



**YSLME**

# **Status and Regulatory Measures of Marine Litter Management in Weihai City of PR China**

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# 1 Brief Introduction of Weihai Marine Litter Status

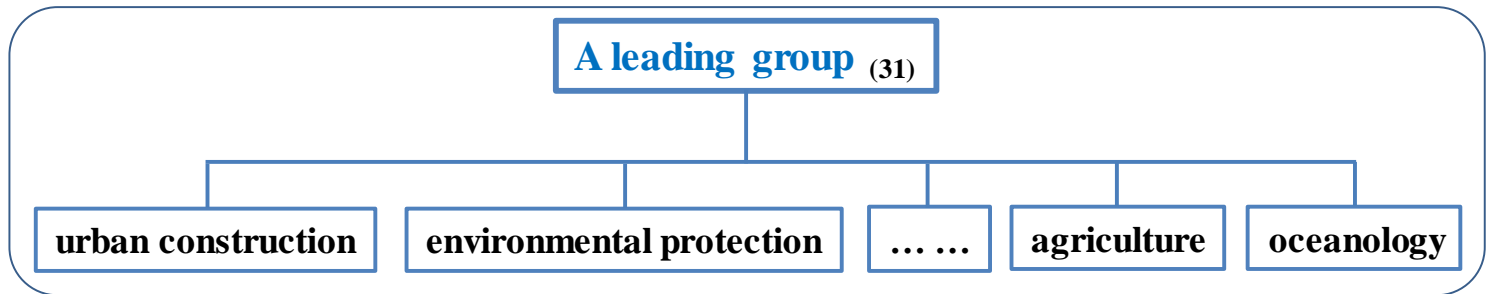
➤ <b>Main Source</b>	Human coast activities, other wastes, and shipping/fishing activities.	
➤ <b>Area Distribution</b>	Tourist and recreation areas	mostly household garbage such as plastic bags and plastic bottles
	agricultural and fishery areas	mostly production waste, such as plastic and polystyrene foam
	port shipping areas and adjacent sea areas	

The density was higher in agricultural and fishery areas than that in tourist and recreation areas and port shipping areas.

➤ <b>Component Analysis</b>	Among the marine litter components, the amount and mass of plastic waste accounted for the highest proportion.	
➤ <b>Average Density</b>	Litter on the beach	1 989 kg·km <sup>-2</sup>
	Submarine litter	2.51 kg·km <sup>-2</sup>
	Floating litter on the sea	2.06 kg·km <sup>-2</sup>

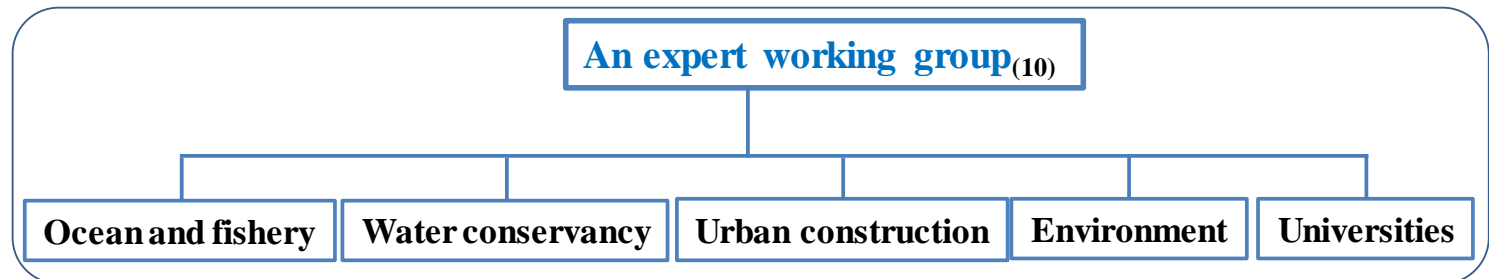
\* The data are from marine litter monitoring of Xiaoshi Dao in Weihai.

## 2 Current Regulatory Measures of Weihai Litter Management



### 2.1 Organization And Leadership

Be responsible for coordinating and handling the daily affairs of marine litter prevention, and coordinating the prevention and reduction of litter into the sea.



As the technical support institution of the leading group, the working group will provide decision-making consultation and related suggestions for in-depth promotion of marine litter prevention cooperation.

