Sustainability in Maritime Logistics – The Role of Green Port

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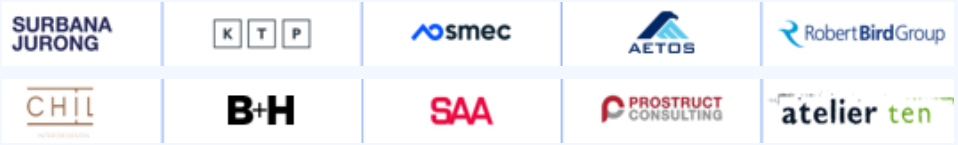
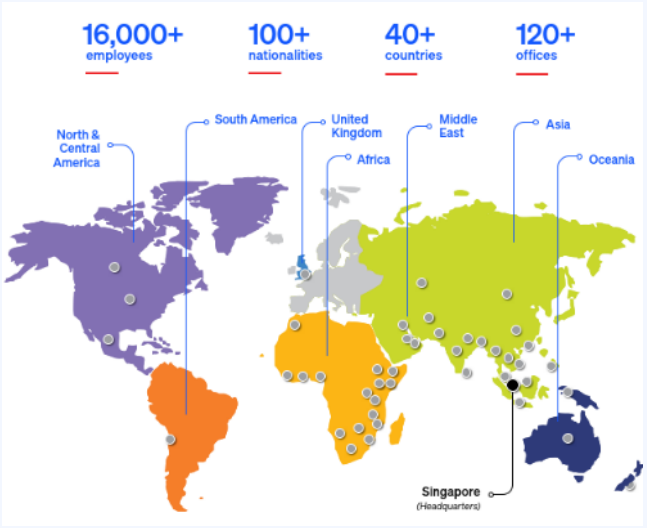
Real impact, made together

SJ Group is a global urban, infrastructure, and managed services consulting firm headquartered in Singapore, known for delivering sustainable solutions across the entire project lifecycle.





Building + Cities (B+C)

Infrastructure + Energy (I+E)

Integrated Solution

One of the largest Asia-based global urban, infrastructure and management services consulting firms

Over 70 years track record of successful project delivery

Ranked #23 in ENR 2024 Top 225 International Design Firms

Ranked 14th in World Architecture 100 2025

Increased Singapore's land mass by 16% through reclamation

Completed master planning in over 60 countries

Planned over 100 industrial parks worldwide

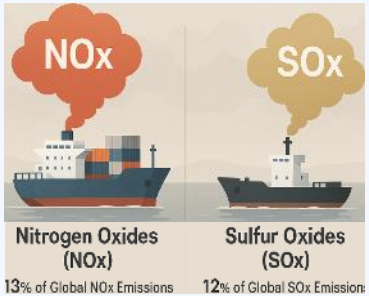
Engineered 1 of 7 engineering wonders of the modern world – Snowy Mountains Hydroelectric Scheme

Engineered Southeast Asia's 1st underground rock cavern with a storage capacity of 17.6 million barrels of oil

