# Port of Taipei
# Environmental Report

**Environmental Report Work Team**

**Keelung Branch, TIPC., Ltd.**: President Shytzong Liou, Chief Secretary Suru Lin, Senior Director Iching Song, Senior Deputy Director Kuohung Yeh, Manager Shangru Chou, Assistant Technician Derong Chen, Engineer Chungkai Chen, Junior Engineer Yuting Chang, Assistant Technician Chungen Wang

**Advised by Taiwan International Port Corporation, Ltd.**: Vice President of Business Tingyi Tsai, Senior Director Weichien Chang,Manager Tsunghsun, Assistant Technician Changjing Feng

**Chief Editor**: Suru Lin
**Executive Editor**: IChing Song
**Layout Design:** Kwangleun Cheng, Chengkuan Kan , N.Y. Lee
**Aerial Photography** : Jyunzunjie Liou
**Examine & Revise**: Rueytsair Lin, Kuohung Yeh,Shangru Chou, Derong Chen ,Chungkai Chen, Yuting Chang, Chungen Wang

**Publishers**: Taiwan International Ports Corporation, Ltd.
**Address**: No.10, Penglai Rd., Gushan Dist., Kaohsiung City 804, Taiwan (R.O.C.)
**Tel** : +886-7-5219000

This environmental report presents Taipei Port' s achievements in environmental protection from 2016 to 2017 as well as the environmental policy, commitments and action plans of the Keelung Branch, Taiwan International Ports Corporation, Ltd.

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

Taipei Port Branch Office of Keelung Port, TIPC
No.123,Shanggang Rd., Bali Dist., New Taipei City 249

## CONTENTS

臺灣港務股份有限公司
基隆港務分公司
Port of Keelung, Taiwan International Ports Corporation, Ltd.
TIPC

# Port of Keelung, Taiwan International Ports Corporation Environmental Policy

In charge of port operation and developments, Port of Keelung, Taiwan International Ports Corporation (hereinafter referred to as Port of Keelung) recognizes its obligations towards protecting the environment as its corporate social responsibility. Aiming at being an eco-friendly and sustainable port with continuous advancement, we consider environmental protection as a part of port operation and work proactively to prevent the pollution of the environmental impacts.

In order to minimize the potential and actual environmental impacts from port operations, Port of Keelung has identified the scope of its environment protection. With autonomous management, periodic inspection and evaluation, we will keep continuously improving our environmental performance.

We commit to:

- Regularly evaluate port environmental impacts and any pollution generated from port operation.
- Set environmental objectives to continuously lower environmental impacts.
- Comply with all relevant environmental regulations and aim at pollution prevention.
- Provide environmental education to build environmental awareness in all staff to completely implement our environmental policy.

The full understanding and mutual consent to this environmental policy have been reached by all the relevant parties, including employees, suppliers and tenants of Port of Keelung. This policy is open to the public on our website.

Shy-tzong Liou

President of Port of Keelung, TIPC

Date: Feb. 13, 2017

No.1, Chung-Cheng Road, Keelung 20202, Taiwan, R.O.C.
Tel:(02)24206100 Website: http://kl.twport.com.tw/



臺灣港務股份有限公司
基隆港務分公司
PORT OF KEELUNG TAIWAN INTERNATIONAL PORTS CORPORATION, LTD
TIPC

# Environmental Objectives for the Taipei Port

To achieve our commitments in environmental policy, the following environmental objectives are set according to the ten major environmental impacts from the port:

- **Improve Port Air Quality**
  Maintain air quality through utilizing continuous environmental monitoring systems, reducing vessel pollution, and implementing port environment spot checks
- **Avoid Fugitive Dust**
  Practice airtight operations and cargo handling equipments management plans to avoid fugitive dust
- **Abate Port Vehicle Emissions**
  Work with the environmental protection authorities to enhance port fleet eco-friendliness by restricting Tier 1, Tier 2 trucks from entering the port
- **Strengthen Hazardous Cargo Management**
  Ensure hazardous cargo management by increasing cargo spot checks frequencies to tighten port security
- **Reduce Port-generated Waste**
  Avoid unnecessary resource waste, apply adequate waste disposal practices, and ensure waste recycling
- **Land Use Optimization**
  Adjust port land usage and enhance the plenary use of lands
- **Manage Port Sediment**
  Implement sediment monitoring and repurpose dredged sediment for land reclamation
- **Enhance Port Water Quality**
  Install wastewater treatment and long-term water quality monitoring systems
- **Reduce Noise**
  Construct collector road to reduce noise pollution and traffic volume
- **Use Resources Wisely**
  Continue to promote the 4 saving's policy, implement environmental accounting and energy usage reporting

The President of the Port of Keelung is responsible for the implementation, maintenance, and effectiveness of the environmental objectives. The objectives are reviewed on a biennial basis, and action plans are adjusted according to the condition of the Port of Keelung to ensure that promises are upheld, improvements are made, and environmental objectives are achieved.

Liou, Shy-Tzong Liou, Shy-Tzong

President of Port of Keelung, TIPC

Date: 2018 / 8 / 24

Taipei Port Branch Office of Keelung Port, TIPC 24941No.123,Shanggang Rd., Bali Areas New Taipei City
TEL:886-2-2619-6000 Website: http://kl.twport.com.tw/tp/

# Message from TIPC

# 01/

## Message from the President of Port of Keelung Taiwan International Ports Corporation ,Ltd

Major ports worldwide have gradually integrated environmental sustainability into port management owing to the rising environmental awareness. Accordingly, the Taiwan International Ports Corporation also endeavors to build the Port of Taipei into a Green Port by implementing various sustainable practices.

Located in the south-west bank of the Tamsui River, the Port of Taipei is an artificial harbor constructed through land reclamation and is still expanding to this date. In this regard, we strive to vigorously uphold our self-imposed, stringent requirements in environmental assessment while the port continues to develop.

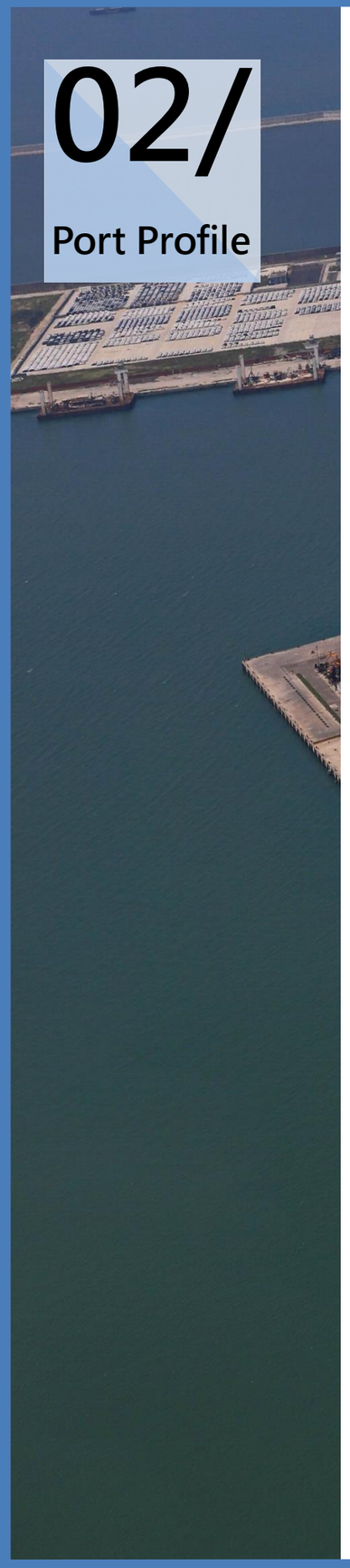
The Port of Taipei obtained the EcoPorts Certification in 2016 and has been striving to protect the marine ecosystem and to maintain the quality of life surrounding the harbor. This requires a variety of actions such as doing cyclical modifications to our environmental policies and action plans, implementing energy-efficient equipment, conducting environmental monitoring, and executing environmental management plans. The Taiwan International Ports Corporation believes that port development is a mutually beneficial strategy for both economic development and environmental protection. Therefore, besides implementing the Green Port Strategies, we also aim at providing a hydrophilic space for residents to make the Port of Taipei an international harbor of excellent quality.

Shy-tzong Liau

President
Keelung Branch of TIPC


# Port Profile

# 02/

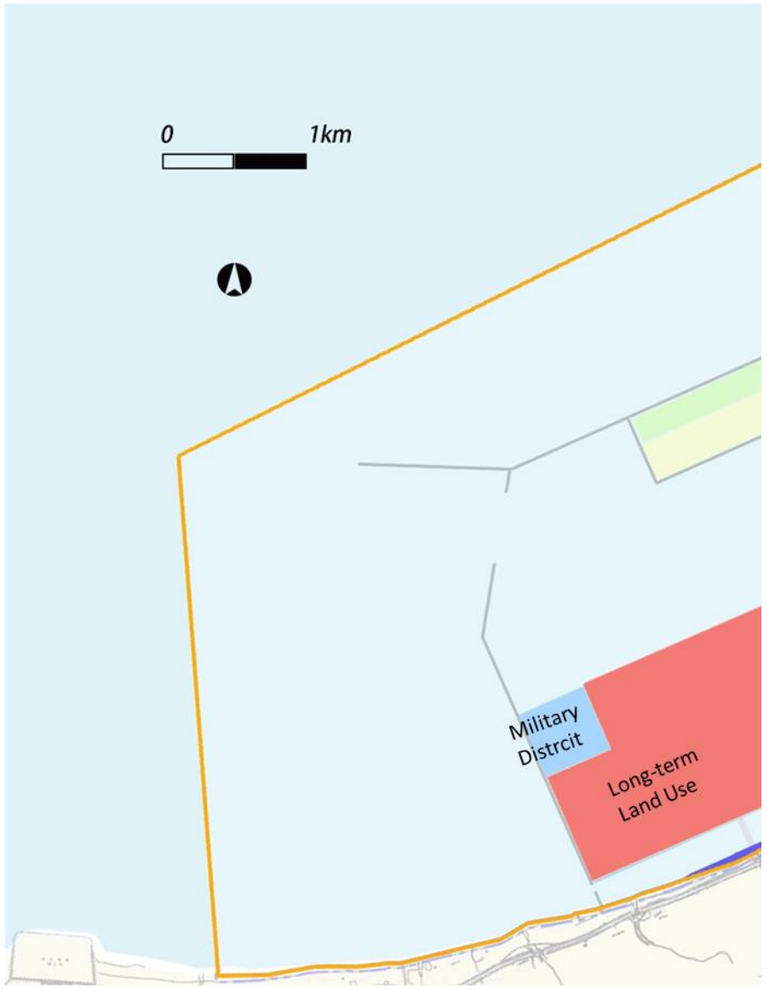


# 02/ Port Profile

## Port Location and Port Area

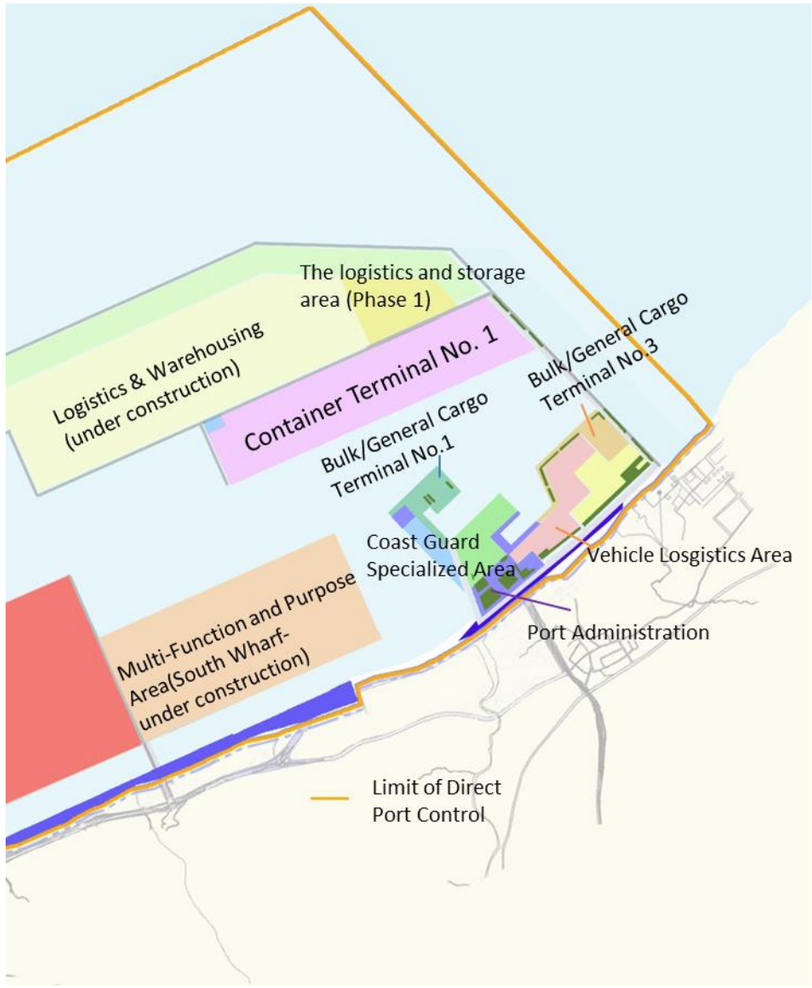
Taipei Port is located on the southwestern bank of the estuary of Tamsui river, and is situated between Mount Guanyin and the Taiwan Strait, 34 nautical miles (nm) west of Keelung Port, 87 nm north of Taichung Port, and 115 and 92 nm east of Fuzhou Port and Pingtan Port, respectively. It covers a coastal area where meteorological conditions such as wind force, ocean current, ocean waves, and tidal range are stable. The center of Taipei Port is located at Northern Longitude 25°09′ 49″ and Eastern Latitude 121°21′ 29″ . The total area of the port is approximately 3,102 hectares.

