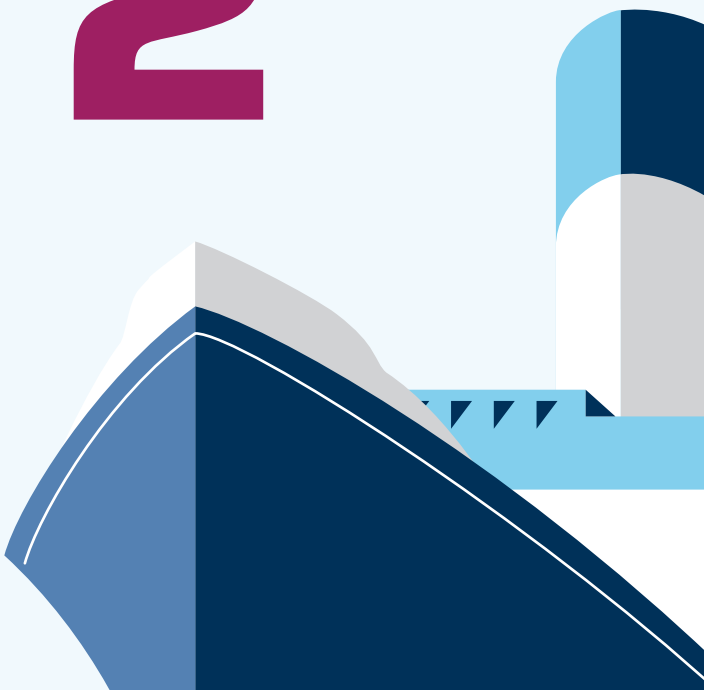
2



STRUCTURE, OWNERSHIP AND REGISTRATION OF THE WORLD FLEET

After five years of decelerating growth, world fleet expansion increased slightly in 2017. A total of 42 million gross tons were added to the global tonnage in 2017, equivalent to a modest 3.3 per cent growth rate. This performance reflects both a slight upturn in new deliveries and a decrease in demolition activity, resulting from optimistic views among shipowners given positive developments in demand and freight rates. The expansion in ship supply capacity was surpassed by faster growth in demand and seaborne trade volumes, altering the market balance and supporting improved freight rates and earnings.

With regard to the shipping value chain, Germany remained the largest container ship owning country, although with a slight decrease in its share in 2017. By contrast, shipowners from Canada, China and Greece increased their container ship market shares. Further, the Marshall Islands emerged as the second largest registry, after Panama and ahead of Liberia. Over 90 per cent of shipbuilding activity in 2017 occurred in China, the Republic of Korea and Japan, and 79 per cent of ship demolitions took place in South Asia, notably in India, Bangladesh and Pakistan.

The liner shipping industry witnessed further consolidation through mergers and acquisitions and the restructuring of global alliances. However, despite the global trend in market concentration, UNCTAD data recorded an increase in 2017–2018 in the average number of companies providing services by country. This is the first such increase since UNCTAD began to monitor capacity deployment in 2004. Put differently, several individual carriers, both within and outside alliances, expanded their service networks to a larger number of countries, and this more than offset the reduction in the global number of companies following takeovers and mergers.

Not all countries saw an increase in the number of companies, however. UNCTAD data shows that the number of operators servicing several small island developing States and vulnerable economies decreased in 2017–2018. Further, reflecting the challenges posed by larger vessel sizes, small ports in many countries face obstacles in accommodating the demands of larger vessels and continue to rely on outdated and geared container and general cargo ships.

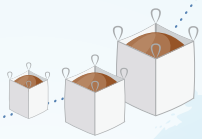
Three global liner shipping alliances dominate capacity deployment on the major container routes. The members of the alliances still compete with regard to prices, and the gains in operational efficiency and capacity utilization have exercised downward pressures on freight rates, to the benefit of shippers (see chapter 3). By joining forces in alliances, carriers have strengthened their bargaining power with regard to seaports when negotiating port calls and terminal operations (see chapter 4).

WORLD FLEET

LEADERS IN SHIPBUILDING

China, the Republic of Korea and Japan accounted for **90.5%** of global deliveries in 2017.

The dry bulk sector saw the largest tonnage of newbuildings entering the fleet, with **+20 million** gross tons reported delivered.



MERCHANT FLEET

Deadweight tonnage of the commercial shipping fleet grew **+3.31%** in the 12 months to 1 January 2018.

Gas carriers recorded the greatest growth rate in 2017. **+7.2%**

Capacity of up to 21,400 TEUs

Far East

Northern Europe

The largest container ships are deployed on long-distance routes, connecting trans-shipment hubs.

FLEET OWNERSHIP

Greece
17.3%
Greece expanded its lead, adding 21 million dwt in 2017.

Japan
11.7%

China
9.6%
China is the largest shipowning country in terms of vessel numbers.

Germany
5.6%

SHIP-SCRAPPING COUNTRIES

India continues to be the country where the most ship scrapping takes place, followed by Bangladesh and Pakistan.

A. WORLD FLEET STRUCTURE

Chapter 1 highlighted the demand side of and growth in seaborne trade volumes, which may serve as a leading indicator of or proxy for globalization, economic growth and merchandise trade expansion. However, such exchanges would not be possible without shipping and associated services, which provide in particular the global fleet of different vessels that cater for every type of cargo transported across the oceans. If seaborne trade volume is a proxy for the well-being of the global economy, the world fleet and the industry that provides the necessary vessels and services are the backbones of that economy. Beyond carrying 80 per cent of global trade by volume, ships also provide livelihoods for a wide range of businesses in nearly all countries of the world.

1. World fleet growth and principal vessel types

Growth in supply

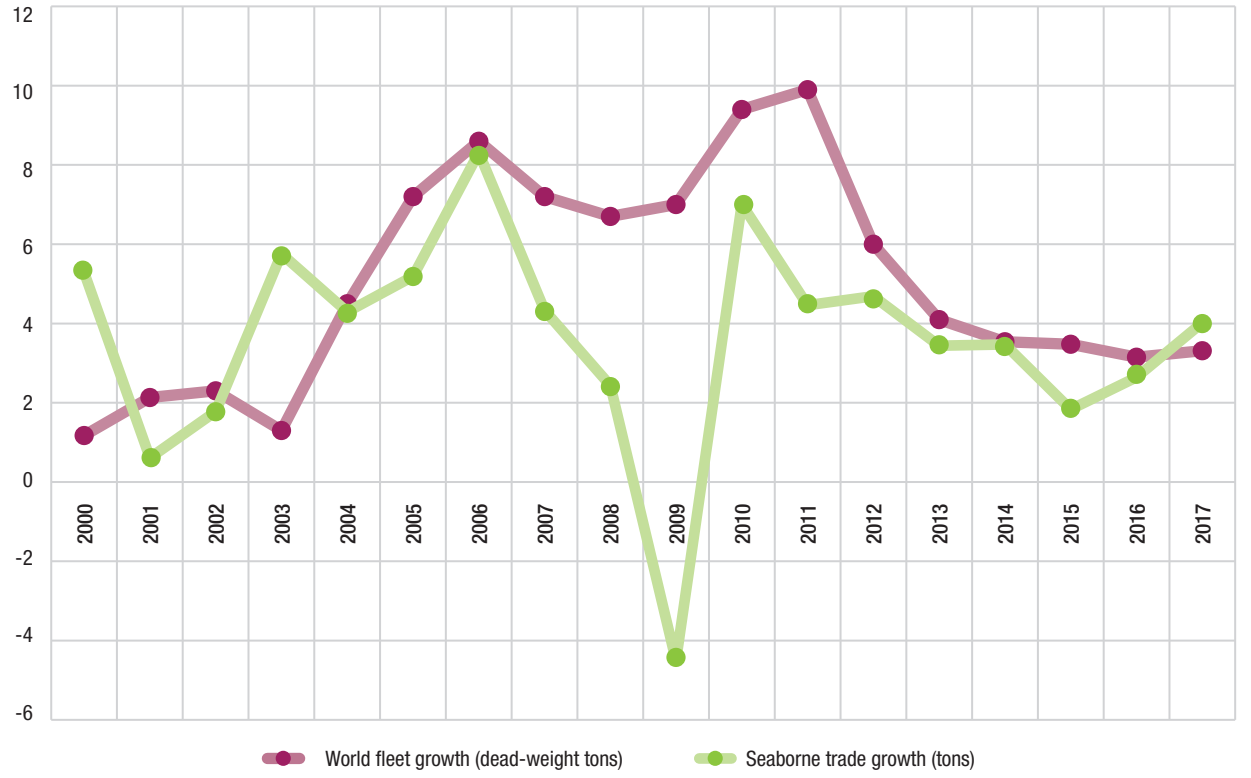
On 1 January 2018, the world commercial fleet consisted of 94,171 vessels, with a combined tonnage of 1.92 billion dwt. After five years of decelerating growth, in 2017, there was a slight rebound in the rate of increase (figure 2.1). The dead-weight tonnage of the commercial shipping fleet grew by 3.31 per cent in the 12 months to 1 January 2017, up from 3.15 per cent in 2016. Compared with the growth rate of demand, at 4.0 per cent in 2017, the lower level of growth in supply helped to improve market fundamentals, leading to improved freight rates and profits for most carriers, with the exception of tankers.

Ship sizes of new deliveries continued to be larger than the existing fleet. With regard to vessel numbers, the growth rate was therefore lower, at 1 per cent. The estimated market value of the world fleet, however, increased by 7.8 per cent, in line with improved market fundamentals and increased investments in ships incorporating the latest technologies and complying with current and potential future regulations.

Vessel types

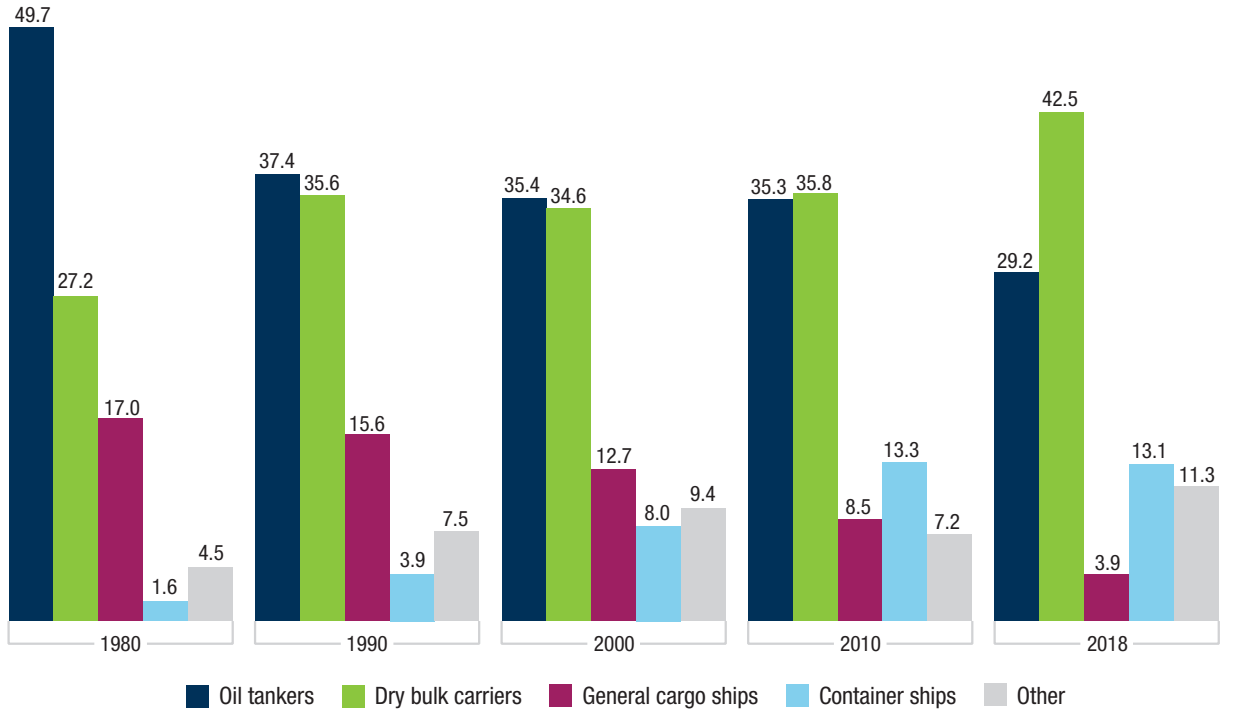
Dry bulk carriers, which carry iron ore, coal, grain and similar cargo, account for the largest share of the world fleet in dead-weight tonnage and the largest share of total cargo-carrying capacity, at 42.5 per cent (figure 2.2). They are followed by oil tankers, which carry crude oil and its products, and account for 29.2 per cent of total dead-weight tonnage. The third largest fleet is container ships, which account for 13.1 per cent of the total. As container ships carry goods of higher unit value than dry and liquid bulk ships and usually travel at higher speeds, they effectively carry more than half of total seaborne trade by monetary value.

