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# PORT OF KAOHSIUNG

# ENVIRONMENTAL REPORT

TAIWAN INTERNATIONAL PORTS CORPORATION, LTD.

TIPC


2022/08

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# CONTENT

# *Message from Port of Kaohsiung*

To achieve sustainable development, the Port of Kaohsiung(hereinafter the Port) has employed environmentally friendly practices in its operational development Since 2010 the Taiwan International Port Corporation's "Greening the Ports Action Plan" has been gradually implemented among ports in Taiwan In 2014 the Port became the first in the Asia Pacific region to obtain European EcoPort certification Since then, it has continued to strive toward sustainable development and has set the following objectives to increase its business competitiveness, to enhance its social image, to improve its visibility and reputation, and to obtain the experience of international ports

To implement industrial and diverse operation concepts, Port of Kaohsiung adopted development strategies based on cooperation,innovation, and sustainability By adopting a customer oriented corporation core value, the Port has created an environment conducive to favorable operation and has cooperated with manufacturers to generate benefits The Port will implement various construction projects to build port facilities and develop solutions to expand on its core operation Through this approach, the Port will continue to develop diverse operation models to expand its scope of business associated with port industry, transcend the conventional management framework of ports, and apply smart technologies in port operation Finally, we will optimize the operation safety of all ports in Taiwan and provide convenient transportation and efficient services to realize the vision of "focus on innovation to enter the world market and become the best port operation group worldwide

Considering the compatibility of port city development, the Port will expand southward and adhere to the principles of sustainable development in production, life, and ecology by adjusting the function of the old port area As a green port, the Port is transitioning into the role of a hub port, LOHAS port (i e a port that features lifestyles of health and sustainability), and eco port (i e a port that is environmentally friendly) The Port will be built to function as a modern commercial harbor that is informative, automated, and complies with green transportation, while meeting shipping and urban development demands Combining the business culture of " sincere service, and business innovation," the Port provides clients with attentive and thoughtful services, creating a win win business outcome for the Port, shipping sectors, and clients

President of Port of Kaohsiung
Taiwan International Ports Corporation, Ltd.

# Taiwan International Ports Corporation Environmental Policy

"Leverage innovation effectively to connect and communicate with global trade flows. Mature into a world-class port management group" is the vision of Taiwan International Ports Corporation(TIPC). TIPC manages and operates commercial ports in Taiwan and is engaged in maritime transport related services, free trade zones, and the development of relevant tourism and recreational projects.

While TIPC pursues business growth, we are well-aware of the importance of our social responsibility, which is to ensure both environmental and economic sustainability. With the goal to establish green and sustainable ports, we will proactively identify environmental risks that may be associated with our activities and manage the risks accordingly to minimize the environmental impacts.

We commit to:

1. Implement and follow through with the Green Port Policy to establish extraordinary world-class ports.
2. Comply with applicable environmental regulations to fulfill corporate environmental responsibility.
3. Execute pollution prevention, monitoring, and control mechanism to enhance environmental quality in and around port areas.
4. Reinforce environmental education to cultivate environmental awareness among employees.
5. Strengthen the communication with local communities,and pursue sustainable development for both the ports and the cities where we are operating.

Hsien-Yi Lee

**Hsien-Yi Lee**
**Chairman of TIPC**
**Date:** 2020 / 03 / 26

Shao-Liang Chen

**Shao-Liang Chen**
**President of TIPC**
**Date:** 2020 / 03 / 26

# Environmental Policies
## Port of Kaohsiung

The port of Kaohsiung is the lifeblood of Taiwan's economic development and plays an important role in the world trade. We are well aware of the need to balance the prosperity of the port with the ecological environment, so that the port and the environment can be developed in a harmonious manner to ensure the sustainable development of the port of Kaohsiung.

In order to express the importance, we attach to the environment, the Port of Kaohsiung, Taiwan International Ports Corporation, has established the following environmental policies, incorporating the concept of environmental friendliness into the focus of operation and development, and striving to make Kaohsiung port a model of green port.

- **Fully apply the environmental management system; promote sustainable development of the green port.**
- **Follow environmental laws and regulations; endeavor to fulfill corporate social responsibility initiatives.**
- **Provide appropriate environmental education and training; enhance the environmental awareness and skills of our employees.**
- **Continue environmental monitoring and pollution control; reduce energy consumption, carbon emissions, and environmental load.**
- **Disclose environmental information regularly; establish a bridge of communication between the inner and outer port.**
- **Promote community participation ; co-create a friendly port-city environment.**

President of Port of Kaohsiung, TIPC Wang, Chin-Jung

Date 2022 / 8 / 2

Port of Kaohsiung, Taiwan International Ports Corporation, LTD. No.62.Linhai 2nd Road, Gushan District, Kaohsiung, Taiwan, R.O.C

# Environmental Objectives
## Port of Kaohsiung

To implement the commitments of environmental policy, the following environmental objectives are set based on the ten major environmental issues from the port.

### Improve port air quality
Continue to monitor port air quality, enhance environmental inspection and trace pollution sources.

### Abate vessel emissions
Continue to promote vessel speed reduction, manage vessel emissions and conduct long-term port water quality monitoring.

### Avoid fugitive dust in the port area
Strengthen dissemination and inspect operators the implementation of dust prevention practices to effectively control fugitive dust.

### Intensify waste management in the port area
Implement resource recycle and increase waste handling efficiency in the port area.

### Promote development in the port area
Value the overall planning in the port area, activate the resources in the old port area, and implement the environmental monitoring in the developed area.

### Enhance hazardous cargo management in the port area
Establish hazardous cargo safety management system, reinforce on-site inspection, and implement disaster prevention.

### Tighten transport vehicle control
Advance automated door sentry system, build smart vehicle traffic routing system, cooperate with authority concerned for managing old vehicles.

### Monitor marine sediment pollution
Implement substrate quality monitoring in long term and protect the port ecology.

### Tighten resource usage
Reduce port impact by streamlining resource consumption and reducing greenhouse gas emissions.

### Enhance Community Relationship
Increase port friendliness by making port information transparent, encouraging public participation, and encouraging local communities interaction.

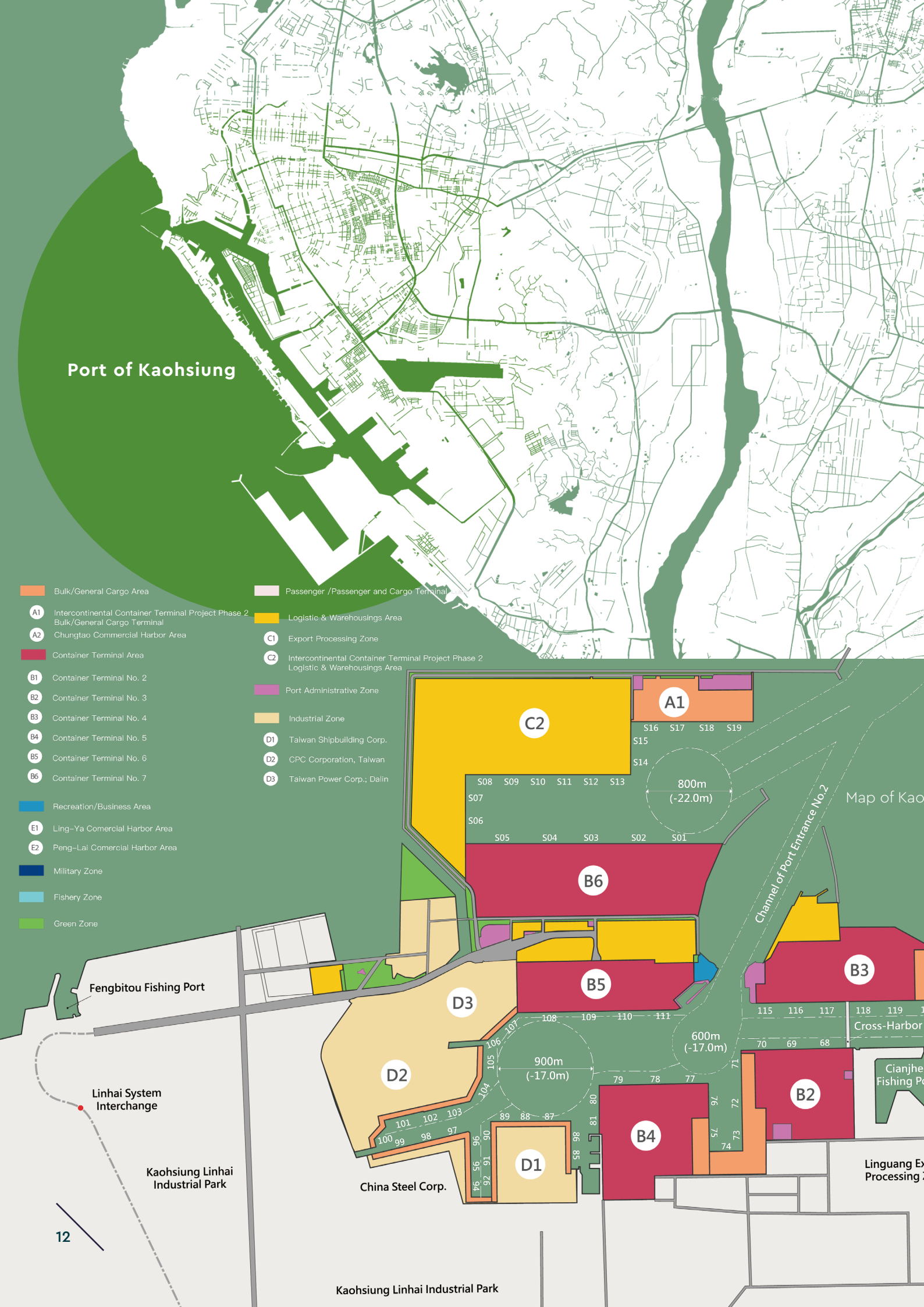
President of Port of Kaohsiung, TIPC Wang, Chin-Jung

Date 2022/ 8 / 2

Port of Kaohsiung, Taiwan International Ports Corporation, LTD. No.62 Linhai 2nd Road, Gushan District, Kaohsiung, Taiwan, R.O.C

# 01

# Port Profile

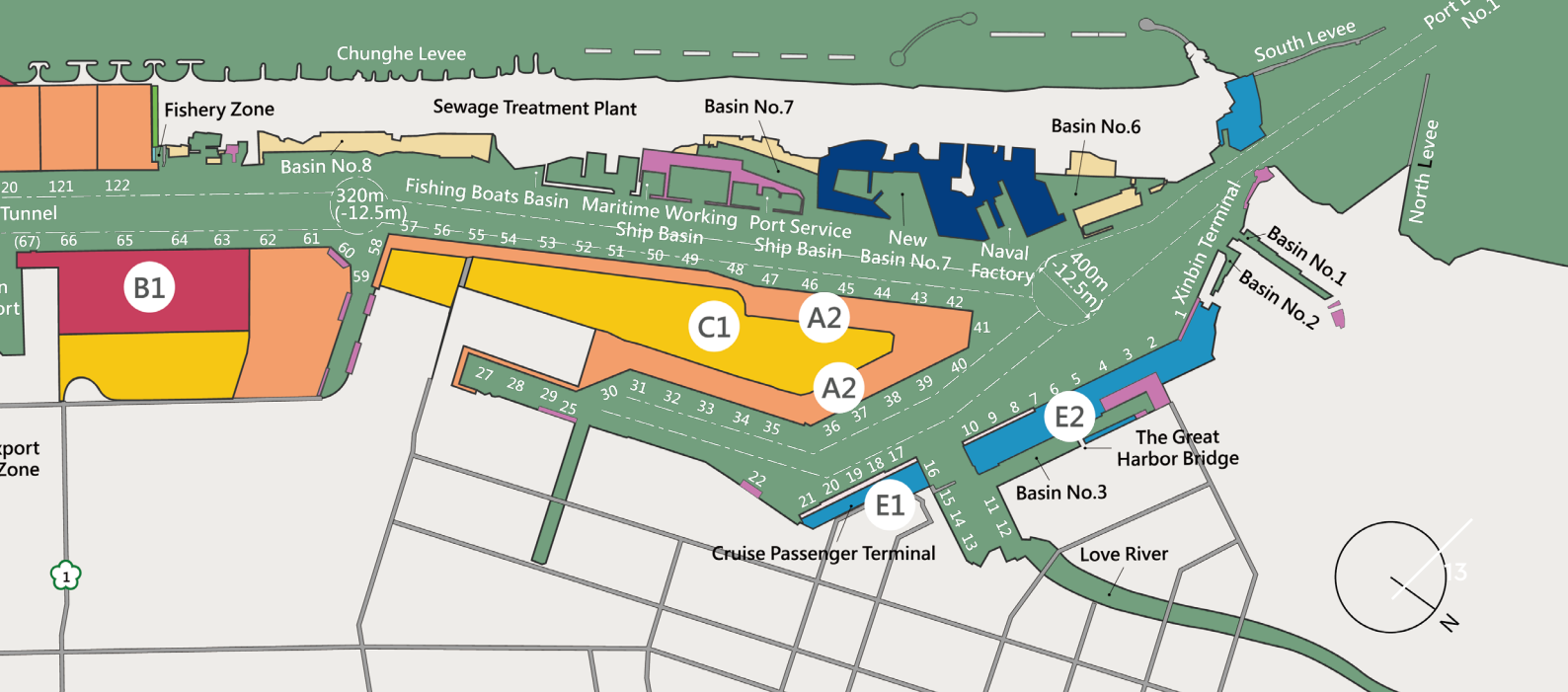

Port of Kaohsiung
Bulk/General Cargo Area
A1 Intercontinental Container Terminal Project Phase 2 Bulk/General Cargo Terminal
A2 Chungtao Commercial Harbor Area
Container Terminal Area
B1 Container Terminal No. 2
B2 Container Terminal No. 3
B3 Container Terminal No. 4
B4 Container Terminal No. 5
B5 Container Terminal No. 6
B6 Container Terminal No. 7
Recreation/Business Area
E1 Ling-Ya Comercial Harbor Area
E2 Peng-Lai Comercial Harbor Area
Military Zone
Fishery Zone
Green Zone
Passenger /Passenger and Cargo Terminal Area
Logistic & Warehousings Area
C1 Export Processing Zone
C2 Intercontinental Container Terminal Project Phase 2 Logistic & Warehousings Area
Port Administrative Zone
Industrial Zone
D1 Taiwan Shipbuilding Corp.
D2 CPC Corporation, Taiwan
D3 Taiwan Power Corp.; Dalin
C2
A1
S16 S17 S18 S19
S15
S14
S08 S09 S10 S11 S12 S13
S07
S06
S05 S04 S03 S02 S01
800m
(-22.0m)
B6
Channel of Port Entrance No.2
B5
B3
D3
115 116 117
118 119
Cross-Harbor
108 109 110 111
107 106 105 104
600m
(-17.0m)
900m
(-17.0m)
70 69 68
71 72 73 74 75 76
79 78 77
80 81 82 83 84 85 86
89 88 87
101 102 103
100 99 98 97
96 95 94 93 92 91 90
D2
B2
B4
D1
Fengbitou Fishing Port
Linhai System Interchange
Kaohsiung Linhai Industrial Park
China Steel Corp.
Cianjhe Fishing P
Linguang Ex Processing
Kaohsiung Linhai Industrial Park
Map of Kao

## 1.1 Port Geographic Information

The Port of Kaohsiung is located on the southwest coast of Taiwan (22°27 north latitude and 120°10′ East longitude) at the intersection of Taiwan Strait and Bashi Channel. The Port enjoys a geographic position at the hub of shipping routes, and serves as an essential point for American, European, Australian and Asian shipping routes. With a vast hinterland, the port occupies 18.71 km2 of land, and the water area of the Port reaches 158.65km2. The maximum draft of its inner port is 17.5 meters. Average tidal range is 0.74 meters. The Port has two entrances: No. 1 and No.2. Geographically speaking, the Port was a natural lagoon before it became a port (Takao Bay). The Port is situated on a plain area, and the coastal area of the Port includes: rocky foreshore, tidal flats, sea walls, offshore island (Chichin Peninsula), offshore banks and sandy beach. The Port neighbors the downtown area of Kaohsiung City, industrial parks (Linhai Industrial Park, Export Processing Zone) and waterfront recreational area (Chichin Seashore). In addition, the Love River, Canal No. 5 , Qianzhen River and Yanshui Stream all flow into the ocean through the Port.

## 1.2 Legal Status and Port Operators

To modernize the management of commercial ports in Taiwan, the country passed the amendment of Commercial Port Law on December 28, 2011. It was then decided in March 2012 that the government should be separated from the enterprise for management of the ports. Public entities that used to manage the ports, including: Kaohsiung Harbor Bureau, Taichung Harbor Bureau, Keelung Harbor Bureau and Hualien Harbor Bureau, are integrated into a corporation (Taiwan International Ports Corporation, TIPC) to reduce legal and institutional restrictions on commercial port operations, enhance the ability of ports to respond to market changes, and increase their competitiveness. After the transformation, management of the Port of Kaohsiung is now the responsibility of the Kaohsiung Branch of TIPC. The Southern Taiwan Service Center of Maritime and Port Bureau (MPB), Ministry of Transportation and Communications (MOTC) will be in charge of navigation and managemen.



## 1.3 Commercial Activities

At present, the commercial section of the port include 137 operating docks(Including 50 non-operating docks), whose full length is 32,924 m, including: bulk and sundry goods dock, container dock and industrial dock. Commercial activities within the port include: ship building and repair, petroleum product processing, marinas / leisure, chemical industry, general manufacturing, storage and packaging and refrigerated cargo.

Main Commercial Activities
and Cargo Handling of Port of Kaohsiung

| Petroleum | Pyrites minerals |
|---|---|
| Crude oil<br>Refined products | Aluminium<br>Cement<br>Phosphates<br>Sulphur |
| Dry bulk | Liquid bulk (non-oil) |
| Animal feed<br>Chemicals<br>Grains<br>Scrap<br>Timber<br>Wood products | Liquid chemicals<br>Liquefied gases |
| Ores | Other |
| Coal<br>Iron ore | Fish<br>Fruit |

## 1.4 Main Cargoes

In 2018 and 2019, the inbound cargo of the Port of Kaohsiung mainly includes mineral products (60.2%), Base metals and their products (14.4%), vegetable products (7.8%), and products of chemical or allied industries (6.1%). The outbound cargo primarily includes base metals and their products (36.6%), plastics, rubber, and articles thereof (24.5%), products of chemical or allied industries (11.7%), and mineral products (10.5%). ◦

# 1.5 Port Business

2020–2021 Business of Port of Kaohsiung

| Item | | 2020 | 2021 | Difference | % |
|---|---|---|---|---|---|
| Incoming and Outgoing Ships | Number of Vessel | 33,237 | 31,043 | -2,194 | -6.60 |
| | G.T. | 871,484,375 | 772,803,153 | -98,681,222 | -11.32 |
| Volume of Cargo Handled | Cargo (Revenue ton) | 343,843,065 | 352,591,434 | 8,748,369 | 2.54 |
| | Dry bulk and Groceries (Revenue ton) | 49,847,400 | 58,396,834 | 8,549,434 | 17.15 |
| | Pipeline cargo (Revenue ton) | 28,456,355 | 28,878,769 | 422,414 | 1.48 |
| | Total (Revenue ton) | 422,146,820 | 439,867,037 | 17,720,217 | 4.20 |
| Number of Cargo Handle | Incoming Cargo(TEU) | 4,799,759.25 | 4,950,631.00 | 150,871.75 | 3.14 |
| | Outgoing Cargo(TEU) | 4,821,903.00 | 4,913,807.50 | 91,904.50 | 1.91 |
| | Total(TEU) | 9,621,662.25 | 9,864,438.50 | 242,776.25 | 2.52 |
| Volume of Imports & Exports | Imports (ton) | 72,955,941 | 79,119,916 | 6,163,975 | 8.45 |
| | Exports (ton) | 28,722,148 | 31,595,165 | 2,873,017 | 10.00 |
| | Domestic (ton) | 6,871,331 | 9,405,641 | 2,534,310 | 36.88 |
| | Total (ton) | 108,549,420 | 120,120,722 | 11,571,302 | 10.66 |
| Incoming and Outgoing Passenger | Domestic Line (number) | 66,533 | 41,155 | -25,378 | -38.14 |
| | International Line (number) | 5,311 | 0 | -5,311 | -100.00 |
| | Total (number) | 71,844 | 41,155 | -30,689 | -42.72 |

# 02

# Environmental Management

## 2.1 Organization Structure

The Kaohsiung Branch of TIPC is in charge of managing the environment of the Port of Kaohsiung. However, environmental aspects involve the division of responsibilities among different agencies. In addition to the Kaohsiung Branch of TIPC, agencies responsible for environmental aspects include the South Maritime Affairs Center, Marine Bureau, Environmental Protection Bureau, Environmental Protection Administration, Coast Guard 5th General Brigade, Kaohsiung Harbor Police Department, and Kaohsiung Harbor Fire Brigade...etc.

