

Green future: Sailing towards sustainability





Outline

- 1. TIPC Green Port Development**
- 2. TIPC Commitment to Net zero**
- 3. TIPC Towards Sustainability**
- 4. Conclusions**

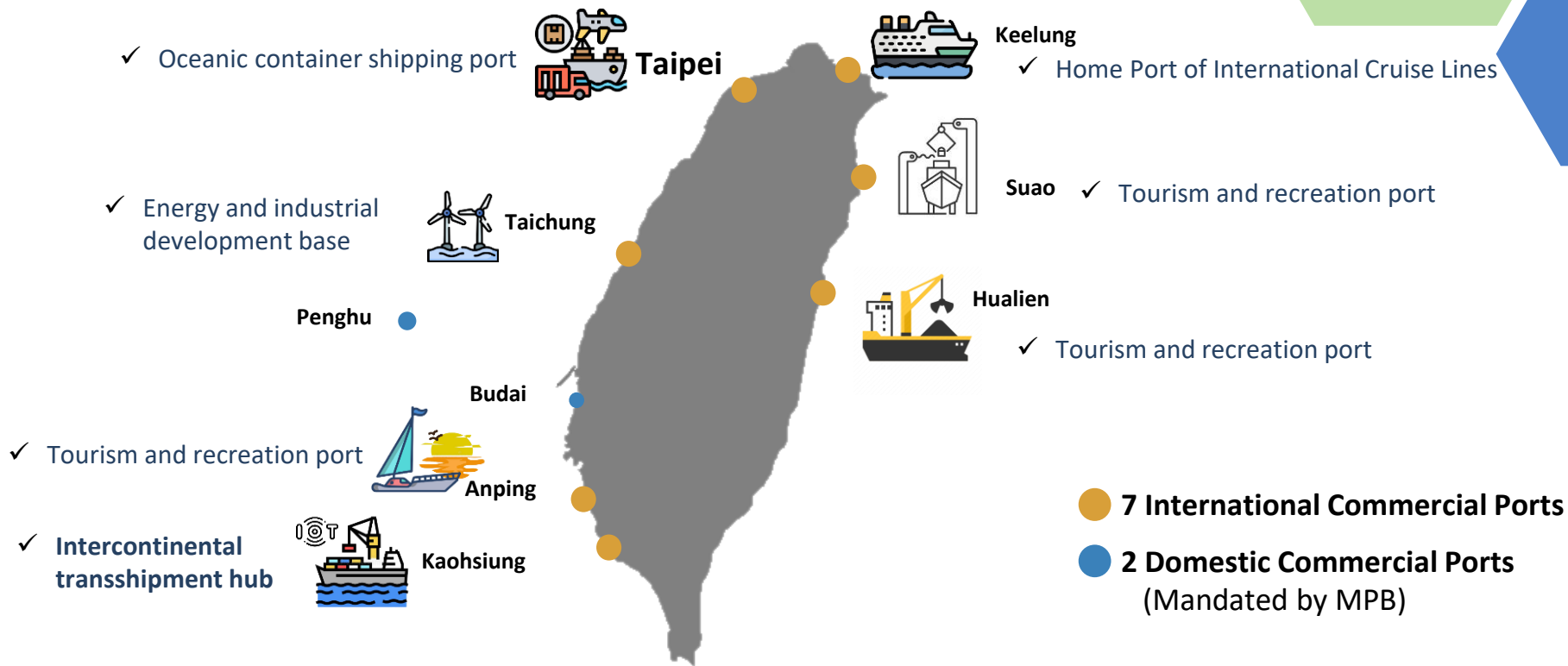


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TIPC Green Port Development



Ports Operated by TIPC





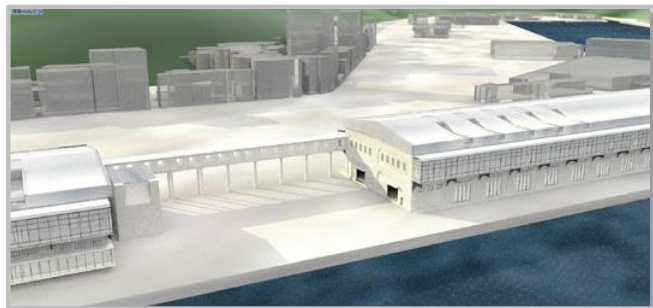
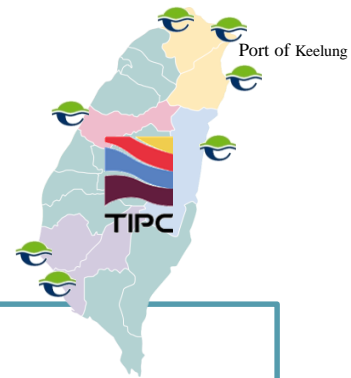
TIPC Green Port Development