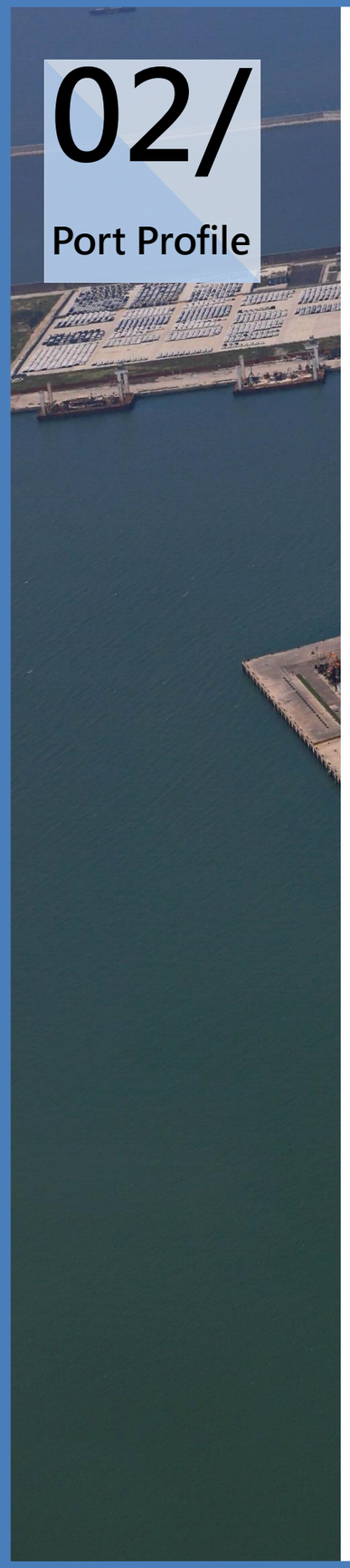
>>Port of Taipei Comprehensive Planning




## Legal Status and Port Operators

To modernize the management of commercial ports in Taiwan.The Taiwan International Ports Corporation, Ltd. Establishment Act was promulgated on November 9, 2011 and 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 manage-ment 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 one 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 Keelung Harbor Bureau underwent institutional changes, the operation of Taipei Port was delegated to the Taipei Port Branch Office under Port of Keelung TIPC, and the port administration and management of Taipei Port was governed by the Taipei Branch of the North Taiwan Maritime Affairs Center of the Maritime and Port Bureau (MPB) under the Ministry of Transportation and Communications (MOTC).





# 02/ Port Profile

## Commercial Activities

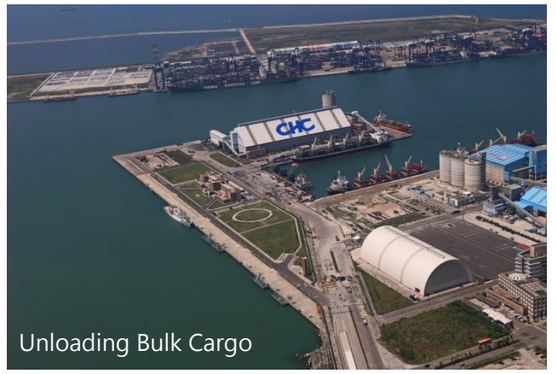
Taipei Port currently has 20 wharves providing containers, bulk and general cargo, and liquid bulk cargo services. Bulk and general cargo is the main service target, consisting of oil refining products, cement, coal, chemicals, and iron scrap. Taipei Port mainly features ocean-going and cross-strait (direct) shipping lines, and the port' s commercial activities revolve around vehicle and automotive component distribution, finished product and chemical product tanks, and load, discharge, and storage of bulk cargo, such as coal, sand, gravel, slag, and cement.

>>Main Commercial Activities and Cargo Handling of Port of Taipei

| **Main Commercial Activities** | |
|---|---|
| Aggregates (Sand, gravel) | Storage and packaging |
| Refrigerated cargo | |
| **Cargo Handling** | |
| Dry bulk | Liquid bulk (non-oil) |
| Cars/Vehicles | Perishable goods |
| Ro-Ro | General goods |

## Main Cargoes

The main inbound cargos to Taipei Port in 2016 were mineral products (81.42%) and chemical or related industrial products(5.83%).Outbound cargos were mainly Plastics, Rubber and the Products thereof(26.27%) and chemical or related industrial products(18.20%).In 2017 were mineral products (81.50%) and chemical or related industrial products(6.02%).


Unloading Bulk Cargo

>>Main Cargoes at Port of Taipei

| **Petroleum** | **Pyrites minerals** |
|---|---|
| Refined products | Cement |
| **Ores** | **Liquid bulk (non-oil)** |
| Coal | Liquid chemicals |
| **Dry bulk** | **Other** |
| Scrap (iron) | Containers/ Vehicles |

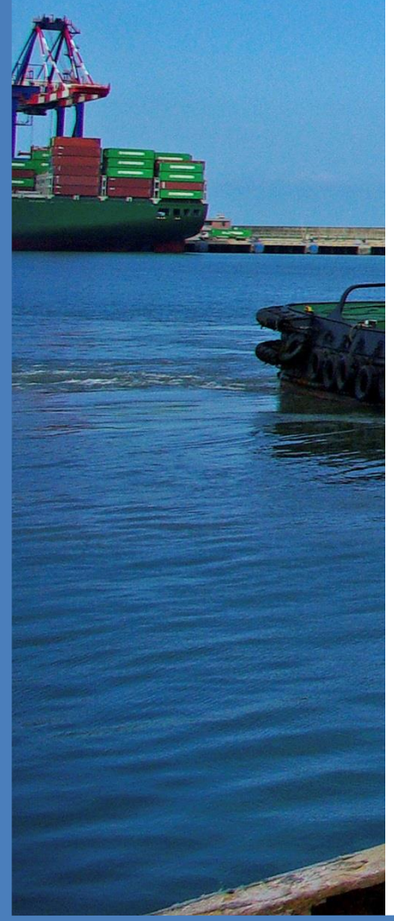
>>Taipei Port Business Statistics from 2016 to 2017

| Business item | | 2016 | 2017 | Comparison between 2016 and 2017 | |
|---|---|---|---|---|---|
| | | | | Actual number | % |
| Incoming and Outgoing Ships | Total number of ships (vessel) | 8,423 | 8,140 | -283 | -3.36 |
| | Total Tonnage (tonne) | 179,547,343 | 177,355,441 | -2,191,902 | -1.22 |
| Volume of Imports & Exports | Imports (tonne) | 16,472,503 | 18,816,511 | 2,344,008 | 14.23 |
| | Exports (tonne) | 2,559,971 | 3,099,445 | 539,474 | 21.07 |
| | Domestic(tonne) | 1,711,172 | 1,207,378 | -503,794 | -29.44 |
| | Total(tonne) | 20,743,646 | 23,123,334 | 2,379,688 | 11.47 |
| Incoming and Outgoing Passenger | Total number of travelers | 71,410 | 77,389 | 5,979 | 8.37 |

# Environmental Management

# 03/

# 03/ Environmental Management



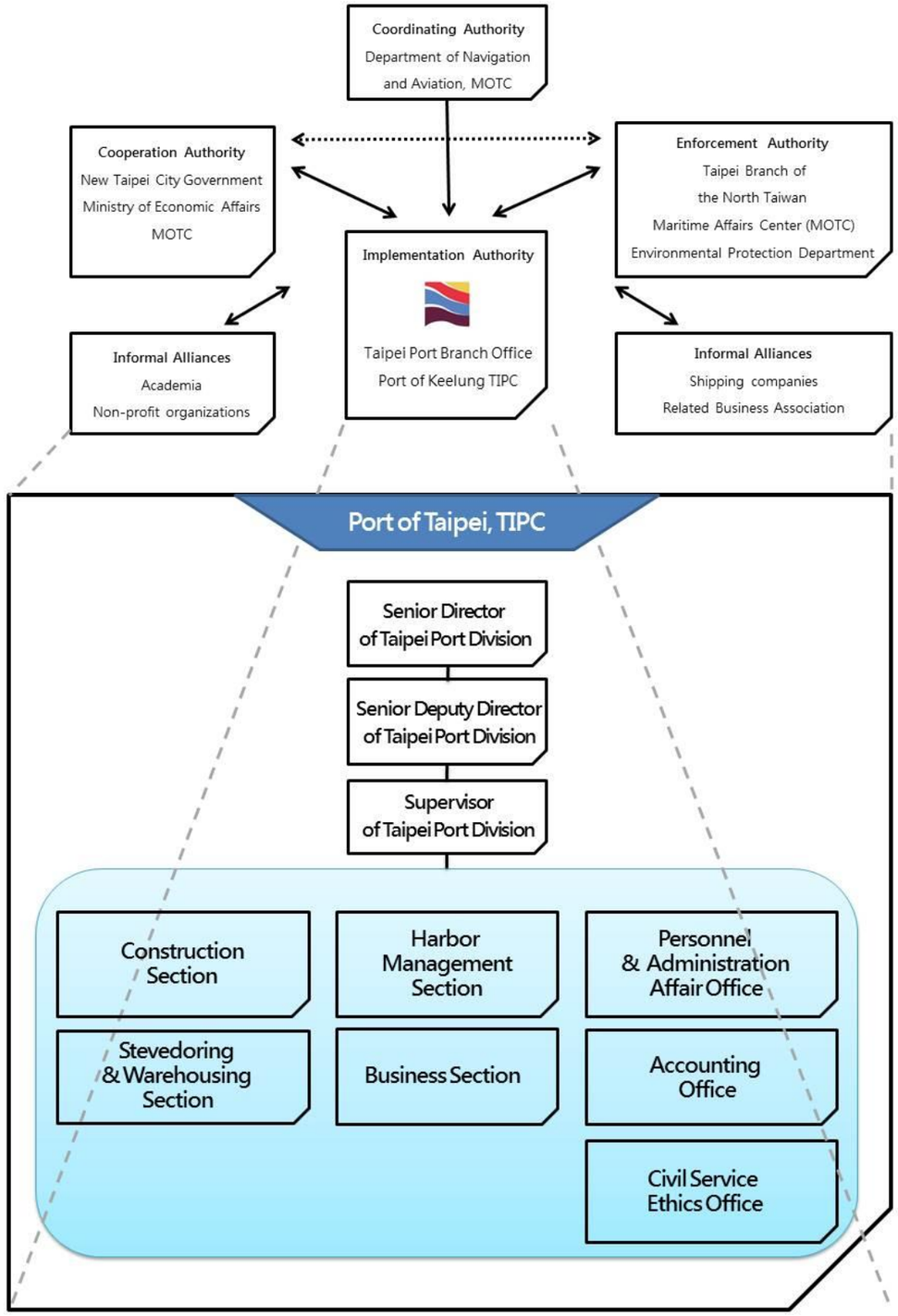
## Organization Structure

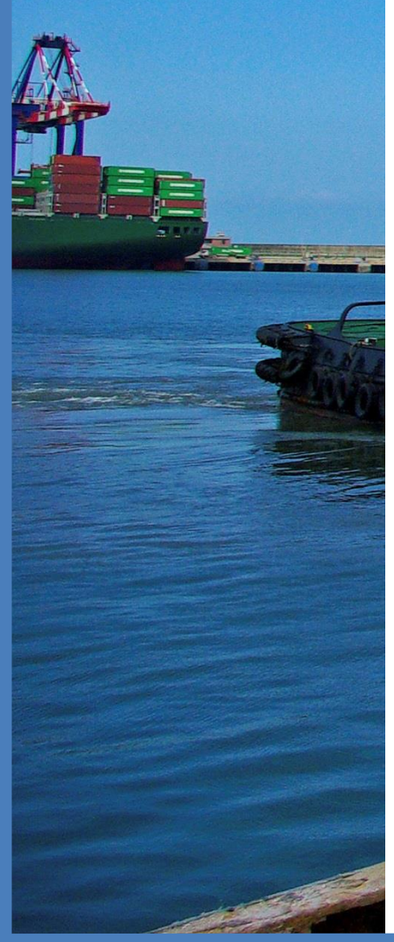
The Taipei Port Branch Office is in charge of managing the environment of the Port of Taipei. However, environmental aspects involve the division of responsibilities among different agencies. In addition to the Taipei Port Branch Office, agencies responsible for environmental aspects include the Taipei Port Division of the Northern Maritime Affairs Center of Maritime and Port Bureau of MOTC, Environmental Protection Department of New Taipei City Government, Environmental Protection Administration of Executive Yuan (EPA), Offshore Flotilla 8, the Northern Branch of Coast Guard Administration, Ocean Affairs Council , Executive Yuan, Keelung Harbor Police Department Taipei Unit of National Police Agency, Ministry of The Interior, Taipei Harbor Subsection of Keelung Harbor Fire Brigade of National Fire Agency, Ministry of The Interior.

The Taipei Port Branch Office is consist of the Business Section, Harbor Management Section, Stevedoring and Warehousing Section, Construction Section, Personnel and Administration Affair Office, Civil Service Ethics Office, Accounting Office, etc. Descriptions of the sections/ offices of Taipei Port are listed in the following table.

>>Function of the section/ office of the Taipei Port Branch Office

| Section/Office | Description |
|---|---|
| Business Section | Customer service operation and management, investment attraction, and port service and profit development |
| Harbor Management Section | Berth allocation, in-port ship traffic management, environmental protection, contamination prevention, port operation and management, and disaster prevention and rescue |
| Stevedoring and Warehousing Section | Stevedoring and weighing, passenger liner service, labor safety and health, and port service maintenance and management |
| Construction Section | Port construction planning, design, commission, procurement, and supervision, and commercial port service maintenance |
| Personnel and Administration Affair Office | Branch office human resources and property management, public relations, cashiers, personnel affairs, and employee benefits |
| Civil Service Ethics Office | Service ethics formulation and promotion, corruption prevention and investigation, service ethics examination and reward, confidential information protection, and security system maintenance |
| Accounting Office | Budget, income, and expenditure administration, income and expenditure auditing, and annual and monthly report examinations |





## Relevant International Regulations

The Taipei Port Branch Office follows relevant international specifications, such as International Convention for the Prevention of Pollution From Ships (MARPOL 73 /78), London Dumping Convention, International Convention on the Control of Harmful Anti-fouling Systems on Ships etc.