## 2.2 About Management System

- " **Implementation Plan of the 'Partner City' for Marine Litter Prevention and Control between Weihai City, China and the United States** " organized by Weihai City has clearly defined the main objectives, key tasks and safeguard measures of marine litter prevention and cooperation. The specific work is carried out as follows.

<b>Departments</b>	<b>Responsibility</b>
<b>Marine and Fisheries</b>	<b>Marine litter monitoring, surface and seabed litter cleaning, fishery production waste management, marine environmental remediation, law enforcement inspections, and marine litter prevention cooperation.</b>
<b>Propaganda and Cultural</b>	<b>Marine litter management publicity and education</b>
<b>Water Conservancy</b>	<b>Comprehensive regulation of rivers entering the sea.</b>
<b>Agriculture, Forestry and Animal Husbandry</b>	<b>Construction of coastal windbreaks, plastic film recycling, agricultural clean production, and harmless treatment of aquaculture waste.</b>
<b>Environmental Protection</b>	<b>Construction of sewage treatment stations and high-temperature steam treatment facilities.</b>
<b>Housing and Construction</b>	<b>Household garbage control and construction waste disposal and other work</b>

## 2.2 About Management System

- The "**Regulations on the Protection of Urban Features**" has been officially issued and implemented.
- The "**Regulations on the Protection of Coastal Zones in Weihai City**" has been reviewed by the Municipal Law Office.

### In the two "regulations" :

- The coastal litter management and urban landscape protection have been regarded as an important part of promoting marine litter management.
- The rules for marine litter management to follow are provided.
- The coordinated development of urban coastal zone construction, ecological protection, and social culture are promoted.

## 2.3 The Specific Work of Marine Litter Management

### 2.3.1 Fishery production litter management

Contents	Specific Work	Objects
Fishing ports	"Regulations on Environmental Sanitation Management of Fishing Ports in Weihai Aquaculture Farm"	<ul style="list-style-type: none"> <li>➤ Clean up and rectify the dirty, chaotic and poor conditions in fishing ports, aquaculture and nursery farms.</li> <li>➤ Classify and sort the farming materials.</li> <li>➤ Concentrate and store the generated in a sealed manner.</li> </ul>
Off-shore Aquaculture	"Weihai Marine Functional Zoning (2013-2020)"  "Mudflat Aquaculture Plan in Weihai City"	<ul style="list-style-type: none"> <li>➤ The regulation of prohibiting the newly-enclosed aquaculture was clearly stipulated.</li> <li>➤ Compress the scale of off-shore, expand aquaculture enterprises to the open sea, and develop the ecological breeding of famous and excellent products.</li> <li>➤ Develop the offshore platforms and aquaculture vessels, and gradually reduce the operation time of aquaculture production in the land.</li> </ul>
Agricultural Non-point Source Pollution	A demonstration project "Plastic film recycling and comprehensive utilization of agricultural clean production"	<ul style="list-style-type: none"> <li>➤ Enhance the recycling and comprehensive utilization capacity of plastic film :               <ul style="list-style-type: none"> <li>• Recycle 30,000 hectares of waste plastic film.</li> <li>• Promote to use 7,000 hectares of plastic film for easy recycling.</li> <li>• Set up 4 waste plastic film recycling points and 2 processing points.</li> <li>• Increase 1,200 tons of waste plastic film processing capacity.</li> </ul> </li> </ul>

## 2.3.2 Marine litter cleaning and beach management protection

### ➤ **The territorial management principle**

"Be Responsible for General Sanitation in Front of the Door" is established for coastal parks, bathing beaches, scenic spots, port (docks) management departments and coastal production enterprises to be responsible for the cleanup of shore beach litter.

### ➤ **The first responsible person system for sea surface litter disposal**

Be responsible for timely salvaging, cleaning and transshipment of sea surface litter and carrying out special clean-up operations on seasonal and large-scale sea surface litter such as enteromorpha.

### ➤ **"Management Measures for the Protection of Beaches in Weihai City"**

Establish the principle of beach classification protection, specify the procedures for the development and utilization of beaches and the specific requirements for beach cleaning, clarify the legal responsibility for setting up land-source sewage outlets, litter dumping, litter burning and illegally sea sand mining on the beach.



