2

STRUCTURE, OWNERSHIP AND REGISTRATION OF THE WORLD FLEET

The world fleet grew by 3.5 per cent during the 12 months to 1 January 2015, the lowest annual growth rate in over a decade. In total, at the beginning of the year, the world's commercial fleet consisted of 89,464 vessels, with a total tonnage of 1.75 billion dwt. For the first time since the peak of the shipbuilding cycle, the average age of the world fleet increased slightly during 2014. Given the delivery of fewer newbuildings, combined with reduced scrapping activity, newer tonnage no longer compensated for the natural aging of the fleet.

Greece continues to be the largest ship-owning country, followed by Japan, China, Germany and Singapore. Together, the top five ship-owning countries control more than half of the world tonnage. Five of the top 10 ship-owning countries are from Asia, four are European and one is from the Americas.

The Review of Maritime Transport further illustrates the process of concentration in liner shipping. While the container-carrying capacity per provider per country tripled between 2004 and 2015, the average number of companies that provide services from/to each country's ports decreased by 29 per cent. Both trends illustrate two sides of the same coin: as ships get bigger and companies aim at achieving economies of scale, there remain fewer companies in individual markets.

New regulations require the shipping industry to invest in environmental technologies, covering issues such as emissions, waste, and ballast water treatment. Some of the investments are not only beneficial for the environment, but may also lead to longer-term cost savings, for example due to increased fuel efficiency.

Economic and regulatory incentives will continue to encourage individual owners to invest in modernizing their fleets. Unless older tonnage is demolished, this would lead to further global overcapacity, continuing the downward pressure on freight and charter rates. The interplay between more stringent environmental regulations and low freight and charter rates should encourage the further demolition of older vessels; this will not only help reduce the oversupply in the market, but also contribute to lowering the global environmental impact of shipping.

A. STRUCTURE OF THE WORLD FLEET

1. World fleet growth and principal vessel types

Responding to the growth in demand (see chapter 1), the world fleet grew by 3.5 per cent during the 12 months to 1 January 2015, the lowest annual growth rate in over a decade.[1] In total, at the beginning of the year, the world's commercial fleet consisted of 89,464 vessels, with a total tonnage of 1.75 billion dwt (figure 2.1 and table 2.1). The new tonnage added to the global fleet continued to decline in comparison with previous years in absolute terms. At the same time, the overall growth rate of tonnage was still above that of global GDP and trade growth, and even slightly higher than that of the growth of seaborne trade.

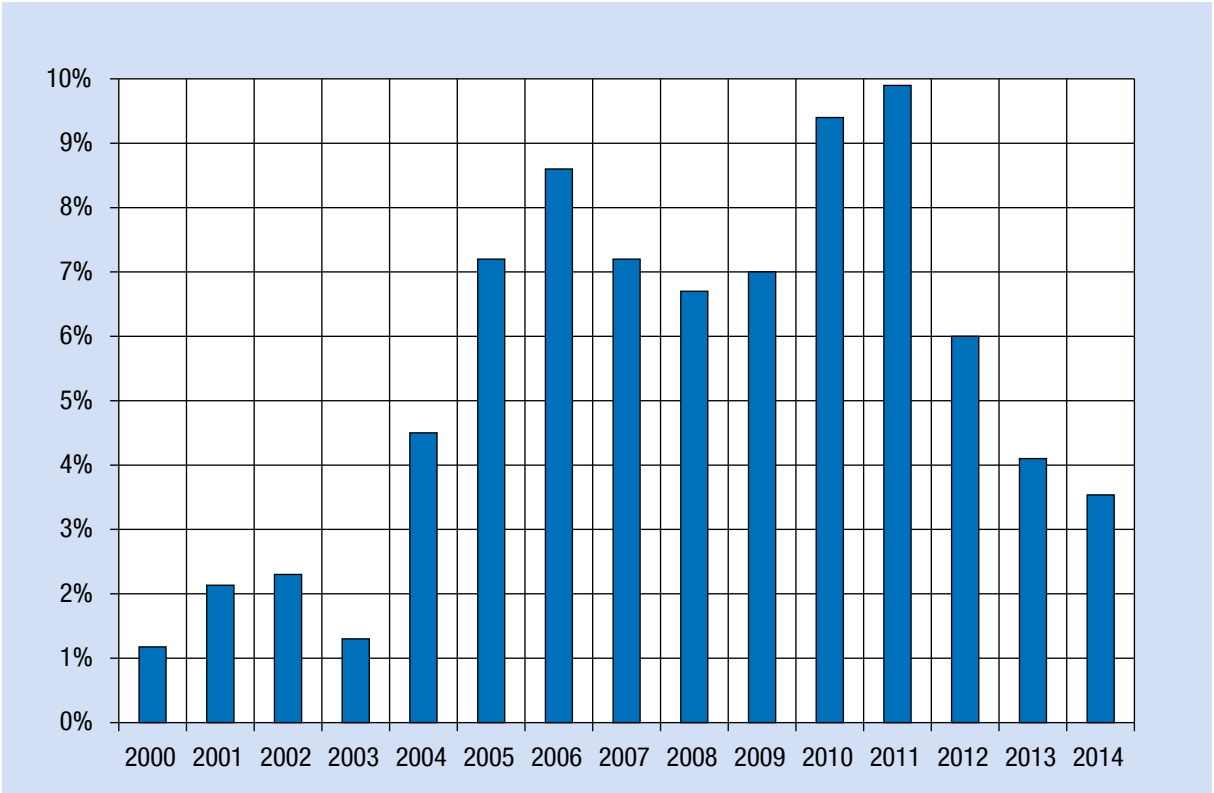
The greatest and expanding share in the global fleet are dry bulk carriers, which by the beginning of 2015 had reached a share of 43.5 per cent of total capacity; the result of a 4.4 per cent growth rate between 2014 and 2015 and even higher expansion in the years 2010–2013 (figure 2.2).

Despite the continued economic crisis, the container ship fleet increased by 5.2 per cent in the same period and thus stands in contrast to the slowdown in global economic growth. A further increase in the rate of containerization may to some extent lead to growing demand for container-carrying capacity, yet overall during recent years demand has grown less than supply, leading to a situation of continued oversupply in the container shipping market, resulting in continued downward pressure on container freight rates (see chapter 3).

The growth in the offshore and gas tanker segment surpassed all other vessel types and reflects the expansion of trade in gas and new offshore exploration projects. This development contrasts the slow growth in oil carriers (1.4 per cent). The ferries and passenger vessels fleet expanded by 4.8 per cent, indicating positive expectations about demand in the cruise industry. The overall positive development in the market segment of other types also indicates the further specialization of the global fleet (table 2.1).

