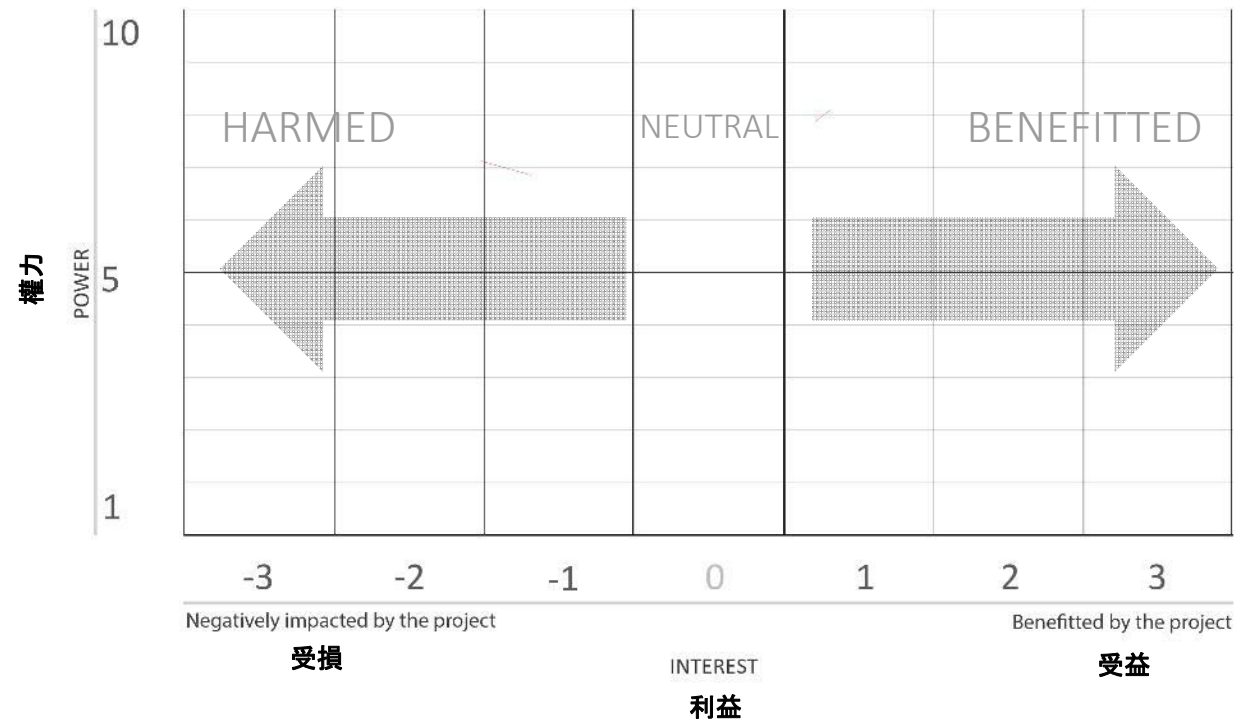
Mai Po Nature Reserve, Hong Kong 香港米埔自然保護區