### 2.3.3 Remediation and restoration projects

#### Remediation and restoration of sea area, island, and coastal zone

Nearly 3 billion yuan for 48 projects:

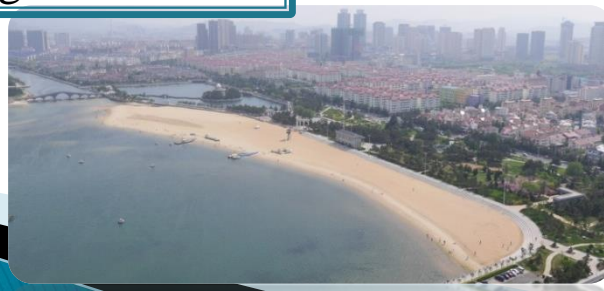
- Repair 75 km of damaged shoreline, 600,000 m<sup>2</sup> of beach, more than 10,000 mu of wetland
- Restore 89,000 m<sup>2</sup> of vegetation
- Remove 275,800 m<sup>3</sup> of silt
- Clean 594,500 m<sup>3</sup> of litter
- Rehabilitate 25 dangerous rock masses
- Place 20,000 m<sup>3</sup> of algae reefs
- Transplant 80,000 algae

#### Comprehensive river improvement projects

In 2006 and 2007, 140 million yuan for 117 projects to governance the river of 132 kilometers long.

3 directions:

- The improvement of river flood control capacity.
- Pollution control at source.
- The enhancement of river appreciation.



### 2.3.4 Urban and rural sanitation integration and litter classification pilot

- At present, the coverage rate of township litter transfer stations, the domestic garbage input rate, and the harmless treatment rate of domestic garbage in Weihai city are all up to 100%.
- In 2006 and 2007, a pilot program for garbage sorting has been launched in Huancui district, involving 8 residential communities, 29 primary and secondary schools, and 20 government agencies, enterprises and institutions.
- The current classification principle of domestic garbage includes four categories.
  - Principle of combining source diversion and classification
  - Principle of "large-scale coarse separation, dry-wet separation"
  - Principle of classified delivery, classified collection, and classified disposal
  - Principle of matching the classification method with the garbage terminal treatment facilities.

## 2.4 The Specific Work of Marine Litter Monitoring and Inspection

### 2.4.1 Marine litter monitoring

#### ➤ Comprehensive monitoring and evaluation of marine litter

<b>Covers</b>	Beaches, sea surface, seabed and rivers.
<b>Objects</b>	Basically master the distribution of marine litter in urban coastal areas.
<b>Works</b>	17 sea and land monitoring sections are set up to monitor the type and density of marine litter.
	4 rivers, such as Zhangcun River and Bijiatuan River, are selected to carry out the blocking facilities layout and monitoring of the litter into the sea from the living and production areas.

#### ➤ Land-based sources of marine pollution survey

- Find out the location, mode, quantity and temporal distribution of the land source sewage outlets and rivers entering the sea along the coast of the city.
- Screen the key pollution sources and major pollutants.

## 2.4.2 Marine litter inspection

### System design

- "Views on Strengthening Coastal Zone Management and Protection"
- "Measures for Coastal Zone Law Enforcement Inspection in Weihai City"
- "Rules for Coastal Zone Law Enforcement Inspection in Weihai City"

### Supervision and law enforcement

- Special enforcement actions, such as "Haidun", "Bihai" and "Escort blue zone"
- "Detailed Rules for the Implementation of the Responsibility System for the Coastal Supervision of Weihai City"

### Management of commercial vessels litter

- Vessels pollutant discharge standards
- Renovation non-standard vessels and old vessels environmental protection facilities
- Publicity and education of ship operators
- Agreements signed between the key commercial ports and the professional and technical environmental clean-up companies

## 2.5 Public Opinion Work on Marine Litter Prevention and Control

- A series of thematic publicity activities of "**Sea Frontier Ecological Tour**"
- Volunteer activities to "**Prevent and Control Litter Pollution and Protect Marine Home**"
- Publicity activities of "**Wave the Sea, Go Deep Blue**"
- Marine environmental protection **into campus activities**



# 3 Opportunities and Challenges of Weihai Litter Management

## 3.1 Marine Litter Prevention and Control Faces Important Opportunities

### 3.1.1 Weihai city becomes the first national demonstration area of marine ecological civilization

<b>Time of inclusion</b>	2013
<b>Significance</b>	An affirmation of the long-term effectiveness in marine ecological environment protection
	Promote marine ecological environment protection through the establishment of long-term mechanism in the future.
<b>Opportunities</b>	Obtain the target requirements, operational guidelines, and necessary policy and financial support for the promotion of marine litter control in Weihai City.
	Obtain optimized development opportunities of marine ecological environment by taking marine litter prevention and control as the starting point.

