



Implement ICM for A Sustainable City —— ICM Practice of Xiamen, China



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01 A Glance of Xiamen Sea Area

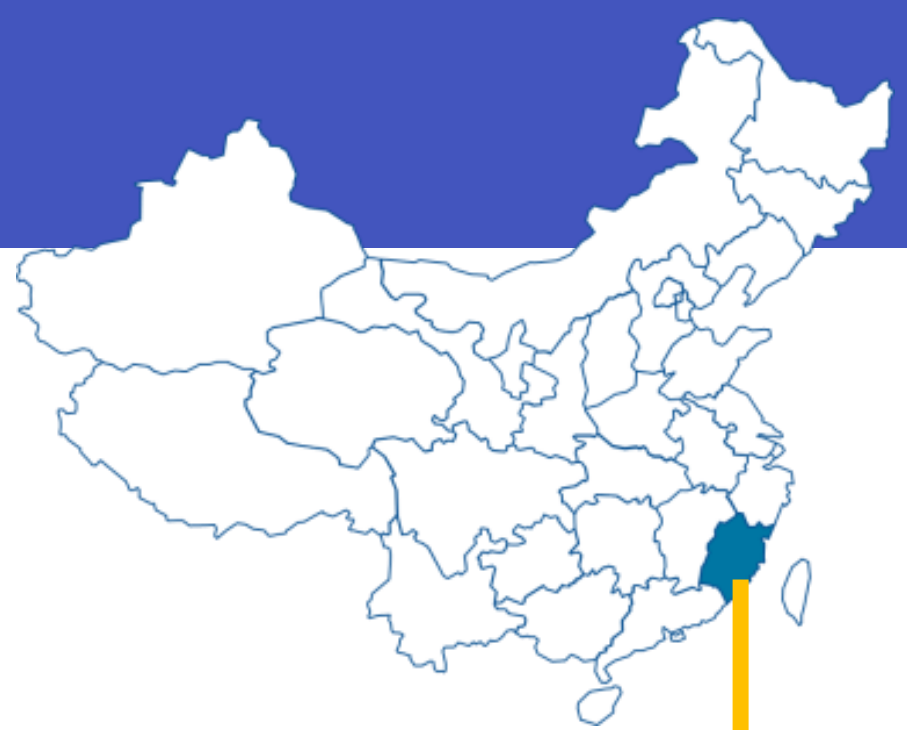
- Xiamen locates at the Southeast part of China, the west coast of the Taiwan Straits.
- Its economic improvement, social development and level up of living standard highly rely on the various products and services provided by the ocean and coastal ecosystem.
 - Port and coastal industries
 - Marine high-tech industries
 - Coastal tourism

Sea Area: **355 km²**

Coastline: **226 km**

Marine life:

2000 Species



An aerial photograph of a crowded beach. The top half of the image shows the ocean with white-capped waves crashing onto the shore. The bottom half shows a large number of people scattered across the golden sand. The text is overlaid in the center, between the waves and the beach.

**City and Sea Relationship in Xiamen:
City on the sea, and sea in the city.**

02 ICM Mode of Xiamen

Local legal sytem

- Marine Environment Protection
- Usage of Sea Area
- MPA
- Mrine bio-diversity
- Port management
- Marine culture
- ICM of Yudang Lake
-

Inter-department coordination mechanism

- ICM leading group and its office

Integrated enforcement mechanism

- Joint marine law enforcement team

Scientific policy making system

- Marine expert group
- Medium and long term scientific research projects

Sustainable financial mechanism

- Regular budget of the government
- Donation
- Compensation for ecological damage

