

Port of Taipei Environmental Report

▶ 2016



Port of Taipei Environmental Report

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This environmental report presents Taipei Port's achievements in environmental protection from 2014 to 2015 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.

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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 Programme 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; and
5. Strengthen the communication with local communities, and pursue sustainable development for both the ports and the cities where we are operating.

Men Feng Wu

Men-Feng Wu
Chairman of TIPC

Date: 2016/11/2

Tien Kuei Kuo

Tien-Kuei Kuo
President of TIPC

Date: 2016/11/1

Port of Keelung, Taiwan International Ports Corporation Environmental Policy

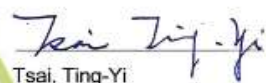
In charge of port operation and developments, Port of Keelung, Taiwan International Ports Corporation (hereinafter referred to as Port of Keelung) recognizes its obligations towards protecting the environment as its corporate social responsibility. Aiming at being an eco-friendly and sustainable port 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.


Tsai, Ting-Yi

President of Port of Keelung, TIPC

Date: Sep. 10, 2014



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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 continuous environmental monitoring systems and implementing eco-friendly fleet practices
- **Avoid Fugitive Dust**
Practice enclosure operations and vehicle management plans
- **Land Use Optimization**
Adjust port land usage and enhance the integrity of land use
- **Enhance Port Water Quality**
Install wastewater treatment and long-term water quality monitoring systems
- **Strengthen Hazardous Cargo Management**
Ensure hazardous cargo management to tighten port security
- **Reduce Port-generated Waste**
Avoid unwanted resource wastage, apply adequate waste disposal practices, and ensure waste recycling
- **Reduce Noise**
Construct connecting underground pathways to reduce noise pollution from port transportation
- **Abate Port Vehicle Emissions**
Assist the Environmental Protection Department in enhancing the eco-friendliness of port vehicles by managing port vehicle emissions
- **Use Resources Wisely**
Record and reduce the usage of water, electricity, gas, and paper; implement environmental accounting
- **Manage Port Sediment**
Implement sediment monitoring and repurpose dredged sediment for land reclamation

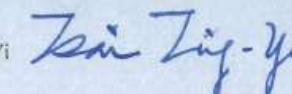
The President of the Port of Keelung is responsible for the implementation, maintenance, and effectiveness of this environmental policy. The policy is reviewed on an annual basis, and action plans are adjusted according to the condition of the Port of Keelung to ensure that promises are upheld, improvements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



Tsai, Ting-Yi

President of Port of Keelung, TIPC

Date:


Aug 29, 2016

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Message from TIPC

01/

Message from the Chairman of Taiwan International Ports Corporation ,Ltd

The Taiwan International Ports Corporation, Ltd. (TIPC) is committed to advancing port infrastructure, improving facility and service, optimizing land use and preventing pollution. In recent years, we have been networking with global ports and active in international certification schemes of port environment management. The environmental performance of ports in Taiwan is thus recognized by the world. With our global presence, we are well positioned to achieve our goal as building Ecoport and Green Port.

Sustainable development has been the foundation on which the TIPC has been built. It is our strong belief that long-term operation and success are not possible without social, economic and environmental prosperity. We are dedicated to carrying out our mission of creating the best investment environment for the port business as well as the livable life for the neighboring communities.

At the TIPC, we will continue the collaboration and communication with shipping companies, port business, neighboring communities and local governments. Together with public authorities and citizens, we will seek ways to build ideal international green ports for all.

Meng-Feng Wu

Meng-Feng Wu
Chairman

Taiwan International Ports Corporation, Ltd.

Message from the President of Taiwan International Ports Corporation ,Ltd

Changes in the global climate and the quality of the marine environment have contributed to a wide attention on pollutions created during ship operations as well as greenhouse gas emissions produced during international shipping. As one of the world's most advanced port operators, the Taiwan International Ports Corporation, Ltd. (TIPC) takes into account climate risks when designing its port facilities. Moreover, we actively establish environmental management system and enable public access to port-related environmental information.

Environmental policy is the guiding principle of environmental management in our ports. We work toward minimization of the negative impact on port environment during port operations and development. As of today, the Ports of Kaohsiung, Keelung, and Taichung have received the EcoPort certification of the European Sea Ports Organization. The Ports of Hualien and Taipei are planning to implement such certification system this year and thus joining the global network of EcoPort.

As a transportation hub in the Asia-Pacific region, Taiwan ports shoulder the responsibility of promoting international trade and shipping development. TIPC will continue to provide the shipping industry with high-quality services so that ports and the local cities coexist in harmony and work jointly to facilitate mutual developments. Such partnership will allow the ports to continue to innovate and will improve our competitiveness. Now and in the future, all of our staff members will work diligently to protect the environment and ensure sustainable port development.

Kuo, Tien-Kuei

President
Taiwan International Ports Corporation, Ltd.

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

Built in 1993, Taipei Port is an artificial port developed by land reclamation technologies, and has established itself as an ocean-going container port, sea-air intermodal port, and logistics port for automotive and other industries. Located in the important trunk routes from Europe and the United States to the Far East, Taipei Port is an eligible base for logistics and warehouse service investors to develop global logistics operation. Presently, the container line service of the port includes 6 ocean-going lines, 26 short-sea lines, 5 cross-strait lines, and 1 coastal line, resulting in 40% of the Taipei Port's transshipment volume. When the prosperity of the port has increased container cargo throughput volume, Taipei Port has devoted itself to achieving sustainable development and reached a balance between commercial development and environmental protection.

In addition to boosting port development, financial benefits, and comprehensive port planning, the port has strived to reduce its environmental impact and improve the relationship between the port and its residents. In 2015, Keelung Port was certified as an EcoPort by the European Sea Ports Organization (ESPO). To fulfill corporate social responsibilities, efforts will be made in 2016 in obtaining an EcoPort certificate for Taipei Port and in creating sustainable and eco-friendly port environments.

Ting-Yi Tsai

President
Keelung Branch of TIPC



Port Profile

02/

02/

Port Profile



Port Location and Port Area

Taipei Port is located on the southern 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 134 and 92 nm east of Fuzhou Port and Pingtan Port, respectively. It covers a coastal area where meteorological con-

ditions 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' 35.24" and Eastern Latitude 121°21' 37.79" . The total area of the port is approximately 3,102 hectares (land area: 1,038 hectares; ocean area: 2,064 hectares).

>>Port of Taipei Comprehensive Planning



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 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

>>Taipei Port Business Statistics from 2014 to 2015

Business item	2014	2015	Comparison between 2014 and 2015		
			Actual number	%	
Incoming and Outgoing Ships	Total number of ships (vessel)	8,131	8,278	147	1.81
	Total Tonnage (tonne)	149,175,088	168,007,746	18,832,658	12.62
Volume of Imports & Exports	Imports (tonne)	15,517,210	15,086,650	-430,560	-2.77
	Exports (tonne)	1,956,190	2,211,705	255,515	13.06
	Domestic(tonne)	1,523,421	1,478,384	-45,037	-2.96
	Total(tonne)	18,996,821	18,776,739	-220,082	-1.16
Incoming and Outgoing Passenger	Total number of travelers	74,258	87,274	13,016	17.53

Main Cargoes

In 2014 and 2015, the main incoming and outgoing cargo included containers, sand, gravel, and minerals, followed by chemical and oil products, and finally followed by vehicles and coal.



>>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

An aerial photograph of an industrial facility, likely a refinery or chemical plant, situated along a waterfront. The facility features a large central building with a white roof, several large storage tanks (some white with blue markings, others blue), and various pipes and structures. A large body of water is visible in the background, with a ship docked at a pier. The foreground shows a multi-lane road with several trucks and cars. The overall scene is industrial and urban.

*Environmental
Management*

03/

Organization Structure

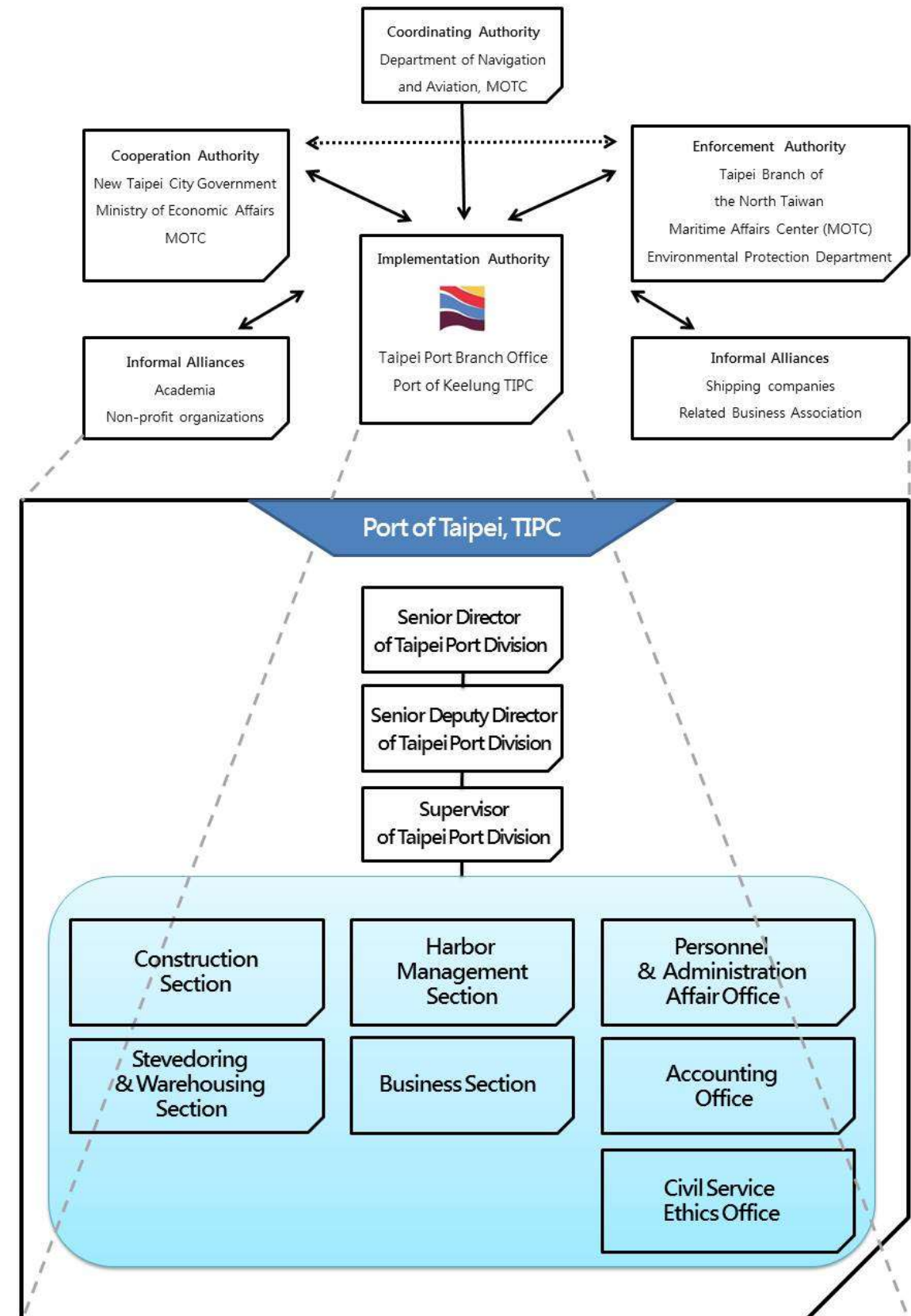
The Taipei Port Branch Office is in charge of managing the environment of the Port of Taipei. However, environmental aspects involve the division of responsibilities among different agencies. In addition to the Taipei Port Branch Office, agencies responsible for environmental aspects include the Taipei Port Division of the Northern Maritime Affairs Center of MOTC, Environmental Protection Department of New Taipei City Government, Environmental Protection Administration of Executive Yuan (EPA), Offshore Flotilla 2, Maritime Patrol Directorate General Of Coast Guard Administration,

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 consists 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.