The Kaohsiung Branch of TIPC consists of 15 divisions, including Port Business Division, Harbor Management Division, Stevedoring and Warehousing Division, Information Technology Division, Construction Management /Engineering Division, Maintenance Division, Ship and Machinery Division, Occupational Safety and Health Division, Personnel Division, Civil Service Ethics Division, Accounting Division, Secretariat Division, Anping Port Branch Office, Magong District Office and Budai District Office.

**Port Of Kaohsiung**

**Management**

-Kaohsiung Port Branch Office
-Ocean Affairs Council
-South Taiwan Maritime Affairs Center

**Supervise**

-Kaohsiung Port Branch Office
-Marine Bureau Kaohsiung City
-Ocean Affairs Council
-South Taiwan Maritime Affairs Center
-Environmental Protection Administration,Executive Yuan
-Environment Protection Bureau of Kaohsiung City

**Perform Interdiction,Collection of evidence or Enforcement Referral**

-Kaohsiung Port Branch Office
-Offshore Flotilla 5
-South Taiwan Maritime Affairs Center
-Environment Protection Bureau of Kaohsiung City
-Kaohsiung Harbor Police Dept

**Sanction**

-Ocean Conservation Administration, OCA
-Marine Bureau Kaohsiung City
-South Taiwan Maritime Affairs Center
-Environmental Protection Administration,Executive Yuan
-Environment Protection Bureau of Kaohsiung City
-Kaohsiung Harbor Police Dept

Duties of the Divisions of the Kaohsiung Branch of TIPC

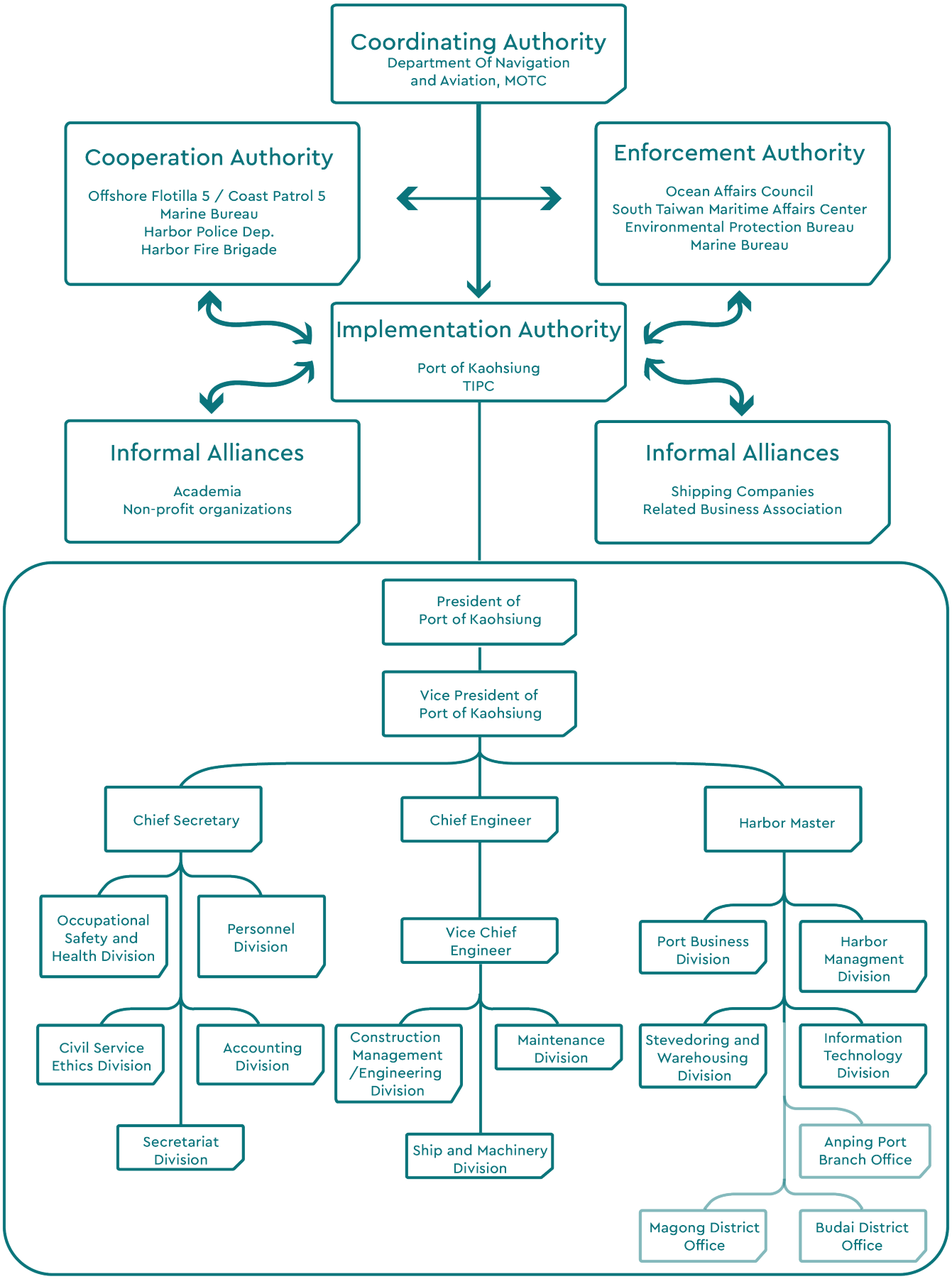



Figure of Organization chart of Kaohsiung Branch of TIPC

Remarks: Anping Port Operation Office is responsible for the operation and management of Anping Port, Magong Management Office is responsible for the operation and management of Magong Port, and Budai Management Office is responsible for the operation and management of Budai Port

## 2.2.1 Relevant International Regulations

The Kaohsiung Branch of TIPC follows relevant international specifications, such as International Convention for the Prevention of Pollution From Ships (MARPOL73/78), London Dumping Convention, International Convention on the Control of Harmful Anti-fouling Systems on Ships etc.

Relevant Environmental Laws and Regulations Related to Ports in Taiwan

| Competent Authorities | Laws Title |
|---|---|
| Sectors in the Ministry of transportation and communications | The Commercial Port Law |
| | The Law Of Ships |
| | The Shipping Act |
| | Act for the Establishment and Management of Free Trade Zones |
| Sectors in the Ministry of the Interior | Fire Services Act |
| Sectors related to agricultural | Wildlife Conservation Act |
| Sectors related to environmental protection | Marine Pollution Control Act |
| | Basic Environment Act |
| | Air Pollution Control Act |
| | Water Pollution Control Act |
| | Waste Disposal Act |
| | Environmental Impact Assessment Act |
| | Environmental Education Act |
| | Noise Control Act |
| | Indoor Air Quality Act |
| | Toxic and Concerned Chemical Substances Control Act |
| | Soil and Groundwater Pollution Remediation Act |
| | Environmental Agents Control Act |
| | Greenhouse Gas Reduction and Management Act |
| | Public Nuisance Dispute Mediation Act |
| Intersectoral | Disaster Prevention and Protection Act |

## 2.2.2 Relevant Environmental Laws and Regulations Related to Ports in Taiwan

In addition to the international environmental specifications and conventions, The Kaohsiung Branch of TIPC collaborates with local authorities to manage the environment in the Port in compliance with relevant environmental laws and regulations in Taiwan.

| | Central Competent Authority | Local Law Enforcement Agencies |
|---|---|---|
| 2021/04/28 | Ministry of Transportation and Communications | South Maritime Affairs Center, Maritime and Port Bureau, MOTC |
| 2018/11/28 | | |
| 2014/01/22 | | |
| 2019/01/16 | | |
| 2022/05/11 | Ministry of the Interior | Fire Bureau, Kaohsiung City Government |
| 2013/01/23 | Council of Agriculture | Marine Bureau/ Agriculture Bureau, Kaohsiung City Government |
| 2014/06/04 | Ocean Affair Council | Marine Bureau, Kaohsiung City Government |
| 2002/12/11 | Environmental Protection Administration | Environmental Protection Bureau, Kaohsiung City Government |
| 2018/08/01 | | |
| 2018/06/13 | | |
| 2017/06/14 | | |
| 2003/01/08 | | |
| 2017/11/29 | | |
| 2021/01/20 | | |
| 2011/11/23 | | |
| 2019/01/16 | | |
| 2010/02/03 | | |
| 2016/12/07 | | |
| 2015/07/01 | | |
| 2009/06/17 | | Public Nuisance Disputes Mediation Committee, Kaohsiung City Government |
| 2022/06/15 | Ministry of the Interior | Kaohsiung City Government |

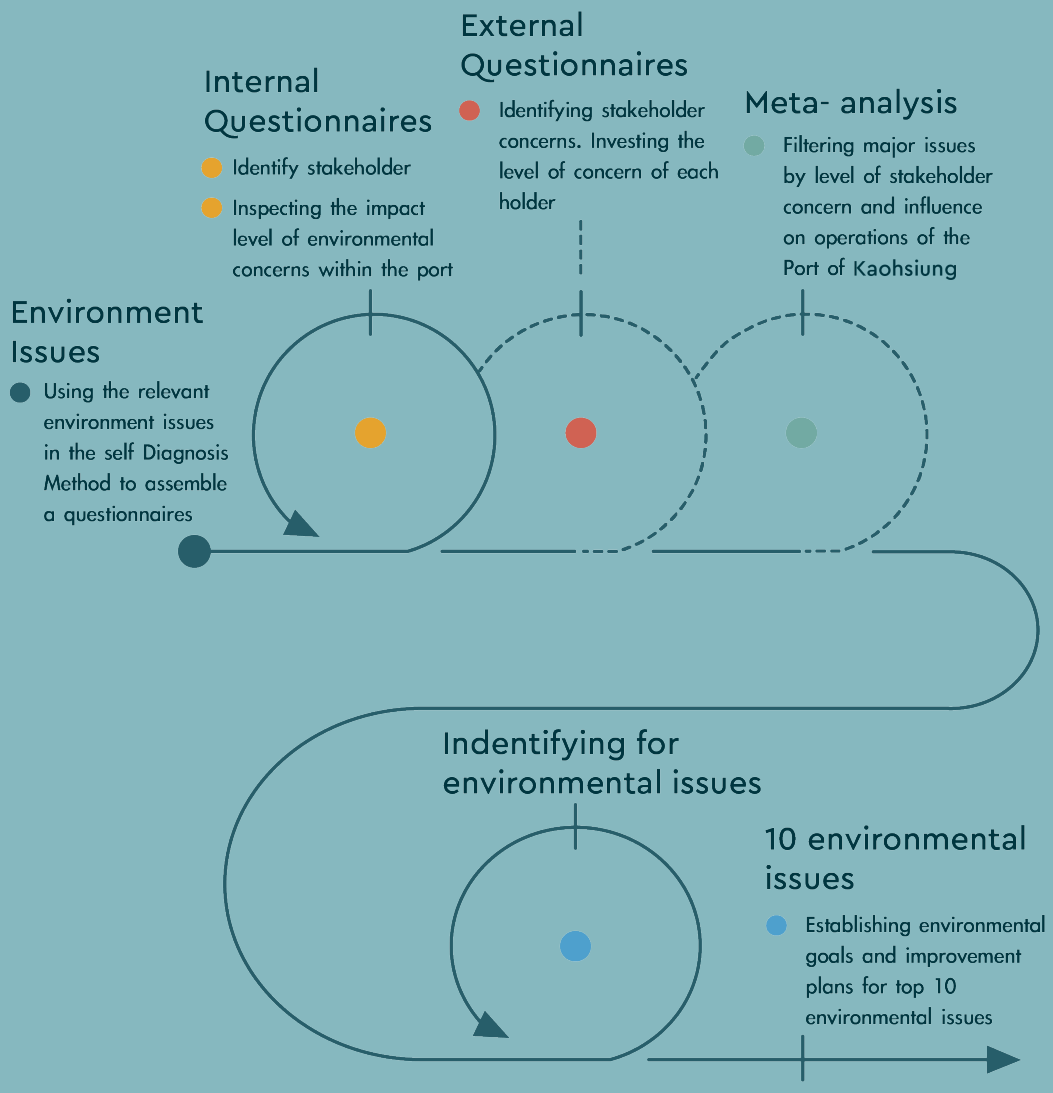
## 2.3 Stakeholder Analysis

**As an important enterprise in the Kaohsiung City bay area, the Kaohsiung Branch of TIPC uses a variety of methods to communicate with stakeholders Their needs and expectations are gathered and incorporated into the company's policy ThePort of Kaohsiung believes that good communications with the stakeholders help identify key environmental issues and create value Therefore, it collected surveys to help formulate the Port's Environmental Objective**

| Sector | Environmental Concerns | Relevant Environmental Objectives |
|---|---|---|
| Government | Dust, Emissions from Heavy Duty Vehicles and Vessels, Emissions from Port Industry, Hazardous Cargo | I. Air Quality<br>II. Vessel Emissions<br>III. Port Waste<br>VI. Vehicle exhaust emissions<br>VII. Hazardous Cargo |
| Employee | Air Quality, Living Quality near the Ports, Resource Usages | I. Air Quality<br>V. Port Development<br>IX. Relationship with Local Community<br>X. Resource Consumption |
| Clients | Air Quality, Emissions from Port industry, Cargo Leakage, Port Safety, Dust | I. Air Quality<br>II. Vessel Emissions<br>IV. Dust<br>VII. Hazardous Cargo |
| Community | Air Quality, Emissions from Heavy Duty Vehicles and Vessels, Pollution from Riverain,Noise, Dredge Disposal, Marine Sediment, Port Development, Port Safety | I. Air Quality<br>II. Vessel Emissions<br>III. Port Waste<br>V. Port Development<br>VII. Hazardous Cargo<br>VIII. Marine Sediment |

# Analysis of major environmental issues

Kaohsiung Port Branch has assessed the activities and services that may have a significant impact on the environment of Kaohsiung Port, including the significant environmental impacts caused by related businesses (tenants, contractors) in the port area, and sorts out the relevant environmental laws and regulations for each topic. Regulations, and the handling methods of Kaohsiung Port Branch, and through the third justice law firm to confirm the laws and regulations and operating norms that should correspond to various environmental issues. In addition, in order to review the environmental performance of Kaohsiung Port, the Kaohsiung Port Branch has established appropriate environmental performance indicators for the ten major environmental issues of Kaohsiung Port.



Port of Kaohsiung

# Environmental Issues

Top 10

## 1. Air quality

indicator

-Air quality pass rate ($PM_{10}$、$PM_{2.5}$、$SO_2$、$NO_2$)
-Number of air pollution patrols

## 2. Vessel emission

indicator

-Vessel waste oil management
-Vessel exhaust
-The ratio of using shore power among harbor crafts
-Shore power usage
-Ships deceleration target completion rate

## 3. Dust

indicator

-The percentage of concealed/covered transportation for bulk cargo (e.g., cement and coal) during loading and unloading operations in the port area
-Car wash

## 4. Garbage/ port waste

indicator

-Port recycling rate(land)
-Waste from the waters

## 5. Port development

indicator

-Public waterside recreational space

## 6. Hazardous Cargo

indicator

-Hazardous cargo inspection
-Number of patrols, vessels inspected, and number of cases sent to the authorities

## 7. Vehicle exhaust emissions (including cargo handling)

indicator

-Promotion of a comprehensive use of the Automatic Gate Sentry Post Control System among shipping lines

## 8. Marine sediment quality

indicator

-Sediment monitoring

## 9. Energy consumption

indicator

-Power and oil saving efficiency
-The amount of solar power generation
-Greenhouse Gas Management

## 10. Relationship with Local Communities

indicator

-Neighborhood and community welfare activities


泊帆
雜屋

# 03

# State of the Environment

# 3.1 Air Quality

The air pollutants in the Port of Kaohsiung mainly include nitrogen oxides (NO x sulfur dioxides (SO x and suspended particulates Ocean going vessels are the greatest contributor of pollutant emission,followed by in port ships, heavy duty vehicles, and steve doring equipment Pollutants from ocean going vessels are mainly derived from emissions caused by the fuel combustion of auxiliary boilers and engines when such ships approach and berth in a port, thereby generating SO x as the primary pollutant Pollution released from heavy duty trucks is mainly caused by engine idling during freight handling Therefore, to reduce pollution and green house gas ( emissions, the Kaohsiung Branch of TIPC has focused on promoting eco friendly practices among incoming ships and freight forwarders, improving handling equipment, decreasing fugitive substances produced during handling, and controlling transportation vehicles.

# 3.2 Air Quality Monitoring Situation

Currently,12 air quality monitoring stations are set up in the Port of Kaohsiung, monitoring items include total suspended particles(TSP)、particulate matters($PM_{10}$)、fine suspended particles($PM_{2.5}$)、($SO_2$)、($NO_x$)and ozone($O_3$)、These indicators are monitored quarterly In addition, two monitoring stations are established in the neighboring areas of the Port of Kaohsiung, namely the Xiaogang Monitoring Station and the Dalin Po Monitoring Station, respectively set up by the EPA and EPB

Performance Rate

| Indicator | Performance (Pass Rate%) | | |
|---|---|---|---|
| | Target | 2020 | 2021 |
| $PM_{10}$ Daily Ave.(<100μg / $m^3$) | 100 | 100 | 98 |
| $PM_{2.5}$Daily Ave.(<35μg / $m^3$) | 60 | 82 | 80 |
| $SO_2$ Daily Ave.(<0.02 ppm) | 100 | 100 | 100 |
| $NO_2$ Daily Ave.(<0.1 ppm) | 100 | 100 | 100 |

# 3.3 Preventing Emissions from Cargo Handling Operations

In order to suppress environmental dust, Kaohsiung Port has installed dust nets, cleaned roads, used sprayers, and set up four car wash pools at Piers 50, 52, 54, and 55 to effectively reduce the number of bulk cargo terminals No. 48–56. Environmental pollution caused by suspended particles generated during loading and unloading of cargo.

