

Japan's Efforts for Environmental Issues in International Shipping

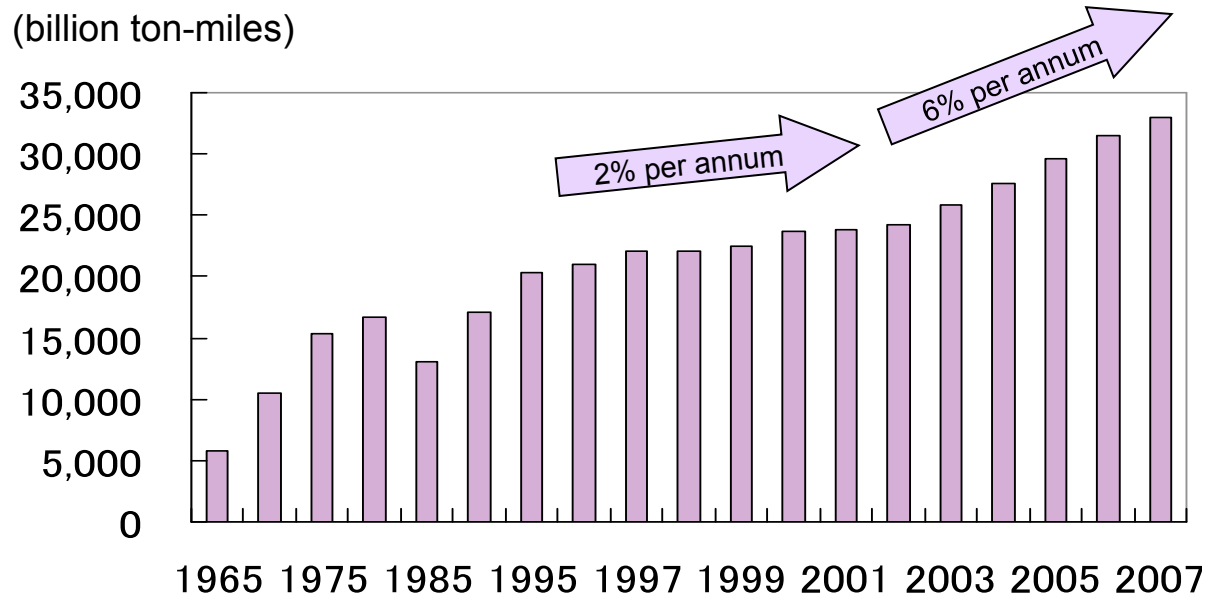
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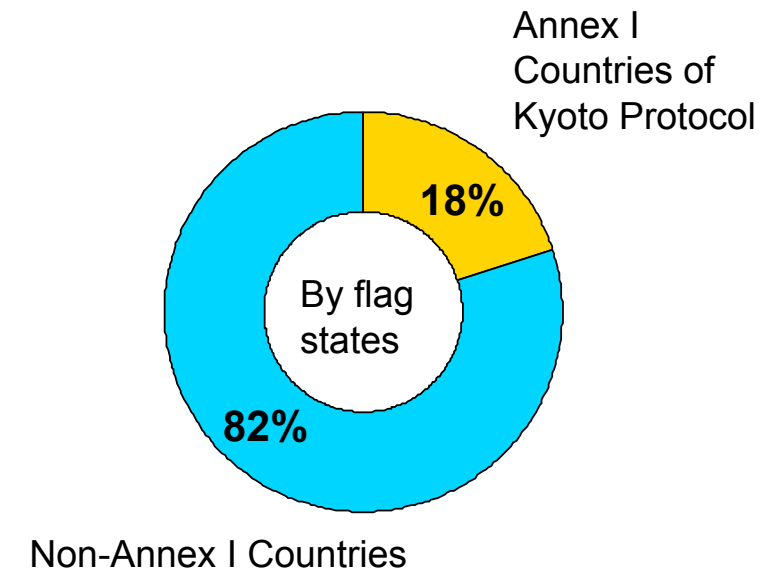
Vice-Minister for Transport, Tourism and International Affairs
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1. CO₂ Emission from International Shipping

World Seaborne Trade (ton-miles)



Proportion of Annex I Countries and Non-Annex I Countries in Flag States (Gross Tonnage Base)



