

The 3rd Programme of China-ASEAN Academy on Ocean Law and Governance

Shipping and Connectivity between China and Southeast Asia

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Dalian Maritime University, China

Haikou, China, 7 Nov. 2017

Shipping and Connectivity

- Shipping and Ports
- Connectivity under BRI
- China and Southeast Asia

Shipping and Connectivity

- Shipping and Ports
- Connectivity under BRI
- China and Southeast Asia

Shipping and Ports



(Source: IMO homepage)

Shipping and Ports

- Our theme for this year will enable us to shine a spotlight on the existing **cooperation between ports and ships** to maintain and enhance a safe, secure and efficient maritime transportation system.

(Source : IMO Secretary-General Mr. Ki-tack Lim)

Shipping and Ports

World Maritime Day 2017



(Source: IMO homepage)

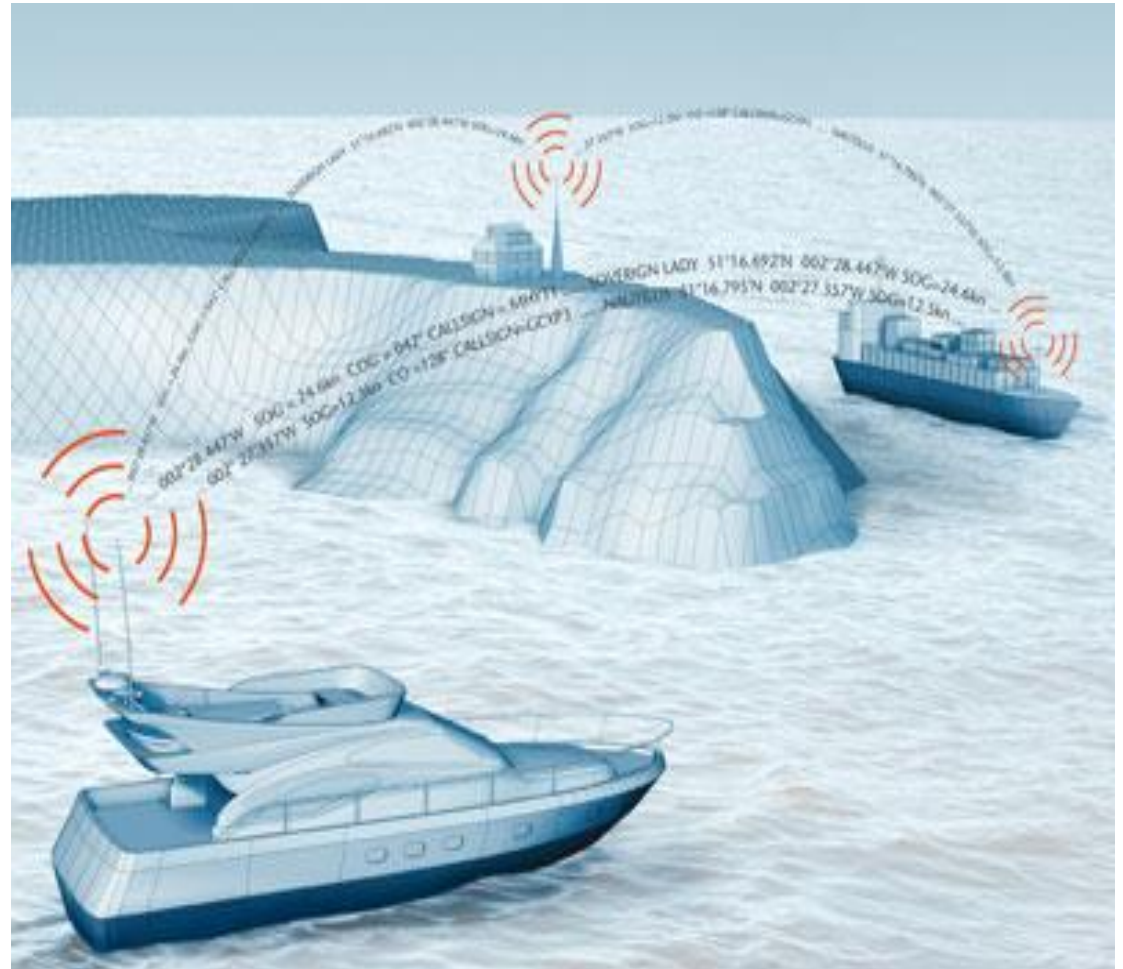
Shipping and Ports

Shipping is the most international of all the world's great industries, and one of the most dangerous.



Shipping and Ports

AIS - Automatic Identification Systems



Shipping and Ports

ECDIS -

Electronic Chart Display and Information Systems



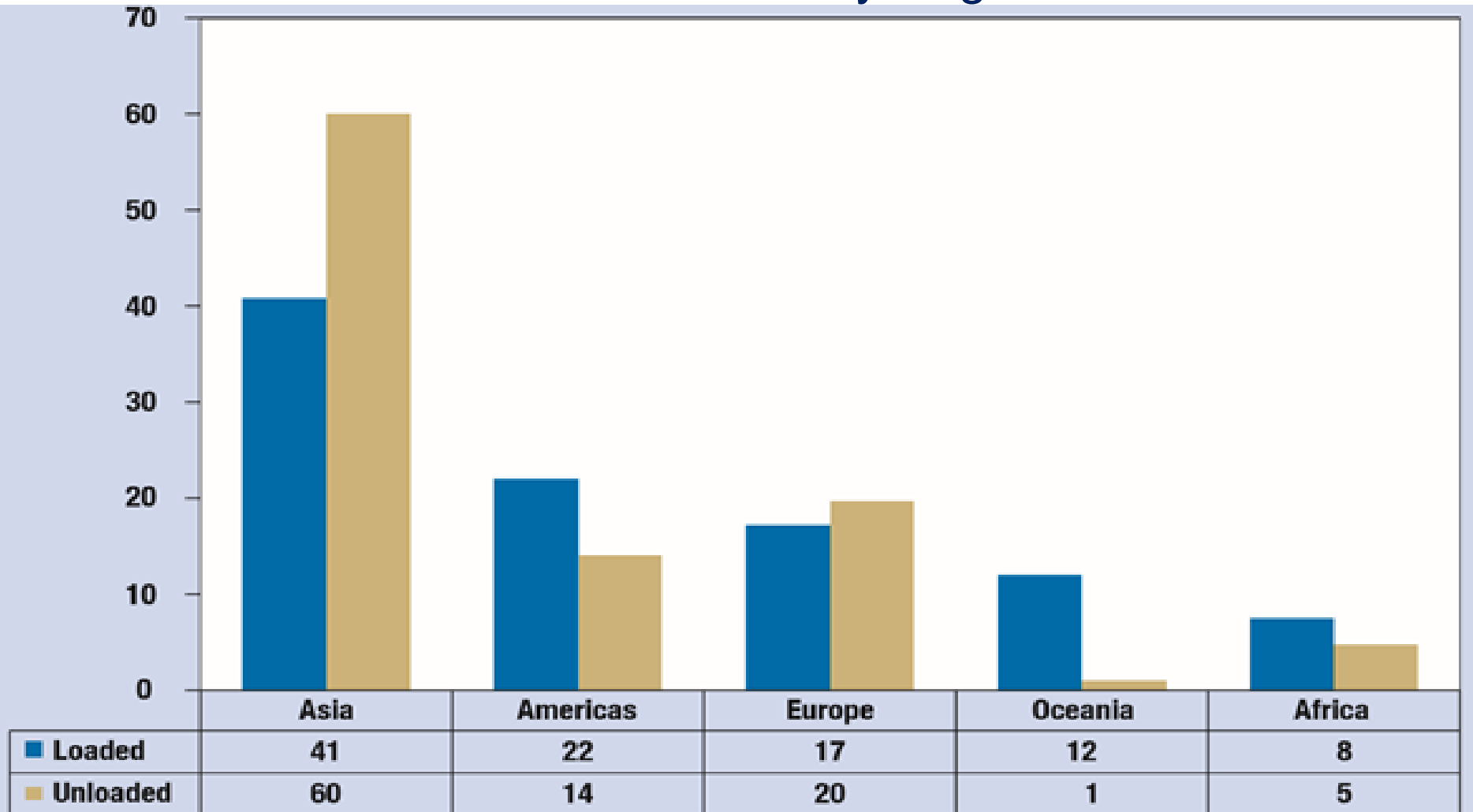
Shipping and Ports

Safety of
Ro-Ro Ships,
Passenger
Ships.



Shipping and Ports

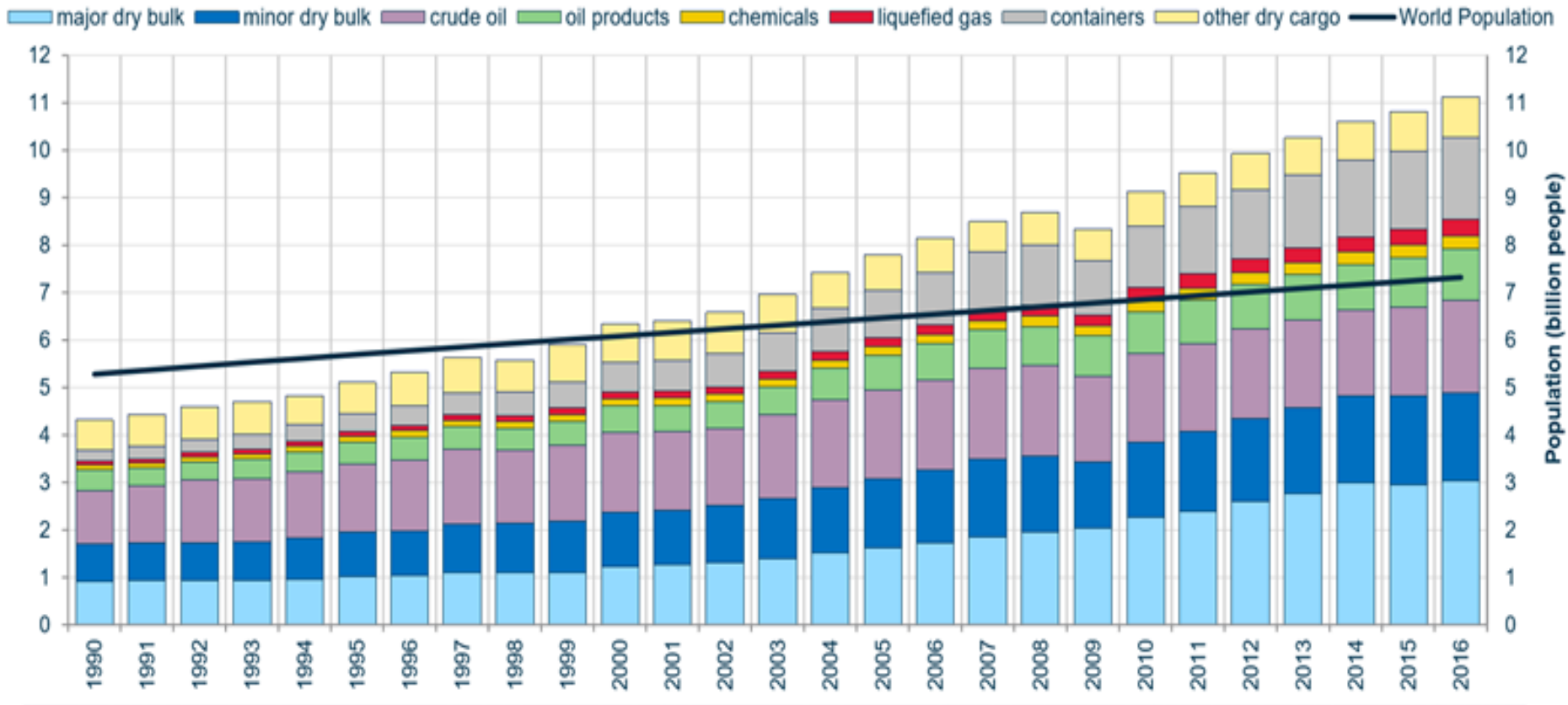
World Seaborne Trade by Region 2015



(Source: UNCTAD 2016 Review of Maritime Transport)

