



MTCC AFRICA
Maritime Technology Cooperation Centre



CAPACITY BUILDING FOR CLIMATE CHANGE MITIGATION IN THE MARITIME SHIPPING INDUSTRY

Safe / Secure / Efficient shipping on clean oceans Need for Partnership

Madagascar National Workshop | 16 – 17 May 2018 | Toamasina

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The Global MTCC Network (GMN) project is funded by the European Union and implemented by IMO
The views expressed in this presentation can in no way be taken to reflect the views of the European Union



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International Trade and Shipping - Statistics

- Over 90% of all trade between countries is carried by ships
- Some 50,000 merchant ships sail the world's oceans, transporting everything from food and fuel to construction materials, chemicals, and household items.
- In 2003, around 6.1 billion tonnes of cargo was shipped by sea, covering a collective distance of over 6 million kilometres.

Ship Manufacturers

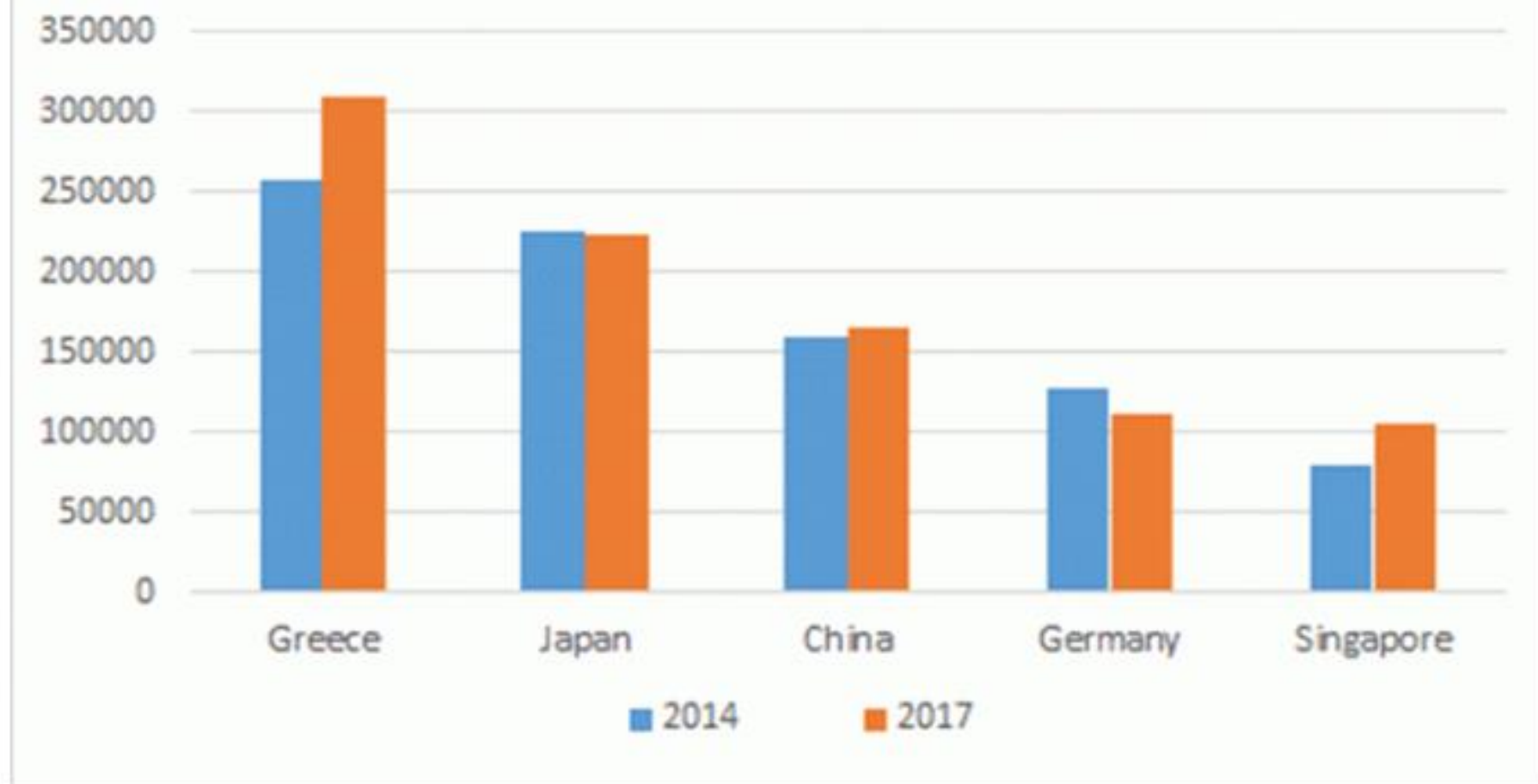
- Republic of Korea, China and Japan constructed 91.8% of world tonnage (GT) in 2016
- Of these three countries, Republic of Korea had the largest share with 38.1%.