*Estimate of CO₂ emission from international shipping is about 843 million tons.
(3% of the global CO₂ emission and equal to the emission from Germany)
The increase in world seaborne trade driven by the development of global economy
will further lead to an increase in CO₂ emissions from international shipping.*

2. Japan's Policy to Reduce CO₂ Emission

Basic Position

- ❑ Reducing CO₂ emission from international shipping is vitally important
- ❑ A framework in which all countries can participate should be established, taking account of;
 - International shipping is environmentally-friendly transport mode
 - Measures which distort international shipping market should be avoided
 - Improving energy-efficiency of shipping is indispensable
- ❑ The IMO should take the lead in establishing international mechanism

Action

- ❑ Proposal of a fuel-efficiency index (Energy Efficiency Design Index) to the IMO.
- ❑ Development of energy-saving technologies to reduce CO₂ emission.

*Contribute to accelerating discussion in the IMO.
Encourage development of energy-saving technologies.*

3. Marine Environment Initiative

“Energy Efficiency Design Index for new ships”

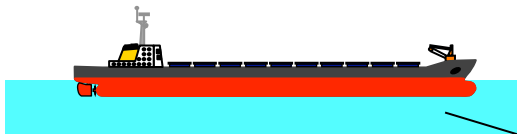
Agreed at the IMO MEPC 58

- Energy Efficiency Design Index (EEDI) for new ships is a scale of ships' efficiency in terms of CO₂/ton-mile.

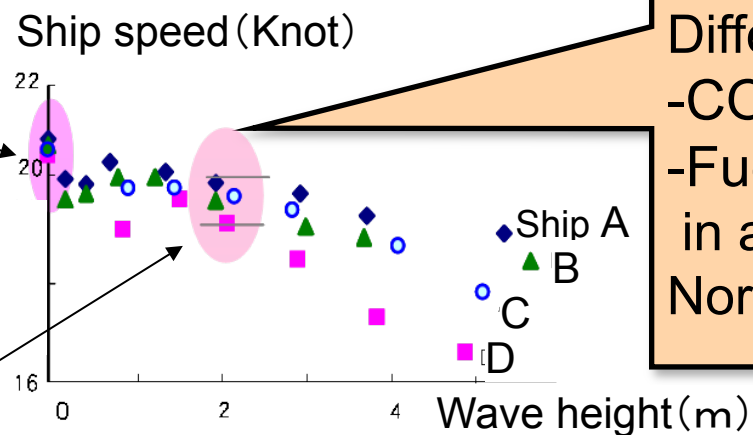
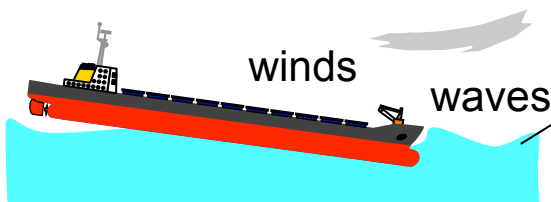
$$\text{EEDI (g/ton-mile)} = \frac{\text{CO}_2 \text{ emission from Main Engine} + \text{CO}_2 \text{ emission from Aux Machinery}}{\text{Cargo Capacity} \times \text{Ship Speed} \times f_w \text{ (weather effect)}}$$