Public participation mechanism

- Public maritime education
- Public Marine monitoring network
- Public survey

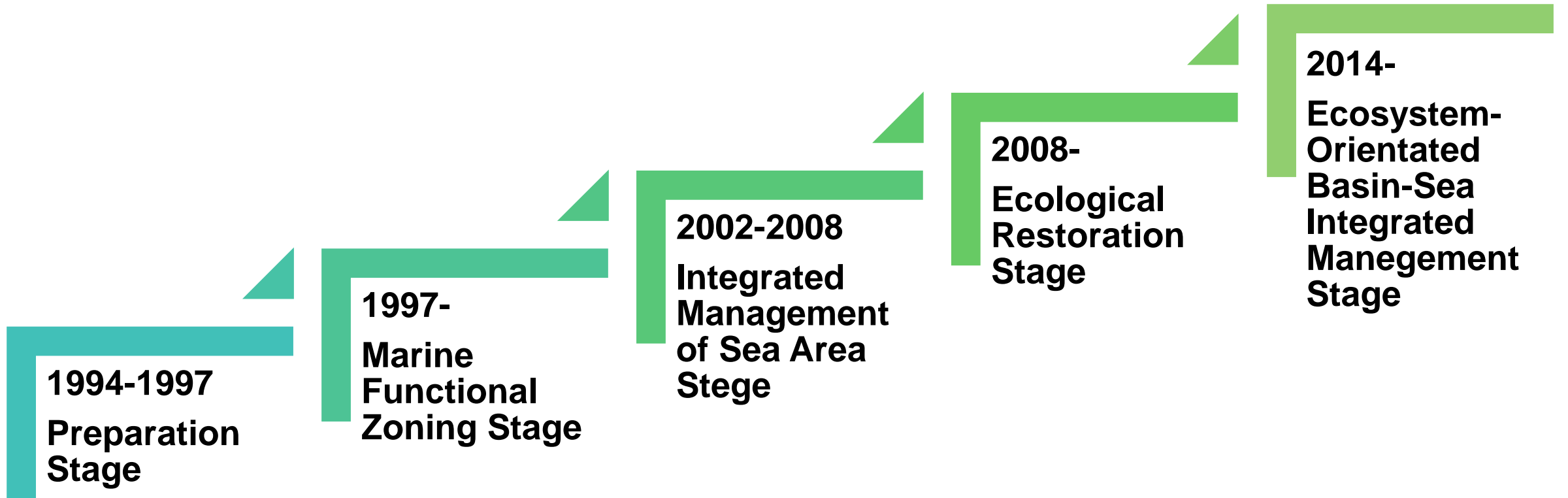


First marine enforcement team in China



Red line of Xiamen marine ecosystem

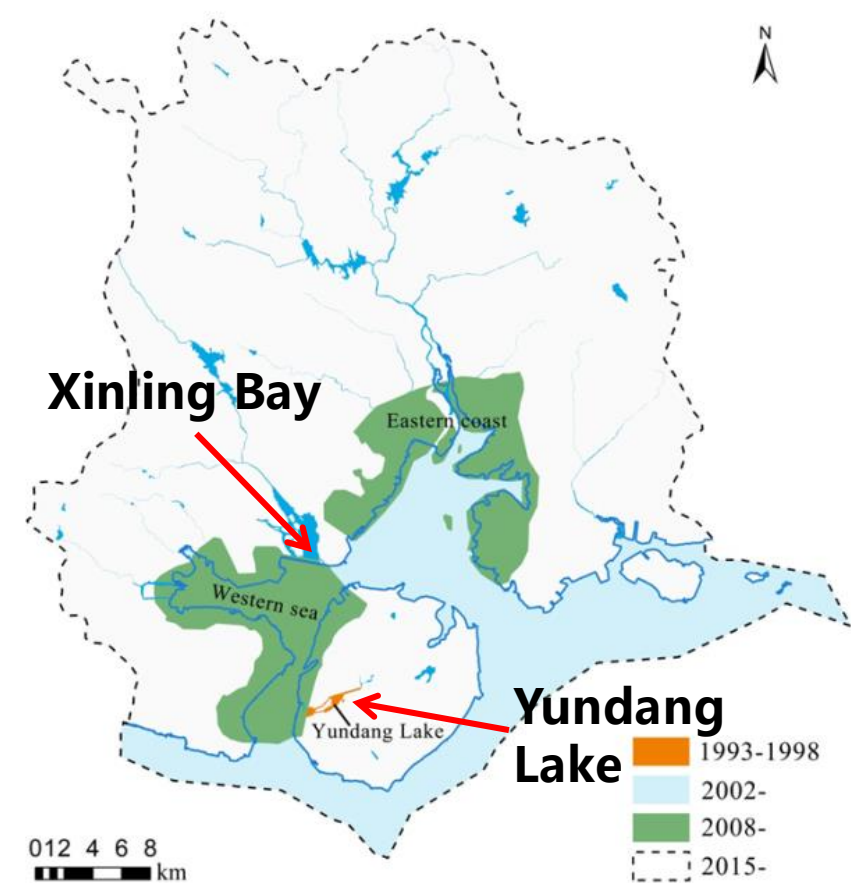
Development of Xiamen's ICM



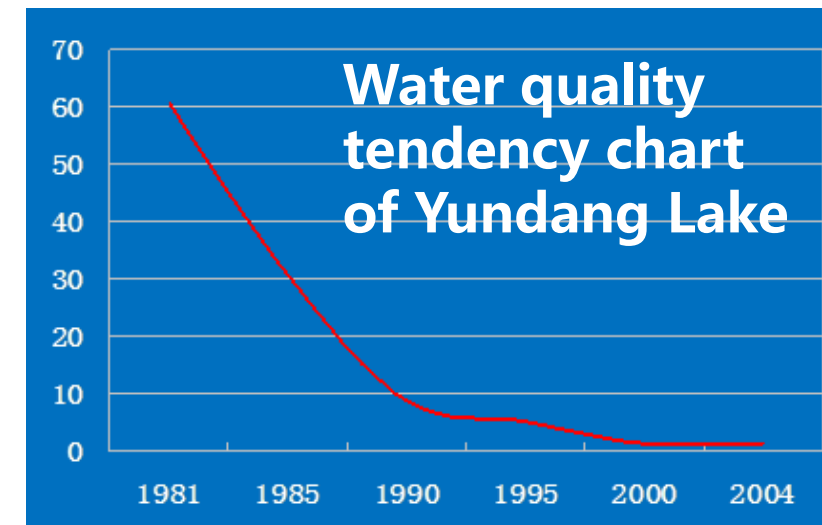
Development of Xiamen's ICM

➤ 1994-1997: Preparation Stage

- Identifying marine environmental problems and causes
- Developing ICM strategy
- Accumulating experience and reaching consensus through demonstration projects.
- ICM scope: Yundang Lake, Xinling Bay
- ICM function: pollution prevention and treatment



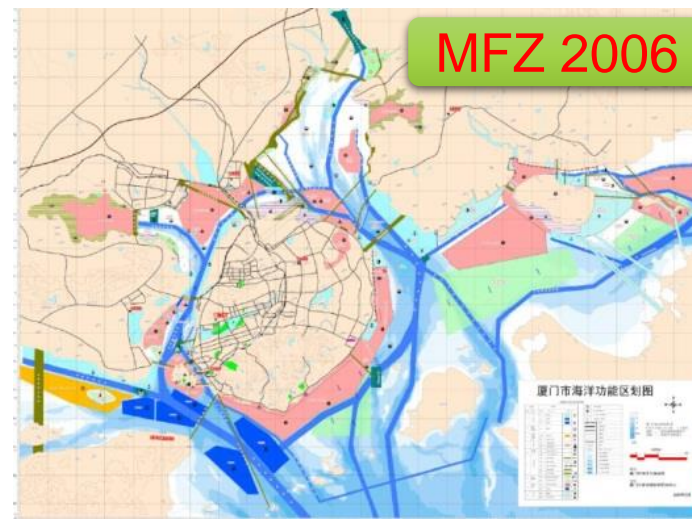
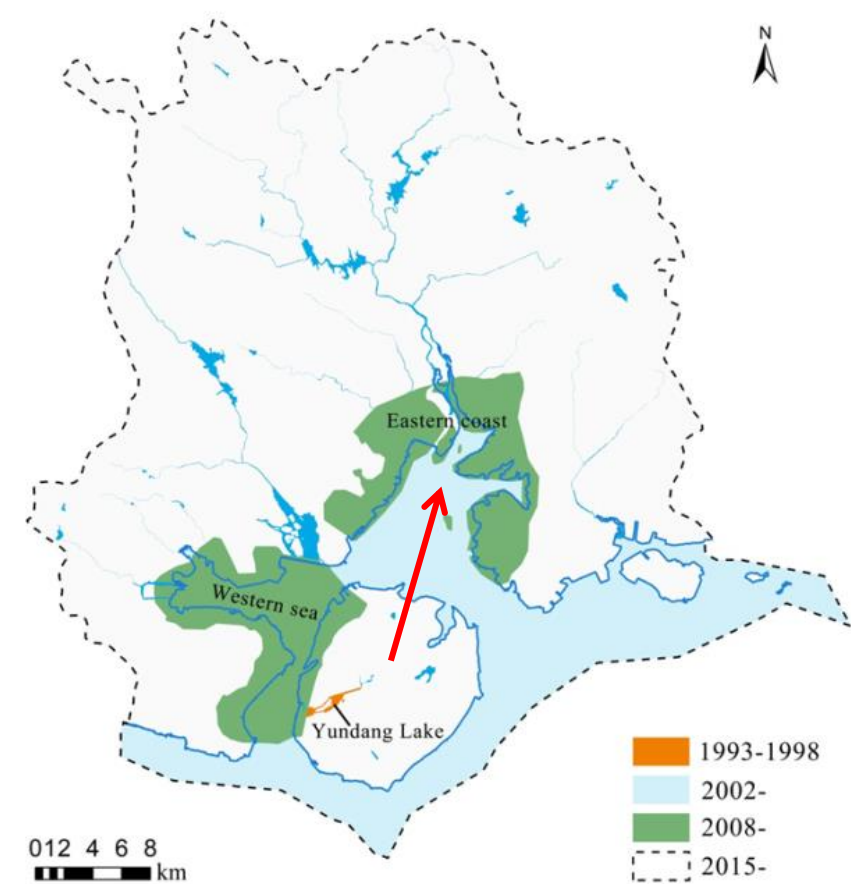
Before and After Comparison of Yundang Lake