Shelter type coal unloading operation

Dust prevention nets

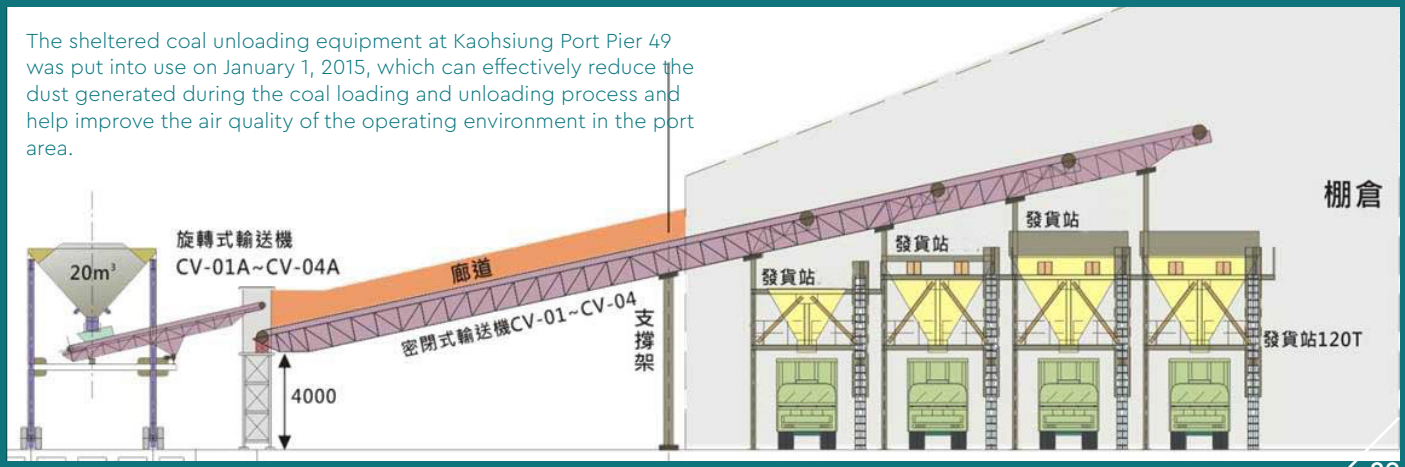
**Number of times and utilization rate of car wash pool**

| year | washing times | rate |
|---|---|---|
| 2020 | around 11,000 | 99% |
| 2021 | around 7.5000 | 99% |

High water pressure car wash lane

**Pier 49 is equipped with shielded coal unloading equipment to prevent dust pollution during coal loading and unloading.**

The sheltered coal unloading equipment at Kaohsiung Port Pier 49 was put into use on January 1, 2015, which can effectively reduce the dust generated during the coal loading and unloading process and help improve the air quality of the operating environment in the port area.




Schematic of the shielded coal unloading facility

## 3.4 Land Mobile Pollution Source Control

Kaohsiung Port's land-based mobile transport is another major source of air pollution. In recent years, Kaohsiung Port Branch has cooperated with Kaohsiung City Government Environmental Protection Bureau to carry out joint inspections and handle 3 to 5 phases of large-scale diesel vehicle port inspection station services. In the future, it will also cooperate with the plan of the Kaohsiung City Government to set up a "Port Air Quality Maintenance Zone". In addition, we continue to take measures such as "refinement of automated gate guard system" and "build-up of delivery cabinet forecasting system", which can effectively improve the exhaust emissions of operating vehicles. Among them, in order to reduce the idle time of trucks and reduce engine exhaust emissions, there are currently 69 entry and exit lanes in Kaohsiung Port, of which 36 are automated gates. The general lanes will be reserved, however, except for a small number of general lanes reserved for subsequent new lanes, the rest will be planned as automated gates.

## 3.5 Automated vehicle traffic and carbon reduction

After the automated lanes are installed, the average clearance time has been improved from 4 minutes to 10 seconds, and the diesel consumption can be reduced by 24.6 grams and carbon emissions by 0.152 kilograms per trip. According to statistics, the number of traffic in 2020–2021 will reach approximately 25.5 million trips. , which is estimated to reduce carbon emissions by approximately 3,876 metric tons.

The carbon reduction of heavy trucks through automatic gate lanes

| Year | No.of Passing Container Trucks | Fuel Consumption Reduction | Carbon Emission Reduction(Kg) | Total Fuel Reduction (L) | Total Carbon Reduction(Kg) |
|---|---|---|---|---|---|
| 2015 | 8,860,126 | 24.6 g/per passing | 0.152 kg/Per passing | 217,959,100 | 1,346,739 |
| 2016 | 8,588,795 | | | 211,284,357 | 1,305,497 |
| 2017 | 8,698,290 | | | 213,977,934 | 1,322,140 |
| 2018 | 9,898,116 | | | 243,493,654 | 1,504,514 |
| 2019 | 10,876,734 | | | 267,567,656 | 1,653,264 |
| 2020 | 12,600,997 | | | 309,984,526 | 1,915,352 |
| 2021 | 12,904,406 | | | 317,448,388 | 1,961,470 |

1. Automotive Research & Testing Center
2. EPA "Eco Life"Website (ecolife.epa.gov.te)

# 3.6 Vessel (Water) Mobile Pollution Source Control

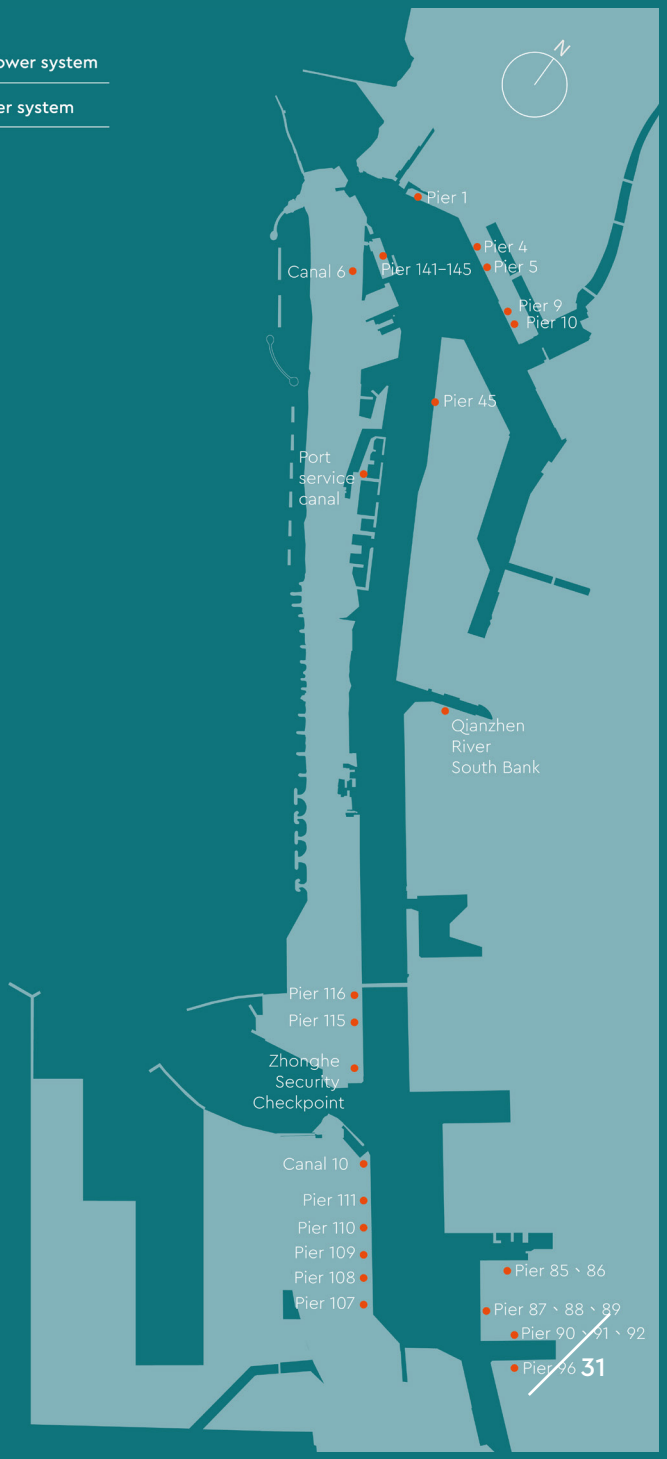
Ship pollution management can be divided into air and sewage and waste. In terms of air pollution, Kaohsiung Port Branch continued to make efforts towards the full use of low-polluting ships in port operations. Kaohsiung Port currently has 72 low-voltage shore power stations and 10 high-voltage shore power stations. First of all, it is ensured that all ships in the port area use shore power when docking to reduce the exhaust emissions of ships in the port area. According to statistics, the utilization rate of shore power (both low-voltage shore power) for port handling ships is 100%; Usage is 522,863 degrees in 2020 and 852,267 degrees in 2021.

**Shore power terminal voltage and quantity table**

| Location | Voltage | Quantity |
|---|---|---|
| Pier No. 1 | 220V | 1 |
| Pier No. 4 | 220V | 1 |
| Pier No. 5 | 220V | 2 |
| Pier No. 9 | 220V | 1 |
| Pier No. 10 | 440V | 2 |
| Pier No. 45 | 440V | 1 |
| Pier No. 85、86 | 440V | 5 |
| Pier No. 87、88、89 | 440V，6.6kV | (7.2) 9 |
| Pier No. 90、91、92 | 440V | 7 |
| Pier No. 96 | 11.4kV | 1 |
| Pier No. 107 | 6.6kV | 1 |
| Pier No. 108 | 6.6kV | 1 |
| Pier No. 109 | 6.6kV | 1 |
| Pier No. 110 | 6.6kV | 1 |
| Pier No. 111 | 6.6kV | 1 |
| Pier No. 115 | 6.6kV | 1 |
| Pier No. 116 | 6.6kV | 1 |
| Pier No. 141 | 110V，220V，440V | 4 |
| Pier No. 142 | 110V，220V，440V | 5 |
| Pier No. 143 | 110V，220V，440V | 2 |
| Pier No. 144 | 110V，220V，440V | 2 |
| Pier No. 145 | 110V，220V，440V | 2 |
| Channal 6 | 220V，440V | 12 |
| Channal 10 | 220V | 3 |
| Zhonghe Security Checkpoint | 220V | 1 |
| Port service canal | 110V，220V | 11 |
| Qianzhen River South Bank | 220V，440V | 3 |

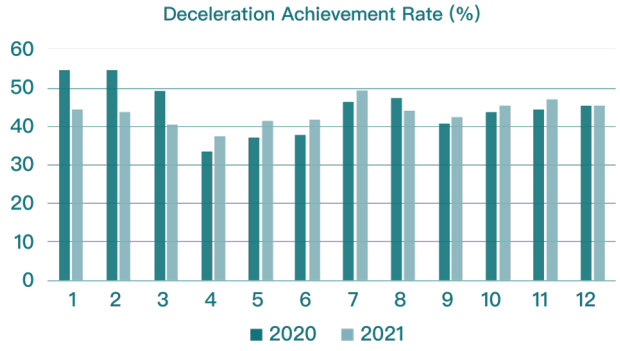
Map of shore power system

Shore power system



## 3.7 Promote Vessel Speed Reduction

Kaohsiung Port encourages ships entering and leaving the port to implement Vessel Speed Reduction (VSR), and promotes ships sailing within 20 miles of the international commercial port area through VTS and other pipelines to cooperate to reduce speed to less than 12 knots; within the port area (3~5 wei) The rate of achievement of deceleration of the ship is 100%, and the ship should travel slowly in accordance with regulations. The achievement rates in 2020 and 2021 are 45.45% and 43.64%, respectively.




| year | (A)Vessels meeting the criteria | (B) Vessels with measured average speed | (C)VSR achievement rate(%) (C=A/B) |
|---|---|---|---|
| 2020 | 8,429 | 18,545 | 45.45 |
| 2021 | 9,057 | 20,755 | 43.64 |

## 3.8 Low Pollution Fuel

All vessels in Kaohsiung Port from 2016 to 2021 use low-polluting fuel oil. At the same time, the switch of fuel products of ships entering the port is promoted, and the ship will be promoted to the ship from the VTC tower for fuel switching within 5 nautical miles. From 2019, ships in the port area should use low-sulfur fuel oil with a sulfur content of less than 0.5% or devices or alternative fuels with the same emission reduction effect.

## Build "Ship Navigation Smart Warning Auxiliary System"

Kaohsiung Port is an international integrated port for commerce, military, fishing and industry. About 70,000 ships enter and leave the port every year. Such a huge sea traffic flow has caused a great burden on tower controllers and increased risks to navigation safety. In order to promote smart ports, improve operational efficiency and navigation safety, the port company will upgrade the VTS in 2020 and build a "smart navigation warning assistance system for ships". Reduce the human error rate to improve port efficiency and service quality, strengthen maritime traffic safety, reduce the occurrence of port accidents such as terminal collisions, and reduce marine impact and pollution caused by ship accidents.

# A Improve the marine weather management mechanism

Strengthen the warning function of abnormal marine weather

Establish a warning notification mechanism for marine meteorological equipment, and establish a warning function in accordance with the relevant regulations of the port area. Since 2022, it is planned to build and improve the marine meteorological warning function to improve marine traffic safety and reduce the risk of marine environment pollution due to marine traffic accidents.

Optimize the marine weather webpage

Through the new setting function, it is also connected to the webpage. If the marine weather value reaches the standard, a color block will be displayed on the webpage to strengthen the reminder function, and the construction will provide reference for various ships and shipping companies to speed up voyage planning. (To be completed by the end of April 2022)

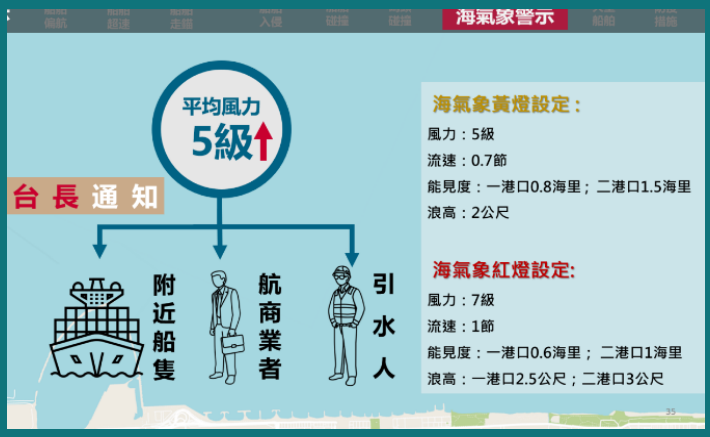
Adding wave flow meter

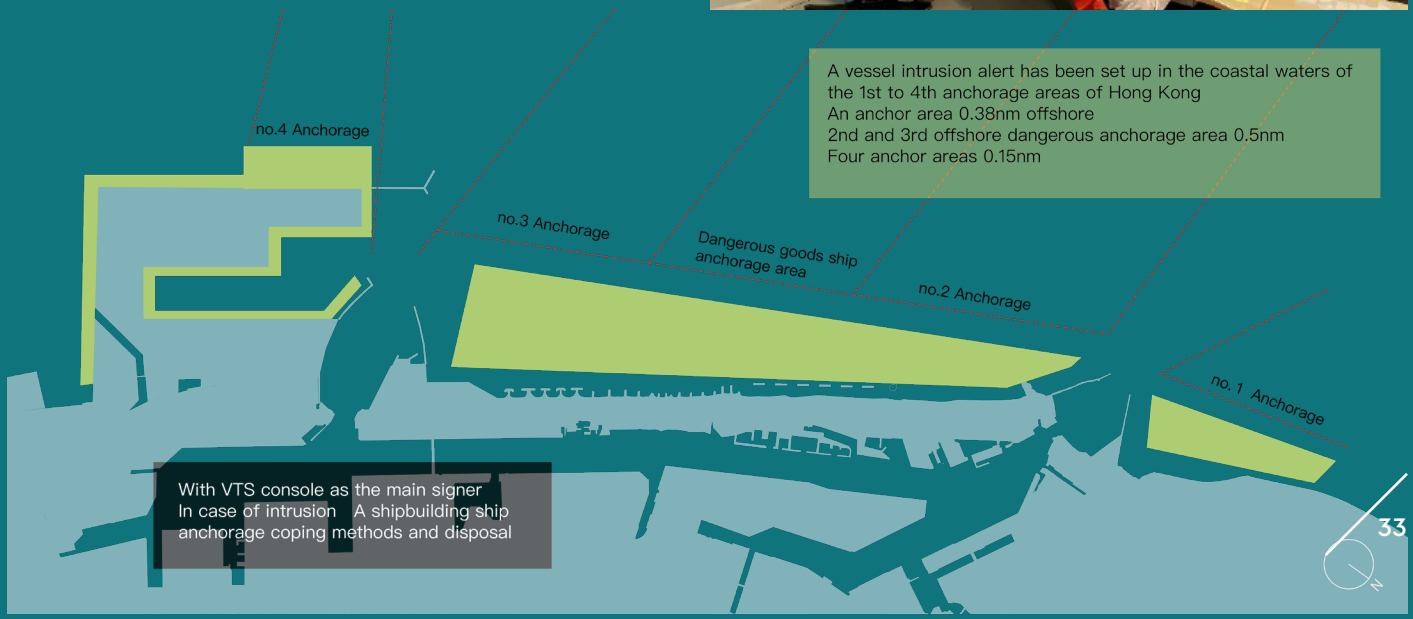
It has been inspected as the existing equipment to improve the observation and warning of sea wave flow, and it is proposed to add wave flow meter equipment to strengthen the warning. At present, only one department is set up in the waters of one port, and one more department is planned to be set up in the waters of two ports to enhance maritime safety. (Expected to be completed by the end of December 2022)

# B Strengthen the function of monitoring ships

Added intrusion warning function

Strengthen the water management of the ship's anchoring area. In order to prevent the ship from stranded in the shoal area due to anchoring or unpowered drifting to the shoal area, resulting in the risk of oil pollution of the marine environment, the smart electronic chart has added a water intrusion ship warning function. Once the ship enters the shoal area , the warning function will give an instant warning and remind you to pay attention.



## 3.9 Port waste

Due to its proximity to the urban area, Kaohsiung Port pays special attention to the cleanliness of the port area and the quality of life of the people. For land-based waste in the port area, according to Articles 19 and 20 of the Waste Disposal Law and the Resource Recycling and Recycling Law, a total of 864.49 metric tons of waste will be removed in 2020 and 927.52 metric tons in 2021. Through the "General Waste Resource Recycling Work Management Procedure", resource classification, recycling and statistics are carried out to achieve the effect of resource recycling, reduction of port resource consumption and waste generation. The environmental pollution or waste generated by the loading and unloading operations of bulk cargo ships at the terminal shall be handled in accordance with the "Taiwan Port Co., Ltd.'s Terminal Operation Environmental Pollution and Remnant Waste Cleanup Management Procedures".

The port company conducts daily cleaning operations in the waters of the port area, and carries out the cleaning business of ship crew's domestic waste in accordance with Article 38 of the Commercial and Port Law. It is also required that ships visiting the port should entrust legal environmental protection manufacturers to collect and transport waste oil and water, so as to reduce the environmental impact caused by ships calling at the port area.

In order to properly implement the operations related to the water waste removal and transportation of the upcoming Intercontinental Phase II, the port company has planned to purchase a new multi-functional cleaning vessel, which is expected to be put into operation in mid-2023. In addition to the ability to travel to the port, the new multi-functional cleaning vessel also has functions such as automatic cleaning, high-pressure water column, hydraulic boom and oil-water separation, which will greatly increase the capacity of Kaohsiung Port to treat marine waste and oil pollution.

**Kaohsiung Port Waste Disposal and Recycling Statistics**

| Project / Year | 2020 | 2021 |
|---|---|---|
| Waste generation (metric tons) | 1,417.43 | 1,685.52 |
| Resource recovery (metric tons) | 135.62 | 206.53 |
| Resource recovery rate (%) | 9.56% | 12.25% |

## 3.10 Port development promotion

Kaohsiung Port is the largest international commercial port in Taiwan and is located in the Asian shipping hub. The port development policy is aimed at a sustainable green port. Therefore, the overall environment and compatibility with the city are the primary considerations in the development process. Start the port construction in accordance with the "Taiwan International Commercial Port Future Development and Construction Plan" approved by the Executive Yuan.