The cyclical nature of shipbuilding is exemplified in figure 2.3, which illustrates the year the vessels built in 2014 were contracted. As illustrated in figure 2.4, total

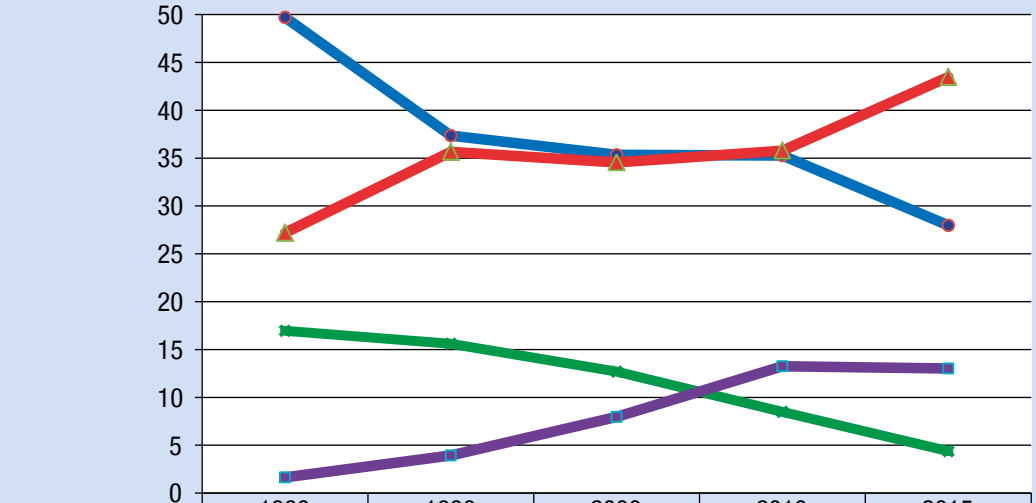
Figure 2.1. Annual growth of the world fleet, 2000–2014 (per cent of dwt)



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

tonnage delivered in 2014 was only slightly more than half the tonnage delivered in 2011, the peak year of the historically largest ever shipbuilding cycle. Several years pass between the placement of an order for a new ship and the moment the new ship is delivered to the market. Ships are often ordered when the market is perceived as strong, only to be delivered years later, when the market may have become weaker.

Figure 2.2. World fleet by principal vessel types, 1980–2015 (beginning-of-year figures, percentage share of dwt)



	1980	1990	2000	2010	2015
Oil tanker	49.7	37.4	35.4	35.3	28.0
Dry bulk	27.2	35.6	34.6	35.8	43.5
General cargo	17.0	15.6	12.7	8.5	4.4
Container	1.6	3.9	8.0	13.3	13.0

Source: UNCTAD secretariat, based on data supplied by Clarksons Research and the Review of Maritime Transport, various issues.

Note: All propelled seagoing merchant vessels of 100 GT and above, 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 (FPSOs) and drillships).

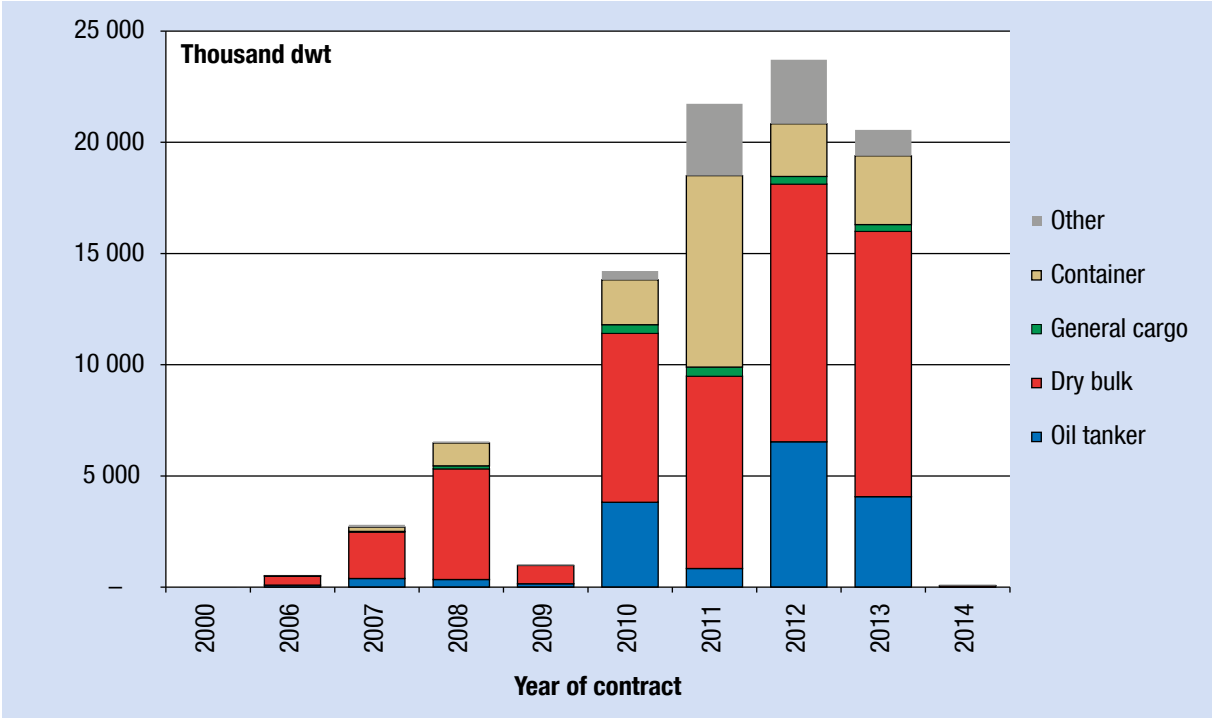
Table 2.1. World fleet by principal vessel types, 2014–2015 (beginning-of-year figures, thousands of dwt; percentage share in italics)

Principal types	*2014*	*2015*	*Percentage change 2015/2014*
Oil tankers	482 447	489 388	1.4%
	28.6%	*28.0%*	
Bulk carriers	728 322	760 468	4.4%
	43.1%	*43.5%*	
General cargo ships	77 507	76 731	-1.0%
	4.6%	*4.4%*	
Container ships	215 880	227 741	5.5%
	12.8%	*13.0%*	
Other types:	185 306	194 893	5.2%
	11.0%	*11.1%*	
Gas carriers	46 335	49 675	7.2%
	2.7%	*2.8%*	
Chemical tankers	41 688	42 181	1.2%
	2.5%	*2.4%*	
Offshore	69 513	74 174	6.7%
	4.1%	*4.2%*	
Ferries and passenger ships	5 531	5 797	4.8%
	0.3%	*0.3%*	
Other/n.a.	22 241	23 066	3.7%
	1.3%	*1.3%*	
World total	1 689 462	1 749 222	3.5%
	100%	*100%*	

Source: UNCTAD secretariat, based on data supplied by Clarksons Research.