Development of Xiamen's ICM

➤ 1997-: Marine Functional Zoning Stage

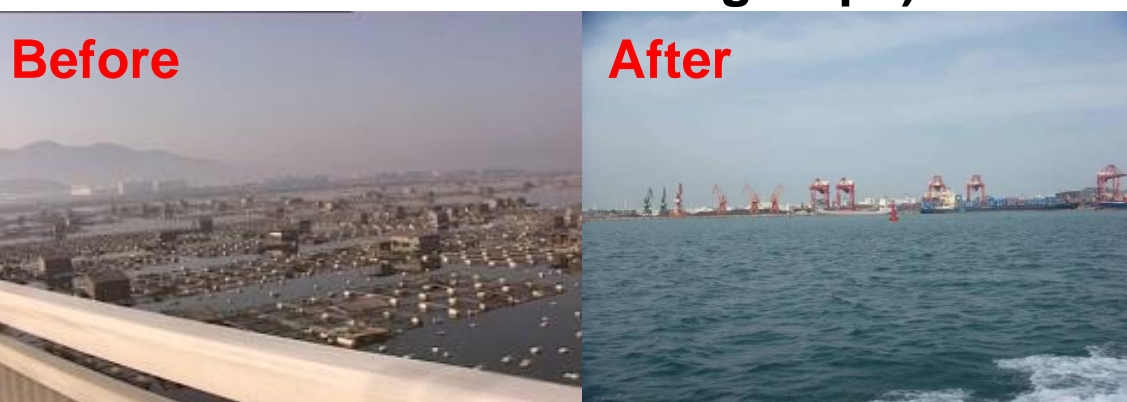
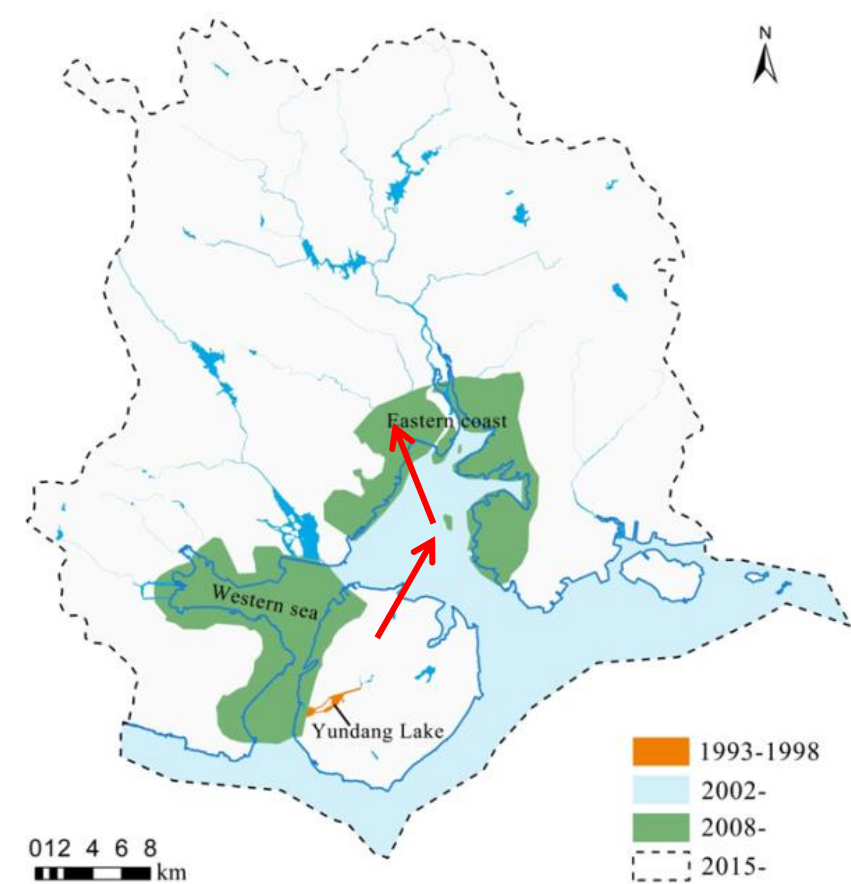
- Planning functions, sea usages and environmental protection requirements for different sea areas.
- Marine projects will be reviewed and approved according to the marine functional zoning.
- MFZ was modified 3 times, which changed it from human needs orientated to ecosystem orientated.
- ICM scope: Xiamen Sea Area
- ICM function: avoid resource utilization conflicts, pollution prevention and treatment



Development of Xiamen's ICM

➤ 2002-2008: Integrated Management of Sea Area Stege

- Integrated Management of western sea, Wuyuan Bay and eastern coast
- ICM scope: sea area and nearby land, integrated management of land and sea
- ICM function: achieving sustainable development which intent to balance the economic development, environment protection, restoration and social equality (improving the welfare of vulnerable groups)