Shipping and Ports

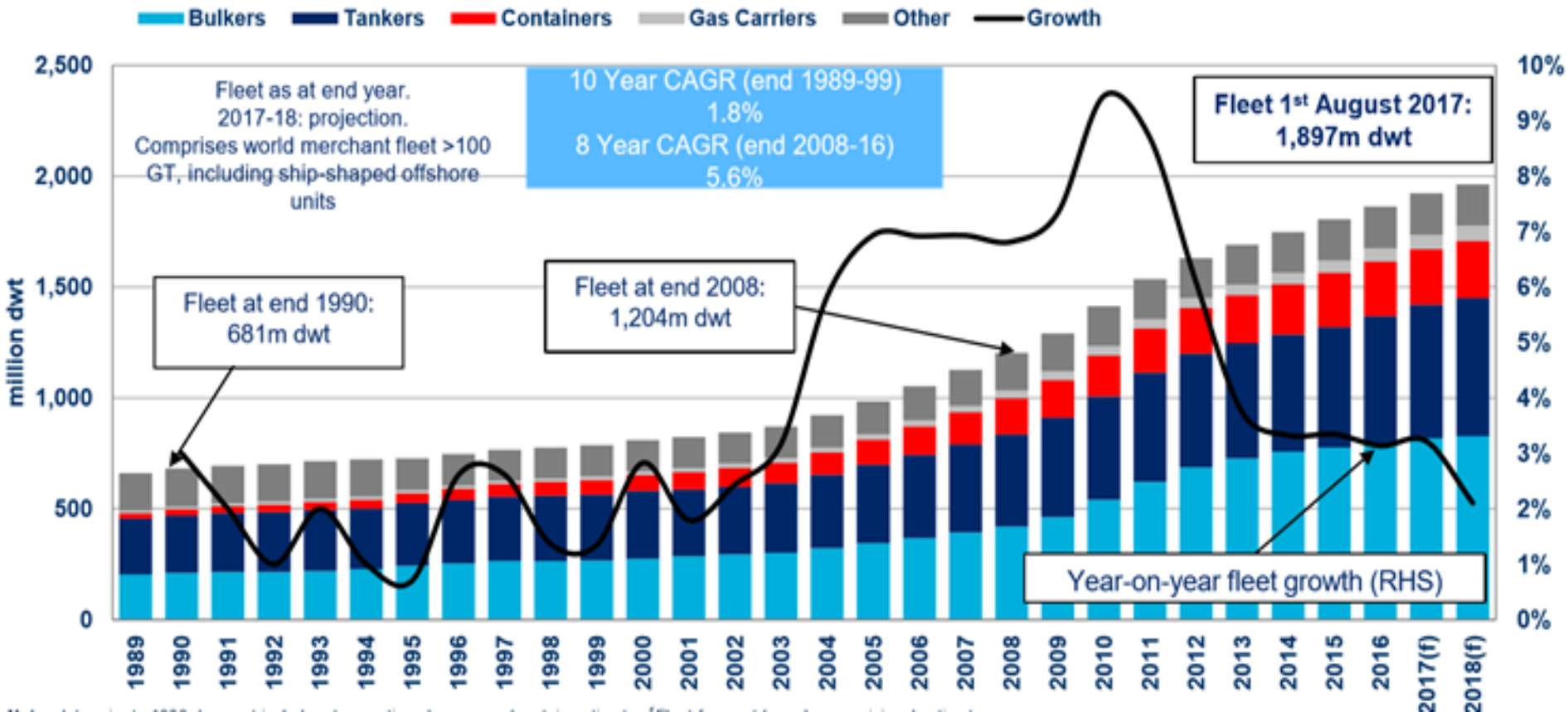
World Seaborne Trade



(Source: Clarksons 2017 Interim Result)

Shipping and Ports

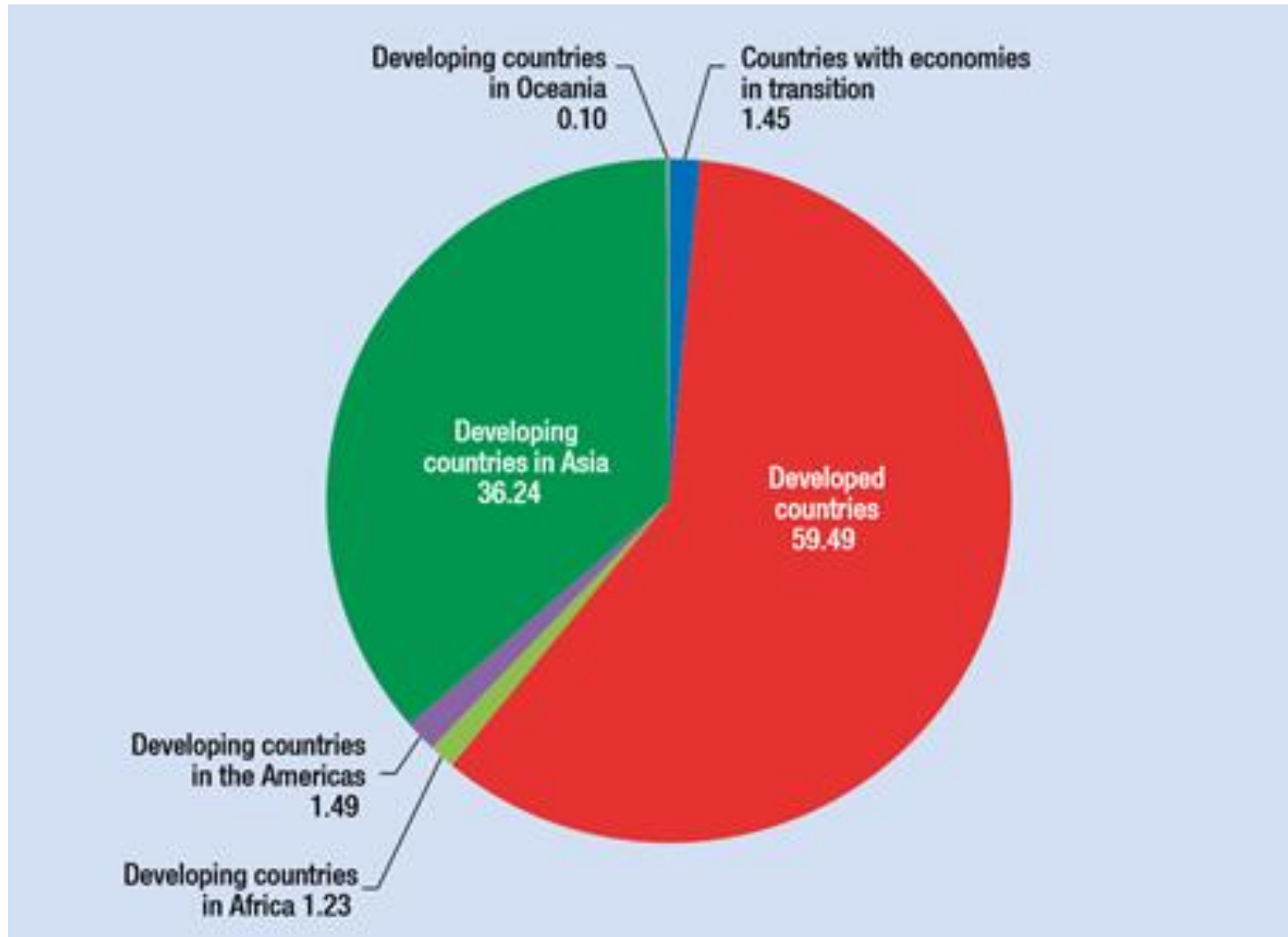
Shipping Fleet Development: 1989-2018¹



(Source: Clarksons 2017 Interim Result)

Shipping and Ports

Vessel Ownership by Country Grouping 2016



(Source: UNCTAD 2016 Review of Maritime Transport)

Shipping and Ports

Top 10 Ownership of World Fleet 2016

	Country	Number	Deadweight tonnage	World %
1	Greece	4 136	293 087 231	16.36
2	Japan	3 969	228 980 209	12.78
3	China	4 969	158 884 367	8.87
4	Germany	3 361	119 181 405	6.65
5	Singapore	2 553	95 312 373	5.32
6	Hong Kong (China)	1 448	87 375 262	4.88
7	Republic of Korea	1 634	78 84 194	4.40
8	United States	1 995	60 279 138	3.36
9	United Kingdom	1 329	51 441 100	2.87
10	Bermuda	418	48 453 161	2.69

(Source: UNCTAD 2016 Review of Maritime Transport)

Shipping and Ports

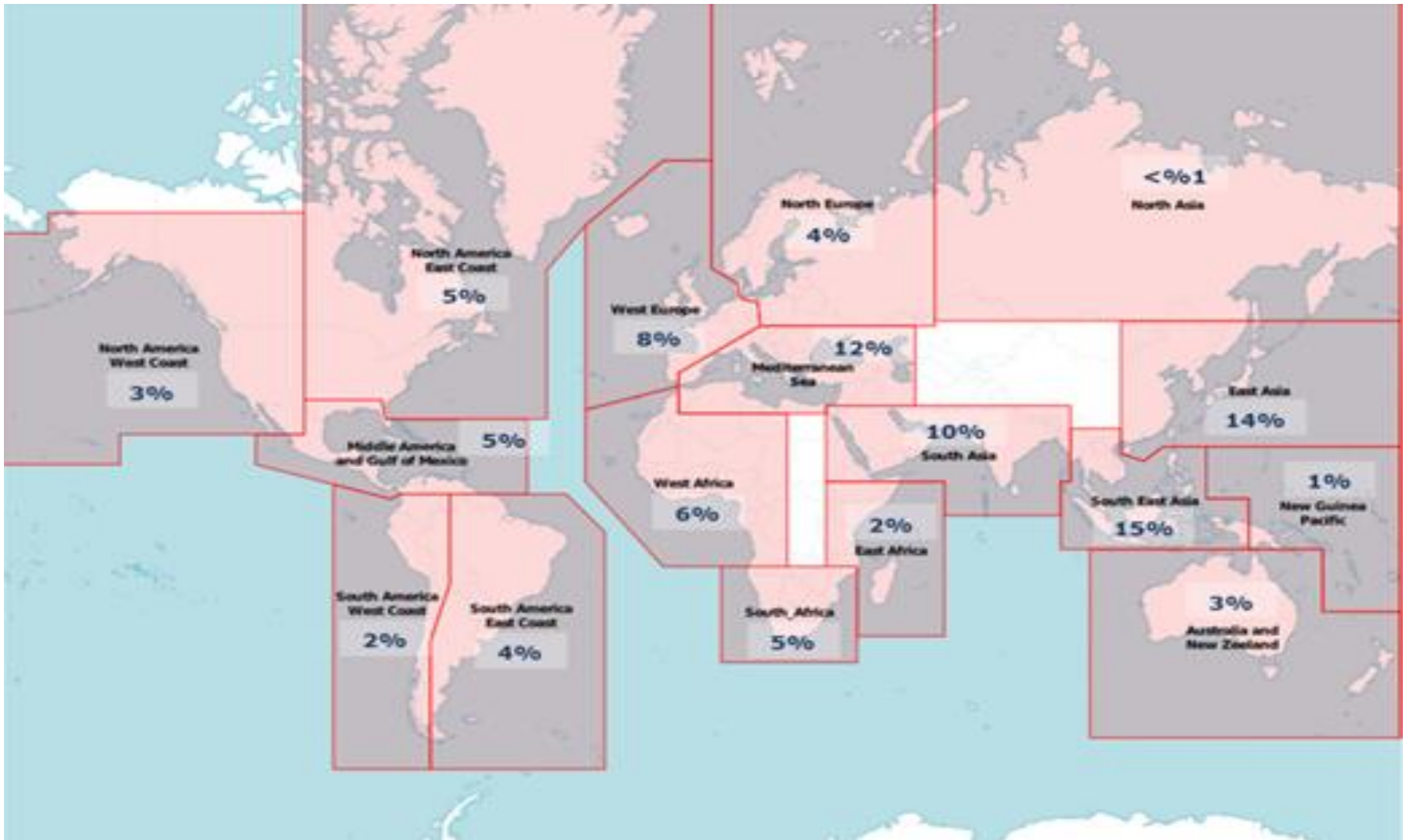
Top 20 Container Liners, Oct. 2017

Rank	Operator	TEU	Share %
1.	APM-Maersk	3 522 485	16.5
2.	Mediterranean Shipping Co.	3 142 378	14.7
3.	CMA CGM Group	2 501 751	11.7
4.	COSCO Shipping Co Ltd	1 821 300	8.5
5.	Hapag-Lloyd	1 511 721	7.1
6.	Evergreen Line	1 063 973	5.0
7.	OOCL	691 315	3.2
8.	Yang Ming Marine Transport Corp.	580 036	2.7
9.	Hamburg Süd Group	559 580	2.6
10.	MOL	548 607	2.6
11.	NYK Line	541 089	2.5
12.	Pacific International Line	370 247	1.7
13.	ZM	366 689	1.7
14.	Hyundai M.M	349 787	1.6
15.	K-Line	341 746	1.6
16.	Wanhai Lines	217 085	1.0
17.	X-press Feeder Lines	152 785	0.7
18.	KMTC	122 211	0.6
19.	Antong Holdings	100 328	0.5
20.	SITC	98 582	0.5

(Source: Alphaliner, October 2017)

Shipping and Ports

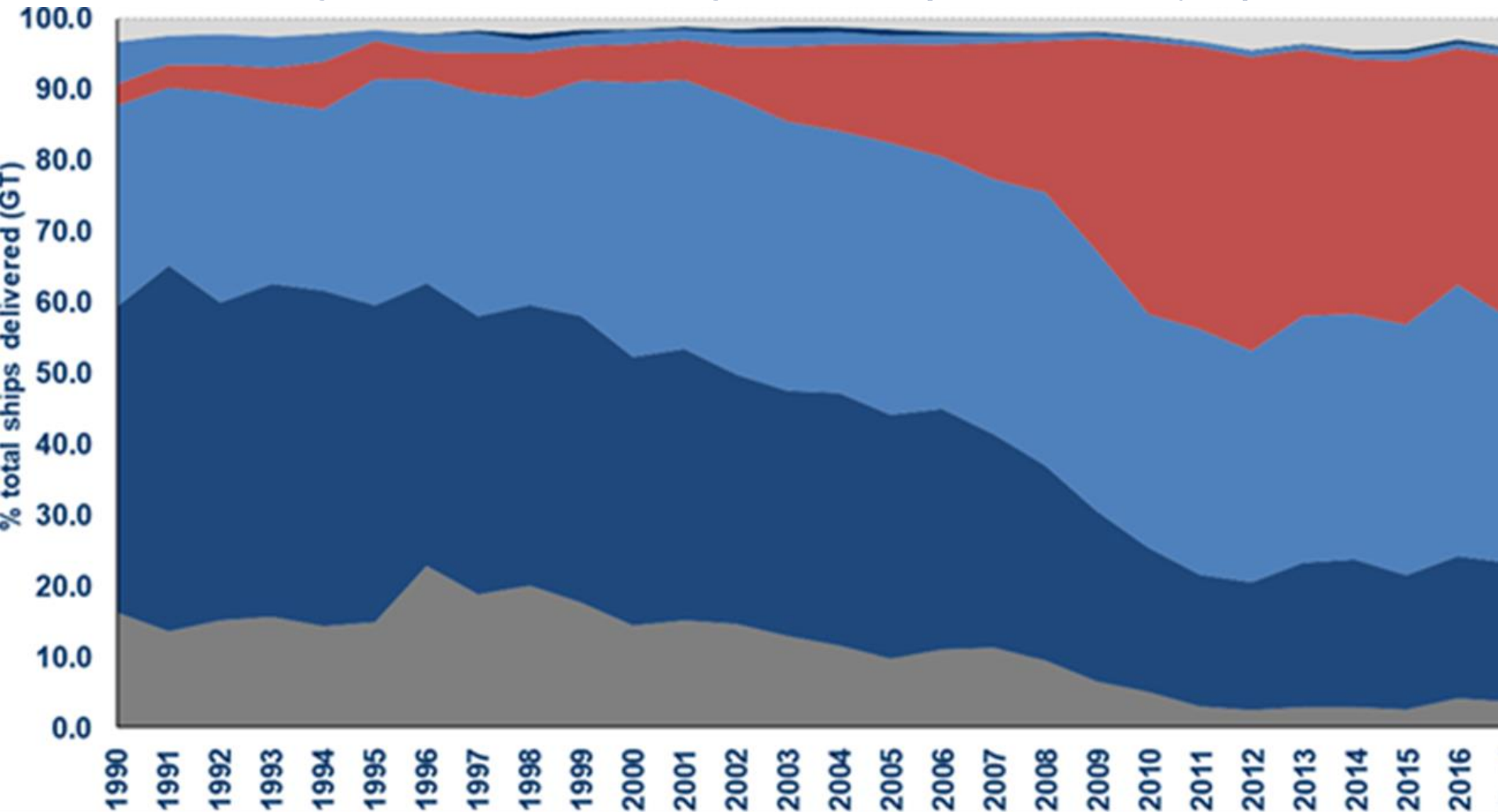
Total ships sighted by geographical area 2015