Seeking ESPO EcoPorts Certification





TIPC Green Port Development – Port of Keelung



Green Building

West 2 & West 3 warehouses converted to a passenger center

✓ Green Methods

Lots of windows to maximize natural lighting

✓ Green Materials

Structural steel construction to reduce CO₂ emissions



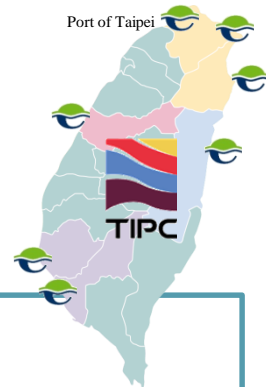
Environmental Education Ecological Park

✓ Environmental Education

- ❑ Environmental education facility certified in 2023
- ❑ Courses including understanding green ports, building environmental friendliness, awareness and responsibility



TIPC Green Port Development – Port of Taipei



Renewable Energy Generation Facilities

Rooftops of East 1-1 &
East 2 warehouses

✓ Photovoltaic Systems

Install solar power generation facilities to
improve the usage of green power



Marine Ecological Conservation

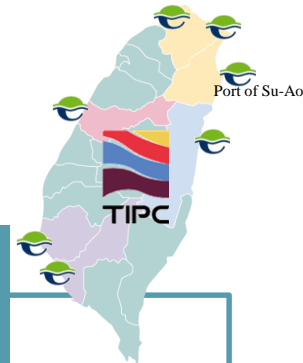
Logistics warehouse
ecological tide pools

✓ Ecological Conservation

Build ecological tide pools through high and
low tides to create a sustainable living
environment and achieve the goal of
biodiversity



TIPC Green Port Development – Port of Suao



Green Building

Warehouse No. 15
green building certified

✓ Energy Saving Indicators

Building envelope up to 50%; AC system up to 20%;
lighting system up to 54%; CO₂ reduction up to 26%;
waste reduction up to 3.5%; water saving up to 18.7%



Resource Recycling

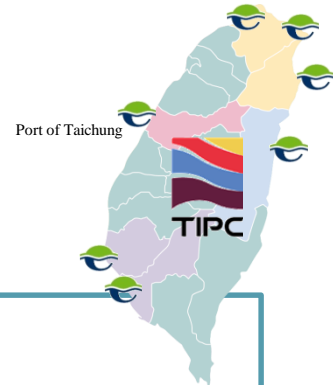
Dredged soil backfilling for land reclamation

✓ Dredging & Backfilling

The area of the backfilled site is about 9.6 hectares, with a capacity of 1 million m³ of soil.



TIPC Green Port Development – Port of Taichung



Air Pollution Abatement

✓ Optimization of equipment

Introduce equipment such as hydraulic grabs and dust collection funnels to reduce the dust generated by loading and unloading



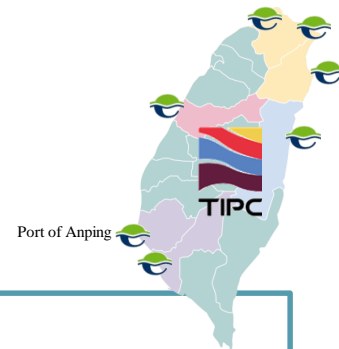
Certified Environmental Education Facility

✓ Environmental Education

- Environmental education facility certified in 2022
- Courses incorporating the history of Port of Taichung, overview of EcoPorts, and the development of offshore wind power industry



TIPC Green Port Development – Port of Anping



Ecological Restoration

✓ Mangrove

- Restore 4.6 hectares of Taiwan indigenous mangroves
- Functions including windproof, dike protection, water purification, and ecological conservation



Habitat Optimization & Open Space

✓ Waters

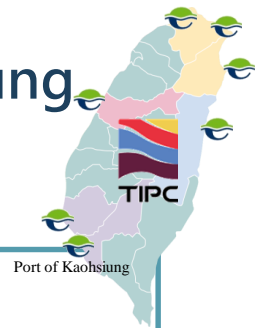
The 300m-long spur dike provides an ecological submerged reef environment for algae growth, creating a quality living environment for marine animals and plants.