Before and After Comparison of western sea



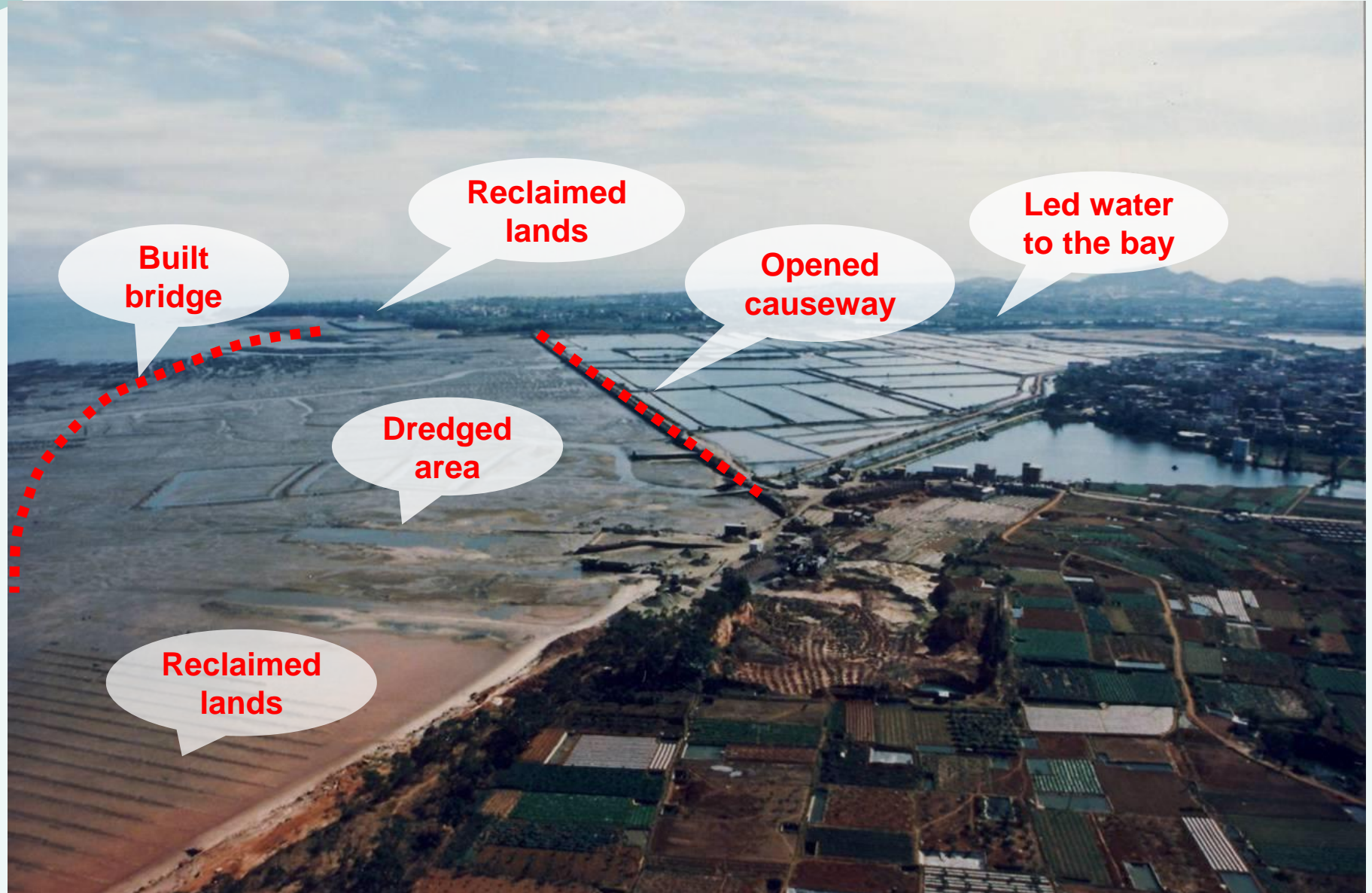
Before and After Comparison of Wuyuan Bay

Wuyuan Bay

Main tasks

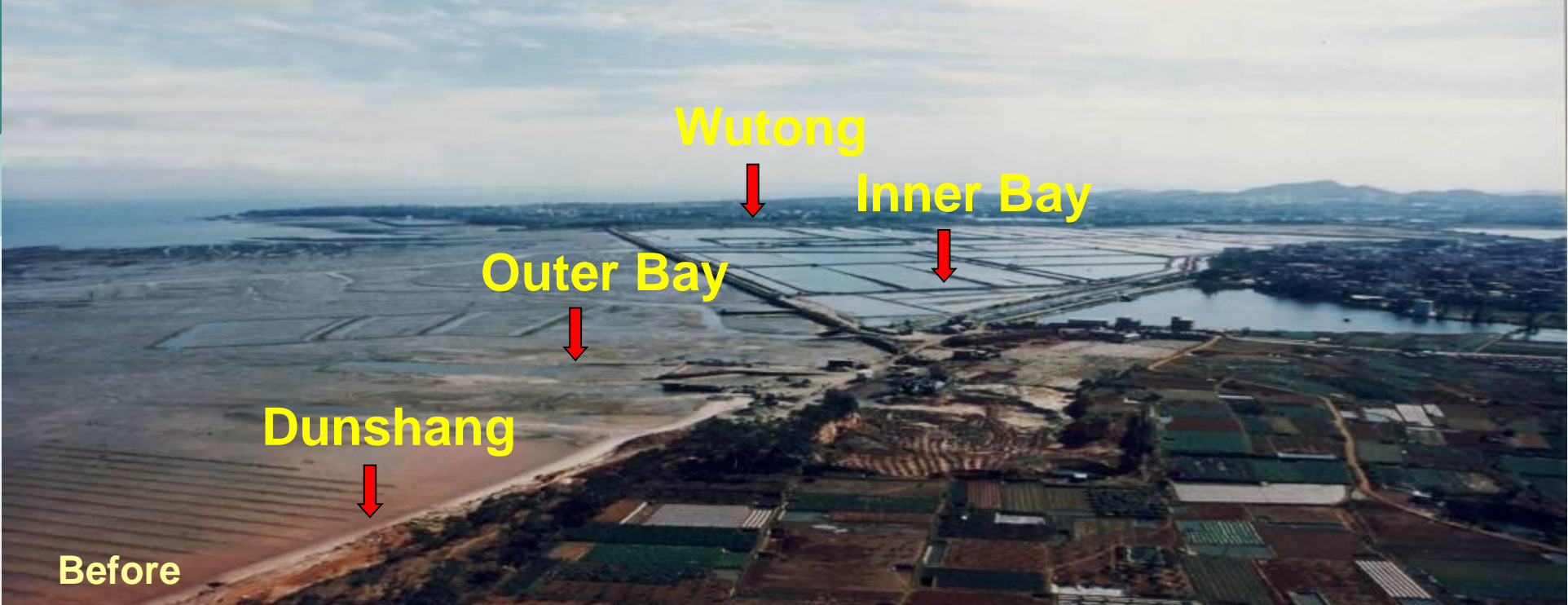
- ◆ Built bridges across the sea
- ◆ Cleaned up siltation
- ◆ Reclaimed land on both sides
- ◆ Opened up causeway
- ◆ Diverted sea water into the bay

After management, 2km² wetland, 3km² land and 8km high quality shoreline was added in the Wuyuan Bay which now is recognized as “the New Living Room of Xiamen”.