(Source: EQUASIS Statics 2015)

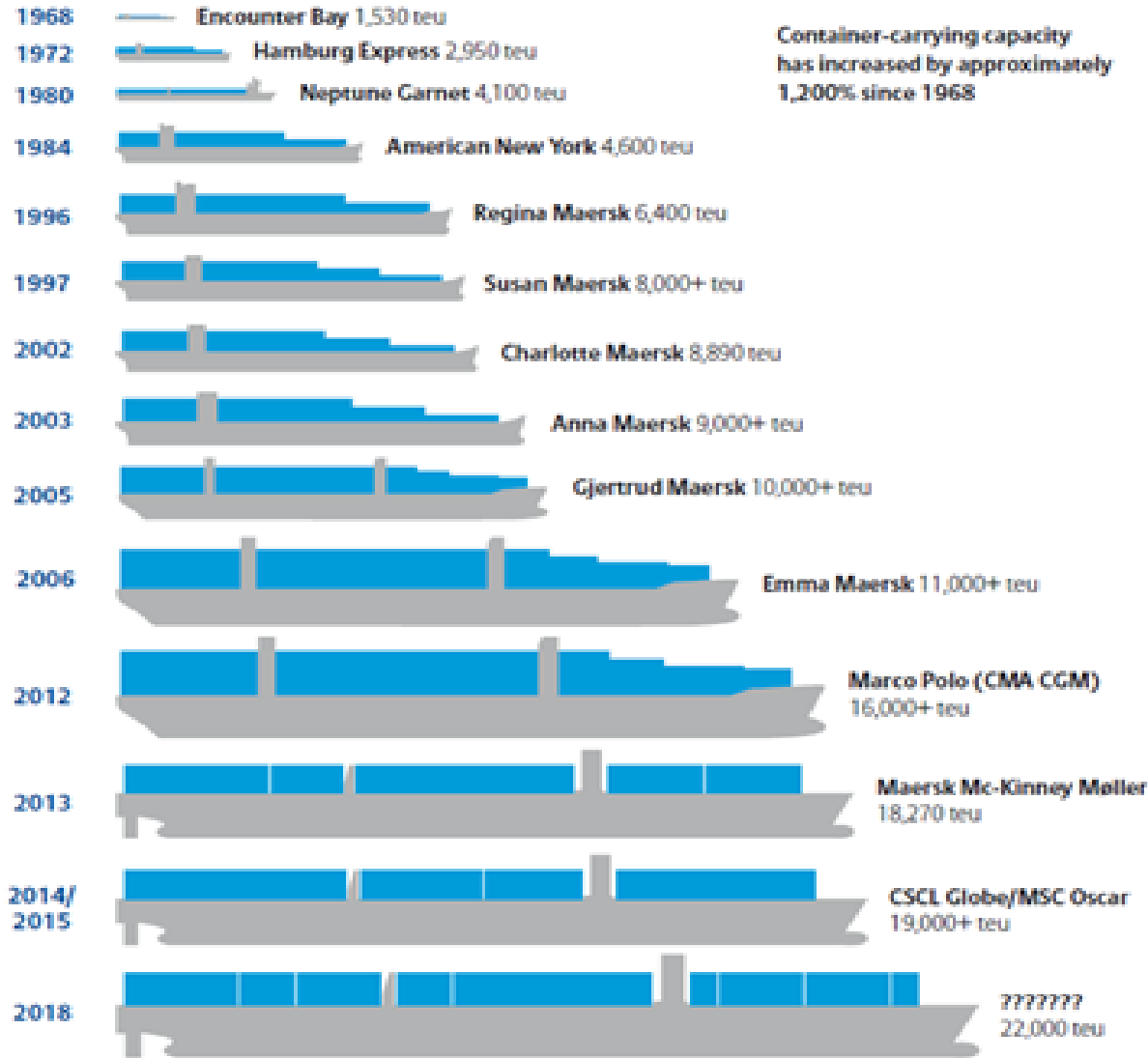
Shipping and Ports

Regional Shipbuilding Shares (1990-2017ytd)



(Source: Clarksons 2017 Interim Result)

Shipping and Ports



50 years of
container ship
growth

(Source: World Shipping Council 2015)

Shipping and Ports



Shipping and Ports

Top 100 Ports in 2017



(Source: Lloyd's List)

Shipping and Ports

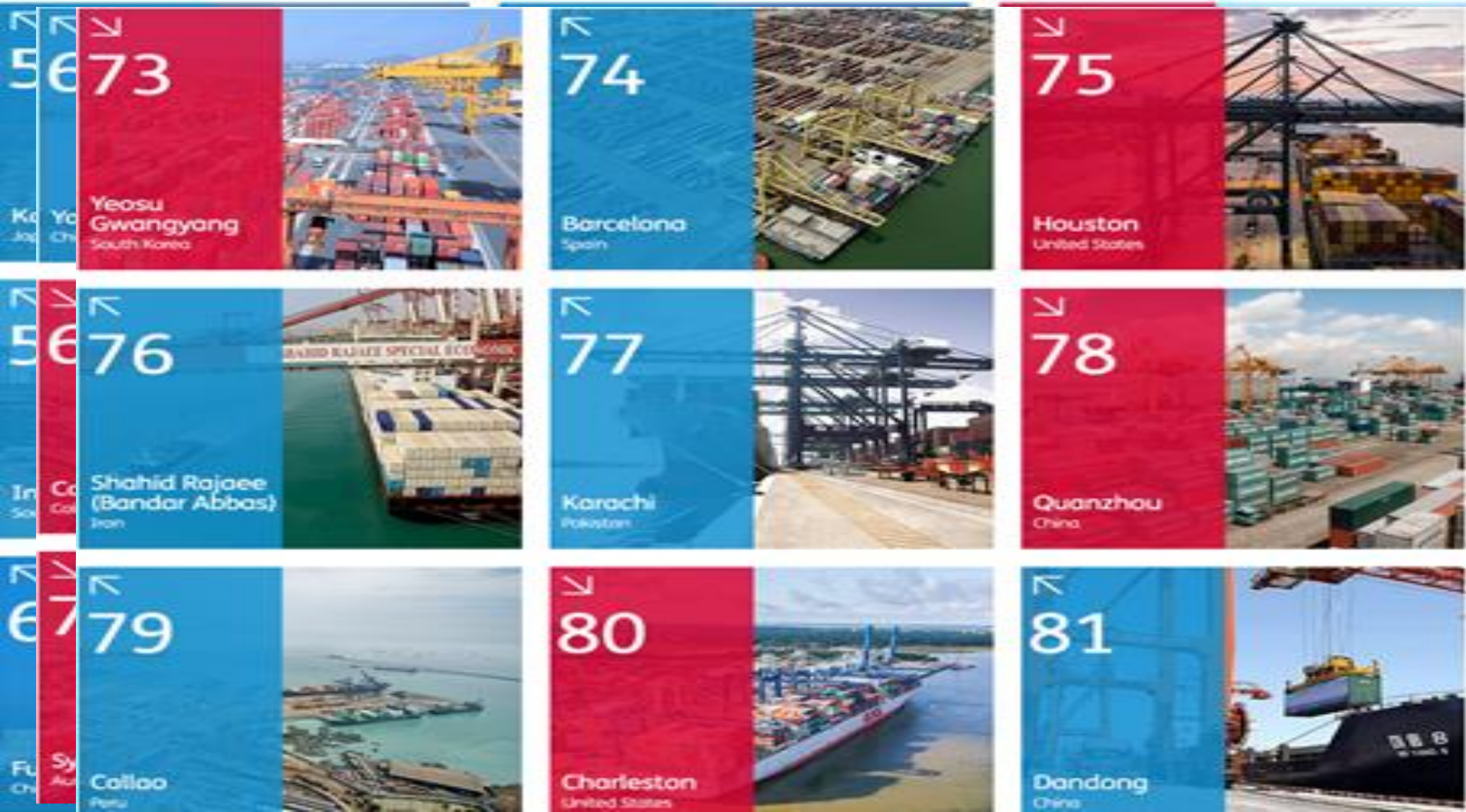
Top 100 Ports in 2017



(Source: Lloyd's List)

Shipping and Ports

Top 100 Ports in 2017



(Source: Lloyd's List)

Shipping and Ports



(Source: Lloyd's List)

Shipping and Ports

Top 100 Ports in 2017

	Asia	Others	(China)
Top 10	10	0	(7)
Top 20	16	4	(10)
Top 50	33	17	(15)
Top 100	55	45	(22)

Shipping and Ports



Top 10:

- Shanghai
- Singapore
- Shenzhen
- Ningbo-Zhoushan
- Busan
- Hong Kong
- Guangzhou
- Qingdao
- Dubai
- Tianjing

(Source: Strategic Maritime Passage)

Shipping and Connectivity

- Shipping and Ports
- **Connectivity under BRI**
- China and Southeast Asia

Connectivity under BRI

Vision for Maritime Cooperation under BRI

Principles

- Consensus
- Open and inclusive
- Market-based and multi-stakeholder
- Joint and benefit sharing

Connectivity under BRI

Vision for Maritime Cooperation under BRI

Cooperation Priorities

1 Green development

- marine ecosystem and biodiversity
- regional marine environment
- addressing climate change
- international blue carbon cooperation

Connectivity under BRI

Vision for Maritime Cooperation under BRI

Cooperation Priorities

2 Ocean-based prosperity

- Marine resource utilization
- Marine industry cooperation
- **Maritime connectivity**
- **Maritime transport**
- Connectivity of information infrastructure and networks

Connectivity under BRI

Vision for Maritime Cooperation under BRI

Cooperation Priorities

3 Maritime security

- Maritime public service
- Maritime navigation security
- **Joint maritime SAR**
- Prevent marine disasters
- Maritime law enforcement

Connectivity under BRI

Vision for Maritime Cooperation under BRI

Cooperation Priorities

4 Innovative growth

- Marine scientific R & D
- Marine technology cooperation
- Smart ocean application
- Marine education and exchange
- Ocean culture

Connectivity under BRI

Vision for Maritime Cooperation under BRI

Cooperation Priorities

5 Collaborative governance

- Hi-level dialogue mechanisms
- Mechanisms for blue economy
- Marine spatial planning & application
- Multilateral mechanisms
- Think tanks
- NGOs

