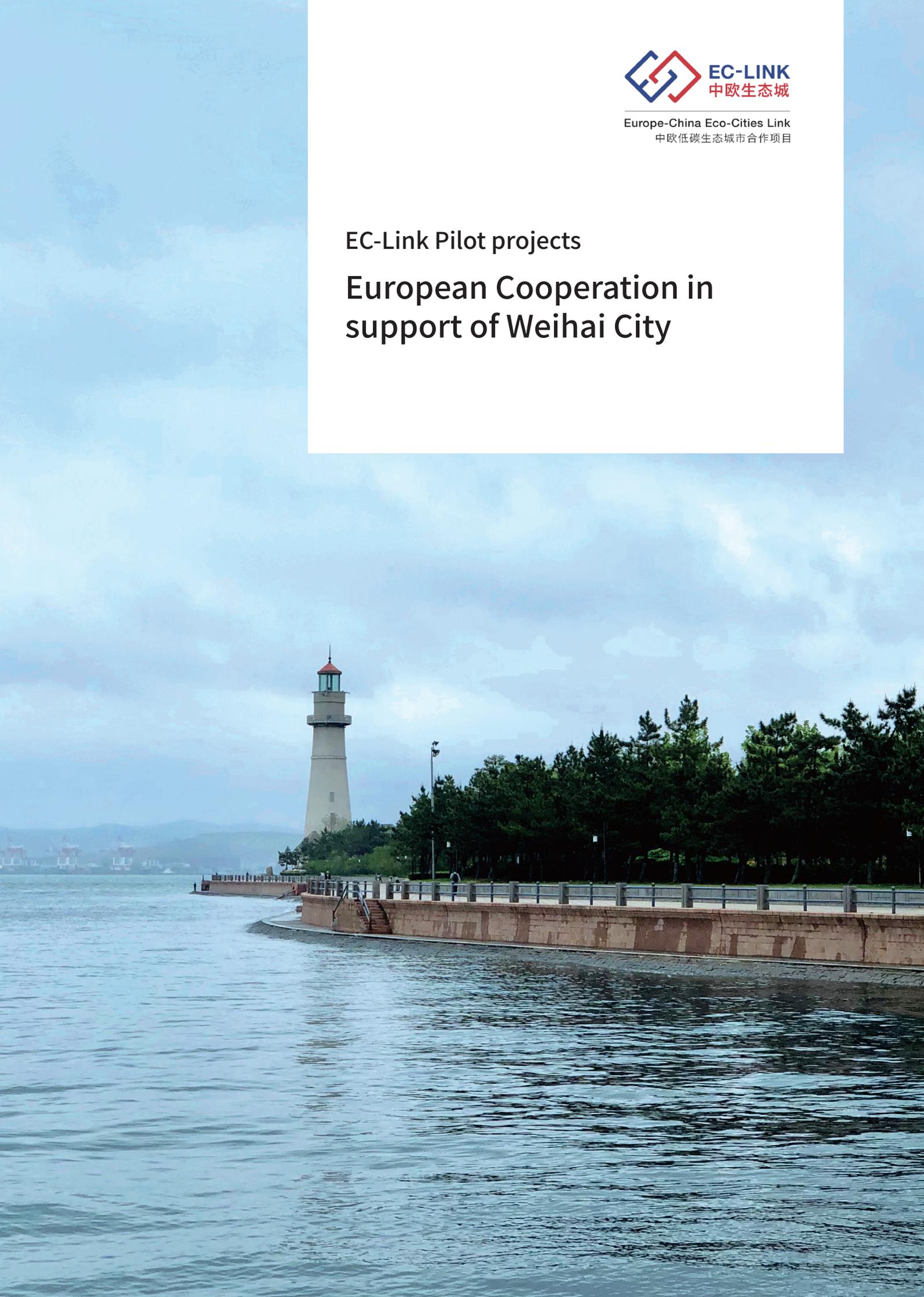




Europe-China Eco-Cities Link  
中欧低碳生态城市合作项目

EC-Link Pilot projects

# European Cooperation in support of Weihai City





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中欧低碳生态城市合作项目

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# European Cooperation in support of Weihai City