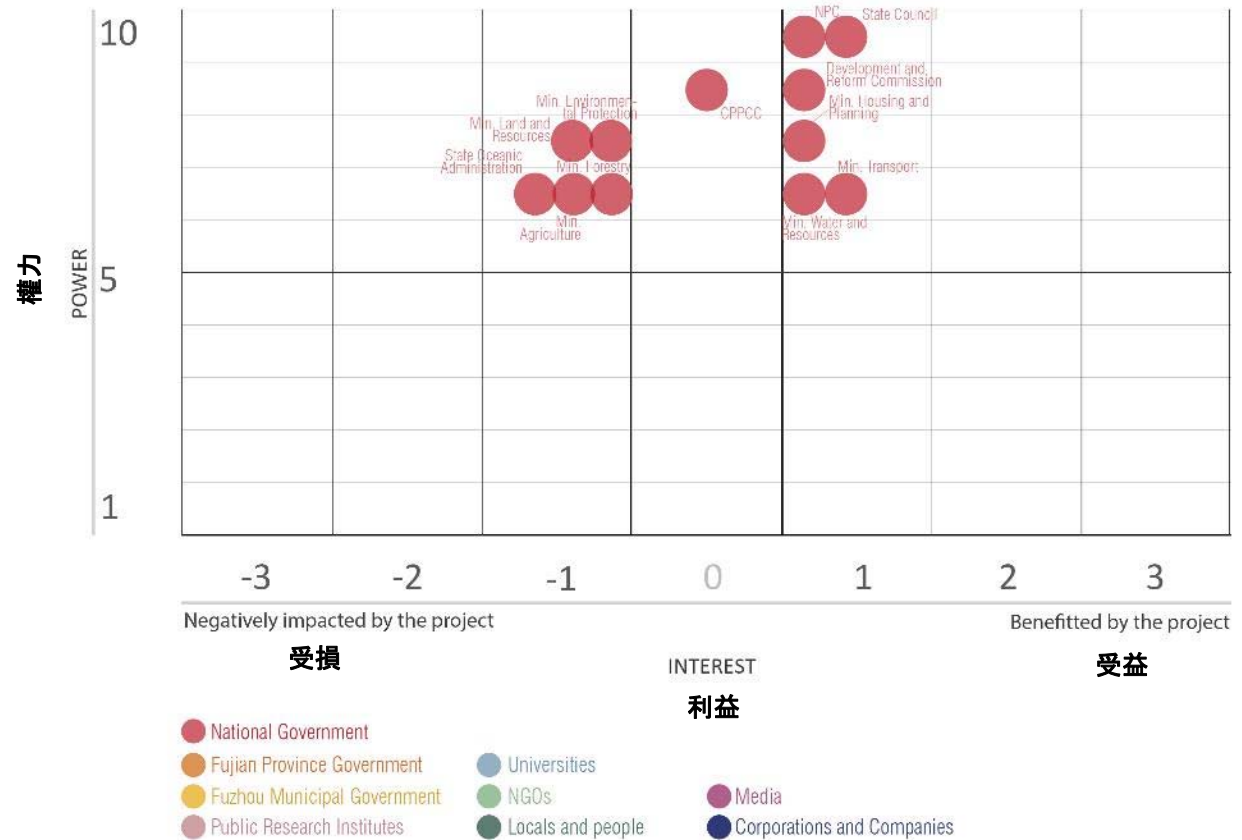
stakeholder analysis 利益相關者分析



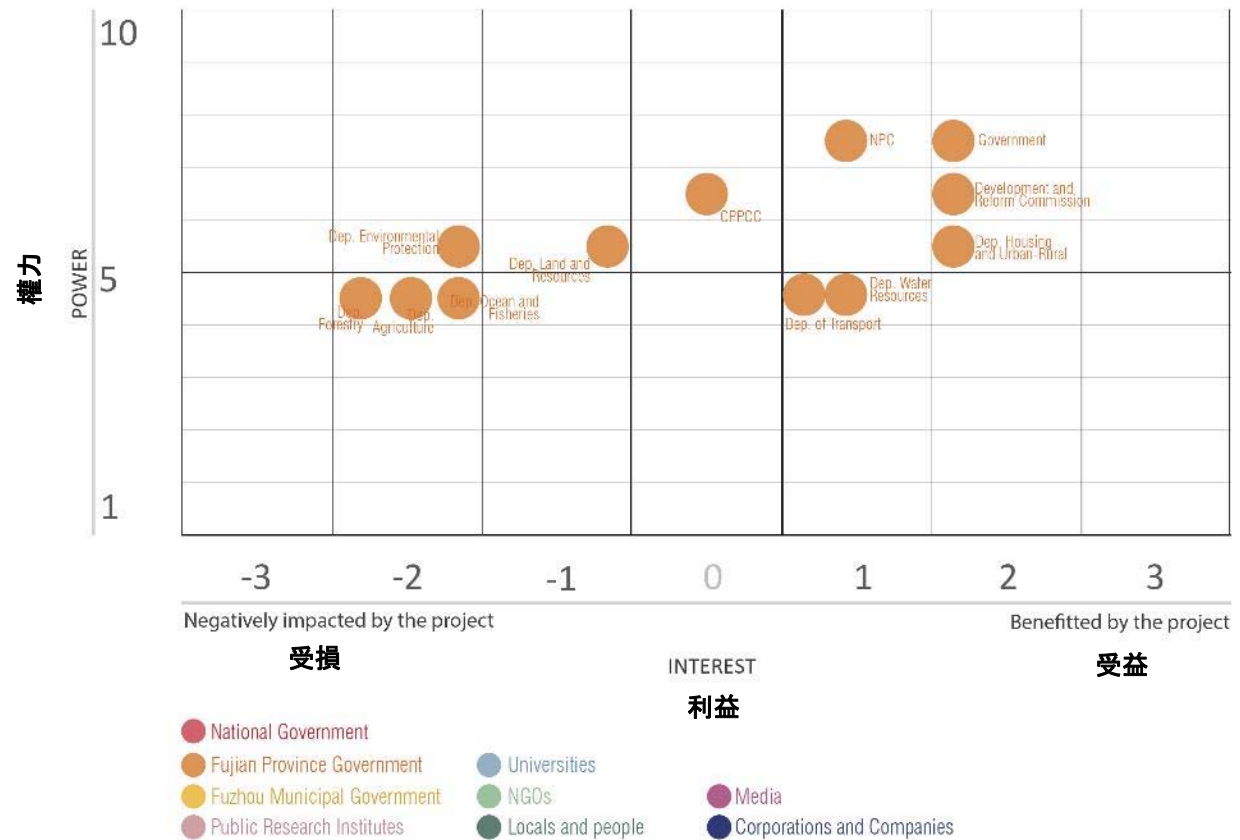