Connectivity under BRI



Connectivity under BRI

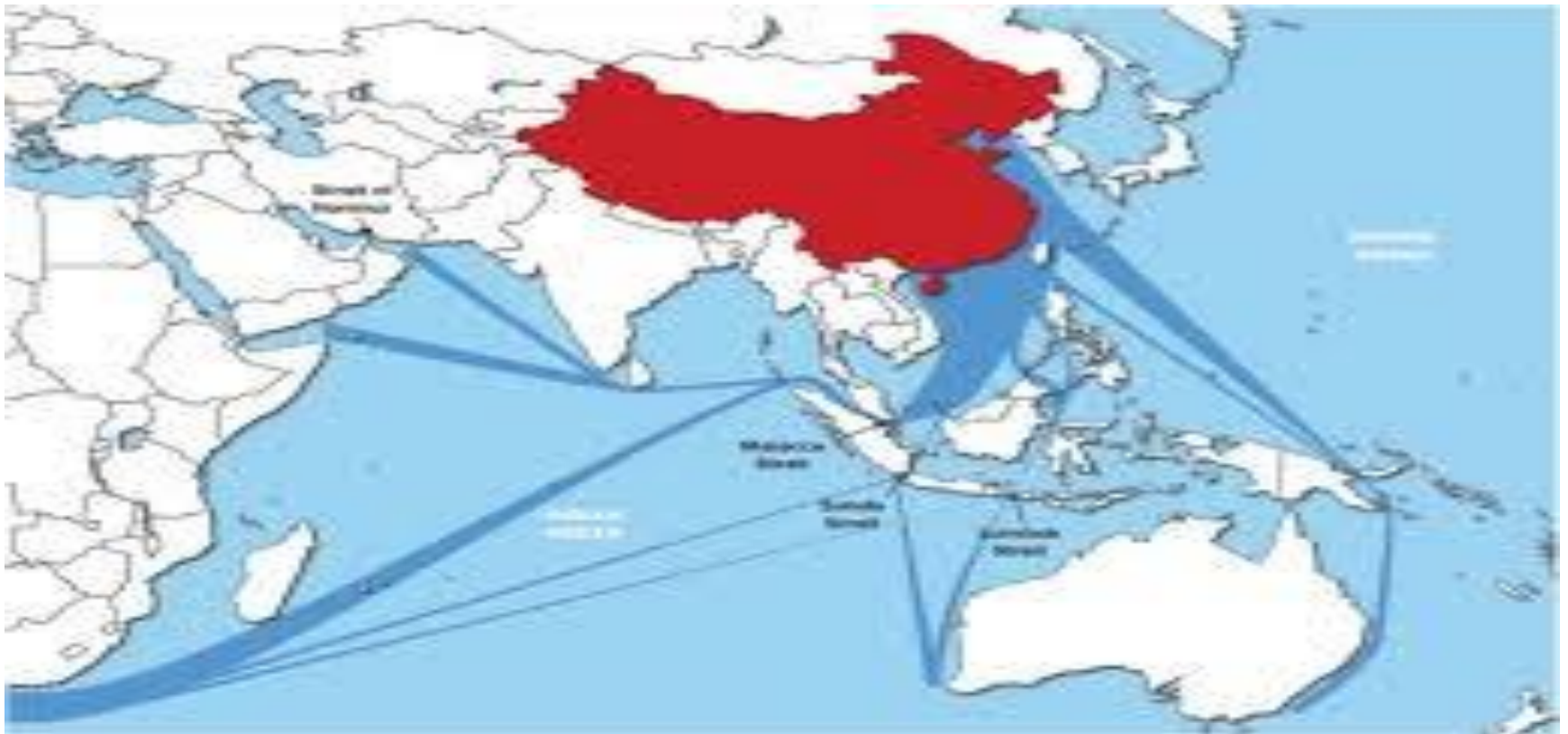
Shipping Routes	No
China--Southeast ASIA	56
China--West ASIA	16
China--South ASIA	7
China--East & Central Europe	14
China--Northwestern Europe	10
China--Oceania	14



(Source: Port and Shipping Logistics for MSR, 2017)

Connectivity under BRI

Maritime Silk Road builds smooth, secure and efficient transport routes connecting major sea ports under BRI.



Connectivity under BRI

What are the main factors
that may influence the
connectivity ?

Connectivity under BRI

Economic Factors:

- Overall GDP level
- Reliance in foreign trade
- Fund gap in Asian infrastructure construction
- Investment



Connectivity under BRI

Technological Factors:

- Shipping industry
- Challenges from terminal automation
- Main obstacles



Connectivity under BRI

Information sharing

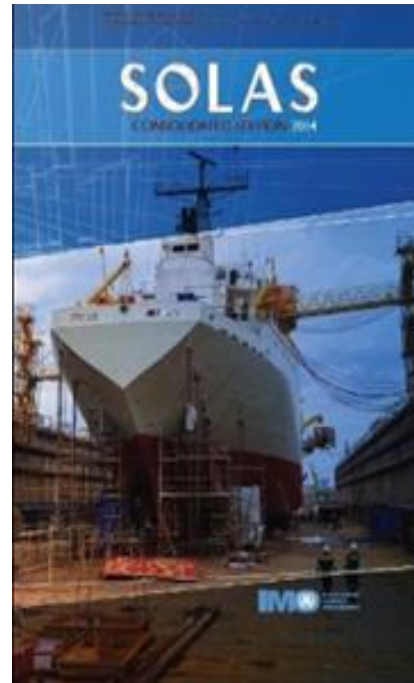
- Information fence
- Traditional trade barrier



Connectivity under BRI

Maritime & Port security

- SOLAS
- ISPS Code
- Training

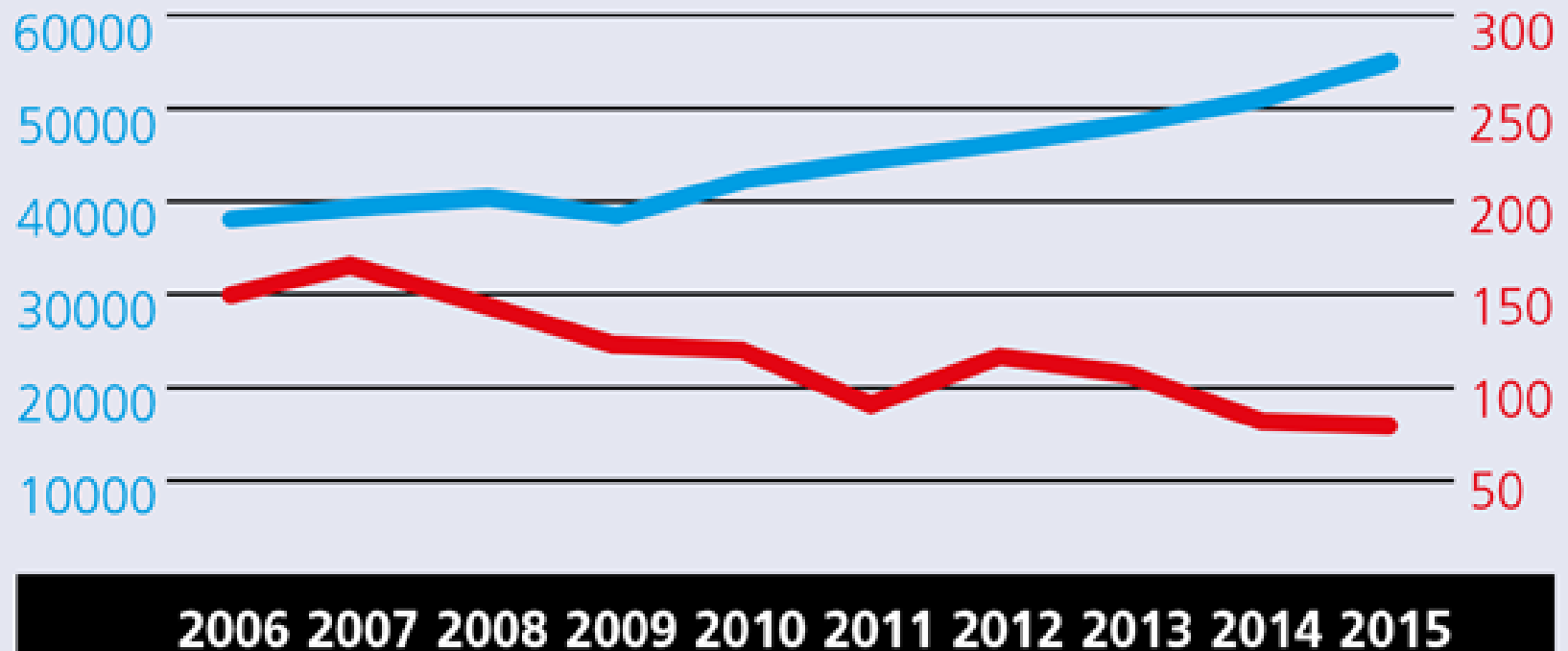


Connectivity under BRI

MARITIME CASUALTIES

World seaborne trade
(billion tonne-miles)

Number of total losses
(vessels over 500 tonnes)

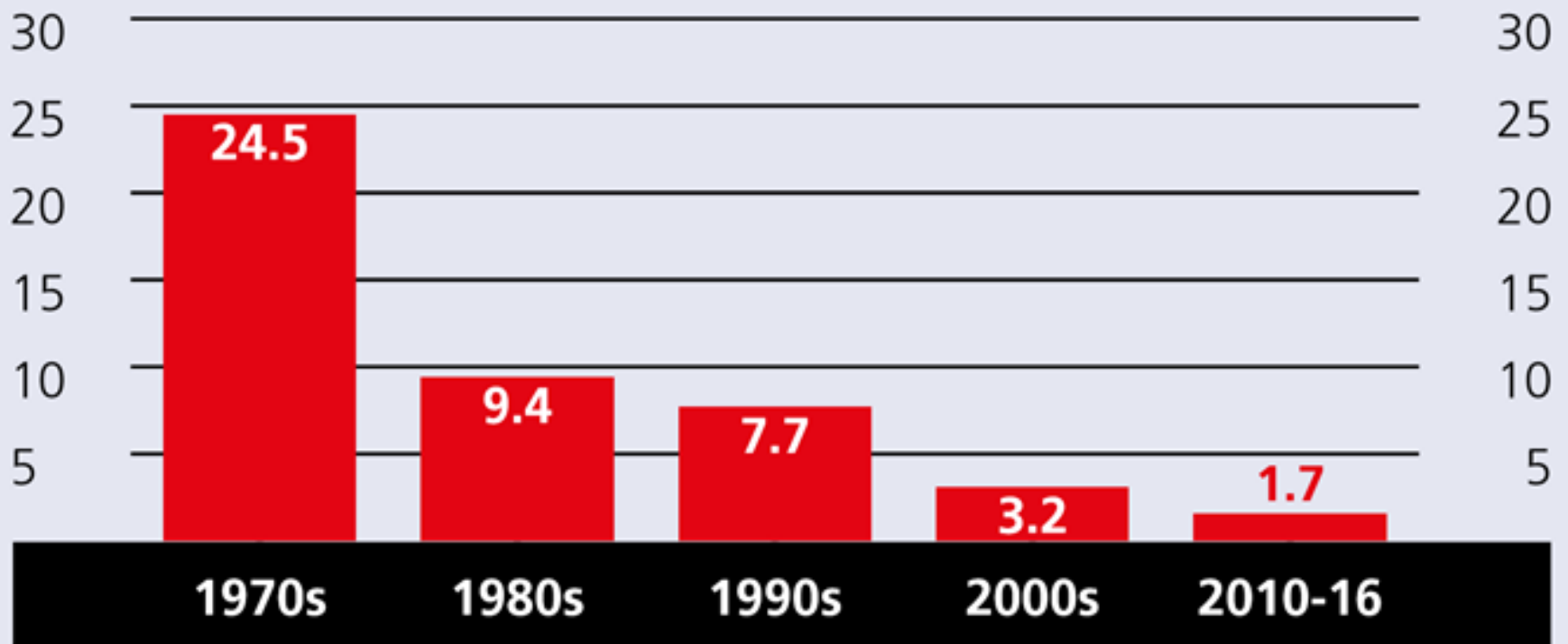


(Source: ICS Annual Review, 2017)

Connectivity under BRI

REDUCTION IN MAJOR OIL SPILLS

Average number of major oil spills per year (over 700 tonnes)

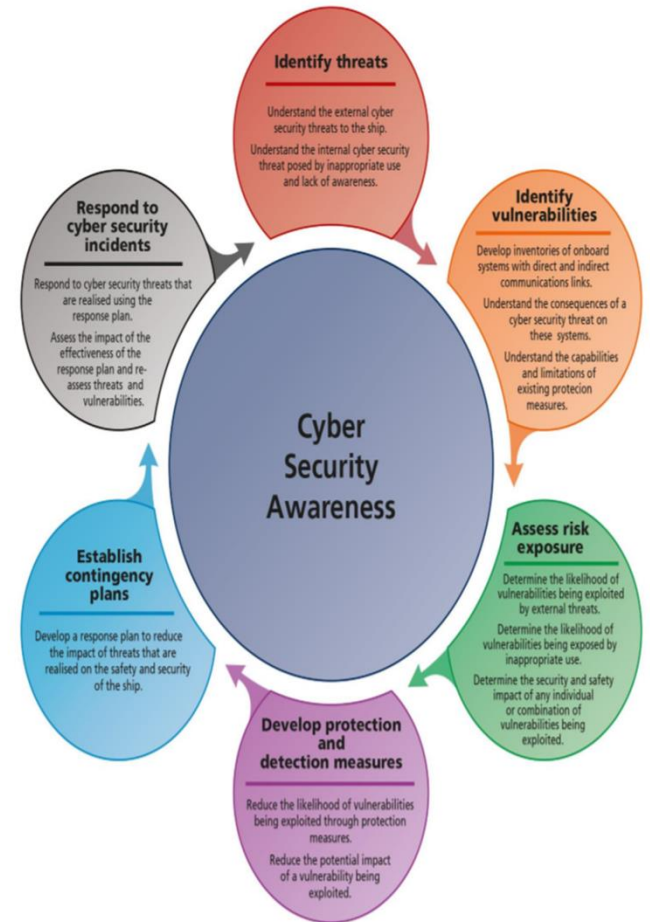


(Source: ICS Annual Review ,2017)

Connectivity under BRI

Maritime Cyber Security

- Shipping and ports are highly automated, operations rely on computerised information and communication technologies, which may be vulnerable to maritime cyber hacker attacks.
- Maritime cyber risk management.