## EC-Link Pilot projects

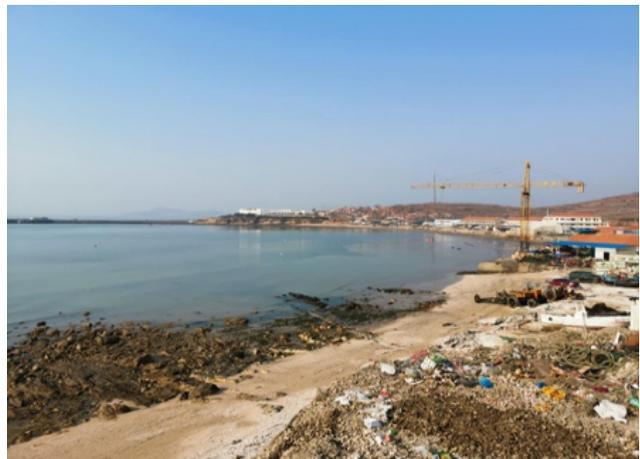
Weihai city is located at the eastern end of Shandong Peninsula, bordering the Yellow Sea in the north, east and south. It is an important marine industry and coastal tourism city. It is the Chinese mainland city closest to Tokyo, Japan and Seoul, Korea. Rushan city is under Weihai administration, which is located in the hinterland of Qingdao, Weihai and Yantai, with a coastline of 199.27km. The marine ecological and coastline environment have an extremely important impact to the city and vice versa. EC-link provided Technical Assistance to Weihai and Helped develop and document a number of coastal restoration projects in Rushan city. These projects will improve the coastal areas environment and enhance resilience to marine disasters.

Three major restoration projects received EC-link assistance to develop project Pre-feasibility studies. The study results will assist the city to apply for finance from the Shandong Green Development Fund for a total investment of 562million CNY. The projects are all located in Rushan city, the three projects are:

- Haiyangsuo Town Eastern Coastline Ecological Restoration Project;
- Haiyangsuo Town Southern Coastline Ecological Restoration Project; and
- Baishakou- to- Shangdong Coastline Ecological Restoration Project.

Critical environmental issues are addressed by the implementation of the project. Due to increasing offshore aquaculture and development activities, the coastal ecological environment in the project area has been damaged due to environmentally inappropriate activities and practices. These have seriously changed and in some cases destroyed the structure and natural appearance of the coastline. They affected the natural ecology and landscape of the coastal zone, weakening local ecosystem functioning.

There are a large number of oyster shells and other marine farming waste and construction wastes have also been discarded along the coast of the project area, which brings pollution to coastal ecological environment and reduces the water quality offshore. All wastes needs to be cleaned up.



Picture 1: the garbage along the coastal area

There is also a large area of abandoned aquaculture ponds in the eastern sea area, which blocks the coastal current, destroys the marine ecological environment and affects the marine landscape. All the aquaculture ponds need to be removed and all cofferdams will be demolished. The aquaculture activities will be better organized in resettled areas.



Picture 2: the abandon aquaculture ponds along the shoreline

The Yellow Sea coast is an area which has seen frequent and serious storm surge disasters in China. In recent years, the tide patterns have changed greatly. In this context, coastal aquaculture has suffered attack by several large storm surges, and heavy losses have been caused. These events have also posed a great threat to the safety of people's lives and property along the coast and limited the development of regional economy and society.



Picture 3: road damage under sea storm

The coast of the project area mainly consists of natural soil slopes without effective protection. They have been eroded by sea waves for many years. The bank slopes are steep and high, and thus unstable. Especially after the removal of the coastal aquaculture ponds, the shoreline is more likely to be eroded by the waves due to the lack of protection. Ecological revetments need to be built to protect the shoreline.



Picture 4: the natural bank slope without protection

The coastal restoration projects are aiming to solve the local problems through comprehensive restoration of the coastline. This will bring important benefits to the project region, which including: 1) improving the damaged coastal zone and restoring its anti-erosion ability; 2) increasing the city resilience to Climate Change impacts and reducing economic losses caused by storm surge damages, 3) preventing a large number

of land-based pollutants from entering the sea; 4) restoring the coastal ecosystem both protect the integrity of coastal ecosystem and increase its ecological functions, such as purifying pollutants; 5) providing a leisure/ entertainment space for local residents and visitors; and 6) strengthening the protection of the biodiversity and biological resources in the sea region.

These projects constitute a very good example of a Climate Change Adaptation project. The project implementation will increase the protection to coastal area and surrounding residents. As estimated 120,000 people in the town and surrounding region will be impacted by the project, and half million of Rushan population will be indirect beneficiaries.