Figure 2.1 **Annual growth of world fleet and seaborne trade, 2000–2017**
(Percentage)



Source: UNCTAD, *Review of Maritime Transport*, various issues.

Figure 2.2 Share of world fleet in dead-weight tonnage by principal vessel type, 1980–2018
(Percentage)



Sources: UNCTAD secretariat calculations, based on data from Clarksons Research and the *Review of Maritime Transport*, various issues.
Notes: Propelled seagoing merchant vessels of 100 gross tons and above, as at 1 January, excluding inland waterway vessels, fishing vessels, military vessels, yachts and offshore fixed and mobile platforms and barges, with the exception of floating production, storage and offloading units and drillships.

Table 2.1 World fleet by principal vessel type, 2017–2018
(Thousands of dead-weight tons and percentage)

	2017	2018	Percentage change, 2017–2018
Oil tankers	535 700	561 079	4.74
	28.8	*29.2*	
Dry bulk carriers	795 518	818 612	2.90
	42.7	*42.5*	
General cargo ships	74 908	74 458	-0.60
	4.0	*3.9*	
Container ships	245 759	252 825	2.88
	13.2	*13.1*	
Other	210 455	217 028	3.12
	11.3	*11.3*	
Gas carriers	60 003	64 317	7.19
	3.2	*3.3*	
Chemical tankers	42 853	44 597	4.07
	2.3	*2.3*	
Offshore vessels	77 845	78 228	0.49
	4.2	*4.1*	
Ferries and passenger ships	5 944	6 075	2.20
	0.3	*0.3*	
Other/not available	23 810	23 811	0.01
	1.3	*1.2*	
World total	**1 862 340**	**1 924 002**	**3.31**

Source: UNCTAD secretariat calculations, based on data from Clarksons Research.
Notes: Propelled seagoing merchant vessels of 100 gross tons and above, as at 1 January. Percentage share in italics.

In 2017, almost all vessel types recorded positive growth rates, except for general cargo ships, which continued to show a long-term decline in their share of the world fleet (table 2.1). In January 2018, general cargo ships accounted for only 3.9 per cent of total dead-weight tonnage, a further decrease from their 4 per cent share in 2017. The long-term trend towards the containerization of general cargo may be illustrated by comparing the general cargo fleet with the container ship fleet. In 1980, container ships had one tenth the total tonnage of general cargo ships; at present, container ships have 3.4 times more total dead-weight tonnage. The order book for general cargo ships is at its lowest level since UNCTAD began to monitor this indicator and 58.8 per cent of such ships are older than 20 years (table 2.2).

Whenever there is sufficient volume, it is more efficient to make use of specialized ships for different types of cargo. General cargo ships therefore only remain in use in smaller markets, including at peripheral ports and on small islands and for shipments of project cargo that cannot be containerized. As the general cargo fleet continues to diminish, policymakers and port planners need to take every opportunity to invest in the most appropriate specialized terminals, in particular for the growing fleet of gearless container ships. A related development is the growing predominance of deep-water container trans-shipment hubs in all regions, which leads to a reduction in direct calls in adjacent smaller economies.

Gas carriers recorded the greatest growth rate in 2017, at 7.2 per cent, with expectations for further expansion in the coming years in view of the projected growth in liquefication and regasification capacity, as well as the consideration of gas as a cleaner source of energy. The share of chemical tankers grew by 4.1 per cent, reflecting the demand for the transport of chemicals required in industrial processing, as well as of palm oil and other liquid goods. The largest number of chemical tankers is controlled by owners from Japan, followed by owners from China, Norway, the Republic of Korea and Singapore.

Tonnage and value

UNCTAD analysis mostly focuses on dead-weight tonnage, which is more relevant to seaborne trade and cargo-carrying capacity. To complement information on the maritime industry as a business sector, data on the commercial value of fleets are also included, indicating the capital intensiveness of the shipping industry and the implications for owning, operating, registering, building and scrapping such assets (figure 2.3). The value of its main assets also signals the state of the industry during business cycles. In addition, the value of a ship gives some indication of the level of its sophistication and technological content. For example, ships emit different amounts of greenhouse gases by ton-mile, depending on the country of build and vessel type (Right Ship, 2018). In the longer term, further digital transformation may entail greater investment and higher fixed costs, against lower operational and variable costs (box 2.1).

The high commercial value of the industry's main assets highlights the extent of investment in ships and technology, which shipowners need to recover by improving cost-efficiency measures, setting rates and surcharges and covering variable costs and fixed costs with regard to vessel prices. The values of different vessel types vary considerably (figure 2.3). Dry and liquid bulk ships have the largest cargo-carrying capacity and, accordingly, dry bulk carriers and oil tankers together account for more than 72 per cent of total dead-weight

Box 2.1 The shipping fleet and digitalization

The shipping industry is investing heavily in technologies that have the potential to transform business as usual. Such new technologies relate to the way that ships move and operate, as well as to strategic decision-making and day-to-day operations at offices, and include automated navigation and cargo-tracking systems and digital platforms that facilitate operations, trade and the exchange of data. They can potentially reduce costs, facilitate interactions between different actors and raise the maritime supply chain to the next level.

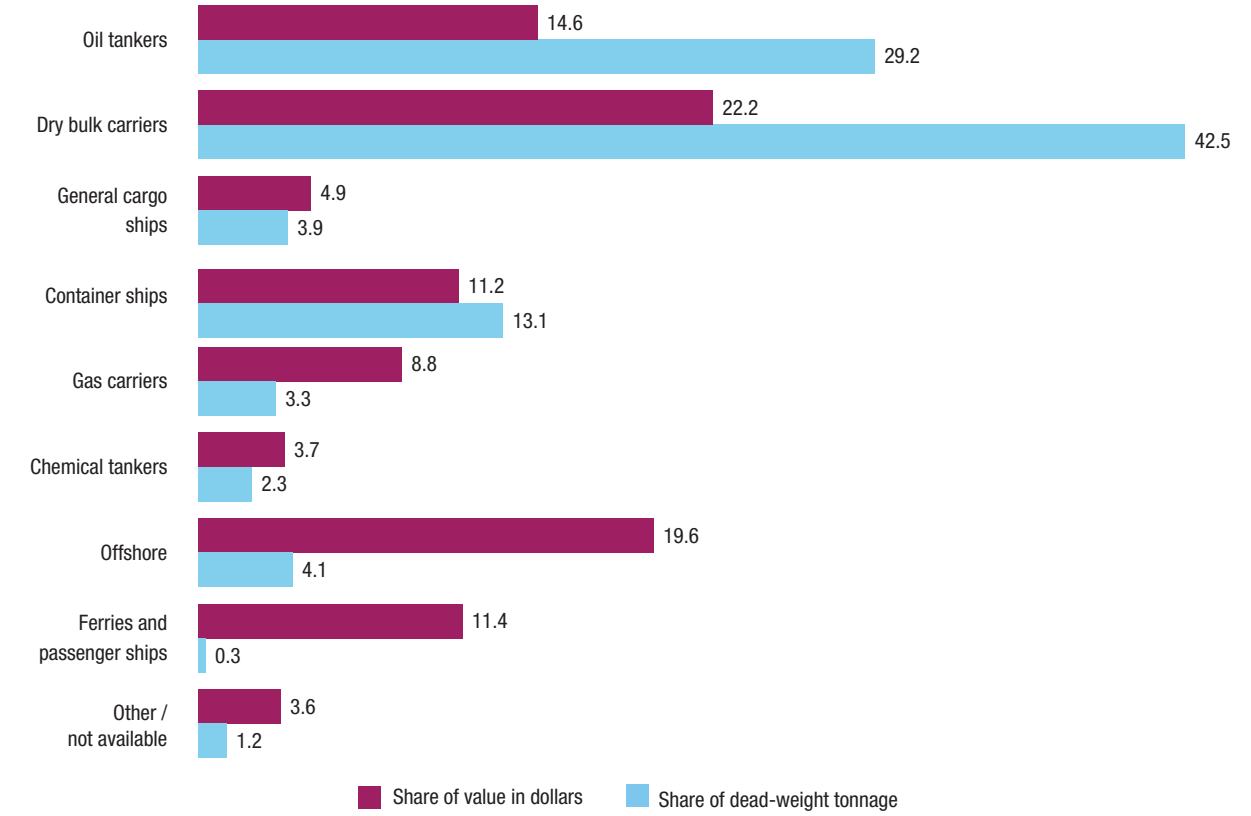
Automation and unstaffed ships offer interesting options related to greater cargo intake and reduced fuel consumption and operational expenses such as crew costs. At the same time, as new technologies are incorporated into on-board operations, ships become more complex to operate. As ship sizes and the complexity of on-board operations increase, the risk of major accidents may also rise. Yet reducing human intervention can also lead to a decrease in accidents. Human error reportedly accounted for approximately 75 per cent of the value of almost 15,000 marine liability insurance claims in 2011–2016, equivalent to over $1.6 billion.

Vessel and cargo-tracking systems are developing quickly. Technological developments can help in generating business intelligence for asset management and optimized operations, for example in the provision of data on fuel consumption and engine performance. Such systems also allow for the identification and monitoring of a ship's position, as well as for the monitoring of other aspects that might be important with regard to manoeuvring and stabilizing route and course, improving security and ensuring the safety of crew.

Combining on-board systems and digital platforms allows vessels and cargo to become a part of the Internet of things. A key challenge is to establish interoperability, so that data can be exchanged seamlessly, at the same time ensuring cybersecurity and the protection of commercially sensitive and private data (for further discussion of legal and regulatory frameworks, see chapter 5).

Sources: Allianz Global Corporate and Specialty, 2017; Lehmacher, 2017.

Figure 2.3 World fleet by principal vessel type, 2018
(Percentage)



Source: UNCTAD secretariat calculations, based on data from Clarksons Research.
Notes: Share of dead-weight tonnage is calculated for all ships of 100 gross tons and above. Share of value is estimated for all commercial ships of 1,000 gross tons and above.

tonnage. However, with regard to their value, the vessels make up only 37 per cent of the fleet. Other vessel types are more technology-intensive and costlier to build. Gas carriers and the offshore fleet have a far higher monetary value by dwt. The category of ferries and passenger ships includes cruise ships and other vessels whose main purpose is not the transport of goods; their share in dead-weight tonnage is thus negligible, yet reaches more than 11 per cent of the fleet's market value.

2. World merchant fleet age distribution

The age structure of the world fleet provides interesting insights into trends and differences in country groups and vessel types with regard to fleet modernization and vessel sizes. The average age of the fleet registered in developing countries continues to be slightly higher than that registered in developed countries, but this gap has been narrowing over the years (table 2.2).