✓ Lands

Create friendly waterfront public spaces



TIPC Green Port Development – Port of Kaohsiung



Habitat Restoration

Wild Bird Sanctuary

- About 10 hectares of wild bird habitats are preserved in the Nanxing Free Trade Zone.
- Recorded 68 species of birds, including endemic species and subspecies of Taiwan, and precious and protected species



Ecological Conservation

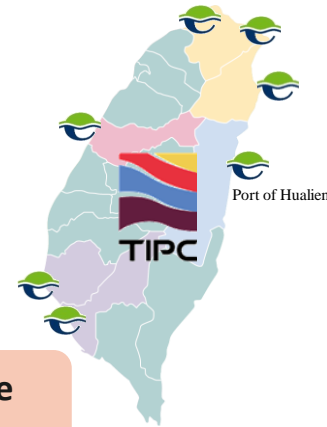
Phase II Project of Intercontinental Container Terminal

- Intercontinental Phase II Project has retained round caissons as submerged dykes for porous ecological habitats.
- Enrich the biodiversity of the port area with the concept of sustainable co-existence with the environment

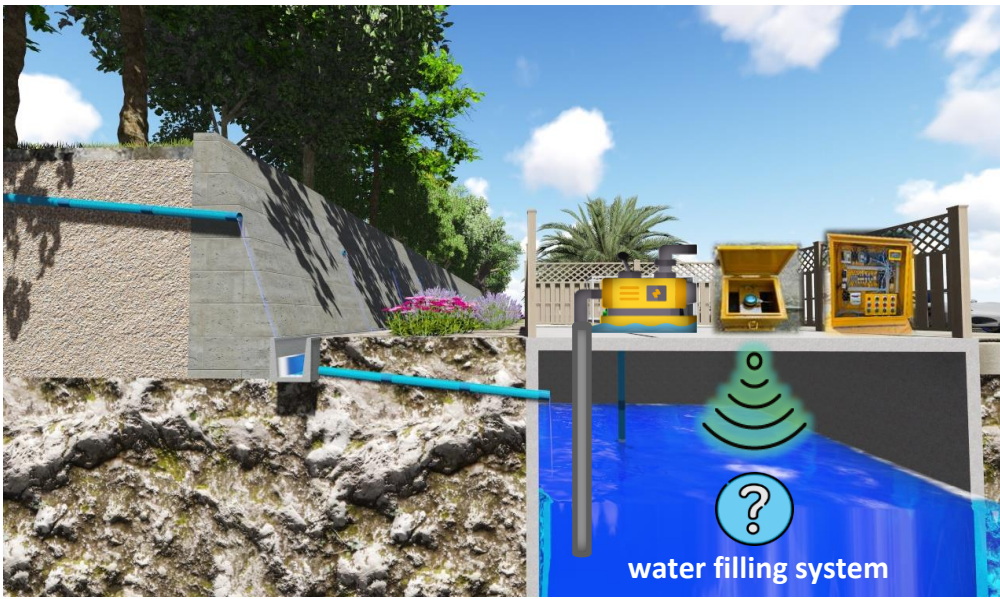


TIPC Green Port Development – Port of Hualien

- ◆ Surface water is pooled into the port water filling system, which is automatically controlled by the Energy Management System (EMS) to allocate water resources in the port and enhance efficiency.
- ◆ Surface water can replace 170,000 metric tons of tap water usage and reduce CO₂ emissions by 26 metric tons per year.



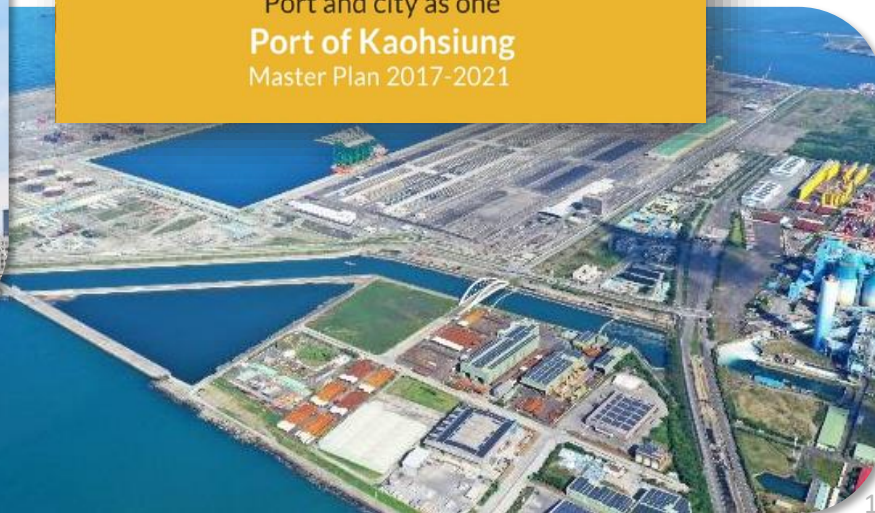
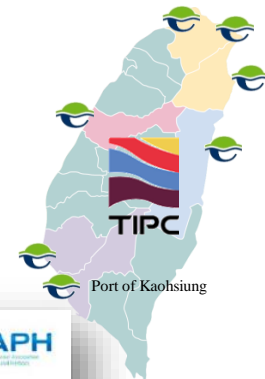
Awarded the “2021 Annual Water Conservation Agency – Outstanding” by the central government