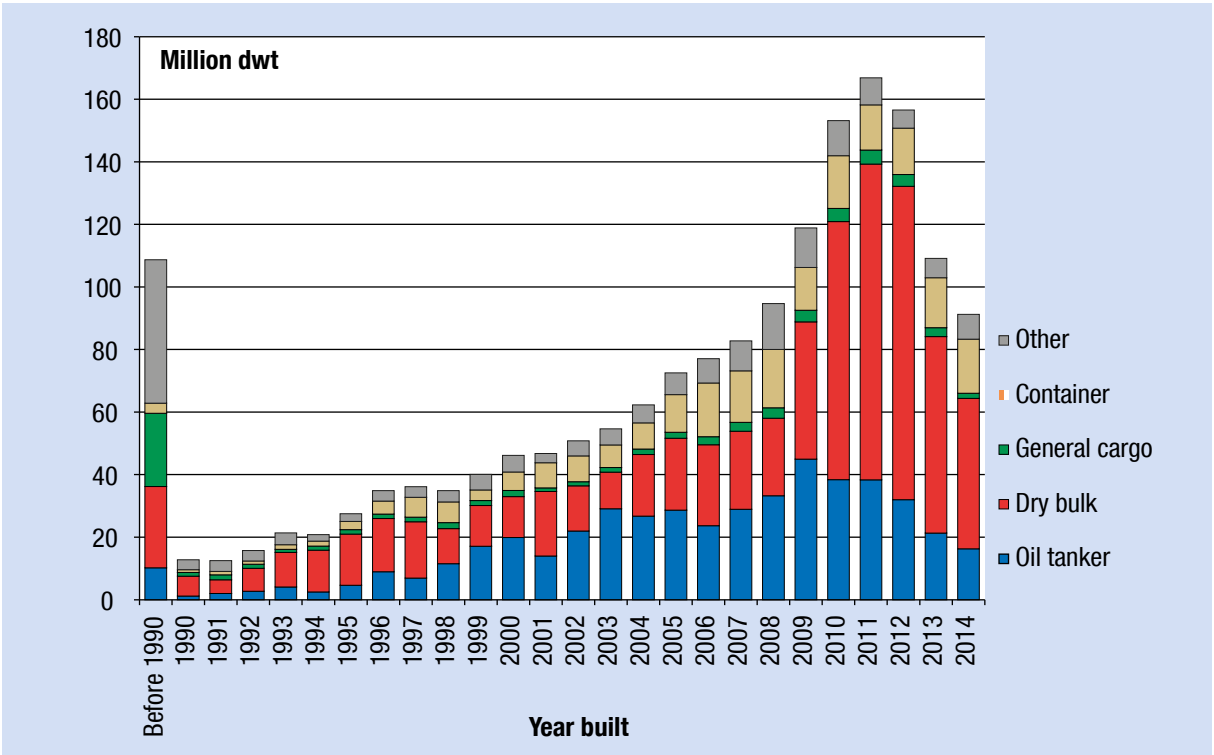
Note: Propelled seagoing merchant vessels of 100 GT and above.

Figure 2.3. Contract year for tonnage (dwt) delivered in 2014



Source: UNCTAD secretariat, based on data supplied by Clarksons Research.
Note: Propelled seagoing vessels of 100 GT and above.

Figure 2.4. Vessel types of the world fleet, by year of building (dwt as of 1 January 2015)



Source: UNCTAD secretariat, based on data supplied by Clarksons Research.
Note: Propelled seagoing vessels of 100 GT and above.

Table 2.2. Age distribution of the world merchant fleet, by vessel type, as of 1 January 2015 (percentage of total ships and dwt)

Country grouping Types of vessel		*0–4 years*	*5–9 years*	*10–14 years*	*15–19 years*	*20 + years*	*Average age 2014*	*Average age 2015*	*Change 2015/2014*
World: Bulk carriers	**Ships**	47.50	18.68	11.12	11.55	11.15	9.07	9.15	-0.09
	Dwt	51.88	18.73	10.46	9.94	8.99	8.08	7.98	0.10
	Average vessel size (dwt)	80 338	73 728	69 145	63 323	59 290			
World: Container ships	**Ships**	20.94	34.31	17.61	17.55	9.60	10.88	10.70	0.18
	Dwt	34.88	34.22	16.58	10.18	4.14	8.23	8.19	0.04
	Average vessel size (dwt)	74 310	44 487	42 001	25 869	19 235			
World: General cargo	**Ships**	10.68	14.89	7.70	8.96	57.76	24.86	24.18	0.68
	Dwt	22.09	18.86	10.05	10.17	38.83	17.97	17.76	0.21
	Average vessel size (dwt)	8 297	5 388	6 086	4 885	2 758			
World: Oil tankers	**Ships**	18.74	21.72	12.69	8.32	38.54	18.37	17.92	0.45
	Dwt	29.90	32.59	22.83	10.04	4.64	8.98	8.51	0.47
	Average vessel size (dwt)	83 196	78 871	95 231	65 702	6 521			
World: Others	**Ships**	16.55	16.87	9.22	8.88	48.48	22.22	21.86	0.36
	Dwt	20.41	26.49	12.31	9.16	31.62	15.65	15.30	0.35
	Average vessel size (dwt)	6 619	8 547	7 574	5 834	3 962			
World: All ships	**Ships**	14.94	15.64	8.35	7.96	53.12	20.25	19.89	0.35
	Dwt	38.71	25.50	14.90	9.92	10.97	9.63	9.41	0.22
	Average vessel size (dwt)	42 873	30 899	34 042	23 160	6 095			
Developing economies: All ships	**Ships**	20.28	17.71	8.64	9.24	44.12	19.76	19.43	0.33
	Dwt	41.55	20.45	10.97	10.98	16.05	10.37	10.20	0.17
	Average vessel size (dwt)	36 453	21 879	25 241	22 128	6 788			
Developed economies: All ships	**Ships**	20.20	21.02	12.79	11.24	34.76	18.52	18.17	0.35
	Dwt	37.46	29.00	17.56	9.10	6.88	8.90	8.65	0.25
	Average vessel size (dwt)	52 026	39 690	40 847	24 649	7 142			
Countries with economies in transition: All Ships	**Ships**	7.29	7.71	3.68	4.03	77.30	28.82	28.12	0.70
	Dwt	20.21	22.70	15.56	12.57	28.97	15.56	15.03	0.53
	Average vessel size (dwt)	17 659	20 706	27 366	20 029	2 398			

Source: UNCTAD secretariat, based on data supplied by Clarksons Research.
Note: Propelled seagoing vessels of 100 GT and above.