stakeholder analysis 利益相關者分析



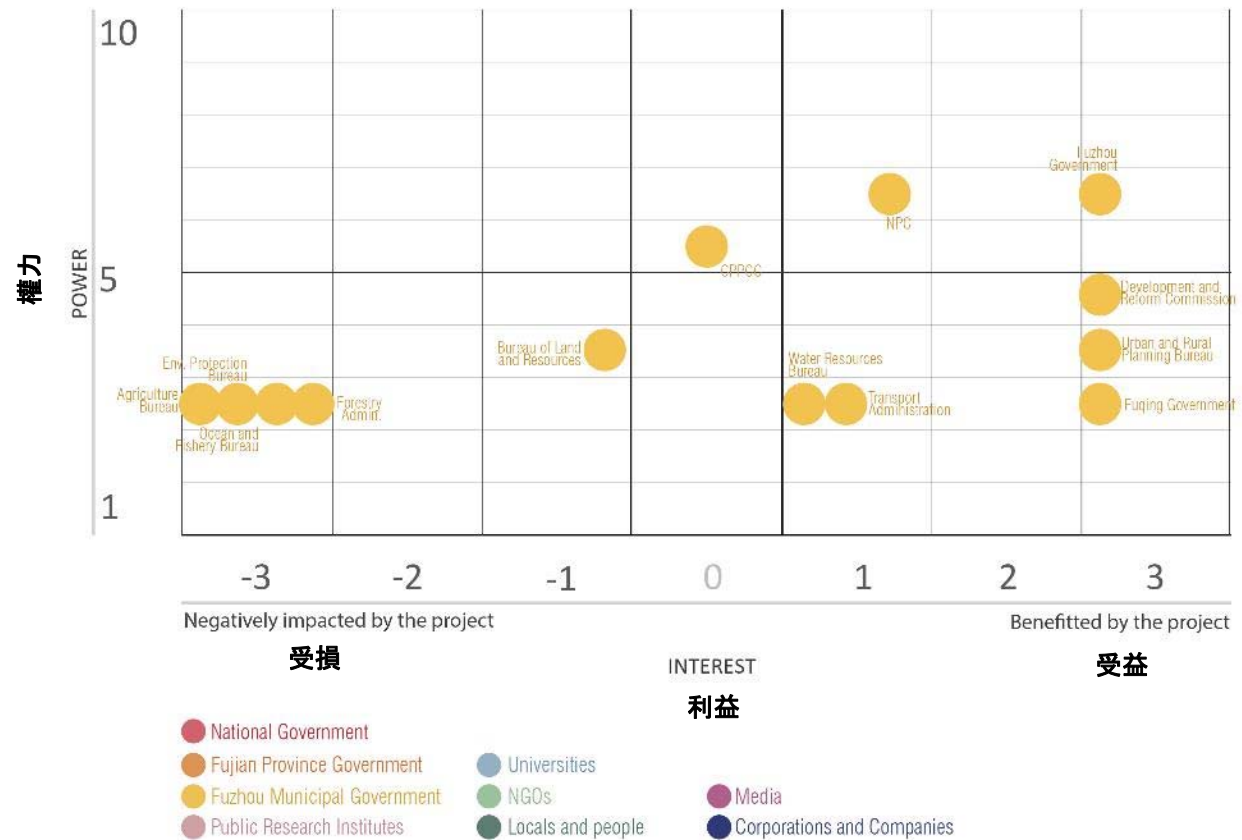
stakeholder analysis: national government