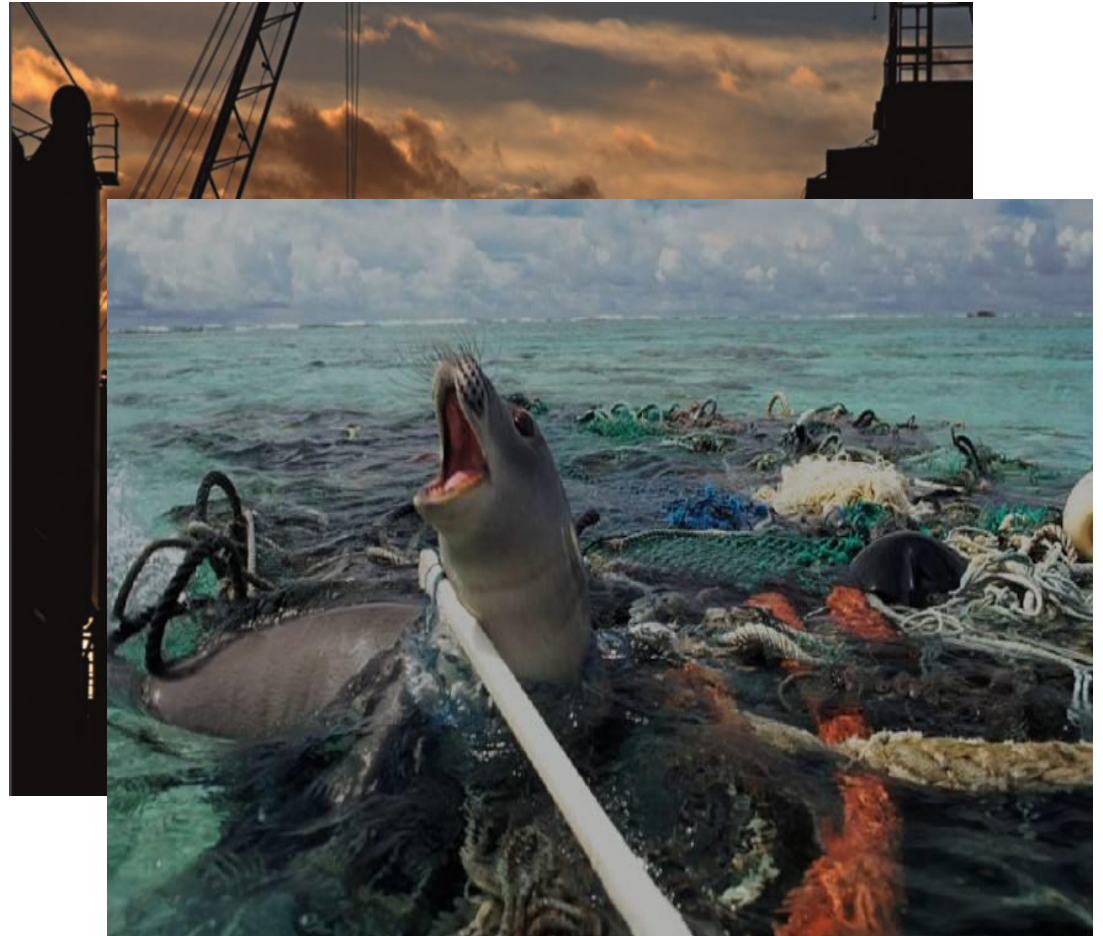


Connectivity under BRI

Environmental Protection

Air pollution

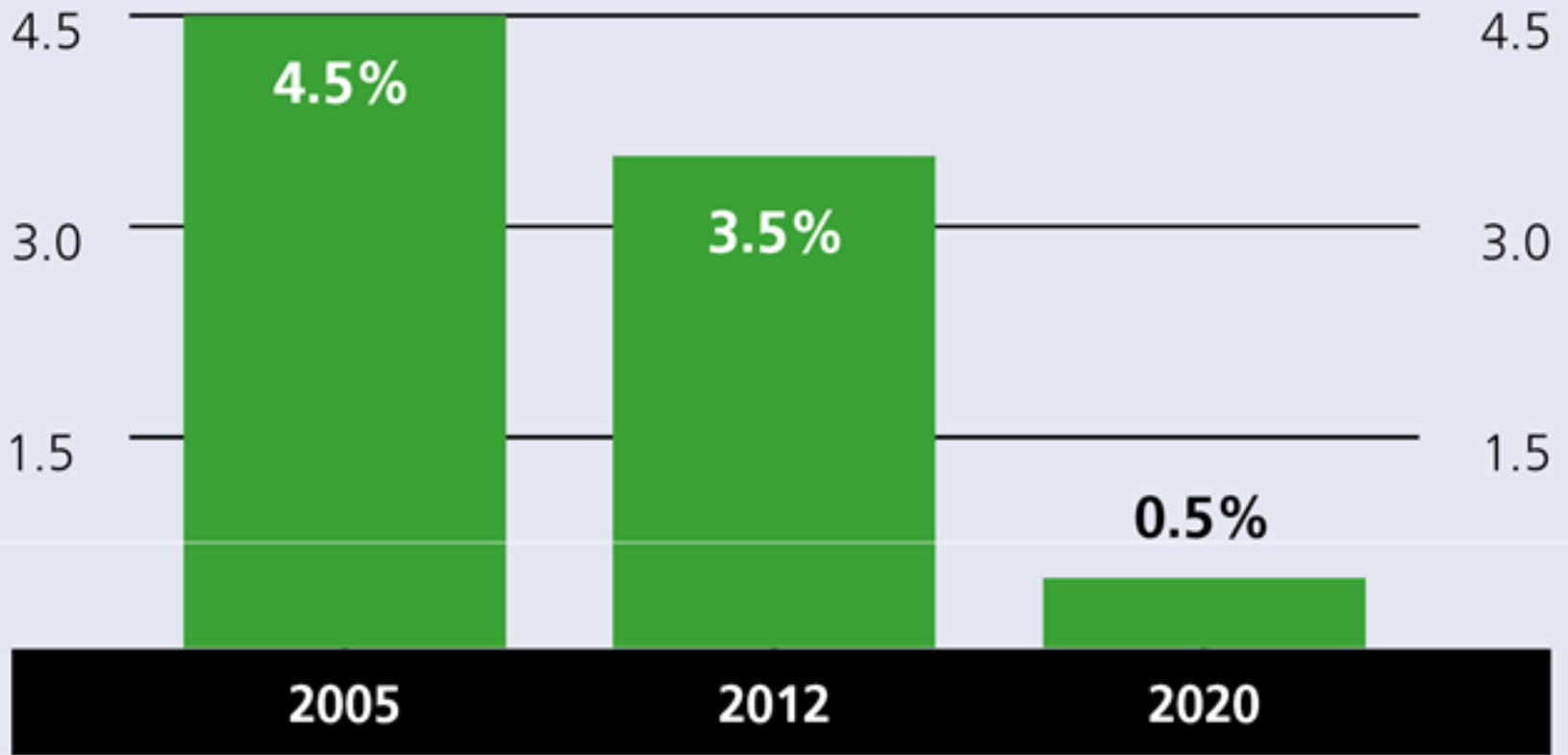
- Multi-lateral Vs Unilateral in GHG
- Air pollution
- SO_x and NO_x



Connectivity under BRI

GLOBAL SULPHUR CAP

Sulphur content of fuel permitted outside Emission Control Areas

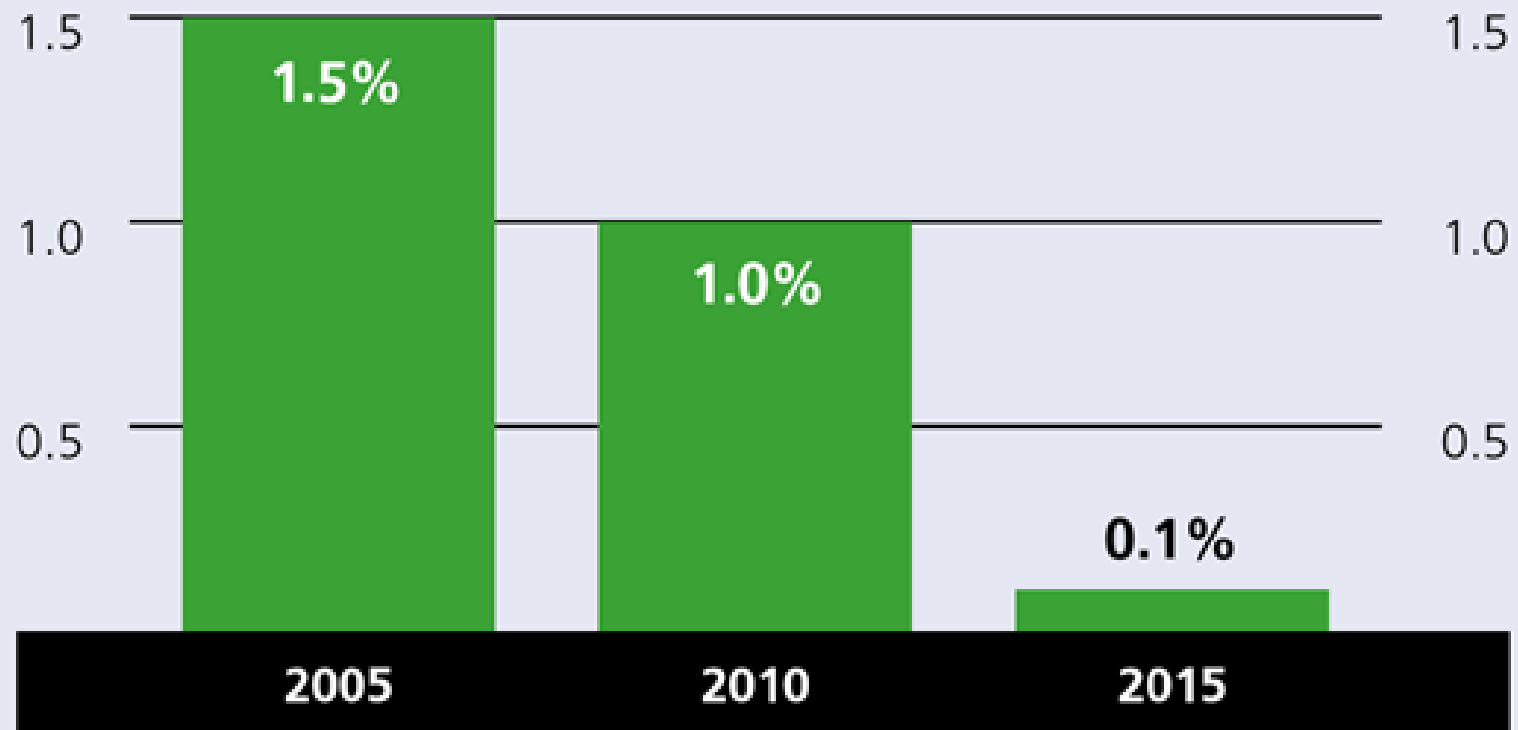


(Source: ICS Annual Review, 2017)

Connectivity under BRI

IMO AGREEMENT TO REDUCE ATMOSPHERIC POLLUTION FROM SHIPS

Sulphur content of fuel permitted in Emission Control Areas



(Source: ICS Annual Review, 2017)

Connectivity under BRI

Ballast water management

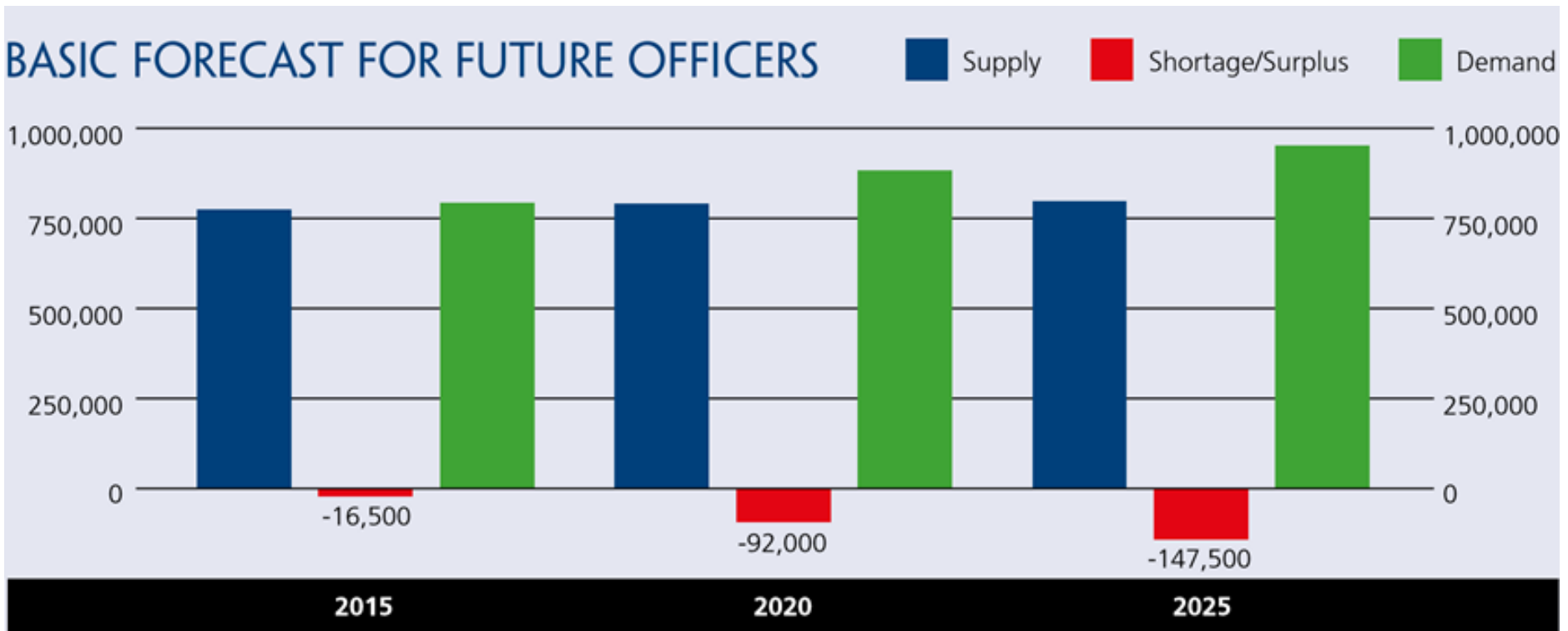
- Harmful aquatic organisms in ballast water



