



MTCC ASIA
Maritime Technology Cooperation Centre



GMN | The Global
MTCC Network
A global network for energy-efficient shipping

Challenges and opportunities for innovation and deploying new solutions in Asia

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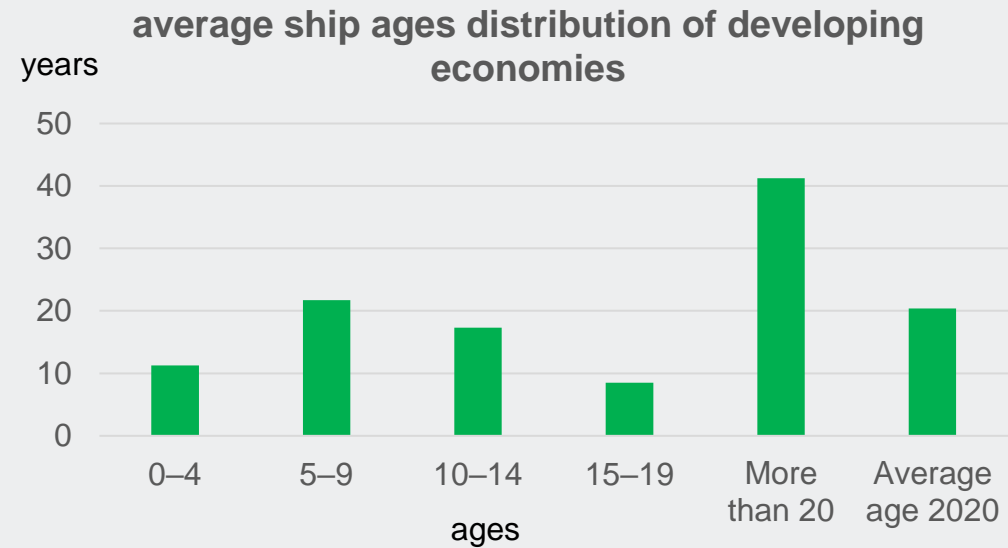
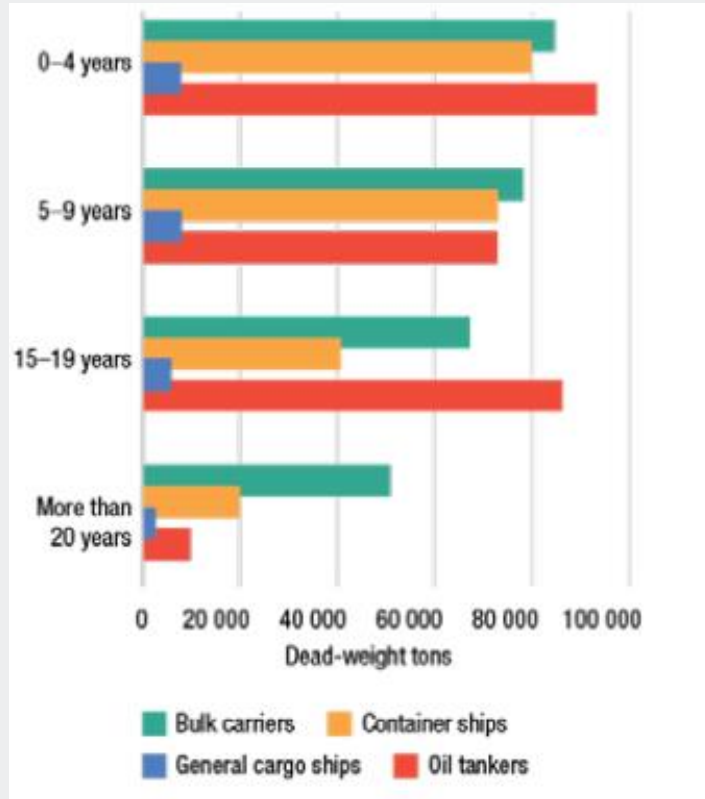
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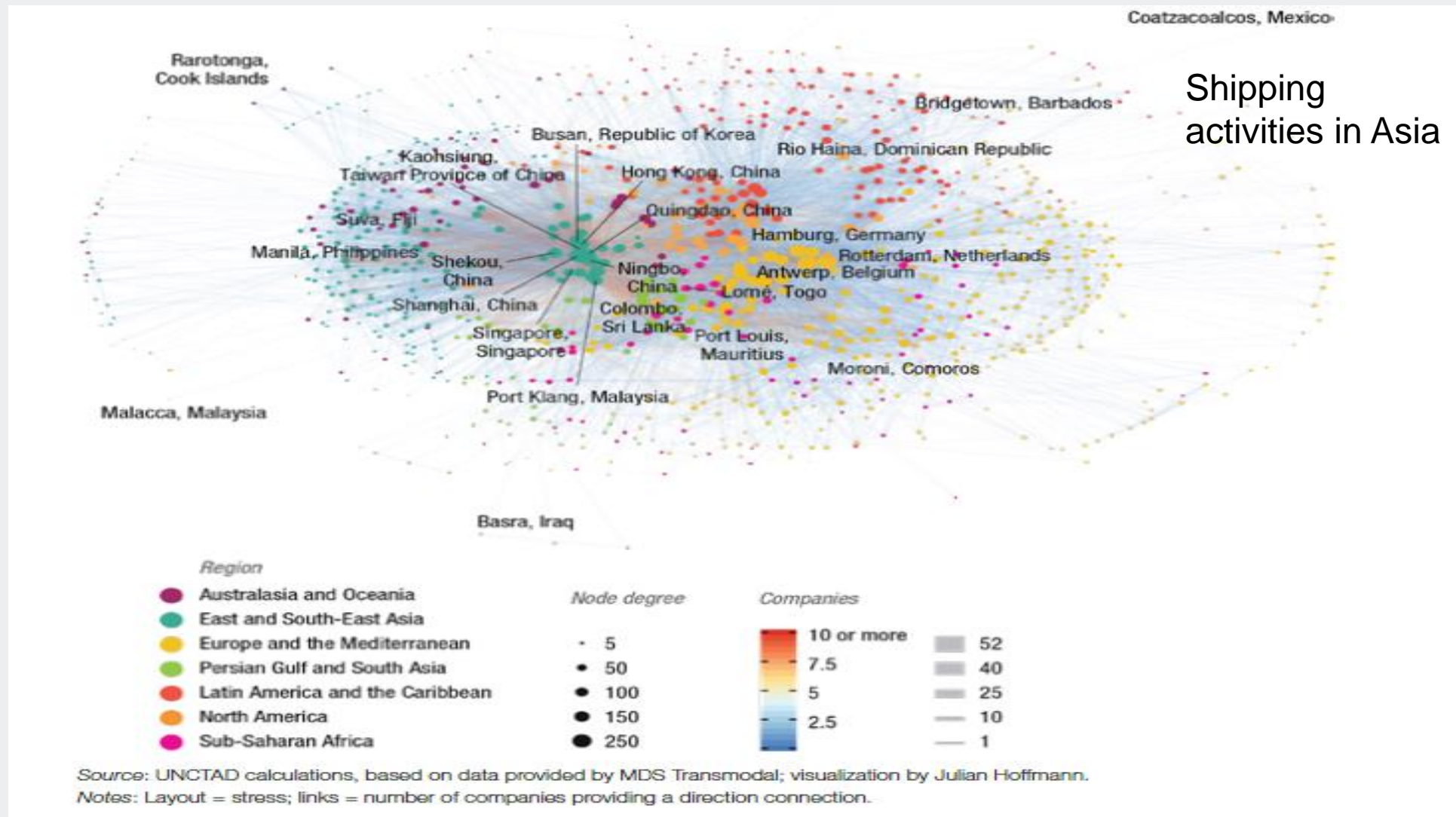
Fleet age profile of Asia economies