Designed over 1 million homes in Singapore

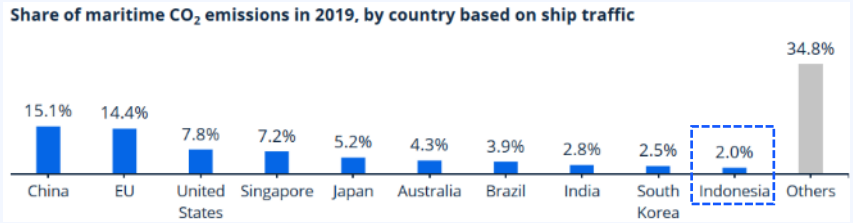
Maritime Sector's Environmental Impact

Source: UNCTAD



Oil Spill | Untreated Ballast Water | Recycling of ship

Source: European Commission



Source: Coordinating Ministry of Maritime Affairs

International Commitments

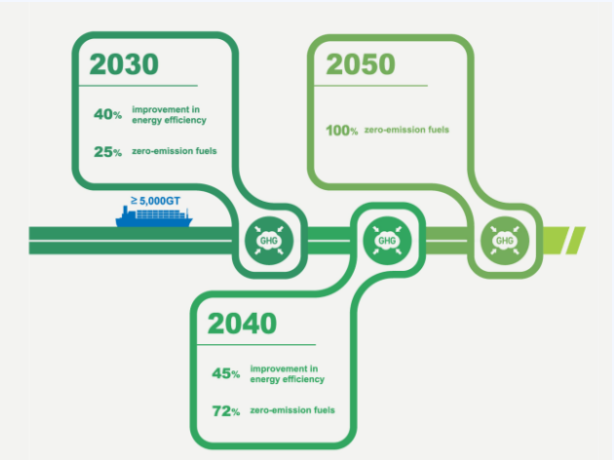
1990 Double hull mandate
for Tanker >5,000 DWT

2017 BWMS Convention
International ship to comply D-2 standard by 2024

2020 Sulfur cap
Max 0.5% sulfur content in fuel oil

2025 Hong Kong Convention for Safe & Environmental Sound Recycling of Ship will enter into force on 26 Jun 2025

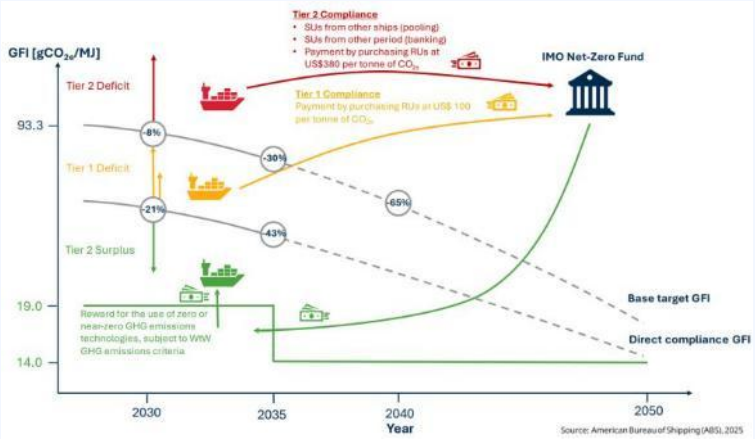
2050 Decarbonization Target
Net-zero emission for shipping Industry



Update :

IMO Net-zero Framework: combining mandatory emissions limits and GHG pricing across an entire industry sector) has been approved in **Apr 2025**.

- In 2027, it will become mandatory for large ocean-going ships over 5,000 GT
- Ships must reduce their annual greenhouse Gas Fuel Intensity (**GFI**)
- There will be punishment & reward for ships emitting above & below threshold



Indonesia Commitments

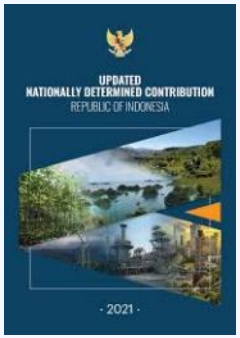
2016

Paris Agreement ratification & 1st NDC

2021

Updated NDC & LTS

Perpres 98/2021: Carbon Economic Value



2022

Enhanced NDC

Permen LHK 21/2022: Implementation of Carbon Economic value

31.89%
on its own

Indonesia's goal to reduce GHG emission by 2030

43.2%
with international support

Maritime Sector's Progress Toward Sustainability Journey

Global Situation

🌎 Only 35% of shipping companies committed to 2050 climate targets.

⛽ Due to price hike of VLSFO, HSFO still commonly used

🔋 In 2022, only 1.2% of ships used alternative fuels. But ship use alternative marine fuels slowly picking up. E-ammonia projected to be 43% of fuel use by 2050