>>Domestic port environment regulations

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		
	Act for the Establishment and Management of Free Trade Zones	2012/12/28		
Interior regulations	Fire Services Act	2011/12/21	National Fire Agency, Ministry of the Interior	Fire Bureau, New Taipei City Government Taipei Harbor Subsection, Keelung Harbor Fire Brigade
	Police Act	2002/6/12	National Police Agency, Ministry of the Interior	Keelung Harbor Police Department Taipei Unit
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	Environmental Protection Administration	Environmental Protection Department, New Taipei City Government
	Air Pollution Control Act	2012/12/19		
	Water Pollution Control Act	2015/02/04		
	Waste Disposal Act	2013/05/29		
	Environmental Impact Assessment Act	2003/01/08		
	Environmental Education Act	2010/06/05		
	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		
	Public Nuisance Dispute Mediation Act	2009/06/17		Public Nuisance Disputes Mediation Committee, New Taipei City Government
Intersectoral	Disaster Prevention and Protection Act	2016/04/13	Ministry of the Interior	New Taipei City Government

*State of the
Environment*

04/



Air Quality

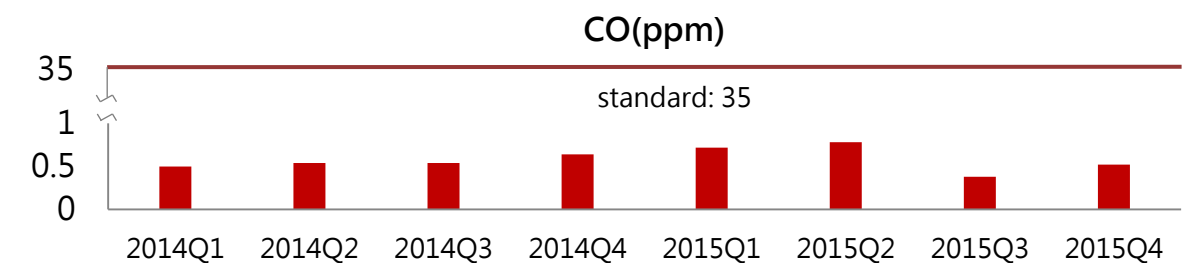
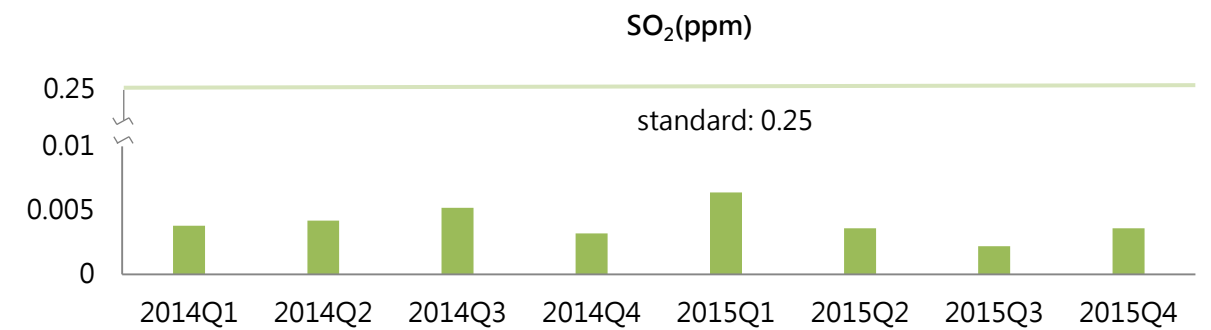
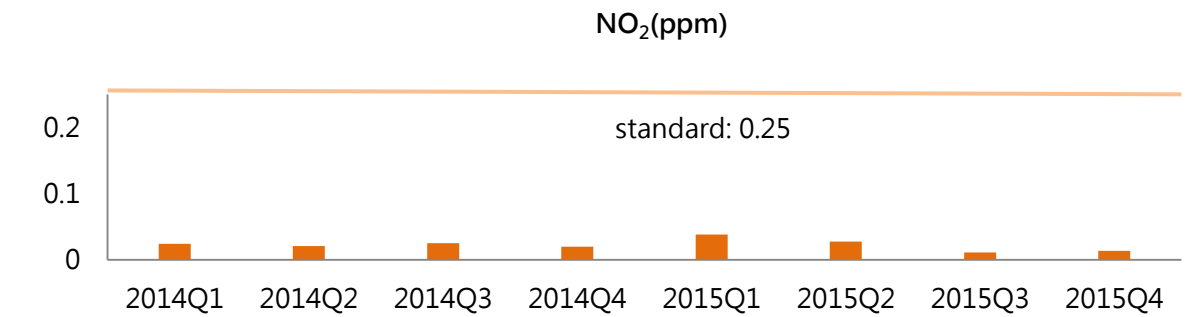
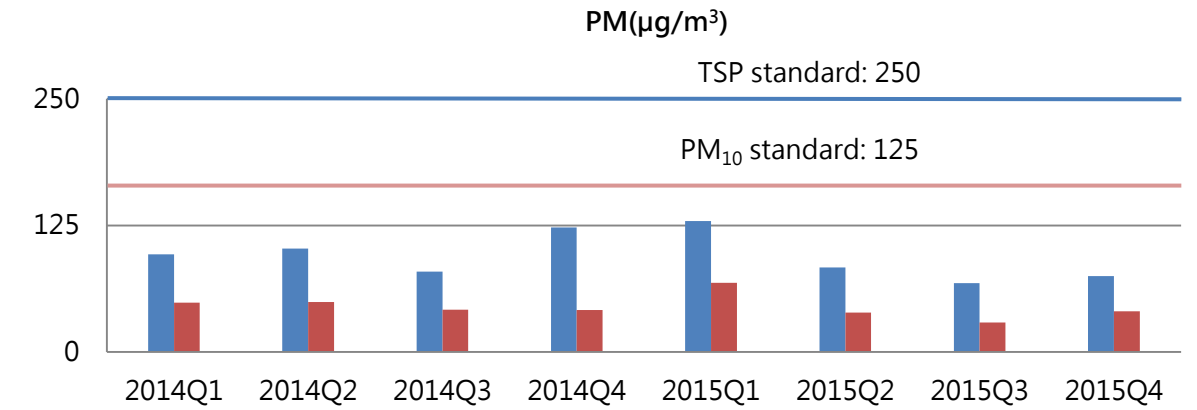
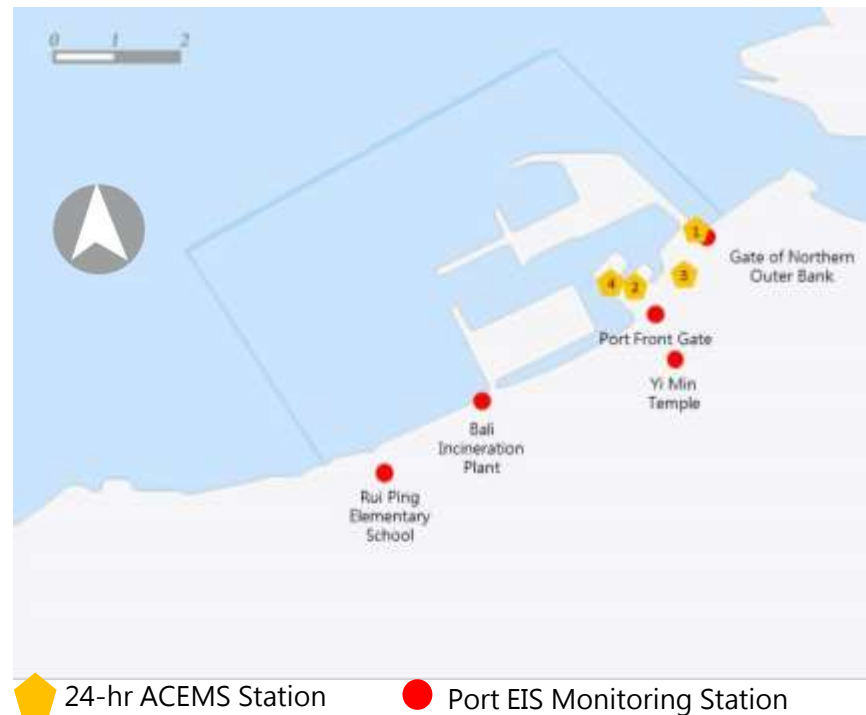
The main pollution sources of Taipei Port include particulates from stevedoring operations, ship exhaust, and dust from construction sites. On top of implementing pollution control measures, the Taipei Port installs monitoring systems to better understand the status of port air quality.

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

The monitoring items include total suspended particles (TSP), particulate matters (PM₁₀), fine suspended particles (PM_{2.5}), sulfur dioxides (SO₂), carbon monoxide (CO), ozone (O₃), nitrogen oxide (NO), nitrogen dioxide (NO₂), Tetrahydrocannabinol (THC), non-methane hydrocarbon (NMHC), wind speed, and salt etc.

The results of the air monitoring stations in 2014 and 2015 are shown on the right, and most of the monitored pollutions meet the emissions standards.

>>Air Quality Monitoring Stations and Sites





Greenhouse Gas Emissions

In order to achieve carbon reduction, sources of green house gases (GHGs) emissions must be identified first.

Taipei Port uses the Taiwan Air Pollution Emission Line Source Manual to calculate port GHG emissions from vessels, vehicles, and resources consumption.

$$\text{Ocean-going ship carbon emissions(kgCO}_{2e}\text{)} = \text{Fuel consumption (L)} \times \text{Emissions factor (KgCO}_{2e}\text{/L)} \times \text{Control factor}$$

Note:
 Fuel consumption (L) = Cargo throughput (tonne) × Energy density (L/tonne-km) × Harbor travel distance (km) × 1000 (kg/tonne)

A ship entering the harbor may switch to marine diesel oil, the properties of which are similar to those of regular diesel fuel. Therefore, the 2015 diesel fuel carbon emission factor in the EPA carbon factor database is used as a reference for the emissions factor.

>>2014-2015 Ocean-Going Ship Carbon Emissions in Taipei Port

Year	Total Cargo Throughput (tonne)	Energy Density (L/tonne-km)	Harbor Travel Distance (km)	Fuel Consumption (L)	Emissions Factor (kgCO _{2e} /L)	Carbon Emissions (tonne)
2014	18,996,821	0.003	12	683,886	2.65	1,812
2015	18,776,739	0.003	12	675,963	2.65	1,791



Harbor Craft

Carbon Emissions from Ships
 The Taiwan air pollution emission [TEDS 8.1] line source manual calculation formula was adopted to estimate carbon emissions by ocean-going vessels:

Carbon Emissions of Port Vehicles

The Taiwan air pollution emission [TEDS 8.1] line source manual calculation formula was adopted to estimate carbon emissions by inbound and outbound container trucks:

$$\text{Container truck carbon emissions(kgCO}_{2e}\text{)} = \text{Total number of vehicles per year} \times \text{Average fuel consumption(L) in the port area} \times \text{Emissions factor(kgCO}_{2e}\text{/L)} \times \text{Control factor}$$

Note:
 Total number of vehicles per year = {Total cargo throughput (TEU) – Container transshipment throughput (TEU)} ÷ 2

Automotive Research & Testing Center data were reviewed to determine the average fuel consumption rate in the port area. The monthly fuel consumption rate was 2.47 km/L. The research findings of Harbor and Marine Technology Center, MOTC, were also reviewed. The average travel distance to Taipei port is 1.71km, and the round-trip distance is 3.42km. Thus, Taipei Port's fuel consumption was estimated to be 1.38L.