## Promote the "Intercontinental Container Center Project"

Kaohsiung Port has been established for more than 100 years. In response to the shipping trend of large-scale ships and changes in the economic and trade environment at home and abroad, the "Intercontinental Container Center Project" is promoted to create opportunities for the future development of Kaohsiung Port. Sustainable and environmentally friendly concept design and construction. After completion, the Kaohsiung Port Area Container Center can be re-allocated, the number of berthing seats in large container terminals can be increased, sufficient land can be provided for industrial chain integration, and the scattered oil storage tanks in the port area can be solved. Adjacent to the core area of the urban area, creating opportunities for land development in the old port area and revitalizing the waterfront tourism and recreational resources, Kaohsiung Port will become a green port with sustainable development of production, living and ecology, creating a win-win situation for the port and the city.

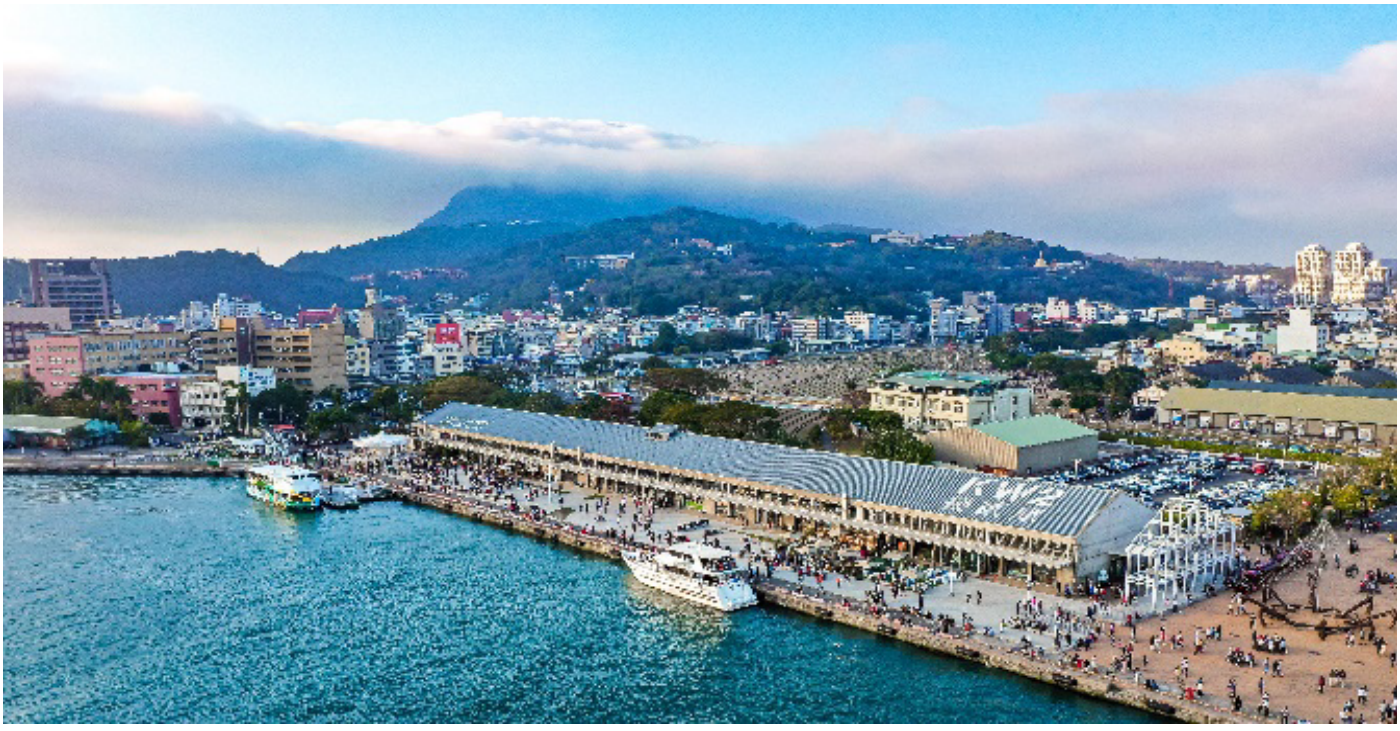
Kaohsiung Port's container handling volume accounts for nearly 70% of Taiwan's total, of which Evergreen Shipping's container handling volume accounts for more than 30% of the total Kaohsiung Port's total, contributing significantly to Taiwan's economic growth. In order to enhance the competitiveness of Kaohsiung Port and its future development opportunities, the seventh container center under construction by the port company will not only provide a better container operation base for my country's largest shipping company – Evergreen Shipping Company, but also increase its competitiveness in international shipping. It is more related to the long-term development of my country's economic and trade development, and can provide airlines with a better and more modern operating environment, creating a new win-win situation for Kaohsiung Port, the city and the shipping business.

# Construction of "Kaohsiung Port Tourism Center"

In order to revitalize the harbor space, improve land use and provide an elegant and relaxing hydrophilic space, Kaohsiung Port cooperated with the multi-functional economic and trade park plan to handle the construction of "Kaohsiung Port Tourism Center". The construction project is made of reinforced concrete with 2 floors underground and 15 floors above ground. It is an avant-garde building made of steel frame and metal curtain with 3D curved surface. The architectural design concept is based on the intention of ocean waves and fluids, forming a new landmark of Kaohsiung Ocean Gate. After the construction is completed, it will be combined with the existing shorelines of Piers 17 to 21 (total length 730 meters, water depth 10.5 meters), which can accommodate the berthing of the largest tourist cruise ships of 225,000 tons, and can serve more than 2,100 customs clearance passengers per hour during peak hours. , to provide convenient and comfortable travel space for cruise passengers, and to promote the establishment of water-friendly recreational, catering or cultural leisure and commercial activities facilities near the port, to create a variety of public service facilities, space and business environment for citizens and consumers, and to promote international exchange activities, To promote the development of the national and local tourism industry, to transform Kaohsiung Port from cargo transportation to a harbor for international culture and tourism, and to create a new landmark of port waterfront architecture to enhance Kaohsiung Port into a multi-functional international port.

# The old port area reconstruction and transformation plan

The Kaohsiung Port Area is close to the densely populated urban areas. In order to establish a channel for Kaohsiung Port City to communicate and build consensus, the company has established the "Kaohsiung Port City Cooperation Platform" with the Kaohsiung City Government since 2015. As of October 2022, a total of 18 formal meetings have been held. In addition, we will continue to conduct case-by-case consultations based on the needs of port-city cooperation issues. Through the integration of port-city resources, we will successively promote the transformation and development of the port area, the hardware construction of the old port area, and the monitoring of air pollution control in the port area. development related issues. The old port area of Kaohsiung Port has strong historical features and cultural connotations. In order to promote the development and transformation of land in the port area and revitalize the waterfront sightseeing and recreational resources, the company and the Kaohsiung City Government jointly established "Kaohsiung Port Area Land Development Co., Ltd." to accelerate the establishment of A communication platform for the development of the old port area of Kaohsiung Port. TDK has so far completed the investment promotion and development of Zhan 2 Warehouse, Kaohsiung Port Waiting Room, Dagang Warehouse 410 and Yachting Wharf Zone A, and will continue to promote the Penglai Commercial Port Zone, the land behind Pier 21 and the yacht wharf in accordance with the consensus of port-city cooperation. Area B and other investment promotion plans, the existing open and planned waterfront space totals 58.7 hectares. It is expected to create a new highlight of Kaohsiung's waterfront by reshaping the functions of the old port area to achieve the goal of co-prosperity and sustainable development of the port and city.

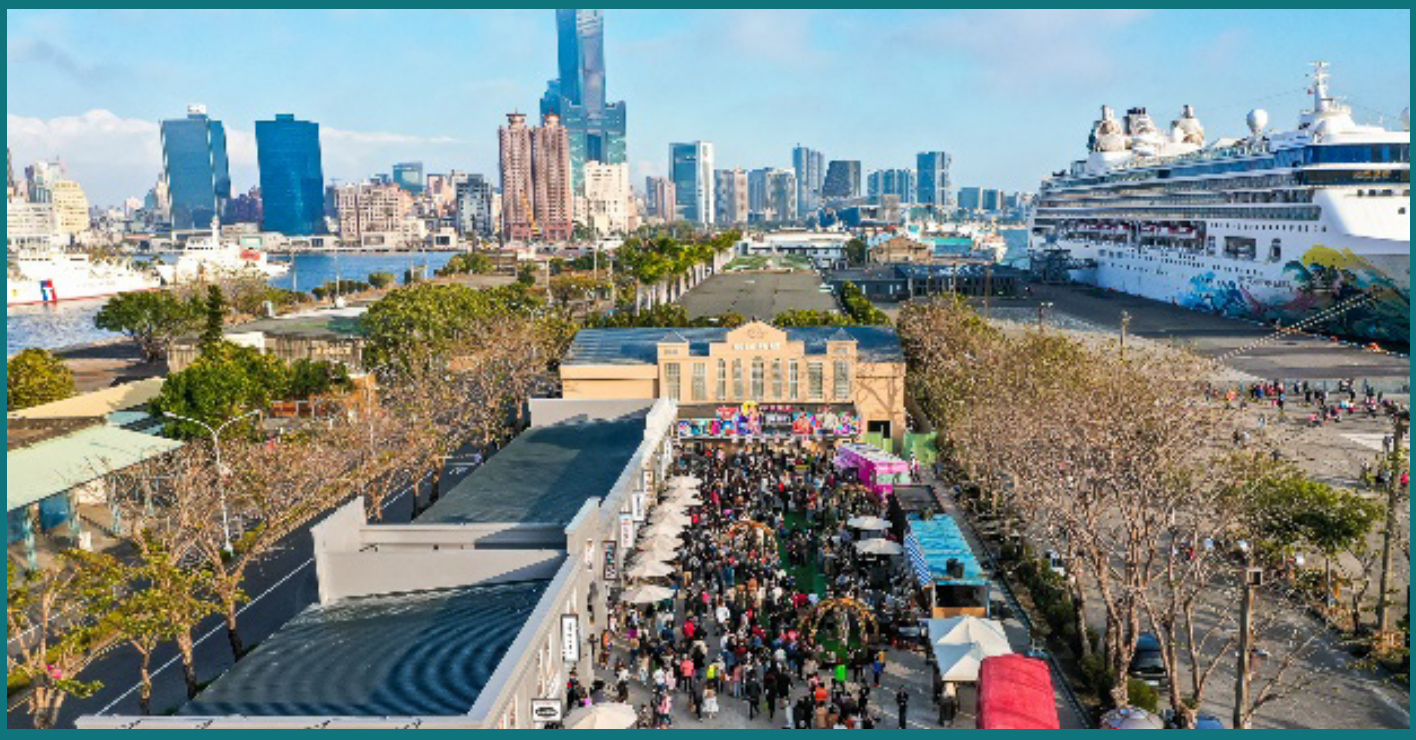


## Continue to carry out environmental monitoring in the port area

In order to control the changes in the surrounding environment of the port area, the port company continues to monitor the air quality, noise, water quality, bottom quality and ecological environment of the port area. Based on the results of environmental monitoring, understand the impact degree of operation and project development on the environment, as well as the difference between the current situation of project development and the original environmental impact assessment results, and compare the monitoring results with environmental laws and regulations to grasp abnormal phenomena at any time and carry out immediately. Improvement and adjustment of working methods to maintain environmental quality.

## Improve the road traffic in the port area

In order to improve the connection roads of the Kaohsiung Port and Port Area, improve the efficiency of external transportation, improve the conflict of mixed traffic flows, promote the coordinated development of the port and the city, improve the traffic system in the port area and surrounding areas, and improve the living quality of Kaohsiung City, the Kaohsiung Port Linkage is promoted. The outer elevated road plan is to build a 3.4-kilometer corridor connecting the commercial port area and a 1.13-kilometer extension corridor in Zhongshan High.



## 3.11 Habitat Restoration

The natural coast where the Port of Kaohsiung is located at was originally the habitat of mangroves. The coast was later reclaimed to develop the Port of Kaohsiung, and the increase of artificial coasts reduces the ecological and species diversity of the coast. Therefore, when developing the Port of Kaohsiung, the Kaohsiung Branch of TIPC is also committed to maintaining the ecology and habitats in the port and actively protecting the existing green belts (or buffer zones) to reduce the environmental stress

For example, the South Star Free Trade (SSFT) District is located in a remote area that is relatively free from human disturbances According to the environmental assessment conducted on the first and second phases of this land development project, a total 68 bird species have been observed and recorded According to the Kaohsiung Wild Brid Society, more than 210 species of migratory birds stop by the SSFT District during autumn and winter The district is also habitat to 8 species of mammals, 6 species of amphibians, 10 species of reptiles, and

Green Building of Nanxing Management Center

40 species of butterflies In addition, the society found 5 species endemic to Taiwan, 19 subspecies endemic to Taiwan, 2 rare and protected species, and 3 other species that should be protected Therefore during construction and operation processes, the SSFT District plans to preserve the existing windbreaks, protect indigenous species to green the area, set up green belts as buffer zones,and restrict the speed of incoming and outgoing vehicles to reduce the impact incurred by development Currently, approximately 10 ha of land in the development area of the first phase of the SSFT District has been preserved as a wild bird habitat

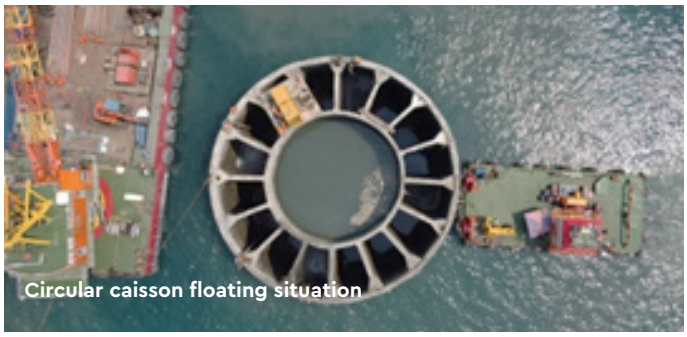

Common kestrel


Oriental Pratincole

# 3.12 Ecological conservation

The Kaohsiung Port Intercontinental Phase II project is the largest marine engineering construction in Taiwan in the near future. Adhering to the concept of "Salute to the Sea" and the sustainable symbiosis of the environment, the project construction is promoted towards the concept of hydrophilic ecology, and the "circular caisson" will be retained in April 2021. The reuse method as an "ecological dyke" has become a national initiative. The demolition of "the 13 circular caissons of the existing south breakwater in the second port" is a part of the second phase of the Intercontinental project. After many discussions by the engineering team, the difficulties of underwater construction technology were overcome, and different methods of excavation, cleaning and floating were tried. Afterwards, 13 circular caissons were successfully floated and sunk to the west breakwater. As the "ecological buried dike" porous biological habitat, it enriched the ecological diversity of the port area and became the first example of circular caisson reuse in Taiwan. A green port with a friendly environment.

In June 2021, Kaohsiung Port won the first prize in the "World Port Sustainability Plan (WPSP)"- "Resilient Infrastructure" group competition with "Kaohsiung Port 2017–2021 Future Development and Construction Master Plan", presenting the Intercontinental Container Center (Phase 2) The innovative and sustainable engineering of the engineering plan, including dredging and backfilling, sand extraction monitoring, energy saving and carbon reduction, ecological and environmental protection construction methods, engineering problems and overcoming, and the reconstruction mechanism of the old port area, etc. Phase II) Engineering Project" and "Old Port Area Planning and Reconstruction" are dedicated to the efforts and results of environmental sustainability work. Taking the opportunity of winning the award, on August 10, 2021, Kaohsiung Port Branch, local government, industry and academia jointly held the "Sustainable Port City Forum" to organize exhibitions, theme presentations and forums online to let more people know about the port city. different aspects, and provide more ideas and visions for the future outlook of Port City.



Circular caisson floating situation

Circular caisson lifting operation

# 3.13 Manage Hazardous Cargo

In order to implement the management of Hazardous Cargos in the port area, the company established the "Port Area Dangerous Goods Safety Management Information System" in January 2017, and interfaced with the customs cabinet dynamic warehouse system information to implement the dangerous goods storage information and inspection functions in the port area. . In order to further improve the relevant information on the handling and storage of dangerous goods in the port area, the company established the "Intelligent Cloud Platform for Dangerous Goods in the Port Area" in December 2019, and displayed the storage and distribution status on a map, so that you can grasp the dangerous goods in the port area at any time. Store information. In order to maintain the safety of the port area, in addition to attaching importance to the concept of disaster prevention and response to accidents, Kaohsiung Port has also established a drill and supervision and inspection mechanism for dangerous goods to implement the safety management of dangerous goods in the port area. Carry out safety and health inspections for loading and unloading operations at public petrochemical terminals every month, and immediately notify the operators and on-site management units of any missing items found in the inspections to prevent hazards from terminal operations. The relevant units of the port company and the port fire brigade cooperate with the competent authorities of the port area. The port bureau handles joint inspection and supervision of dangerous goods at least twice a year and irregular inspections in the port area. The number of joint inspections and supervision in 2020 and 2021 will be 4 times each. In addition, if serious violations are found, they will be transferred to the competent authority. For example, there will be 1 transfer case in 2020 and 2 cases in 2021 due to the transfer of highly dangerous goods temporarily in the port area for too

Port of Kaohsiung 2020–202Hazardous Cargo Management Related Activities

| Year | Name of event (Training Conference) | participants |
|---|---|---|
| 2020 | "Kaohsiung, Anping Port Area Petrochemical Storage and Transportation Industry Dangerous Goods Operation Safety Supervision" Conference | 20 |
| | Hazardous chemicals and hazardous machinery safety and hygiene promotion | 48 |
| | Self-organized Dangerous Goods Handling and Warehousing Management Visits 10.14–10.19 Visits to petrochemical operators in Kaohsiung Port Area | 14 |
| | Kaohsiung Port's 2020 Typhoon Disaster Prevention and Response War Game Drill | 25 |
| 2021 | "Kaohsiung Port Area Petrochemical Storage and Transportation Industry Dangerous Goods Operation Safety Supervision" Conference | 22 |
| | Self-organized dangerous goods handling and warehousing management visit 05.10–06.02 Visit to petrochemical industry operators in Kaohsiung port area | 13 |
| | 09.27–10.01 Joint inspection of dangerous goods operation safety in container distribution station | 5 |
| | Dangerous goods personnel education and training 10.25–10.26 | 5 |
| | Natural Disaster Education and Training – Talking about the Impact of Northeast Monsoon and Fog on Taiwan 12.03 | 36 |

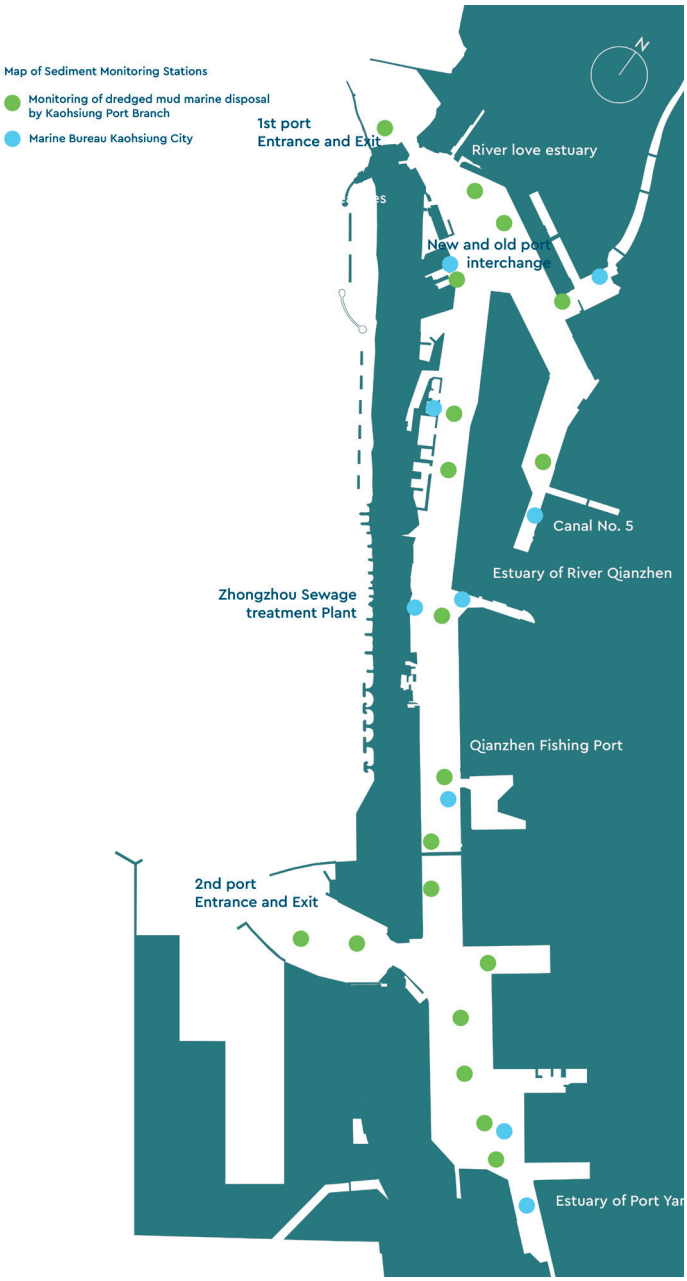
# 3.14 Monitoring to reduce marine sediment pollution

In order to effectively manage marine sediments, Kaohsiung Port Branch conducts sediment monitoring on a quarterly basis. The monitoring of 32 substances such as cyanide and heavy metals showed that there was heavy metal pollution. However, all of them occurred at the confluence of rivers and channels into the port area, indicating that the pollution mainly came from upstream discharge.