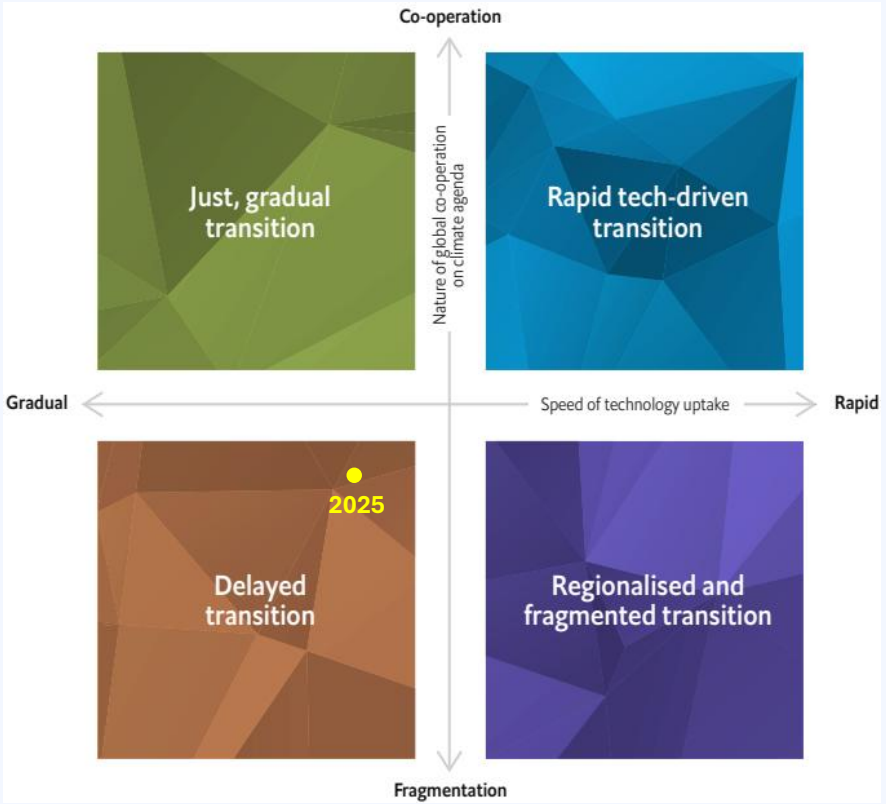
Indonesia Situation

🔌 52 OPS installation points at 20 ports in Indonesia

🌱 Utilization of Biofuel for ships using FAME (B40)

🚢 23 authorized ship recycling facilities in Indonesia

What port sector players can do to contribute to achieving Net-Zero target?

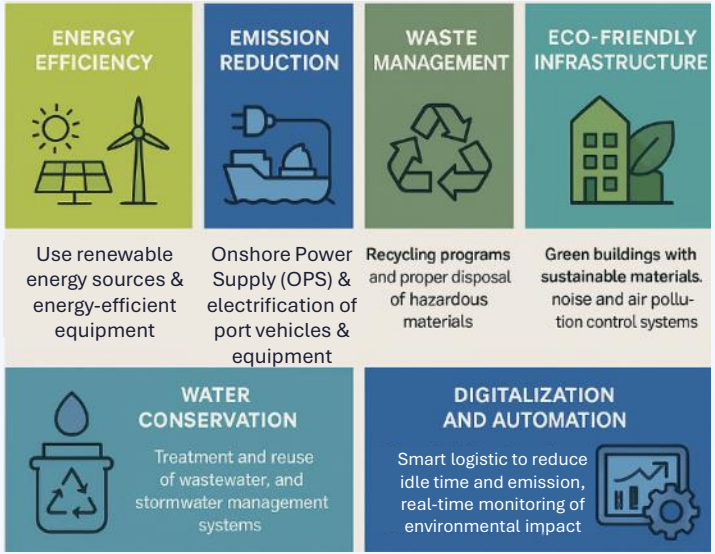


Source: *Global Maritime Trend Barometer 2025, LR's Foundation*

Port Sector Contributions – Green Port

- Majority of GHG emissions produced at a port come from docked vessels.
- Port operators can actively contribute to the sustainability journey in port operation efficiency (e.g. reduce ship's fuel consumption & emission during dock as well as reduce port's energy waste)
- Charge lower fees for green vessels→ As of 2022, 60% of ports in Europe offered lower fees for "green" vessels . Some ports in Asia (e.g. Singapore, Shenzhen, and Hong Kong) are also adopting this environmental port fee.