In addition to the international environmental specifications and conventions, the Taipei Port Branch Office collaborates with local authorities to manage the environment in the Port in compliance with relevant environmental laws and regulations in Taiwan. The follow table lists the relevant environmental laws and regulations related to ports in Taiwan.

| Regulations | | | Central Competent Authority | Local Law Enforcement Agencies |
|---|---|---|---|---|
| Transportation regulations | The Commercial Port Law | 2011/12/28 | Ministry of Transportation and Communications | Taipei Port Division of North Maritime Affairs Center, Maritime and Port Bureau, MOTC |
| | The Law Of Ships | 2010/12/08 | | |
| | Shipping Act | 2014/01/22 | | |
| | Act for the Establishment and Management of Free Trade Zones | 2012/12/28 | | |
| Interior regulations | Fire Services Act | 2017/01/18 | National Fire Agency, Ministry of the Interior | Fire Bureau, New Taipei City Government |
| | | | | Taipei Harbor Subsection, Keelung Harbor Fire Brigade |
| Agriculture regulations | Wildlife Conservation Act | 2013/01/23 | Council of Agriculture | Agriculture Bureau, New Taipei City Government |
| Environmental protection regulations | Marine Pollution Control Act | 2014/06/04 | Ocean Affairs Council | Environmental Protection Bureau, New Taipei City Government |
| | Basic Environment Act | 2002/12/11 | Environmental Protection Administration | |
| | Air Pollution Control Act | 2018/08/01 | | |
| | Water Pollution Control Act | 2018/06/13 | | |
| | Waste Disposal Act | 2017/06/14 | | |
| | Environmental Impact Assessment Act | 2003/01/08 | | |
| | Environmental Education Act | 2017/11/29 | | |
| | Noise Control Act | 2008/12/03 | | |
| | Indoor Air Quality Act | 2011/11/23 | | |
| | Toxic Chemical Substances Control Act | 2013/12/11 | | |
| | Soil and Groundwater Pollution Remediation Act | 2010/02/03 | | |
| | Greenhouse Gas Reduction and Management Act | 2015/07/01 | | |
| | Environmental Agents Control Act | 2016/12/07 | | |
| | Public Nuisance Dispute Mediation Act | 2009/06/17 | | Public Nuisance Disputes Mediation Committee, New Taipei City Government |
| Intersectoral | Disaster Prevention and Protection Act | 2017/11/22 | Ministry of the Interior | New Taipei City Government |

# State of the Environment

# 04/

# 04/

State of the Environment


## Analysis of major environmental issues

To fully understand the opinion of each stakeholder and adapt to the new EcoPort Certification, the Port of Taipei distributed internal questionnaires as an opinion poll among relevant stakeholders, including employees, the government, clients, and the community. The information obtained was used to evaluate the level of concern each stakeholder held. The data are plotted on the table to the right.

| Stakeholder | Importance |
|---|---|
| Government | 22.42% |
| Public association | 14.95% |
| Employee | 17.44% |
| Customer | 18.27% |
| Media | 13.08% |
| Community | 13.84% |

**Environmental issues**

- Using the relevant environment issues in the Self Diagnosis Method to assemble a questionnaire

**Internal questionnaires.**

- Identifying stakeholders
- Inspecting the impact level of environmental concerns within the port

**External questionnaires.**

- Identifying stakeholder concerns. Investigating the level of concern of each stakeholder.
- A total of 103 valid questionnaire responses.

**Meta-analysis.**

- Filtering major issues by level of stakeholder concern and influence on operations of the Port of Taipei.

**Identifying for top 10 environmental issues.**

- Establishing environmental goals and improvement plans for top 10 environmental issues.



## Top 10 environmental issues in Taipei Port



Interview


Interview


Interview

# 04/

State of the Environment


## Air Quality

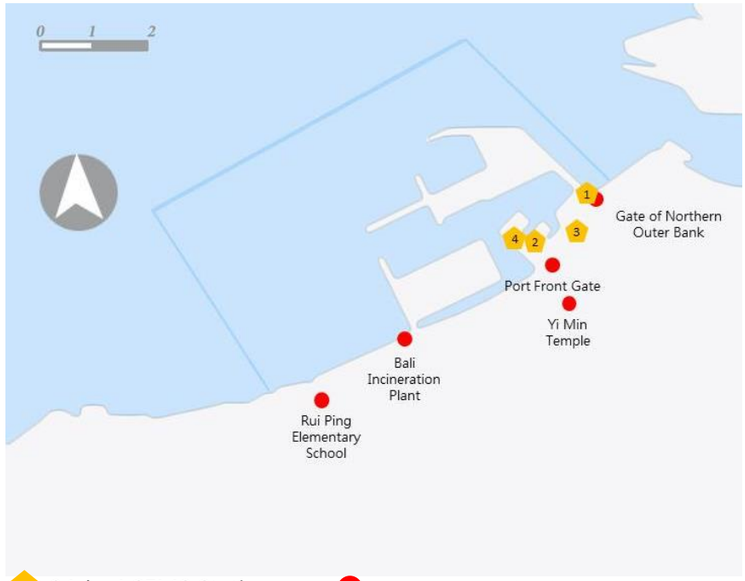
The main pollution sources of Taipei Port include particulates from stevedoring operations, ship exhaust, and dust from construction sites. On top of implementing pollution control measures, the Taipei Port installs monitoring systems to better understand the status of port air quality.

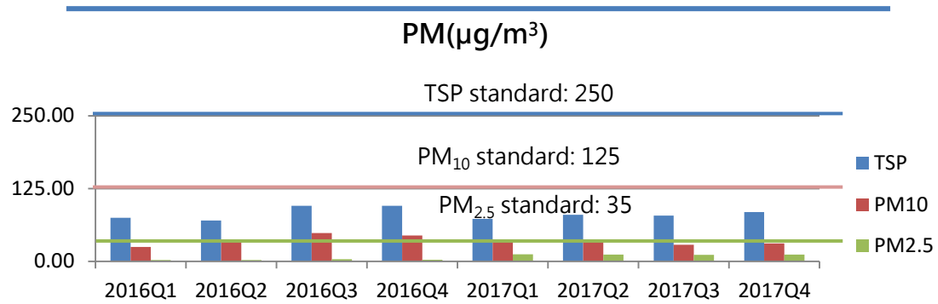
Besides four 24-Hour Automated and Continuous Environment Surveillance System (ACESS). The port also has other Environmental Impact Statement (EIS) required monitoring sites.

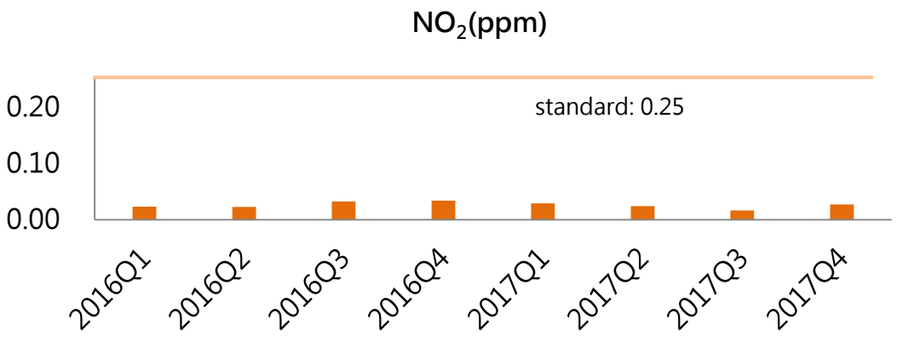
The monitoring items include total suspended particles (TSP), particulate matters ($PM_{10}$), fine suspended particles ($PM_{2.5}$), sulfur dioxides ($SO_2$), carbon monoxide (CO), ozone ($O_3$), nitrogen oxide (NO), nitrogen dioxide ($NO_2$), Tetrahydrocannabinol (THC), non-methane hydrocarbon (NMHC), wind speed, and salt etc.

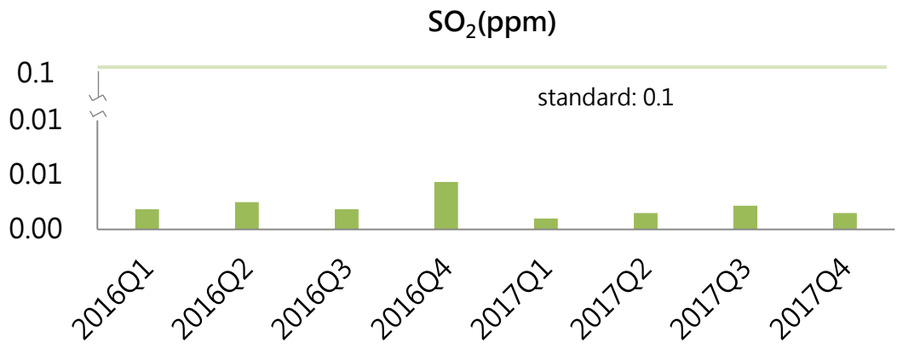
The results of the air monitoring stations in 2016 and 2017 are shown on the right, and most of the monitored pollutions meet the emissions standards.

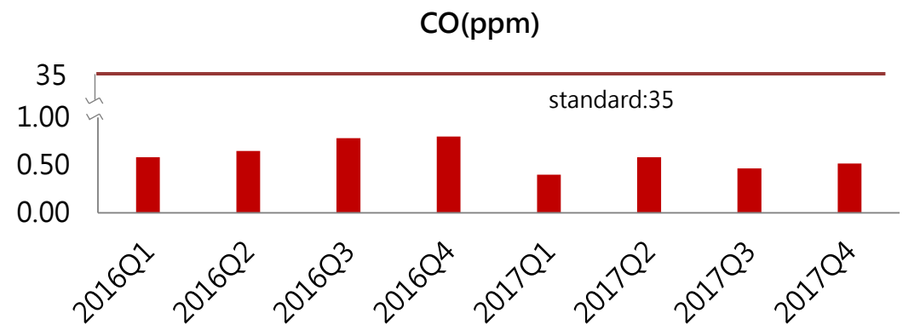
>>Air Quality Monitoring Stations and Sites




## Air Quality Improvement Strategies

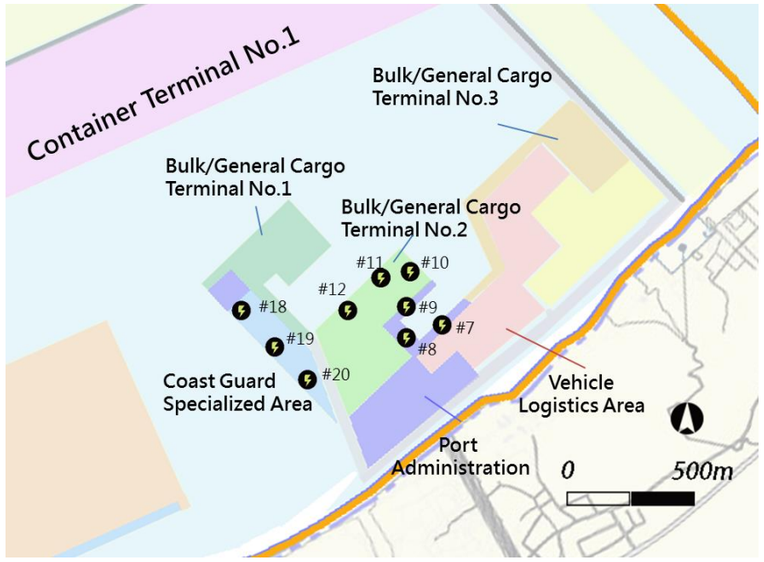
### Environmental Friendly Vessels

To facilitate environmental friendly vessel policies, the Port of Taipei has adopted premium diesel, which contains a sulfur content lower than 10 ppm, as the fuel for all of its harbor vessels. Moreover, the port has promoted the electrification of port service facilities, including the installation of shore power systems at official-purpose wharves to supply electricity to ported vessels. A total of 23 shore power systems to reduce exhaust gas emissions from ported vessels were installed at wharves No. 7–9 and wharves No.18-20 of the east bank , and this year(2018) four new shore power supply systems (East 10-12, and North 1 wharves) have been provided .

In addition, the Taipei Port Branch Office encourages vessel speed reduction (VSR), which is to reduce speed of vessels within 20 nautical miles to the port to under 12 knots per hour to abate air pollution.

>>Shore Power Services at Taipei Port

| Operating enterprise | Kun Yang Port Service | | | CPC Corp. | Coast Guard | | | Goldsun |
|---|---|---|---|---|---|---|---|---|
| Wharf | #7 | #8 | #9~1 | #9~2 | #18 | #19 | #20 | #10~#12 |
| # of units | 3 | 2 | 4 | 5 | 3 | 3 | 3 | 3 |




Shore Power Systems



### Fugitive Dust Emission Control

Having large amount of worksites and bulk cargo handling operations such as sand and coal, makes fugitive dust emissions one of Port of Taipei' s major environmental issues. In order to create an excellent working environment and good quality of life for the port surrounding areas, the Port of Taipei has implemented control measures for fugitive dust emissions.

The control measures has two aspects, cargo handling and vehicle control. In addition, the Taipei Port also requests stevedoring companies to abide by the related regulations.

Port of Taipei dust control machineries
- Cargo handling pollution prevention device：6 units
- Enclosed stevedoring warehouse：1 unit
- Carwash facilities：6 units

Note: Cargo handling pollution prevention devices include 1 spiral unloading machines and 1 indoor material extractor,4 gravel belt conveyers)

>>Taipei Port Fugitive Dust Control Measures

| Aspects | Dust Control Measures |
|---|---|
| Cargo Handling | • Environment-friendly enclosed warehouse facilities<br>• Encourage cargo handling industries to implement dust-control meshes |
| Vehicle Control | • Implemented diesel vehicle self-management program promoted by the New Taipei City Government<br>• Inspect incoming and outgoing diesel vehicles<br>• Install water sprinklers at sand and gravel stacking sties<br>• Sweep inner and neighboring roads on a daily basis |


Enclosed Warehouse

Enclosed warehouse increases stevedoring effectiveness, maintaining in-port environmental cleanliness, and preventing pollutants from entering the port through rainfall and affecting marine ecology.

Carwash facilities clean vehicles exiting construction sites to prevent dust emissions from vehicles.

# 04/

State of the Environment


## Noise

Noise pollution is another Taipei Port' s most concerning environmental issues due to loud noises from construction projects and cargo trucks coming and leaving the port. Thus, to maintain improve the quality of life near the port, the Branch Office requested all companies and vessels in the port to follow noise control standards.

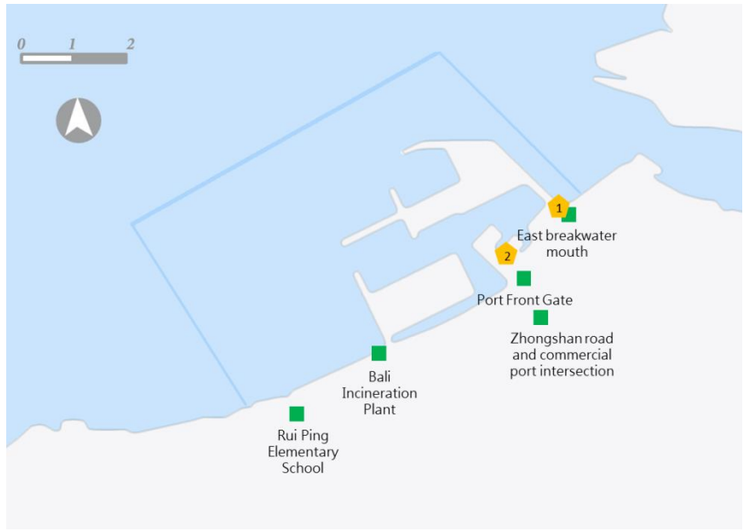
As for the port' s container terminal, Container Wharves No. 3–6 of the north bank were equipped with a total of 13 highly efficient bridge cranes ,40 remote-controlled unmanned bridge cranes and 17 electric stackers to minimize vessels' and container pallet trucks' stay at port, abating noise level and vehicle exhaust emissions.