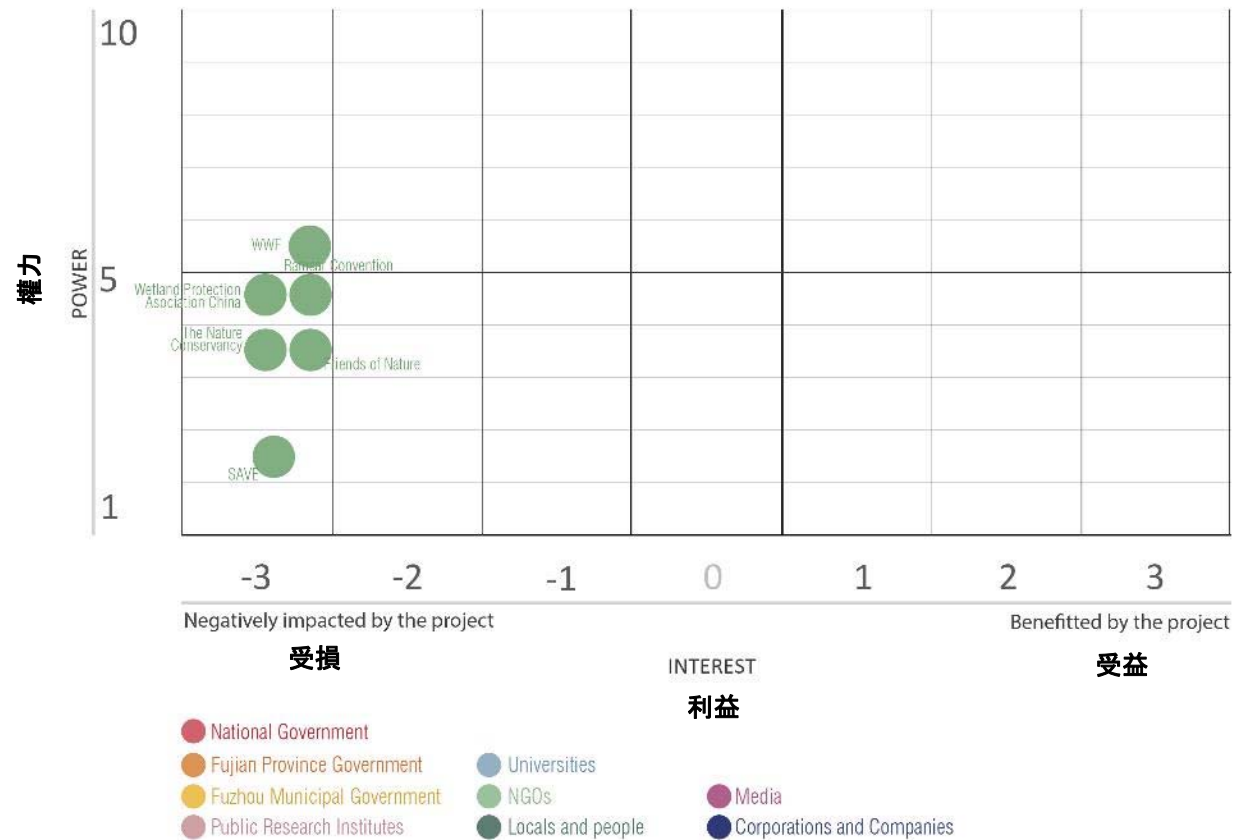
stakeholder analysis: Fujian provincial government