In 2017, as new deliveries further slowed down compared with deliveries in 2016, the average age of the world fleet increased slightly. At the beginning of 2018, the average vessel age in the commercial fleet was 20.8 years. With regard to dead-weight tonnage, the average age of the fleet was significantly younger, at 10.1 years, as ships built in the last 10 years have been on average seven times larger than those built two or more decades ago and still trading.

Container ship sizes have significantly increased in the last two decades, while the average size of oil tankers has marginally decreased. The largest ships built in the last five years have been container ships of an average of 83,122 dwt, followed by dry bulk carriers of an average of 79,281 dwt. These trends are a reflection of changed economic conditions. Notably, in container shipping, the process of consolidation has gone together with the demand for larger ships by the major shipping lines and alliances.

3. Container ship fleet

Container shipping is fundamental for global trade in intermediate and manufactured consumer goods. It is provided by regular liner shipping services that form a network of transport connections, including direct services and services that involve the trans-shipment of containers in hub ports.

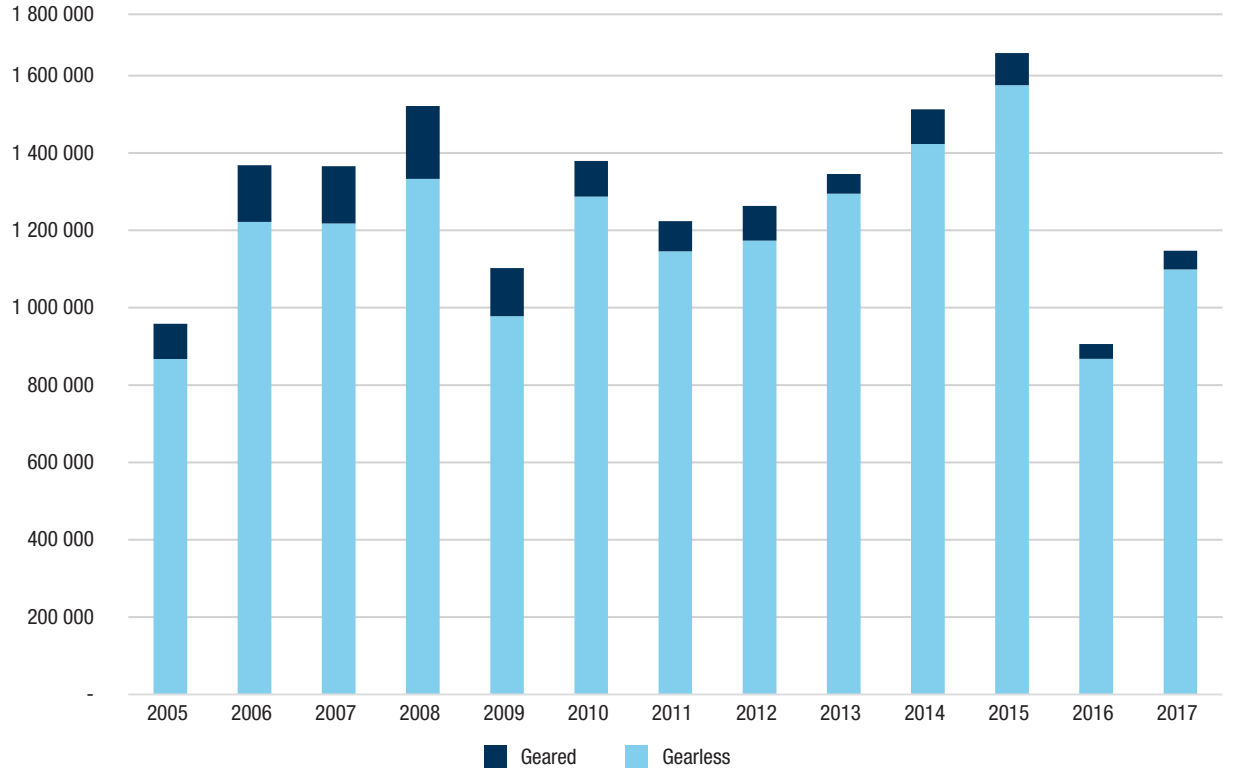
Modern container ports have specialized ship-to-shore container cranes installed and most new container ships are therefore gearless, that is, they are not equipped with

Table 2.2 Age distribution of world merchant fleet by vessel type, 2018

Economic grouping and vessel type		Years					Average age		Percentage change
		0–4	5–9	10–14	15–19	20+	2018	2017	2017–2018
World									
Oil tankers	Percentage of total ships	14.97	21.89	17.04	8.46	37.64	19.06	18.73	0.32
	Percentage of dead-weight tonnage	21.70	33.86	24.60	14.30	5.55	9.99	9.90	0.09
	Average vessel size (dwt)	78 543	84 016	78 643	93 525	8 303			
Dry bulk carriers	Percentage of total ships	27.83	41.32	12.90	8.72	9.24	9.10	8.77	0.33
	Percentage of dead-weight tonnage	29.99	43.04	12.93	7.22	6.82	8.28	7.93	0.34
	Average vessel size (dwt)	79 281	76 618	73 750	60 907	54 304			
General cargo ships	Percentage of total ships	6.09	16.26	11.88	7.03	58.75	25.82	25.10	0.72
	Percentage of dead-weight tonnage	11.59	26.27	14.50	9.84	37.80	18.66	18.17	0.49
	Average vessel size (dwt)	8 060	6 641	5 400	6 392	2 656			
Container ships	Percentage of total ships	17.40	26.67	26.81	14.74	14.37	11.94	11.53	0.41
	Percentage of dead-weight tonnage	29.55	30.98	23.71	10.32	5.45	9.04	8.71	0.32
	Average vessel size (dwt)	83 122	56 847	43 284	34 246	18 568			
Other	Percentage of total ships	13.07	19.42	11.62	8.48	47.41	22.86	22.32	0.54
	Percentage of dead-weight tonnage	20.70	24.04	16.10	10.78	28.39	15.45	15.34	0.11
	Average vessel size (dwt)	9 253	7 507	8 440	7 741	4 156			
All ships	Percentage of total ships	13.75	22.01	13.25	8.54	42.46	20.83	20.34	0.50
	Percentage of dead-weight tonnage	25.74	35.98	18.16	10.20	9.92	10.09	9.85	0.24
	Average vessel size (dwt)	43 360	38 186	32 634	29 049	6 150			
Developing economies – all ships									
	Percentage of total ships	14.08	22.81	12.70	7.76	42.65	20.07	19.56	0.51
	Percentage of dead-weight tonnage	25.70	35.39	13.92	10.03	14.97	17.46	17.50	-0.04
	Average vessel size (dwt)	34 174	30 399	21 763	25 426	6 932			
Developed economies – all ships									
	Percentage of total ships	14.58	23.78	15.57	10.63	35.45	19.35	18.94	0.41
	Percentage of dead-weight tonnage	26.15	36.71	20.97	10.26	5.91	9.35	9.12	0.23
	Average vessel size (dwt)	55 976	47 322	43 041	32 571	6 951			
Transition economies – all ships									
	Percentage of total ships	5.75	9.48	6.81	3.54	74.41	29.67	29.08	0.59
	Percentage of dead-weight tonnage	9.80	27.51	22.07	13.44	27.18	16.16	15.55	0.62
	Average vessel size (dwt)	13 865	22 668	25 258	26 867	2 577			

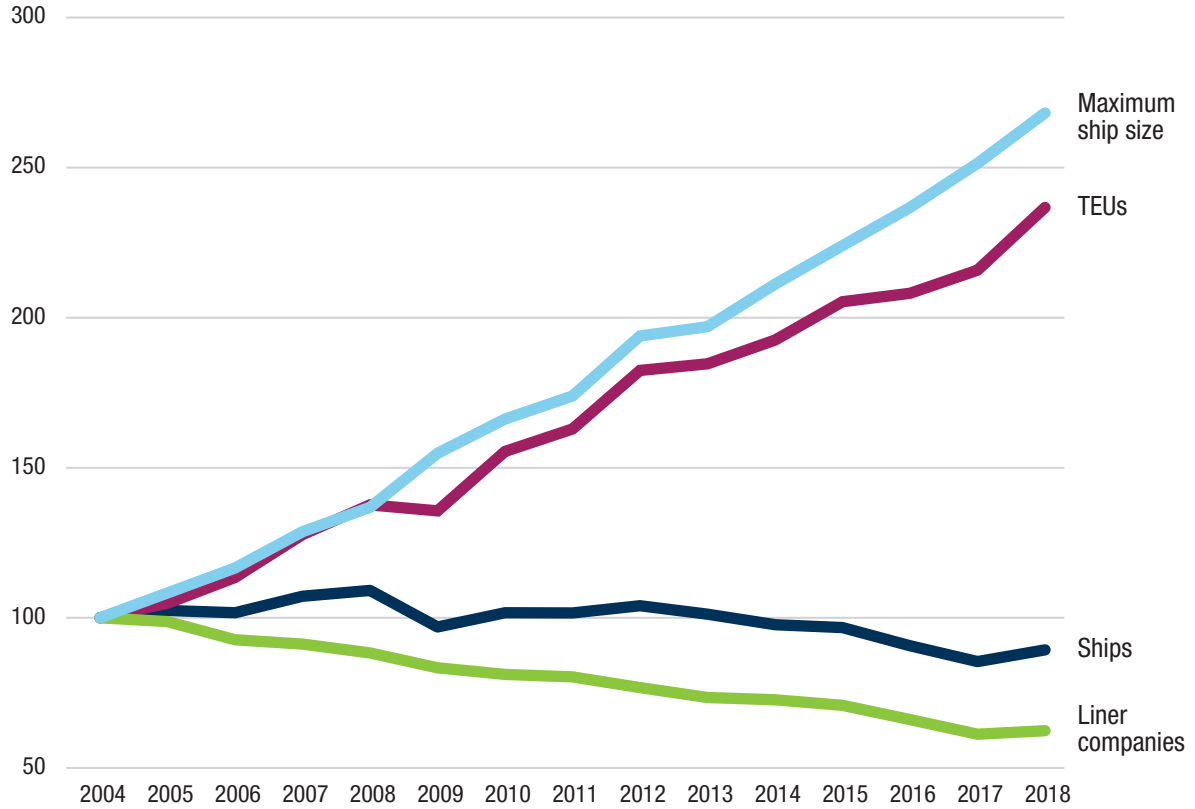
Source: UNCTAD secretariat calculations, based on data from Clarksons Research.
Notes: Propelled seagoing vessels of 100 gross tons and above, as at 1 January.

Figure 2.4 **Container ship deliveries, 2005–2017**
(20-foot equivalent units)



Source: UNCTAD secretariat calculations, based on data from Clarksons Research.
Note: Propelled seagoing vessels of 100 gross tons and above.

Figure 2.5 **Trends in container ship deployment, average per country**
(2004 = 100)



Source: UNCTAD secretariat calculations, based on data from MDS Transmodal and *Review of Maritime Transport*, various issues.
Note: Figures as at 1 May of each year.

their own cranes. In 2017, only 4.2 per cent of TEUs of container ship deliveries was of geared container ships, intended for markets in which terminals do not provide for the necessary port cranes, including in some small island developing States and at small and remote ports at which the volume of cargo may not justify investment in ship-to-shore cranes (figure 2.4).

With regard to long-term trends in container ship deployment by country, ship sizes and total capacity deployed by country have increased over the years and the number of companies has decreased (figure 2.5). The number of ships and TEU-carrying capacity deployed reflect to some extent the growth of containerized trade. For example, deployment declined in 2008–2009, following the economic crisis, when carriers withdrew capacity from the market. The latest developments are more positive and the average TEU deployment by country increased by almost 10 per cent between May 2017 and May 2018. However, the number of companies providing services to and from a country, on average, has decreased in most years since 2004. The slight increase between 2017 and 2018 is an interesting development, as it reflects the fact that despite global mergers and acquisitions, the remaining carriers have been expanding into new markets, including as members of global alliances. Each major carrier thereby ensures its own in-house global network.