Ships Owners

- Greece, Japan, China, Germany, Singapore, USA, Norway, South Korea, Denmark and UK.
- The first 5 have a market share of 49.5% of dwt.
- Only one country from Latin America (Brazil) is among the top 35 ship owning countries, and none from Africa

Top 5 merchant fleet owning economies

Fleet in thousands of DWTs (dead weight tons)
2014 and 2017



Top [5 ship owners](#) are Greece, Japan, China, Germany and Singapore. Together they have a market share of 49.5% of dwt. Only one country from Latin America (Brazil) is among the top 35 ship owning countries, and none from Africa.

Ship Registries (by tonnage)

- Panama, Liberia, Marshall Islands, China Hong Kong SAR, Singapore, Malta, Bahamas, China, Greece and United Kingdom.
- Developing countries flag more than 76% of the world fleet (including small vessels) in dwt, But they own very few ships.
- In terms of vessel types, bulk carriers account for 42.8% of dwt, followed by oil tankers (28.7%), Container ships (13.2%), other types (11.3%) and general cargo ships (4%).

Table 2.6. Leading flags of registration by tonnage, 2017

Flag of registration	Number of vessels	Vessel share of world total (percentage)	Dead-weight tonnage	Share of world total dead-weight tonnage (percentage)	Cumulated share of dead-weight tonnage (percentage)	Average vessel size (dead-weight tons)	Dead-weight tonnage growth, 2016–2017 (percentage)
Panama	8 052	8.64	343 397 556	18.44	18.44	45 237	2.75
Liberia	3 296	3.54	219 397 222	11.78	30.23	66 706	5.66
Marshall Islands	3 199	3.43	216 616 351	11.63	41.86	67 968	7.76
Hong Kong (China)	2 576	2.77	173 318 337	9.31	51.17	68 695	6.23
Singapore	3 558	3.82	124 237 959	6.67	57.84	36 942	0.21
Malta	2 170	2.33	99 216 495	5.33	63.17	46 297	5.14
Bahamas	1 440	1.55	79 842 485	4.29	67.46	56 625	0.79
China	4 287	4.60	78 400 273	4.21	71.67	20 555	2.12
Greece	1 364	1.46	74 637 988	4.01	75.68	66 999	1.60
United Kingdom	1 551	1.66	40 985 692	2.20	77.88	30 495	10.42

major ships in real-time as they voyage around the Deep Blue Sea.



Image: Visual Capitalist

Ship Traffic

- Greece, Japan, China, Germany, Singapore, China, Hong Kong, Korea, Norway and USA
- The first 5 have a market share of more than 50% of deadweight tonnage.