### Reduce Port Noise

To improve the quality of life in neighboring communities, the New Taipei Government provides subsidies to install airtight window to an estimated 250 households. Moreover, companies within the port have resorted to noise reduction measures such as the speed reduction policy for incoming and outgoing transportation vehicles.

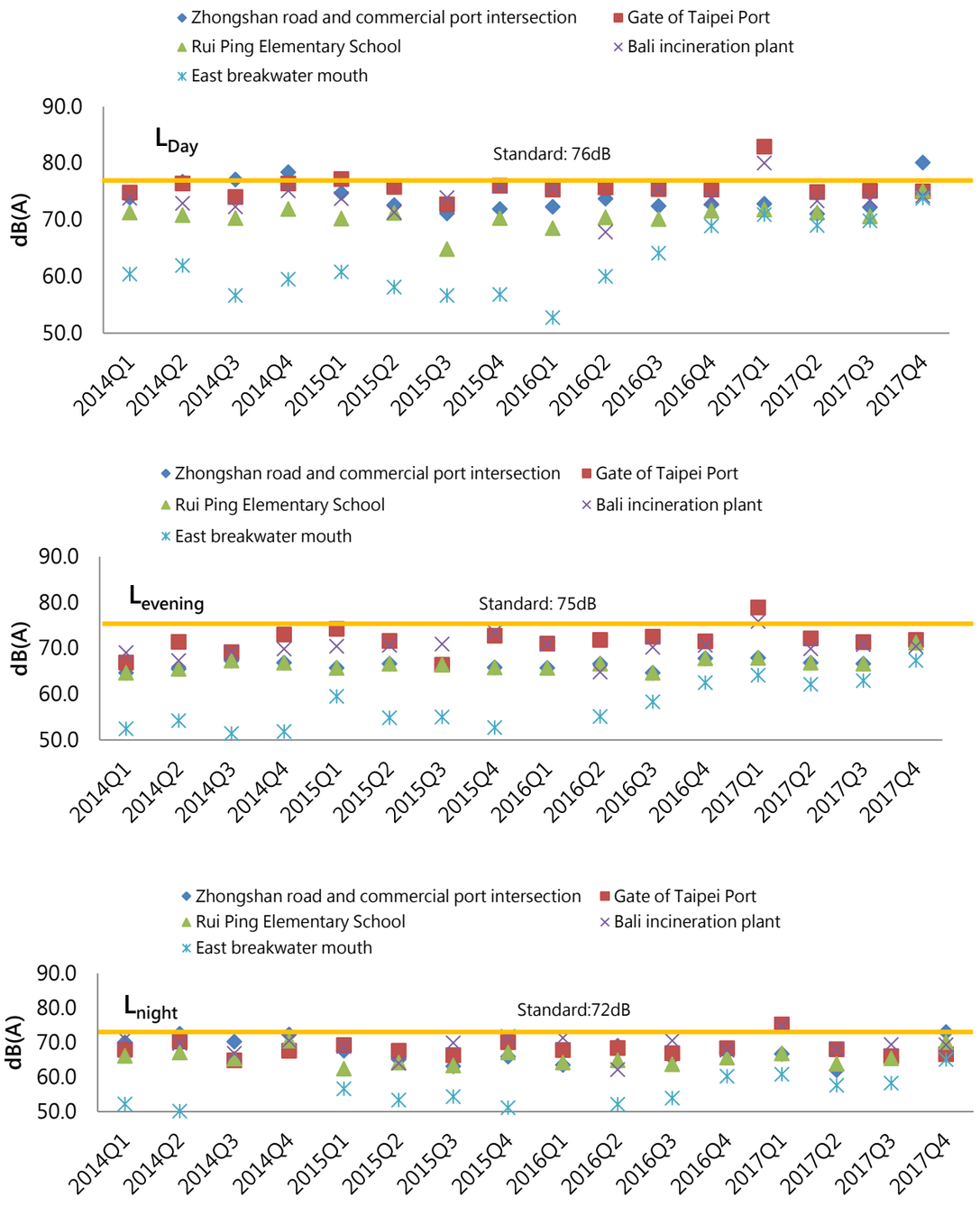
According to the port' s 2016-2017 environmental quality monitoring records, 85% of the noise control standard was met, with an ultimate goal of 100%. Most violation incidents occurred at the port front gate caused by the traffic. The situation improved after implementing the vehicle speed reduction policy.

>>Noise Monitoring Sites




1 24-hr ACEMS

Port EIS Monitoring Station



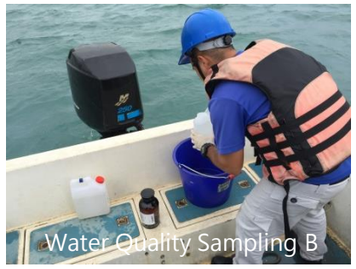
# 04/

State of the Environment

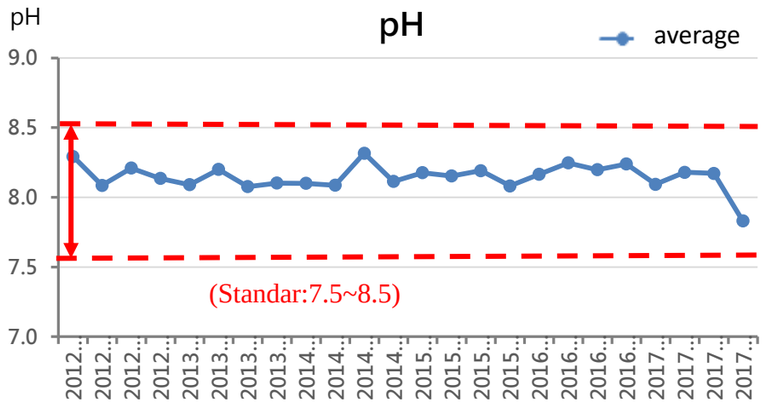

## Water Quality

As an artificial port, Taipei Port is undergoing numerous land projects. Therefore, management of bottom mud and ocean water quality are important tasks. Taipei Port has continued to monitor and maintain its water quality, including pH, dissolved oxygen, biological oxygen demand 5 ($BOD_5$), cyanide, phenols, and mineral oil. All quarterly measurement in 2016 satisfy the water quality standards. The reason for slightly lower dissolved oxygen in the third quarter of 2017 was initially determined as the result of higher summer temperatures. In 2003, Taipei Port became the first commercial port that was able to comprehensively process its own sewage and wastewater. In 2013, sewer pump station maintenance was completed to conduct continuous sewage treatment. An average of approximately 120,000 tons of sewage was processed each year. In addition, the port has continued to monitor and maintain its water quality.


Water Quality Sampling A

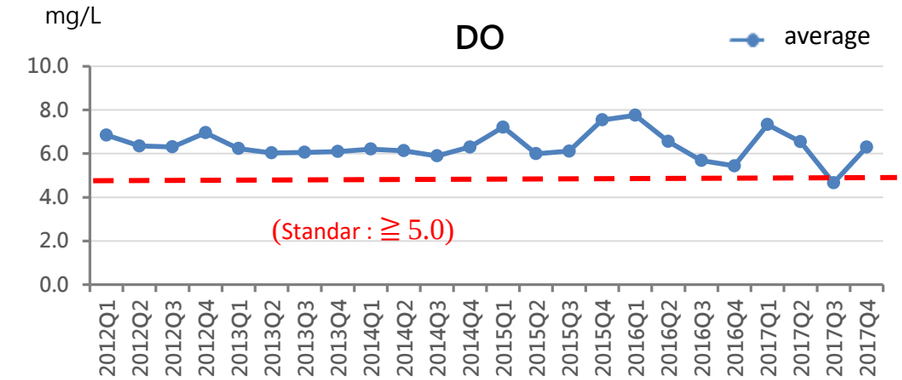

Water Quality Sampling B

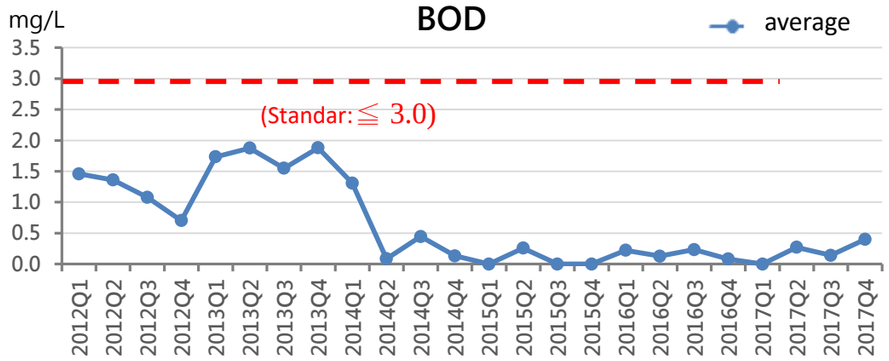
>> Annual water quality monitoring in Taipei Port




Note: Environmental quality standards for class II marine water bodies are referenced when examining the port' s water quality






>>Port of Taipei Water Quality Monitoring Sites (EIS required)

# 04/

State of the Environment


## Reduce Port-generated Waste

To reduce port waste, the Branch Office has promoted waste reduction, implemented recycling and reuse, promoted the 4-in-1 recycling program initiated by the EPA in 1997 (to recycle and reduce waste), and in 2005 promoted the concept of mandatory garbage recycling to recycle items mainly consisting of paper, glass containers, and plastic products.。

To avoid unnecessary waste of resource, Taipei Port has been reducing waste and increasing recycling rate. Taipei Port collected 216.8 tonnes of general waste and recycled 110.3 tonnes (recycling rate of 50.9%) in 2016, and collected 221.3tonnes of general waste and recycled 117.4 tonnes in terrestrial port areas (recycling rate reaching 53% in 2017.

>> Amount of waste recycle & disposal at the Port of Taipei

| Item | 2016 | 2017 |
|---|---|---|
| Total waste generated (tonne) | 216.8 | 221.3 |
| Disposal (tonne) | 106.5 | 103.9 |
| Recycle (tonne) | 110.3 | 117.4 |
| Recycle Rate (%) | 50.9 | 52.9 |

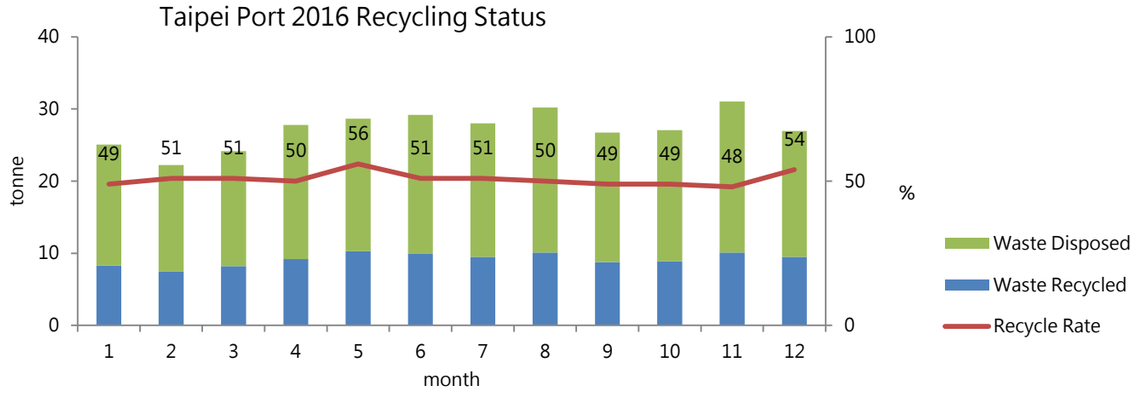
Waste Handling in Port of Taipei



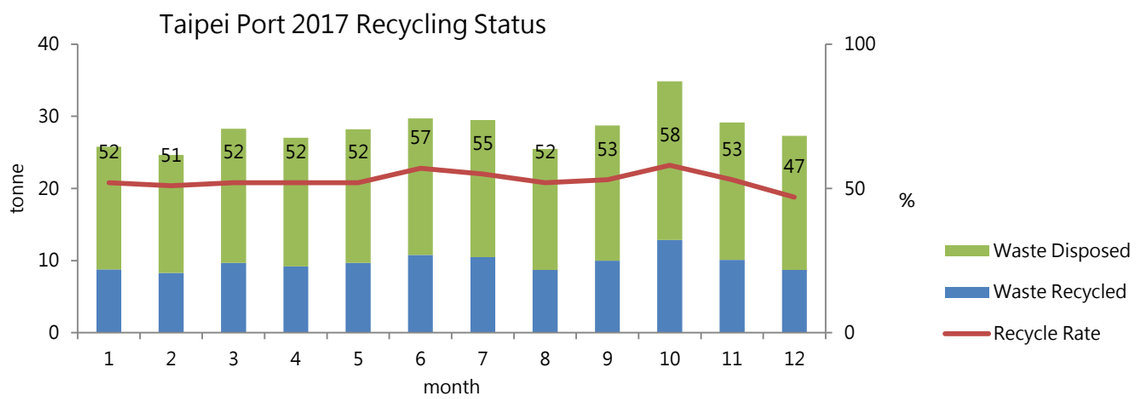
To prevent pollution from vessel oil and wastewater, Taipei Port implemented vessel wastewater and oil recycling measures according to the Regulations on Clearance of Ships' Oily Discards in Taipei Harbor, recycling 3130.3 tonnes of wastewater and oil from 274 vessels in 2016 and 3193.3 tonnes of wastewater and oil from 260 vessels in 2017.