The largest ships are deployed on the Far East–Northern Europe route. As at June 2018, there were 18 weekly services on this route, down from 32 services in 2008, when significantly smaller ships were deployed. Current services are operated by nine different carriers organized into three alliances and one independent carrier, Hyundai Merchant Marine, and the average capacity of the total 205 ships employed is 15,000 TEUs; the largest vessel has a capacity of 21,400 TEUs and the smallest vessel, deployed by the sole independent carrier, has a capacity of 4,100 TEUs (Dynamar BV, 2018a).

The slight long-term decline in the number of ships deployed by country does not mean that the total number of ships in the world fleet has declined. The opposite is true; the total number of container ships in the world fleet increased in 2004–2018. Each ship calls at a smaller number of ports; the largest ships are deployed on long-distance routes, connecting trans-shipment hubs, and the smaller ships connect a smaller number of countries, on shorter routes, to and from these trans-shipment hubs.

B. WORLD FLEET OWNERSHIP AND OPERATION

1. Shipowning countries

The top five shipowning countries together account for 49.6 per cent of the world fleet in dead-weight tonnage. Greece has expanded its lead, adding 21 million dwt in 2017; it now has a market share of 17.3 per cent, followed by Japan at 11.7 per cent, China at 9.6 per cent and Germany at 5.6 per cent. Shipowners from Greece specialize in oil tankers, in which Greece has a market share of 24 per cent, as well as dry bulk carriers. Japan and China have their largest market shares in dry bulk carriers, with 20 and 16 per cent, respectively. Shipowners from Germany specialize mostly in container ships, in which Germany has a market share of 20 per cent. Among charter owners, that is, owners that do not themselves provider liner services but instead charter ships to liner companies, Germany has a market share of one third, down from two thirds in 2013, and owners from Canada, China and Greece have expanded their markets. A typical example of this trend is the sale of six container ships by Commerzbank of Germany to Maersk in March 2018, for around $280 million (Dynamar BV, 2018b).

The largest shipowning country in terms of vessel numbers is China, with 5,512 commercial ships of 1,000 gross tons and above, many of which are deployed in domestic trades, under the national flag (table 2.3). Indonesia and the Russian Federation also own a large number of ships deployed in coastal and inter-island transport. Most major shipowning economies are in Asia, Europe and North America. No country in Africa or Oceania and only one country in Latin America – Brazil – is among the top 35 shipowners. Among the top 35 shipowning countries, 28 have more than half of their fleet registered abroad, that is, in a foreign open registry. The seven exceptions are Belgium, India, Indonesia, Italy, Saudi Arabia, Thailand and Viet Nam. In Saudi Arabia and Thailand, the nationally flagged ships are mostly oil tankers; in Belgium and Italy, the national flag is financially attractive for national owners; and in India, Indonesia and Viet Nam, the nationally flagged ships include a large share of general cargo ships deployed in coastal traffic, which is reserved for nationally flagged ships.

With regard to the commercial value of the world fleet, the largest shipowning country is the United States, followed by Japan and Greece (figure 2.6). The difference between the ranking by tonnage and by value is due to the vessel types owned by different countries. For example, shipowners from Greece specialize in dry bulk carriers and oil tankers, which have a large carrying capacity; shipowners from the United States, by contrast, have greater shares in cruise ships and other vessels, primarily offshore, which are not used for trade in goods.

2. Container ship ownership and operation

Table 2.4 depicts container ship fleet ownership in TEUs. Germany continues to be the largest owner, with a market share of 20.22 per cent, a decrease of 1.2 percentage points from 2017. France, Denmark, Hong Kong (China) and Switzerland own the container

Table 2.3 Ownership of world fleet ranked by dead-weight tonnage, 2018

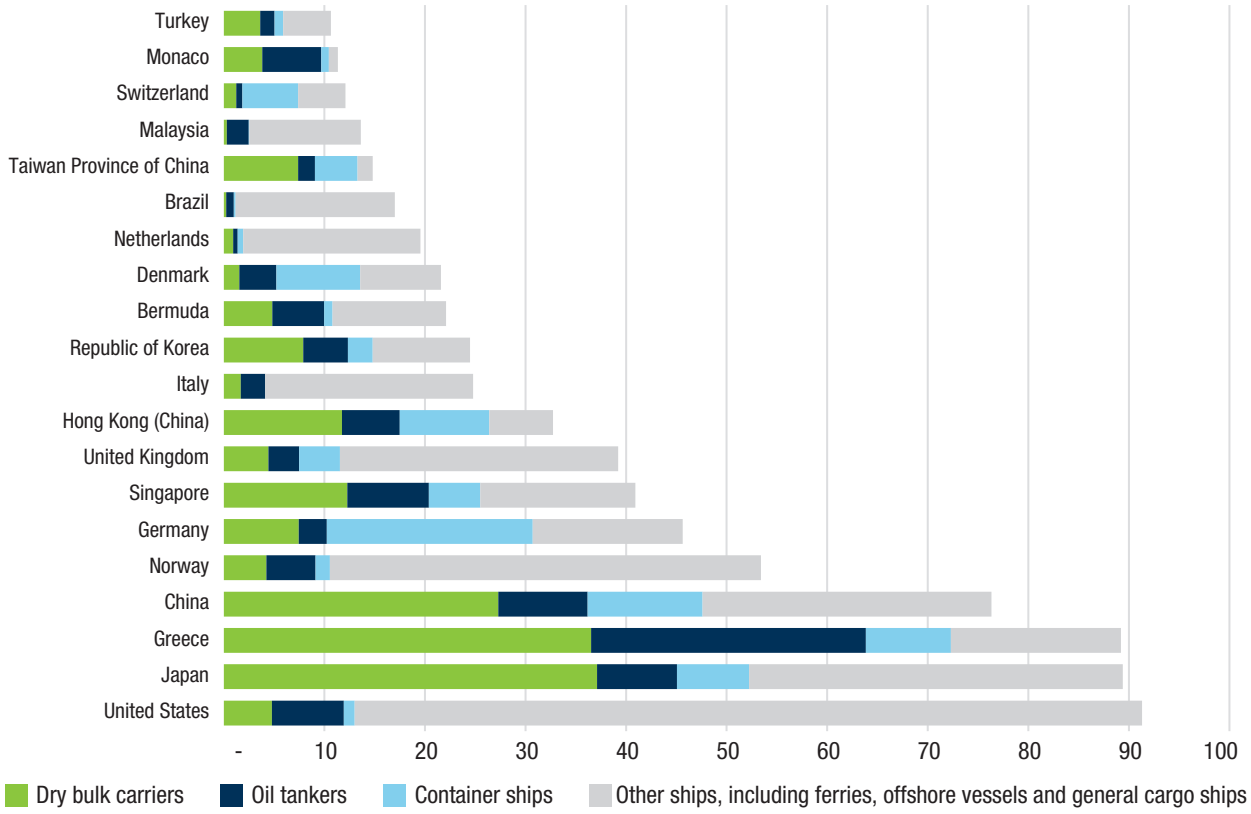
	Country or territory	Number of vessels			Dead-weight tonnage (thousands of tons)			
		National flag	Foreign or international flag	Total	National flag	Foreign or international flag	Total	National flag as percentage of total (dead-weight tonnage)
1	Greece	774	3 597	4 371	64 977	265 199	330 176	19.7
2	Japan	988	2 853	3 841	38 053	185 562	223 615	17.0
3	China	3 556	1 956	5 512	83 639	99 455	183 094	45.7
4	Germany	319	2 550	2 869	11 730	95 389	107 119	11.0
5	Singapore	240	2 389	2 629	2 255	101 327	103 583	2.2
6	Hong Kong (China)	95	1 497	1 592	2 411	95 396	97 806	2.5
7	Republic of Korea	801	825	1 626	14 019	63 258	77 277	18.1
8	United States	943	1 128	2 071	13 319	55 611	68 930	19.3
9	Norway	549	1 433	1 982	4 944	54 437	59 380	8.3
10	Bermuda	21	473	494	1 215	53 036	54 252	2.2
11	Taiwan Province of China	164	823	987	6 732	43 690	50 422	13.4
12	United Kingdom	398	956	1 354	9 496	40 494	49 989	19.0
13	Monaco	16	405	421	3 856	35 467	39 323	9.8
14	Denmark	139	805	944	1 521	37 691	39 212	3.9
15	Turkey	633	889	1 522	8 034	19 207	27 241	29.5
16	India	885	126	1 011	17 974	6 878	24 852	72.3
17	Switzerland	43	368	411	1 565	23 240	24 805	6.3
18	Belgium	120	152	272	12 405	11 225	23 630	52.5
19	Russian Federation	1 384	323	1 707	7 589	14 630	22 219	34.2
20	Indonesia	1 886	62	1 948	19 414	885	20 299	95.6
21	Italy	583	163	746	14 221	5 530	19 750	72.0
22	Malaysia	500	162	662	9 731	9 793	19 524	49.8
23	Netherlands	800	428	1 228	6 911	11 205	18 116	38.2
24	Islamic Republic of Iran	164	62	226	3 914	13 927	17 841	21.9
25	United Arab Emirates	200	695	895	1 115	16 317	17 432	6.4
26	Saudi Arabia	219	67	286	13 378	3 760	17 138	78.1
27	France	159	279	438	5 635	6 506	12 141	46.4
28	Brazil	290	100	390	4 341	7 636	11 976	36.2
29	Cyprus	14	281	295	92	10 137	10 229	0.9
30	Viet Nam	875	116	991	7 464	1 756	9 221	81.0
31	Canada	220	149	369	2 695	6 387	9 082	29.7
32	Oman	6	42	48	6	7 782	7 788	0.1
33	Thailand	337	65	402	5 576	1 983	7 559	73.8
34	Qatar	63	56	119	1 841	4 977	6 818	27.0
35	Sweden	167	122	289	2 332	3 927	6 259	37.3
	Subtotal, top 35 shipowners	**18 551**	**26 397**	**44 948**	**404 399**	**1 413 699**	**1 818 098**	**22.2**
	Rest of world and unknown	*3 224*	*2 560*	*5 784*	*36 114*	*55 800*	*91 913*	*39.3*
	World total	**21 775**	**28 957**	**50 732**	**440 513**	**1 469 499**	**1 910 012**	**23.1**

Source: UNCTAD secretariat calculations, based on data from Clarksons Research.

Notes: Propelled seagoing vessels of 1,000 gross tons and above, as at 1 January.
For a complete listing of nationally owned fleets, see http://stats.unctad.org/fleetownership.
For the purposes of this table, second and international registries are recorded as foreign or international registries, whereby, for example, ships of owners in the United Kingdom registered in Gibraltar or the Isle of Man are recorded as under a foreign or international flag. In addition, ships of owners in Denmark registered in the Danish International Register of Shipping account for 43.5 per cent of the Denmark-owned fleet in dead-weight tonnage and ships of owners in Norway registered in the Norwegian International Ship Register account for 26.4 per cent of the Norway-owned fleet in dead-weight tonnage.

Abbreviation: SAR, Special Administrative Region.

Figure 2.6 Top 20 nationally owned fleets by value of principal vessel type, 2018
(Billions of dollars)



Source: UNCTAD secretariat calculations, based on data from Clarksons Research.
Notes: Propelled seagoing merchant vessels of 1,000 gross tons and above, as at 1 January.