Wuyuan Bay

Comparison of Wuyuan Bay



Development of Xiamen's ICM

➤ 2008-: Ecological Restoration Stage

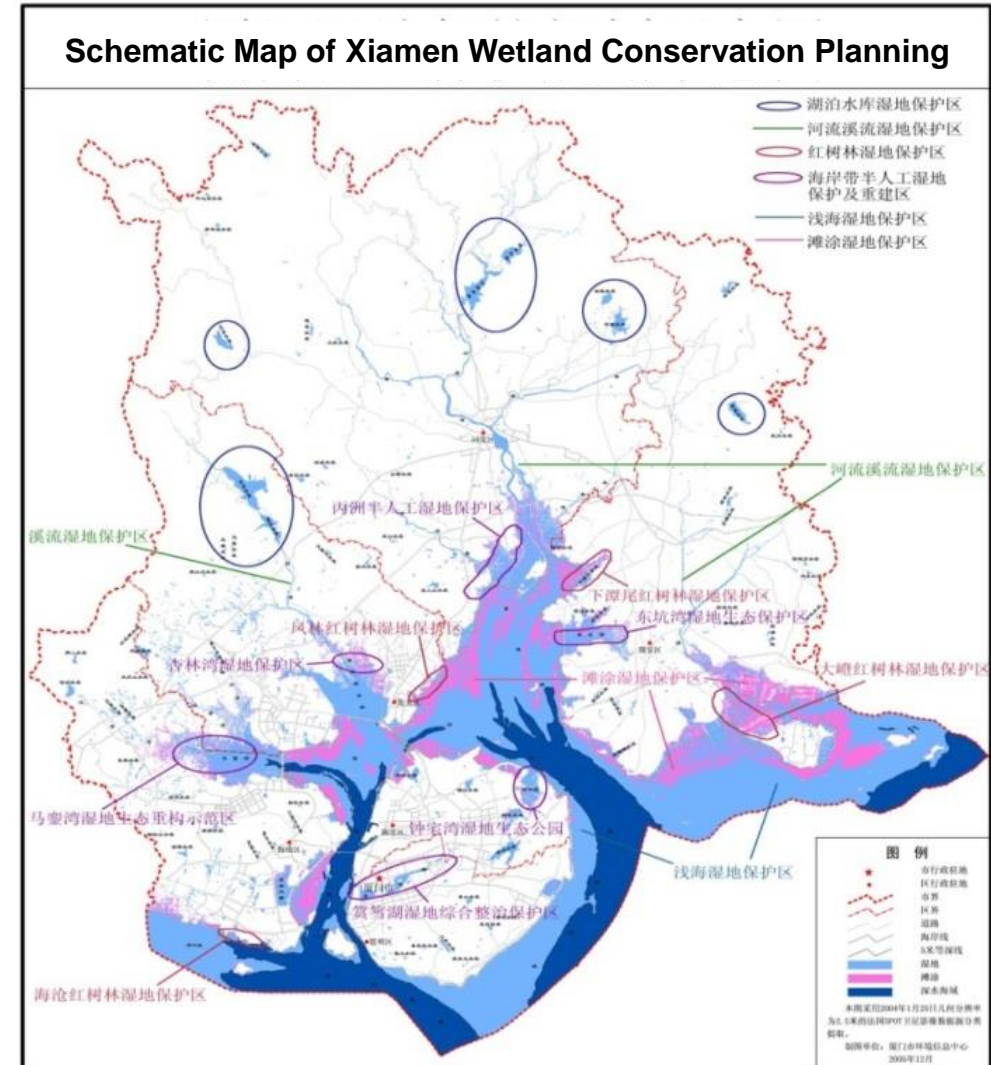
- Drawing up the ecological restoration plan
- Opening up causeway + dredging: improving hydrodynamic force and marine landscape
- Habitat and beach restoration
- ICM scope: sea area and nearby land, integrated management of land and sea
- ICM function: ecological protection and restoration



Opening up the causeway



Dredging



Open up causeways



Reconstruction plan of Jixing Causeway



Reconstruction plan of Gaoji Causeway

“Opening up causeway + dredging” improved 30% of hydrodynamic force and shortened the seawater semi exchange cycle from 15 days to 7 days

Ecological Restoration

Through ecological restoration, Xiamen returned more than 20 km² grain plots to sea, planted 60 km² mangrove and restored more than 100 km² beach.