The details of the specific projects are set out below:

### **1. Haiyangsuo Town Eastern Coastline Ecological Restoration Project**

The project is located in the eastern side of Haiyangsuo Town, Rushan City, starting from mouth of the tidal lake (Chaoxihu) in the north and reaching Nanhong fishing port in the south. In the project area there are 5,640meters of shoreline area need to be rehabilitaed. 90,000m<sup>3</sup> of construction and aquaculture waste need to be cleaned up. After restoration, the area will revert 1,100meters beach shoreline, 1,400meters ecological revetment and restore 3,140meters of natural shoreline.

In the offshore area, about 400,000 m<sup>2</sup> of aquaculture ponds need to be demolished along the coast as well 15,000meters of aquaculture cofferdams, about 50,000 m<sup>2</sup> of aquaculture sheds and 1 million m<sup>2</sup> of offshore rafts. After the removal there will be 4 aquaculture ponds with a total area of 190,100 m<sup>2</sup> to be reconstructed.

The reconstruction of the four aquaculture ponds will be in accordance of the functional zoning. Part of the internal dam of the aquaculture pond will be removed, and the riprap in the pond need to be cleaned. The planning is to add floating tanks and permeable structures in this area to minimise impact on the natural system. The reconstructed aquaculture pool will be fully utilized to provide fishing and hydrophilic entertainment for the public.

Figure 1: Zoning map of aquaculture pond for reconstruction



Figure 2: Functional areas to be built in area A



Source of the graphs are from the project Engineering Feasibility Study report

<p><b>Key climate impacts: Improve the environment along shoreline, enhance coastal areas resilience and protect coastal ecosystem.</b></p>	<p><b>Summary of Investment:</b> The engineering cost is 239.81million CNY</p>
<p>a. Clean up 90,000m<sup>3</sup> of construction and aquaculture waste to reduce the pollution to coastal area and water quality of the offshore area;</p> <p>b. Revert beach and build ecological revetment to protect shoreline;</p> <p>c. Demolish abandoned aquaculture ponds and facilities along the coast to restore the natural marine environment;</p> <p>d. Reconstruct A aquaculture pond area to provide recreation facilities to local residents and increase their quality of life.</p>	<p>The major engineering works are:</p> <p>Form beach shoreline - 46.67million CNY</p> <p>Build ecological revetment - 60.7 million CNY</p> <p>Restore natural shoreline - 34.17 million CNY</p> <p>Aquaculture ponds demolish - 16 million CNY</p> <p>Breeding cofferdams demolish 2.25 million CNY</p> <p>Breeding sheds demolish - 20 million CNY</p> <p>Breeding ponds reconstruction - 60 million CNY</p>

## 2. Haiyangsuo Town Southern Coastline Ecological Restoration Project

The project is located on the coastline from Nanhong fishing port to Paotazui in the south of Haiyangsuo Town. The total length of the shoreline is about 10.10kilometers. The renovation contents include removing 419,800 m<sup>2</sup> of aquaculture cofferdam; removing about 30,000 m<sup>2</sup> of aquaculture shed; cleaning up 100,000 m<sup>3</sup> of coastal construction and aquaculture waste; restoration of 1050meters of beach approximating to 157,500m<sup>3</sup> of sand filling; 1950meters of new revetment; 10,100M of boardwalk, 100,000 m<sup>2</sup> of greening; 47,000 m<sup>2</sup>

of aquaculture pond reconstruction and 2 new resettlement areas.

The reconstruction area of the aquaculture pond is located in the southwest corner of Xiaoshikou village. The original aquaculture pond with an area of 47,000 M<sup>2</sup> will be reconstructed and transformed into a marine entertainment fishing area. The main construction works will include two new parking lots, one management area, water amusement area, a marina, a leisure area and fishing area.

Figure 3: Restoration area along the shoreline



Figure 4: Functional area to be built on the demolished aquaculture ponds



Source of the graphs are from the project Engineering Feasibility Study report

<p><b>Key climate impacts: Improve the environment along shoreline, enhance coastal areas resilience and protect coastal ecosystem.</b></p>	<p><b>Summary of Investment:</b> The engineering cost is 143.987million CNY</p>
<p>a. Clean up 100,000m<sup>3</sup> of construction and aquaculture waste to reduce the pollution to coastal area and sea; b. Revert beach and build ecological revetment to protect shoreline; c. Demolish aquaculture ponds and facilities along the coast to restore the natural marine environment; d. Reconstruct 47,000m<sup>2</sup> aquaculture pond area to provide recreation facilities to local residents to increase their quality of life.</p>	<p>The major engineering works are: Aquaculture cofferdams demolish - 18.67million CNY Aquaculture sheds demolish - 1.35 million CNY Garbage cleaning - 4.55 million CNY Footpath construction - 50.5 million CNY Restore beach shoreline - 8 million CNY Greening - 12 million CNY Revetment - 33.91 million CNY Aquaculture pond reconstruction - 15million CNY</p>