## 3.1 Marine Litter Prevention and Control Faces Important Opportunities

### 3.1.2 Weihai and New York establish "Sister-Cities" partnership in marine litter control

<b>Starting time</b>	March 2016
<b>Reference</b>	"Sister city" work plan for marine litter control between China and the United States
<b>Opportunities</b>	Obtain the opportunity to promote marine litter prevention and control and to strengthen the protection of the regional marine ecological environment through international cooperation.
<b>Impacts</b>	<ul style="list-style-type: none"> <li>➤ improve the capability of marine litter prevention and control.</li> <li>➤ Promot the construction of marine ecological civilization demonstration area and the status of city.</li> </ul>

### 3.1.3 Weihai city has laid a good foundation for marine litter disposal

- Related **fruitful work** has been carried out.
- The "**implementation Plan for Marine Litter Prevention and Control**" has been issued.
- A large amount of **social capital** has been invested in or attracted.

## 3.2 Marine Litter Prevention and Control Faces Serious Challenges

### 3.2.1 Shoreline litter management failed to achieve full shoreline coverage

- The ecological environment is beautiful with a clean city appearance and effectiveness waste prevention in Weihai region.
- However, in some **industries and living activities intensive coastal areas** and **remote coastal areas**, there are still different levels of litter pollution phenomenon, marine litter prevention and control cannot achieve the whole shore cover.

#### Sources:

- Tourists traveling to the sea and leaving behind
- Light landmass litter is blown into the sea by the wind
- The marine transport of fishing boat droppings



### 3.2.2 Litter pollution in coastal waters is difficult to eradicate

- Due to the influence of coastal tourism, fishery and shipping industry, littoral litter in Weihai coastal area is in the condition of **pollution while controlling** for a long time.
- Under the influence of industrial activities and the lack of environmental awareness among people, these litters are **difficult to eradicate completely** and are **extremely harmful**.

#### Coastal marine litter mainly comes from:

- Shipping and fishing
- Coastal recreational activities
- Random disposal of beach and river refuse

#### Negative effects on:

- Marine and coastal natural landscapes
- Marine ecosystems and marine economy
- The safety of navigation

### 3.2.3 The status of seabed litter is unclear

- The beach and sea surface litter in most sea areas can be cleared in time because of the naked eye.
- However, the **source**, **migration route** and **distribution problems** in the near-shore submarine area are still unknown and lack of corresponding investigation and research.

#### **In Weihai :**

- Three sections of submarine litter trawls were carried out from the Beihai in Chucun village to Jinzitou sea-area and in the Haixitou sea area, respectively.
- Results showed that the density of submarine litter in Weihai City is relatively low, and the main source was the deserted operational tools of fishery production.

### 3.2.4 The public participation is still lack

#### ➤ **Public participation is less efficient.**

- The public participation efficiency is mainly reflected in the strength of public participation awareness, the level of public participation and the engagement in management process.

#### ➤ **The protection legal systems of public participation is insufficient.**

- In theoretical research, scholars pay insufficient attention to the research on the involvement of individuals, enterprises, and social organizations in marine litter management.
- The successively promulgated and formulated laws make requirements for public participation in marine environmental protection, but are lack of the definition of the scope of public participation, the guidelines for participation, and the corresponding safeguard measures.

#### ➤ **The cooperation between government departments and enterprises is insufficient.**

- In general, the cooperation between government departments and marine-related enterprises mainly concentrated in end processing, and maintained active and passive relationships in terms of source classification and intermediate collection and transportation.

# 4 Public participation incentive policy proposals

## 4.1 Improve the legal mechanism for public participation in marine litter management

### Legal Mechanism

- Define the **legal status** of public environmental rights
- Take the methods of **adjusting economic interest mechanism**
- Improve the **information disclosure system**
- Improve the marine environmental **public interest litigation system**

### Administrative Mechanism

- A new pattern of **diversified marine environmental management** is expected to be formed.
- Improve the **hearing system** for marine environmental management.