>>2014-2015 Carbon Emissions of Container Truck in Taipei Port

Year	Inward / Outward Container Throughput (TEU)	Heavy Goods Vehicle Carrying Limit (TEU)	Unit	Total Number of Passes per Year	Fuel Consumption (L)	Emission Factor (kgCO _{2e} /L)	Carbon Emissions (tonne)
2014	624,113	2	No. of vehicles	312,056	1.38	2.65	1,141
2015	665,736			332,868			1,217

Carbon Emissions from Resource Consumption

>>Carbon Footprint of Resource Consumption at Taipei Port

Resource	2014		2015	
	Amount of Resource Consumed	Carbon Emissions (tonne)	Amount of Resource Consumed	Carbon Emissions (tonne)
Water	525,498 m ³	81	561,730 m ³	87
Electricity	3,463,800 kwh	1,829	3,594,000 kwh	1,898
Fuel	4,063 L	10	3,816 L	9
Paper	406 packages	1	463 packages	1
Total		1,921		1,995

Note: CO₂ emissions factors of resources
 Water: 0.155 KgCO_{2e} /CMD (2014);
 Power: 0.528 KgCO_{2e} /kwh(2015);
 Fuel: 2.36 KgCO_{2e} /litre;
 Paper: 2.8KgCO_{2e} / sheets(A4,70 pounds)

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.

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		
	Wharf #7	#8	#9~1	#9~2	#18	#19	#20
# of units	3	2	4	5	3	3	3



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 : 5 units

Note: Cargo handling pollution prevention devices include 2 spiral unloading machines and, 4 gravel belt conveyers)

>>Taipei Port Fugitive Dust Control Measures

Aspects	Dust Control Measures
Cargo Handling	<ul style="list-style-type: none"> • Enclosed warehouse • Encourage cargo handling industries to implement dust-control meshes
Vehicle Control	<ul style="list-style-type: none"> • Implemented diesel vehicle self-management program promoted by the New Taipei City Government • Inspect incoming and outgoing diesel vehicles • Install water sprinklers at sand and gravel stacking sties • 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

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



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.

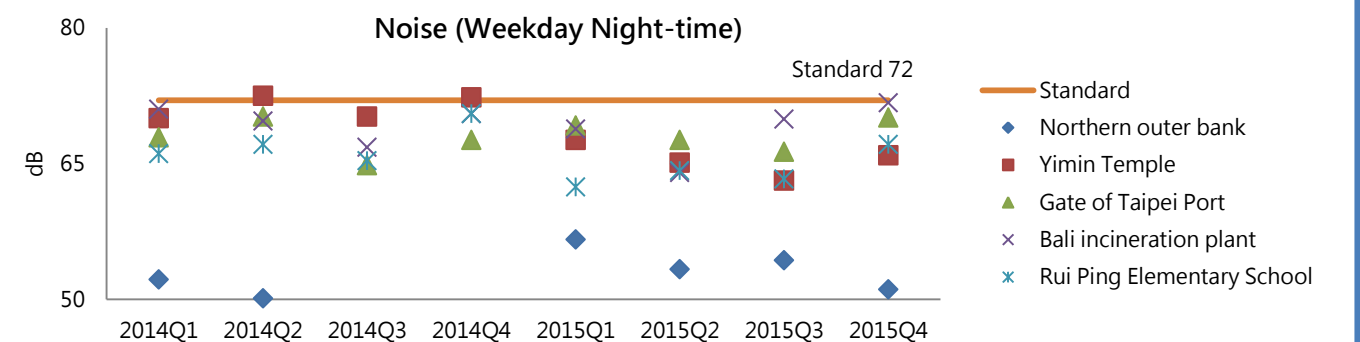
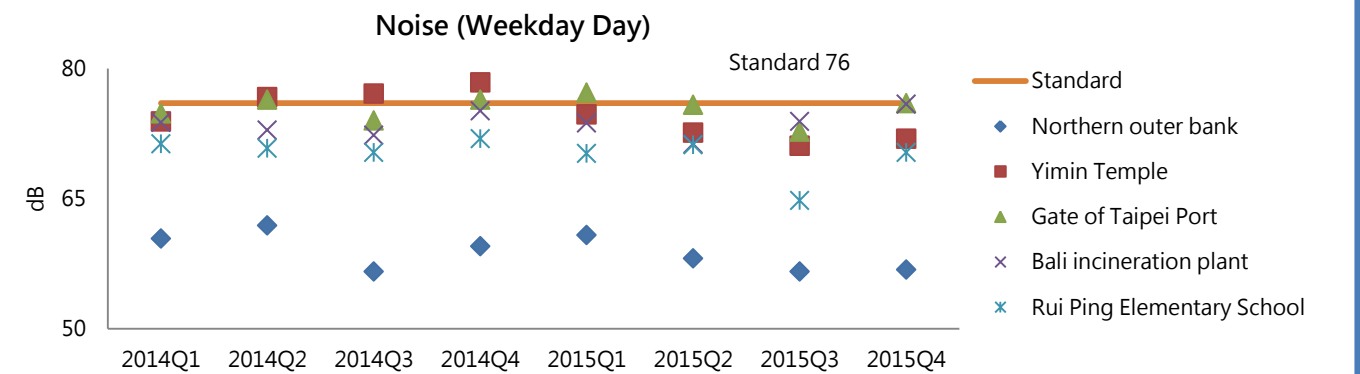
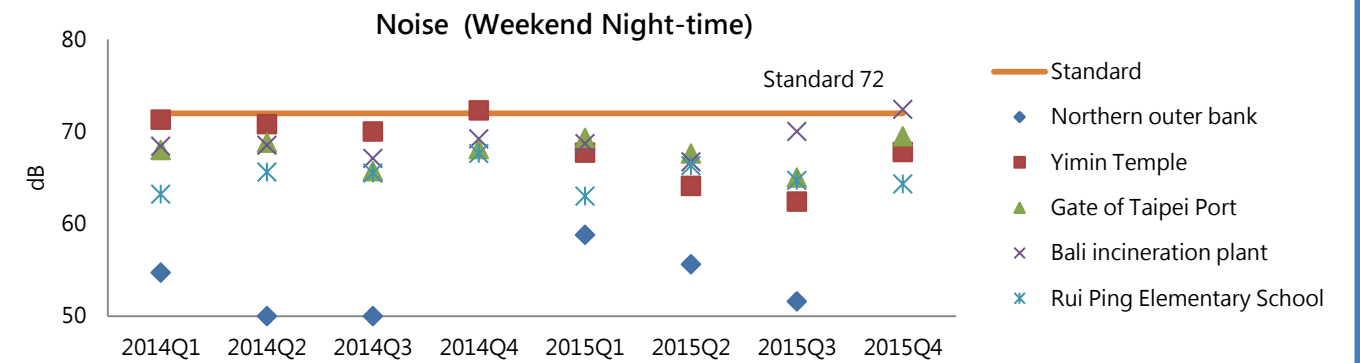
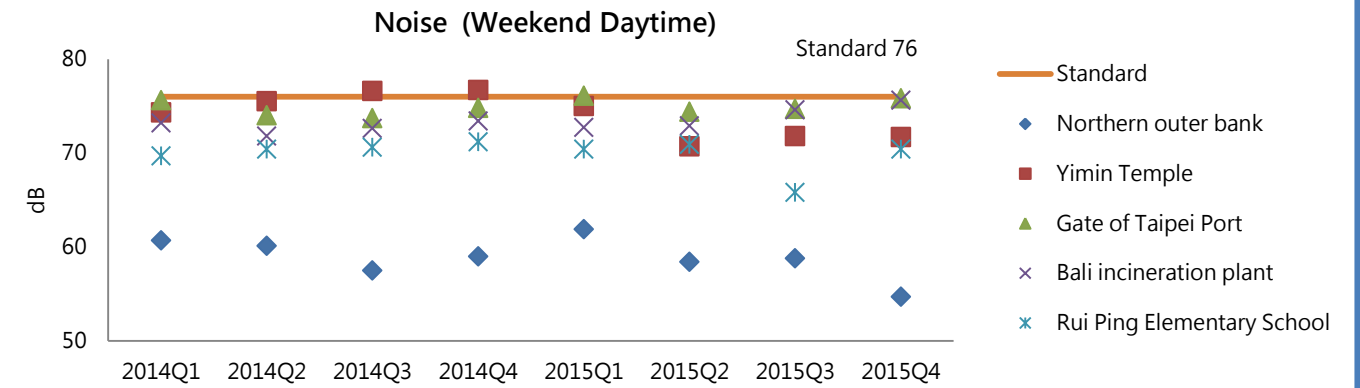
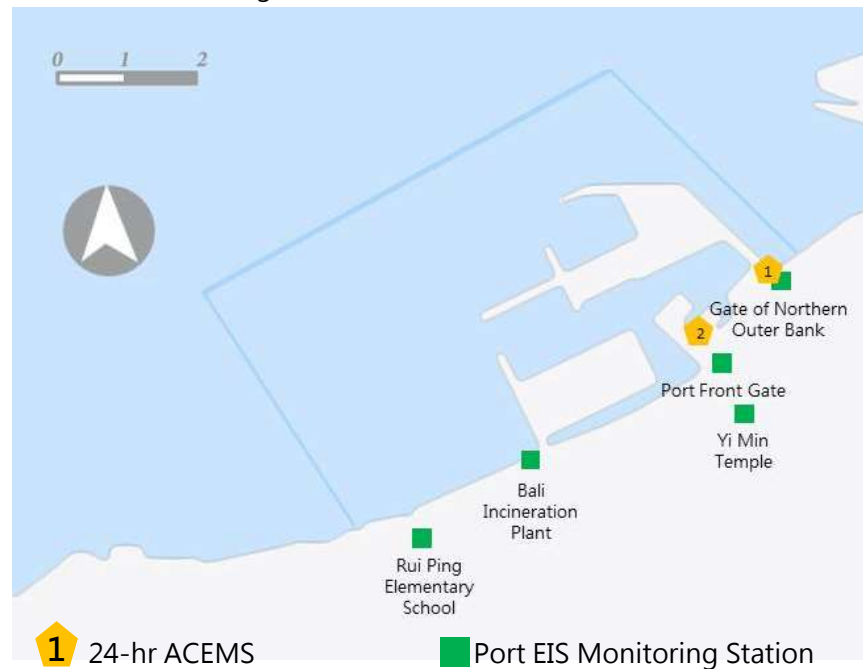
As for the port's container terminal, Container Wharves No. 3-6 of the north bank were equipped with a total of 13 highly efficient bridge cranes and 40 remote-controlled unmanned bridge cranes to minimize vessels' and container pallet trucks' stay at port, abating noise level and vehicle exhaust emissions.

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 2014-2015 environmental quality monitoring records, 95% 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.

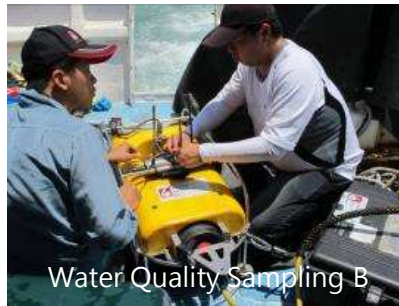
>>Noise Monitoring Sites



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 (BOD₅), cyanide, phenols, and mineral oil. All quarterly measurement from 2014-2015 satisfy the water quality standards.

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.