Average vessel size and age distribution, selected vessel types, 2020 (Dead-weight tons)

Source: Review of Maritime Transport 2020.

Structure of shipping in the region



Ports of Asia economies are in the center of world port network

Overview of ship energy efficiency technologies in region

1. Parties to MARPOL Annex VI

National policies and incentive measures had been developed to promote vessels to adopt technical and operation EE measures. These nations include China, Indonesia, Malaysia etc..

Large ship owners and operators have actively begun to try EE technologies for cost cutting and emission reduction purposes.

The public awareness on the importance of emission control and the available EE technologies has reached a relatively high level.

Overview of ship energy efficiency technologies in region

2. The most widely used ship's EE measures in the region

Operational measures:

- ◆ weather routing
- ◆ optimal trimming
- ◆ speed optimization
- ◆ slow steaming

...

Technical measures:

- ◆ optimal hull design
- ◆ coating
- ◆ propeller optimization
- ◆ Main engine optimization

...

Shipowners have also shown interests in alternative fuels, LNG, Ammonia etc..

- Shore power are used to reduce emission while ships are in port.

Overview of ship energy efficiency technologies in region

3. Parties Which haven't ratified MARPOL Annex VI

The application of ship's EE technologies mainly depends on the wiliness of ship's owners or operators.

The applicable EE technologies are normally operational measures.

Overview of ship energy efficiency technologies in region

Owing to relative small ship size and available navigational waters, the options of EE measures are limited.

A lack of national policies and incentive measures lead to a weak strength on promotion of EE technology application

Barriers analysis

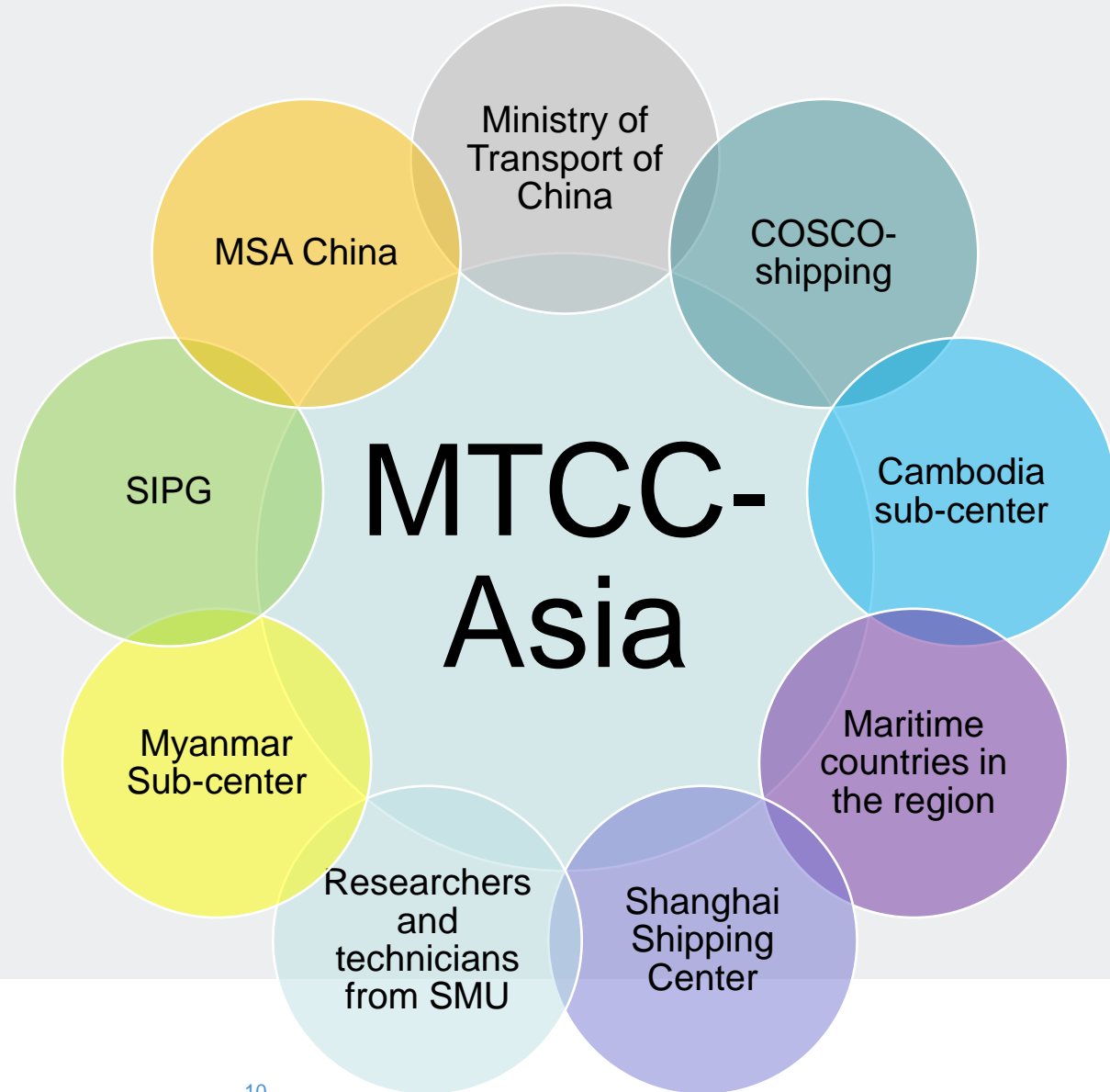
- The lack of national policies or promotion measures are common, which lead to ship players are slack to mitigate GHG emission.
- Some nations have difficulties and still struggle to ratifies MARPOL Annex VI due to the lack of personals and budget, complicated national legal process etc..