### Long-term Mechanism

- Strengthen **collaboration** between government departments and marine-related enterprises.
- Improve the **dialogue and consultation mechanism, information flow mechanism** and **incentive compensation mechanism** between government departments and enterprises

## 4.2 Improve incentives about the social mechanism for public participation

### ➤ Improve marine environmental protection literacy of the public

	Level	Public Group
Education	Basic	Student Groups
	Higher	
	Professional Technical Guidance	enterprises and institutions and other social organizations

### ➤ Expand the channels for public participation in marine litter management

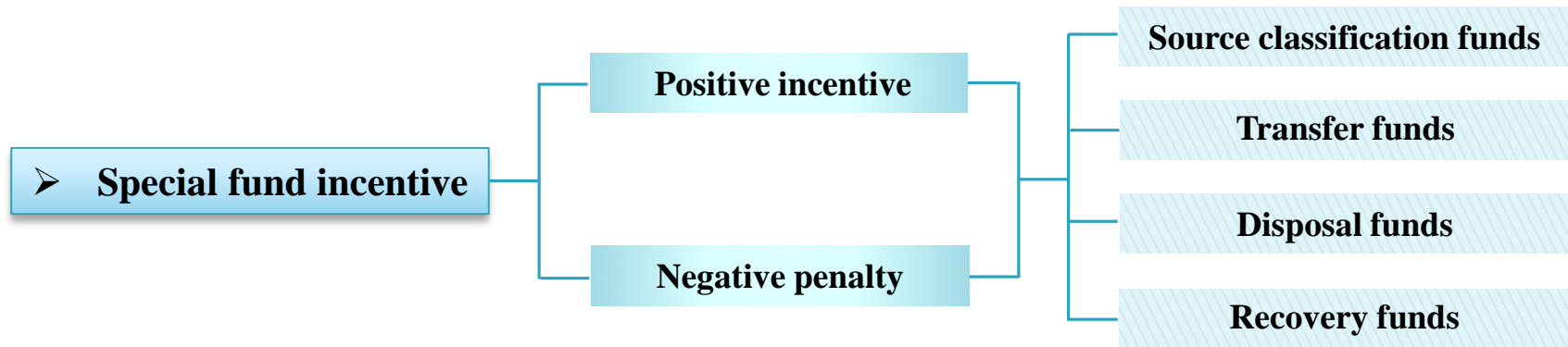
- Improve the mechanism construction of public participation
- Provide multiple ways for the public to participate in marine litter management.

Major project symposiums	census suggestions for marine pollution sources	marine garbage transfer and recycling volunteers	a special advisory expert group for marine litter management decisions
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### ➤ Establish a collaborative governance mechanism between government departments and enterprises

- Incorporate enterprises from various industries into the body of marine litter management.
  - The government management departments, production enterprises and recycling industries will be equipped with marine litter management links to form an effective industrial chain system.

### 4.3 Improve the financial incentives for public participation



- And furthermore, different subsidies for marine litter reduction and treatment can be offered according to the relevant provisions of the "**Renewable Energy Law**".

For example, waste incineration power generation enterprises can be subsidized at a price of 0.25 yuan per kilowatt.

## 4.3 Improve the financial incentives for public participation

### ➤ Support incentive

formulate the "Resource Recovery Industry Regulations" in line with the actual situation

carry out the regulation and qualification examination of recycling enterprises

support the development of the industry with the management mode of special fund dedicated ledger through financing incentives, tax reductions, financial subsidies, etc.

provide guidance and business support to the enterprise through the "Marine Litter Management Decision Advisory Group"

### ➤ Waste monetization

According to the model of "plastic bank" in Canada:

- An **equivalence table** between various marine litter and daily payments for electricity, water, telephone, gas, insurance, etc. is to be created.
  - A **special "marine waste bank" department** is expected to be opened up to sell marine litter as raw materials to the corresponding manufacturing industry.

## 4.4 Improve public opinion propaganda incentives for public participation

### 4.4.1 Give play to the role of public opinion propaganda in marine litter management

It is suggested that the government environmental protection department establish a long-term cooperative relationship with the mass media industry.

- Different publicity methods, such as instruction manuals, public service advertisements, promotional videos, documentaries, short videos, etc., are set up for different levels of the public.
- Build public opinion media into a special channel for equal communication and dialogue among stakeholders in Marine environmental governance.
- For the behaviors of destroying the marine ecological environment and hindering the work of marine litter management, the related organizations and individuals will give public exposure and criticism to warn the public to exercise self-discipline by using the supervision function of public opinion of modern media.



#### 4.4.2 Establish a big data platform for the disclosure of marine litter monitoring information

- Since 2007, the status of marine litter has been listed in "**Marine Environment Status Bulletin in China**" as one of the contents.
- The data of marine litter monitoring in Weihai City have been able to support the construction of "**Weihai Marine Litter Monitoring Information Big Data Platform**".
- The platform will integrate marine litter management **achievements**, **public participation**, and the **contribution rate** of different levels of the public to the management achievements in Weihai city, and add **an information disclosure section** to facilitate citizens to inquire, supervise and use environmental information.