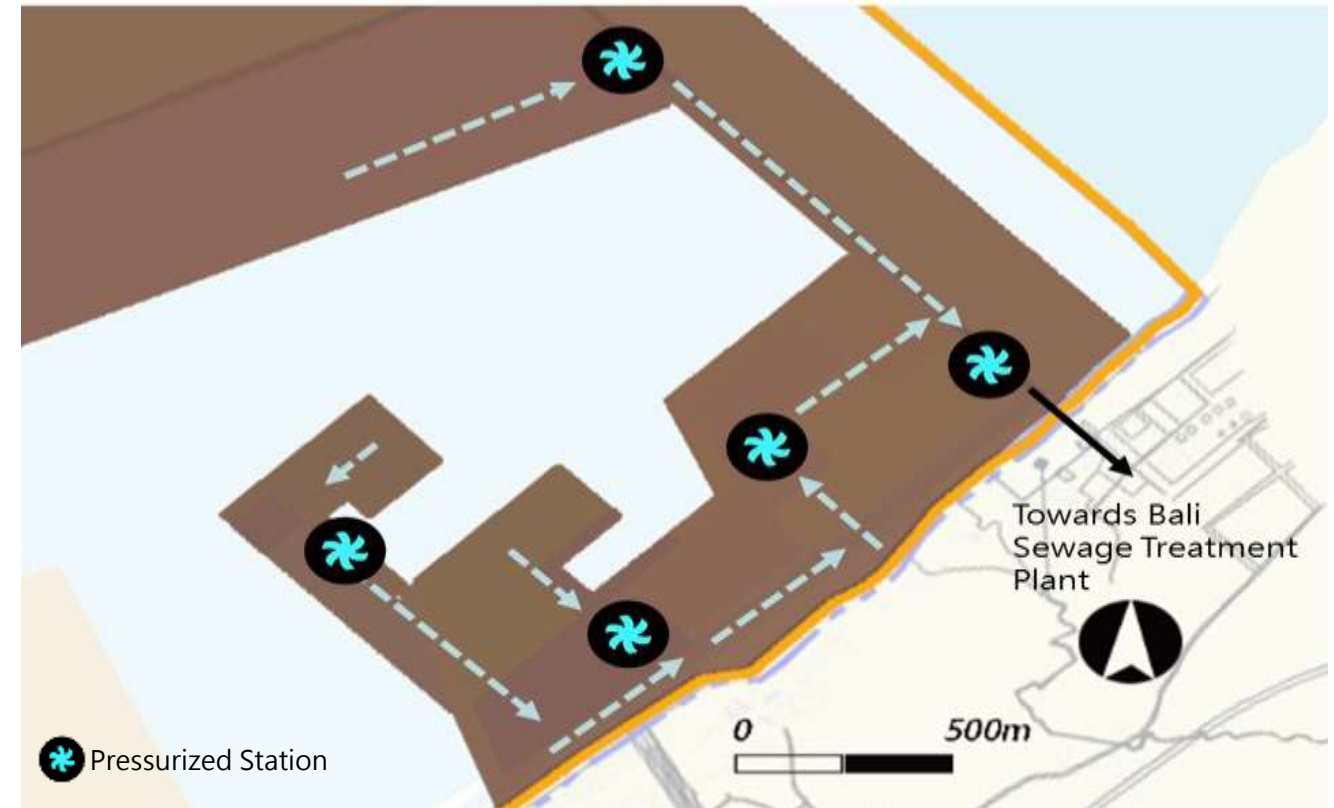


>> Records of 2014, 2015 Taipei Port Water Quality (EIS required)

Indicators	Standards	Measurements	Pass rate(%)
pH	7.5~8.5	7.5~8.3	100
Dissolved Oxygen (mg/L)	≥5.0	6~8.1	100
Biological Oxygen Demands(mg/L)	≤3.0	≤1.3	100
Mineral oil(mg/L)	<2.0	<1.0	100
Cyanide (mg/L)	<0.01	ND	100
Phenol (mg/L)	<0.01	ND	100

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

>>Illustration of Taipei Port Sewage System



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





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 144.2 tonnes of general waste and recycled 62.1 tonnes (recycling rate of 43.1%) in 2014, and collected 186.5 tonnes of general waste and recycled 97.6 tonnes in terrestrial port areas (recycling rate reaching 52.34% in 2015, close to the national average recycling rate, 55%).

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

Item	2014	2015
Total waste generated (tonne)	144.2	186.5
Disposal (tonne)	82.1	88.9
Recycle (tonne)	62.1	97.6
Recycle Rate (%)	43.1	52.3



Waste Handling in Port of Taipei

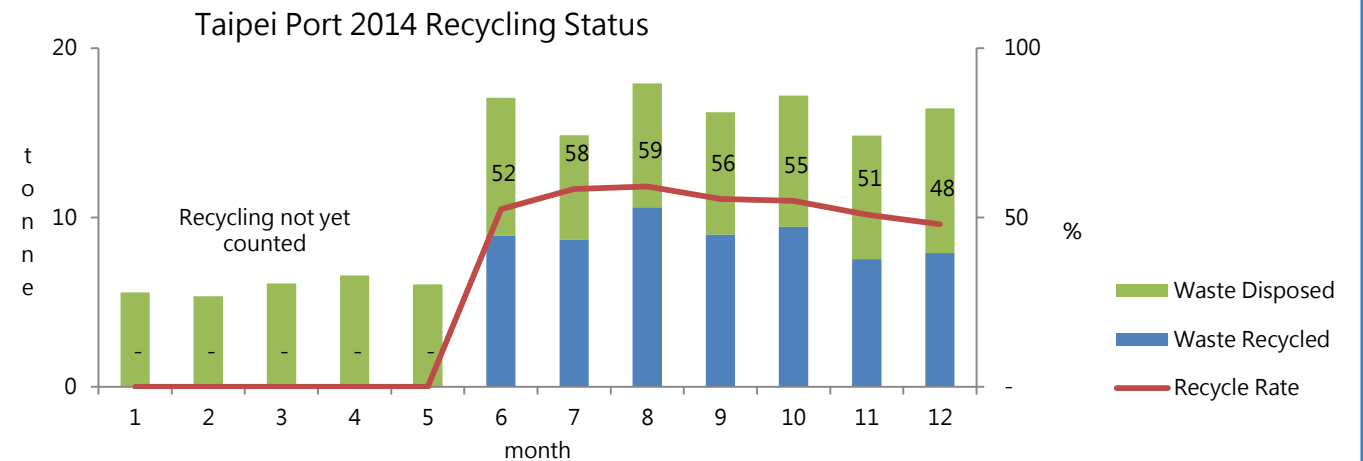
To prevent pollution from vessel oil and wastewater, Taipei Port implemented vessel wastewater and oil recycling measures according to the Regulations on Clearance of

Ships' Oily Discards in Taipei Harbor, recycling 55.5 tonnes of wastewater and oil from 4 vessels in 2014 and 2,340.6 tonnes of wastewater and oil from 215 vessels in 2015.

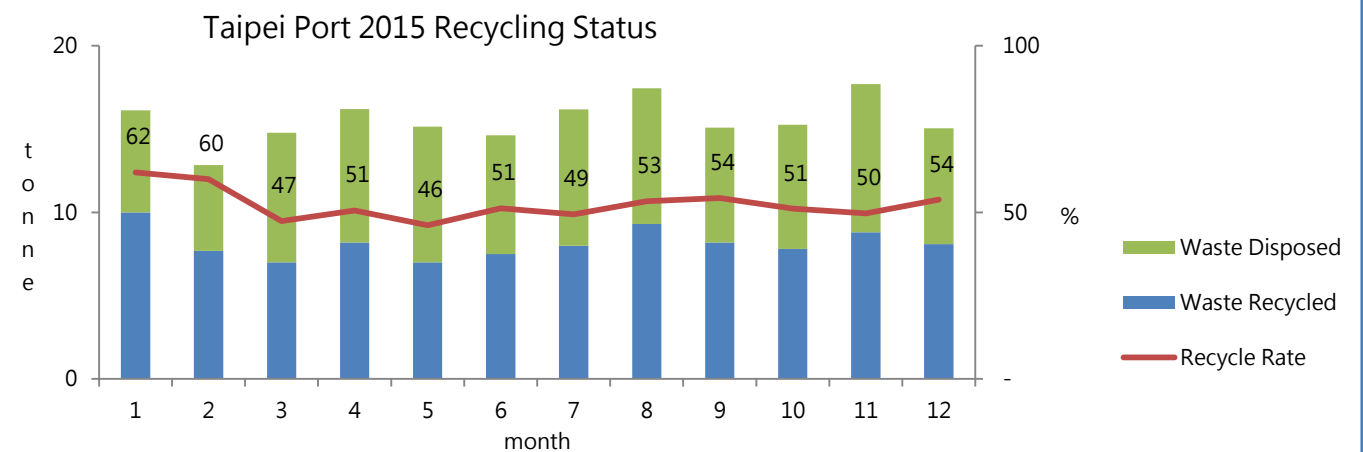
>> Records of collected ship waste and ship oily wastewater at Taipei Port

Year	# of vessels	Oily wastewater (tonne)
2014	4	55.3
2015	215	2,340.6

Note: a partial of Keelung Port vessels were transferred to the Port of Taipei in 2015



Note: Waste Disposed + Waste Recycled = Total Waste Generated

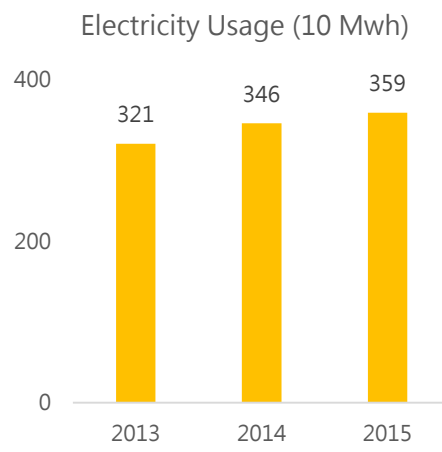
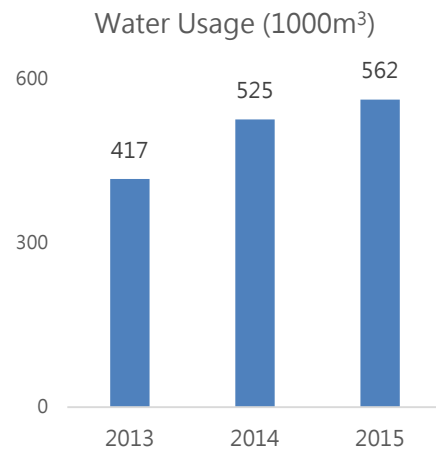




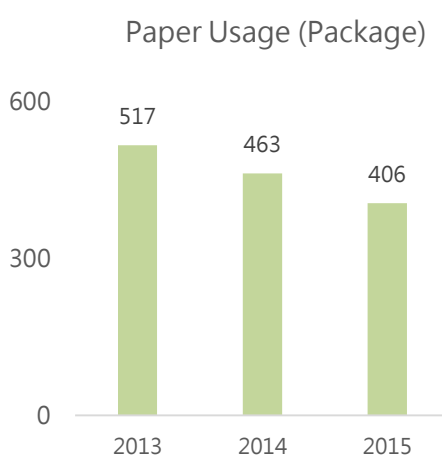
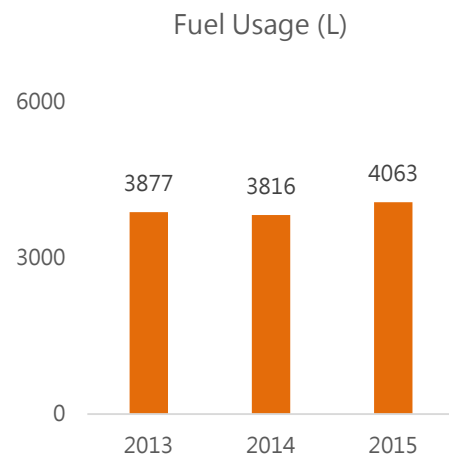
Taipei Port Resource Usage

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 2014 and 2015, among the four recorded resource uses (water, electricity, fuel, and paper) only the paper usage decreased, while the rest (water, electricity, 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 2016 is 27% 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.



Usage of water and electricity increased with business growth, which was mainly contributed by the demand from Containerized Cargo Center1 and public wharves.



Being generally affected by the degree and scope of environmental inspection, garbage collection and disposal, and worksite inspection, the port's fuel consumption increased because the service volume and port size was enlarged.