TIPC Green Port Development – Achievements

Port of Kaohsiung participated in the WPSP organized by the International Association of Ports and Harbors (IAPH) and won the **“Resilient Physical Infrastructure”** award for its **“Port of Kaohsiung Master Plan 2017-2021”**.

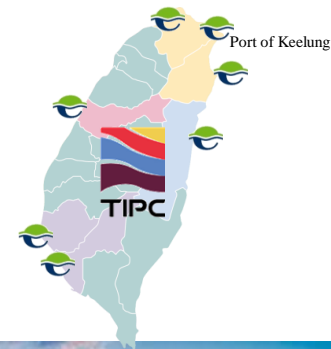




2023 ESPO EcoPorts Recertification & Best Practices



Best Practices at Port of Keelung



East Pier 3 & East Pier 4

Cruise Terminal Facilities Construction

- Designed with the concepts of lightweight, transparency, friendliness, quality and regeneration, it provides cruise passengers with friendly customs clearance and waiting lounge, shuttle services, pedestrian walking space, a butterfly garden for public recreation, and other passenger facilities.
- The building adopts high quality spatial and environmental regeneration design to achieve energy conservation, carbon reduction and environmental protection.





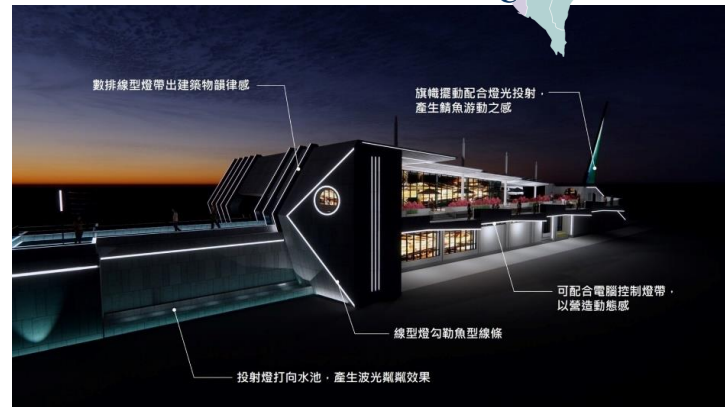
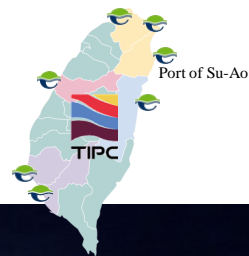
Best Practices at Port of Suao

Cruise Terminal Center Construction (Sightseeing Transit Zone)

- Revitalizing old piers and warehouses and converting them into sightseeing piers and a cruise terminal center
- Designing roads and parks with local characteristics to increase green space
- Attracting investment to the tourism center to enhance local employment

Comprehensive Management Strategy for Climate Change

- Conservation and planting to ensure biodiversity, prevent land degradation, and maintain sustainability
- Building renewable energy facilities to reduce carbon emissions and ensure a low-carbon friendly environment
- Carbon inventory in the harbor certified by a third party (SGS) to form the path forward for carbon reduction

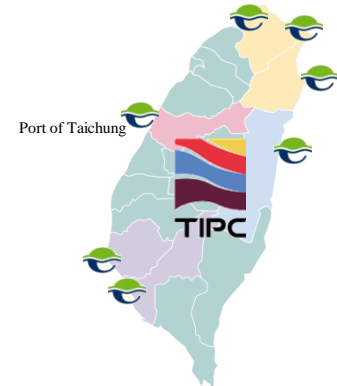




Best Practices at Port of Taichung

Indigenous Production of Wind Power (Renewable Energy Promotion)