>> Records of collected ship waste and ship oily wastewater at Taipei Port

| Year | # of vessels | Oily wastewater (tonne) |
|---|---|---|
| 2016 | 274 | 3130.3 |
| 2017 | 260 | 3193.3 |




Note: Waste Disposed + Waste Recycled= Total Waste Generated

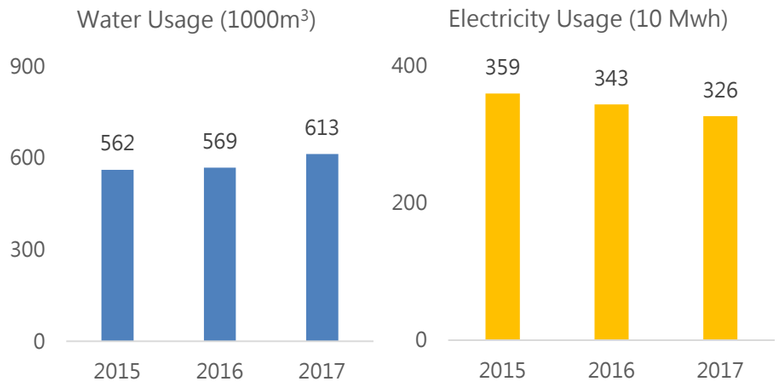


# 04/

State of the Environment


## Taipei Port Resource Usage

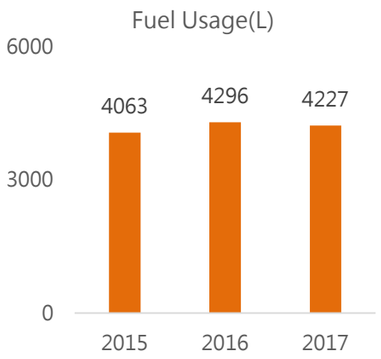
Because of increasing scale of port size and business operation, even though the Taipei Port Branch Office has taken resource conservation measures, the result is not conspicuous. In 2016 and 2017, among the four recorded resource uses (water, electricity, fuel, and paper) only the electricity usage decreased, while the rest (water, paper, and fuel) continue to grow. However, if compared with the port growth rate, the increase of resource usage is relatively low. If we use the total cargo tonnage as a reference, the average growth rate of between 2009 and 2017 is 12% annually, which is higher than the growth rate of all resource usage. Thus, this shows that the Branch Office' s resource conservation strategy still makes an impact。



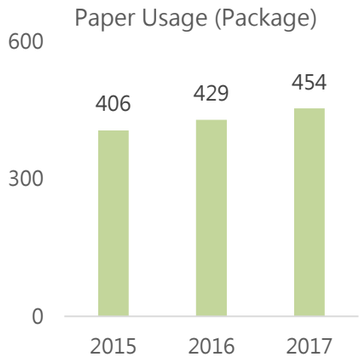

Water consumption increased as a result of increased operating capacity and increased water consumption for the new construction of the north 1 and north 2 piers (including embarkation corridors).




The electricity consumption has decreased as the Branch Office gradually replaces street light with LED bulbs every year, and the existing hardware facilities have been upgraded.




Increased oil consumption is due to the increasing frequency and scope of environmental protection patrol, waste cleaning and site inspection.




The Taipei port Branch Office has increased its business volume in recent years and increased its paper consumption.



## Strategies for Reducing Resource Consumption

>>Carbon Footprint of Resource Consumption at Taipei Port

| Resource | 2016 | | 2017 | |
|---|---|---|---|---|
| | Amount of Resource Consumed | Carbon Emissions (tonne) | Amount of Resource Consumed | Carbon Emissions (tonne) |
| Water | 568,901 $m^3$ | 86 | 612,735 $m^3$ | 93 |
| Electricity | 3,430,400 kwh | 1,815 | 3,263,600 kwh | 1,726 |
| Fuel | 4,296 L | 10 | 4,227 L | 10 |
| Paper | 429 packages | 1 | 454 packages | 1 |
| Total | | 1,912 | | 1,830 |

Note: $CO_2$ emissions factors of resources
Water: 0.152 $KgCO_2e$ /CMD (2016);
Power: 0.529 $KgCO_2e$ /kwh(2016);
Fuel: 2.36 $KgCO_2e$ /litre;
Paper: 2.8$KgCO_2e$ / sheets(A4,70 pounds)

>> Resource Savings Strategies of Taipei Port

| Category | Strategies |
|---|---|
| Water | • Port Administration building rainwater recycling system<br>• Chia Pei Corp. Rainwater reclamation system |
| Electricity | • Turn off unnecessary lights in hall ways<br>• Gradually replace traditional lightings to energy saving once<br>• Do not use AC under 28℃, and keep office above 26℃<br>• Turn off office lightings during lunch break<br>• Receive energy management counseling from Department of Energy ever 2 years to enhance energy usage efficiency |
| Fuel | • Promote ride sharing<br>• Limited idle speed duration to less than 3 min<br>• Regularly recorded the fuel consumption of official vehicles |
| paper | • Encouraging online administrative service and online document signing(such as online application of the access pass)<br>• Print documents on both sides and reuse used paper |


Separate Island Rainwater Collection


Inspecting Port Electricity Utilities

# 04/

State of the Environment


## Strengthen Hazardous Cargo Management

The petroleum, chemical cargo storage, and transportation service companies in the port may cause potential environmental hazards because cargo leakage accidents can cause harm to neighboring ecology and residents. Therefore, improving cargo management and port security has become a crucial task for Taipei Port. Companies operating in the port shall devise corresponding emergency response plans and organize joint disaster drills to increase their capability of addressing emergency events.

In accordance to current regulations, the Taipei Port Branch Office stipulates a set of operating procedures for a variety of dangerous cargo. For instance, radio-active stevedoring requires import and export permits from the Atomic Energy Commission under the Executive Yuan, and explosive stevedoring requires import and export permits from the Bureau of Foreign Trade and transportation certificates from the Bureau of Mines under the Ministry of Economic Affairs. The Branch Office inspects stevedoring in the port more than 30 times per month and manages dangerous cargo in the port. In addition, the Branch Office contacts each port unit on a regular basis to develop emergency response plans for cargo leakage and improve the response capacity for responding to such events. The Branch Office stipulated that emergency response drills shall be organized at least four times per year and a joint safety promotion at least once per year.

>>Inspections and Drills Conducted in 2016-2017

| Year | 2016 | 2017 |
|---|---|---|
| Inspections | 633 | 686 |
| Drills | 5 | 5 |
| Cross Agency Inspections | 1 | 1 |


Port Hazard Inspection


Joint inspection

The accident rehearsal

# 04/

State of the Environment


## Port Sediment Management

To maximize the effectiveness of resource utilization, the port has sought to maintain the balance between land dredging and filling by recycling the bottom mud removed from ship channel construction and reusing it for filling in-port land areas. Presently, recently completed projects, those under construction, and those that have been designed but not yet constructed have been or will be developed using this approach.

In addition to reusing in-port surplus soil, the port uses surplus soil from other construction projects. For the on going project of the Taipei Port Logistics and Warehouse Zone, the four-phase project will assist in using surplus soil from public constructions in northern areas of the port, and is expected to receive approximately 71.72 million m3 of soil to develop approximately 338 hectares of artificial land. At present, about 58.3 ha of land has been reclaimed.

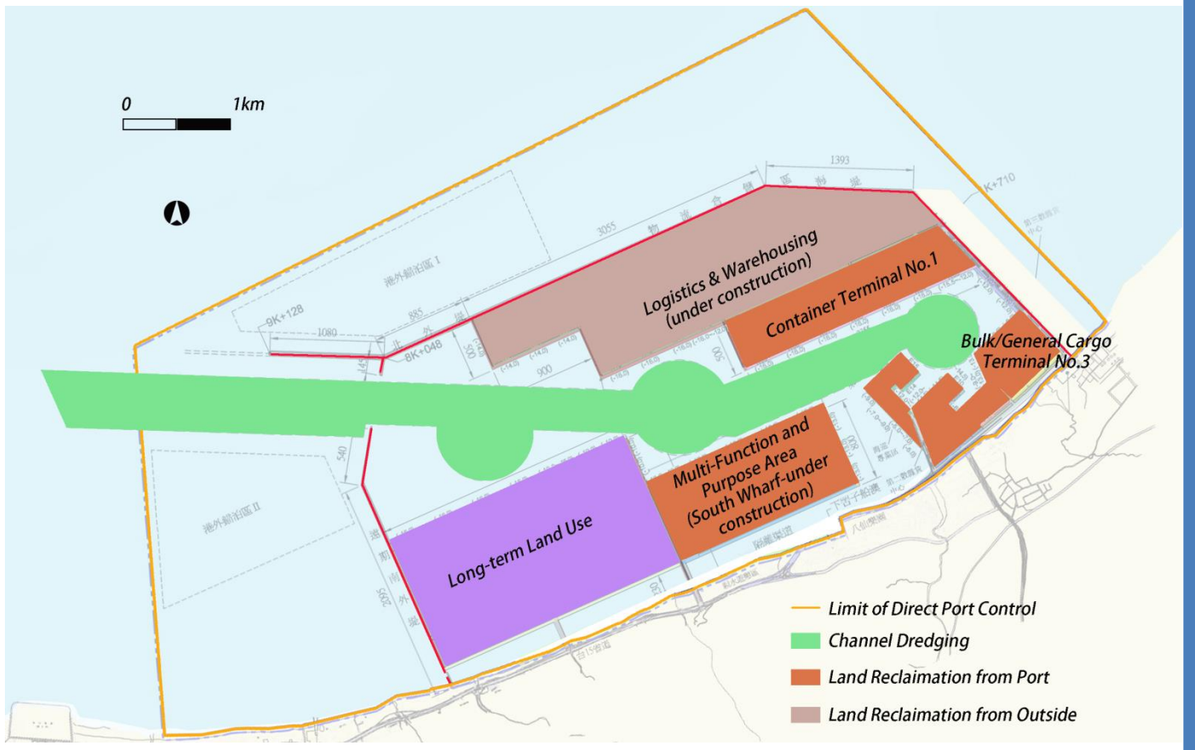
>>Taipei Port list of recent land reclamation projects

| Site | Content | Status |
|---|---|---|
| East Wharf | Bulk/General Cargo Terminal No.1<br>Bulk/General Cargo Terminal No.2<br>Bulk/General Cargo Terminal No.3 | About 159 hectares have been filled using soil dredged from waterway |
| North Wharf | Container Terminal No.1 | |
| | Logistics & Warehousing Phase I | Complete in 2016 (about 48.3 hectares of land) |
| | Logistics & Warehousing Phase II | Commenced in 2012 (total of 123.2 hectares of land). About 10 hectares have been reclaimed in 2017 |
| | Logistics & Warehousing Phase III | Not yet commenced (total of 124.4 hectares of land) |
| | Logistics & Warehousing Phase IV | Not yet commenced (total of 42.1 hectares of land) |
| South Wharf | South Outer Bank<br>Rear Wharf | Under construction (total of 146 hectares of land) About 44 hectares have been reclaimed in 2017 |


Land Reclamation Operation


Artificial Port-Port of Taipei

>>Port Channel Dredging and Land Reclamation



# 04/

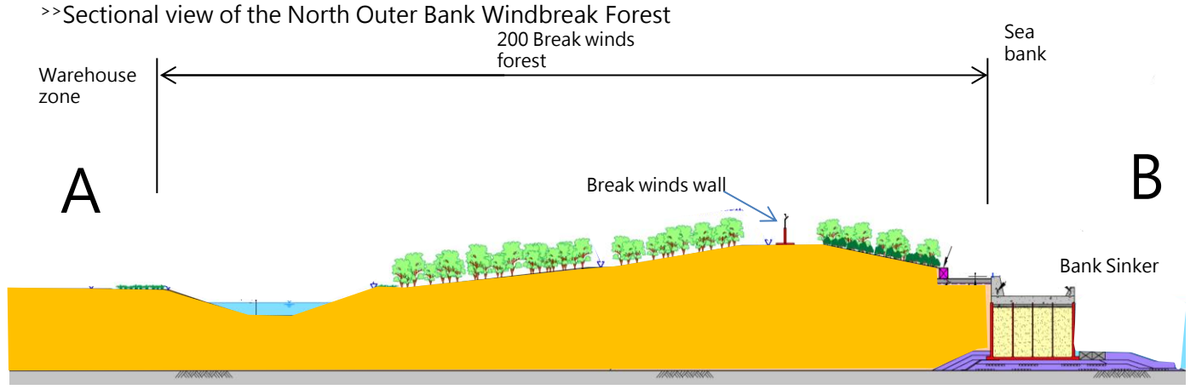
State of the Environment

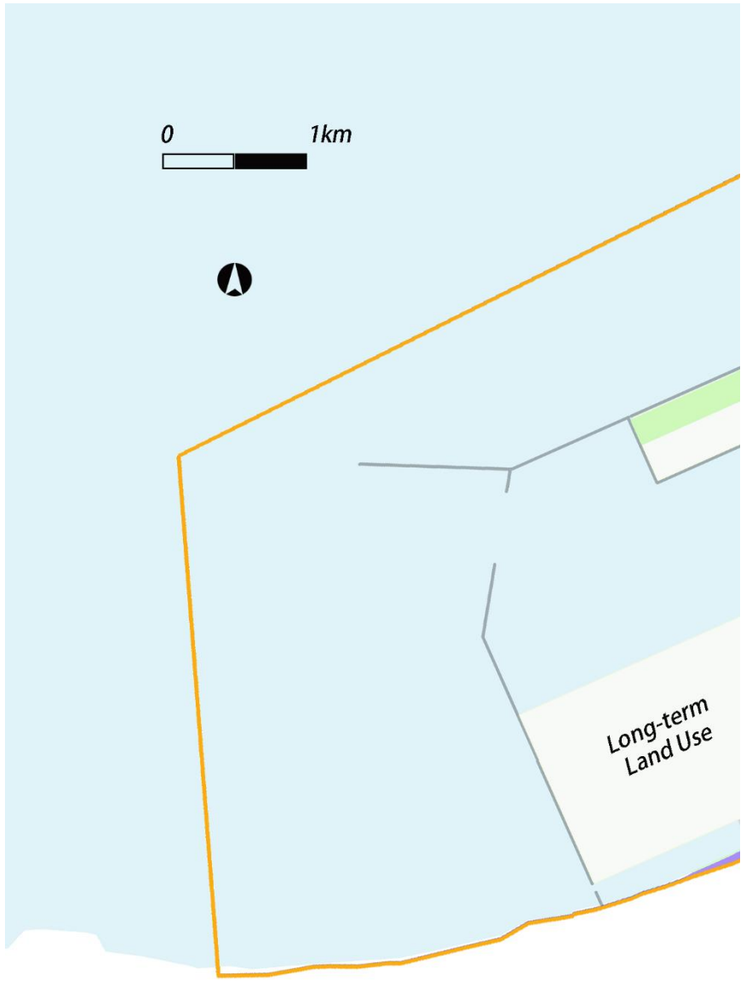

## Land Use Optimization

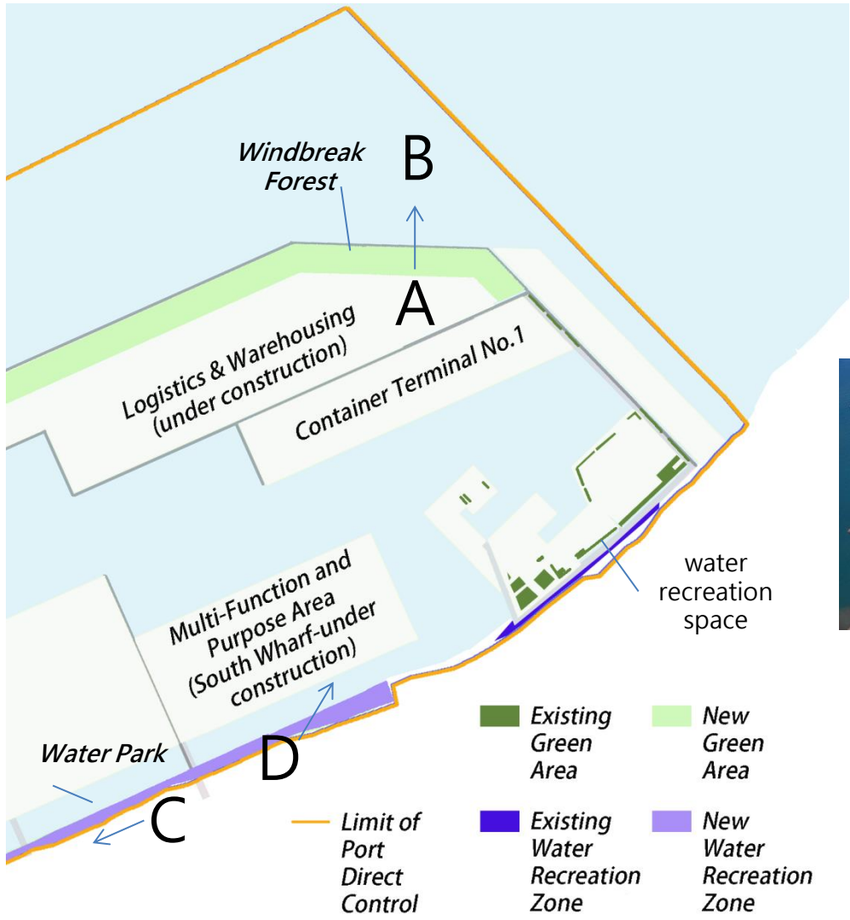
To make improvements according to the Executive Yuan' s recommendations on Taipei Port' s overall development and to follow the National Development Plan, the Branch Office shall set its long-term goals as multidirectional and as conducive as possible to create an environmentally friendly port that provides high service quality, regional prosperity, and most importantly, good quality of life for the local community.