The Taipei Port Branch Office is dedicated to encouraging online use of administrative and service procedures, increasing the likelihood of online document signing, and promoting video conferencing and electronic services. As a result, paper usage has decreased gradually.

Strategies for Reducing Resource Consumption

In order to reduce resource consumption, Taipei Port has been keeping records of water, electricity, fuel, and paper usage to actualize green accounting.

Reclaim Rainwater for Irrigation



>> Resource Savings Strategies of Taipei Port

Category	Strategies
Water	<ul style="list-style-type: none"> Port Administration building rainwater recycling system Chia Pei Corp. Rainwater reclamation system
Electricity	<ul style="list-style-type: none"> Turn off unnecessary lights in hall ways Gradually replace traditional lightings to energy saving once Do not use AC under 28°C, and keep office above 26°C Turn off office lightings during lunch break Receive energy management counseling from Department of Energy ever 2 years to enhance energy usage efficiency
Fuel	<ul style="list-style-type: none"> Promote ride sharing Limited idle speed duration to less than 3 min Regularly recorded the fuel consumption of official vehicles
paper	<ul style="list-style-type: none"> Encouraging online administrative service and online document signing Print documents on both sides and reuse used paper



Inspecting Port Water Utilities



Inspecting Port Electricity Utilities

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 2014-2015

Year	2014	2015
Inspections	478	471
Drills	6	4
Cross Agency Inspections	1	1



Cargo Vehicle Inspection



Port Cargo Handling Inspection



Port Hazard Inspection



Safety Check



Vehicle Documentation Check



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.



Artificial Port-Port of Taipei

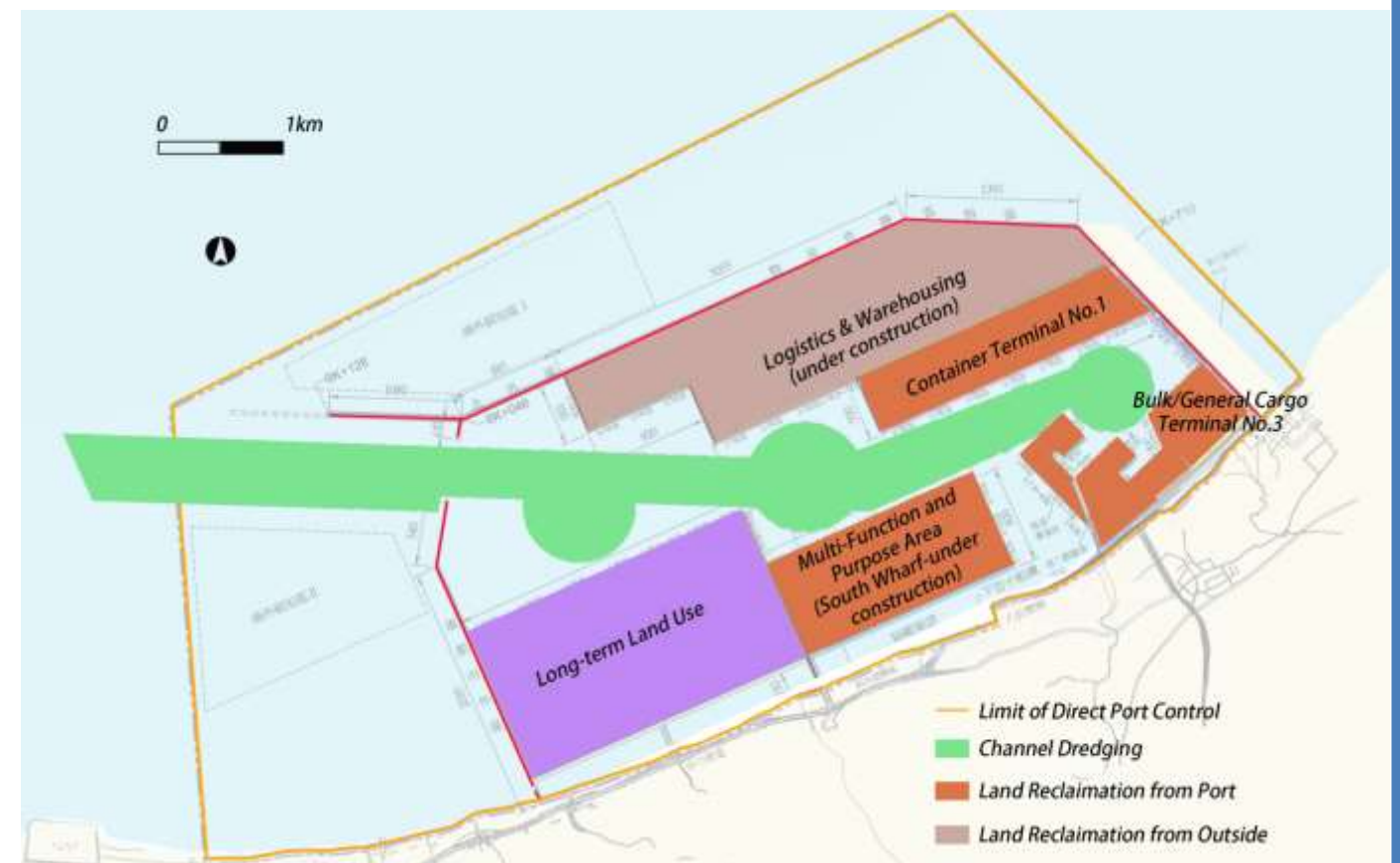
>> Taipei Port list of recent land reclamation projects

Site	Content	Status
East Wharf	Bulk/General Cargo Terminal No.1	Constructed using recycled bottom mud from Taipei Port (accounting for approximately 16.3 million m ³ of surplus soil) and cover a total of 146 hectares of land
	Bulk/General Cargo Terminal No.2	
	Bulk/General Cargo Terminal No.3	
North Wharf	Container Terminal No.1	Complete in 2016 (total of 48.8 hectares of land)
	Logistics & Warehousing Phase I	Commenced in 2012 (total of 123.2 hectares of land)
	Logistics & Warehousing Phase II	Not yet commenced (total of 124.4 hectares of land)
	Logistics & Warehousing Phase III	Not yet commenced (total of 42.1 hectares of land)
South Wharf	South Outer Bank Rear Wharf	Under construction (total of 146 hectares of land)



Land Reclamation Operation

>> Port Channel Dredging and Land Reclamation

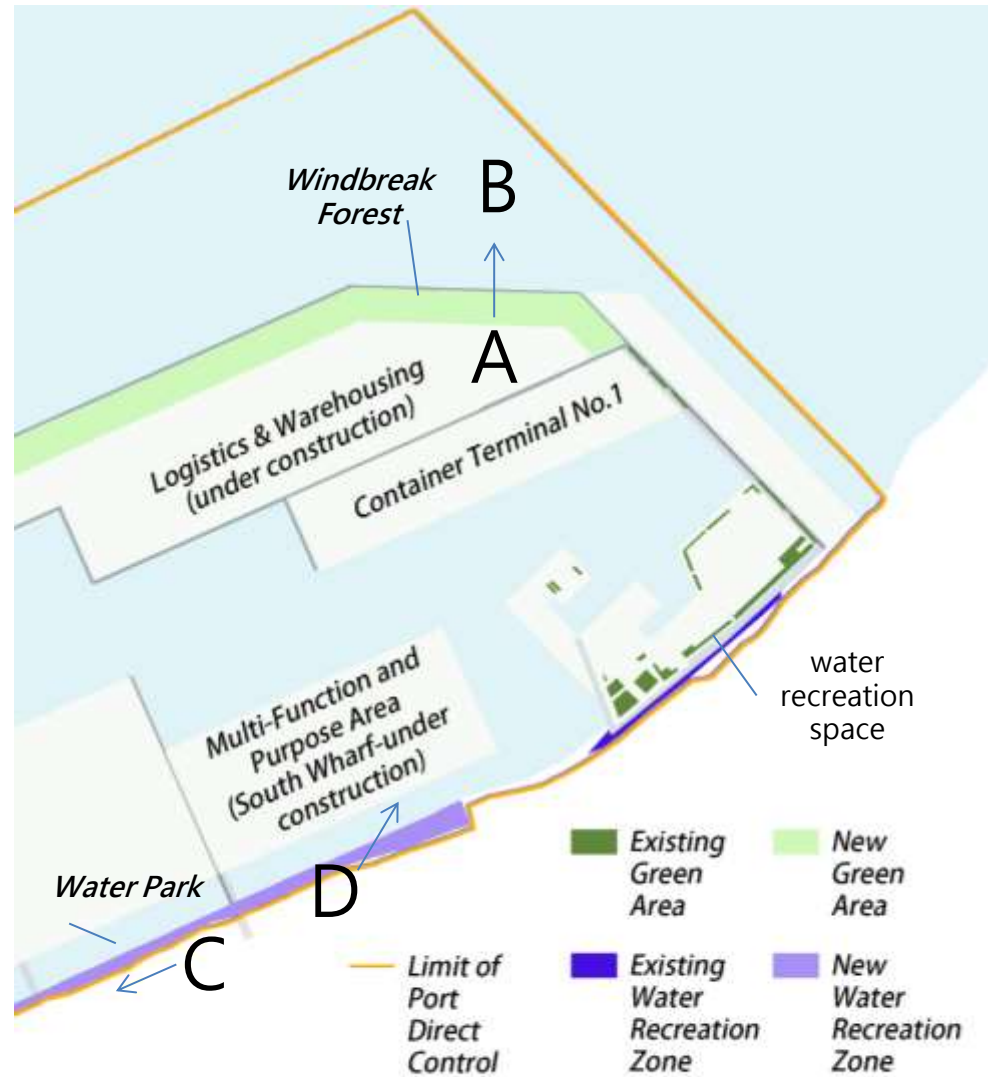
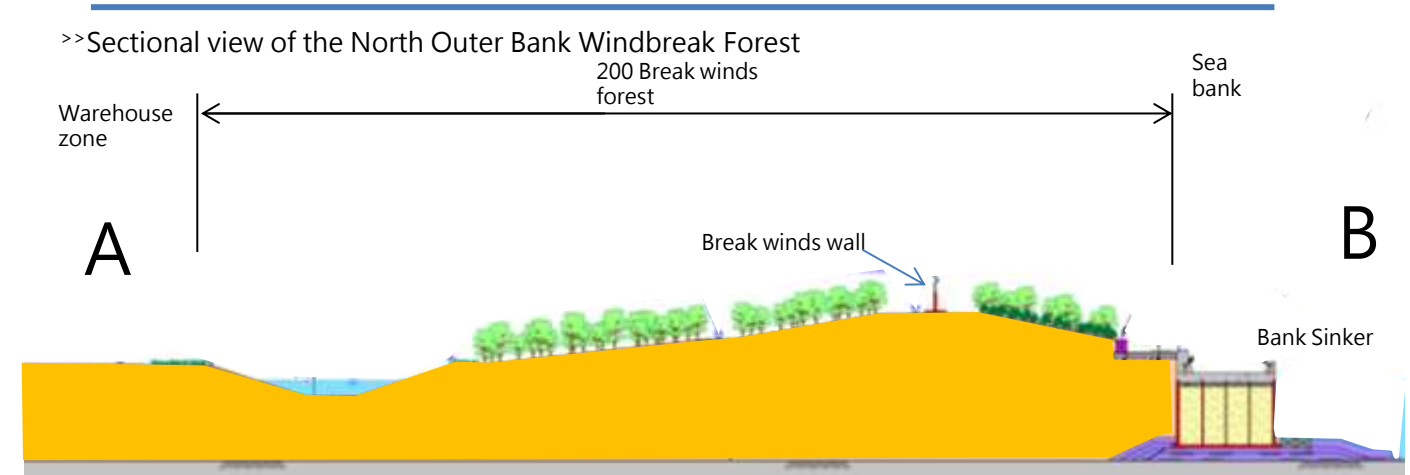




Land Use Optimization

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.