- Localization of the industry: Participation of local manufacturers to enhance technical and service capabilities
- Industrial cluster: Establishing an offshore wind power industry supply chain
- Increasing employment opportunities: Establishing facilities to drive talent cultivation and employment in the offshore wind power sector





Best Practices at Port of Anping

Landscaping Improvement

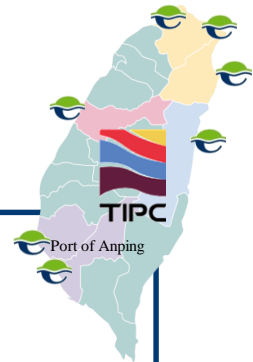
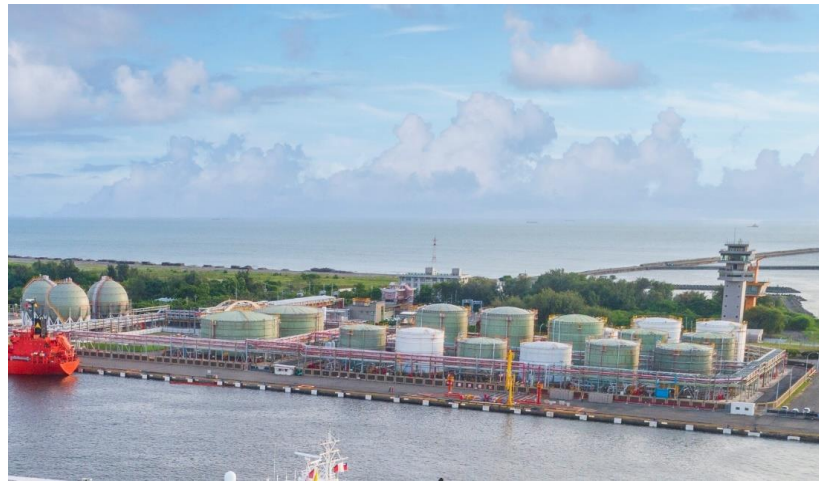
Landscaping in roads, offices, and creating green belts in Yuguang Island

- Total landscaping area of about 25.42 hectares
- Routine cleaning, landscaping and replanting



Wastewater Treatment System for Chimei Corporation

- Wastewater collection by closed pipelines
- Wastewater management with holding tanks
- Wastewater transported back to Chimei by specialized tanker trucks
- Implementing the concept of water recycling





2

Carbon Reduction Goals of TIPC



International Trends – Extreme Weather Impacts

➤ Economic activities have changed the climate.

Climate Change

From the unique vantage point in space, NASA collects critical long-term observations of our changing planet.