Most tonnage delivered in 2014 had been contracted during the previous four years, as well as to some extent in 2008 and 2007. Relatively fewer new orders were placed in 2009, after the economic slump (figure 2.3). Thus most current deliveries result from decisions made after the economic crisis. The continued high level of growth of container vessels indicates the industry's persistent strategy to realize economies of scale as well as cost savings, for example through increased energy efficiency.

The resulting oversupply of tonnage may not be good news for shipowners. However, it is a positive development from the perspective of those who aim at reviving global trade; there is no shortage of carrying capacity, and as a result trade costs continue to decline in the long term (see also chapter 3).

2. Age distribution of the world merchant fleet

For the first time since the peak of the shipbuilding cycle, the average age of the world fleet increased slightly during 2014. Given the delivery of fewer newbuildings, combined with reduced scrapping activity, newer tonnage no longer compensated for the natural aging of the fleet (table 2.2). As overall growth rates have been slowing down for the third consecutive year, the current aging of the fleet is a natural phenomenon of the concluding shipping cycle and will accelerate over the next few years. However, the current fleet is significantly younger than a decade ago. Average values somewhat hide that the low average fleet age is largely the result of newbuildings in the dry bulk and container sector, while the age of other vessel types continues to increase. The average age of "other" vessels is double that of the two previously mentioned sectors.

The distribution is also not equal across regions, countries and shipping routes. A central driver for these differences is the cascading effect induced by overcapacity in the main trade lanes, which shifts older and often smaller vessels to secondary routes. Also, new environmental regulations push older tonnage into regions with less restrictive regimes. Peripheral and less developed regions, and particularly services between these, already tend to be those with the oldest and potentially less environmentally friendly fleets. Hence, the cascading effect actually has a positive impact from an environmental perspective, as it pushes relatively more modern vessels into the peripheral regions and routes. As these ships tend to be bigger, this trend increases the pressure on port infrastructure development in developing countries.

3. Environmental sustainability: Trends in vessel technologies

New regulations (see also chapter 5) require that the shipping industry invest in environmental technologies, covering issues such as emissions, waste and/or ballast water treatment. Some of the investments are not only beneficial for the environment, but may lead to longer term cost savings, for example thanks to increased fuel efficiency.

Figure 2.5 illustrates the increasing introduction of ballast water treatment systems, making use of technologies such as ultraviolet, chemical and filtration systems. Their effectiveness varies according to factors such as seawater salinity, temperature and sediment load (Clarksons Research, 2014a). In 2013 and 2014, more than half of new container ships were built with such systems. The share was lower, albeit also growing, in other vessel types.

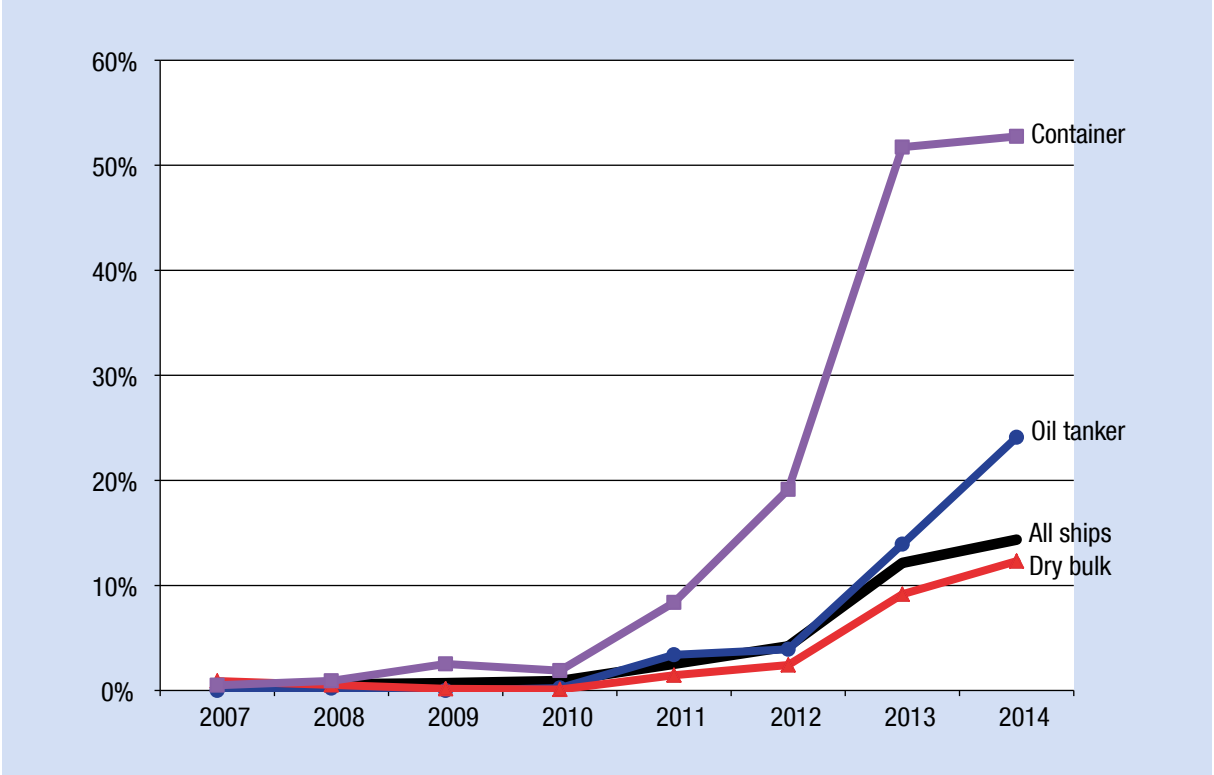
Emissions from maritime transport are of increasing concern. More stringent measures have been adopted by IMO in relation to SOx and NOx. As regards SOx, there exist new global limits, as well as more stringent limits in ECAs in Europe and North America.

As regards technologies, there are three main methods of compliance with the SOx regulations. These are (a) low sulphur fuels such as marine gas oil; (b) scrubber technology for the after-treatment of exhaust gas that uses seawater to wash out SOx; (c) alternative fuels, notably LNG, and potentially also biofuels and methanol.

The solution an owner chooses for will depend on a range of factors, including the amount of time spent in ECAs, the ship's fuel consumption and its age. Scrubber systems reportedly cost in the range of $2 million–$4 million per vessel (Clarksons Research, 2014b) and it is expected that the majority of shipowners will switch to marine gas oil in the short term. Only for ships operating mostly in ECAs will scrubbers become more economic, as they enable the use of standard heavy fuel oil, which is cheaper than low sulphur fuel alternatives.