Barriers analysis

example

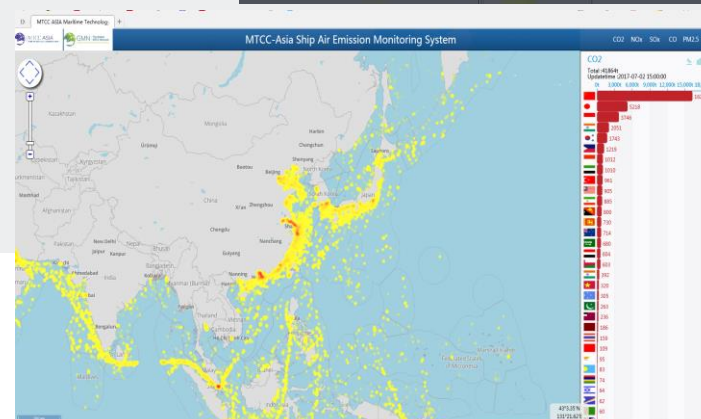
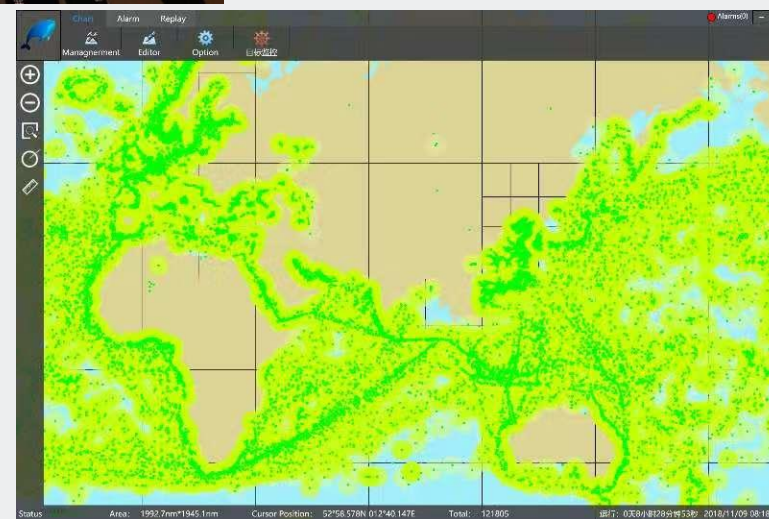
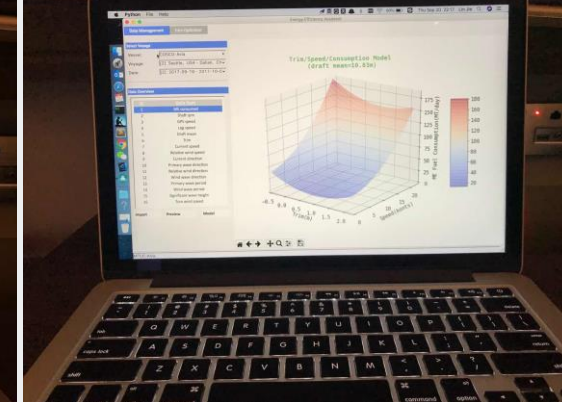
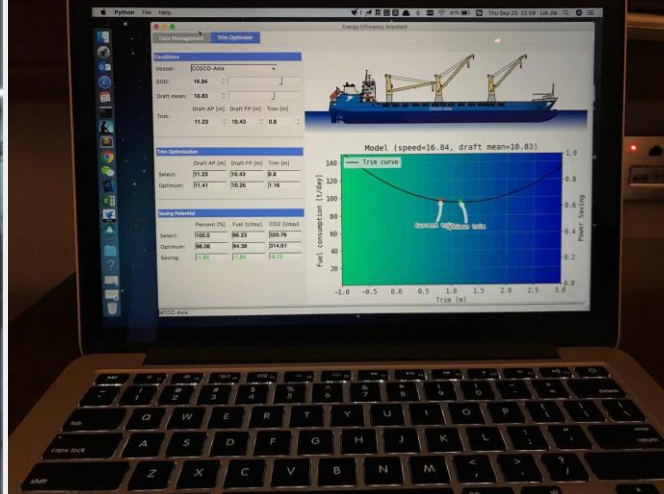
- Many ships which are more than 20 years old and small sizes, fail to implement some of the new technologies on those ships.
- Lack of technologies and low level of public awareness on GHG mitigation measures prevent the effective implementation of GHG mitigation requirement in different nations
- Challenges in monitoring the performance of oceangoing vessels in sea voyages.