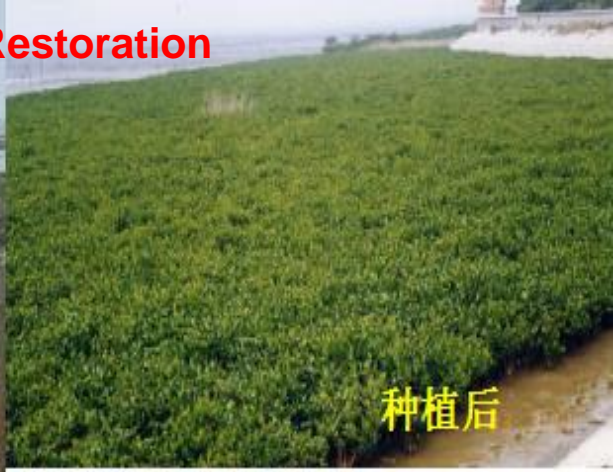


Xiatanwei Mangrove Wetland Park



Habitat Restoration

种植前



种植后



Island Restoration

修复前



修复后



Beach Restoration

Before



After

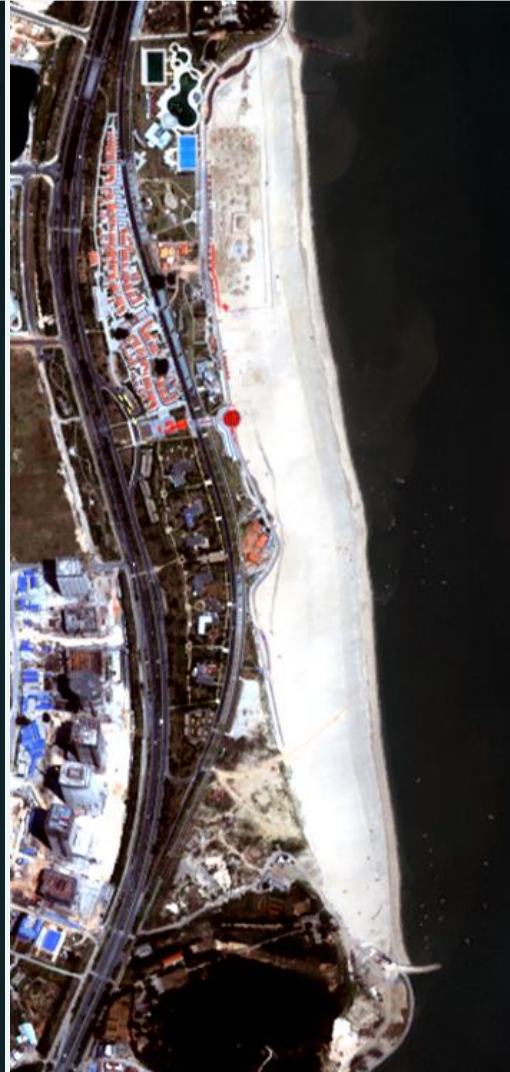
Guanyinshan Beach Restoration Project



April, 2006



November, 2007



December, 2009

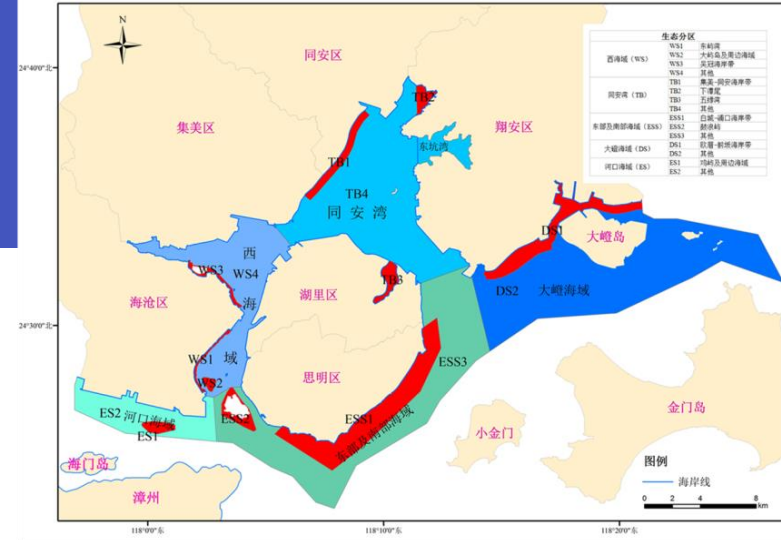
The project located at the shore of the Guanyinshan Business District, east part of Xiamen Island. The length of the beach is 1.5 km, the width of beach berm is 30 to 80 m, the width of beach surface is 180 to 230 m, and its area is 160,000 m², which makes it the largest artificial beach in China.

The project makes up the insufficiency of the natural beach in Xiamen, effectively alleviating coastal erosion, creating a beautiful coastal landscape, and improving the general landscape of the eastern coast of Xiamen.

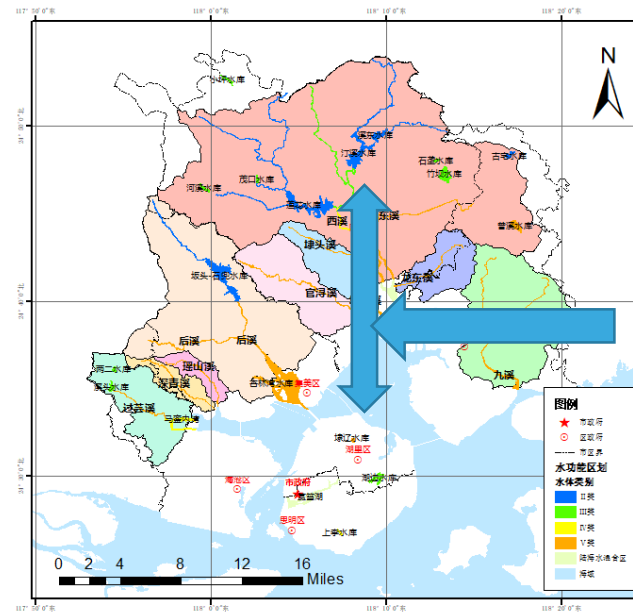
Development of Xiamen's ICM

2014-: Ecosystem-Orientated Basin-Sea Integrated Management Stage

- Land: ICM plans for 9 major river basin
- Combining ICM with basin management through total marine pollution control: ecosystem oriented management
- Using economic measures to stimulate the willing of marine ecosystem protection: ecological compensation regulations
- ICM Scope: Xiamen sea and land area
- ICM function: sustainable development of coastal zone (including sea debris treatment)



Setting ecological compensation standards for different areas and sea usages



Xiamen Integrated Basin Management Plan

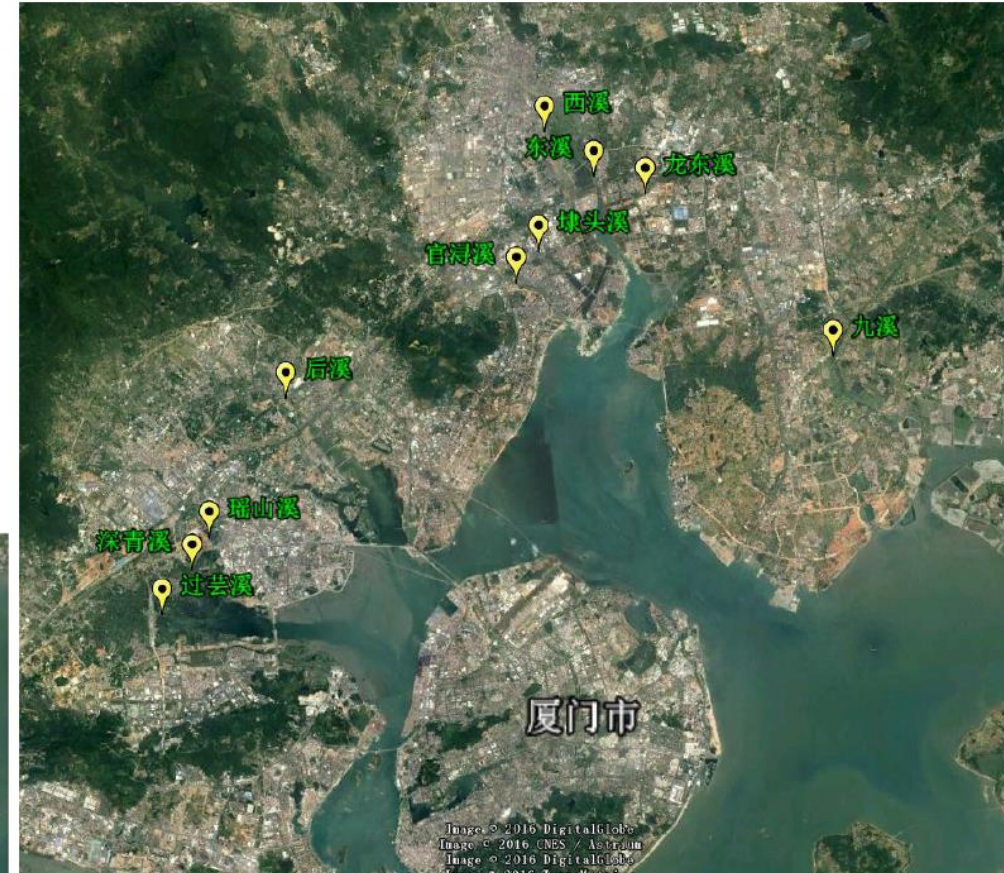
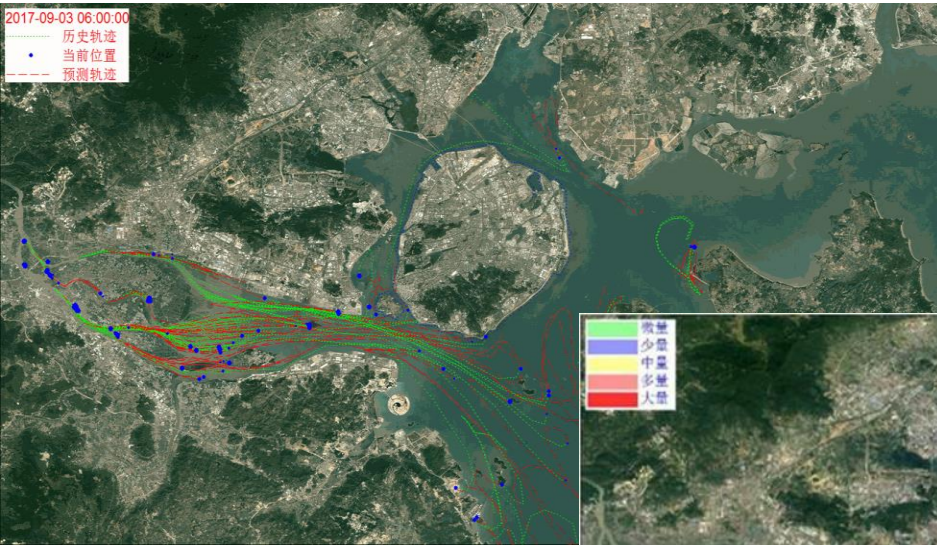