Data on vessel newbuildings suggests that the majority of ships will meet new limits for ECAs by

Figure 2.5. Share of newbuildings (number of ships) with ballast water treatment systems, by main vessel type, 2007–2014



Source: UNCTAD secretariat, based on data supplied by Clarksons Research.
Note: Propelled seagoing merchant vessels of 1,000 GT and above.

switching to low sulphur fuels such as marine gas oil in the short term. A small share of the existing fleet and the order book is reported to have scrubbers installed. In particular, ships that spend a lot of time in ECAs find the installation of scrubbers convenient. In the longer term, as global SOx limits are further tightened, it can be expected that more scrubbers will be installed rather than opting for the short-term solution of using marine gas oil (Clarksons Research, 2014b).

Using LNG as fuel is another option to reduce emissions. In March 2015, only 178 ships were LNG fuelled or capable of running on LNG, most of which were LNG carriers themselves (Clarksons Research, 2015a). Nevertheless, the share of tonnage using LNG as fuel is increasing, and as regulations on emissions become more stringent, this growth can be expected to continue in the longer term. The use of LNG as fuel will also depend on the installation of the corresponding bunkering infrastructure. Currently, the infrastructure is lacking, with only sparse coverage of LNG fuelling stations, mostly located in Northern Europe (Morgan Stanley, 2013).

B. OWNERSHIP AND OPERATION OF THE WORLD FLEET

1. Ship-owning countries

Greece continues to be the largest ship-owning country, accounting for more than 16 per cent of the world total, followed by Japan, China, Germany and Singapore. Together, the top five ship-owning countries control more than half of the world tonnage (dwt) (table 2.3). Five of the top ten ship-owning countries are from Asia, four are European, and one (the United States) is from the Americas.

Over the last decade, China, Hong Kong (China), the Republic of Korea and Singapore have moved up in the ranking of largest ship-owning countries, while Germany, Norway and the United States have a lower market share today than in 2005.

In South America, the largest ship-owning country (in dwt) continues to be Brazil, followed by Mexico, Chile and Argentina. The African country with the largest

Table 2.3. Ownership of the world fleet, as of 1 January 2015 (dwt)

Rank (dwt)	Country/territory of ownership	Number of vessels			Dead-weight tonnage				
		National flag	Foreign flag	Total	National flag	Foreign flag	Total	Foreign flag as a % of total	Total as a % of world
1	Greece	796	3 221	4 017	70 425 265	209 004 526	279 429 790	74.80%	16.11%
2	Japan	769	3 217	3 986	19 497 605	211 177 574	230 675 179	91.55%	13.30%
3	China	2 970	1 996	4 966	73 810 769	83 746 441	157 557 210	53.15%	9.08%
4	Germany	283	3 249	3 532	12 543 258	109 492 374	122 035 632	89.72%	7.04%
5	Singapore	1 336	1 020	2 356	48 983 688	35 038 564	84 022 252	41.70%	4.84%
6	Republic of Korea	775	843	1 618	16 032 807	64 148 678	80 181 485	80.00%	4.62%
7	Hong Kong, China	727	531	1 258	56 122 972	19 198 299	75 321 271	25.49%	4.34%
8	United States	789	1 183	1 972	8 731 781	51 531 743	60 263 524	85.51%	3.47%
9	United Kingdom	477	750	1 227	12 477 513	35 904 386	48 381 899	74.21%	2.79%
10	Norway	848	1 009	1 857	17 066 669	29 303 873	46 370 542	63.20%	2.67%
11	Taiwan Province of China	117	752	869	4 681 240	40 833 077	45 514 317	89.71%	2.62%
12	Bermuda	5	317	322	289 818	41 932 611	42 222 429	99.31%	2.43%
13	Denmark	392	538	930	15 286 153	20 893 511	36 179 664	57.75%	2.09%
14	Turkey	576	954	1 530	8 321 506	19 366 264	27 687 770	69.95%	1.60%
15	Monaco		260	260		23 929 323	23 929 323	100.00%	1.38%
16	Italy	596	207	803	15 961 983	6 040 199	22 002 182	27.45%	1.27%
17	India	697	147	844	14 546 706	7 268 449	21 815 155	33.32%	1.26%
18	Brazil	228	163	391	3 150 493	17 308 798	20 459 291	84.60%	1.18%
19	Belgium	87	156	243	7 302 545	12 787 196	20 089 741	63.65%	1.16%
20	Russian Federation	1 291	448	1 739	5 920 435	12 403 644	18 324 079	67.69%	1.06%
21	Islamic Republic of Iran	157	70	227	3 986 804	14 093 340	18 080 144	77.95%	1.04%
22	Switzerland	47	291	338	1 403 668	16 492 768	17 896 436	92.16%	1.03%
23	Indonesia	1 504	153	1 657	12 908 577	4 120 935	17 029 512	24.20%	0.98%
24	Netherlands	775	445	1 220	6 589 901	10 415 708	17 005 609	61.25%	0.98%
25	Malaysia	466	142	608	8 430 359	7 707 526	16 137 885	47.76%	0.93%
26	United Arab Emirates	95	684	779	472 967	14 845 550	15 318 518	96.91%	0.88%
27	Saudi Arabia	86	155	241	2 004 631	11 358 349	13 362 980	85.00%	0.77%
28	France	180	277	457	3 517 344	7 636 312	11 153 656	68.46%	0.64%
29	Cyprus	141	179	320	3 811 947	6 858 661	10 670 608	64.28%	0.62%
30	Viet Nam	786	92	878	6 527 639	1 510 645	8 038 284	18.79%	0.46%
31	Kuwait	42	27	69	5 293 213	2 462 656	7 755 869	31.75%	0.45%
32	Canada	209	139	348	2 743 006	5 004 054	7 747 060	64.59%	0.45%
33	Oman	6	31	37	5 842	7 008 489	7 014 331	99.92%	0.40%
34	Sweden	101	234	335	1 248 460	5 194 955	6 443 415	80.62%	0.37%
35	Qatar	56	70	126	888 093	5 471 554	6 359 647	86.04%	0.37%
Total top 35 ship-owning countries		18 410	23 950	42 360	470 985 656	1 171 491 033	1 642 476 689	71.32%	94.69%
All others		2 962	2 486	5 448	35 004 138	51 845 622	86 849 760	59.70%	5.01%
Unknown country of ownership				717			5 234 918		0.30%
WORLD TOTAL				48 525			1 734 561 367		100.00%

Source: UNCTAD secretariat, based on data supplied by Clarksons Research. For a complete listing of nationally owned fleets, see http://stats.unctad.org/fleetownership.