Table 2.4 Global top 20 owners of container-carrying world fleet, 2018

Country or territory	20-foot equivalent units	Market share (percentage)	Number of ships	Average age per ship (years)	Size of largest ship (20-foot equivalent units)	Average size per ship (20-foot equivalent units)
Germany	4 207 388	20.22	1 131	10.6	18 800	3 720
Denmark	2 220 911	10.68	317	10.5	20 568	7 006
China	2 150 700	10.34	485	10.8	19 224	4 434
Greece	1 891 234	9.09	418	11.7	14 424	4 524
Hong Kong (China)	1 583 036	7.61	258	8.8	21 413	6 136
Japan	1 455 580	7.00	278	8.7	20 150	5 236
Switzerland	1 260 807	6.06	207	15.5	14 000	6 091
France	1 038 824	4.99	135	9.4	17 722	7 695
Taiwan Province of China	985 495	4.74	255	13.1	8 626	3 865
United Kingdom	870 632	4.18	199	10.8	15 908	4 375
Singapore	658 654	3.17	230	11.9	15 908	2 864
Republic of Korea	532 670	2.56	186	12.5	13 100	2 864
Cyprus	253 392	1.22	70	10.2	19 200	3 620
Norway	208 262	1.00	48	9.9	13 102	4 339
United States	207 894	1.00	70	19.4	9 443	2 970
Indonesia	172 711	0.83	205	17.4	3 534	842
Israel	170 434	0.82	31	8.7	10 062	5 498
Turkey	159 855	0.77	90	14.0	9 010	1 776
United Arab Emirates	110 265	0.53	61	17.0	4 498	1 808
Netherlands	92 815	0.45	87	10.8	3 508	1 067
Subtotal, top 20 owners	20 231 559	97.25	4 761	11.1	21 413	4 249
Rest of world	*572 912*	*2.75*	*383*	*12.6*	*6 572*	*1 496*
World total	**20 804 471**	**100.00**	**5 144**	**11.9**	**21 413**	**2 004**

Source: UNCTAD secretariat calculations, based on data from Clarksons Research.
Notes: Propelled seagoing vessels of 1,000 gross tons and above, as at 1 January. Only fully cellular container ships are included. For a complete listing of nationally owned fleets, see http://stats.unctad.org/fleetownership.
Abbreviation: SAR, Special Administrative Region.

Table 2.5 Global top 30 liner shipping companies, 1 June 2018

	Owned			Chartered			Total				
	Number of ships	Total 20-foot equivalent units	Average vessel size (20-foot equivalent units)	Number of ships	Total 20-foot equivalent units	Average vessel size (20-foot equivalent units)	Number of ships	Total 20-foot equivalent units	Market share (percentage of 20-foot equivalent units)	Average vessel size (20-foot equivalent units)	Share of chartered ships (percentage)
Maersk	300	2 213 253	7 378	400	1 666 186	4 165	700	3 879 439	15.3	5 542	42.9
Mediterranean Shipping Company	154	1 032 256	6 703	319	2 085 852	6 539	473	3 118 108	12.3	6 592	66.9
CMA CGM	147	1 131 606	7 698	329	1 422 658	4 324	476	2 554 264	10.1	5 366	55.7
China Ocean Shipping (Group) Company	156	1 194 776	7 659	174	777 715	4 470	330	1 972 491	7.8	5 977	39.4
Hapag-Lloyd	105	999 787	9 522	112	551 087	4 920	217	1 550 874	6.1	7 147	35.5
Ocean Network Express	88	700 560	7 961	140	835 752	5 970	228	1 536 312	6.1	6 738	54.4
Evergreen	113	577 062	5 107	87	533 646	6 134	200	1 110 708	4.4	5 554	48.0
Orient Overseas Container Line	55	495 150	9 003	44	194 836	4 428	99	689 986	2.7	6 970	28.2
Yang Ming	45	209 810	4 662	55	399 939	7 272	100	609 749	2.4	6 097	65.6
Pacific International Lines	118	348 140	2 950	14	65 194	4 657	132	413 334	1.6	3 131	15.8
Zim Integrated Shipping Services	11	70 314	6 392	72	328 612	4 564	83	398 926	1.6	4 806	82.4
Hyundai Merchant Marine	20	158 886	7 944	45	223 258	4 961	65	382 144	1.5	5 879	58.4
Wan Hai Lines	72	172 819	2 400	28	82 263	2 938	100	255 082	1.0	2 551	32.2
X-Press Feeders	20	17 253	863	69	109 462	1 586	89	126 715	0.5	1 424	86.4
Republic of Korea Marine Transport Company	27	57 082	2 114	30	67 378	2 246	57	124 460	0.5	2 184	54.1
Islamic Republic of Iran Shipping Lines	24	79 668	3 320	4	22 850	5 713	28	102 518	0.4	3 661	22.3
Shandong International Transportation Corporation	50	70 719	1 414	17	23 950	1 409	67	94 669	0.4	1 413	25.3
SM Line	13	57 706	4 439	7	20 612	2 945	20	78 318	0.3	3 916	26.3
Arkas Line	37	65 336	1 766	7	9 940	1 420	44	75 276	0.3	1 711	13.2
TS Lines	4	7 200	1 800	29	66 312	2 287	33	73 512	0.3	2 228	90.2
Transworld Group of Companies	22	38 159	1 735	11	22 302	2 027	33	60 461	0.2	1 832	36.9
Feedertech Shipping	5	12 040	2 408	12	44 422	3 702	17	56 462	0.2	3 321	78.7
Grimaldi Group	41	48 110	1 173	7	3 343	478	48	51 453	0.2	1 072	6.5
Quanzhou Ansheng Shipping Company	20	50 820	2 541				20	50 820	0.2	2 541	0.0
Regional Container Lines	20	28 928	1 446	7	17 060	2 437	27	45 988	0.2	1 703	37.1
Unifeeder	1	530	530	38	42 883	1 129	39	43 413	0.2	1 113	98.8
China Navigation Company	19	31 872	1 677	6	10 859	1 810	25	42 731	0.2	1 709	25.4
Grieg Star	26	41 540	1 598	1	306	306	27	41 846	0.2	1 550	0.7
Sinotrans	13	21 102	1 623	13	20 139	1 549	26	41 241	0.2	1 586	48.8
Sinokor Merchant Marine	12	17 874	1 490	18	22 409	1 245	30	40 283	0.2	1 343	55.6
Subtotal, top 30 carriers	1 738	9 950 358	5 725	2 095	9 671 225	4 616	3 833	19 621 583	77.6	5 119	49.3
Rest of world							4 330	5 668 430	22.4	1 309	
World total							8 163	25 290 013	100.0	3 098	

Source:UNCTAD secretariat calculations, based on data from MDS Transmodal.

ships with the largest average size and also host the largest liner shipping companies, which tend to own the largest vessels. Smaller vessels are more likely to be chartered from owners in, for example, Germany and Greece. The top three carriers are from Europe, with a combined market share of 37.7 per cent of world carrying capacity. Most of the remaining top 30 carriers are from Asia. In total, the top 10 carriers have a combined market share of 68.6 per cent and the top 30 together account for 77.6 per cent (table 2.5). Carriers with more ships also own and operate larger ships, which is a further indication that the growing size of container ships and the process of consolidation go hand in hand.

The liner shipping industry has witnessed increasing consolidation, in the form of both mergers and acquisitions, and liner shipping alliances. Consolidation can result in better supply management, fleet utilization and improved efficiency. It can benefit the industry through the pooling of cargo, improved economies of scale and reduced operating costs. Carriers may also see the benefits of such cooperation by sharing resources, including port calls and networks, and developing new services. Shippers could benefit from consolidation through stability and less fluctuation in freight rates, as well as more efficient and extensive services offered by carriers. As long as there is sufficient competition and transparency, shippers may also benefit from improvements if the resulting lower costs are effectively passed on to them in the form of lower freight rates. Beyond cost savings, improvements in operational efficiency and higher vessel utilization can exacerbate the oversupply of capacity, leading to further downward pressure on freight rates.

Consolidation can have a potential negative impact on competition, however, and may result in oligopolistic market structures. Growing consolidation can reinforce market power, potentially leading to decreased supply and service quality and higher prices. Some of these negative outcomes may already be in effect. For example, in 2017–2018, the number of operators decreased in several small island developing States and structurally weak developing countries (table 2.6). This is an issue of concern, as such countries are already serviced by a low number of operators and face high transport costs due to several obstacles, including limited transport infrastructure and market size. Alliances have also increased the bargaining power of shipping companies with regard to ports. By pooling services and ship calls, for example when negotiating port dues or conditions for dedicated terminals, carriers can more easily obtain the most beneficial arrangements from port authorities.

The UNCTAD liner shipping connectivity index provides an indicator of a country's position within the global liner shipping network. Liner shipping connectivity is closely related to trade costs and trade competitiveness. Table 2.7 depicts the ranking of selected countries in different regions according to their index in 2018. The liner shipping connectivity index reflects both changes in demand and decisions taken by carriers, which in turn depend on their strategic vessel deployment and responses to port investments and reforms in the container ports of countries (for further analysis of the causes and implications of changes in maritime connectivity, see chapter 6 of the *Review of Maritime Transport 2017*). The following countries experienced a significant increase in the 2018 index compared with the 2017 index: United Arab Emirates, by 179.1 per cent; Maldives, by 124.9 per cent; Mauritania, by 77.1 per cent; Eritrea, by 73.3 per cent; the Federated States of Micronesia, by 69.2 per cent; and Cameroon, by 66.5 per cent. By contrast, the following economies experienced the sharpest decreases in the 2018 index: Ukraine, by 60.6 per cent; Albania, by 48.6 per cent; Montenegro, by 47.6 per cent; New Zealand, by 42.9 per cent; Northern Mariana Islands, by 34.7 per cent; and Yemen, by 31.7 per cent.

Table 2.6 Number of operators and maximum ship size in selected small island developing States and vulnerable economies, 2017 and 2018

	Number of operators		Maximum ship size, 2018 (20-foot equivalent units)	Maximum ship size change, 2017–2018 (20-foot equivalent units)
	2017	2018		
Martinique	4	3	2 626	- 198
Northern Mariana Islands	5	3	1 357	- 724
Guam	5	4	2 692	—
Marshall Islands	5	4	1 617	—
Saint Vincent and the Grenadines	6	4	1 282	- 7
Sudan	9	4	5 368	-1 551
Guadeloupe	6	5	2 626	- 198
Somalia	6	5	2 394	- 34
Cuba	7	6	2 095	- 456
Reunion	7	6	6 639	- 311

Source: UNCTAD secretariat calculations, based on data from MDS Transmodal.
Note: Figures based on monthly schedules of liner companies for 1 May 2017 and 1 May 2018.

Table 2.7	Level of maritime connectivity, 2018			
	Best connected countries and/or territories	2018 index	Least connected countries and/or territories	2018 index
Global leaders	1. China	187.8	1. Norfolk Island	0.6
	2. Singapore	133.9	2. Christmas Island	0.9
	3. Korea, Rep.	118.8	3. Cayman Islands	1.2
	4. Hong Kong (China)	113.5	4. Bermuda	1.5
	5. Malaysia	109.9	5. Tuvalu	1.6
	6. Netherlands	98.0	6. Wallis and Futuna Islands	1.6
	7. Germany	97.1	7. Nauru	1.9
	8. United States	96.7	8. Cook Islands	2.0
	9. United Kingdom	95.6	9. Greenland	2.3
	10. Belgium	91.1	10. Timor-Leste	2.5
Africa	1. Morocco	71.5	11. Montserrat	3.0
	2. Egypt	70.3	12. Montenegro	3.0
	3. South Africa	40.1	13. Albania	3.0
	4. Djibouti	37.0	14. Anguilla	3.2
	5. Togo	35.9	15. Palau	3.3
Asia	1. United Arab Emirates	83.9	16. Federated States of Micronesia	3.4
	2. Taiwan, province of China	78.0	17. Antigua and Barbuda	3.5
	3. Japan	76.8	18. Democratic Republic of the Congo	3.5
	4. Sri Lanka	72.5	19. British Virgin Islands	3.7
	5. Vietnam	68.8	20. Saint Kitts and Nevis	3.7
Latin America and the Caribbean	1. Panama	56.6	21. United States Virgin Islands	4.3
	2. Colombia	50.1	22. Northern Mariana Islands	4.4
	3. Mexico	49.1	23. Saint Vincent and the Grenadines	4.4
	4. Peru	43.8	24. Saint Lucia	4.8
	5. Chile	42.9	25. Kiribati	4.8
			26. Faroe Islands	4.8
			27. Dominica	4.8

Source: UNCTAD secretariat calculations, based on liner shipping connectivity index.
Note: For the liner shipping connectivity index of each country, see http://stats.unctad.org/lsci.
Abbreviation: SAR, Special Administrative Region.