Total Marine Pollution Control Regulation

Development of Xiamen's ICM

➤ Promoting Marine Debris Treatment

1. Establish monitoring and early warning platform

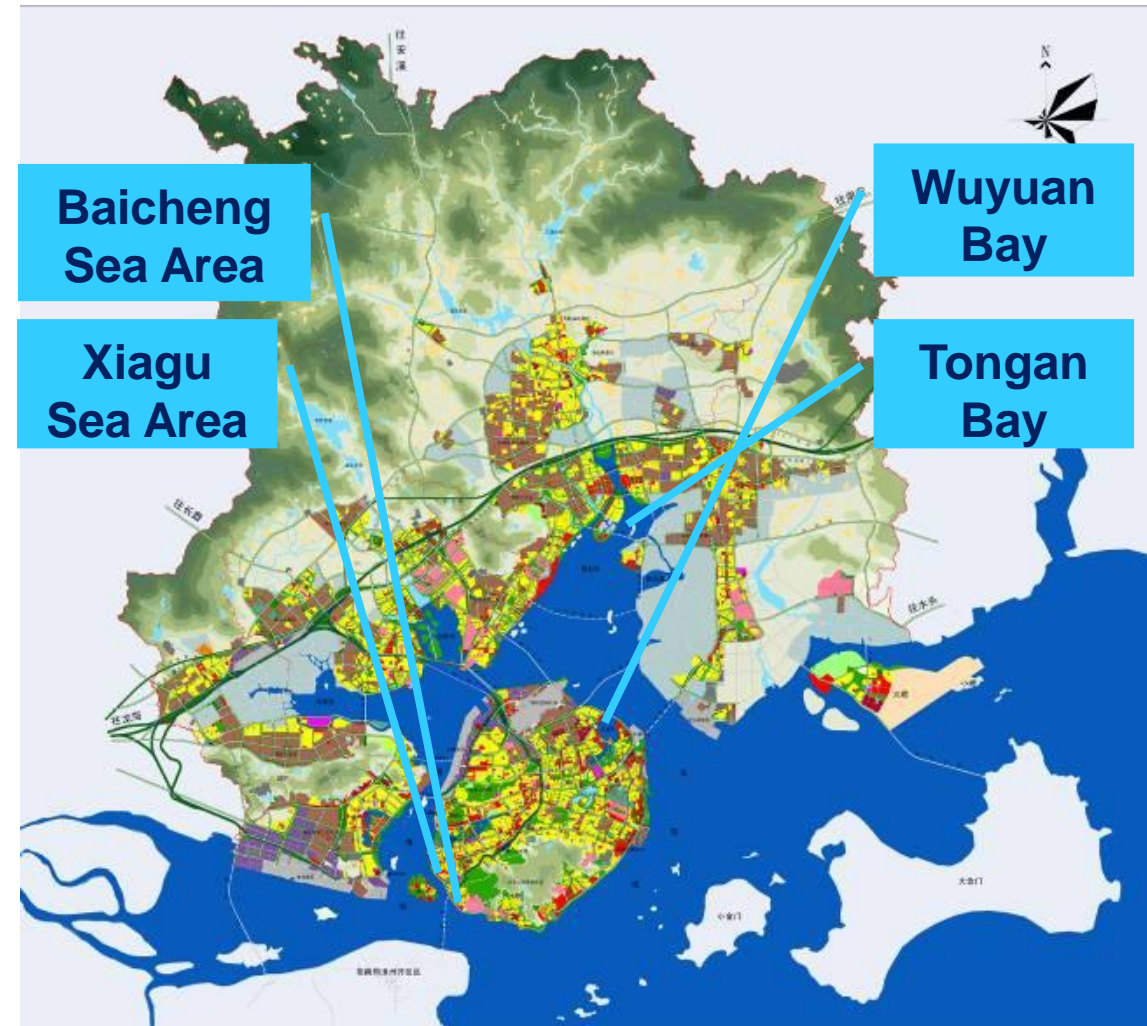


Estuary monitoring stations for main streams outside Xiamen Island

Jiulong River-Xiamen Bay marine debris trajectory and distribution monitoring and predicting platform

Development of Xiamen's ICM

2. Establish and improve marine debris collection and treatment mechanism



Key areas of marine debris treatment

Development of Xiamen's ICM

3. Establish marine sanitation team

Appropriative transfer terminal



Mechanical collection boat



Beach sanitation team

Development of Xiamen's ICM

4. Improve treatment capacity through international cooperation and science research



In 2016, a MOU on the partnership cities for marine debris prevention and treatment between Xiamen and San Francisco was signed.