For the Kaohsiung Port dredged marine disposal area, Kaohsiung Port Branch also conducts long-term impact monitoring on the marine ecology and environment of the abandoned area according to the "Kaohsiung Port Dredged Marine Disposal Permit Application", and submits a quarterly report to the Ocean Affairs CouncilApplication", and submits a quarterly report to the IOC.

**Statistics on Dredging and Backfilling of "Kaohsiung Port Dredging and Marine Disposal Permit"**

| Year | Actual dredging volume | Actual amount of dredging sludge disposal | Actual amount of alternative's dredging mud alternative's dredging mud | Dredging mud reuse rate |
|---|---|---|---|---|
| 2009 | 59.4 | 42.6 | 16.8 | 28.3 |
| 2010 | 96.7 | 30.7 | 66.0 | 68.3 |
| 2011 | 88.0 | 16.0 | 72.0 | 81.8 |
| 2012 | 70.9 | 18.9 | 52.2 | 73.3 |
| 2013 | 51.7 | 25.7 | 26.0 | 50.3 |
| 2014 | 60.0 | 11.4 | 48.6 | 81.0 |
| 2015 | 97.4 | 9.3 | 88.1 | 90.5 |
| 2016 | 51.7 | 0.2 | 51.5 | 99.6 |
| 2017 | 31.4 | 8.6 | 22.8 | 72.6 |
| 2018 | 22.1 | 18.5 | 3.6 | 16.4 |
| 2019 | 19.6 | 16.6 | 3.0 | 15.2 |
| 2020 | 25.6 | 25.7 | 6 | 4.75 |
| 2021 | 11.3 | 12.1 | | 1.25 |



## 「Actual dredging volume of Kaohsiung Port reclamation project」

| Project name | 2016 | | 2017 | | 2018 | | 2019 | | 2020 | | 2021 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Inside | Outside | Inside | Outside | Inside | Outside | Inside | Outside | Inside | Outside | Inside | Outside |
| The second phase project of Kaohsiung Port Intercontinental Container Center Project Seawall and Breakwater Project and Taipower Dalin Power Plant Renewal Project Diversion Diversion North Dike Project | 107.7 | 0 | 2.89 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| The second phase of the Kaohsiung Port Intercontinental Container Center project plans shoreline, dredging, and port canal engineering | 322.1 | 0 | 9.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kaohsiung Port Intercontinental Container Center Phase II Project Project New Land Reclamation Project | 704.5 | 2,081.50 | 1,035.60 | 288.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kaohsiung Port Intercontinental Container Center Phase II Project S4-S5 Wharf Revetment and new Land Reclamation | 609.9 | 0 | 66.3 | 0 | 0 | 0 | 44.9 | 0 | 0 | 0 | 0 | 0 |
| Kaohsiung Port No. 4 Container Center Rear Line Site Expansion: Embankment Construction Project | 0 | 0 | 152.6 note.1 | 143.6 note.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kaohsiung Port No. 7 Container Center Project S1-S3 Wharf Revetment and Xinsheng Land Reclamation Project | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12207 | 0 | 34786 | 0 |

Note 1: The second port of Kaohsiung Port, the waters in front of Pier 77 ~ Pier 111
Note 2: Anping Port Channel, Return Pool, Pier 10 berth

Unit: 10,000 cubic meters

# 3.15 Port Energy

## Setting up a solar photovoltaic system

In order to reduce the impact of the port area on the environment and implement environmental protection, Kaohsiung Port has set the improvement of energy efficiency as one of the ten environmental issues. Considering that the Kaohsiung Port area has sufficient sunshine conditions, it has important conditions for solar energy development, and makes full use of the resources of the port area. Therefore, it is planned to lease the roofs of some buildings in the port area to energy companies to set up photovoltaic power generation equipment, and the lessee will pay part of the electricity sales revenue. Paying for Kaohsiung Port as management fee not only makes good use of space to increase income, but also can block sunlight, reduce indoor temperature and reduce electricity consumption. Therefore, solar photovoltaics are used as the main force of Kaohsiung Port's renewable energy. Currently, Kaohsiung Port uses the roof space of existing buildings to install photovoltaic power generation equipment in Penglai, Qianzhen, Zhongdao Port District and the second, third and fourth container centers. The power generation in 2020 will be about 7.53 million kWh and in 2021 will be about 9.77 million kWh.

## Reduce resource consumption

A.Promoting『Energy Conservation Reporting Website for Government Agencies and Schools."』

The main approach for reducing resource consumption in port is to report the amount of power consumption and oil consumption through the "Energy Conservation Reporting Website for Government Agencies and Schools." This website was established by the Bureau of Energy, Ministry of Economic Affairs. The amounts of power saved in 2020 and 2021 were 1.9% and – 0.29% respectively, and the amounts of oil saved in 2020 and 2021 were 7.64% and 4.86% respectively.

B. Green Procurement

In order to implement the green port policy, the office equipment of this branch will be given priority to purchase items with "environmental protection labels", and cooperate with the "green life information website" to log in. Both 2020 and 2021 will achieve 100% green procurement.

C. Purchase electric business vehicles

In order to reduce fuel consumption and pollution at the same time, the branch has purchased 2 electric vehicles and 17 locomotives for use by colleagues for inspections and business negotiations, in order to achieve the effect of energy saving and carbon reduction

D. Daily office energy saving measures

- Meeting (training) by video
- Reverse Osmosis Recycled Water Reuse
- Implement paperless work with electronic operations
- Utility bills sent electronically instead
- Use e-cards
- Data double-sided printing, blank paper reuse
- Meeting (training) bring your own green cup
- Moderate control of air conditioning temperature
- Encourage employees to use the mass transit system
- Planting green environment, tree planting activities

E. Handle energy conservation and carbon reduction

publicity (public welfare) activities
In recent years, the port company has been adhering to the concept of environmental sustainability and cherishing resources. In addition to its internal management, it also cooperates with government agencies, associations, charities and other units to collect second-hand materials and encourage the public to participate in the exchange of second-hand materials with invoices. Protect the earth with practical actions, reduce carbon emissions, and create a circular economy. All the collected invoices and donations will be donated to social welfare organizations. In addition to achieving the purpose of resource recycling, it also sends charity to the corners of need, injecting warmth into social support.

## 3.16 Greenhouse Gas Management

In 2022, Kaohsiung Port will check the greenhouse gas emissions from 2020 to 2021 in accordance with the ISO14064-1:2018. Its main activities are port management and office administration. Greenhouse gas organization boundary setting method, identify all emission sources within the organization boundary according to the operation control law. That is, 100% of the scope is owned and controlled by the Kaohsiung branch, so the emissions of affiliated ports (Anping Port, Budai Port, Penghu Port), the Port Branch and the tenants are not included in the calculation. The inventory of greenhouse gas emissions for 2020-2021 ihas been completed at the end of October of this year (2022).

In addition, the greenhouse gas inventory verification operation of the first phase of the Nanxing Free Trade zone of Kaohsiung Port was carried out in October 2019. "Nanxing Land Development Plan Free Zone Phase 1. The third change content comparison table (greenhouse gas inventory) operation of the environmental impact statement for the period was submitted to the Environmental Protection Administration to be changed to Kaohsiung Port Branch to guide the stationed manufacturers to conduct self-inspection of greenhouse gases and record them for future reference.

On 2021/09/24, organize the "Carbon + 0 · Love Sustainability · Circular Economy Don't Wither" activity, exchange invoices for second-hand goods, and encourage people to take practical actions to protect the earth, reduce carbon emissions, and create a circular economy.

From 2021/12/18 and 2022/01/07 to 2022/01/09, in cooperation with the Taiwan Ports and Harbors Association, and combined with public art exhibitions, they will organize 2 second-hand market invoice exchange activities of "Recycling Generation X No Carbon Emissions".

# Landscaping work

Port environmental maintenance is an important part of corporate responsibility and sustainable port operation. In order to improve air quality and implement the goal of reducing dust pollution in the port area, Kaohsiung Port Branch continued to promote the greening of the port area, and planned the planting and maintenance schedule at the port. During the development process, the sustainable development of economy, environment and society will be taken into consideration, and the coexistence of the port and the natural ecology will be created, so that Kaohsiung Port will be transformed into a green port with sustainable development of production, life and ecology.

Kaohsiung Harbor Water Garden

Kaohsiung Harbor Water Garden Next to the Kaohsiung Harbor History Museum

Kaohsiung Port Pier 11

Banana Pier

# 3.17 Strengthen relationships with local communities

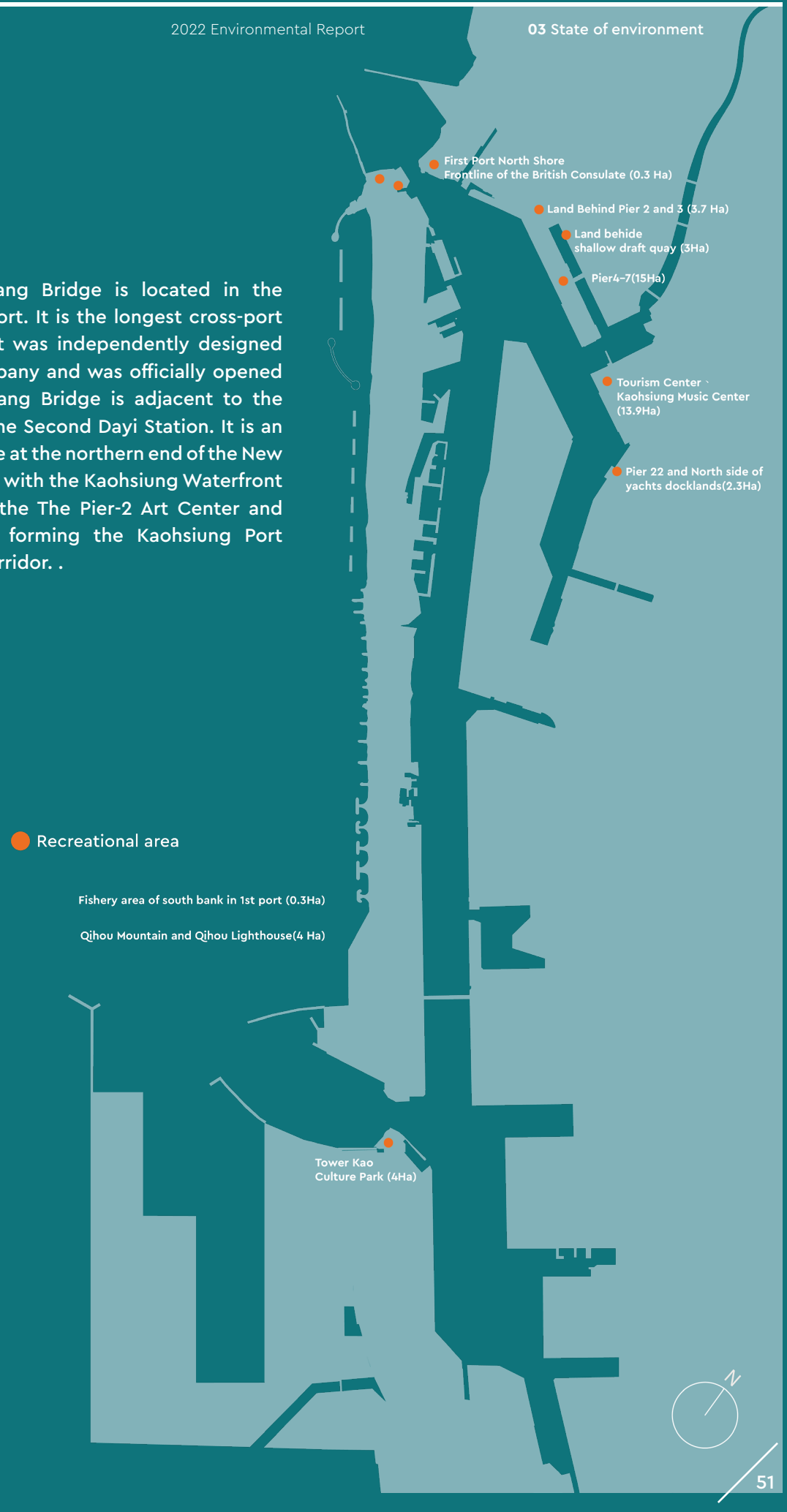
The surrounding communities of Kaohsiung Port are facing the impact of the front line of the port and bear high environmental risks. Therefore, the Kaohsiung Port Branch has carried out environmental restoration by maintaining the port's hydrophilic space and green belt buffer area to create a harmonious water and land interface. Reducing the gap between the port and city interface through green belts can not only improve the living quality of nearby residents and reduce the impact of port operations on residents, but also increase ecological habitat and enhance the biodiversity of the surrounding environment of the port area. Kaohsiung Port Branch has also gradually opened up the old port area to the public, providing recreational space for the public with facilities such as parks, green spaces, event exhibition halls, and bicycle paths. Educational seminars, inviting the public to participate together, maintaining the public's identification with the port and good interaction with the surrounding community.

In order to achieve the community prospect of resource sharing, mutual benefit and common prosperity, and benefit the public, the port company opened the early port area control area as a water sightseeing and leisure space, and built a 4,300-square-meter high port at Kaohsiung Port No. 3 to 5. The water garden achieves the effect of energy saving, carbon reduction and environmental sustainability.

2020/06/02 Handle marine education-painting wave elimination activities

2020/06/20Dragon Boat Festival Community Care Activities

The Kaohsiung Port Dagang Bridge is located in the third canal of Kaohsiung Port. It is the longest cross-port revolving bridge in Asia. It was independently designed and built by the port company and was officially opened on July 6, 2020. The Dagang Bridge is adjacent to the Kaohsiung Light Rail and the Second Dayi Station. It is an important waterfront puzzle at the northern end of the New Bay Area in Asia. Combined with the Kaohsiung Waterfront Light Rail, it connects to the The Pier-2 Art Center and the Gaogang Trespasses, forming the Kaohsiung Port Waterfront Sightseeing Corridor. .



# Strengthen relationships with local communities (Beach cleanup)

In 2020, a total of 18 public welfare activities were held. In 2021, a total of 25 public charity activities will be held.

2020 "Horticultural Healing Course" Public Charity Activity

2021 "Golden Bull Blessings – Invoices for Spring Festival Couplets" Charity Activity

2020 Ocean Parent-Child Education

Moon Festival Public Charity Activity


2021/06/16 "Anti-epidemic care, protect the elders of the community" public service care measures


2021/11/05 Send AI to remote villages

## Strengthen relationships with local communities

In line with the Executive Yuan's "Salute to the Sea" policy, in 2020, Kaohsiung Port Branch organized more than 30 "Marine Education" physical public welfare publicity activities. The "Let the sea clean, pay tribute to the sea" beach cleaning activity, mobilized more than 200 people to clean up about 2,683 kilograms of garbage in total, and made concerted efforts to promote the marine environment protection action, so as to awaken the environmental protection awareness of marine conservation.

In 2021, 10 "Ocean Education" publicity promotion activities will be held. Among them, the "Salute to the Sea" benchmarking seminar on March 19 will invite the Ocean affairs council、 Landscape Management Office and various branches to participate. Through the "Green Harbor Land Board Game" to share the history of Kaohsiung Port's Green Harbor, through exchanges and mutual encouragement, the policy benefits can be maximized.

On June 8, 2020 in conjunction with the "World Oceans Day", an exclusive interview with Zhang Ruipeng was broadcast, he is a volunteer who initiatively maintains and clean the ocean environment. The video conveys the idea that the fishing area allows everyone to "close to the ocean" while also sharing the beautiful environment of "clean ocean".