Spotlights on MTCC Asia



For technologies, we are serving not only the pilot projects, but also.....

1	Leading maritime technologies for GHG reduction	<ul style="list-style-type: none"> 1. Trimming Optimization technologies 2. Fuel oil collection system 3. Global ship GHG emission monitoring system 4. Port operations based on Just-In-Time concept 5. GHG plus intelligent technologies 6. ...
2	Maritime Knowledge Bank	<ul style="list-style-type: none"> 1. Courses and subjects for Energy Efficiency (ship and port) 2. White paper for maritime GHG technologies
3	Exchange platform for Technologies	<ul style="list-style-type: none"> 1. Close co-operations with a cluster of shipping entities 2. Close co-operations with Asian maritime countries



GUIDELINES ON SHIP TRIM OPTIMIZATION

—BASED ON MACHINE LEARNING METHOD

Maritime Technology Cooperation Centre for Asia
(MTCC-Asia)



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GUIDELINES ON SHIP FUEL CONSUMPTION DATA COLLECTION AND REPORTING

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Quality capacity-building programs in Asia



High level international meetings: Global Green Maritime Forums, ASEAN maritime co-operation, SMART, UNDP, nextGen, etc,...



Achievements and Impacts

- *Increased the visibility of IMO achievements and progress for GHG reduction (upon the field operations).*
 - *Trained a number of maritime administrators and company officers (through capacity-building programs)*
 - *Consolidated capacity for transferring and adapting technologies*
 - *Maintained a more effective platform for wider co-operation in Asian counties, in technologies, maritime legislation, management schemes and policies, etc.,.*
- *More than 1,500 professionals are trained, from more than 30 countries;*
 - *More than 2,000 Vessels are benefited from the technologies;*
 - *15 full time postgraduates;*
 - *11 GHG related online courses;*
 - *Global Green Shipping Forum, conferences and webinars, etc.,.*
 - *.....*

5. Proposed actions/opportunities

- Keep continuously good communication and co-operations with relevant parties in Asian maritime countries to enhance the effectiveness and efficiency of capacity building programs, by providing more goal-based, realistic and practical training and education for GHG reduction from both ships and ports.
 - Practical GHG-related operations (for operators from ships and ports)
 - Legislation, policies and strategic planning (for management level and administrators)
 - Joint researches
 - Field study and implementation
 - etc...
- To tailor-make or adapt GHG technologies. In particular, to encourage the transferring of following technologies, in view of their cost-effectiveness:
 - JIT
 - Trimming optimization
 - Practical onboard GHG related operations (voyage-planning, main Engine conversion and operations, etc..)
 - Management schemes, maritime legislations and policies beneficial to the reduction of GHG
- Actively promote environmental awareness in the whole society, promote greater technology uptake and digitalization, and accelerate Technology transferring on EE
- Pay more attention to the total performance of GHG reduction in Asia, by applying AIS and IT technologies, in particular to the international voyages around those SIDs and LDCs. Make contributions to the implementation of IMO initial strategies in the region.
- Contributing to the work of IMO and national legislation in Asian maritime countries.



Thanks for your attention!

Comments and Questions ?

The Global MTCC Network (GMN) project is funded by the European Union and is implemented by IMO.

The MTCC-Asia is hosted by SMU and supported by SMG.