Note: Propelled seagoing vessels of 100 GT and above.

fleet ownership is Angola, followed by Nigeria and Egypt (see also the extended data available online for all ship-owning countries under UNCTADstat fleet ownership database – http://stats.unctad.org/fleetownership.

China, Indonesia and the Russian Federation have a large number of nationally flagged and owned ships, which are largely employed in coastal or inter-island shipping. These markets tend to be protected from foreign competition and do not necessarily fall under global IMO regulations. Ships deployed on these services tend to be smaller and older than the fleet deployed on international routes.

2. Container ship operators

Together, the three largest liner shipping companies, that is, those companies that operate the container ships deployed on regular services, have a share of almost 35 per cent of the world total container-carrying capacity. The top three companies are headquartered in Europe (Denmark, Switzerland and France), while most other carriers among the top 20 are based in Asia and one company in South America (Compañía Sudamericana de Vapores (CSAV)), headquartered in Santiago; the company has recently merged with Hapag Lloyd (headquartered in Germany) (table 2.4). Note that about half of the ships operated by the liner companies are not owned by them, but are chartered from the shipowner, who is likely to be from a third country, for example Germany or Greece.

Concentration in the sector continues to increase and the recent mergers of CSAV and Hapag Lloyd, and Compañía Chilena de Navegación Interoceánica and Hamburg Süd, have contributed further to this development. In the beginning of 2015, the top ten companies operated over 61 per cent of the global container fleet and the top 20 controlled 83 per cent of all capacity. All companies with vessels on order are investing in larger vessels, as the average vessel size of the order book is in all cases larger than the current average container-carrying capacity.

Table 2.4. The 50 leading liner companies, 1 May 2015 (Number of ships and total shipboard capacity deployed, ranked by TEU)

Rank	Operator	Market share % (TEU)	TEU	Vessels	Average vessel size	Orderbook TEU	Orderbook vessels	Average vessel size orderbook
1	Maersk Line A/S	13.45	2 526 490	478	5 286	91 080	9	10 120
2	Mediterranean Shipping Company (MSC) SA	13.22	2 483 979	451	5 508	498 680	36	13 852
3	CMA CGM S.A.	8.00	1 502 417	375	4 006	182 500	16	11 406
4	Evergreen Marine Corporation (Taiwan) Limited (Evergreen Line)	5.08	954 280	204	4 678	354 000	23	15 391
5	COSCO Container Lines Limited (COSCON)	4.55	854 171	158	5 406	119 500	10	11 950
6	China Shipping Container Lines Company Limited	4.00	751 507	136	5 526	19 100	1	19 100
7	Hapag-Lloyd Aktiengesellschaft	3.90	732 656	145	5 053	0	-	
8	Hanjin Shipping Company Limited	3.41	640 490	104	6 159	0	-	
9	Mitsui O.S.K. Lines Limited (MOL)	3.19	599 772	111	5 403	122 300	6	20 383
10	APL Limited	2.91	545 850	96	5 686	0	-	
11	Orient Overseas Container Line Limited (OOCL)	2.77	520 328	103	5 052	143 656	8	17 957
12	Hamburg Sudamerikanische Dampfschifffahrts-Gesellschaft KG	2.66	498 902	104	4 797	0	-	

Table 2.4. The 50 leading liner companies, 1 May 2015 (Number of ships and total shipboard capacity deployed, ranked by TEU) *(continued)*

Rank	Operator	Market share % (TEU)	TEU	Vessels	Average vessel size	Orderbook TEU	Orderbook vessels	Average vessel size orderbook
13	Nippon Yusen Kabushiki Kaisha (NYK)	2.63	494 953	104	4 759	112 000	8	14 000
14	Yang Ming Marine Transport Corporation	2.60	487 771	103	4 736	182 000	13	14 000
15	Hyundai Merchant Marine Company Limited (HMM)	2.13	399 791	65	6 151	60 000	6	10 000
16	Kawasaki Kisen Kaisha Limited ('K' Line)	2.12	397 623	77	5 164	110 960	8	13 870
17	Pacific International Lines (Private) Limited (PIL)	1.99	374 849	139	2 697	22 905	6	3 818
18	United Arab Shipping Company (S.A.G.) (UASC)	1.98	372 841	53	7 035	214 300	13	16 485
19	Zim Integrated Shipping Services Limited	1.58	296 554	66	4 493	0	-	
20	Compania Sud Americana de Vapores S.A. (CSAV)	1.26	237 567	40	5 939	18 000	2	9 000
21	Wan Hai Lines Limited	1.07	200 970	88	2 284	0	-	
22	X-Press Feeders	0.67	126 009	87	1 448	0	-	
23	MCC Transport (Singapore) Private Limited	0.58	109 662	62	1 769	0	-	
24	Delmas	0.53	99 078	47	2 108	0	-	
25	SITC Container Lines Company Limited	0.41	76 765	63	1 218	14 400	8	1 800
26	Korea Marine Transport Company Limited (KMTC Line)	0.40	75 779	46	1 647	5 400	1	5 400
27	Nile Dutch Africa Line BV	0.40	75 678	29	2 610	0	-	
28	United States Military Sealift Command	0.36	68 334	58	1 178	0	-	
29	Compania Chilena de Navegacion Interoceanica S.A. (CCNI)	0.32	59 906	14	4 279	18 030	2	9 015
30	CNC Line Limited	0.32	59 787	26	2 300	0	-	
31	BBC Chartering & Logistic GmbH & Company KG	0.31	57 570	93	619	0	-	
32	TS Lines Company Limited	0.31	57 477	36	1 597	0	-	
33	Safmarine Container Lines N.V.	0.28	52 638	23	2 289	0	-	
34	Arkas Konteyner ve Tasimacilik A.S.	0.28	52 180	36	1 449	5 000	2	2 500
35	Seago Line	0.27	50 688	22	2 304	0	-	
36	Simatech Shipping & Forwarding L.L.C.	0.24	45 947	19	2 418	8 700	2	4 350
37	Sinotrans Container Lines Company Limited (Sinolines)	0.23	43 447	36	1 207	16 000	4	4 000

Table 2.4. The 50 leading liner companies, 1 May 2015 (Number of ships and total shipboard capacity deployed, ranked by TEU) *(continued)*