Therefore, in addition to expanding port size and enhancing operational effectiveness, the port has focused on developing plantation and green areas, as well as water recreation zones.

>>Sectional view of the North Outer Bank Windbreak Forest





>>Taipei Port Water Park and Green


## Environmental Performance Indicators

| Significant Environmental Issues | Index Item | Calculation Method | | Index Target | Description of Calculation | |
|---|---|---|---|---|---|---|
| | | | | | 2016 | 2017 |
| Air quality | The ratio of using low-sulfur fuel or biodiesel and the consumption of low-sulfur fuel among harbor crafts | • Number of harbor crafts using low-sulfur fuel (marine diesel oil or super diesel) ÷ Total number of harbor crafts × 100%<br>• Consumption of low-sulfur fuel among harbor crafts | | The ratio of using low-sulfur fuel or biodiesel reaches 100% among harbor crafts | • 1÷1×100%=100%<br>• Number of harbor crafts:1<br>• Number of harbor crafts using low-sulfur fuel<br>• Amount of low-sulfur fuel used by harbor crafts:950 liter | • 1÷1×100%=100%<br>• Number of harbor crafts:1<br>• Number of harbor crafts using low-sulfur fuel<br>• Amount of low-sulfur fuel used by harbor crafts: 0 liter (Annual maintenance) |
| | The ratio of harbor crafts using shore power | • Number of harbor crafts using shore power ÷ Total number of harbor crafts × 100% | | The ratio of using shore power reaches 100% among harbor crafts | 1÷1×100%=100%<br>All the harbor craft use shore power during berthing operations | 1÷1×100%=100%<br>All the harbor craft use shore power during berthing operations |
| | 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 | | The ratio of deceleration among all the incoming and outgoing ships reaches 40% in 2016 and 50% in 2017. | In 2016, the total ship entry and exit count was 5,382, and a 40% rate of accomplishment was achieved in vessel deceleration. | In 2017, the total ship entry and exit count was 5,566, and a 43% rate of accomplishment was achieved in vessel deceleration. |
| | Air pollution inspection, number of cases sent to authority | • Number of land area inspections<br>• Number of cases sent to authority<br>• Warning ticket | | • A total of 400 inspections are conducted annually<br>• Annual decreases in the number of cases sent to authority<br>• Annual decreases in the number of warnings | • Number of inspections: 633<br>• Number of cases sent to authority : 0<br>• Number of warnings:10 | • Number of inspections:686<br>• Number of cases sent to authority : 0<br>• Number of warnings:12 |
| | Air quality pass rate ($PM_{2.5}$,$PM_{10}$, $SO_2$, $NO_2$) | • The ratio of the measurements in the air quality monitoring station of the port that meet the "Air Quality Standards" | | • $PM_{2.5}$ of the daily mean measurem- ents satisfy the standard (<35μg / $m^3$):80%<br>• $PM_{10}$ of the daily mean measurem ents satisfy the standard (<125μg / $m^3$): 100%<br>• $SO_2$ of the daily mean measurem ents satisfy the standard (<0.1 ppm):100%<br>• $NO_2$ of the hourly mean measurements satisfy the standard(<0.25ppm):100% | • $PM_{2.5}$ of the daily mean measurements satisfy the standard:100%<br>• $PM_{10}$ of the daily mean measurements satisfy the standard:100%<br>• $SO_2$ of the daily mean measurements satisfy the standard: 100%<br>• $NO_2$ of the hourly mean measurements satisfy the standard:100% | • $PM_{2.5}$ of the daily mean measurements satisfy the standard:100%<br>• $PM_{10}$ of the daily mean measurements satisfy the standard:100%<br>• $SO_2$ of the daily mean measurements satisfy the standard: 100%<br>• $NO_2$ of the hourly mean measurements satisfy the standard:100% |


## Environmental Performance Indicators

| Significant Environmental Issues | Index Item | Calculation Method | | Index Target | Description of Calculation | |
|---|---|---|---|---|---|---|
| | | | | | 2016 | 2017 |
| Dust | Number of pollution prevention device for cargo handling, indoor cargo handling, dust collecting system | • Number of dust prevention devices implemented annually | | Increase/update or maintain the number of dust prevention devices | • Number of pollution prevention device for cargo handling:6<br>• Number of indoor cargo handling:1<br>• Number of dust collecting system:0 | • Number of pollution prevention device for cargo handling:6<br>• Number of indoor cargo handling:1<br>• Number of dust collecting system:0 |
| | Ratio of port bulk cargo handled indoor(sand/stone+coal+other bulk cargo) | • Amount of bulk cargo handled indoor÷total bulk cargo×100% | | Increase/update or maintain the amount of bulk cargo handled indoor | Amount of bulk cargo handled indoor÷ (sand/stone+coal+other bulk cargo)= (3,140,547÷(1,620,088+793,434+3,140,547)×100%=56.5% | Amount of bulk cargo handled indoor÷ (sand/stone+coal+other bulk cargo)= (2,526,686÷(1,342,674+1,200,873+2,526,686)×100%=49.8% |
| Vehicle exhaust gas emissions (including cargo handling) | Number and ratio of gates installed with automatic sensories | The ratio of incoming and outgoing roadways installed with an automatic gate sentry post control system | | • Ratio of gates with automatic sensory: 50% | • 4 gates, 17 lanes<br>• 11 automatic sensories<br>• 11÷17=64.7% | • 4 gates, 17 lanes<br>• 11 automatic sensories<br>• 11÷17=64.7% |
| Hazardous Cargo Handling/ Storage | Number of drills and exercises | Number of drills and exercises | | 5 drills a year | 5 drills | 5 drills |
| | Number of joint inspections | Number of joint inspections | | One joint inspection a year | One joint inspection | One joint inspection |
| | Number of inspections and cases sent to authority | • Number of inspections<br>• Number of cases sent to authority | | • A total of 400 inspections are conducted annually<br>• Annual decreases in the number of cases sent to authority | • A total of 633 inspections are conducted annually<br>• Number of cases sent to authority : 0 | • A total of 686 inspections are conducted annually<br>• Number of cases sent to authority : 0 |
| Garbage/port waste | Port recycling rate | Recycling rate of general waste on the land in the port area = (weight of recycled materials ÷ total wastes weight × 100%) | | Annual recycling rate is 40% | Amount of recycled waste: 110.3 tons<br>Waste generation: 216.8 tons<br>Recycling rate: 110.3÷216.8 =51% | Amount of recycled waste:117.4 tons<br>Waste generation: 221.3 tons<br>Recycling rate:117.4÷221.3 =53% |
| | Performance of commissioned qualified operators on cleaning oily bilge water | Number of cleanups conducted by relevant vessels÷ number of vessels that collected oily bilge water × 100% | | 100% oily bilge water cleanup | • 274÷274×100%=100%<br>• Cleanups conducted by relevant vessels (oily bilge water): 274<br>• Total oily bilge water collected: 3130.3 tons | • 260÷260×100%=100%<br>• Cleanups conducted by relevant vessels (oily bilge water): 260<br>• Total oily bilge water collected: 3193.3 tons |


## Environmental Performance Indicators

| Significant Environmental Issues | Index Item | Calculation Method | Index Target | Description of Calculation | |
|---|---|---|---|---|---|
| | | | | 2016 | 2017 |
| Port development (land area) | Maintain or increase port green area | • Calculate annual port green area | • Maintain or increase port green area | • Total port green area in 2016:7.7 acre | • Total port green area in 2017: 28.29 acre |
| | Area of reclaimed land for logistics and storage | • Area of reclaimed land | • Maintain or expand the area of reclaimed land in the port area. | The area for additional land reclamation established in 2016 measures approximately 48.3 ha (phase I) | The area for additional land reclamation established in 2017 measures approximately 58.3 ha (phase I and phase II) |
| Dredging; dredge disposal | • Amount of sediment dredged<br>• Amount of sediment disposed<br>• Amount of sediment reclaimed | Reclaim rate: amount recalimed ÷ amount dredged×100% | • Annual reclaim rate:100% | • Amount of sediment dredged:1,327,318 $m^3$<br>• Amount of sediment disposed:0 $m^3$<br>• Amount of sediment reclaimed:1,327,318$m^3$<br>• Reclaim rate:100% | • Amount of sediment dredged:1,010,897 $m^3$<br>• Amount of sediment disposed:0 $m^3$<br>• Amount of sediment reclaimed:1,010,897 $m^3$<br>• Reclaim rate:100% |
| Port Development (water area) | Marine water quality pass rate(pH, DO, $BOD_5$, mineral oils, cyanide, phenols) | The ratio of port water quality measurements (obtained at the water quality monitoring station in the port) satisfying the Marine Environment Classification and Quality Criteria | Marine water quality: 100% of the quarterly pH, DO, $BOD_5$, mineral oils, cyanide, and phenols measurements satisfy the criteria. | Class B marine water quality standard:<br>pH100% DO99%<br>$BOD_5$100% mineral oils 100%<br>Cyanide 100% Phenols 100% | Class B marine water quality standard:<br>pH100% DO80%<br>$BOD_5$100% mineral oils 100%<br>Cyanide 100% Phenols 100% |
| | Maintain port recreational spaces and facilities | • Area of port recreational related space | • Maintain area of port recreational related space | Total area of recreational space in 2016 : 4.3 acre | Total area of recreational space in 2017 : 4.3 acre |
| | | | | A 10.5-acre water park is under construction | |
| Noise | Daily ratio of noise levels (measured at the noise monitoring station in the port) that satisfy related regulations | • Road Category D Noise Control Criteria:<br>• Detailed regulations: 76 dB during the day (7 am–7 pm); 75 dB during the evening (7–11 pm); 72 dB during the night (11 pm to 7 am of the following day) | • Daytime equivalent energy sound levels: quarterly achievement rate of 100%<br>• Evening Leq: quarterly achievement rate of 100%<br>• Nighttime Leq: quarterly achievement rate of 100% | • Daytime Leq 100%<br>• Evening Leq 100%<br>• Nighttime Leq 100% | • Daytime Leq 85%<br>• Evening Leq 90%<br>• Nighttime Leq 85% |
| Energy consumption | Implementation results of the "4-Saving" project | • Difference of water, fuel, electricity, and paper consumption (the year before and the year after) | • Save 2% of water usage, 1% of fuel usage, 1% of electricity usage, and 3% of paper usage | Water Use : +1.2%<br>Fuel Use : +5.7%<br>Electricity Use : -4.5%<br>Paper Use :+5.7% | Water Use : +7.7%<br>Fuel Use : -1.6%<br>Electricity Use : -5.0%<br>Paper Use : +5.8% |

Emergency Response

# 05/


# 05/ Emergency Response

## Port Emergency Notification and Drill

In order to maintain port safety, the Taipei Port Branch Office conducts daily land and marine environment inspection. When any suspicious behavior was identified, the inspection personnel will immediately notify for correction or inform competent legal authorities for legal enforcement. In 2016 and 2017, major port accidents were construction site leakage and vessel collision (no spillage).

For port pollution and disaster, Taipei Port Branch Office, New Taipei City Environmental Protection Department, and the Taipei Port Branch Office of the Northern Mari-time Affairs Center of Maritime and Port Bureau of MOTC each accepts Public Nuisance Petitions.

Regarding catastrophic events such as vessel or fire explosions, the Port triggers emergency response procedure to cope with disastrous incidence.

>>Taipei Port 2016-2017 Accidental Incidents

| Accident type/Year | 2016 | 2017 |
|---|---|---|
| Vessel collision, shipwreck, fire, oil and other chemical spillage | 1 | 1 |
| Ship machinery breakdown, tilt, strand | 0 | 1 |
| Major warehouse, storage tank explosion | 0 | 0 |
| Port minor pollution, fire, chemical spillage | 0 | 0 |
| Man overboard, occupational accident, sea drifter, others | 1 | 4 |


Emergency Response Drill

## Port environment Inspection

To ensure port safety, the Branch Office imposed regulations on bulk stevedoring, increased the management of stevedoring, prevented overloading or leaking, and improved emergency response plans and communication mechanisms.