>>Taipei Port Water Park and Green

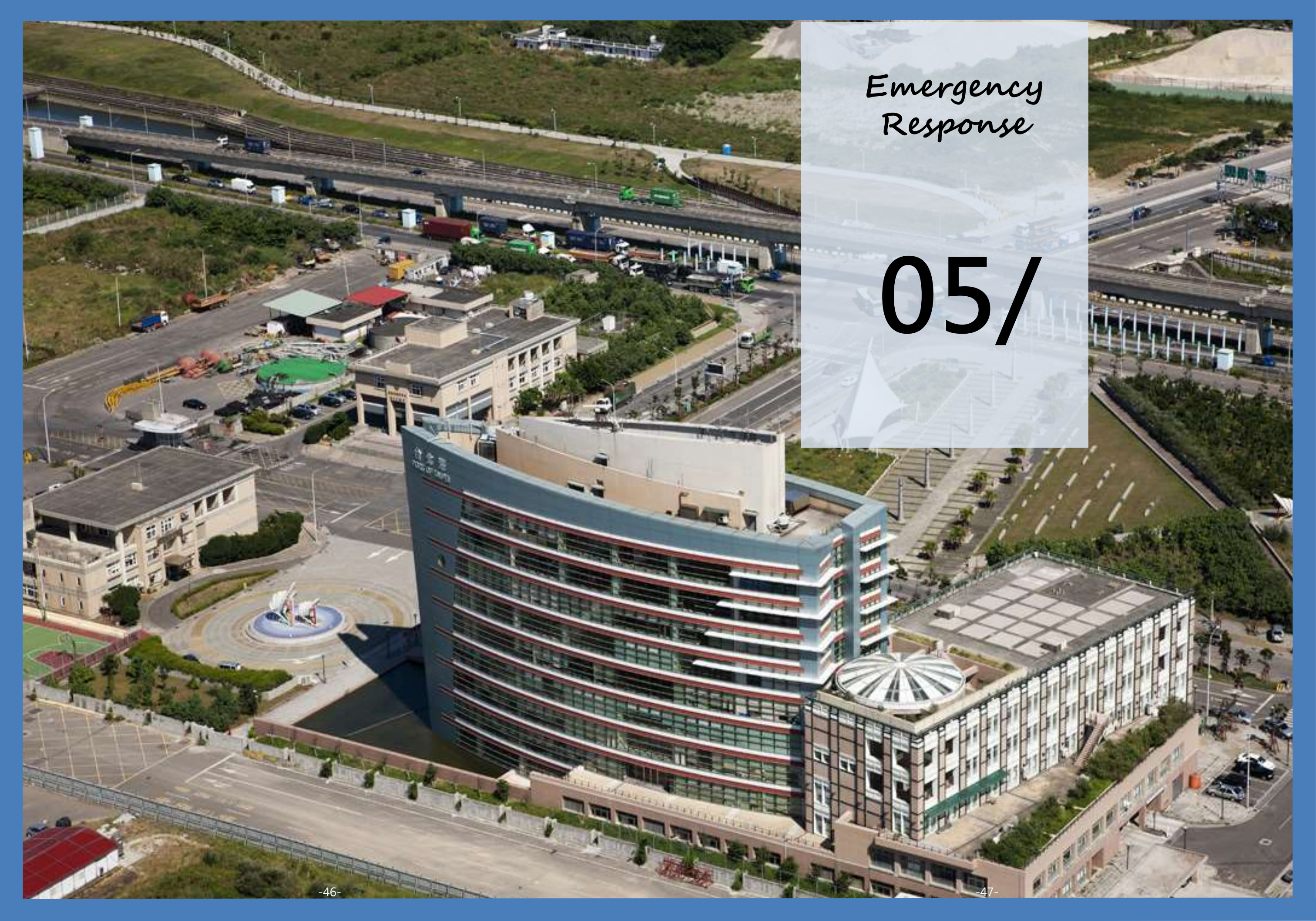


Environmental Performance Indicators

Significant Environmental Issues	Index Item	Calculation Method	Index Target	Description of Calculation	
				2014	2015
Air quality	The ratio of using low-sulfur fuel or biodiesel and the consumption of low-sulfur fuel among harbor crafts	<ul style="list-style-type: none"> Number of harbor crafts using low-sulfur fuel (marine diesel oil or super diesel) ÷ Total number of harbor crafts × 100% Consumption of low-sulfur fuel among harbor crafts 	The ratio of using low-sulfur fuel or biodiesel reaches 100% among harbor crafts	<ul style="list-style-type: none"> Number of harbor crafts:1 Number of harbor crafts using low-sulfur fuel 1 ÷ 1 × 100% = 100% Amount of low-sulfur fuel used by harbor crafts: 1000 litre 	<ul style="list-style-type: none"> Number of harbor crafts:1 Number of harbor crafts using low-sulfur fuel 1 ÷ 1 × 100% = 100% Amount of low-sulfur fuel used by harbor crafts: 1000 litre
	The ratio of harbor crafts using shore power	<ul style="list-style-type: none"> Number of harbor crafts using shore power ÷ Total number of harbor crafts × 100% 	The ratio of harbor crafts using shore power reaches 100%	<ul style="list-style-type: none"> Number of harbor crafts:1 Number of harbor crafts using shore power:1 1 ÷ 1 × 100% = 100% 	<ul style="list-style-type: none"> Number of harbor crafts:1 Number of harbor crafts using shore power:1 1 ÷ 1 × 100% = 100%
	Promotion of vessel speed reduction plan	<ul style="list-style-type: none"> Number of vessel speed reduction promotion (communication record/logbook) Number of vessel speed reduction promotion meeting Number of times promoting vessel speed reduction at berth meetings 	At least 2 times annually	<ul style="list-style-type: none"> Planning stage of the vessel speed reduction system 	<ul style="list-style-type: none"> Installation and testing of the vessel speed reduction system
	Air quality pass rate (PM _{2.5} , PM ₁₀ , SO ₂ , NO ₂)	<ul style="list-style-type: none"> Ratio of the measurements in the air quality monitoring station of the port that meet the "Air Quality Standards" 	<ul style="list-style-type: none"> Percentage satisfy the standard PM_{2.5} (<35µg / m³): 80% PM₁₀ (<125µg / m³): 100% SO₂ (<0.1 ppm): 100% NO₂ (<0.25 ppm): 100% 	<ul style="list-style-type: none"> Percentage satisfy the standard PM_{2.5} (<35µg / m³): 87% PM₁₀ (<125µg / m³): 95% SO₂ (<0.1 ppm): 100% NO₂ (<0.25 ppm): 100% 	<ul style="list-style-type: none"> Percentage satisfy the standard PM_{2.5} (<35µg / m³): 88% PM₁₀ (<125µg / m³): 94% SO₂ (<0.1 ppm): 100% NO₂ (<0.25 ppm): 100%
Dust	Number of dust control facilities for cargo handling, enclosed stevedoring warehouse, dust collection equipment	<ul style="list-style-type: none"> Number of dust control facilities implemented annually 	Increase/ update or maintain the number of dust control facilities	<ul style="list-style-type: none"> Number of dust control facilities for cargo handling:6 Number of enclosed stevedoring warehouse:1 Number of dust collection equipment:0 	<ul style="list-style-type: none"> Number of dust control facilities for cargo handling:6 Number of enclosed stevedoring warehouse:1 Number of dust collection equipment:0
	Ratio of port bulk cargo handled indoor (sand/gravel+coal+other bulk cargo)	<ul style="list-style-type: none"> Amount of bulk cargo handled indoor ÷ total bulk cargo 	Increase/update or maintain the amount of bulk cargo handled indoor	<ul style="list-style-type: none"> Amount of bulk cargo handled indoor ÷ (sand/gravel+coal+other bulk cargo) = (2,956,693 ÷ (8,129,230 + 3,002,290 + 2,720,012)) × 100% = 21.3% 	<ul style="list-style-type: none"> Amount of bulk cargo handled indoor ÷ (sand/gravel+coal+other bulk cargo) = (2,956,693 ÷ (8,515,869 + 2,072,124 + 2,504,642)) × 100% = 22.6%
Port development (land area)	Maintain or increase port green area	<ul style="list-style-type: none"> Calculate annual port green area 	<ul style="list-style-type: none"> Maintain or increase port green area 	Total port green area: 7.7 acre	Total port green area: 7.7 acre
Port development (water area)	Marine water quality standard pass rate	The ratio of port water quality measurements satisfying the Marine Environment Quality Standards	Marine water quality: pass rate 100% for pH, DO, BOD5, mineral oils, cyanide, and phenol	<ul style="list-style-type: none"> Pass rate of daily average pH: 100% DO: 100% BOD₅: 100% cyanide: 100% phenol: 100% mineral oil: 100% 	<ul style="list-style-type: none"> Pass rate of daily average pH: 100% DO: 100% BOD₅: 100% cyanide: 100% phenol: 100% mineral oil: 100%
	Maintain port recreational spaces and facilities	<ul style="list-style-type: none"> Area of port recreational related space 	<ul style="list-style-type: none"> Maintain area of port recreational related space 	<ul style="list-style-type: none"> Total area of recreational space: 4.3 acre 	<ul style="list-style-type: none"> Total area of recreational space: 4.3 acre A 10.5-acre water park is under construction

Environmental Performance Indicators

Significant Environmental Issues	Index Item	Calculation Method	Index Target	Description of Calculation	
				2014	2015
Hazardous Cargo Handling/Storage	Number of inspection, drills, and jointly supervised inspection	Number of annual inspection, drills, and jointly supervised inspection	<ul style="list-style-type: none"> Number of inspections:360 Number of drills:4 Number of jointly supervised inspections:1 	<ul style="list-style-type: none"> Number of inspections:478 Number of drills:6 Number of jointly supervised inspections:1 	<ul style="list-style-type: none"> Number of inspections:471 Number of drills:4 Number of jointly supervised inspections:1
Garbage/port waste	Recycling rate of steel, paper, glass, metal, plastic	Port general waste recycle rate=(weight of waste recycled÷total amount of waste generated x100%)	40% recycling rate	Waste recycled: 62.1ton Total generated: 144.2ton 2014 recycling rate: 62.1tone÷144.2ton=43% (counted from June)	Waste recycled: 97.6ton Total generated: 186.5ton 2015 recycling rate: 97.6tone÷186.5ton=52%
Noise	Daily ratio of noise levels (measured at the noise monitoring station in the port) that satisfy related regulations	Category D Road Noise Control Criteria: 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)	<ul style="list-style-type: none"> Daytime equivalent energy sound levels: quarterly achievement rate of 100% Evening Leq: quarterly achievement rate of 100% Nighttime Leq: quarterly achievement rate of 100% 	<ul style="list-style-type: none"> Daytime equivalent energy sound levels: quarterly achievement rate of 95% Evening Leq: quarterly achievement rate of 100% Nighttime Leq: quarterly achievement rate of 100% 	<ul style="list-style-type: none"> Daytime equivalent energy sound levels: quarterly achievement rate of 95% Evening Leq: quarterly achievement rate of 100% Nighttime Leq: quarterly achievement rate of 100%
Vehicle emissions	<ul style="list-style-type: none"> Ratio of vehicle traffic lanes with automated gate controls 	Number of vehicle traffic lanes with automated gate controls ÷total number of vehicle traffic lanes	<ul style="list-style-type: none"> Ratio of gates with automated gate control system: 50% 	<ul style="list-style-type: none"> 4 gates, 8 lanes 5 automated gate control system 5÷8=62.5% 	<ul style="list-style-type: none"> 4 gates, 8 lanes 5 automated gate control system 5÷8=62.5%
Energy consumption	Water, fuel, electricity, and paper consumption	<ul style="list-style-type: none"> Difference of water, fuel, electricity, and paper consumption (the year before and the year after) Emission Calculation: Activity Data×Emission Coefficient 	<ul style="list-style-type: none"> Save 2% of water usage, 1% of fuel usage, 1% of electricity usage, and 3% of paper usage Carbon Reduction 	Water Use: +8% Fuel Use: +4.8% Electricity Use: +26.2 Paper Use: -10.4% 2014 CO ₂ e Emission: 1,921 tonnes	Water Use: +12.1% Fuel Use: -1.6% Electricity Use: -35.6 Paper Use: -21.7% 2015 CO ₂ e Emission: 1,995 tonnes
Dredging; dredge disposal	<ul style="list-style-type: none"> Amount of sediment dredged Amount of sediment disposed Amount of sediment reclaimed 	Reclaim rate: amount of sediment reclaimed ÷amount of sediment dredged×100%	Annual reclaim rate:100%	Amount of sediment dredged:0 Amount of sediment disposed:0 Amount of sediment reclaimed:0 Reclaim rate:0	Amount of sediment dredged:0 Amount of sediment disposed:0 Amount of sediment reclaimed:0 Reclaim rate:0
				In 2014 and 2015, dredging constructions were not performed because channel depth was sufficient. Taipei Port dredged 2,465,420ton for channel depth in 2012 and 1,675,521 ton in 2013	



*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 2014 and 2015, 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 2014-2015 Accidental Incidents

Accident type/Year	2014	2015
Vessel collision, shipwreck, fire, oil and other chemical spillage	0	2
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	3	2

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.