C. SHIP REGISTRATION

Most commercial ships are registered under a flag that differs from the flag of the country of ownership (table 2.3). The three leading flags of registration are those of countries that are not major shipowners, namely Panama, the Marshall Islands and Liberia (table 2.8). The Marshall Islands has continued to increase its market share in recent years and, as at January 2018, had become the world's second largest registry. The fourth and fifth largest registries are Hong Kong (China) and Singapore, and accommodate both owners headquartered in each economy and owners from other economies.

The registries specialize in different vessel types (table 2.9). With regard to commercial value, almost 24 per cent of the world's dry bulk carrier fleet is registered in Panama, including tonnage mostly owned by Japan; 17 per cent of the oil and gas tanker fleet is registered in the Marshall Islands, including many Greece-owned tankers; 27 per cent of the ferry and passenger ship fleet, including United States-owned cruise ships, is registered in the Bahamas; and 16 per cent of the container ship fleet is registered in Liberia, including many Germany-owned ships. As the market share of Germany among the main shipowning countries has declined in recent years, so has the market share of the registries that cater mostly for this market, including Liberia and Antigua and Barbuda, which recorded the greatest decrease in 2017.

Table 2.8	Top 35 flags of registration by dead-weight tonnage, 2018						
	Number of vessels	Vessel share of world total (percentage)	Dead-weight tonnage (thousands of tons)	Share of world total dead-weight tonnage (percentage)	Cumulated share of dead-weight tonnage (percentage)	Average vessel size (dead-weight tons)	Dead-weight tonnage change, 2017–2018 (percentage)
Panama	7 914	8.40	335 888	17.46	17.46	42 442	-2.04
Marshall Islands	3 419	3.63	237 826	12.36	29.82	69 560	9.91
Liberia	3 321	3.53	223 668	11.63	41.44	67 350	3.10
Hong Kong (China)	2 615	2.78	181 488	9.43	50.88	69 403	4.60
Singapore	3 526	3.74	127 880	6.65	57.52	36 268	2.93
Malta	2 205	2.34	108 759	5.65	63.18	49 324	7.45
China	4 608	4.89	84 184	4.38	67.55	18 269	6.79
Bahamas	1 418	1.51	76 659	3.98	71.54	54 061	-4.14
Greece	1 343	1.43	72 345	3.76	75.30	53 868	0.14
Japan	5 299	5.63	37 536	1.95	77.25	7 084	7.88
Cyprus	1 020	1.08	34 848	1.81	79.06	34 165	3.16
Isle of Man	412	0.44	27 275	1.42	80.48	66 201	9.15
Indonesia	9 053	9.61	22 313	1.16	81.64	2 465	9.95
Madeira	422	0.45	19 105	0.99	82.63	45 273	27.11
India	1 719	1.83	18 481	0.96	83.59	10 751	6.70
Danish International Register of Shipping	452	0.48	18 165	0.94	84.53	40 188	7.80
Norwegian International Ship Register	519	0.55	18 056	0.94	85.47	34 790	-0.76
United Kingdom	1 157	1.23	16 764	0.87	86.34	14 489	5.79
Italy	1 405	1.49	15 090	0.78	87.13	10 740	-5.54
Republic of Korea	1 897	2.01	14 426	0.75	87.88	7 605	-4.89
Saudi Arabia	380	0.40	13 522	0.70	88.58	35 584	238.90
United States	3 692	3.92	12 045	0.63	89.21	3 262	2.48
Bermuda	160	0.17	10 612	0.55	89.76	66 325	-3.01
Malaysia	1 704	1.81	10 230	0.53	90.29	6 004	3.88
Germany	629	0.67	9 936	0.52	90.81	15 797	-5.51
Russian Federation	2 625	2.79	8 613	0.45	91.25	3 281	3.45
Antigua and Barbuda	853	0.91	8 578	0.45	91.70	10 056	-15.02
Belgium	192	0.20	8 497	0.44	92.14	44 255	5.87
Viet Nam	1 863	1.98	8 176	0.42	92.57	4 389	2.01
Turkey	1 263	1.34	7 740	0.40	92.97	6 128	-3.48
Netherlands	1 233	1.31	7 326	0.38	93.35	5 942	-0.83
Thailand	807	0.86	6 212	0.32	93.67	7 698	15.21
Cayman Islands	165	0.18	6 155	0.32	93.99	37 303	10.17
Philippines	1 615	1.72	5 683	0.30	94.29	3 519	-8.41
French Flag Register	94	0.10	5 031	0.26	94.55	53 521	-4.68
Total, top 35 flags	**70 999**	**75.40**	**1 819 112**	**94.55**	**94.55**	**25 622**	**-**
Rest of world	*23 170*	*24.60*	*104 890*	*5.45*	*5.45*	*4 527*	-
World total	**94 169**	**100.00**	**1 924 002**	**100.00**	**100.00**	**20 431**	**3.34**

Source: UNCTAD secretariat calculations, based on data from Clarksons Research.
Notes: Propelled seagoing merchant vessels of 100 gross tons and above, as at 1 January. For a complete listing of countries, see http://stats.unctad.org/fleet.
Abbreviation: SAR, Special Administrative Region.

Table 2.9 Leading flags of registration by value of principal vessel type, 2018
(Millions of dollars)

	Oil tankers	Dry bulk carriers	General cargo ships	Container ships	Gas carriers	Chemical tankers	Offshore vessels	Ferries and passenger ships	Other	Total
Panama	12 564	46 799	3 909	13 601	8 027	5 286	20 889	9 920	7 506	128 501
Marshall Islands	22 479	28 088	504	6 473	13 604	4 881	24 667	1 316	2 456	104 469
Bahamas	7 430	5 042	174	413	9 885	140	26 807	26 911	2 747	79 551
Liberia	15 284	21 158	1 039	16 388	4 548	2 045	11 022	151	1 648	73 281
Hong Kong (China)	9 370	24 785	1 968	14 983	3 589	1 982	324	50	122	57 173
Singapore	10 764	13 346	1 188	10 686	5 011	2 799	7 617	—	1 778	53 189
Malta	8 769	11 684	1 815	7 911	4 106	2 246	4 977	10 045	594	52 148
China	4 900	13 811	2 583	2 568	915	1 557	7 192	4 693	2 304	40 523
Italy	1 400	1 113	2 772	121	298	550	608	12 044	354	19 260
Greece	8 832	3 935	187	237	4 364	63	1	1 447	100	19 166
United Kingdom	562	661	1 145	3 765	447	723	4 727	4 315	496	16 840
Bermuda	413	173	9	86	6 412	336	2 295	6 466	—	16 191
Japan	2 417	3 718	1 926	425	1 551	157	582	2 905	1 895	15 575
Cyprus	721	5 396	850	1 769	861	306	2 071	616	843	13 433
Norwegian International Ship Register	1 672	1 860	239	—	2 729	1 031	3 372	697	1 230	12 831
Isle of Man	2 646	2 638	267	268	2 545	337	3 358	26	16	12 101
Netherlands	136	161	3 675	208	482	173	1 615	3 307	1 018	10 776
Norway	269	109	150	—	101	148	7 227	1 865	2	9 871
Danish International Register of Shipping	1 082	81	533	5 783	819	559	468	431	105	9 861
Indonesia	1 580	725	1 580	677	542	317	2 276	1399	36	9 132
United States	1 311	36	528	629	—	33	3 727	1 668	721	8 654
Malaysia	673	176	79	67	1 837	219	5 112	14	133	8 310
Madeira	169	1 678	362	4 292	26	230	1	38	208	7 004
India	1 580	1 079	561	127	230	87	961	293	233	5 150
Nigeria	146	—	5	—	—	80	4 905	2	2	5 140
Subtotal, top 25 flags	**117 168**	**188 252**	**28 047**	**91 477**	**72 932**	**26 283**	**146 804**	**90 618**	**26 548**	**788 129**
Other	*13 486*	*10 099*	*15 354*	*8 902*	*5 512*	*7 022*	*28 637*	*11 119*	*5 208*	*105 337*
World total	**130 654**	**198 351**	**43 401**	**100 379**	**78 443**	**33 305**	**175 440**	**101 737**	**31 756**	**893 467**

Source: UNCTAD secretariat calculations, based on data from Clarksons Research.
Notes: Propelled seagoing merchant vessels of 1,000 gross tons and above, as at 1 January.
Abbreviation: SAR, Special Administrative Region.

Table 2.10 Distribution of dead-weight tonnage capacity of vessel types by country group of registration, 2018
(Percentage)

	Total fleet	Oil tankers	Dry bulk carriers	General cargo ships	Container ships	Other
Developed countries	23.14	25.21	18.66	27.87	29.02	26.24
	0.23	*0.67*	*-0.10*	*0.00*	*0.48*	*0.12*
Countries with economies in transition	0.67	0.88	0.19	5.54	0.05	1.06
	-0.01	*-0.04*	*-0.01*	*0.15*	*0.00*	0.02
Developing countries	75.94	73.81	81.13	65.20	70.85	71.43
	-0.18	*-0.51*	*0.13*	*-0.23*	*-0.31*	*-0.33*
Of which:						
Africa	12.49	13.87	11.23	6.98	18.17	8.91
	-0.07	*-1.40*	*0.77*	*0.44*	*-0.36*	*-0.30*
America	23.47	19.63	27.27	20.37	16.44	28.30
	-1.35	*-1.40*	*-1.58*	*-0.31*	*-1.47*	*-0.50*
Asia	27.21	24.45	28.91	35.01	30.45	21.53
	0.53	*1.33*	*-0.10*	*0.15*	*1.14*	*0.54*
Oceania	12.76	2.84	13.72	2.84	5.78	12.69
	0.71	*0.75*	*1.03*	*-0.52*	*0.39*	*-0.07*
Unknown and other	0.25	0.10	0.03	1.38	0.09	1.27
	-0.04	*-0.12*	*-0.01*	*0.08*	*-0.18*	*0.19*
World total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source: UNCTAD secretariat calculations, based on data from Clarksons Research.
Notes: Propelled seagoing merchant vessels of 100 gross tons and above, as at 1 January. Annual change in italics.

The major open registries are hosted by developing countries. Accordingly, developing countries account for almost 76 per cent of the global national flag tonnage, developed countries account for 23 per cent and countries with economies in transition account for less than 1 per cent (table 2.10).

D. SHIPBUILDING, DEMOLITION AND NEW ORDERS

1. Delivery of newbuildings

In 2017, total delivery amounted to 65 million gross tons, equivalent to 5.2 per cent of the start-of-year fleet in 2017 (table 2.11). In addition in 2017, 23 million gross tons were scrapped, leading to a net growth in the world fleet of 42 million gross tons, equivalent to a growth rate of 3.3 per cent.

The dry bulk sector saw the largest tonnage of newbuilding entering the fleet, with more than 20 million gross tons reported delivered; this sector also saw the highest level of scrapping activity, at more than 8 million gross tons, leading to a net growth in the dry bulk fleet of 2.9 per cent. Oil tankers saw less newbuilding activity but also less scrapping, resulting in greater net growth in the fleet, at almost 5 per cent. General cargo ships recorded more scrapping than newbuildings, leading to a negative growth rate in this sector. The largest shipbuilding countries continued to be China, the Republic of Korea and Japan, which together accounted for 90.5 per cent of gross tons delivered in 2017. China has the largest market shares in dry bulk carriers and general cargo ships. The Republic of Korea is strongest in oil tankers, container ships and gas carriers. Japan has its largest market share in chemical tankers and bulk carriers. The rest of the world, comprising mostly countries in Europe, is strongest in offshore vessels and passenger ships, including cruise ships.