### 3. Baishakou- to- Shangdong Coastline Ecological Restoration project

The project is located in the coastal zone from Baishakou to Shangdong in Yintan tourist resort of Rushan City, adjacent to the Yellow Sea in the south, starting from the mouth of tidal Lake (Chaoxihu) in the West and reaching about 1100meters to the south of Shangdong fishing port in the East. The coastline is about 13kilometers long. The restoration and renovation will include clean-up of 80,000m<sup>3</sup> of garbage, demolition of aquaculture cofferdam of about 182,000 m<sup>2</sup>, removal of aquaculture shed of about 10,000 m<sup>2</sup>, reconstruction of aquaculture

pond of 154,000 m<sup>2</sup>, reconstruction of one wharf and restoration of natural shoreline over about 13 kilometres.

The reconstruction area of aquaculture pool is located in the middle of the project. The original 154,000 m<sup>2</sup> aquaculture pool will be reconstructed and transformed into a marine entertainment fishing area. The main construction will include two new parking lots, two management areas, a water maze area, a marina, floating area and fishing platform.

Figure 5: the reconstruction layout of the wharf area

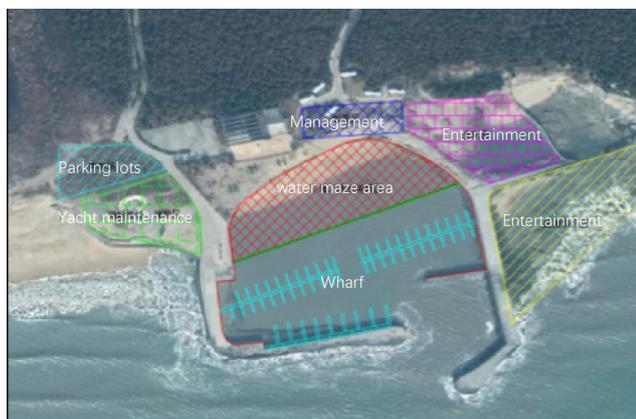


Figure 6: the reconstruction layout of the pond area



Source of the graphs are from the project Engineering Feasibility Study report

<p><b>Key climate impacts: Improve the environment along shoreline, enhance coastal areas resilience and protect coastal ecosystem.</b></p>	<p><b>Summary of Investment:</b> The engineering cost is 178.13million CNY</p>
<ul style="list-style-type: none"> <li>a. Clean up 80,000m<sup>3</sup> of construction and aquaculture waste to reduce the pollution to coastal area and sea;</li> <li>b. Revert beach and build ecological revetment to protect shoreline;</li> <li>c. Demolish aquaculture ponds and facilities along the coast to restore the natural marine environment;</li> <li>d. Reconstruct original aquaculture ponds area to provide recreation facilities to local residents to improve their quality of life.</li> </ul>	<p>The major engineering works are:                  Aquaculture cofferdams demolish – 7.28 million CNY                  Aquaculture sheds demolish – 0.45 million CNY                  Aquaculture pond reconstruction – 40 million CNY                  Port reconstruction – 15 million CNY                  Garbage cleaning – 2.8 million CNY                  Footpath construction – 65 million CNY                  Restore beach shoreline – 32 million CNY                  Greening – 15.6 million CNY</p>

## EC-Link Technical Support Summary

EC-Link provided Technical Support to RUSHAN coastal restoration projects, which helped the project development and increased its bankability through a Pre-feasibility study process. EC-Link team made the projects accessible to the green financing resources and steered the project preparation to meet specific requirements of Shandong Green Development Fund. The detail Technical Support included: a) identification and prioritizing the potential projects for Green Finance, b) developing the projects to maximise green impact and to document this impact so as to meet the eligibility criteria of downstream green financing, through rigorously documenting the results of the Pre-Feasibility Study; and c) providing trainings on Municipal Green Finance and Project Pre-feasibility Study, for stakeholder capacity building.





**EU-CHINA**

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