>>2016-2017 Taipei Port Inspection Statistics

| Year | 2016 | 2017 |
|---|---|---|
| Port Environmental Inspection | 633 | 686 |
| Penalty from Legal Authority (MPB) | 0 | 0 |
| Pollution Prevention Spot Check | 0 | 0 |

>> 2016-2017 Taipei Port Drill Records

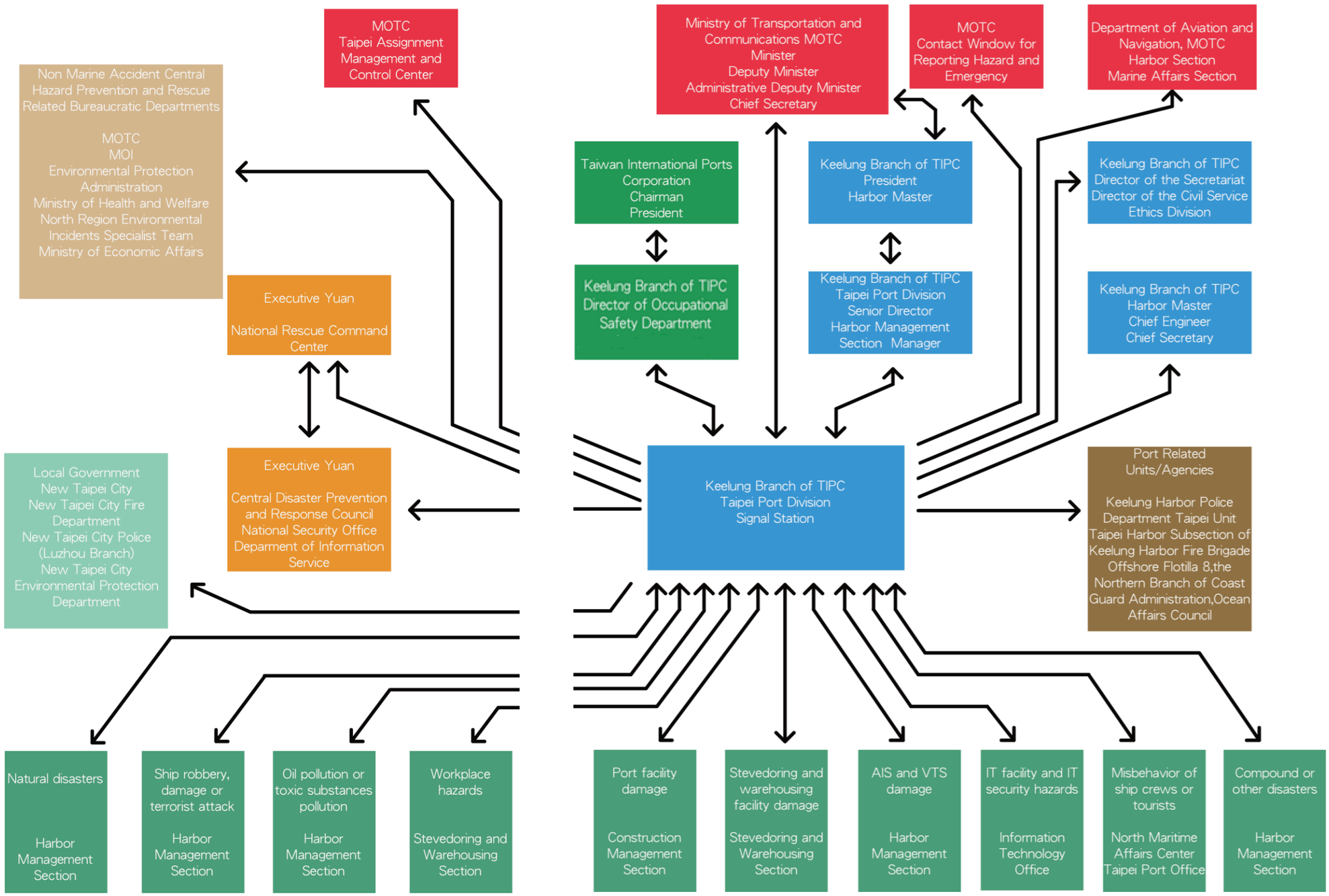
| Year | Name of the Drill | Content | Dates |
|---|---|---|---|
| 2016 | 2016 national port disaster prevention and rescue and new Taipei city Marine oil pollution emergency response drill | Conduct drills on reporting, handling, investigation, recovery and compensation of hijackings and damage, man overboard and oil pollution accidents | June 17 |
| | Facility Security Drill | Security drill for port personnel | Mar 30<br>June 20<br>Sept 29<br>Dec 06 |
| 2017 | Taipei Port 2017 anti-terrorism and hazardous cargo disaster drill | There are two purposes for this drill:<br>1. perform on-site disaster control, suppression and rescue.<br>2. Practice horizontal communication across different disaster rescue and relief units. | Dec 27 |
| | Facility Security Drill | Security drill for port personnel | Mar 14<br>June 06<br>Sept 26<br>Dec 19 |

Taipei Port anti-terrorism drill


Disaster prevention drill


# 05/ Emergency Response

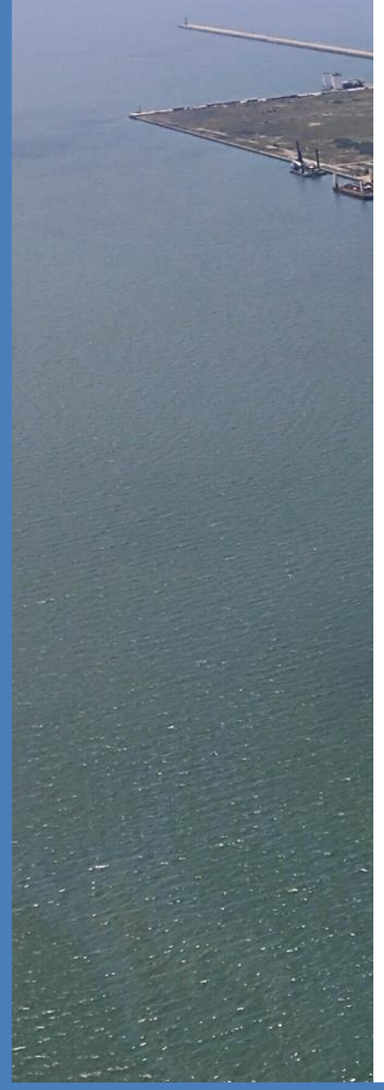
## Port of Taipei Emergency Response



# Involvement and Collaboration

# 06/

Port of Taipei has established best practices for issues concerning the port environment, which include (1) The automated operation system for Taipei Port Container Terminal ; (2) The Reclamation Project for Taipei Port. In addition, the proposed example of best practices can be incorporated into the database of the ECO Sustainable Logistic Chain as a reference for other EcoPorts.



## Innovation

# The automated operation system for Taipei Port Container Terminal

## Concern/Motivation

Large-scale container ships have continued to develop. Because of the rise of global logistics, facilities for port terminals have developed into composite transportation models in large-scale port-terminal container yards for deep water ports. Taipei Port Container Terminal Corp. has started to improve related machinery and facilities to avoid air pollution due to large business volume.

## Solution

Regarding professional lashing and unlashing services for special cargo, the bridge crane in the harbor can handle 70 tons of special cargo, thereby saving shipping costs for cargo owners and enhancing shipping companies' competitiveness. At Check Point no. 1, an automatic container-number detection system was set up to improve the harbor police's efficiency in security checks.
In addition, the container terminal was the first worldwide that used ZigBee two-way wireless sensing technology as well as electronic-paper orders and automated operations to achieve environmental protection and energy conservation.

## Effects/Benefits

To relieve inland traffic congestion and container-truck flow on highways and to share the loading and unloading volumes of containers for imports and exports in northern Taiwan in excess of Keelung Harbor's capacity, after the operation started, electrification equipment was adopted to reduce gasoline and diesel consumption and to save costs for preventing and handling air pollution caused by container trucks.

## Environmental Issues

Air quality, noise, and dust

## Stakeholders

Transportation industries, port stevedoring industries, port tenants, New Taipei City Environmental Protection Department, EPA, local residence.

## Implementation/Timeline

| | |
|---|---|
| 2002 | planning phase |
| 2006 | construction phase |
| 2008 | first wharf was completed and a trial operation commenced |

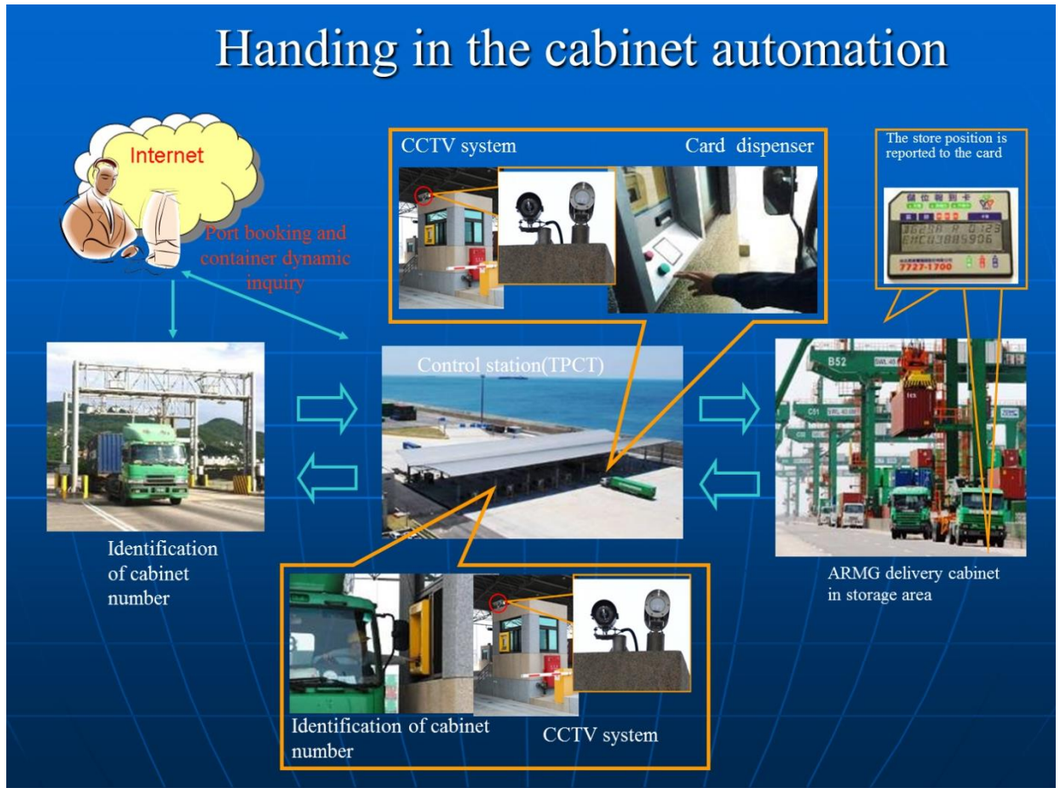


## Investment

| | |
|---|---|
| 2002-2013 | € 508,669,684.75 (Project expenditure) |
| 2008-2017 | € 478635661.87 (Maintenance costs) |

## Participants

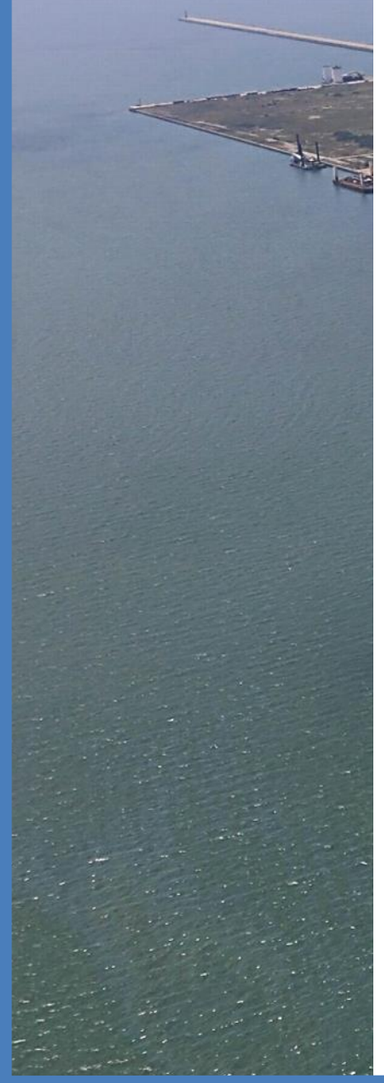
Taipei Port Branch Office, Taipei Port Container Terminal Corporation.




Environmental Management Strategies：Exemplifying、Enabling

Port of Taipei
Contact Person: Mr. Shang -Ru Chou
Taipei Port Branch Office Harbor Mangement Section Manager
Phone：02-2619-6005
E-mail：srchou@twport.com.tw

Taipei Port Container Terminal Corporation.
Contact Person: Mr. Jiun- Fu Lin
Job title：Deputy section chief
Phone：02-77271652
E-mail：chunfu_lin@tpct.com.tw
Website ：https://www.tpct.com.tw/



# The Reclamation Project for Taipei Port

## Concern/Motivation

According to the "Land Reclamation Project for the Logistics and Storage Area in Taipei Port-Phase 1 Land Reclamation and Phase 2 Dike Construction" approved by the Executive Yuan, earthwork exchange for land reclamation was performed for the construction of the logistics and storage area to stimulate the development of Taipei Port.

## Solution

By applying land reclamation technology in Taipei Port and by dredging sludge and using the leftover earthworks of public construction projects in the Greater Taipei Area, new land was formed around Taipei Port. For the logistics and storage area in Taipei Port, 10.83 million m3 of earthworks from public construction was used in Phase 1 land reclamation to form a new land area of approximately 48.3 ha, solving the problem of how to handle the leftover earthworks from public construction and increasing usable land area. Accordingly, Taipei Port has sufficient space for development.

## Effects/Benefits

- Solving the problem of how to handle the leftover earthworks of public construction in the Greater Taipei Area and saving considerable costs for land reclamation.
- Serving as a space for storing dredged mud in Taipei Port for the long term.
- Mitigating the influences of monsoons and salt damage on harbor operations and relevant facilities.
- Increasing national land assets and green areas.

## Environmental Issues

Air quality, noise, dust, water quality and port development (water area)

## Participants

TIPC,Construction Mangement Divison of the Keelung Branch Office of TIPC , Taipei Port Branch Office

## Implementation/Timeline

Octorber,2011-March,2016

## Stakeholders

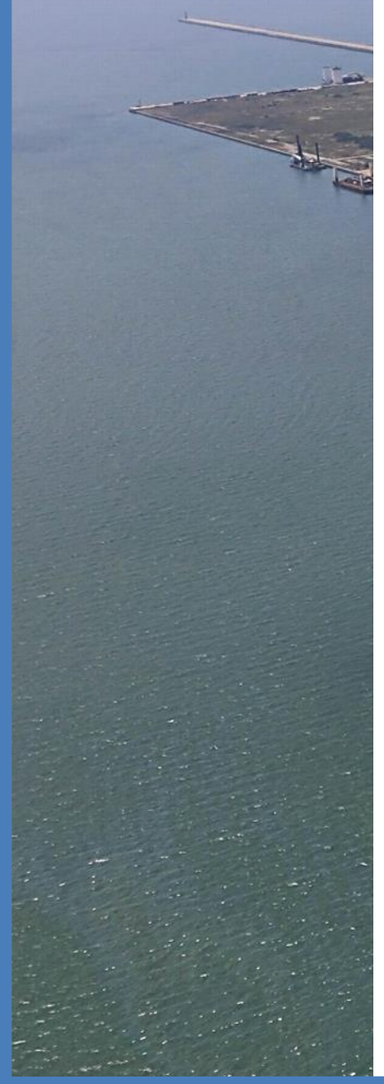
Transportation industries, port stevedoring industries, port tenants, New Taipei City Environmental Protection Department, Environmental Protection Administration , The Construction and Planning Agency, local residence

## Investment

Dike construction: approximately €4776083
Land reclamation: approximately €6539838
Land reform: approximately €3682957


Environmental Management Strategies：Exemplifying , Enabling, Enforcing

Port of Taipei
Contact Person: Mr. Chungkai Chen
Construction Mangement Divison of the Keelung Branch Office of TIPC
Phone：02-26196211
E-mail：chungkai@twport.com.tw
Website：https://kl.twport.com.tw/tp/



# Involvement and Collaboration

The Taipei Port Branch Office actively collaborates with both domestic and international organizations, including governmental agencies, academics, and industries. Besides sustainable development related exchanges, there are also joint collaboration on technological research, investment, inspection, and academic seminar etc.