2. Ship demolition

Ship demolitions in 2017 were almost one quarter less in gross tons than in 2016, an indicator of improved market optimism. Bulk carrier and container ship scrapping slowed in line with improved market conditions but tanker recycling increased. The most ship scrapping continued to take place in India, followed by Bangladesh and Pakistan (table 2.12).

Table 2.11 Deliveries of newbuildings by major vessel type and countries of construction, 2017
(Thousands of gross tons)

	China	Republic of Korea	Japan	Philippines	Rest of world	Total
Oil tankers	5 330	10 859	1 835	472	1 213	19 709
Dry bulk carriers	11 982	640	7 713	480	236	21 052
General cargo ships	588	75	186	—	233	1 082
Container ships	3 105	5 873	1 408	974	451	11 813
Gas carriers	708	3 973	439	52	12	5 185
Chemical tankers	654	6	531	—	137	1 329
Offshore vessels	409	473	145	0	647	1 675
Ferries and passenger ships	166	—	197	1	1 174	1 537
Other	395	609	482	—	121	1 607
Total	**23 339**	**22 509**	**12 937**	**1 980**	**4 224**	**64 989**

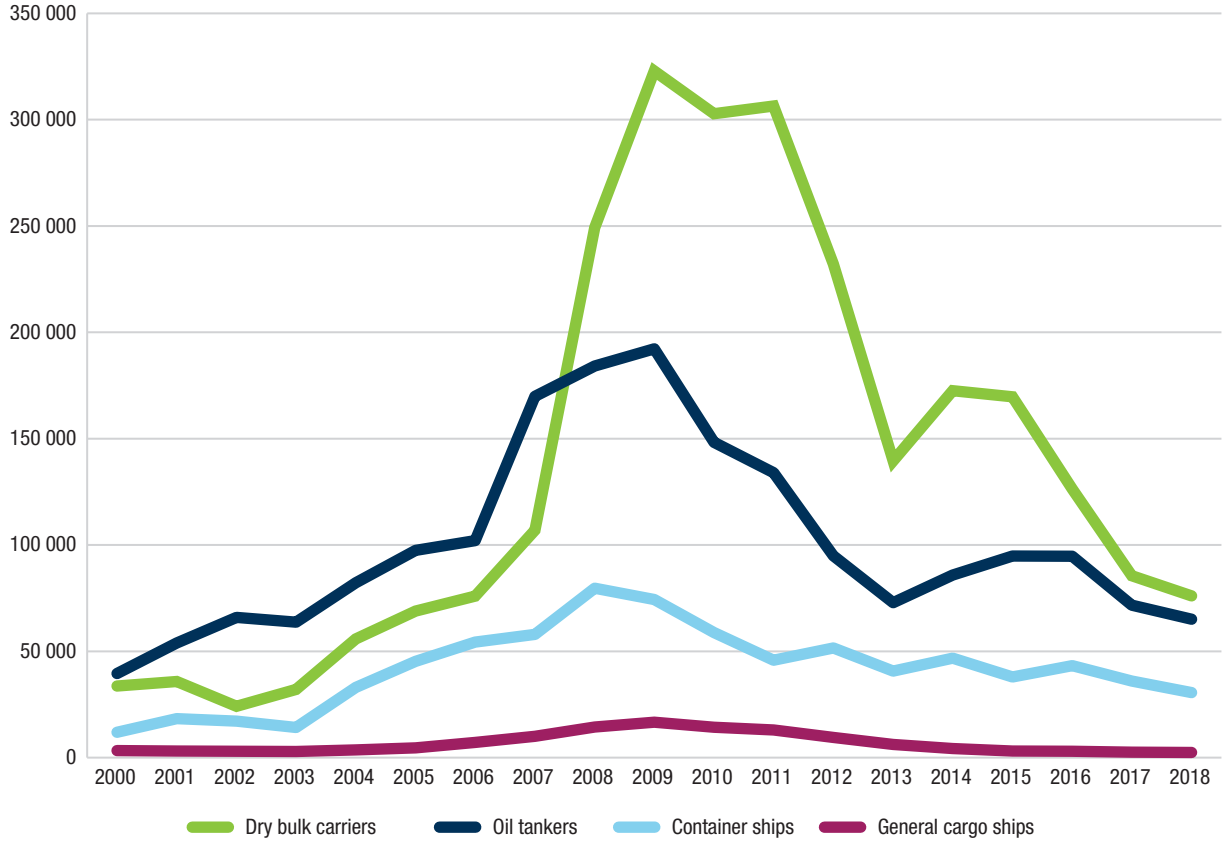
Source: UNCTAD secretariat calculations, based on data from Clarksons Research.
Notes: Propelled seagoing merchant vessels of 100 gross tons and above. For more detailed data on other shipbuilding countries, see http://stats.unctad.org/shipbuilding.

Table 2.12 Reported tonnage sold for demolition by major vessel type and country of demolition, 2017
(Thousands of gross tons)

	India	Bangladesh	Pakistan	China	Unknown – Indian subcontinent	Turkey	Other/unknown	World total
Oil tankers	1 935	3 245	0	1	749	12	40	5 982
Dry bulk carriers	1 062	1 460	2 527	2 464	470	139	0	8 123
General cargo ships	420	155	102	82	0	312	108	1 178
Container ships	1 755	892	748	650	140	309	3	4 498
Gas carriers	145	59	0	4	0	173	5	387
Chemical tankers	109	35	0	2	44	0	6	196
Offshore vessels	318	57	77	90	157	128	404	1 230
Ferries and passenger ships	165	35	5	0	0	51	21	277
Other	415	321	0	152	0	133	23	1 044
Total	**6 323**	**6 260**	**3 459**	**3 445**	**1 560**	**1 257**	**611**	**22 916**

Source: UNCTAD secretariat calculations, based on data from Clarksons Research.
Notes: Propelled seagoing merchant vessels of 100 gross tons and above. Estimates for all countries are available at http://stats.unctad.org/shipscrapping.

Figure 2.7 World tonnage on order, 2000–2018
(Thousands of dead-weight tons)



Source: UNCTAD secretariat calculations, based on data from Clarksons Research.
Notes: Propelled seagoing merchant vessels of 100 gross tons and above, as at 1 January.

3. Tonnage on order

The tonnage on order for all main vessel types further decreased between 2017 and 2018 (figure 2.7). Compared with the peaks in 2008 and 2009, the current tonnage on order has decreased by 62 per cent for container ships, 66 per cent for oil tankers, 76 per cent for dry bulk carriers and 85 per cent for general cargo ships. With regard to TEUs, two thirds of the container ship orderbook is for ships of 14,000 TEUs and above.

With regard to shipbuilding countries, China accounts for 41.6 per cent of the dwt on order, followed by the Republic of Korea at 24.3 per cent and Japan at 23.6 per cent (figure 2.8). Nearly all shipbuilding of cargo-carrying vessels takes place in Asia. The other shipbuilding countries in the figure focus on passenger ships and specialized ships such as offshore vessels.

E. ASSESSING GENDER EQUALITY ASPECTS IN SHIPPING

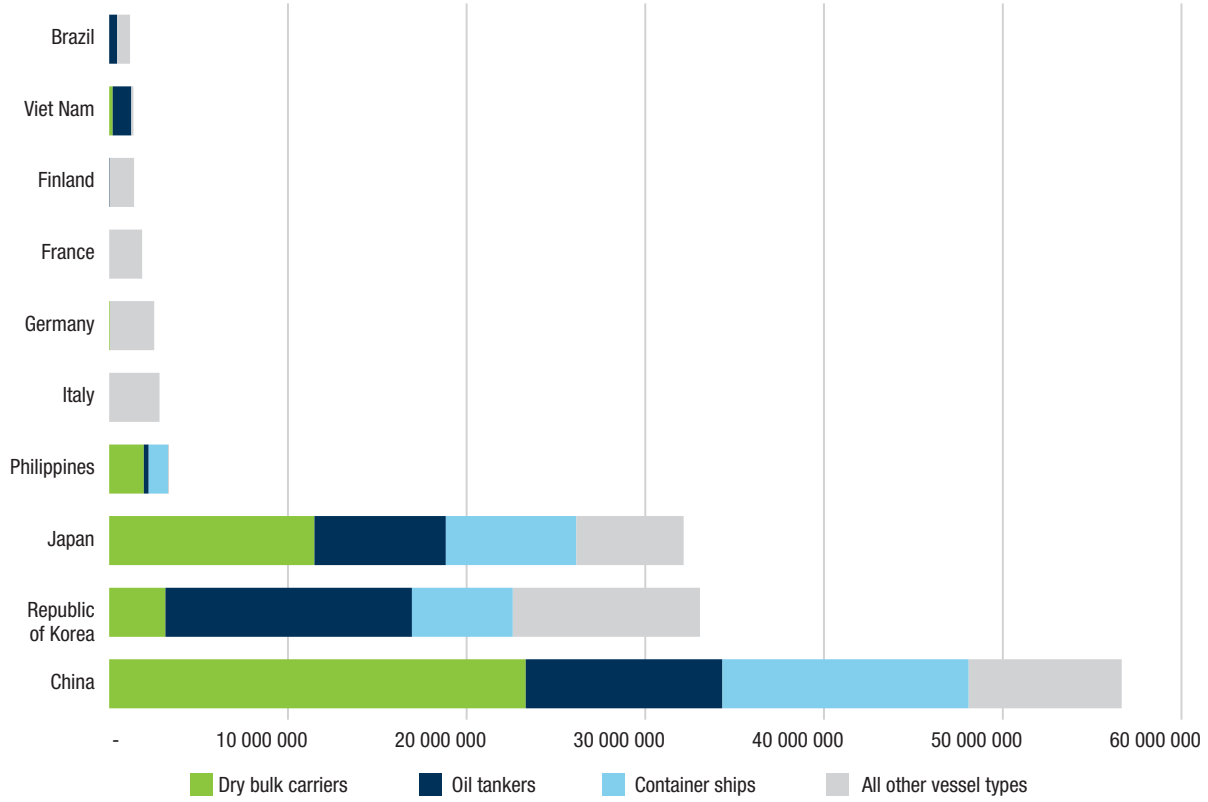
An increasing number of women are entering the shipping industry in all roles, including seafaring and operations, chartering, insurance and law. More women are also enrolling in maritime-related studies. This may be attributed to efforts to advance the role of women in the maritime industry, including through IMO initiatives in global capacity-building and International Labour Organization and International Transport Workers' Federation initiatives in standard-setting.

Challenges remain, however. The level of women's participation in the maritime industry remains low, at an estimated 2 per cent, and patterns of job segregation exist (World Economic Forum, 2015). According to Maritime HR Association survey data from 2017, women who work in the shipping industry are paid on average 45 per cent less than men and fill solely 7 per cent of management positions (HR Consulting, 2017). Table 2.13 depicts three outcomes of the lack of gender equality in the maritime industry.

Overcoming the lack of gender equality in the maritime industry may be a core element in addressing the shortage of skilled professionals in the sector, which could impact shipping operations in the future. Two main factors help explain the low level of participation of women in the transport sector, namely working conditions and gender stereotyping (Turnbull, 2013).

With regard to seafaring roles, working conditions refer, for example, to a lack of amenities on ships and to alternatives for accommodating interruptions that may occur due to

Figure 2.8 Tonnage on order by shipbuilding country, 2018



Source: UNCTAD secretariat calculations, based on data from Clarksons Research.
Notes: Propelled seagoing merchant vessels of 100 gross tons and above, as at 1 January.