Fishing Area Cleaning Volunteer Documentary Video


Fishing Area Cleaning Volunteers


2021 "Rooted in Your Heart: Horticultural Healing Care Course"


2020 Salute to the sea


2020 "Family-family " public welfare activities

# 4.Environmental Performance Indicators of Kaohsiung Port

| 10 Major environmental issues of Kaohsiung Port | | Index item | Calculation method | Target value | |
|---|---|---|---|---|---|
| 1 | Air Quality | Air quality pass rate ($PM_{10}$、$PM_{2.5}$、$SO_2$、$NO_2$) | The ratio of the measurements in the air quality monitoring station of the port that meet the "Air Quality Standards" | • $PM_{10}$ of the daily mean measurem- ents satisfy the standard (<100μg / $m^3$): 100%<br>• $PM_{2.5}$ of the daily mean measurem- ents satisfy the standard (<35μg / $m^3$): 60%<br>• $SO_2$ of the daily mean measurem- ents satisfy the standard (<0.02 ppm): 100%<br>• $NO_2$ of the daily mean measurem- ents satisfy the standard (<0.1 ppm): 100% | |
| | | Number of air pollution patrols | Frequency of land patrol | 300 inspections per year | |
| 2 | Vessel emission | Vessel waste oil management | • Processed by qualified collectors ÷ Total number of vessels collected× 100%<br>• Amount of waste oil collected | • The implementation of entrusting qualified operators to clean up waste oil and sewage from ships<br>• The pass rate reaches 100% | |
| | | Vessel exhaust<br>▯ Usage of clean fuel by harbor vessels | • Number of Port handling ships use clean fuel (sea heavy diesel oil or marine light diesel oil)÷Total number of harbor vessel×100%<br>• Total amount of clean fuel used | • 100% | |
| | | ▯ The ratio of using shore power among harbor crafts<br>▯ Shore power usage | • Number of harbor crafts using shore power ÷ Total number of harbor crafts × 100%<br>• Shore power usage | The ratio of using shore power reaches 100% among harbor crafts | |
| | | Ships deceleration target completion rate | The automatic identification system for ship deceleration is applied to determine the deceleration of ships within 20 sea miles from the port | • Statistics on deceleration of ships entering and leaving the port<br>• 100% ship deceleration achievement rate within the international commercial port area (3~5 miles) | |

| | Indicator presentation (calculation details) | |
|---|---|---|
| | 2020 | 2021 |
| | • $PM_{10}$ of the daily mean measurements satisfy the standard: 100%<br>• $PM_{2.5}$ of the daily mean measurements satisfy the standard: 82%<br>• $SO_2$ of the daily mean measurements satisfy the standard: 100%<br>• $NO_2$ of the daily mean measurements satisfy the standard: 100% | • $PM_{10}$ of the daily mean measurements satisfy the standard: 98%<br>• $PM_{2.5}$ of the daily mean measurements satisfy the standard: 80%<br>• $SO_2$ of the daily mean measurements satisfy the standard: 100%<br>• $NO_2$ of the daily mean measurements satisfy the standard: 100% |
| | • Number of port area inspections:431 | • Number of port area inspections:406 |
| | • 100%; total of 163 vessels<br>• Vessel waste oil collected: 3,002.73tons | • 100%; total of 143 vessels<br>• Vessel waste oil collected: 3,063.82 tons |
| | 15÷15×100%=100%<br>• Clean fuel:15 KL<br>• Marine Gas Oil: 134.6 KL<br>• Marine Diesel Oil: 596 KL | 15÷15×100%=100%<br>• Clean fuel:15 KL<br>• Marine Gas Oil: 88.65 KL<br>• Marine Diesel Oil :381KL |
| | 15 ÷ 15 × 100% = 100%<br>• using shore power reaches 100%<br>• Shore power usage: 522,863kWh | 15 ÷ 15 × 100% = 100%<br>• using shore power reaches 100%<br>• Shore power usage: 852,267kWh |
| | • The achieved speed reduction rate was approximately45.45%.<br>• 100% achievement rate of inbound/outbound deceleration within the port area (3~5 miles) | • The achieved speed reduction rate was approximately43.64%.<br>• 100% achievement rate of inbound/outbound deceleration within the port area (3~5 miles) |

# 4.Environmental Performance Indicators of Kaohsiung Port

| 10 Major environmental issues of Kaohsiung Port | | Index item | Calculation method | Target value | |
|---|---|---|---|---|---|
| 3 | Dust | The percentage of concealed/covered transportation for bulk cargo (e.g., cement and coal) during loading and unloading operations in the port area | • 100% of cement loading and unloading uses closed transportation<br>• 80% of coal loading and unloading use closed transportation | The percentage of cement loaded and unloaded using concealed transportation: 100%<br>The percentage of coal loaded and unloaded using covered transportation: 80% | |
| | | Car wash | • Percent washed<br>• Vehicle washed | • 90%<br>• Total number washed | |
| 4 | Garbage/ port waste | Port recycling rate(land) | • Classification of terrestrial resource recycling in the port area<br>• Amount of recycled waste | • Carry out classification, recovery and statistics of resource recyclables in the port area | |
| | | Waste from the waters | • Cleaning frequency<br>• Amount of waste collected | • Clean daily | |
| 5 | Port development | Public waterside recreational space | • Area of Recreation<br>• Area of reserved wide bird habitat<br>• Area of greenbelt<br>• Area of grassland | Increasing and maintenance the area of waterside recreational space | |
| 6 | Hazardous cargo | Hazardous cargo inspection | • Number of inspections | 6 inspections | |
| | | Number of patrols, vessels inspected, and number of cases sent to the authorities | • Number of patrols<br>• Number of cases sent to the authorities | • 12 patrols each year, 12 vessels<br>• Number of cases decrease over year | |
| 7 | Vehicle exhaust emissions (including cargo handling) | Promotion of a comprehensive use of the Automatic Gate Sentry Post Control System among shipping lines | • The ratio of incoming and outgoing roadways installed with an automatic gate sentry post control system<br>• Number of passes<br>• Carbon reduction | All new lanes are to be organized as automated lanes. | |

| | Indicator presentation (calculation details) | |
|---|---|---|
| | 2020 | 2021 |
| | The amount of break bulk general cargo handled using the enclosed storage method ÷ (cement /coal) * 100%<br>• cement :<br>1,345,894÷1,345,894×100%=100%<br>• coal :<br>1,200,00÷1,200,000×100%=100% | The amount of break bulk general cargo handled using the enclosed storage method ÷ (cement /coal) * 100%<br>• cement :<br>1,507,898÷1,507,898×100%=100%<br>• coal :<br>950,000÷950,000×100%=100% |
| | • 99.0% washed<br>Total of 110,481vehicles | • 99.0% washed<br>Total of 75,296 vehicles |
| | 9.8 metric tons of recycled paper, 9.1 metric tons of iron, 95 kg of aluminum, etc. | 12 metric tons of recycled paper, 8.4 metric tons of iron, 133 kg of aluminum, 527 kg of batteries, etc. |
| | • Cleaned daily<br>• 552.94tons | • Cleaned daily<br>• 758 tons |
| | • Recreation area :46.5ha<br>• Reserved wide bird habitat: 8 ha<br>• Area of greenbelt:4.5<br>• Area of grassland :18.3ha<br>• The area of green space in Kao Port Park: 1.4 ha | • Recreation area :46.5ha<br>• Reserved wide bird habitat: 8 ha<br>• Area of greenbelt:4.5<br>• Area of grassland :18.3ha<br>• The area of green space in Kao Port Park: 1.4 ha |
| | 12 inspections | 12 inspections |
| | • 12 patrols<br>• 1 case | • 12 patrols<br>• 1 case |
| | The ratio of incoming roadways installed with an automatic gate sentry post control system:<br>18 ÷ 35 × 100% = 51.4%<br>The ratio of outgoing roadways installed with an automatic gate sentry post control system:<br>18 ÷ 34 × 100% = 52.9%<br>Number of passes: 12,600,997<br>Carbon reduction: 1,915.35 tons | The ratio of incoming roadways installed with an automatic gate sentry post control system:<br>18 ÷ 35 × 100% = 51.4%<br>The ratio of outgoing roadways installed with an automatic gate sentry post control system:<br>18 ÷ 34 × 100% = 52.9%<br>Number of passes: 12,904,406<br>Carbon reduction: 1,961.47tons |

# 4.Environmental Performance Indicators of Kaohsiung Port

| 10 Major environmental issues of Kaohsiung Port | | Index item | Calculation method | Target value | |
|---|---|---|---|---|---|
| 8 | Marine sediment quality | Sediment monitoring | Quarterly means and maximums of port sediment monitoring measurements | Upper limits of heavy metal content in domestic sediments (mg/kg per unit):<br>Arsenic 33<br>Mercury 0.87<br>Copper 157<br>Lead 161<br>Chromium 233<br>Zinc 384<br>Cadmium 2.49 | |
| 9 | Energy consumption | Power and oil saving efficiency | Power, oil, conservation rates for offices and operation sites.<br>Index calculation equation: (the amount of resources consumed in the preceding year- the amount of resources consumed in the current year) ÷ the amount of resources consumed in the preceding year × 100% | The total power consumption (kW-h) and oil consumption (L) did not exceed those of the preceding year | |
| | | The amount of solar power generation | The 2020 power discharge coefficient announced by the Bureau of Energy: discharging approximately 0.502 kg of $CO_2$ per kW-h | • The amount of solar power generation<br>• Reduce carbon emissions | |
| | | Greenhouse Gas Management | GHG Inventory | GHG emissions | |
| 10 | Relationship with Local Communities | Neighborhood and community welfare activities | Number of activites and events | 12 activities held | |

| | Indicator presentation (calculation details) | |
|---|---|---|
| | 2020 | 2021 |
| | Arsenic: mean = 2.3<br>Mercury: mean = 0.81<br>Copper: mean = 117<br>Lead: mean = 38.9<br>Chromium: mean = 134<br>Zinc: mean = 343<br>Cadmium: mean = 0.16 | Arsenic: mean = 2.2<br>Mercury: mean = 0.63<br>Copper: mean = 102<br>Lead: mean =36.7<br>Chromium: mean = 123<br>Zinc: mean = 315<br>Cadmium: mean = 0.18 |
| | • Power consumption reduction: 1.9%<br>• Oil consumption reduction:7.64% | • Power consumption reduction: -0.29%<br>• Oil consumption reduction:4.86% |
| | The amount of power generation in 2020was 7,525,738 kW-h, and the reduction of carbon emissions was 3,778t | The amount of power generation in 2019 was 9,768,300kW-h, and the reduction of carbon emissions was 4,904t |
| | Category 1 : 2,243.3911<br>Category 2 : 8,198.8594<br>Total emission equivalent: 10,442.25 (metric tons $CO_2e$/year) | Category 1: 1,649.3681<br>Category 2: 9,637.7567<br>Total emission equivalent: 11,287.12 (metric tons $CO_2e$/year) |
| | 18 activities held(Four environmental events) | 25 activities held(Five environmental events) |


EVERGREEN

# 04

# Emergency Response

# 4.1 Port emergency notification and drill

Maintaining the safety of the operating environment of the Kaohsiung Port Area is one of the top priorities of the Kaohsiung Port Branch. The Health Prevention and Control Section of the Occupational Safety Office of the Kaohsiung Port Branch assigns personnel to conduct regular inspections of the land and water environment of the port area every day, and advises if any suspected polluting behavior is found. , through emergency response, or notify the law enforcement unit of public power for punishment. The major accidents in Kaohsiung Port in 2020 and 2021 are mostly small oil pollution, garbage and fire in the port area, followed by other accidents (fishing vessels and fishing obstruct navigation), ship collisions, fires, explosions, oil pollution, and chemical spills , and events such as ship failure and tilt (without affecting safety). In response to pollution and disaster accidents in the port area, Kaohsiung Port Branch, Kaohsiung City Government Environmental Protection Bureau and Kaohsiung City Government Oceanographic Bureau have established channels to report complaints, providing notification and contact with relevant units such as the public and shipping companies. Kaohsiung Port Branch also set up a total of 27 incidents related to disasters in the port area, such as ships, fire and explosion accidents, major oil pollution disasters in the port area, major casualty accidents in the port area, and announced the release of toxic chemical substances, diseases and natural disasters. An emergency response operation procedure (including plans) to deal with the crisis in response to a disaster event.

**Kaohsiung Port Environmental Inspection and Transfer Statistics**

| Project\Year | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|
| Number of patrols | 376 | 503 | 587 | 555 |
| Notification | 120 | 130 | 71 | 57 |
| Admonishing ticket | 1577 | 1621 | 1596 | 1235 |
| Exhaust emission | 16 | 91 | 939 | 1047 |
| Environment and hygiene inspection in ship making plants | 30 | 35 | 33 | 26 |
| Admonishment for improvement | 90 | 494 | 616 | 371 |
| Penalty (MPB) | 9 | 9 | 4 | 3 |
| Oil fence (vessels) | 80 | 164 | 29 | 20 |
| Joint inspection | 20 | 19 | 21 | 23 |

**Kaohsiung 2021 Oil Pollution Emergency Response Joint Exercise**

In addition to hotlines and emergency responses, the Kaohsiung Branch of TIPC also works to improve labor safety, Environmental education and training, in order to reduce the number of accidents in the Port area Joint exercises are conducted every year with other units related to port management The exercises focus on marine oil pollution, civilian protests, connected pathway flooding, typhoons, International Ship and Port Facility Security ( The main collaborators of these exercises includes Kaohsiung Branch of TIPC, Kaohsiung Harbor Police Department, Kaohsiung Harbor Fire Brigade, National Fire Agency, MOI, Offshore Flotilla 5 Coast Guard Administration, Ocean Affairs Council, Southern Taiwan Service Center of MPB, MOTC, and Marine Bureau of Kaohsiung City Government The joint exercises aim to maintain port safety and security through inter agency collaboration.

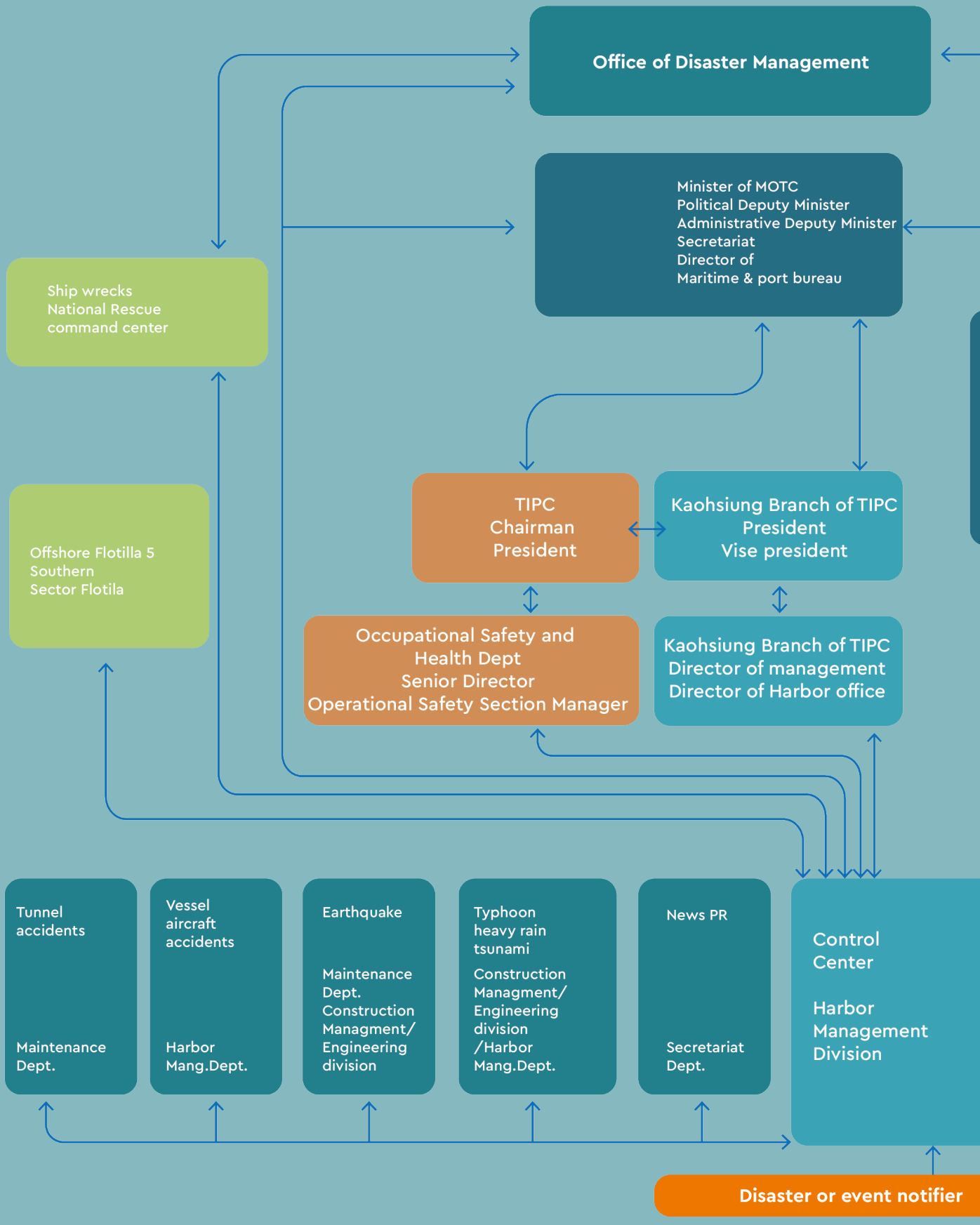
Number of Accidents in Kaohsiung Port

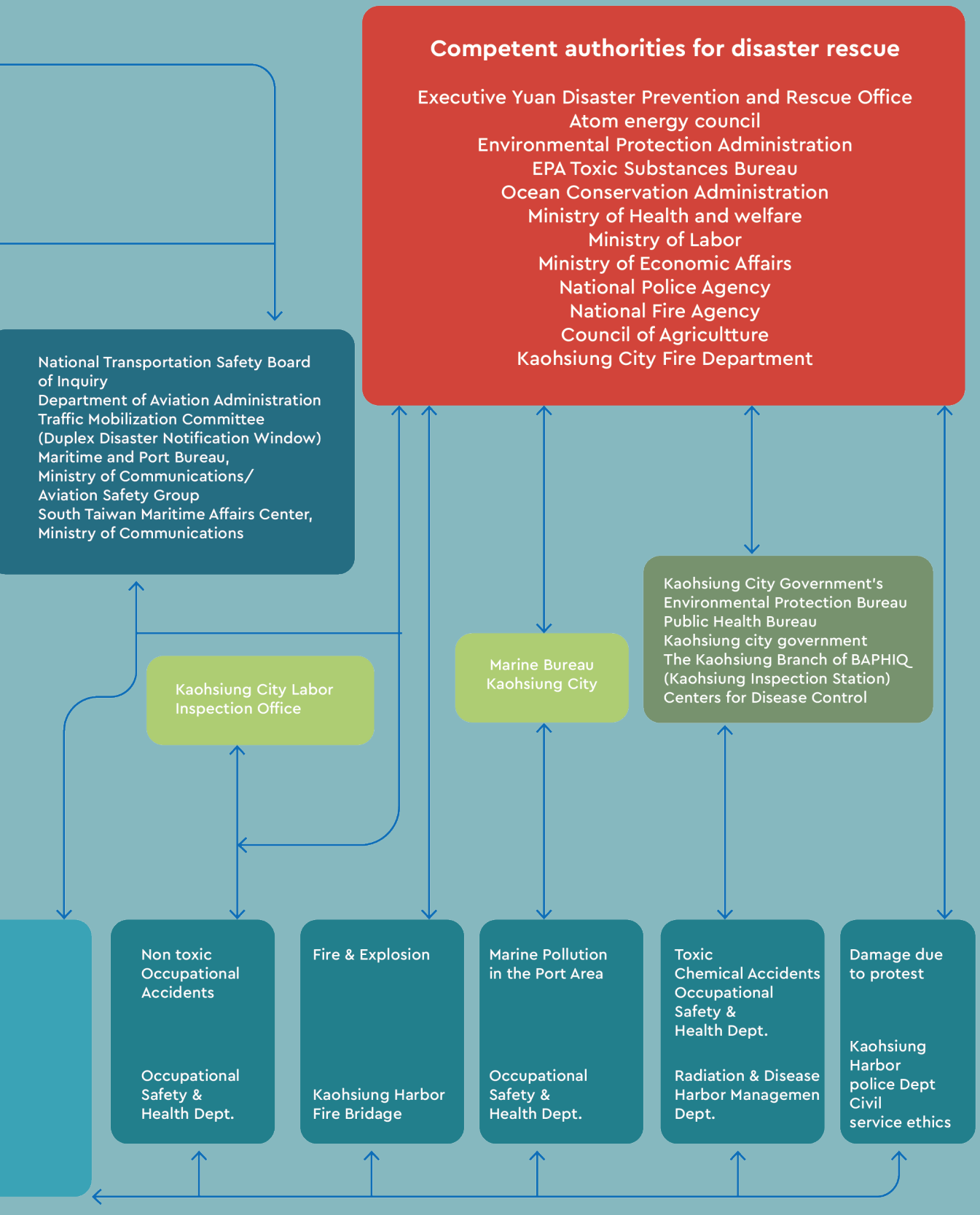
| Accidents/Year | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|
| Ship collision, fire, explosion, fuel spill,chemical spill | 26 | 8 | 26 | 23 |
| Ship breakdown, tilt (no affecting safety) | 2 | 12 | 19 | 24 |
| Safety and health accident cause injuries or deaths | 16 | 9 | 5 | 4 |
| Fire and/or explosion of warehouse or fuel tank | 0 | 0 | 0 | 0 |
| (Small) fuel spill, garbage and fire in the port area | 149 | 58 | 130 | 118 |
| Others | 126 | 85 | 40 | 32 |

2020 "Kaohsiung City Marine Oil Pollution and Terrorism Prevention Emergency Response Exercise"