Green port focuses on reducing the ecological footprint of port operations through eco-friendly practices and technologies, such as:



Minister decree 8/2023

10 Mitigation Actions Plan in Sea Transportation Sector

1) Modernization of Ships
2) Implementation of Ship Energy Efficiency Management Plan (SEEMP)
3) Implementation of Anti Fouling System for the ship-hull
4) Ship Telecommunication Services (Weather Forecast Information)
5) Implementation of Onshore Power Supply (OPS) in ports
6) Electrification of Loading and Unloading Equipment Facilities in Ports
7) Utilization of Solar Power Street Lighting in Ports
8) Utilization of Solar Power Plant (PLTS) in Transportation Infrastructure
9) The use of Low Carbon Fuel on Ships
10) Utilization of Aids to Navigation System (SBNP)

IDN Guidelines

KP-DJPL 689/2022: Ecoport Guidelines

Four Pillars of Ecoport

Compliance

- ✓ Fulfillment of all regulatory requirements in the environmental field (compliance).

Management System

- ✓ Implementation environmental management system (eg ISO 14001).

Green Initiatives

- ✓ Implementation of green initiatives, such as energy management, water saving, using of environmentally friendly technology, habitat protection and biodiversity.

Stakeholders

- ✓ Stakeholders involvement to support fulfillment regulation in the environmental sector and implementation green initiatives ports.

Added values:

Improved Port Efficiency

improved port performance and productivity through equipment automation

Port Economic Function Improvement

Comprehensive and sustainable port planning and development, thus increase the regional economic growth

Environmental Quality Improvement

Ecoport implementation is expected to prevent / reduce the negative environmental impact of port activities

Improving Port Competitiveness

Increase the stakeholder's preferences towards more efficient and environmentally friendly port services

How Surbana Jurong Can Support Green Port Development

Master Planning & Design	Sustainable port masterplan, green infrastructure, climate resilience design
Environmental & Sustainability Consulting	ESIA study, carbon reduction strategies, sustainability roadmap, advise on green certification compliance
Engineering & Technical Solution	Design OPS infrastructure, integrate renewable energy sources, green port design
Smart & Digital Solution	Use AI & data analytic to optimize operations, implement digital twin, smart port design
Project Management & Implementation	Provide end-to-end project delivery

Jurong Port Green Berth (J10 & J11)

Berths J10 & J11 of Jurong Port are the **1st green berths in the world**.

The BCA Singapore has awarded a Green Mark (**Gold**) certification for berth J10 & J11.

The award recognizes the berth's green construction methods and materials and environmental sustainability features (recycled concrete from existing structures at the port).

The challenge:

There are limited items to comply with the available Green Mark guidelines as a port infrastructure project. There was no international green certification which offered any guidelines for port facilities.

After working with owners and BCA, the team managed to kick start the project and achieved the very first Green certified port in the world with a Green Mark Gold award. This marked the Port as a distinguished leader locally as well as internationally in terms of sustainability.

Client: Jurong Port

Year: 2016

Scope of works:

Concept & Basic Engineering Design;

Project & Construction management

Jakarta Integrated Green Terminal (JIGT)

The Jakarta Integrated Green Terminal (JIGT) project aims to address the increasing energy demands in Java and supporting Indonesia's shift towards a net-zero economy. As the country's population grows and urbanization accelerates, there is an urgent need for modern, world-class terminal infrastructure to support sustainable economic development.

The JIGT will be located at Kalibaru area on the new reclaim land. JIGT ambition is to achieve future certifiable claim of Carbon Neutrality (ISO 14068-1:2023).

As a 'Green' Terminal, JIGT has the opportunity to be environmentally-conscious on two main fronts: providing **Green Products** as well as **Green Operations**.

On the product side, it has been determined that JIGT will be a hub for green products (e.g. Liquid CO2, Used Cooking Oil, Sustainable Aviation Fuel). It will also assist with the transition away from higher-emissions Coal-fired energy production by providing facilities for Liquid Natural Gas (LNG).

The scope of Green Operations is to reduce the emissions incurred through the operation of facilities.

Client: PIS

Year: 2024

Scope of works:

Masterplan & Concept Engineering Design;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