### 4.4.3 Establish a dedicated media channel for corporate culture

Enterprises are encouraged to incorporate marine environmental protection concepts into the product design process, and build up a **special media channel** for corporate culture promotion including **newspapers, magazines, radio and television, websites, WeChat, Weibo**, etc. in combination with enterprises and the mass media industry.

#### The channel should meet the following functions:

- The function of **matching** the contribution rate of enterprises' participation in marine litter management and the efforts of corporate culture publicity.
- Relevant enterprises can collect **design drafts of corporate culture publicity** through the channels, and expand the breadth and depth of their own corporate culture publicity.
- Enterprises promote their **green products** and advocate the public for a **green lifestyle** in the sales and publicity process.
- Enterprises can find the upstream or downstream industries suitable for each other, and spontaneously form **an industrial chain system supporting the marine litter treatment**.

# 5 Prospects for Weihai Marine Litter Management

## 5.1 Strengthen the Implementation of Marine Litter Prevention and Control

### About Regulations

- Continue to implement the "Implementation Plan of the 'Partner City' for Marine Litter Prevention and Control between Weihai City, China and the United States".
- Revise and improve the existing "Technical procedures for marine litter monitoring".
- Carry out in-depth investigation of marine litter pollution in coastal provinces and municipalities.
- Establish key monitoring areas for marine litter.
- Develop a long-term monitoring system for marine litter.

## 5.1 Strengthen the Implementation of Marine Litter Prevention and Control

### About Sources Management

#### ➤ Sources:

- Industrial and construction waste
- Agricultural non-point source pollution
- Fishery production waste
- Commercial vessels and ports
- Domestic garbage

#### ➤ Works:

- Further reduce the amount of litter into the sea from the source.
- Increase the harmless disposal and resource utilization of waste.

## 5.1 Strengthen the Implementation of Marine Litter Prevention and Control

### Four main tasks for the Weihai Estuary Plan

- Investigate and assess the estuary ecological environment  
Including estuarine health assessment, degradation cause diagnosis, future development trend prediction.
- Implement the total pollutant control in the estuary area
- Construct the estuarine ecological environment protection and restoration project according to local conditions
- Conduct the ecological environment monitoring network in the estuary area.

## 5.2 Strengthen Investment in Science and Technology and expand International Cooperation

### 5.2.1 Investment in science and technology

- Develop professional and technical **equipment** for marine litter collection and disposal.
- Carry out **screening technology** for marine litter recovery.
- Select some typical beaches for marine litter recycling **demonstration points**.
- Analyze the **feasibility of recycling resources** for marine litter with their **economic inputs and benefits, environmental and ecological benefits**.

### 5.2.2 International cooperation

- Improve the **contact mechanism** for marine litter prevention and control
- Strengthen mutual **communication** and mutual benefit **sharing**.
- Carry out **regular exchanges of visits** and exchanges at a frequency of one to two times a year.
- Establish the **communication and cooperation mechanisms** for bilateral academic exchanges and between private environmental protection enterprises to broaden cooperation areas.

## 5.3 Improve Marine Litter Monitoring and Evaluation System

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- Set up **Monitoring stations in key bays** to investigate and monitor the beach, sea surface and seabed litter.
- Strengthen the **tracking monitoring** of marine engineering and its impacts on marine environment and sea resources in surrounding sea areas.
- Gradually improve the marine litter monitoring system to realize **real-time monitoring, analysis and evaluation** of sea surface and beach litter.
- Improve the **information disclosure mechanism** for marine environmental monitoring, and release marine environmental monitoring information in a timely manner.

## 5.4 Increase the Publicity of Marine Litter prevention and control

- Strengthen the **publicity and education** for residents and tourists.

Media channels	radio and television, newspapers, websites, WeChat, Weibo, etc.
Relevant work	increase notices, strengthen management, formulate holidays beach environmental health emergency plans, and other ways.

- Promote the concept of **marine litter classification** management, and prepare a **marine litter classification manual**.
- Strengthened **the construction of volunteer teams** to ensure the normal operation of volunteers.

**All social forces should be mobilized to participate in marine environmental protection, so as to form a good social atmosphere where everyone loves and protects the ocean.**





**Thank You!**