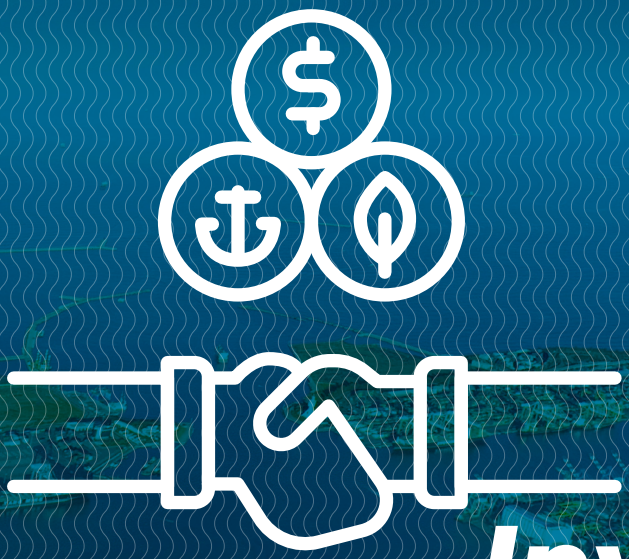
2020 "Kaohsiung City Marine Oil Pollution and Terrorism Prevention Emergency Response Exercise"

# 4.2 Port of Kaohsiung Emergency Response




Competent authorities for disaster rescue
Executive Yuan Disaster Prevention and Rescue Office
Atom energy council
Environmental Protection Administration
EPA Toxic Substances Bureau
Ocean Conservation Administration
Ministry of Health and welfare
Ministry of Labor
Ministry of Economic Affairs
National Police Agency
National Fire Agency
Council of Agricultture
Kaohsiung City Fire Department
National Transportation Safety Board of Inquiry
Department of Aviation Administration
Traffic Mobilization Committee
(Duplex Disaster Notification Window)
Maritime and Port Bureau,
Ministry of Communications/
Aviation Safety Group
South Taiwan Maritime Affairs Center,
Ministry of Communications
Kaohsiung City Government's
Environmental Protection Bureau
Public Health Bureau
Kaohsiung city government
The Kaohsiung Branch of BAPHIQ
(Kaohsiung Inspection Station)
Centers for Disease Control
Marine Bureau
Kaohsiung City
Kaohsiung City Labor
Inspection Office
Non toxic
Occupational
Accidents
Occupational
Safety &
Health Dept.
Fire & Explosion
Kaohsiung Harbor
Fire Bridage
Marine Pollution
in the Port Area
Occupational
Safety &
Health Dept.
Toxic
Chemical Accidents
Occupational
Safety &
Health Dept.
Radiation & Disease
Harbor Managemen
Dept.
Damage due
to protest
Kaohsiung
Harbor
police Dept
Civil
service ethics

# 05



# Involvement and Cooperation

# 5.1 Intercontinental Phase II Project Benefit

## Environmental Issue : Air quality, dust, port development, hazard goods (handling/storage), relations with local communities

### Attention/Motives

In response to the global trend of large-scale ships, the bulk fugitive bulk cargo handling area and petrochemical oil storage tanks are adjacent to the urban area of Kaohsiung, which will affect urban development. The Port Authority researched and proposed the "Phase II Project Plan of Kaohsiung Port Intercontinental Container Center", which was approved and implemented by the Executive Yuan on March 10, 2011. It is planned to reclaim about 422.5 hectares of new land on the south side of the second port of Kaohsiung Port and build a deep-water wharf. In order to consolidate the status of East Asia container hub port and achieve the goal of sustainable development

### Solution

The "Kaohsiung Port Intercontinental Container Center Phase II Project" is located in the open waters on the south side of Kaohsiung Port No. 2 Port. The main project is to build an outer dam with a total length of 6,810 meters, reclaim about 422.5 hectares of new land, and plan to build 19 deep-water wharves , including 5 deep-water new container terminals with a total length of 2,415 meters and a water depth of -18m; 10 deep-water petrochemical terminals with a total length of 2,710 meters and a water depth of 16~18m, and 4 deep-water bulk cargo terminals with a total length of 1,150 meters -16m in water depth It also plans to build a storage and transportation center for energy and petrochemical raw materials, a new container base and port development land, etc., to achieve the goals of relocating the petrochemical terminal in the old port area of Kaohsiung Port and building a container logistics base.

Pier Conditions of the Phase II
Project of Kaohsiung Port Intercontinental Container Center

| | Pier | Mooring type | water depth (m) |
|---|---|---|---|
| Container Port | 5 berth(S1-S5) | 24,000(TEU) | -18 |
| Petrochemical Port | 10berth(S6-S15) | 100,000(TEU) | -16~-18 |
| Bulk and Cargo | 4berth(S16-S19) | 70,000(TEU) | -16 |

## 1.Construction of the seventh container center in Kaohsiung Port

After the completion of the construction of Kaohsiung Port No. 7 Container Center, there will be 5 deep-water piers S1-S5, with a total length of 2,415 meters, a water depth of 18 meters, and a 149-hectare back line site. It has become the largest in my country and the sixth largest in the world. The shipping company Evergreen Shipping has invested in and will start operations in May 2023 and May 2024. With the superior conditions of the new deep-water container terminal in the Seventh Container Center, it attracts super-large ship routes to call. With Kaohsiung Port as the home port, as a hub for near-ocean routes, it will consolidate the container handling capacity and enhance the competitiveness of my country's container ports.


## 2.Promote the relocation of petrochemical and bulk cargo terminals in the old port area

### a. Petrochemical oil loading and unloading location adjustment:

At present, Formosa Plastics, Huayun, Shengyi, Lushun and other petrochemical companies in the old port area are located at No. 27-30 and No. 57-58 in Zhongdao Commercial Port Area and CNPC is located at No. 59-62 in Qianzhen Commercial Port Area. It is engaged in the storage and transportation of petrochemical materials, and cooperates with the promotion of the relocation policy of the old port area operators. It will be adjusted to the Intercontinental Phase II Warehousing and Logistics Area (S6-S15) in the future. The petrochemical industry in the original old port area will gradually complete the storage and transportation from first half year of 2023. The equipment will be built and put into operation, and CNPC will be completed and put into operation at the end of September 2024, which will reshape the development conditions of the petrochemical industry in the south, and effectively cooperate with the overall transformation and development plan of the old port area of Kaohsiung Port; The international petrochemical storage and transportation industry will jointly develop the petrochemical storage and transportation business, and will also increase the petrochemical storage and transportation capacity of Kaohsiung Port to develop the petrochemical storage and transportation center conditions.In order to improve the quality and efficiency of ship bunkering services in Kaohsiung Port, the second phase of the Intercontinental Oil Barge Base is continuing to attract investment.

## b. Improve bulk fugitive cargo handling operations:

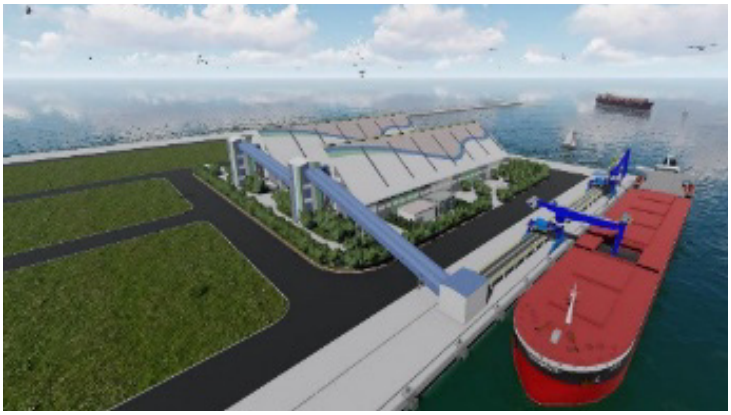
At present, bulk fugitive goods (such as coal, bulk earth and rock, bulk cement clinker, etc.) are mostly concentrated in the berthing and loading and unloading of piers 49–56 in the Zhongdao commercial port area. Or the traditional grab type for loading and unloading operations, which has low loading and unloading efficiency and is prone to dust. In order to improve the current operation methods and improve the air quality conditions in the port area, in line with the plan for the consolidation of bulk cargo terminals in the "Taiwan International Commercial Port Future Development and Construction Plan (2017–2021)", it is expected that the bulk cargo terminals will be gradually relocated from the first half of 2023. Bulk cargo will be loaded and unloaded at the Intercontinental Commercial Port Area Bulk Cargo Terminal (S16-S19), and Jiantong International Company will start the operation of the S19 terminal and the closed coal storage facility in the back line. The back line of the bulk cargo terminal will continue to meet market demand and Wharf loading and unloading function, handle the introduction of businessmen to settle in, concentrate on developing into a bulk cargo storage and transfer base, improve loading and unloading efficiency and maintain the environmental quality of the port and city.

## Effect/Benefit

Container terminal:
Kaohsiung Port No. 7 Container Center will have a future operation volume of more than 4.5 million TEU, and can provide berthing for super-large container ships of more than 24,000 TEU. It is equipped with advanced loading and unloading equipment, which can greatly improve the container loading and unloading capacity and operation efficiency, and help continue to strive for routes. and re-export sources, further enhance the cargo volume and efficiency of Kaohsiung Port, and strengthen the container hub port conditions of Kaohsiung Port.

Petrochemical terminal:
High-risk petrochemical oil operations are integrated into the operation area outside the port, far away from the urban area to reduce public safety concerns, and improve the capacity and conditions of petrochemical storage and transportation in Kaohsiung Port, drive the development of the petrochemical industry, and build Kaohsiung Port into a petrochemical storage and transfer center in the Asia-Pacific region.

Bulk cargo terminal:
It is expected that the relocation operation will be started in the first half of 2023 and the closed coal storage facilities will be put into operation, so as to improve the utilization rate and loading and unloading efficiency of Kaohsiung Port, and effectively improve the dust situation during the operation, maintain the environmental quality of the port area, and enhance the competitiveness of the port.



## Participating units

Kaohsiung Port Branch, Engineering Consultants, ConstructionManufacturers, Port Lessee

Stakeholders Shipping operators, loading and unloading operators, petrochemical operators,bulk cargo operators, transportation operators, Environmental Protection Agency, Environmental Protection Agency

Port of Kaohsiung
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# 5.2 The opening of the Kaohsiung Harbor Museum

Environmental Issue : port development, recycling of old resources, cultural heritage, relations with local communities, corporate social responsibility (CSR), etc.

## Attention/Motives

The Kaohsiung Harbour Museum is located at No. 3, Penglai Road, Gushan District, Kaohsiung City, near the Banana Pier. It was built in the 5th year of the Taisheng era (1916), and is a special and rare brick building designed to imitate western classical architecture. Due to its age and lack of maintenance, part of the structure was slightly decayed and the building was suspended from use in 1994 and planned to be demolished. However, in view of its special historical significance and cultural value, the building was preserved. In 1997, the building was renovated and used as a museum for the history of the Port of Kaohsiung and to preserve the relics related to the development of the Port of Kaohsiung. In 2002, the building was officially opened to the public in conjunction with the anniversary of the Kaohsiung Port Authority, and in 2003, it was registered as a historical building of Kaohsiung City.

Considering its special historical background and cultural value, the building is to be reused for a period of time when the history of Kaohsiung Port can be presented in a focused manner.

## Solutions

The Kaohsiung Port established the Kaohsiung Smart Environment Network in the second quarter of 2019. This system can connect the monitoring data of each unit and display the following four environmental information: air quality, weather information, port affairs, and port maps and is supported by auxiliary tools to assist users during system operation.
Regarding air quality, the system provides real-time air quality data (e.g., the amount of PM $_{2.5}$) gathered from the 3 monitoring stations in the port area and from stations of the Environmental Protection Administration (Executive Yuan).

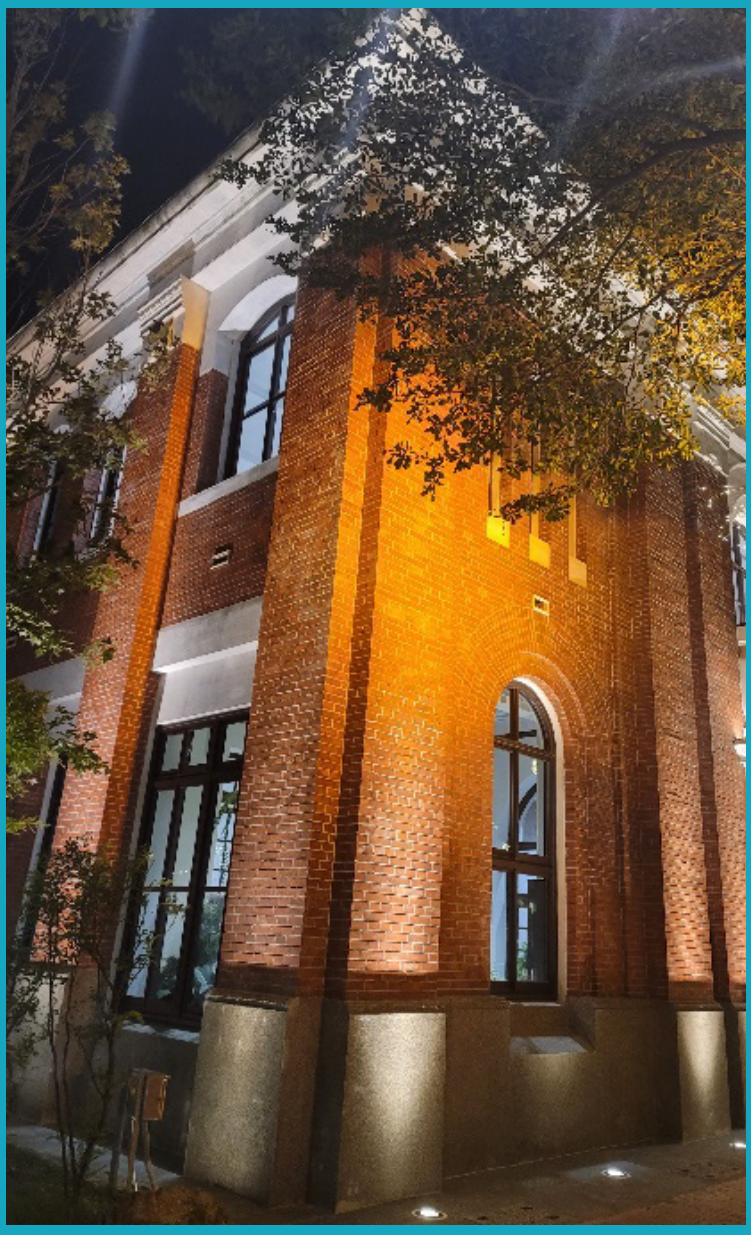
Concerning weather information, the real-time weather information includes satellite cloud images, temperature distributions, accumulated rainfall data, radar echoes, and ultraviolet index data from the Central Weather Bureau, the Ministry of Transportation and Communication.

For port affairs, this system presents basic information about terminals managed by the Port of Kaohsiung Taiwan International Ports Corporation, CCTV images of the Kaohsiung Port, images from the road surveillance system of the Kaohsiung City Government, and real-time sea state information obtained from the Harbor and Marine Technology Center and this corporation.

The aforementioned information can obtained along with the use of customized auxiliary tools including screenshots and measurement, facilitating advanced operation for the user to acquire desired information.

## Effect/Benefits

- Create a new connection between the city and the port area by cooperating with the planning of the water-friendly recreational area in the old port area
- In addition to the special historical background and cultural value of the Kaohsiung Port History Museum, the location can also enjoy the rich surrounding cultural assets and related tourism resources of Kaohsiung Port, which can create new sightseeing highlights for Kaohsiung.
- The refurbished Kaohsiung Port History Museum, in addition to maintaining the function of displaying Port history, is open to the public for exhibitions related to themes related to Kaohsiung Port and Kaohsiung arts and culture.



## Implementation/Timeline

March 2, 2021 Start repairs
July 30, 2021 Complete renovation

## Investment amount

The investment in this facility is approximately NT$35.91 million

## Participating Units

Kaohsiung Branch of TIPC

## Stakeholders

Public

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# 5.3 Salute to the Sea

## Environmental Issue : Garbage/port waste, port development, relationship with local communities

## Attention/Motives

Taiwan is an island nation with rich marine resources and nearly 2,000 kilometers of coastline, which should not only be utilized but also cherished. The Kaohsiung Port Branch is in charge of two international commercial ports (Kaohsiung Port and Anping Port) and two domestic commercial ports (Bupu Port and Magong Port), with a total coastline length of 34.93 km. From 2020, in line with the Executive Yuan's policy of "Salute to the Sea", the Branch has formulated a relevant plan to implement the goals of "coastal cleanliness maintenance" and "friendly fishing environment" in commercial ports through a systematic series of specific actions in order to committed to "Sea Friendly"

Sharing and Common Good, Salute to the Sea, Benchmark Observation Seminar

## Solutions

In order to maintain the coastal cleanliness, the Kaohsiung Port Branch has clearly set the cleaning and inspection frequencies of "regular cleaning, immediate cleaning and emergency cleaning" for each harbor area, and makes good use of the "remote monitoring" system to turn passive into active. Routinely use the "Kaohsiung Port Intelligent Environmental Network" to monitor the harbor closed-circuit television (CCTV) monitoring system in real time to confirm the environmental cleanliness of the harbor and strengthen the ability to immediately report cleanup. The company also invites interested parties to participate in the project. We often invite stakeholders to join us to "clean up the beach" and take practical actions to protect the ocean.

The wastes cleaned up in the coastal environment include waste polystyrene, waste bottles and cans, waste wood, waste fishing nets, and derivative wastes, etc. The branch has been properly sorted and recycled to reduce the amount of waste going to incineration plants for treatment.

In addition, in order to improve the indicator of "immediate cleanup" in the water and land areas of Kaohsiung Port, the Branch has introduced the "undercover" observation and supervision method, and established the pile leg notification mechanism. In the future, in response to the deep-water area of Intercontinental II, we will introduce "multi-functional cleaning vessels" with automatic cleaning, high-pressure water column, hydraulic boom, and oil water separation to provide a better harbor environment for the public and shipping companies.

In the offshore (close to the sea) section, this branch will set up a "commercial harbor fishing information" area to provide a single entrance for the public to inquire about fishing areas and sea weather information, and at the same time, add a fishing spot at the north dike of the second harbor of Kaohsiung Port to encourage friendly fishing.

In addition to setting up necessary safety and friendly facilities in the angling area, the branch incorporates the local landscape characteristics of the port and builds friendly public toilets in the angling areas of Kaohsiung Harbor, Anping Harbor, and Bupu Harbor to improve the service quality of the angling area.

In terms of access to the sea, the Port of Kaohsiung, which has long been building a co-prosperity between life and ecology, is aiming for a new scenery along the waterfront of the harbor and continues to cooperate with the city government to build the Love River Bay Yacht Terminal area. Considering the increasing demand for medium and large yacht berths, the Port of Anping will add 41 berths in June 2021 to optimize the tourism and recreational capacity of the port.

For the section of knowing the sea, Kaohsiung Port gradually opens the old port area for the public to enjoy and experience the geomorphology of the port by maintaining the waterfront space and green belt

buffer area for environmental rehabilitation. In order to promote the information of "Green Port" through online media, and to keep the public from missing the development axis of government promotion, academic research and industry cooperation, the "Green Port Table Tour" is a fun and educational way to build the public's knowledge and concern for the port environment, indirectly understand the knowledge and value of eco-port, and shape the space of port and city co-prosperity.

Fishing Area Cleaning Volunteer


Protect the ocean and clean the beach

## Implementation/Timeline

### Short-term: Inventory of port resources and current situation

- In May 2020, the project was launched.
- In 2020, the international commercial port will increase the opening of fishing spots (the north embankment of the second port of Kaohsiung Port).
- In 2020, set up a special area for fishing information in commercial ports, and cooperate with the "one-stop sea area information platform" to provide structured and open information on sea area activities.

### Medium term: implementation of specific measures

- Before the end of 2020, build and maintain safe and friendly facilities for fishing spots in various commercial ports.
- In June 2021, add 41 yacht berths in Anping Port.
- In July 2021, he was awarded the "Excellent" award by the Executive Yuan in the 2020 "Salute to the Sea – Coastal Cleaning and Maintenance Program".