## Participation organizations

### Association

**Association of Pacific Ports( APP)**

The APP aims to gather port authorities along the Pacific coast to discuss Pacific marine transportation development, seeking solutions for problems.

**The International Association of Ports and Harbors(IAPH)**

The IAPH is a NGO with tremendous influence on global port authorities, IAPH also provide the advisory to the main bodies of UN (eg. ECOSOC, IMO , UNCTAD , UNEP , ILO, WCO). The IAPH holds biennial conferences alternately in America, Asian Pacific, and European and African regions.

### Ports

**Pingtan Comprehensive Pilot Zone Administration Committee in Fujian**

After two years of negotiation, a direct ship line was established between Taipei Port and Fujian Province' s Pingtan Island on October 9, 2013, leading to a mutual partnership.

**Xiamen Port Holding Group Co.**

To cultivate human resources, exchange visits and academic exchange activities are irregularly organized for employees between Xiamen and Taipei Port, allowing them to share successful working experiences and advanced port management concepts, thus enhancing both sides' container, transshipment, and logistics services.



### Government

**North Maritime Affairs Center, Maritime and Port Bureau, MOTC**

Taipei Port Division of North Maritime Affairs Center, Maritime and Port Bureau, MOTC is in charge of Port safety, disaster rescue, pollution prevention services , responsible of decree execution, evidence collection, conducts joint spot check and pollution prevention drills.

**Institute of Transportation, 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 net-work for industrial, governmental, and academic transportation organizations.

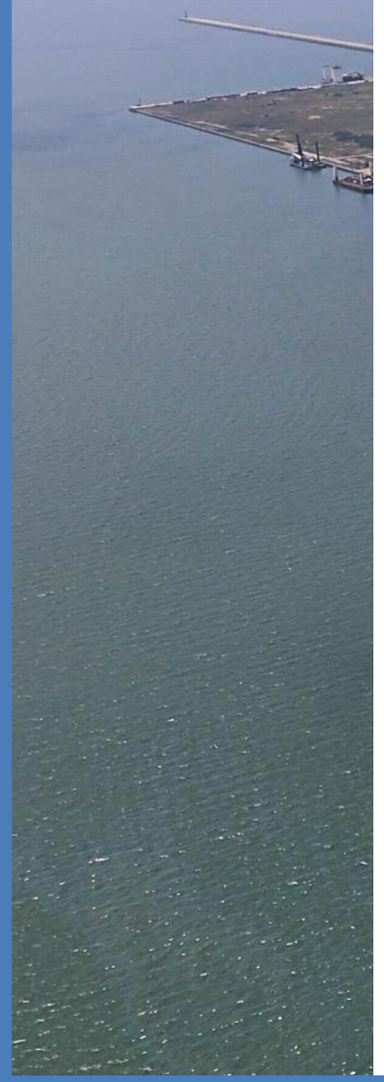
**New Taipei City Environmental Protection Department**

Taipei Port works closely with the New Taipei City Environmental Protection Department. Conducts joint spot check and pollution prevention drills.

**Bali District Hall**

Port of Taipei and the Bali District shares the responsibility to maintain port surrounding environment.

# 06/ Involvement and Collaboration



## Industries

**Chia Hsin Int' l Corp.**

In 2006, Chia Hsin rented Wharves No. 13–15 of the east bank and rented Wharf No. 16 of the east bank to build and operate facilities. In 2009, Chia Hsin built an enclosed warehouse at Bulk and General Cargo Terminal No. 1. Thus, Chia Hsin is an excellent example of an environmental manager for Taipei Port.

**Tonglit Logistics Corp.**

In October 2005, Tonglit Logistics Co., Ltd. was officially approved as a free trade enterprise in Taipei .Tonglit' s main business is in automobile and automobile parts trading ,featuring the integration of shipping and packaging services.

**Goldsun Building Materials Co., Ltd.**

In 2009, the Goldsun Building Materials Co.,Ltd. obtained the 50-year management right of the second bulk general cargo storage and transportation center in Taipei Port. The total investment in development and construction is 4.5 billion yuan. The operation of the enterprise includes cargo handling , warehousing and shipping.

**Taipei Port Container Terminal Corp.**

Taipei Port Container Terminal Corp. (TPTC) is the first privately funded container terminal build–operate–transfer project in Taipei Port. Established on March 9, 2009, TPTC features highly efficient stevedoring services and automated entry procedures through its highly advanced wharves, and has aimed to increase port operation effectiveness and achieve energy conservation and carbon reduction.



**Formosa Petrochemical Corporation**

**Chun Pin Enterprise Co.,Ltd.**

**BOM AMI ENTERPRISE Co.,Ltd.**

There are 47 chemical tanks in the Taipei Port , which are managed by Formosa Petrochemical Corporation , CPE and BOA. These facilities mainly stores gasoline , diesel, any organic chemicals such as toluene, vinyl chloride and p-xylene. To avoid large scale chemical accidents , Port of Taipei mostly stores non-explosive chemicals. Furthermore , the pipelines are mostly buried underground along the Binhai provincial highway ,which are sparsely populated areas.

## Academic Institution

**National Taiwan Ocean Univ.**

**National Sun Yet-Sen Univ.**

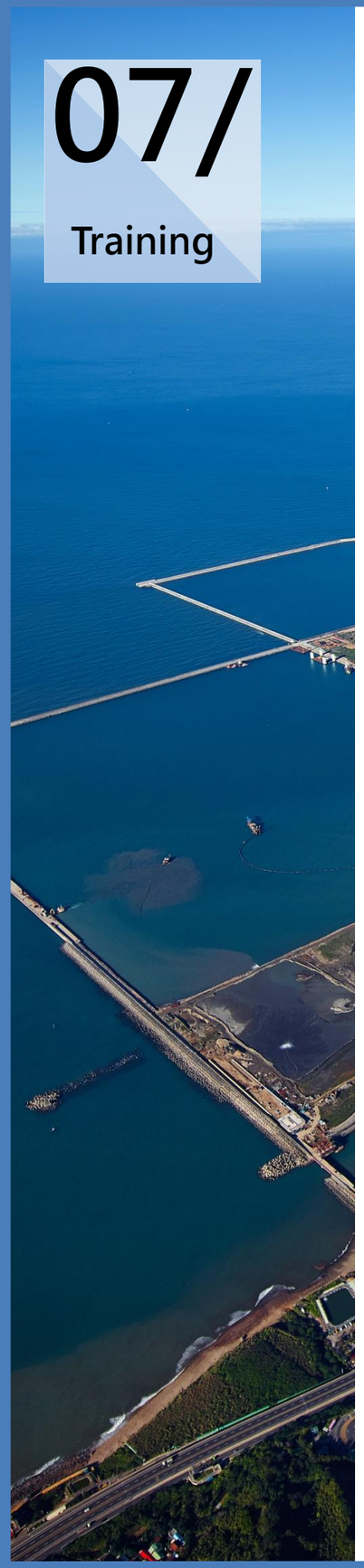
**National Cheng Kung Univ.**

In order to enhance international competitiveness and transportation quality, create a sound educational and academic research environment, and allow the port and educational institutions to prosper together, Taiwan International Ports Corporation signed a memorandum of cooperation with three public universities in 2012. In the future, the parties to the memorandum will be involved in academic exchanges, research and development, cooperative undertakings between companies and educational institutions, education and training, student internships, and port operation seminars. In addition to enhancing training quality, the educational institutions involved can also provide intelligence to port affairs companies, and thus play an active role in assisting practical port management and operations, which will achieve a win-win outcome.

Training

# 07/

# 07/ Training



## Employee Education

In compliance with its environmental policies, the Taipei Port Branch Office provides suitable environmental education and training programs to raise environmental awareness, and improve the competitiveness of the Port of Taipei.

In 2016 and 2017, the Taipei Port Branch Office organized in total 12 environmental education and occupational safety courses for its staff members. Course topics cover pollution prevention, natural disaster, contagious disease control, environmental impact assessment, etc.

>>Port of Taipei 2016-2017 Occupational Safety and Health Training

| Year | Content | Dates |
|---|---|---|
| 2016 | Lecture on the "Occupational Safety and Health Act" and "Improving Port Occupational Health and Safety" | Nov 01<br>Nov 08<br>Nov 14 |
| | Cardio Pulmonary Resuscitation & Automated External Defibrillator | June 01<br>Nov 16 |
| 2017 | Lecture on the "Occupational Safety and Health Act" and "Improving Port Occupational Health and Safety" | July 28<br>Aug 04<br>Aug 11<br>Aug 25 |
| | Port Occupational Safety and Health | Sep 26<br>Oct 23 |
| | Cardio Pulmonary Resuscitation & Automated External Defibrillator | Nov 17 |

>>Port of Taipei 2016-2017 Environmental Education Training

| Year | Content | Dates |
|---|---|---|
| 2016 | Recognize waste and resource recycling | Aug 15<br>Aug 22<br>Aug 29 |
| 2017 | Recognize the ecological environment | Oct 23<br>Oct 26<br>Nov 10<br>Nov 17 |



Fire education training

Observation and learning activities in Keelung incineration


Environmental course lecture

# Communication and Publication

# 08/

# 08/

Communication & Publication

## Communication & Publication

Promotion activities, seminars, workshops, publication, web-sites, and exhibitions have been organized to align Taipei Port with contractors and potential partners.

Therefore, publishing the port' s relevant information is helpful to the public, port companies, academic institu-tions, and subsidiary units.

### Websites


Front Page of Taipei Port Website


Chinese and English web pages for TIPC Green Policy

To present the positive outcomes of creating green ports in Taiwan to international society, TIPC established a website, which features Chinese and English versions of content, to demonstrate its green policies and create an exchange and communication platform with foreign countries.

### Publication


Taipei Port Brochure


Environmental Monitoring Report of Taiwan International Commercial Ports


Environmental Policy Promotion

# 08/

Communication & Publication

## 溝通和出版物

### Forum

Specific industry development forum

### Port area visiting

Bali Junior High School visits Taipei Port

### Community Services


Chocolate flowers for women's day



### Community Services


Bali sanatorium activities


White feast

Defense intellectual journey


Meizhou mazu to Taiwan around the border around the new north activities

### Promotional Events


Taipei Port administration building 3D painting

Taipei Port photography competition - dock impression

# Green Accounting

# 09/

# 09/

## Green Accounting

## Environmental costs

In order to improve the environmental awareness among staff, environmental maintenance, environmental quality, emergency response abilities, and public under-standing of the port, Taipei Port Branch Office invested in the following categories.

The Summation of Costs invested by the Investments of the Taipei Port Branch Office in the Environmental Aspects is €1,483,000 in 2016 and 1,661,000 in 2017.

### Environmental investments at the Taipei Port

- 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 related to Environmental Issues at Taipei Port (Unit: Thousand in EUR)

| Items of Expenses | 2016 | 2017 |
|---|---|---|
| Staff | 348.76 | 385.22 |
| Environmental Maintenance & Management | 193.25 | 275.37 |
| Environmental Monitoring | 935.32 | 996.13 |
| Emergency Response | 2.41 | 2.64 |
| Communication & Publication | 3.12 | 1.96 |
| Total | 1482.89 | 1661.32 |



## Environmental Assets

To develop the Port of Taipei into a ocean-going container port, air-sea port, and distribution port for automotive and other industries, the Keelung Branch of TIPC has launched a series of port development projects (divided into continuing and new projects) and projects for general buildings and equipment.

A portion of these projects are concerned with environmental aspects. For example, land reclamation and barrier repair. The Keelung Branch of TIPC invested in fixed assets for 692,898,000 NTD (approx.€19,449,000) and 1,175,996,000 NTD (approx. €33,009,000) in 2016 and 2017, respectively.

>>Assets invested in Environmental Issues in 2016 (Unit: Thousand in EUR)

| Project | | Amount |
|---|---|---|
| Follow-up Project | Phase I land reclamation works and phase II seawall construction works—land reclamation project for the logistics and warehouse area in Taipei Port | 8529.07 |
| | Public facilities in the south wharf area—permanent revetments, ground improvement, and waste cleaning in waterfront recreational areas | 5768.08 |
| | Dredging project for navigation channels and estuary maintenance in Taipei Port | 110.14 |
| | Keelung Port tetrapod project for breakwaters | 109.33 |
| General building and equipment purchase project | | 4932.46 |
| Total | | 19449.08 |

>>Assets invested in Environmental Issues in 2017 (Unit: Thousand in EUR)

| Project | | Amount |
|---|---|---|
| Follow-up Project | Taipei Port public facility construction project | 8839.69 |
| | Temporary revetment project for area B in the south wharves of Taipei Port | 3262.14 |
| | Phase II land reclamation project—land reclamation project for the logistics and warehouse area in Taipei Port | 1969.67 |
| | Construction and improvement project for public roads of the international commercial port (Taipei Port) | 1634.55 |
| | Waste cleaning project in waterfront recreational areas of Taipei Port (phase II) | 4917.69 |
| | Review and planning of the scope of Taipei Port and anchorage area of Taipei Port | 249.82 |
| General building and equipment purchase project | | 12135.69 |
| Total | | 33009.25 |

# Improvement Recommendations

# 10/

The Port of Taipei began with two aggregate terminals built by transporting sand from eastern Taiwan to northern Taiwan, until August 2018, there have been 20 operation docks. Taipei Port is positioned as a port in the northern part of Taiwan with ocean cargo shipping, value-added logistics center and sea–air freight. In the future, it will continue to build various facilities and introduce the concept of green energy and environmental protection. Meanwhile, it will follow relevant environmental policies of the government and move towards the long-term goal of reducing carbon and air pollution. Apart from the development of various environmental friendly projects, renewable energy-related equipment is planned to meet the overall economic benefits and environmental protection of the port. It is expected to build Taipei Port into an international green port and fulfill its corporate social responsibility.