Focus of future cooperation

prevention and treatment of large granular debris and micro plastic debris



Memorandum of Understanding on the Partnership Cities For Marine Debris Prevention and Treatment between

Xiamen City of the People's Republic of China
and
San Francisco City of the United States of America

Xiamen City of the People's Republic of China and City of San Francisco

of the United States of America (hereinafter referred to as the Parties)

Considering to materialize the outcomes of Xi'an visit to the United States in 2015 and cooperation in the Eighth Round of China-US Dialogue, and thus to promote China-US cooperation and treatment of marine debris;

Recognizing that such cooperation will advance marine debris prevention and treatment for both Parties;

Wishing to cooperation as "Partnership Cities relations for relevant agencies and personnel of

Agreeing to assign Xiamen Oceans and Fisheries Administration and City of San Francisco Department of the United States of America as the executing agencies;

Have agreed as follows:

ARTICLE I OBJECTIVE

The Parties shall, subject to the terms of their respective national policies and relevant international law

c. Either Party may request in writing a revision, amendment or any part of this MoU. Any proposal for amendments of this MoU by either Party shall enter into force subject to the written agreement of the other.

d. The termination of this MoU shall not affect the invalidity and duration of specific activities being undertaken hereunder prior to the date of termination of this MoU, unless otherwise agreed by both Parties.

ARTICLE 9 OTHERS

a. The MoU is without prejudice to the provisions of bilateral agreements, treaties or protocols in force between the Parties.

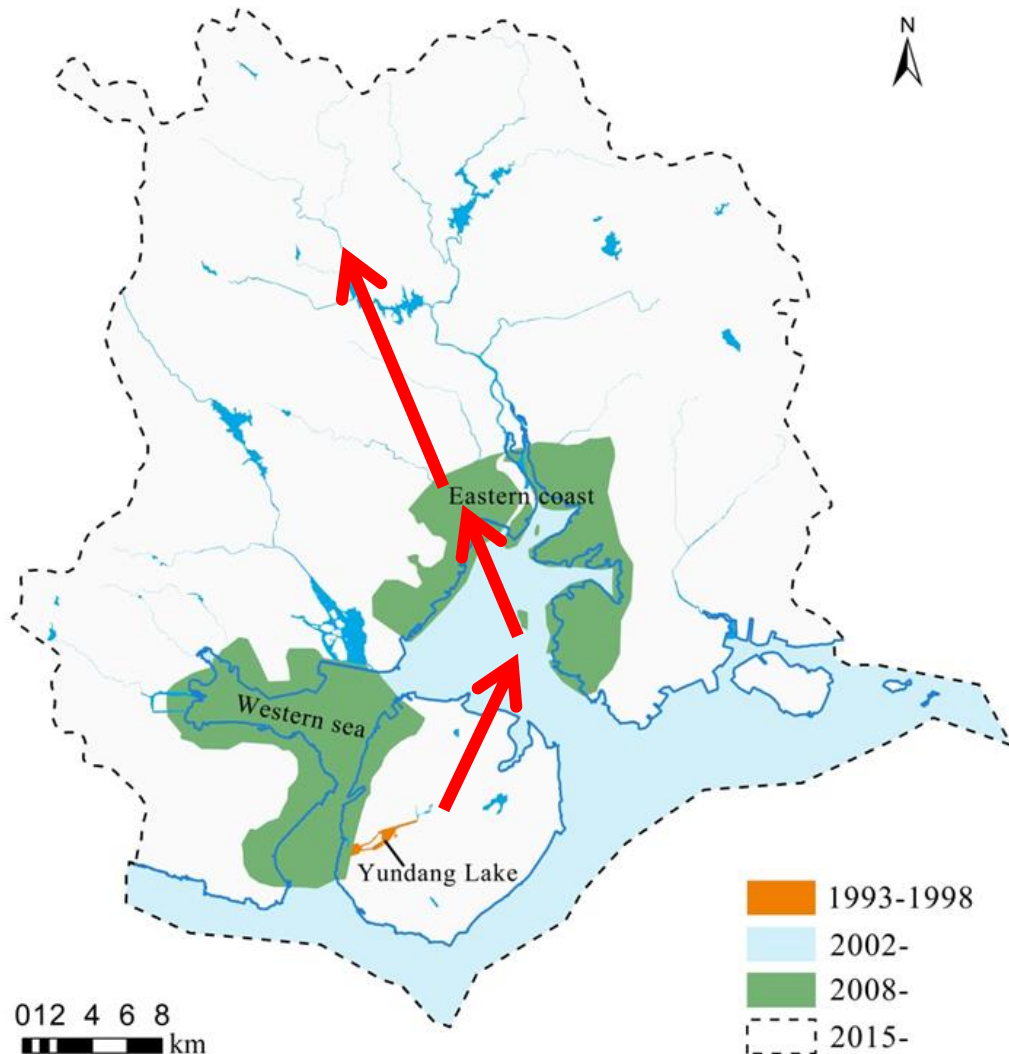
b. The MoU shall not create rights and obligations in terms of international law for the Parties.

Done in Guiyang City, Guizhou Province, People's Republic of China on July 10th 2016, in duplicate in the Chinese and English languages, both equally authentic.

Xiamen City of the People's Republic of China

San Francisco City of the United States of America

03 Achievement of Xiamen ICM



After 20 years exploration and innovation, the coverage of Xiamen ICM has been extended from small bays to the whole city. The function of ICM has expanded from pollution prevention and treatment to resolving resource utilization conflicts, regional marine ecological restoration, and finally to achieving the multiple objectives of sustainable development of coastal area.

Extension of ICM scope



Extension of ICM function



03 Achievement of Xiamen ICM

A、 Beautiful coastline



Baicheng Beach



Exhibition Hall Beach



Wuyuan Bay Beach



Music Square Beach

03 Achievement of Xiamen ICM

B、 Clean sea water



Western Sea



Eastern Sea

03 Achievement of Xiamen ICM

C、 Developed blue economy

In recent years, Xiamen has vigorously developed its blue economy. Blue economy maintained a strong development trend, and benefits of ICM are increasingly apparent.

After a scientific analysis, Xiamen has put forward the idea of developing “3 boats” industry which focus on cruise ship, yacht and sailboat industry, port industry, marine emerging industries such as marine biomedicine industry and modern fishery.

With the development of ICM, in order to protect the blue bay of Xiamen, traditional fisheries are gradually replaced by modern fisheries, such as green ecological aquaculture, ornamental fish aquaculture and recreational fisheries.

Xiamen's marine economy has maintained a 10% growth for years.



“3 boats” industry



Port industry



Marine strategic emerging industry



Modern fisheries

Welcome to Xiamen!