### Long term: friendly oceans, environmental sustainability

- In 2022, continue to implement measures such as "clean sea and pro-sea" planned in this (111) year.

# 5.3 Salute to the Sea

D. Investment amount
Salute to the sea, the funds for sea purification will be implemented in 2020 with NT$52.92 million and in 2021 with NT$59.706 million.

Educate and play Green Port Board Game

Port & City Co-Prosperity – Green Port Game

Recreation - Commercial port control area opened

## Effect/Benefits

- When Kaohsiung Port demolished 13 circular caissons in the existing south breakwater of the second port, in April 2021, the first circular caisson was successfully floated as an "ecological submerged dike" to enrich the ecological diversity of the port area, becoming the first in Taiwan The circular caisson is reused to create a green port that is friendly to the environment.
- In June 2021, Kaohsiung Port won the first prize of IAPH "World's Best Resilient Infrastructure Port", proving the remarkable results of "Planning and Reconstruction of Old Port Areas" and "Intercontinental Container Center (Phase II) Project".
- The results of Kaohsiung Port's 2021 water environment cleaning work, the total amount of general garbage is 1,685.52 metric tons, the total amount of resource recycling garbage is 206.53 metric tons, and a total of 1,892.05 metric tons of marine debris has been cleaned.
- Kaohsiung Port Branch will hold 30 "Marine Education" physical activities in 2020 and 10 in 2021, conveying the concept of "Salute to the Sea" with more than 1,000 people.

## Participating Units

Kaohsiung Branch of TIPC, government units and authorities, employees, community residents

## Stakeholders

Government units and competent authorities, port operators, county and city governments, shipping operators, media, employees, communities or local groups.

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## 5.4 Cooperation

The Kaohsiung Branch of TIPC has been very active in collaborating with the private sector, public sector and academia in Taiwan and abroad on issues related to the environment .In addition to understanding environmental development trends in the international arena, the Port of Kaohsiung also works to achieve the goal of becoming a sustainable green port through technological cooperation,joint venture, joint investigation and seminars.

### Association

Association of Pacific Ports( APP)

**The APP is aimed to gather the authorities of ports along the Pacific coast to discuss the development of Pacific marine transportation**, seek solutions for problems. The Kaohsiung Branch regularly attends APP conferences and served as the organizer in 2015, adopting the theme of "Ecology, LOHAS, and Greening in the Port of Kaohsiung" to exchange innovative technology, knowledge, and professional management **experiences with other members.**

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### Terminal operators

Kao Ming Container Terminal Corp. (KMCT)

**Kaohsiung Branch of TIPC and KMCT collaborated through BOT to invest** in the first world class green terminal in Terminal No. 6 of Kaohsiung Port, to offering highquality and highly efficient service with the principle of safety, efficiency, and **energy saving .**

Yes Logistics Corp.

**The Kaohsiung Branch of TIPC cooperated with Yes Logistics in 2013 to install a solar photovoltaic system on the rooftop of the** warehouse(KLC2). The system can generate 411.72kWp of electricity.

## Cooperation

### South Star Free Trade Port Zone (SSFT)

**will be the hinterland for the Kaohsiung Free Trade Port Zone in the f**uture. The existing windbreak forest within the Zone will be kept. An insulation green belt will be added around the Zone with multi-layered **endemic vegetation. The administrative center and other public buildings (such as transforming substation and checkpoint) will all be green buildings**

### Kaohsiung Port Land Development Company

**The branch** facilitates the cooperation between the Port of Kaohsiung and Kaohsiung City Government, adaptively reuses old land and buildings, and **integrates the resources and strengths of the port and the city to improve local economic development.**

### National Sun Yat-sen University

**NSYSU signs a memorandum of cooperation** with the TIPC to cooperate in terms of personnel training, student in**ternships, and the management of seminars and lectures.**

## Port

### APEC-Antwerp/ Flanders Port Training Center

The Port of Kaohsiung signed a letter of intent with the Antwerp/ Flanders Port Training Center to provide various portoperation-related courses on engineering, wharf management,logistics, and docker training.

### Port of Gdansk Authority

**The Port of Kaohsiung signed a sister p**ort agreement with the Port of Gdansk to facilitate mutual operational deve**lopment and exchanges in port management and technologies.**

### Shanghai International Port (Group) Co. Ltd.

**With an aim to improve the level of p**ort engineering technology,the Port of Gdansk and the Port of Kaohsiung actively engage in exchanges **regarding equipment maintenance, energy conservation and environmental protection, and the application of new technologies.**

## Public sector

### Institute of Transportation(IOT), MOTC

The Institute of Transportation at the MOTC has served as a think tank that assists the ministry with formulating policies, integrating and coordinating transportation related decisions, and establishing a communication network for industrial, governmental, and academic transportation organizations The Kaohsiung Branch of TIPC has collaborated with the Harbor and Marine Technology Center of the institute in multiple projects regarding topics such as the establishment of green ports, innovative container management, and port operation strategies.

### Marine Bureau, Kaohsiung City Government

Kaohsiung Branch of TIPC works with the Marine Bureau of Kaohsiung City Government, and forms an ocean protection alliance with 30 entities from private sector, public sector, academia and the military to cooperate in controlling port pollution and sharing marine environmental monitoring data and information to achieve the goal ofmarine pollution control.

### Bureau of Cultural Affairs, Kaohsiung City Government

The Kaohsiung Branch of TIPC has signed a contract with the Bureau of Cultural Affairs Kaohsiung City Government, to provide some of its warehouses for art exhibition, and to promote the cultural and creative industry with the BCA Functions of the warehouses near The Pier 2 Art Center have changed accordingly.

### Ministry of Economic Affairs, Executive Yuan

The Kaohsiung Branch of TIPC works with the Export Processing Zone Administration of the Ministry of Economic Affairs in Kaohsiung, South Taiwan Maritime Affairs Center, and Kaohsiung EPB monthly to conduct joint inspections of the public bulk cargo dock of Zhongdao Commercial Port to prevent pollution in the Port area.

### Ocean Affairs Council

Co implementation of operations related to ocean environment protection, biodiversity conservation, and pollution prevention For example, radar monitoring and the handling of stray events in the young killer whales, Marine pollution aspects are all cooperating.

### East Maritime Affairs Center of MPB, MOTC

The South Taiwan Maritime Affairs Center of the MPB under the MOTC is in charge of the affairs related to port security, disaster relief, and pollution control in the Port of Kaohsiung, as well as the implementation of laws and regulations, gathering of evidence, and penalty consideration The Kaohsiung Branch of TIPC cooperates with the South Taiwan Maritime Affairs Center to conduct land water inspection in the port.

### Environmental Protection Administration, Executive Yuan

**TheEPA of the Executive Yuan and the USEPA cooperate according to an "Agreement between the American Institute in Taiwan and the Taipei Economic and Cultural Representative** Office in the United States for Technical Cooperation in the Field of Environmental Protection" 1993 **The agreement also covers a series of cooperation strategies for the port environment, so American experts are regularly invited to Taiwan for seminars, offering technical assistance and sharing information (such as regional partnership for "Port Air Quality Improvement Strategies and US Taiwan Sustainability Forum").**

## Environmental groups

### Environmental Protection Bureau, Kaohsiung City Government

The Kaohsiung Branch of TIPC works with EPB of the Kaohsiung City Government to encourage diesel vehicles entering the Port area to join Kaohsiung City's autonomous management project to set up a vehicle license plate recognition system at Checkpoint No 55 for joint inspection.

### Kaohsiung Wild Bird Society

The Kaohsiung Branch of TIPC consulted ecological protection in SSFT Port Zone with the Kaohsiung Wild Bird Society Existing habitats will be kept and a multi layered microhabitat environment will be created for migratory birds and birds of passage Members from Kaohsiung Wild Bird Society are invited to lecture our staff about ecology in the SSFT Port Zone.


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# 06

# Training

# 6.1 Training

Kaohsiung Port Branch provides appropriate environmental education and training in accordance with the content of the environmental policy statement. In addition to cultivating employees' environmental awareness and enhancing their environmental protection knowledge, it can also enhance the competitiveness of Kaohsiung Port. In 2011, the "Environmental Education Law" was promulgated and implemented, public institutions and other related units should formulate an environmental education plan every year, and each employee should participate in environmental education for more than four hours. Kaohsiung Port Branch will hold a total of about 20 environmental education and training activities for internal and external personnel in 2020 and 2021, with about 1,018 participants. The courses include green ports, marine education, ecological education, natural disasters, fire protection propaganda, youth education and other aspects.

2020–2021 Environmental Education Statistics

| NO. | DATE | EVENT | PARTICIPATS |
|---|---|---|---|
| 01 | 2020/01/15–22 | National Cleaning Week Environmental Cleaning Activities | 17 |
| 02 | 2020/05/15 | Typhoon disaster prevention and emergency response plan | 14 |
| 03 | 2020/05/26 | Book Reading: "Our Island, an Appointment with the Author | 38 |
| 04 | 2020/06/02 | Marine Education – Painted Wave Elimination Block Activity | 63 |
| 05 | 2020/06/19, 12/25 | Training Course for Dredging and Marine Disposal Operation in Kaohsiung Port | 45 |
| 06 | 2020/08/07 | Natural Disaster Education and Training – Talking about Natural Disasters in Taiwan-Meteorological Forecasting and Disaster Prevention | 21 |
| 07 | 2020/09/04 | "Environmental Education and Advocacy" course, | 23 |
| 08 | 2020/9/30 | Dagang Youth Self-Challenge | 118 |
| 09 | 2020/12/11 | Ecological Conservation Education and Training Course in Nanxing Free Trade Port Area | 12 |
| 10 | 2020/6/22, 12/29 | Annual self-defense fire formation training | 76 |
| 11 | 2021/01/05 | Annual Smart Harbor and Green Harbor Academic Exchange Conference | 30 |
| 12 | 2021/03/15 | Annual Kaohsiung Port typhoon defense operation description and publicity seminar | 18 |
| 13 | 2021/03/26 | "People Without Names" Digital Guide and Day Reading of Aboriginal Culture | 16 |
| 14 | 2021/08/10 | Sustainable Port Online Forum | 400 |

| | | | |
|---|---|---|---|
| 15 | 2021/09/03 | Environmental Education and Advocacy | 24 |
| 16 | 2021/09/28 | Environmental Education Course | 1 |
| 17 | 2021/10/29, 12/24 | Annual Kaohsiung Port Clarification Marine Disposal for Related Personnel Training Course | 46 |
| 18 | 2021/12/10 | Annual Self-Defense Fire Formation Training | 30 |
| 19 | 2021/12/17 | "Nanxing Free Trade Port Area Ecological Conservation Education and Training" Course | 15 |
| 20 | 2021/12/28 | Dagang Youth Self-Challenge | 11 |
| | | Total | 1,018 |

**2020/12/18 Port business observation**

**2021 Maritime Elite Lecture**


**2021/04/21** Sharon Smart Green Energy Science City

**2021/9/2 9External training sharing session**

**2020/12/11**Eco-port Observation Activities

## 6.2 Communication and promotion activities

By organizing and participating in forums, summits, symposia and other activities, Kaohsiung Port Branch communicates and initiates dialogue with the outside world. We look forward to working together to create a new environment for sustainable development.


2021/08/10 online forum on sustainable Port City market


2021/12/06 Foresight Summit

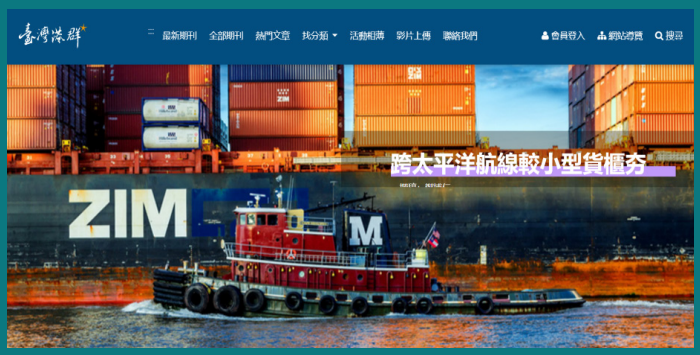
Kaohsiung Port Branch organizes activities such as exhibitions, port family days, second-hand markets, etc., and combines all walks of life: For example, by exchanging invoices for goods, the raised materials will be recycled and reused, and practical actions will be taken to protect the earth and reduce carbon emissions. Circular economy, and donated all the collected invoices to public welfare and charitable organizations, injecting warmth into the society.

2021Handle double port exhibition


2020/6/2Marine Education – Painted Wave Eliminating Block Activity

## 6.3 Communication with internal and external stakeholders

Through the official website, Kaohsiung Port Branch will disclose the relevant information of Kaohsiung Port, including: environmental reports, literature and publicity products, various business activities, dynamic information, investment information, application work, public opinion mailboxes, etc.




Taiwan Port Group Electronic News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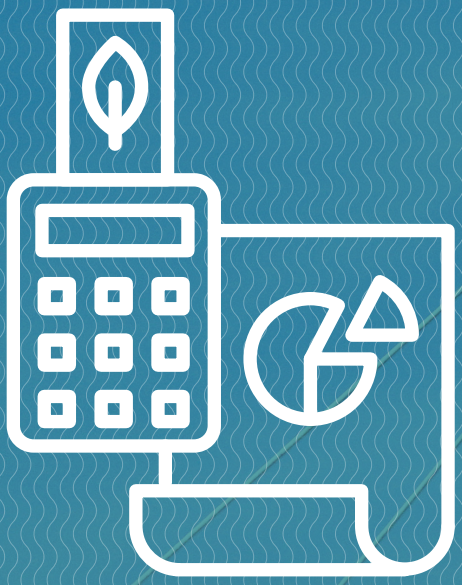
Publications


Environmental report

# 07



# Green Accounting

## 7.1 Environmental Resource Allocation

The costs that have been invested by the Kaohsiung Branch of TIPC in the environmental aspects are mainly divided into the categories of staff, environmental maintenance and management, environmental monitoring, and emergency responses and communication. The purpose of these investments is to improve the environmental awareness among staff, environmental maintenance, environmental quality, emergency response abilities, and public understanding of the port. The costs in each category are as follows:

- Employees: Personnel costs of environmental control, and environmental educationand training
- Environmental maintenance and management: Port green landscaping, waste disposal and dredging
- Environmental Monitoring: Monitoring the air, noise, water, sediment, dredging as well as environmental patrol
- Emergency Response: The costs of accident management, laboratory test fees for materials and dangerous goods that pollute the Port, and so on
- Communication and Publications: Website maintenance, promotional activities and environmental publications

**Costs invested by the Investments of the Kaohsiung Branch of TIPC in the Environmental Aspects in 2020 (Thousand NTD)**

| Item/Year | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|
| Staff | 51,551 | 62,870 | 48,231 | 47,390 |
| Environmental maintenance and management | 21,510 | 21,116 | 25,945 | 26,730 |
| Environmental monitoring | 38,918 | 45,531 | 28,435 | 34,453 |
| Emergency response | 824 | 746 | 1,044 | 1,444 |
| Communication and publication | 973 | 1,210 | 1,180 | 3,293 |
| sum | 113,776 | 131,473 | 104,835 | 113,310 |

The total amounts that Kaohsiung Branch of TIPC invested in the environmental issues are NT$ 104,835,000 (approximately €3,483,551.61 in 2020) and NT$ 113,310,000 (approximately €3,767,035.86 in 2021).

# 7.2 Assets Invested in Environmental Protection

To develop the Port of Kaohsiung into a transshipment hub in the Asia-Pacific region, a transshipment port providing comprehensive logistics services, and an eco-friendly port, the Kaohsiung Branch of TIPC has launched a series of port development projects (Project planning and building and equipment planning) and projects for general buildings and equipment. A portion of these projects are concerned with environmental aspects. For example, new buildings tend to be built green to facilitate public access; terminals are reconstructed and equipped with shore power systems, and old vessels and vehicles are replaced to enhance project implementation effectiveness and reduce pollution emissions. The Kaohsiung Branch of TIPC invested in fixed assets for approximately €80,627,846.0 and approximately €91,908.635 in 2020and 2021, respectively.

**Assets invested by the Kaohsiung Branch of TIPC in the environmental aspects in 2020 (Thousand NTD)**

| Item / Fixed assets | | Improvement on land | Buildings | Machinery and equipment | Transportation Facilities | Miscellaneous equipment | Total |
|---|---|---|---|---|---|---|---|
| Continuing projects | Project for the Port of Kaohsiung Passenger Transportation District | - | 457,940 | 106,909 | - | - | 564,849 |
| | Kaohsiung Port Intercontinental Container Centre Phase II Project | 1,078,335 | 494,826 | - | - | - | 1,573,161 |
| General building and Equipment plan | | 159,137 | 37,993 | 16,987 | 67,433 | 10,695 | 292,245 |
| Total | | 1,237,472 | 990,759 | 123,896 | 67,433 | 10,695 | 2,430,255 |

**Assets invested by the Kaohsiung Branch of TIPC in the environmental aspects in 2021(Thousand NTD)**

| Item / Fixed assets | | Improvement on land | Buildings | Machinery and equipment | Transportation Facilities | Miscellaneous equipment | Total |
|---|---|---|---|---|---|---|---|
| Continuing projects | Project for the Port of Kaohsiung Passenger Transportation District | - | 780,404 | 2,348 | 2,000 | 1,000 | 785,752 |
| | Kaohsiung Port Intercontinental Container Centre Phase II Project | 1,448,041 | 327,959 | 9,000 | - | - | 1,785,000 |
| General building and Equipment plan | | 56,069 | 75,643 | 14,734 | 39,233 | 14,165 | 199,844 |
| Total | | 1,504,110 | 1,184,006 | 26,082 | 41,233 | 15,165 | 2,770,596 |

8

# Improvement Recommendations

The Port of Kaohsiung is the largest international commercial port in Taiwan. Over the years, in addition to pursuing diversified port operations, the Port of Kaohsiung has also recognized the importance of sustainable environmental development and fulfilling corporate social responsibility, and has aspired to become a quality port in line with the world. In order to achieve the goal of "sustainable development", we have incorporated the concept of environmental friendliness into our operation and development, and started to promote the Eco-Port (Green Port) Action Plan, becoming the first port in the Asia-Pacific region to receive the European Eco-Port Certification in 2014, which is also an important milestone in the development of Taiwan's port into a green port.

Regarding the practical action, for example, in response to global warming and air pollution problems, the port company has been promoting five major measures under the "International Business Port Air Pollution Prevention Program", including "expanding the use of shore power facilities," "speed reduction for ships entering and leaving the port," "use of low-sulfur fuel for ships," "prevention of fixed sources of pollution in the port area – fugitive cargoes," and "pollution reduction of operating machinery and other machinery in the port area, and through greenhouse gas inventory management, energy saving and carbon reduction, green beautification, etc., we actively create a low-pollution and high-quality port environment.

In order to strengthen the port development, we promote the "International Business Port Future Development and Construction Plan", such as: "Kaohsiung Port Intercontinental Container Center Project", "Old Port Rejuvenation and Transformation Plan", the construction of "Kaohsiung Port Travel Center" (green building design) and the improvement of the road traffic in the port area. The project planning is based on green and environment-friendly methods to build a multi-functional port with tough infrastructure and "innovation, sustainability, ecology, environmental protection and regeneration", while creating a new link between the city and the port through the revitalization and transformation plan of the old port, and opening up new opportunities for the rebuilding of the port city. It will not only transform the port of Kaohsiung to improve its business performance, but also create a new situation for the development of Taiwan's ports.

In the future, the port company will continue to cooperate with the central and local governments, the shipping industry, academic and non-government organizations, etc. to introduce advanced technology to upgrade port software and hardware facilities, optimize port operation and management, implement environmental protection responsibilities, and continuously improve environmental management efficiency, so as to advance towards a green port with sustainable development.

If you have any inquiries regarding this report, please contact us.

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