Table 2.13 Lack of gender equality in the maritime industry

1. Levels of seniority	Over 76 per cent of the women's workforce operates at administrative, junior and professional level roles, with few reaching managerial levels or higher Only 0.17 per cent of women have places on executive leadership teams The greatest challenge for women appears to be progressing from a professional to a senior professional level
2. Job functions	In technical, marine, safety and quality-related functions, women represent 14 per cent of the workforce, likely linked to the low number of women seafarers moving to onshore positions. Women employees are heavily weighted at the junior level and 90 per cent of all other employees are men, suggesting that there are currently few opportunities for women to progress in such functions In chartering functions, women represent 17 per cent of the workforce. Although the majority remain at the administrative and junior levels, there is better representation at the professional, senior professional and managerial levels than in the previous category In commercial functions, women represent 33 per cent of the workforce, with better representation at all levels than in the other categories
3. Salaries	The difference in the average salary of men and women is 45 per cent Countries with the greatest salary differences do not employ any women on executive leadership teams and employ few at the directorial level Except at the junior and administrative levels, men are paid on average more than women

Source: HR Consulting, 2017.
Note: The survey reflects data for worldwide onshore positions in organizations members of the Maritime HR Association.

childbearing and other responsibilities of care, such as through the provision of flexible working hours, maternity benefits and childcare facilities. Working conditions can also refer to exposure to harassment and violence, a recurrent concern expressed in the seafaring sector (MacNeil and Ghosh, 2016). Such elements lead to a lack of interest in pursuing a career in the maritime sector or to early departures from maritime industry careers. A study on the career awareness of cadets in South Africa showed that the expected span of careers at sea among women was 10 years and that many contemplated leaving their positions during their early 30s (Ruggunan and Kanengoni, 2017).

Gender stereotyping, that is, a cultural perception that women are less able to meet the demands of a career in this sector, is present with regard to physical roles in seafaring operations, as well as in other segments of the maritime industry, such as insurance and law, which can lead to

workplaces that are unwelcoming or openly hostile towards women (Wu et al., 2017). Gender stereotyping also encompasses inappropriate sexual comments, persistent sexual invitations, unwanted physical contact and bullying (MacNeil and Ghosh, 2016; Turnbull, 2013). In addition, it includes discriminatory practices, in particular in lower ranks and in the younger age demographic (Ship Technology, 2017). With regard to onshore managerial roles, a study on women's maritime careers in Eastern and Southern Africa showed that gender stereotyping was closely related to the work-intensive pattern of the professional progression of women, aimed at achieving success in the "man-made" system of the maritime industry, because women perceived that they had to devote extra time and energy compared with men peers in order to achieve similar results, due to the distrust of employers with regard to their competence and ability to perform as maritime professionals and to a lack of recognition of their contributions (Bhirugnath-Bhookhum and Kitada, 2017).

Working conditions and gender stereotyping are closely linked. For example, to fit in in men-dominated environments in the seafaring profession, women may adopt behaviours suggestive of masking perceived feminine attributes and emphasizing masculinity, such as with regard to dress and socialization with peers (Acejo and Abila, 2016). Efforts to integrate women into the seafaring profession and erase gender differentials have been both ambivalent and contradictory, and may conversely reinforce gender biases against the participation of women in the workplace (Acejo and Abila, 2016). For example, some shipping companies require prior seafaring experience to access managerial roles, in a context in which companies are often reluctant to take on women cadets, resulting in an unequal playing field with regard to onshore career progression.

Several international voluntary frameworks and programmes have been put in place at the international and regional levels to meet different aspects of these challenges. For example, in 1989, IMO launched the Women in Development Programme to enhance the capabilities of women in the sector; this programme is now entitled Programme on the Integration of Women in the Maritime Sector, and its main objective is to facilitate access to high-level technical training for women maritime officials. In addition, the International Transport Workers' Federation has instituted a code of conduct on eliminating shipboard harassment and bullying. With regard to factors affecting professional progression in onshore roles, frameworks have been prepared by IMO, regional organizations and women's associations. However, their implementation differs significantly at the national level. For example, Kenya, Mauritius, Seychelles and South Africa have developed practices aimed at empowering women in managerial positions and at retaining women employees, including through the use of flexible working hours (Bhirugnath-Bhookhum and Kitada, 2017).

Overcoming such causes of the lack of gender equality in the maritime industry is likely to require coordinated efforts by several stakeholders, including shipping companies, crewing agencies, freight companies, trade unions and seafarers' welfare organizations. Measures could encompass actions at three levels.

Educational level

Increase awareness of gender equity in maritime academic, operational and business spheres

Increased awareness is required to promote a more systematic gender-sensitive approach in the profession. This could be achieved, for example, by adding related topics to the curricula of maritime educational institutions and ensuring staff induction and consistent sensitization training at the management, human resources, ship manager and ship master levels, which emphasize issues such as improving on-board conditions and policies to report and address sexual harassment and discrimination.

Ensure that training institution curricula are structured to allow graduates to work both onshore and offshore

Such curricula would allow for career paths that are versatile and for flexibility and the retention of trained, experienced individuals who may not be in a position to work on board vessels.

Organizational level

Ensure adequate maternity benefits and flexibility schemes

This would facilitate the shift from offshore to onshore positions without penalization in climbing managerial ladders and could contribute to improving the retention of women in the industry.

Develop gender-neutral working practices

Such practices, particularly those focused on hiring and promotion, would help increase the participation of women in the industry at all levels.

Institutional and national levels

Promote the adoption of internationally agreed codes of conduct and standards

Such codes include the Maritime Labour Convention, 2006, and the International Transport Workers' Federation code of conduct on eliminating shipboard harassment and bullying. Social partners should be involved in the monitoring of enforcement. The creation and adoption of business policies on harassment and bullying, as well as on reporting measures to eliminate such actions, should be encouraged.

Strengthen and consolidate regional networks

This would help support the dissemination of best practices as a basis for mainstreaming better gender-related practices in the maritime industry.

Enhance partnerships between individual institutions and industry association organizations

Such organizations include the Women's International Shipping and Trading Association. Enhanced partnerships should provide long-term coaching, networking and fellowship opportunities and could contribute to retention, creating further opportunities to advance careers, cooperate, share best practices and work across borders.

Inspire and empower new generations by identifying women role models in the sector

This could include the organization of workshops to exchange experiences and the creation of mentoring programmes.

F. OUTLOOK AND POLICY CONSIDERATIONS

In 2017, with positive developments in demand and freight rates, the world fleet grew slightly faster than in 2016. Yet the industry refrained from an expansion that would have added more capacity than needed, and 2017 was the first year since 2003 for which UNCTAD recorded a lower growth rate for world tonnage than for seaborne trade. However, there are signs that the fleet will expand at a higher rate in 2018 and 2019. With regard to container ships, there has been almost no scrapping in the first half of 2018, and total TEU capacity growth is forecasted to reach 5 per cent by January 2019 (Clarksons Research, 2018). In the medium term, for example, the Republic of Korea aims to build 200 new container and dry cargo ships and establish a maritime industry promotion agency to support the placement of orders for new ships through investments or by guaranteeing the ship purchase programme (Marine Log, 2018). As countries try to support their maritime industries, notably in shipowning and construction, they may effectively subsidize the shipping industry and, indirectly, global trade. If the additional carrying capacity outstrips demand, the resulting surplus capacity will put further pressure on freight rates and thus may create further imbalances. Promoting the construction and operation of new and more efficient vessels should be accompanied by strong scrapping and demolition incentives to manage supply-side capacity.

The recent mergers and continued consolidation in container shipping suggest that an ever lower number of carriers, cooperating in only three major global alliances, will control the supply of shipping services in coming years. From the supply-side perspective, the operational gains due to alliances have effectively added surplus capacity to the market. As cooperation and vessel sharing help to improve capacity utilization, fewer ships are needed for the same cargo volumes and when no-longer-needed ships are not scrapped – and they are not – the resulting surplus puts further downward pressures on freight rates. Policymakers and regulators will need to ensure that members of shipping alliances continue to compete with regard to prices, so that efficiency gains on the supply side may be passed on to shippers in the form of lower freight rates.

A challenge arises if traffic volumes are too low to economically allow for more than a small number of competing carriers. UNCTAD records show a decreasing number of carriers, in particular for services to small island developing States and some vulnerable economies. In such situations, government interventions may be justified, yet in practice may do more harm than good. Assessing the implications of horizontal and vertical integration in the industry and addressing potential negative effects through solutions acceptable to all parties will require the engagement of competition authorities, carriers, shippers and ports. The United Nations Set of Multilaterally Agreed Equitable Rules and Principles for the Control of Restrictive Business Practices provides for consultations between member States in this area.

Average vessel sizes and the fleet of gearless container ships continue to grow. This has important repercussions for investments in terminals to provide the adequate space, infrastructure and equipment needed to service these fleets. As the fleet of geared ships further diminishes, policymakers and port planners need to seize every opportunity to invest in the most appropriate specialized terminals.

An increasing number of women are entering the shipping industry, yet a lack of gender equality remains with regard to levels of seniority, job functions and salaries. Overcoming this gender imbalance in the maritime industry may be a core element in dealing with the shortage of skilled professionals in the sector, which could impact shipping operations in future. In order to address the shortage, two main factors need to be addressed, namely working conditions and gender stereotyping. Efforts need to be made by the industry and by policymakers, and should include coordination between several stakeholders, awareness raising, promotion of the adoption of internationally agreed codes of conduct, revised curricula in training institutions, flexibility schemes and instruments to improve rates of retention and to advance careers.

The supply of shipping services will need to go beyond simply management of vessel operations. The digital transformation of shipping entails a number of opportunities. New technologies include automated navigation and cargo-tracking systems, as well as digital platforms that facilitate operations, trade and the exchange of data. They can potentially reduce costs, facilitate interactions between different actors and raise the maritime supply chain to the next level. Combining on-board systems and digital platforms allows vessels and cargo to become a part of the Internet of things. A key challenge for policymakers is to establish interoperability, so that data can be exchanged seamlessly, at the same time ensuring cybersecurity and the protection of commercially sensitive and private data.

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ENDNOTES

1. Data in this chapter concerning tonnage and number of ships in the world fleet was provided by Clarksons Research. Unless stated otherwise, the vessels covered in the UNCTAD analysis include all propelled seagoing merchant vessels of 100 gross tons and above, including offshore drillships and floating production, storage and offloading units. Military vessels, yachts, waterway vessels, fishing vessels and offshore fixed and mobile platforms and barges are not included. Data on fleet ownership only cover ships of 1,000 gross tons and above, as information on the true ownership of smaller ships is often not available. For more detailed data on the world fleet, including registration, ownership, building and demolition, as well as other maritime statistics, see http://stats.unctad.org/maritime.
2. The aggregate fleet values published by Clarksons Research are calculated from estimates of the value of each vessel based on type, size and age. Values are estimated for all oil/product tankers, bulk carriers, combined carriers, container ships and gas carriers with reference to matrices based on representative newbuilding, second-hand and demolition values provided by Clarksons Platou brokers. For other vessel types, values are estimated with reference to individual valuations, recently reported sales and residual values calculated from reported newbuilding prices. As coverage concerning specialized and non-cargo vessels may not be complete, figures might not accurately represent the total value of the world merchant fleet above 100 gross tons. Desktop estimates are made on the basis of prompt charter-free delivery, as between a willing buyer and a willing seller for cash payment under normal commercial terms. For the purposes of this exercise, all vessels are assumed to be in good and seaworthy condition.
3. For further discussion on this issue, see the documentation considered at the seventeenth session of the Intergovernmental Group of Experts on Competition Law and Policy, held from 11 to 13 July 2018, available at http://unctad.org/en/pages/MeetingDetails.aspx?meetingid=1675; the article on consolidation in liner shipping in UNCTAD Transport and Trade Facilitation Newsletter No. 76; and chapter 6 of the *Review of Maritime Transport 2017*. The liner shipping connectivity index, liner shipping bilateral connectivity index and information on calculations for the indices are available at http://stats.unctad.org/maritime.