Importance of Weather Effect

■ Calm Sea Condition



■ Actual Sea Conditions

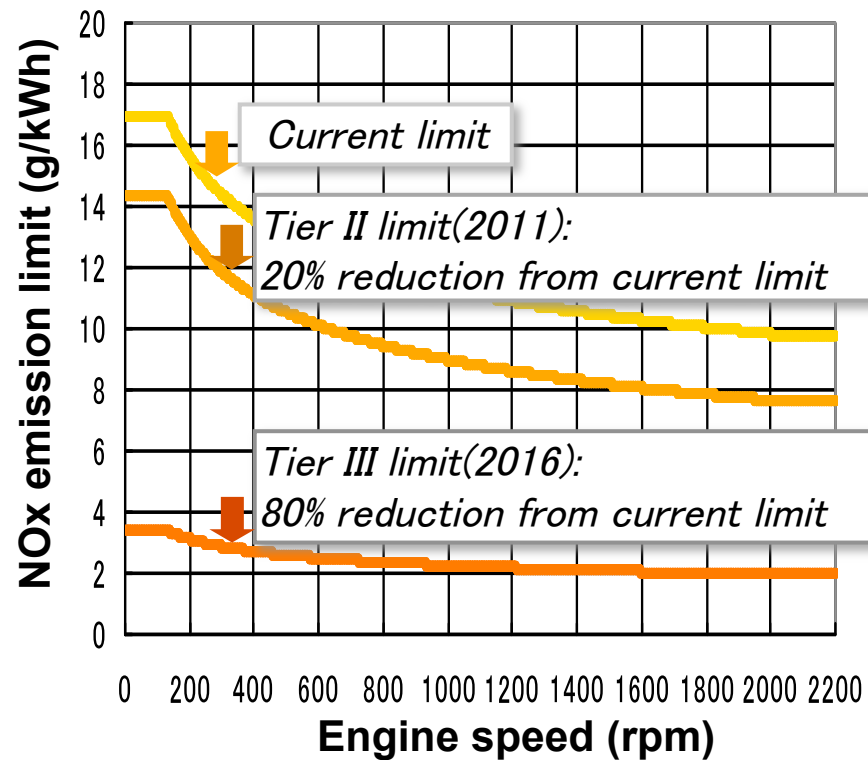


Difference per year
 -CO₂ emission: 6,000 tons
 -Fuel consumption: 10%
 in average wave height in
 North Pacific

4. Prevention of air pollution (NO_x, SO_x)

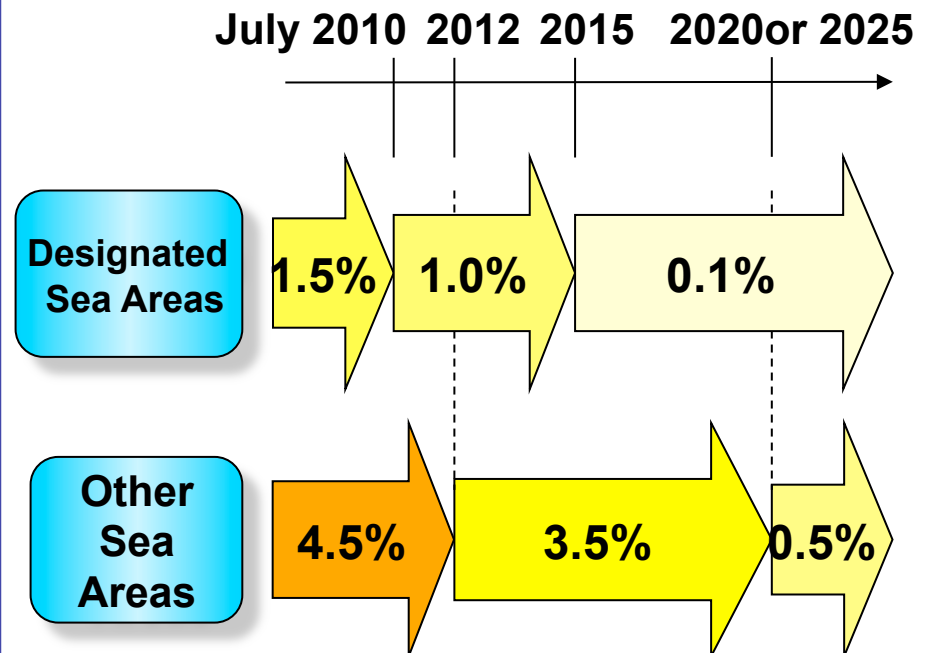
Regulations for the prevention of air pollution from ships

NO_x regulation



SO_x regulation

(Sulphur content limit of fuel oil)



5. Japan's Initiative for New Regulations to prevent air pollution

Development of advanced technology for air pollution prevention

■R&D program for advanced technology for reduction of NOx emission from ships .

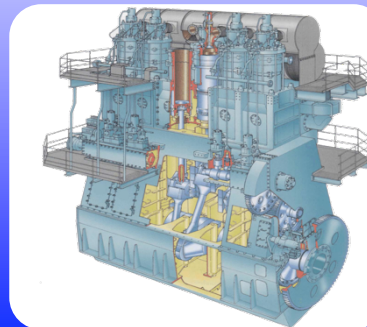
【Target】 NOx reduction : 80%
Fuel consumption: status quo

【Period】 FY2007~FY2011
(5 years plan)

Super Clean Marine Diesel Project

NOx reduction technology for marine engines

Improved in-engine combustion technology



Exhaust gas after-treatment device :
SCR(Selective Catalytic Reduction) systems