Ship Scrapping

Ship Scrapping, four countries accounted for 94.9% of world tonnage (GT) in 2016

- India,
- Bangladesh,
- Pakistan
- China

World Trade Exports - 2016 (\$ billion)

- China: 2060
- US: 1420
- Germany: 1320
- Japan: 606
- France: 486
- South Korea: 483
- Italy: 455
- Netherlands: 435
- UK: 404
- Canada: 387
- Mexico: 373
- Belgium: 326
- Switzerland: 302
- Russia: 282
- Spain: 275
- India: 257
- Thailand: 231
- Malaysia: 184
- Brazil: 182
- Australia: 159

Top Polluters - 2015

2015 annual CO₂ emissions estimates (in thousands of CO₂ tonnes)

Country	Fossil Fuel CO ₂ emissions (kt)	% Fossil fuel CO ₂ Emissions	Emissions per Capita (t)
World	36,061,710	100%	
<u>China</u>	10,641,789	29.51%	7.7
<u>United States</u>	5,172,336	14.34%	16.1
<u>European Union</u>	3,469,671	9.62%	6.9
<u>India</u>	2,454,968	6.81%	1.9
<u>Russia</u>	1,760,895	4.88%	12.3
<u>Japan</u>	1,252,890	3.47%	9.9
<u>Germany</u>	777,905	2.16%	9.6
International Shipping	642,024	1.78%	—
<u>Iran</u>	633,750	1.76%	8
<u>South Korea</u>	617,285	1.71%	12.3
<u>Canada</u>	555,401	1.54%	15.5
<u>Saudi Arabia</u>	505,565	1.40%	16
<u>Indonesia</u>	502,961	1.39%	2
International Aviation	502,936	1.39%	—