VITAL SIGNS

Show All →

Carbon Dioxide

CO₂濃度上升

↑ 427 parts per million

極地冰層下降

Arctic Sea Ice Minimum Extent

↓ 12.2 percent per decade since 1979

Global Temperature

全球溫度上升

↑ 1.4 °C since preindustrial

Ice Sheets

冰層減少

↓ 408 billion metric tons per year

Methane

甲烷

↑ 1932 parts per billion

Sea Level

海平面上升

↑ 4 inches since January 1993

Ocean Warming

海洋熱量增加

↑ 360 zettajoules since 1955

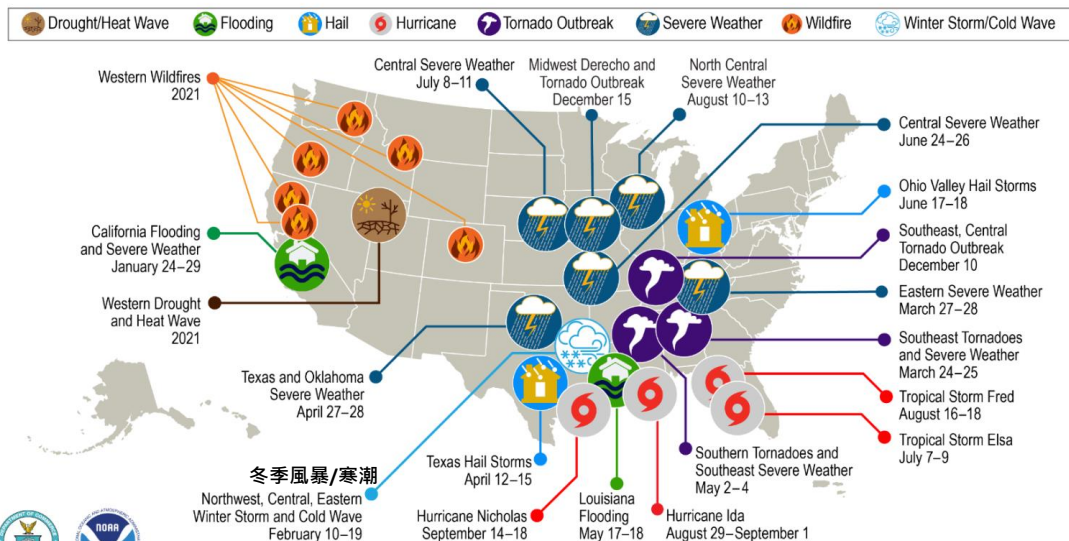


International Trends – Extreme Weather Impacts on the Global Economy

◆ Global warming has caused extreme weather

- Extreme weather events occurred one after another in 2021
- In the U.S., for example, disasters included forest fires, hurricanes and floods

U.S. 2021 Billion-Dollar Weather and Climate Disasters



Source: <https://www.climate.gov/media/13976>

Wildfires will be more frequent, larger and more intense due to climate change.



■ Climate change and environmental issues growing in importance

The “Global Risks Report 2022” of the World Economic Forum (WEF) stated that “**extreme weather**” and “**failure of climate action**” as the top risks for the next 10 years.



International Trends - Net Zero Carbon Emissions by 2050

UN Conference of the Parties (COP26)

■ Glasgow Climate Pact:

1. Maintaining the Paris Agreement to limit **global warming to below 1.5°C**
2. **Achieving net zero emissions by 2050**
3. Reducing the use of unabated coal power and phasing out fossil fuel subsidies
4. Supporting energy transition in developing countries
5. Reviewing the **2030 goals– 45% reduction in carbon emissions**



■ The Clydebank Declaration for Green Shipping Corridors:

1. Creating **six green corridors** by 2025, currently signed by 22 countries, to promote the green transformation of the maritime industry
2. 200 companies committed to scaling up and commercializing **zero-carbon ships** and fuels by 2030



International Trends - Net Zero Carbon Emissions by 2050

UN Conference of the Parties (COP27)

1. With the goal of limiting temperature increase to **<1.5 degrees**: 8% reduction in carbon emissions per year
2. Net zero emissions by 2050: Energy transition to **80% non-fossil fuels**
3. Considering that heavy industry and manufacturing cannot be fully electrified: a hydrogen energy sector needs to be created.
4. It is important for governments to set clear goals and pathways.
5. Energy transition has to be built up by countless “micro-transformations,” in which countries, businesses, communities, etc. must all take action.



COP27
SHARM EL-SHEIKH
EGYPT 2022



International Trends - Net Zero Carbon Emissions by 2050

UN Conference of the Parties (COP28)

- The world's first “global stocktake” report: Global warming control has been ineffective; governments and businesses should accelerate the **establishment of net-zero emission energy systems, transition away from fossil fuels in energy systems, and accelerate zero- and low-emission technologies.**
- Loss and Damage Fund: The role of the World Bank is to host the Fund secretariat and act as a trustee for an interim period of four years.
- **Global Decarbonization Accelerator (GDA):**
 1. “Global Renewables and Energy Efficiency Pledge”: **The world requires three times more renewable energy capacity by 2030**, and must double the global average annual rate of energy efficiency improvements.
 2. “Oil and Gas Decarbonization Charter”: **To eliminate routine gas flaring by 2030**, and be committed to net-zero operations and zero-out methane emissions by 2050.
 3. “Global Methane Pledge”: **To reduce global methane emissions at least 30% by 2030.**



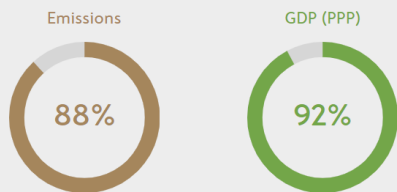


International Trends – Global Carbon Reduction Trends

Global Carbon Reduction Efforts

- The Paris Agreement was officially adopted on December 12, 2015, in an effort to halt global warming.
- 148 UN Parties, 273 cities with populations over 500,000, and 1,150 of the world's top 2,000 companies have made net-zero emission commitments.