Connectivity under BRI



Connectivity under BRI

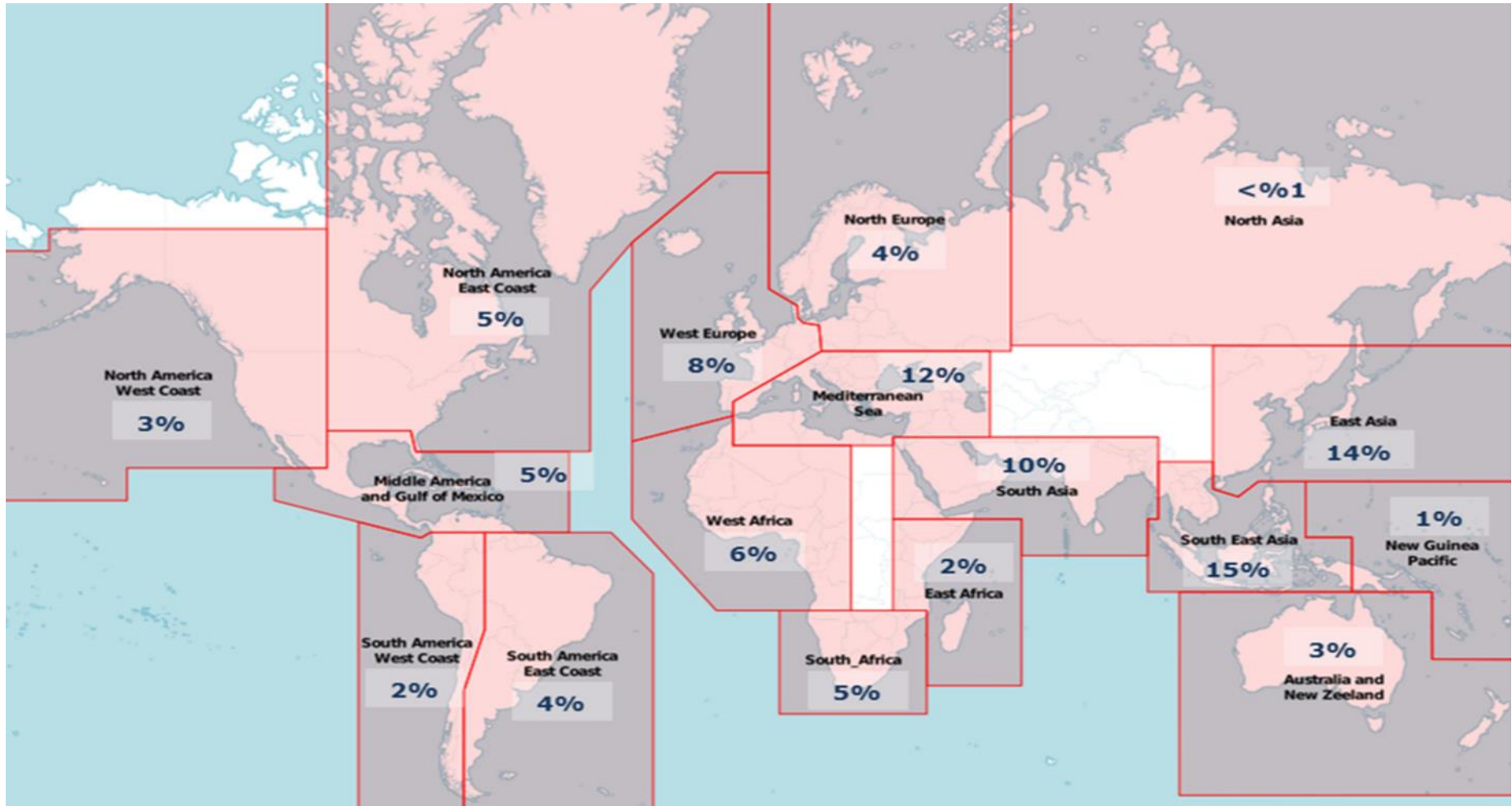


Source: Manpower Report 2015 estimates

Shipping and Connectivity

- Shipping and Ports
- Connectivity under BRI
- **China and Southeast Asia**

China and Southeast Asia



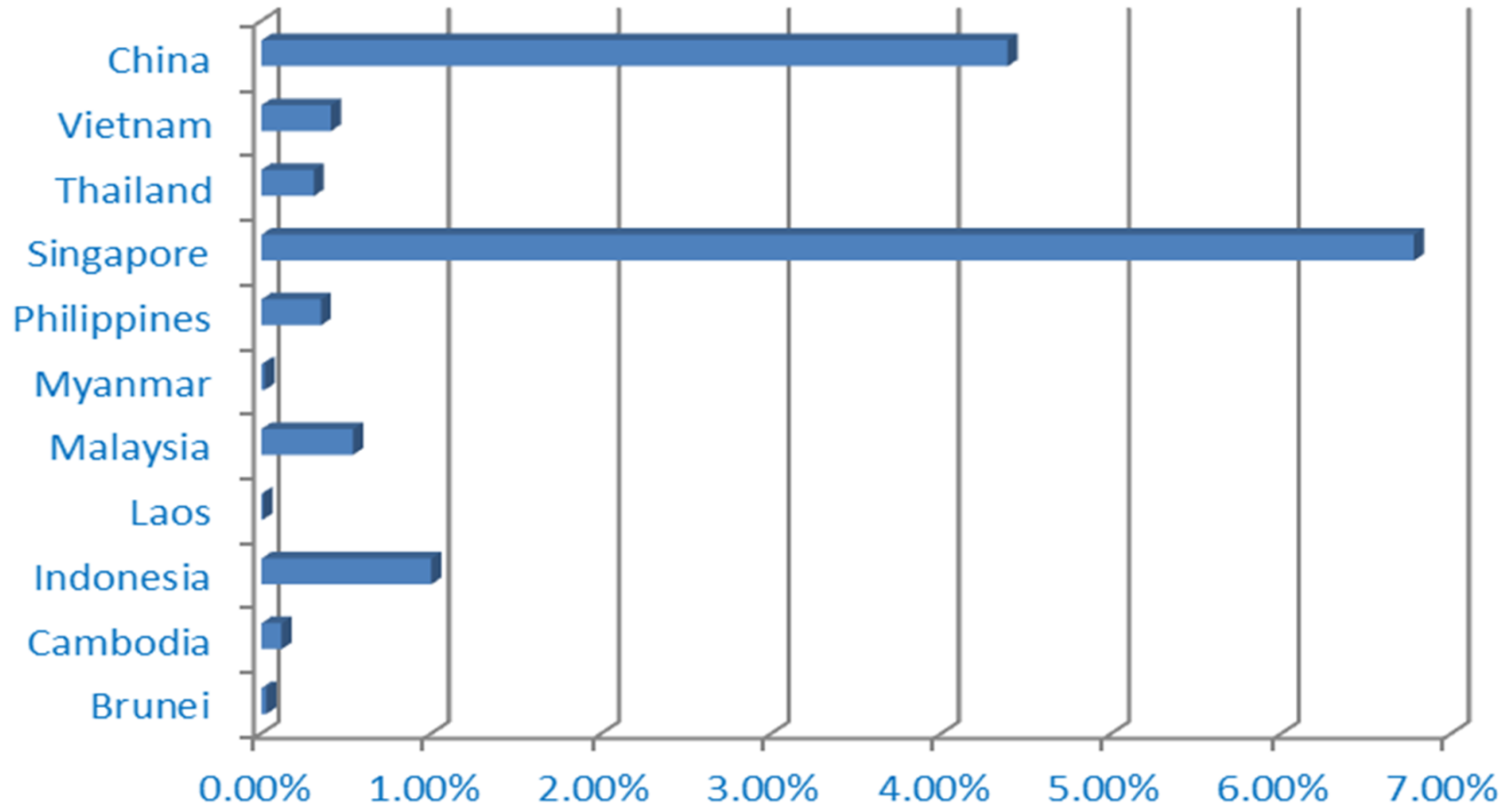
(Source: Equasis 2015)

China and Southeast Asia

What are the scenarios of shipping and exports in Southeast Asia countries?

China and Southeast Asia

ASEAN-China World share (dwt) for 2015

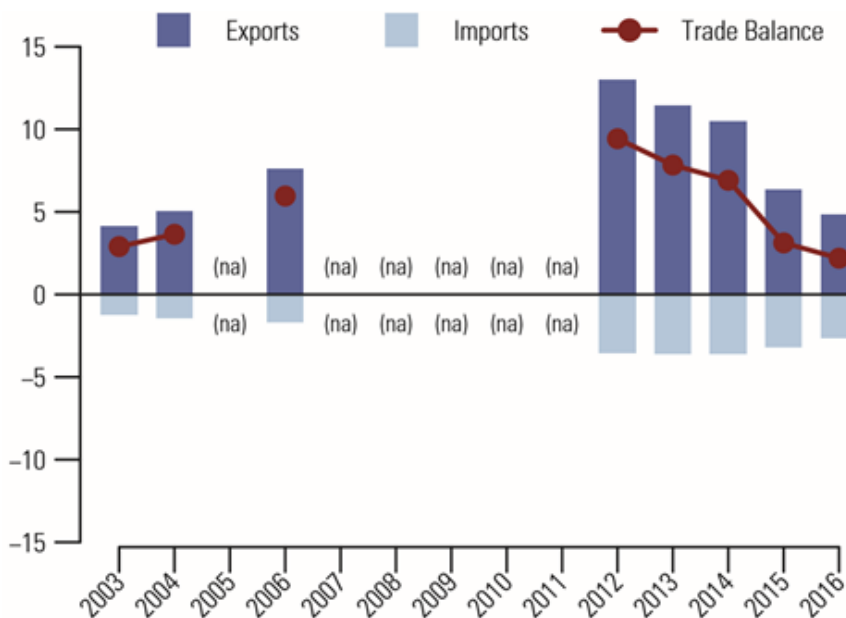


(Source: UNCTAD Homepage, 2017)

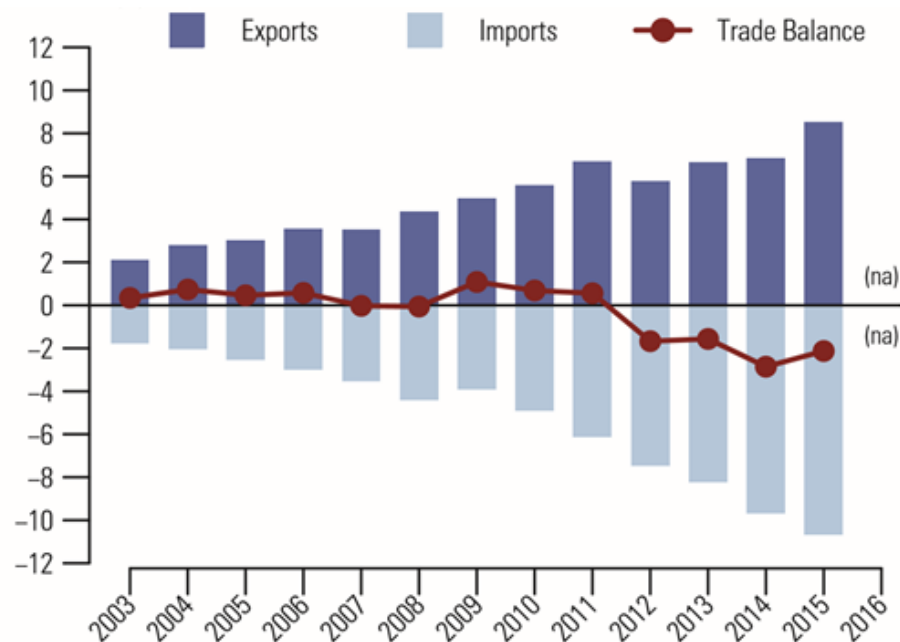
National Flag Fleet for 2015 (1000 dwt)

China and Southeast Asia

Total merchandise trade (export) by value (BLN US\$)



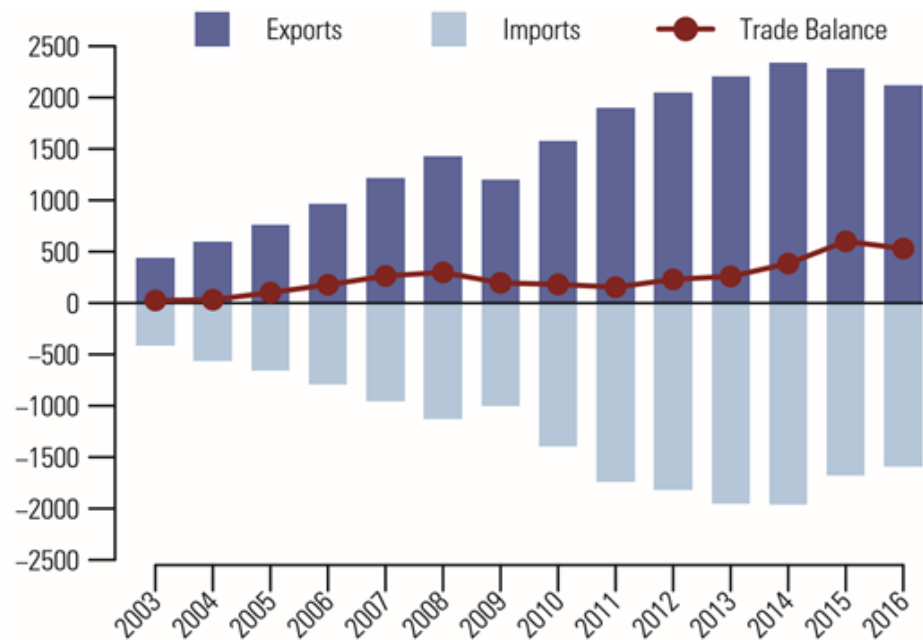
Brunei, 4.9 Bln USD



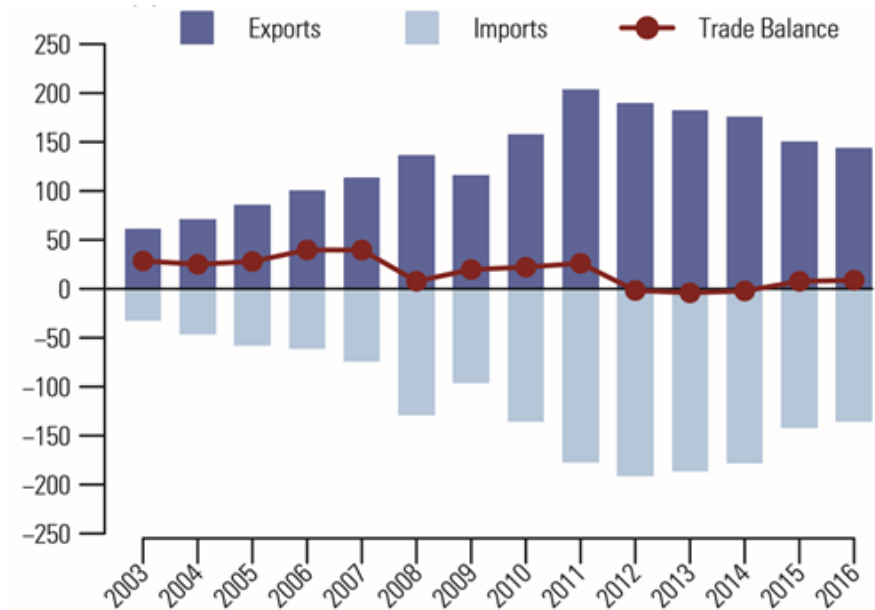
Cambodia, 8.5 Bln USD (2015)