**Business AS Usual
(BAS)**



**Global
Ambition**

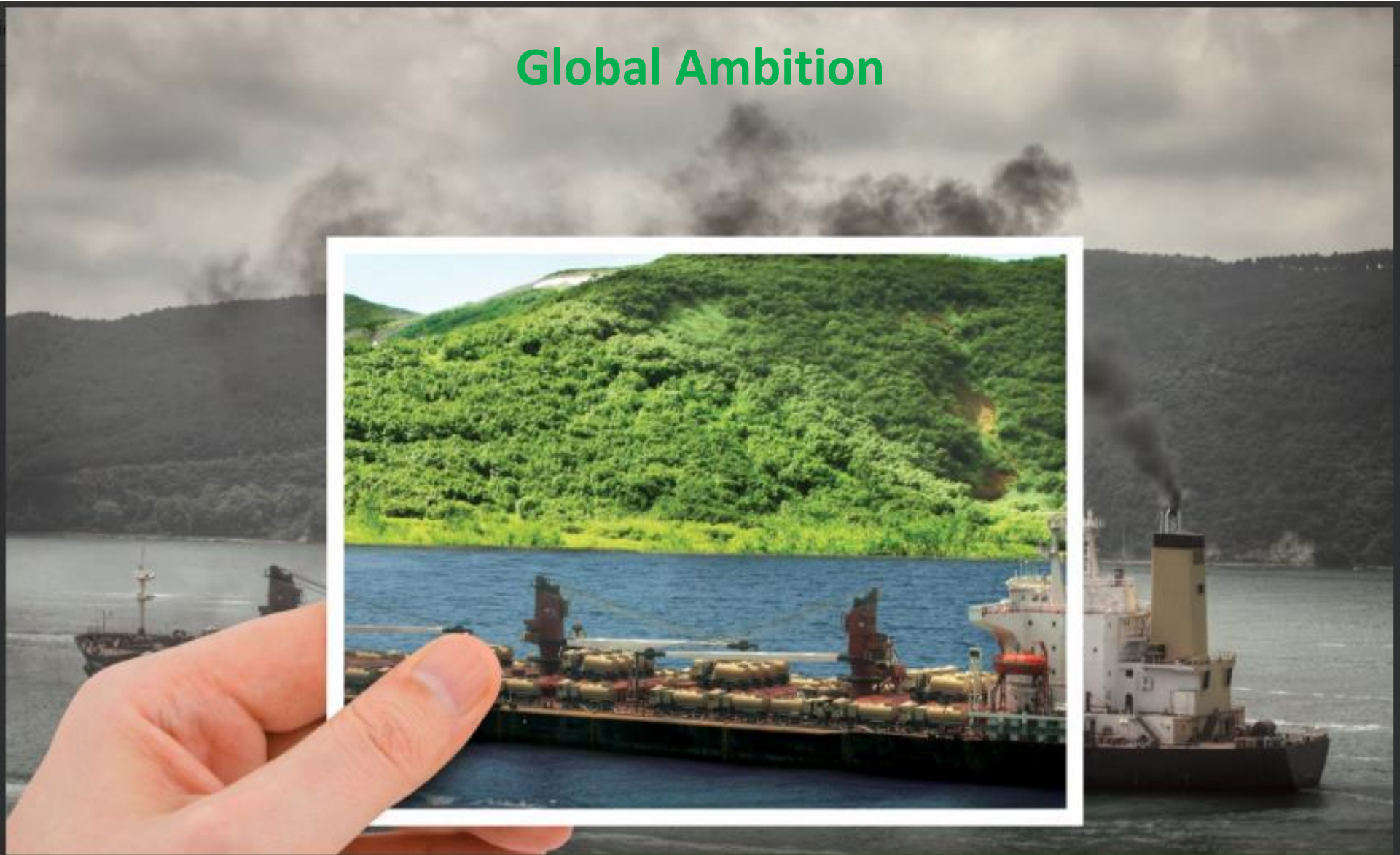


The 10 most effective existing technical and operational measures to reduce CO₂ emissions from shipping

Solution	Relative CO ₂ savings	Savings/Costs per tonne CO ₂	Take-up	
			2007	2011
Speed reduction	17-34%	- 280 €/t	0%	50%
Propeller & rudder upgrade	3-4%	- 150 €/t	0%	0%
Hull coating	2-5%	- 280 €/t	0%	50%
Waste heat recovery	2-6%	+ 60 €/t	0%	0%
Optimisation of trim & ballast	1-3%	- 200 €/t	0%	50%
Propeller polishing	1-3%	- 280 €/t	75%	75%
Hull cleaning	1-5%	- 200 €/t	75%	75%
Main engine tuning	1-3%	- 250 €/t	75%	75%
Autopilot upgrade	1-1.5%	- 280 €/t	75%	75%
Weather routing	1-4%	- 280 €/t	75%	75%

CO₂ savings and costs compared to 'business as usual' in 2020 (source: Maddox 2012)

Global Ambition



UN DESA @UNDESA · Sep 28

Over 80% of global trade is transported by 🚢 Let's make all shipping sustainable to
#SaveOurOcean! #WorldMaritimeDay #BlueEconomy

Shipping - Safe, Secure, Efficient on clean oceans

- International Shipping industry is responsible for the carriage of about 90% of world trade
- International Shipping facilitates the functioning of the global economy
- International Shipping depends on a global regulatory framework to operate efficiently
- IMO is the platform





- In 2018, IMO celebrates 70 years since the Convention establishing the Organization was adopted
- 2018 World Maritime Day (WMD) theme is:
"IMO 70: Our Heritage – Better Shipping for a Better Future"

Partnerships for Clean Shipping

- International Maritime Organization (IMO) is proactively seeking reduction in greenhouse gas emissions (GHGs) through improvements in energy efficiency and increased uptake of low-carbon technologies in the Maritime Shipping Industry.
- With financial assistance from the European Union, IMO has set up Maritime Technology Cooperation Centres (MTCCs) in Latin America, the Caribbean, Pacific, Asia and Africa. These five MTCCs constitute the Global MTCC Network (GMN)
- GMN is implementing this IMO project titled **“Capacity Building for Climate Change Mitigation in the Maritime Shipping Industry”**.



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



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Host Institution

- Jomo Kenyatta University of Agriculture and Technology (JKUAT) in Kenya was selected as the Host Institute (HI) for the Maritime Technology Co-operation Centre for Africa Region (MTCC-Africa) by the International Maritime Organization (IMO).
- JKUAT is in partnership with the Kenya Maritime Authority (KMA) and the Kenya Ports Authority (KPA).



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THANK YOU!



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