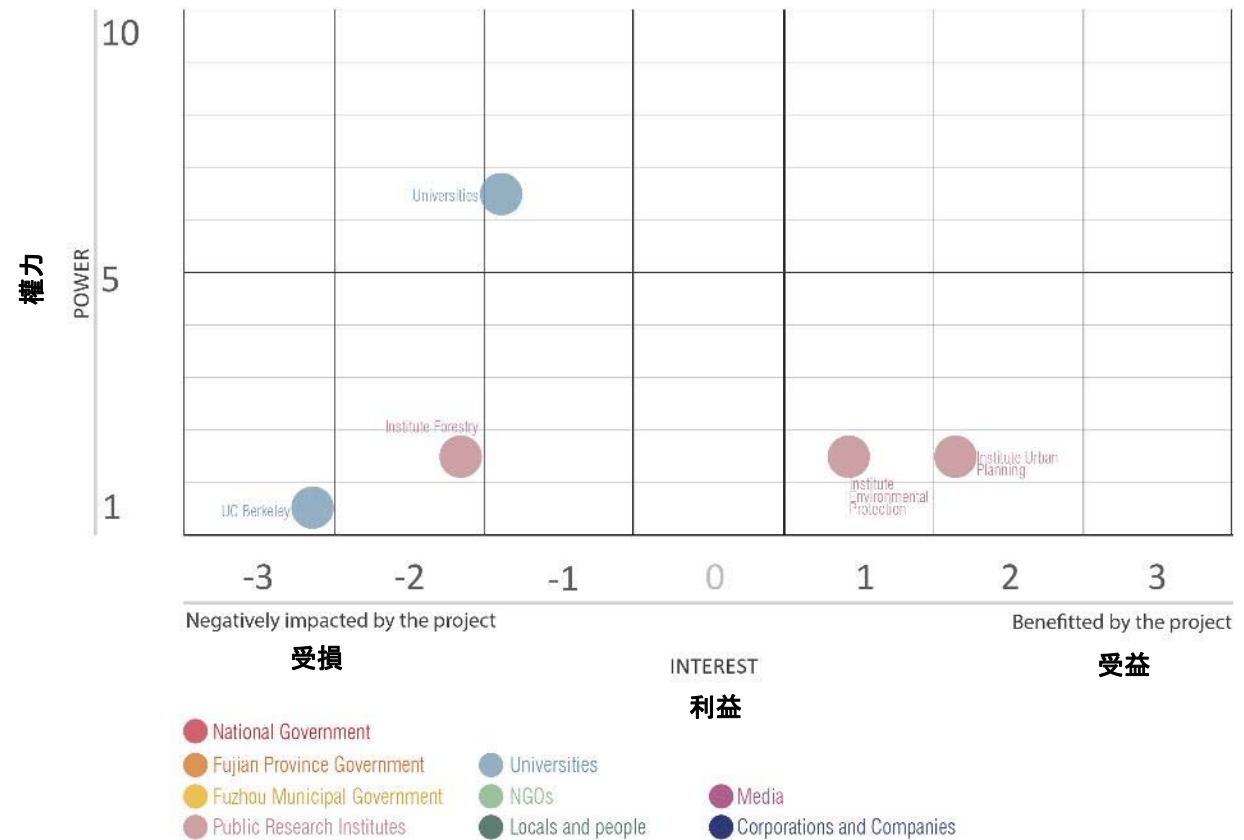
stakeholder analysis: Fuzhou municipal government