>> 2014-2015 Taipei Port Inspection Statistics

Year	2014	2015
Port Environmental Inspection	478	471
Penalty from Legal Authority (MPB)	3	1
Pollution Prevention Spot Check	35	14

>> 2014-2015 Taipei Port Drill Records

Year	Name of the Drill	Content	Dates
2014	Taipei Port 2014 Safety and Disaster Response Drill	Emergency response drill for port oil storage related incidents	Sept 30
	Open Sea Ocean Pollution Emergency Response	Emergency response drill for open sea pollution incidents	June 25
	Facility Security Drill	Security drill for port personnel	Mar 27 June 17 Sept 24 Dec 4
2015	2015 New Taipei City Compounded Marine Pollution Emergency Response Drill	Emergency response drill together with New Taipei City, Environmental Protection Administration, and port industries for ocean oil and chemical spillage, and disease outbreak	Sept 10
	Facility Security Drill	Security drill for port personnel	Mar 30 June 30 Sept 25 Dec 30



Emergency Response Drill



Emergency Rescue Drill

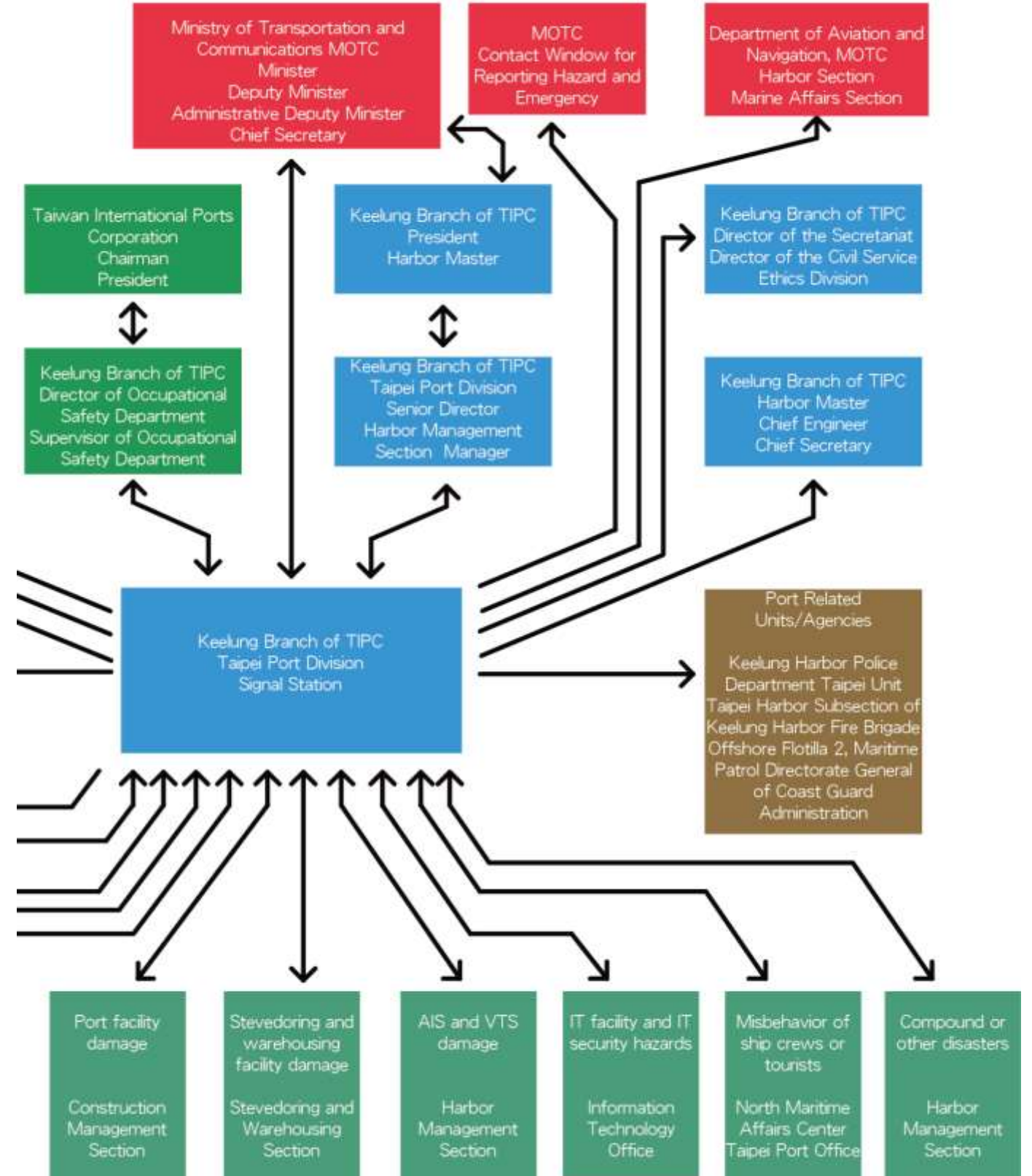
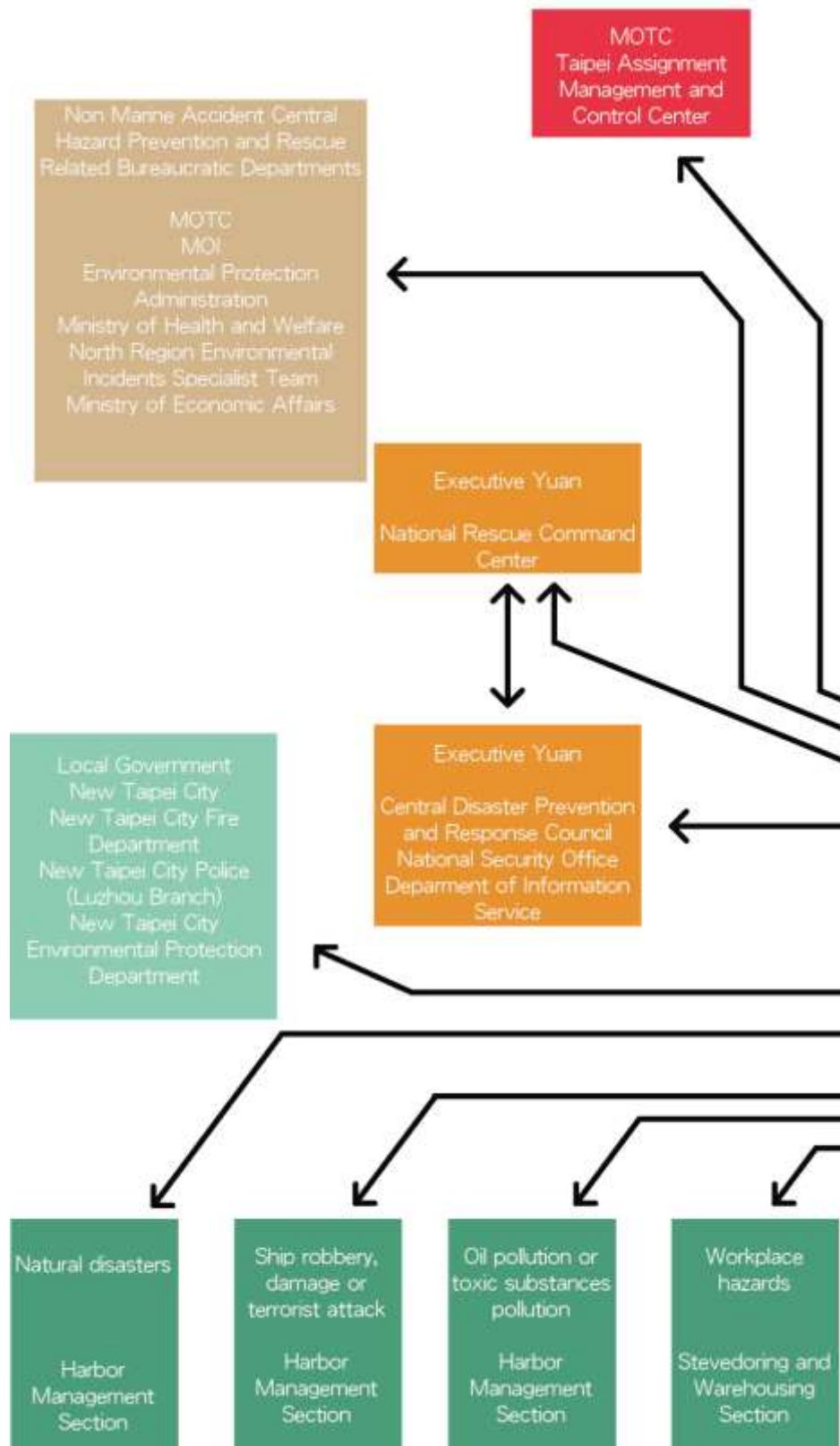


Fire Drill

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) 24-Hour Automated and Continuous Environment Surveillance System ; (2) Chia Pei Enclosed Warehouse ; (3) sewage discharge in public sewage system . 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

24-Hour Automated and Continuous Environment Surveillance System (ACESS)

Concern/Motivation

The continuously growth of Taipei Port involves vessels, stevedoring, and related projects that can affect neighboring residents' quality of life.

Thus, the environmental impact of the port's activity shall be more strictly examined through the construction of a 24-hour automatic continuous monitoring system.

Solution

To compensate for insufficient of monitoring data, the port spent nearly NT\$13 million in 2011 to build an Automated and Continuous Environment surveillance System, which have 4 stations in total, monitoring air quality, noise, and weather.

By employing this system, Taipei Port is able to stay abreast of environmental and weather conditions from each station, detect abnormalities in advance, and request the adoption of improvement measures.

Effects/Benefits

Through the environmental quality monitoring system, the port is able to acknowledge abnormal activities, and inform tenants for improvements. The monitoring data (only data of the previous day) are published on

the Taipei Port website. This allows the public to examine whether the port's environmental qualities meet the legal standards, improving port environmental wellbeing through information transparency.