China and Southeast Asia

Total merchandise trade (export)by value (BLN US\$)



China, 2119 Bln USD



Indonesia, 144.5 Bln USD

China and Southeast Asia

Total merchandise trade (export) by value (BLN US\$)



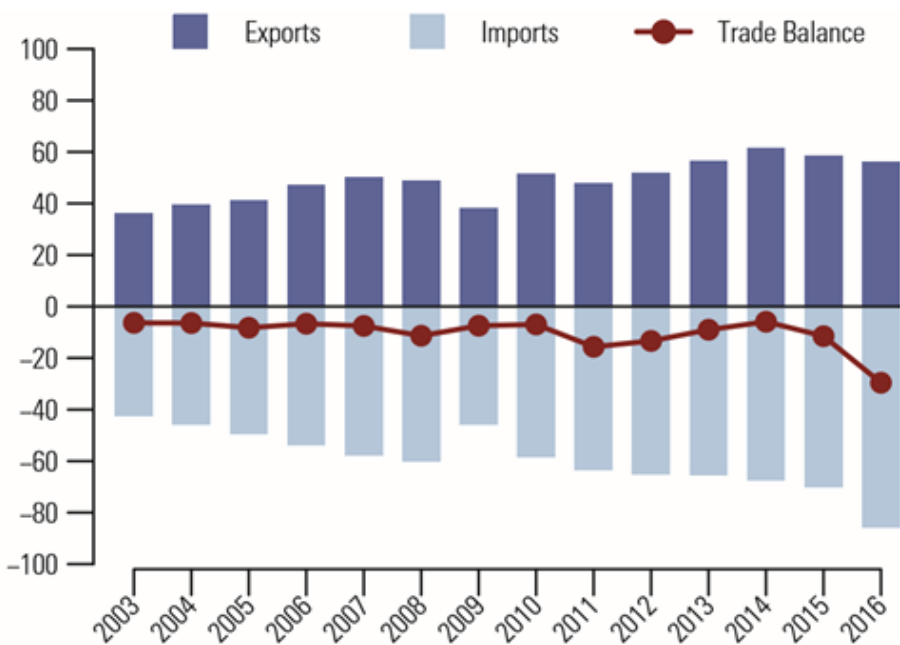
Malaysia, 189.4 Bln USD



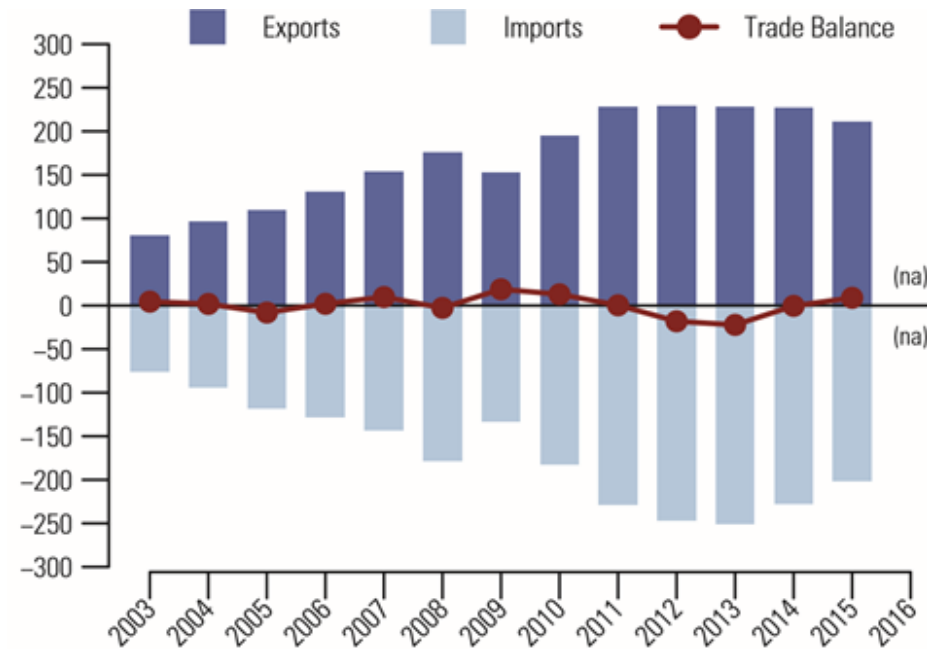
Myanmar, 15.7 Bln USD

China and Southeast Asia

Total merchandise trade by value (BLN US\$)



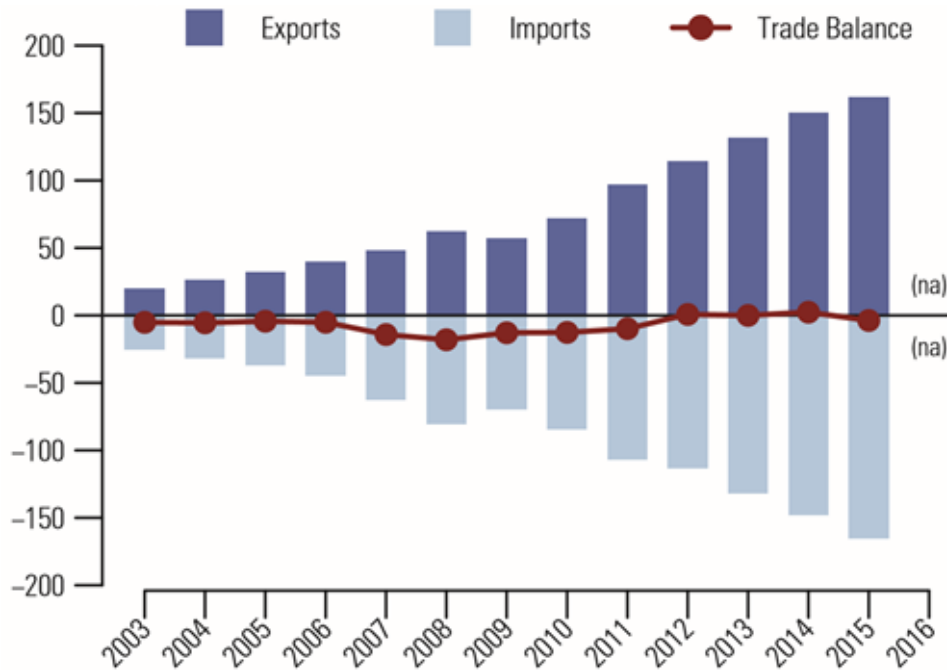
Philippines, 56.3 Bln USD



Thailand, 210.9 Bln USD (2015)

China and Southeast Asia

Total merchandise trade by value (BLN US\$)



Vietnam, 162 Bln USD (2015)

China and Southeast Asia

What are the status quos
of shipping and ports
in China?

China and Southeast Asia



中国远洋海运集团有限公司
CHINA COSCO SHIPPING CORPORATION LIMITED



招商局集团
CHINA MERCHANTS GROUP

China and Southeast Asia



中国远洋海运集团有限公司
CHINA COSCO SHIPPING CORPORATION LIMITED

	Total No.	Total dwt	Ranking
Fleet	1 087	83 m	1
Container	348	18 m	4
Bulk	432	38 m	1
Tanker/LNG	143	19 m	1
General	164	4 m	1
Ports	52	Berths	218

(Source: COSCO Shipping Homepage, Jul 2017)

China and Southeast Asia

	Total No.	Total dwt	Ranking
Fleet	358	34 m	(46 m)
VLCC	39		1
VLCC	14		On order
VLOC	40+		1
LNG	30+		
Ports		Berths	

(Source: China Merchants Group 2017)



China and Southeast Asia

China – SE Asia Shipping Connectivity

- Qinhuangdao – the Philippines
- Rizhao – Ho Chi Minh – Bangkok
- China-Singapore (Chongqing-Guangxi-Singapore)

China and Southeast Asia

China – Asean Port Cities Co-op Network

- 16th C-A Transport Ministers meeting,
- 24 port cities, port & shipping enterprises join the network,
- China – Singapore,
- China – Malaysia,
- China – Thailand,
- China – Brunei,

China and Southeast Asia



China and Southeast Asia



China and Southeast Asia

China Ports in first 3 Qs of 2017 :

- throughputs totaling 9.47 billion tons, 7.7% yty growth,
- foreign trade throughputs amount to 3.1 billion tons, 7.0% yty growth,
- top 10 port throughput order changes,

China and Southeast Asia

China Top 10 ports throughputs for first 3 Qs of 2017

	Port	Throughput (mt)	Growth YTY
1	Ningbo-Zhoushan	770.6	11.1%
2	Shanghai	561.8	7.2%
3	Tangshan	429.3	13.0%
4	Guangzhou	415.7	8.6%
5	Qingdao	381.9	1.5%
6	Tianjin	377.9	-8.5%
7	Dalian	348.9	3.9%
8	Yingkou	283.6	2.3%
9	Rizhao	271.9	2.9%
10	Zhanjiang	217.9	13.5%

(Source: Shanghai International Shipping Institute , 27 Oct. 2017)

China and Southeast Asia

China Top 10 container ports for first 3 Qs of 2017

	Port	Throughput (mt)	Growth YTY
1	Shanghai	29.89	8.3%
2	Shenzhen	18.95	5.6%
3	Ningbo-Zhoushan	18.74	14.2%
4	Guangzhou	14.83	11.3%
5	Qingdao	13.73	1.8%
6	Tianjin	11.45	4.6%
7	Dalian	76.18	0.1%
8	Xiamen	76.13	8.3%
9	Yingkou	46.43	1.5%
10	Lianyungang	35.56	-0.4%

(Source: Shanghai International Shipping Institute , 27 Oct. 2017)

China and Southeast Asia

Ports in 2016

- Tianjing
- Qingdao
- Shanghai
- Ningbo-Zhoushan
- Guangzhou
- Shenzhen



China and Southeast Asia

Tianjin 2016

- throughputs 550 million tons,
- 14.5 million TEU,



China and Southeast Asia

Shanghai 2016

- container throughput top 1 for 7 years
- connections with 214 countries under BRI

Free trade port



China and Southeast Asia

Ningbo-Zhoushan

2016

- throughput 900 mt, expected 1 billion,
- connections with 26 SE Asian ports, 236 ports over 100 countries.



China and Southeast Asia

Qingdao 2016

- berths for 15 000 TEU container ship, for 300 000 ore carrier and VLCC,
- connection with 450 ports over 130 countries,



China and Southeast Asia

Guangzhou 2016

- throughput 544 million tons, top 6
- container 18.86 million TEU, top 7
- connections with 450 ports over 80 countries



China and Southeast Asia

Shenzhen, 2016

- Yantian container terminal
- Shekou cruise terminal



China and Southeast Asia

Global top 20 container terminals

(first half 2017)

and

Future trends of port

China and Southeast Asia

Global Top 20 Container Terminals (first half 2017)

Rank	Port	Throughput / M.TEU
1	Shanghai	19.6
2	Singapore	16.15
3	Ningbo-Zhoushan	12.36
4	Shenzhen	11.87
5	Hong Kong	10.19
6	Pusan	10.11
7	Guangzhou	9.63
8	Qingdao	9.09
9	Dubai	7.72
10	Tianjin	7.42

China and Southeast Asia

Global Top 20 Container Terminals (first half 2017)

Rank	Port	Throughput / M.TEU
11	Rotterdam	6.7
12	Kelang	6.3
13	Kaohsiung	5.98
14	Antwerp	5.14
15	Dalian	4.8
16	Xiamen	4.79
17	Los Angeles	4.48
18	Hamburg	4.45
19	Tanjung Pelepas	4.1
20	Long Beach	3.45

(Source: China Water Transport News, 31 Oct. 2017)

China and Southeast Asia

Automation enters to ports



China and Southeast Asia

Xiamen (Amoy)

fully automated terminal operation.



China and Southeast Asia

Qingdao fully automated container terminal



30% more efficient, 70% less labour,

(Source: picchina.people.com.cn, 11 May. 2017)

China and Southeast Asia

What are challenges for facilities connectivity?

What are possible areas of connectivity cooperation between China and Southeast Asian countries?