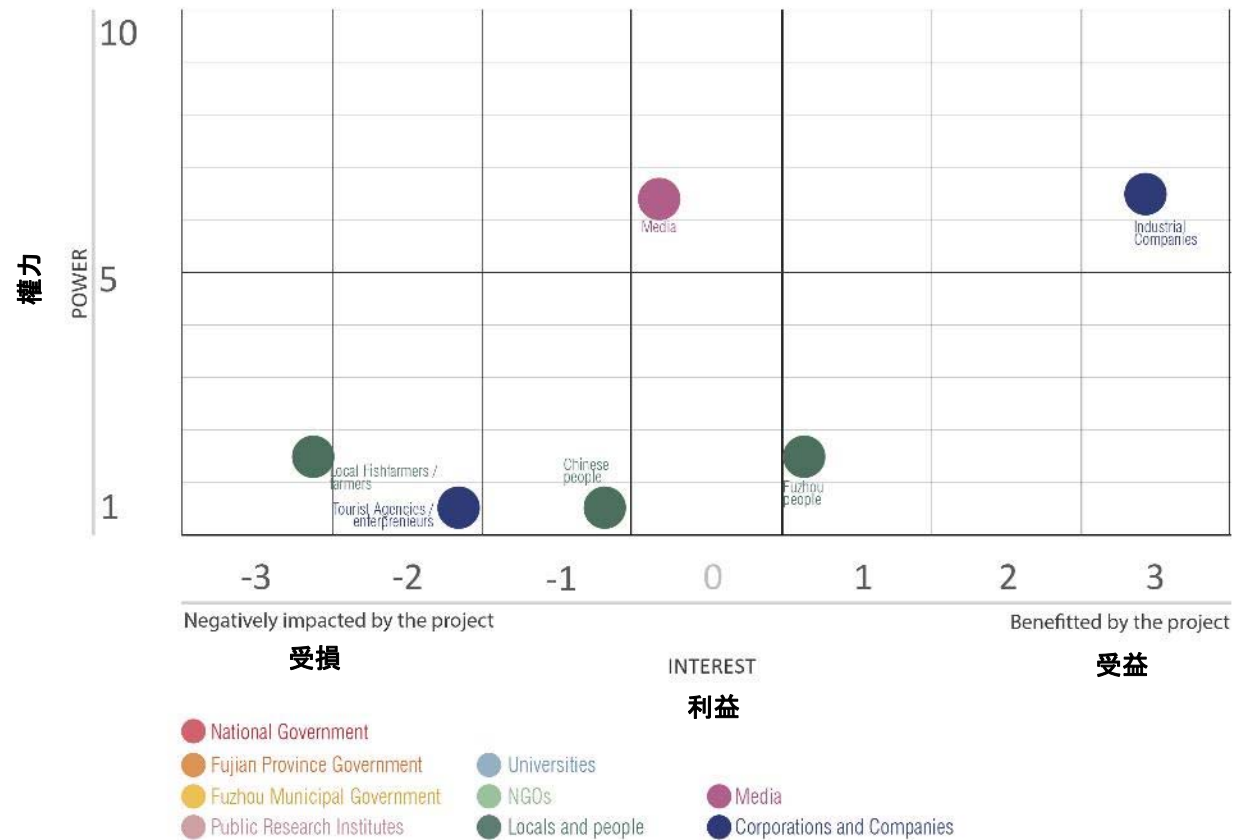
stakeholder analysis: NGOs

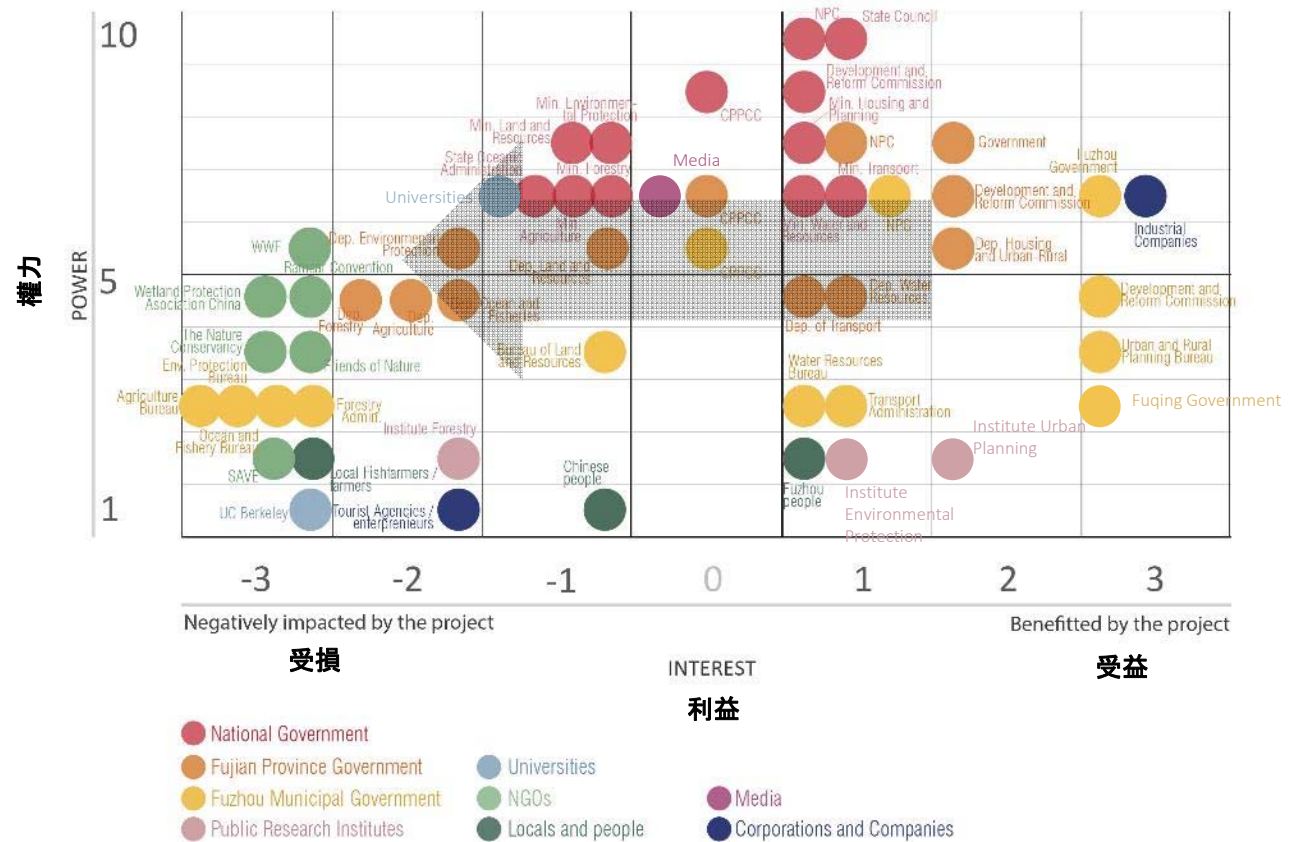


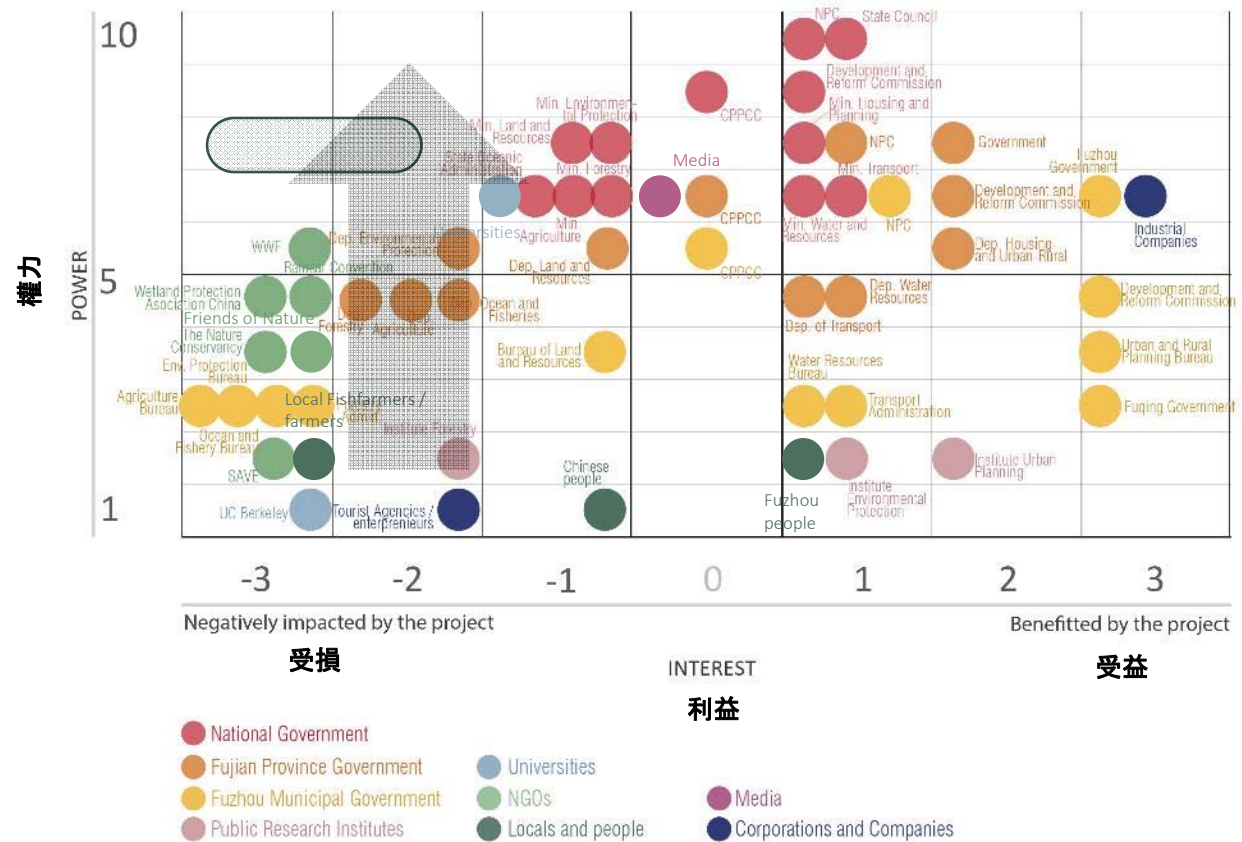
stakeholder analysis: universities and research institutes



stakeholder analysis: citizens, corporations, and media







strategy for implementation 實施策略

黑面琵鹭需要栖息空间！

保护它们在兴化湾的栖息地：
拒绝海湾围填！

A possible multi-pronged approach:

- Letters to government officials and academics/professors
- Gain support through social media networks and microblogs with compelling graphics

一個雙管齊下的策略：

給中國政府官員和學者寫信

通過宣傳畫和社交媒體獲取公眾支持



SAVE asks the Community Design Network:

SAVE的提問

What should we do next?

我們下一步應該怎樣做？

- How does a grassroots approach fit into top-down forms of government?
- What is the appropriate participatory design process within China's rigid political pyramid?
- What is the appropriate communication channel for amending master plans in China? (e.g. working with the Paulson Institute)
- What is the role of the central government in revising/managing/blocking regional plans and aspirations?

acknowledgements

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