Environmental Issues

Air quality, noise, dust, and community relations

Participants

Taipei Port Branch Office

Implementation/Timeline

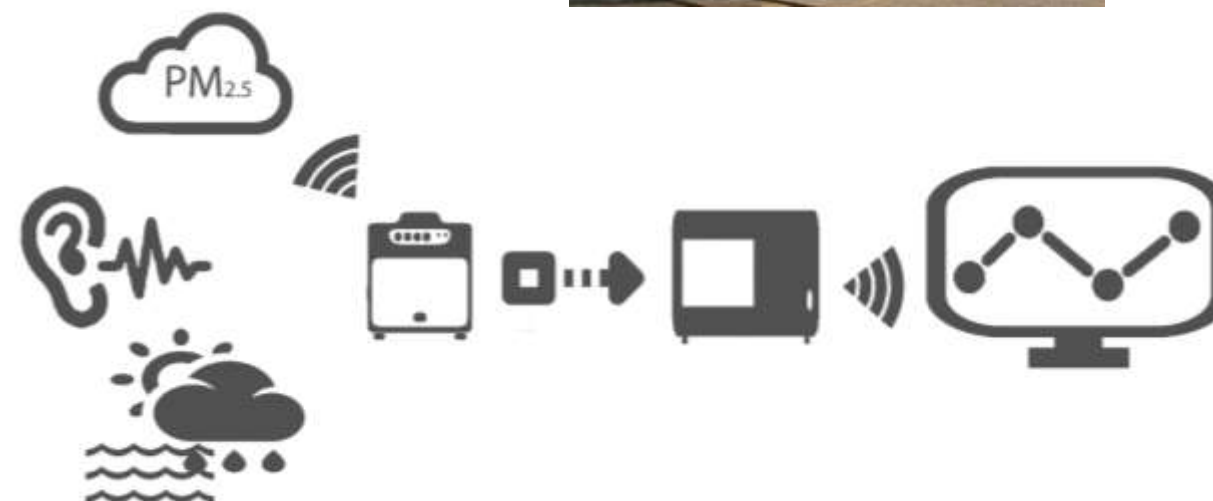
June 2011	Construction began
Nov 2011	Monitoring system completed and began operation

Stakeholders

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

Investment

2011	1.3million NTD
2014	1million NTD (maintenance)
2015	1million NTD (maintenance)



Environmental Management Strategies : Exemplifying · Enabling

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Chia Pei Enclosed Warehouse

Concern/Motivation

Taipei Port features large worksites and handling services for bulk cargo (e.g., sand and gravel), therefore must consider dust emissions as a crucial environmental issue.

Improvement measures are therefore necessary for the port to allow the entry of cargo that may lead to dust emissions, such as fire coal.

Solution

Chia Pei rent Bulk and General Cargo Terminal No. 1 and constructed an enclosed warehouse for handling of coal, sand, and gravel. Each year, approximately 2-3 million tonnes of cargo are stored, accounting for approximately 30% of the port's total bulk and general cargo volume.

The enclosed warehouse effectively reduces air pollution, and prevents dust emissions from affecting environmentally sensitive areas surrounding the port.

Effects/Benefits

Chia Pei's Enclosed Warehouse stores a total of approximately 100,000 tonnes of cargo effectively, which reduces dust emissions and noise, increases stevedoring effectiveness, maintains port environmental quality, and prevents pollutants from entering the sea through runoff, affecting marine ecology.

Building the enclosed warehouse also raises port environmental awareness. A new enclosed warehouse is now under construction at Bulk and General Cargo Terminal No. 2 to increase the portion of bulk and general cargo handled through enclosed environment, and thus reduces dust emissions and noise pollution.

Environmental Issues

Air quality, noise, dust, and local community

Participants

Taipei Port Branch Office, Chia Pei Corporation

Implementation /Timeline

Project awarded (contract) in 2007, and completed in Dec 2009

Stakeholders

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

Investment

The East No.16 Wharf and Enclosed Warehouse totals 2.5 billion NTD.



Environment Management Strategies : Exemplifying 、 Enabling

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Sewage Discharge in Public Sewage Systems

Concern/Motivation

As an ever-growing artificial port, wastewater of the Taipei Port can affect marine ecology without proper treatment.

Main sources of Taipei Port's wastewater include wastewater from office buildings, vessels, and industries.

Solution

To increase port water quality, sewage produced by the port and tenants shall meet the water quality standards imposed by New Taipei City Government for

sewage discharge in public sewage systems and shall be sent to Bali Sewage Treatment Plant for further treatment.

Effects/Benefits

As the first commercial port that comprehensively discharge sewage in public sewage system, Taipei Port discharges approximately 10 thousand tonnes of wastewater per month. Discharging sewage and wastewater into the sewage system is helpful in maintaining environmental health for the nearby communities

and reducing the likelihood of water-borne diseases.

Connecting to the public sewage not only improves water quality, but also provides healthy marine environment for recreational activities, creates better environmental for living, and increases land value.

Environmental Issues

Water quality, marine sediment, port marine development, lost of habitat and eco-system

Participants

Taipei Port Branch Office, Bali Sewage Treatment Plant

Implementation/ Timeline

Civil Engineering:
Contract signed in June 2002 and completed in Nov 2003

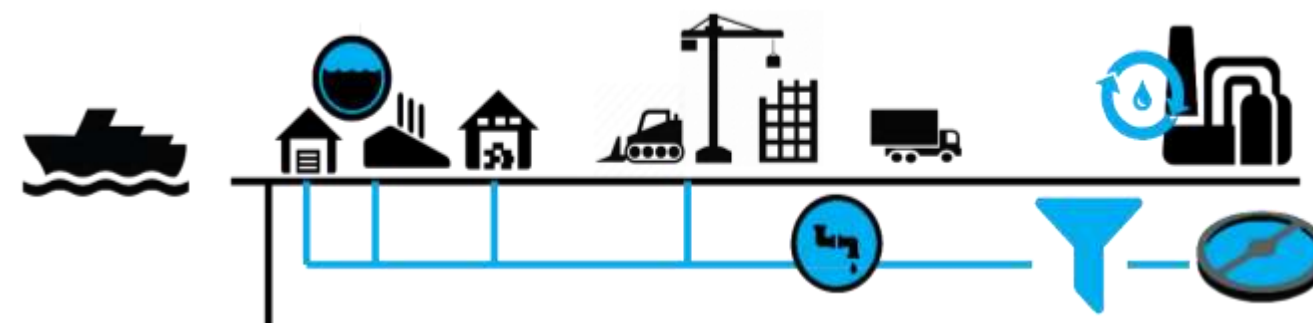
Mechatronic Engineering:
Contract signed in July 2002 and completed in July 2003

Stakeholders

Port operating units, Bali Sewage Treatment Plant, New Taipei City Environmental Protection Department, EPA

Investment

2002-2003	90 million NTD (civil and mechatronic engineering combined)
2013	Mechatronic maintenance



Environmental Strategies : Exemplifying , Encouraging, Enabling

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E-mail : tonylo@twport.com.tw
Website : <http://kl.twport.com.tw/tp/>

Bali wastewater treatment plant
Phone : 02-2619-1987
Address : No.90, Museum Rd., Bali Dist., New Taipei City 249, Taiwan
Website : <http://www.sso.gov.taipei/ct.asp?xItem=208216&CtNode=19803&mp=106041>

06/

Involvement and Collaboration

Participation organizations

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.

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.

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.

Ports



Pingtian 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.



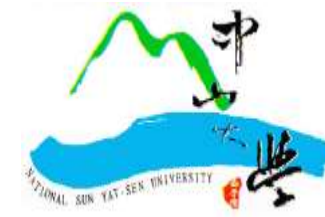
Taipei Port Container Terminal Corp.

Taipei Port Container Terminal Corp. (TPCT) is the first privately funded container terminal build-operate-transfer project in Taipei Port. Established on March 9, 2009, TPCT 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.

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.

Government



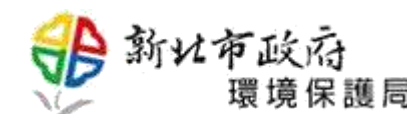
North Maritime Affairs Center, Maritime and Port Bureau, MOTC

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.



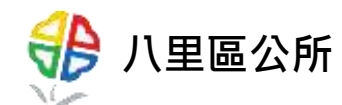
Institute of Transportation, MOTC

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.

Training

07/

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 2014 and 2015, the Taipei Port Branch Office organized in total 13 environmental education and occupational safety courses for its staff members, with approximately 60 participants each year. Course topics cover pollution prevention, natural disaster, contagious disease control, environmental impact assessment, etc.

>>Port of Taipei 2014-2015 Occupational Safety and Health Training

Year	Content	Dates
2014	Lecture on the "Occupational Safety and Health Act" and "Improving Port Occupational Health and Safety"	July 4
		July 7
		July 11
2015	Port Occupational Safety and Health	Oct 5
		Oct 13
		Oct 20

>>Port of Taipei 2014-2015 Environmental Education Training

Year	Content	Dates
2014	Visiting the Rain Garden at National Taiwan Ocean University	Oct 24
		Oct 27
		Nov 7
		Nov 14
2015	Seminar on Energy and Environment	June 26
		July 10
		Nov 26



National Taiwan Ocean University Rain Garden A



National Taiwan Ocean University Rain Garden B



Seminar on Energy and Environment



*Communication
and
Publication*

08/

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 institutions, 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



Communication & Publication

Seminars



Environmental Improvement Exchange



Air Pollution Reduction Meeting



Environmental Issues Discussion Meeting

Port Visitors



Ministry of Finance Visiting



National Academy of Civil Service Visiting

Community Services



Neighborhood Visit



End of the Year Celebration

Promotional Events



Free Trade Zone Promotion Meeting



Smart Logistics Promotion Meeting



*Green
Accounting*

09/

Environmental costs

In order to improve the environmental awareness among staff, environmental maintenance, environmental quality, emergency response abilities, and public understanding 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 62,641,000 NTD in 2014 and 62,227,000 NTD in 2015, which is about €1,740,000 and €1,728,000.

Environmental investments at the Taipei Port

- Employees: Personnel costs of environmental control, and environmental education and 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 NTD)

Items of Expenses	2014	2015
Personnel	13,532	12,687
Environmental Maintenance & Management	16,844	11,403
Environmental Monitoring	31,871	37,801
Emergency Response	115	67
Communication & Publication	279	269
Total	62,641	62,227

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 1,039,417,000 NTD (approx. €28,873,000) and 1,135,224,000 NTD (approx. €31,534,000) in 2014 and 2015, respectively.

>> Assets invested in Environmental Issues in 2014 (Unit: Thousand in NTD)

Project		Amount
Follow-up Project	Logistics and Warehouse Zone Development Project	505,390
	Channel and turning basin deepening	306,450
	Taipei Port Water Recreation Zone Waste Disposal Project	122,616
General building and equipment purchase project		104,961
Total		1,039,417

>> Assets invested in Environmental Issues in 2015 (Unit: Thousand in NTD)

Project		Amount
Follow-up Project	Logistics and Warehouse Zone Development Project	455,373
	Channel and turning basin deepening	109,772
	Barrier and breastwork repair in the Logistics And Warehouse Zone	2,876
	Taipei Port Water Recreation Zone Waste Disposal Project	186,850
	Permanent bank protection of public facilities in the south wharf area	201,284
General building and equipment purchase project		179,069
Total		1,135,224

Improvement Recommendations

10/

Taipei Port was developed from the initial two-berth wharf for sand and stone stevedoring services to a port, and as of June 2016, features a 16-berth bulk and general cargo wharf, a 4-berth container wharf, a 2-berth working boat wharf, and a 3-berth official-purpose wharf. The port is undergoing continuous enlargement projects, and is expected to reach a 1,038-hectare land area and a 2,064-hectare ocean area. Distanced by a mere 34 nm, Taipei Port and Keelung Port possess various port advantages and play complementary roles in establishing themselves as two national gateways for north Taiwan.

Recently, climate change has intensified, resulting in stringent living environments. When rising global temperatures became an inevitable fact, Taipei Port began to follow environmental protection trends and assume corporate social responsibilities by incorporating concepts such as creating green ports and implementing low-carbon eco-friendly measures, which involved integrating enclosed stevedoring warehouses, shore power systems, flow-through gate systems, and automated operation systems at the back ends of container yards. Additional technical exchange opportunities with worldwide green ports will be established once Taipei Port is certified as an EcoPort, resulting in a better world through following successful examples.



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



環科工程顧問股份有限公司

Environmental Science Technology Consultants corporation