GLOBAL NET ZERO COVERAGE



NET ZERO NUMBERS

Countries	Regions
148	164
Cities	Companies
273	1,150

Source: <https://zerotracker.net/>

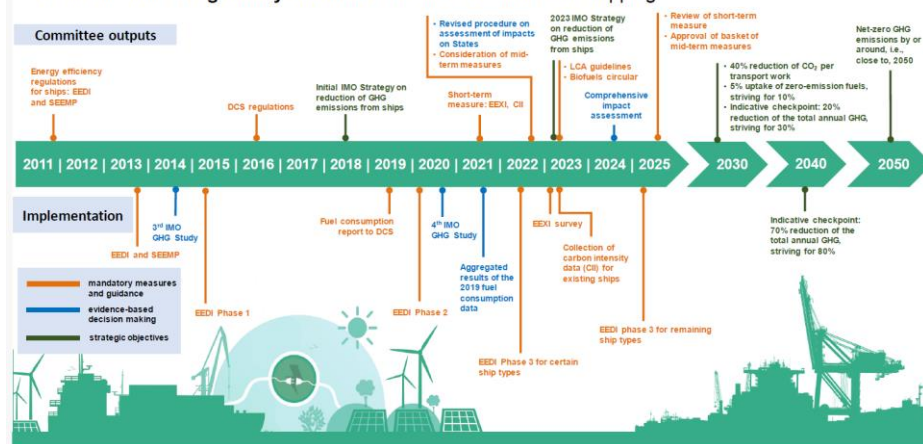
Global net zero coverage and target status (by May 28, 2024)

Shipping GHG Reduction Efforts

- IMO Commitment: Net zero emissions from shipping by 2050
- EU Commitment: Climate neutral economy by 2050

Addressing climate change

Over a decade of regulatory action to cut GHG emissions from shipping





Taiwan Government's Carbon Reduction Policy

April 2021

President Tsai Ing-wen declared:

"The world's goal of net-zero emissions by 2050 is also Taiwan's goal."

March 2022

National Development Council published:

"Taiwan's Pathway to Net-Zero Emissions in 2050"

January 2023

"Climate Change Response Act"
was passed



July 2015

"GHG Reduction and Management Act"
announced and implemented

(GHG emissions below 50% by 2050)

October 2021

EPA announced to amend:
"net-zero emissions in 2050"
explicitly included in the "Climate Change Response Act"

December 2022

National Development Council published:
"Phases of Net-Zero Transition Goals and Actions"



TIPC Commitment to Net zero– Short-term and Medium-term Goals

Short-term Goals (2022-2025)

Medium-term Goals (2025-2030)

Long-term Goals (2030-2050)

2022~2024

2025

2030

2050

Creating a sustainable development committee

- Build an ESG governance framework
- Raise internal sustainability awareness
- Define climate change entities and transition risks
- Complete greenhouse gas inventory and pass ISO certification

Responding to International Sustainability Initiatives



- Introduce World Ports Sustainability Program (WPSP)
- Follow the Task Force on Climate-Related Financial Disclosures (TCFD) and respond to Science-Based Targets Initiative (SBTi)
- Quantify entities risks and develop pathways for resilience and adaptation
- Develop measures and pathways for low-carbon transition

Resilience and Adaptation inventory Low-Carbon Transition Performance

- Complete TCFD disclosures and carbon disclosures
- Building resilient infrastructure to enhance port adaptation and protection capabilities
- Achieve the carbon reduction target of 21% compared with the baseline year 2020

Achieve 50% Carbon Reduction according to SDGs

Achieve Net-Zero Emissions





Executing ESG Sustainable Development and Carbon Reduction Roadmap

Taiwan Ports' Carbon Reduction Roadmap

I. Energy Structure

- Set up self-use wind power generation sites
- Set up self-use solar power generation sites
- Develop emerging or forward-looking energy
- TIPC green power purchase and utilization to increase renewable energy ratio
- Improve green power purchase and utilization by port operators

II. Resource Utilization

- Replace direct GHG emission equipment
- Use alternative energy to fuels
- Waste treatment

III. Transportation Emission Reduction

- Full electrification of official vehicles of port authorities
- Electrification of official vehicles and fleets of port operators
- Charging station infrastructure
- Change habits of commuting and traveling

IV. Shipping

- Comply with IMO goals by port operators
- Shore-to-ship power facilities

V. Equipment Upgrade & Others

- Built Energy-efficient new buildings
- Renovate buildings
- Use more efficient lighting, appliances and equipment
- AI and smart technology applications
- Power system integration and energy storage facilities

VI. Carbon Offset

- Carbon capture and reuse
- Develop carbon sinks (e.g. afforestation)
- Purchase carbon credits

VII. Organizational Behavior

- Participate in sustainability assessment and international initiatives
- Annual greenhouse gas inventory and guidance
- Conduct regular energy-saving checks
- Responsible investment
- Execute clean ship incentive program
- Execute internal carbon pricing
- Implement green purchasing
- Strengthen carbon reduction awareness