Rank	Operator	Market share % (TEU)	TEU	Vessels	Average vessel size	Orderbook TEU	Orderbook vessels	Average vessel size orderbook
38	Regional Container Lines Public Company Limited	0.23	43 371	29	1 496	0	-	
39	ANL Singapore Private Limited	0.22	41 660	12	3 472	0	-	
40	Gold Star Line Limited	0.22	41 474	17	2 440	0	-	
41	Hafiz Darya Shipping Company (HDS Line)	0.22	41 337	9	4 593	0	-	
42	Grimaldi Group S.p.A.	0.21	40 262	41	982	0	-	
43	Unifeeder A/S	0.20	36 711	37	992	0	-	
44	Westfal-Larsen Shipping AS	0.19	35 151	17	2 068	0	-	
45	Swire Shipping Limited	0.18	34 333	24	1 431	0	-	
46	Seaboard Marine Limited	0.17	32 358	26	1 245	0	-	
47	Sinokor Merchant Marine Company Limited	0.17	31 969	32	999	0	-	
48	Spliethoff's Bevrachtingskantoor B.V.	0.17	31 454	36	874	0	-	
49	Heung-A Shipping Company Limited	0.17	31 332	31	1 011	5 400	3	1 800
50	Samudera Shipping Line Limited	0.16	30 995	26	1 192	3 600	2	1 800

Source: UNCTAD secretariat, based on data provided by *Lloyd's List Intelligence*.
Note: Includes all container-carrying ships known to be operated by liner shipping companies.

It is important to note that the attempt to realize economies of scale leads to new vessel orders that at the same time increase the risk of oversupply. The average vessel size for all new vessels on order by the top 15 companies is above 10,000 TEUs, which is double the current average size of vessels in the existing fleet of each company. Only very few companies outside the top 20 carriers have placed any new orders, and if at all, these orders are for far smaller vessel sizes.

The need to confront the oversupply has resulted in more frequent and wider cooperation of shipping lines on all routes, thus providing more and more homogenous services. A resulting challenge in the industry is the difficulty of service differentiation as container transport is a highly standardized transport service and shipping lines are rarely in a position to establish differentiation of services in terms of quality.

The trend towards larger ships, mergers and more collaboration is also reflected on individual routes and markets. The next section, on container ship fleet deployment, provides a more detailed analysis.

C. CONTAINER SHIP DEPLOYMENT AND LINER SHIPPING CONNECTIVITY

Since 2004, the UNCTAD LSCI has provided an indicator of each coastal country's access to the global liner shipping network, that is the network of regular maritime transport services for containerized cargo. The complete time series is published in electronic format on UNCTADstat (http://stats.unctad.org/lsci). The LSCI is generated from five components that capture the deployment of container ships by liner shipping companies to a country's ports of call: (a) the number of ships; (b) their total container-carrying capacity; (c) the number of companies providing services with their own operated ships; (d) the number of services provided; and (e) the size (in TEUs) of the largest ship deployed.

The country with the highest LSCI is China, followed by Singapore, Hong Kong (China), the Republic of Korea, Malaysia, and Germany. The best connected countries in Africa are Morocco, Egypt and South

Africa, reflecting their geographical position at the corners of the continent. In Latin America, Panama has the highest LSCI, benefiting from its canal and the location at the crossroads of main East–West and North–South routes, followed by Mexico, Colombia and Brazil. The 10 economies with the lowest LSCI are all island States, reflecting their low trade volumes and remoteness.

The LSCI of a country is not only determined by its trade volume, but increasingly by its position within the global liner shipping network. The relevance of hubs becomes evident in a high level of connectivity despite a relative low level of trade; examples are Jamaica, Morocco, Panama and Sri Lanka. The centrality of these countries in the global network is of high relevance for the regions in which they are located, as these points offer a high level of connectivity beyond the traditional direct connectivity.

Only 17–18 per cent of pairs of countries are connected with each other through a direct service; all other country pairs need to make use of at least one trans-shipment for bilateral containerized trade (Fugazza et al., 2013; Fugazza, 2015). Trans-shipment in many trade relations is growing and widely practiced in the industry to reach economies of scale and density in operations, and thus it is also widely accepted by customers as trans-shipment operations have become very efficient and the switch between services is often made in few hours.

Building on UNCTAD's newly developed LSBCI (http://stats.unctad.org/lsbci (accessed 15 July 2015), UNCTAD research suggests that lacking a direct maritime connection with a trade partner is associated with lower values of exports. Estimates point to a range varying from minus 42 per cent to minus 55 per cent. When assessing the effect of the number trans-shipments necessary to connect country pairs, any additional trans-shipment is associated with a 20–25 per cent lower value of exports. Results further suggest that in the absence of a bilateral connectivity indicator the impact of bilateral distance on bilateral exports is likely to be overestimated in statistical estimations (Fugazza, 2015).

A view of the level of connectivity from a bilateral perspective shows that intraregional routes are those with the greatest services capacity. The bilateral perspective further opens up the possibility of taking a closer look at the level of competition. It shows that on only 32 per cent of all 11,650 bilateral connections, including options with trans-shipments, are there five or more providers. Competition is limited on the remaining 68 per cent as the number of companies offering services is smaller or equal to four. This situation particularly affects small economies and island States. The most competitive routes for direct container shipping services are intraregional in Asia and Europe. There are 51 liner companies that have vessels deployed on routes that directly connect Singapore with ports in Malaysia, 46 companies provide direct services between China and the Republic of Korea, and 44 carriers offer a direct connection between the Netherlands and the United Kingdom (see table 2.5).

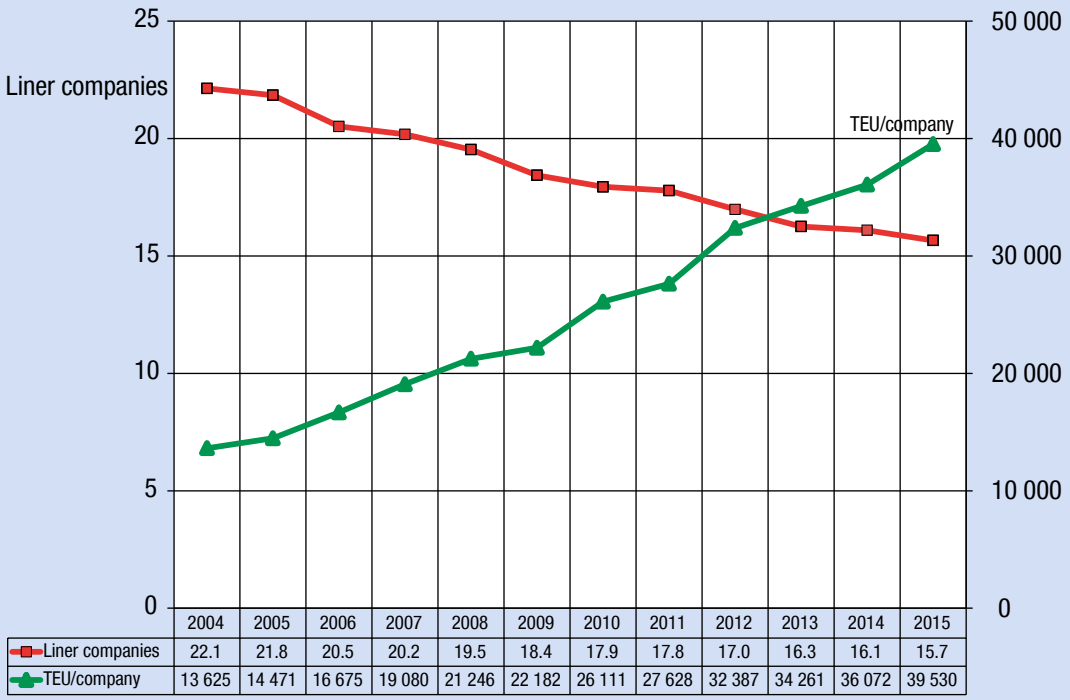
Table 2.5. Container ship deployment on selected routes, 1 May 2015