China and Southeast Asia

Port Connectivity

China-Malaysia Port Alliance

Transport Minister Datuk Seri Liow Tiong Lai said **Kemaman Port Authority, Kuching Port Authority and Sabah Ports Authority** would be joining the alliance from Malaysian side.

On China side, **Tianjin Port and Qingdao Port** would be added, bringing the total number of ports in the alliance to **21**.

China and Southeast Asia

China Emission Control Areas Implementation



Three ECAs within China are launched in 2015, and entered into force from 1 January 2016.

2016-2019

Fuel sulphur $\leq 0.5\%$

By 2020

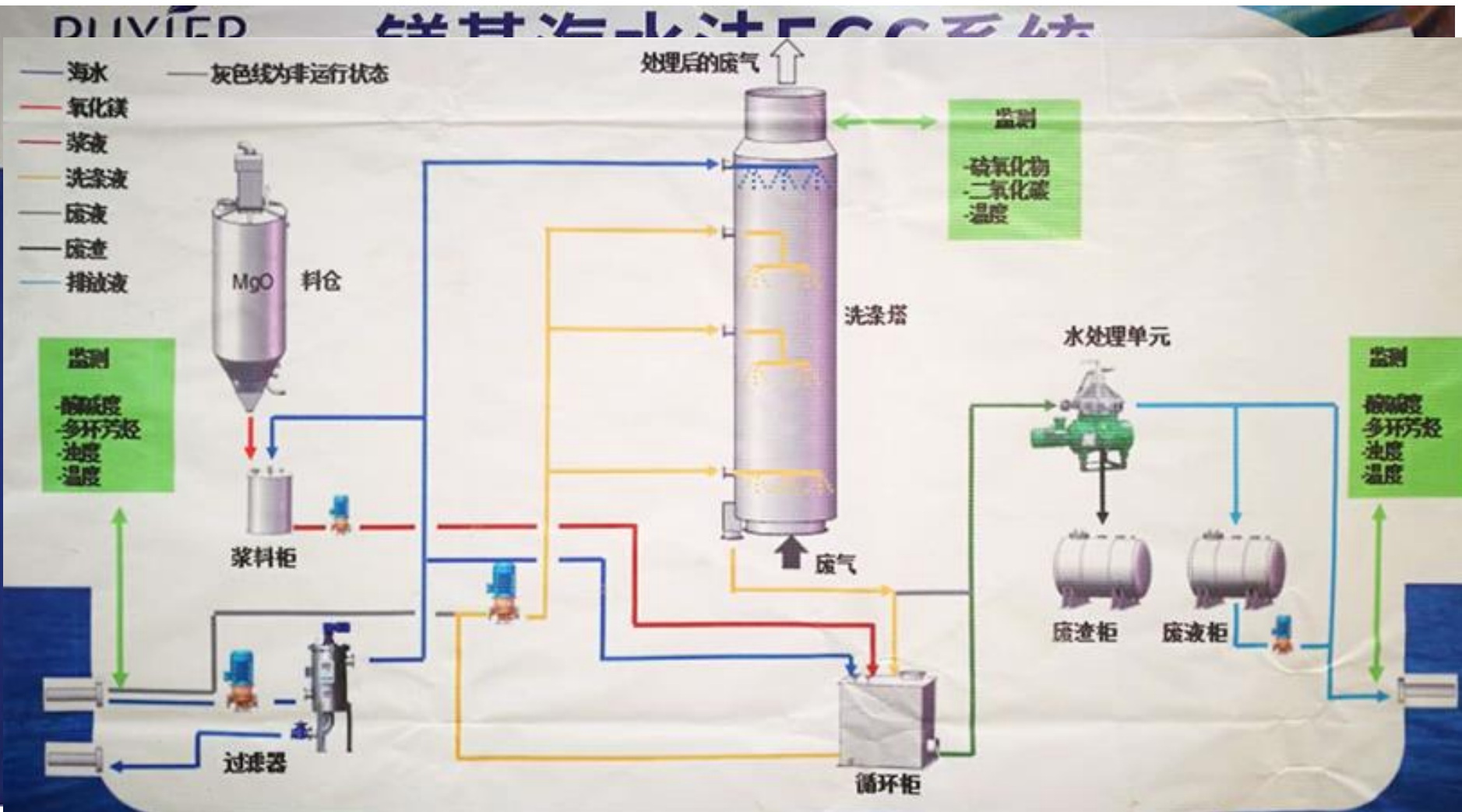
Fuel sulphur $\leq 0.1\%$

China and Southeast Asia



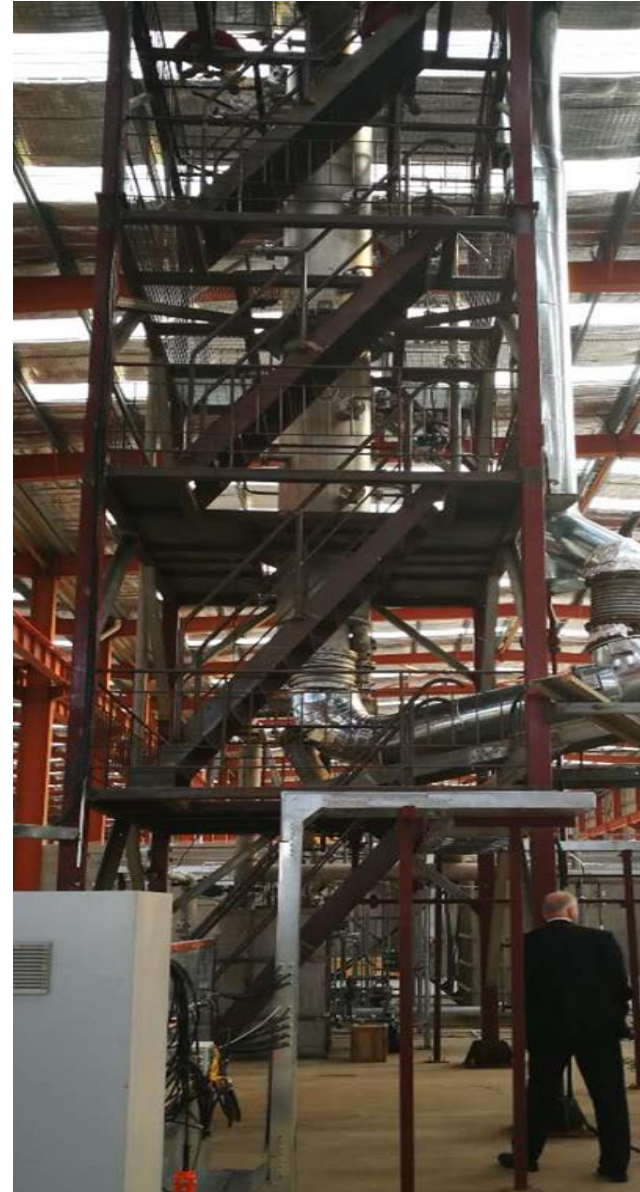
(Source: China Classification Society, Sept 2017)

China and Southeast Asia



Exhaust Gas Cleaning System

China and Southeast Asia



(Source: Puyi Marine Env. Tech. Nov. 2017)

China and Southeast Asia

- cold ironing of vessels,
- safe operation of on-shore power supply (OPS) service in port .



China and Southeast Asia

For shipping and connectivity

- Confidence building
- Capacity building
- Cooperation

China and Southeast Asia

Capacity building

- workshop for maritime administrators;
- training for port state control officers;
- training for SAR coordinators;
- master degree programme in MSEP;
- joint SAR exercises.

China and Southeast Asia

中国—东盟国家海上搜救协调员培训
Search and Rescue Coordinators Training Programs among China and ASEAN Member States



China and Southeast Asia

China-Asean Joint SAR Drill



20 ships, 3 helicopters, 1000 people

Magic Vs Jupiter
29 overboard
328 to be rescued
8 injured
2 transferred by
helicopter

Brunei
China,
Cambodia
Lao
Myanmar
Philippines
Thailand

China and Southeast Asia

Cooperation Areas

- E-Navigation & Beidou Satellite;
- Maritime Autonomous Surface Ship;

China and Southeast Asia

E-Navigation application in China



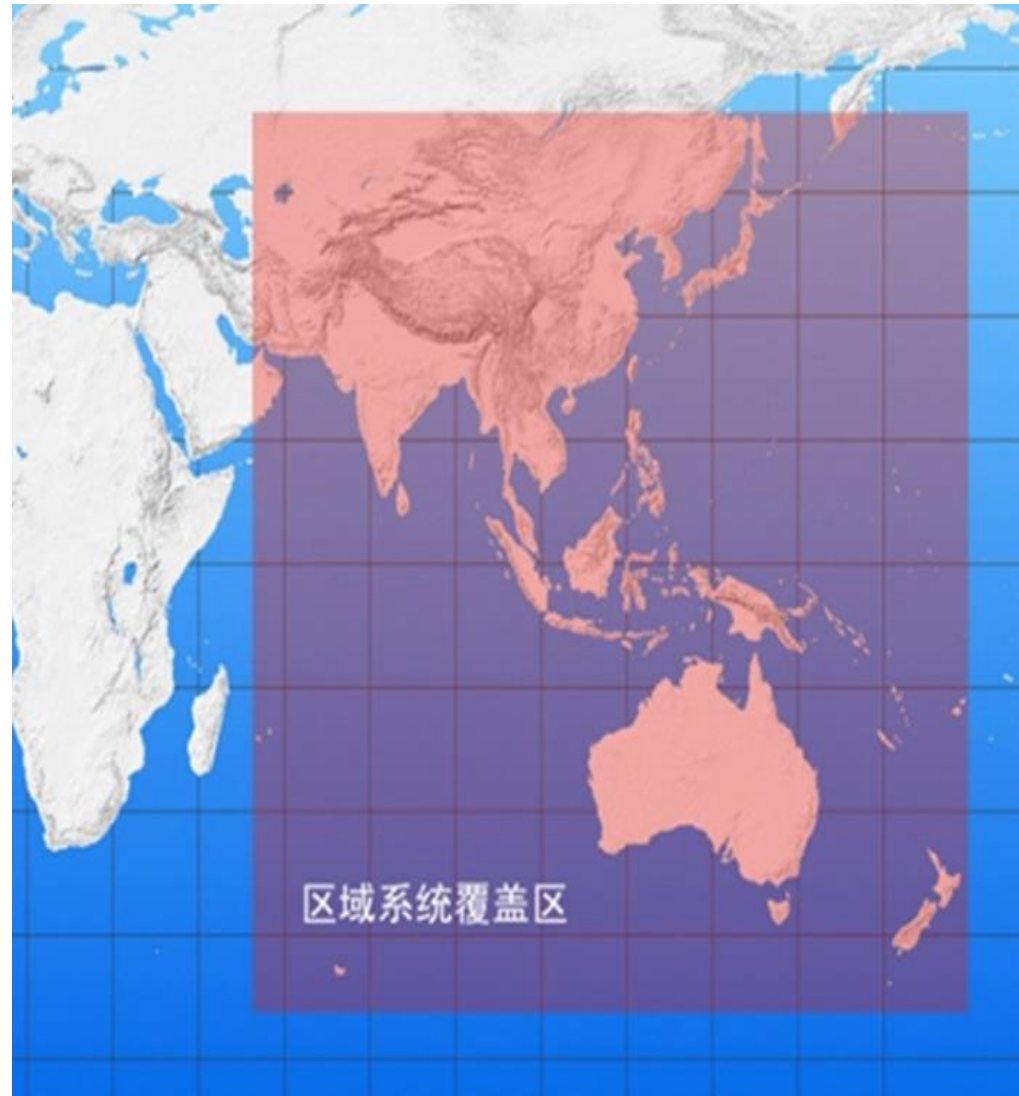
E-YS Port

- VTS
- NAS
- MSI
- Pilotage
- Met. IS
- ...

China and Southeast Asia

Beidou Satellite

- communication
- fishery
- hydrography
- maritime transport
- navigation
- SAR
- ...



China and Southeast Asia

Marine environment protection

- Air pollution,
- Reduction of GHGs,
- Invasive aquatic organisms,
- PSSAs

China and Southeast Asia



Complying with the Ballast Water Management Convention

Stopping the spread of invasive aquatic species



D1 standard requiring ships to exchange ballast water in open seas, away from coastal areas. Few organisms survive.

D2 standard specifying the maximum amount of viable organisms allowed to be discharged, including specified indicator microbes harmful to human health. Usually involves installing ballast water management system.

BACKGROUND INFO

- All new ships must conform to the D2 standard.
- Until the date when they have to meet the D2 standard, existing ships should exchange ballast water mid-ocean, to meet the D1 standard.
- Over time, all ships will have to meet the D2 standard.
- 'Renewal survey' refers to the IOPPC renewal survey under MARPOL Annex 1

All ships must have:

- ballast water management plan
- ballast water record book
- International Ballast Water Management Certificate

Existing ships with renewal survey between 8 September 2017 and 8 September 2019

Case 1: if previous renewal survey was between 8 September 2014 and 8 September 2017 – must comply with D2 by this renewal survey.

Case 2: if previous renewal survey was before 8 September 2014 – then compliance with D2 must be by the next renewal survey.

New ships built on or after 8 September 2017 must meet the D2 standard.

Existing ships built prior to 8 September 2017 must meet the D1 standard until their D2 compliance date.

Existing ships with renewal survey after 8 September 2019 must meet D2 standard by this renewal survey.

All ships must meet D2 standard by 8 September 2024.

2024 ✓

2019 ✓

2017 ✓

D2 STANDARD
D1 STANDARD



China and Southeast Asia

MASS scoping

- UNCLOS;
- SOLAS,
- MARPOL,
- COLREG,
- STCW,
- Liability,
- ...



Shipping and Connectivity

China and Southeast Asian countries need to work together for regional connectivity and sustainability

Shipping and Connectivity

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