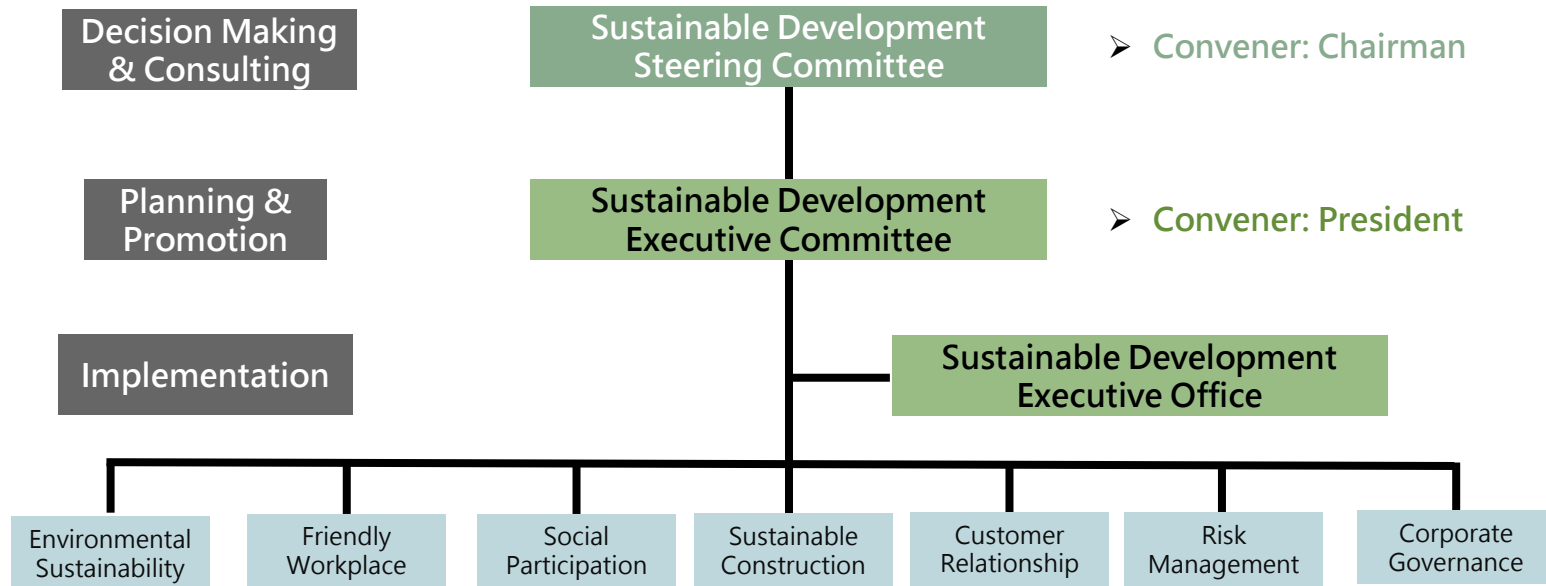


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TIPC Towards Sustainability



TIPC Framework of Sustainable Governance





TIPC Towards Sustainability – Vision and Goals

Sustainability Vision

Low-Carbon, Prosperity, Resilience

WPSP

TIPC Sustainability Goals

TIPC's goals align with UN SDGs

E

- 1.Environmental care
- 2.Climate & Energy

- Transition to low-carbon ports & harbors

S/G

3. Community Building
4. Health Safety and Security

- Implement environmental safety at ports
- Enhance prosperity among diverse partners

G/s

5. Infrastructure
6. Digitalization

- Build smart and resilient ports
- Operate on integrity and sustainable governance



尊嚴就業與經濟發展



產業創新與基礎設施



氣候行動



夥伴關係



可負擔的潔淨能源



永續城市



保育海洋生態



4

Conclusions



Conclusions



✓ The Earth is the port's eternal friend.

The Earth is in a difficult situation of warming. We have jointly caused the warming, so let's work together to cool down the Earth.



✓ Cherish the Earth and make ports sustainable.

Change the energy structure, implement energy conservation and carbon reduction, carbon capture and reuse, and other proactive actions to cool the Earth and pave a sustainable path for the port.



✓ Share blue sky and green land on the Earth.

Only when the Earth has a moderate temperature can we see blue skies and white clouds, surrounded by green trees, and enjoy a green shade on the ground. Let's work together to reduce carbon emissions and move towards a sustainable future.