Direct services	*Number of companies (vessel operators)*	*Largest vessel (TEU)*
Malaysia – Singapore	51	15 908
China – Republic of Korea	46	19 224
Netherlands – United Kingdom	44	19 224
China – Japan	39	13 092
Germany – Netherlands	36	19 224
China – Singapore	35	15 908
Japan – Republic of Korea	35	10 000
Argentina – Brazil	23	9 700
China – United States	23	13 360
Panama – United States	21	5 116
China – Germany	19	19 224
Côte d'Ivoire – Nigeria	19	8 540
Chile – Peru	18	10 000
China – South Africa	16	10 000
United Republic of Tanzania – Mozambique	6	3 091
Kenya – Malaysia	5	3 108
Comoros – United Arab Emirates	3	2 226
Fiji – Australia	3	2 742
Dominica – United States	1	600
Japan – Marshall Islands	1	970

Source: UNCTAD secretariat, based on data supplied by *Lloyd's List Intelligence*.

Figure 2.6 further illustrates the process of concentration in liner shipping. While the container-carrying capacity per provider per country tripled between 2004 and 2015, the average number of companies that provide services to each country's ports decreased by 29 per cent. Both trends illustrate two sides of the same coin. As ships get bigger and companies aim at achieving economies of scale, there remain fewer companies in individual markets. It is a challenge for policymakers to support technological advances and cost savings, for example through economies of scale, yet at the same time ensure a sufficiently competitive environment so that cost savings are effectively passed on to the clients, that is, importers and exporters.

Figure 2.6. Presence of liner shipping companies: Average number of companies per country and average container-carrying capacity deployed (TEUs) per company per country (2004–2015)



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Liner companies	22.1	21.8	20.5	20.2	19.5	18.4	17.9	17.8	17.0	16.3	16.1	15.7
TEU/company	13 625	14 471	16 675	19 080	21 246	22 182	26 111	27 628	32 387	34 261	36 072	39 530

Source: UNCTAD secretariat, based on data supplied by *Lloyd's List Intelligence*.

D. REGISTRATION OF SHIPS

As of 1 January 2015, Panama, Liberia and the Marshall Islands are the largest vessel registries. Together, they account for a 41.8 per cent share of the world tonnage, with the Marshall Islands having recorded an impressive growth of over 13 per cent over 2014 (table 2.6). More than three quarters of the world fleet are registered in developing countries (table 2.7), including in many open registries, that is, registries where the owner does not need to be of the same nationality as the country where the ship is registered. The tonnage registered under a foreign flag (where the nationality of the owner is different from the flag flown by the vessel) is 71 per cent of the world total (see also table 2.3 above).

Care has to be taken when interpreting the data, as several registries have outsourced important parts of their operations and thus not all revenues remain in the flag State. Nevertheless, for some developing countries the provision of flag State services has become an important source of income.

Historically, when the first shipowners started to "flag out" by registering their ships in a foreign open registry in the 1970s or even earlier, one of the motivations may have been less stringent safety and environmental regulations. Today, there is no generalized difference between open and national registries as far as the ratification and implementation of relevant international conventions is concerned. A comparative table provided by the International Chamber of Shipping

Table 2.6. The 35 flags of registration with the largest registered fleets, as of 1 January 2015 (dwt)

Flag of registration	Number of vessels	Share of world total, vessels	Deadweight tonnage (1,000 dwt)	Share of world total (dwt)	Cumulated share (dwt)	Average vessel size (dwt)	Dwt growth 2015/2014 as %
Panama	8 351	9.33	352 192	20.13	20.13	44 052	0.91
Liberia	3 143	3.51	203 832	11.65	31.79	65 018	0.31
Marshall Islands	2 580	2.88	175 345	10.02	41.81	67 990	13.32
Hong Kong (China)	2 425	2.71	150 801	8.62	50.43	63 575	6.47
Singapore	3 689	4.12	115 022	6.58	57.01	33 830	8.52
Malta	1 895	2.12	82 002	4.69	61.70	43 898	8.69
Greece	1 484	1.66	78 728	4.50	66.20	63 286	4.45
Bahamas	1 421	1.59	75 779	4.33	70.53	54 322	2.54
China	3 941	4.41	75 676	4.33	74.85	20 756	-1.28
Cyprus	1 629	1.82	33 664	1.92	76.78	32 000	3.96
Isle of Man	1 079	1.21	23 008	1.32	78.09	55 441	-2.28
Japan	5 224	5.84	22 419	1.28	79.38	5 558	7.47
Norway	1 558	1.74	20 738	1.19	80.56	15 339	-1.20
Italy	1 418	1.58	17 555	1.00	81.57	14 556	-11.22
United Kingdom	1 865	2.08	17 103	0.98	82.54	16 059	-0.35
Republic of Korea	673	0.75	16 825	0.96	83.51	10 099	-3.13
Denmark	7 373	8.24	16 656	0.95	84.46	26 606	13.94
Indonesia	1 604	1.79	15 741	0.90	85.36	3 681	2.29
India	1 174	1.31	15 551	0.89	86.25	10 157	-1.39
Antigua and Barbuda	650	0.73	12 753	0.73	86.98	10 909	-3.45
Germany	3 561	3.98	12 693	0.73	87.70	22 230	-11.69
United States	1 613	1.80	12 683	0.73	88.43	6 089	2.59
United Republic of Tanzania	1 313	1.47	11 703	0.67	89.10	46 256	-1.54
Bermuda	1 245	1.39	11 511	0.66	89.75	71 946	2.69
Malaysia	1 777	1.99	9 232	0.53	90.28	6 793	-0.95
Turkey	2 471	2.76	8 820	0.50	90.79	8 181	-2.64
Netherlands	1 412	1.58	8 651	0.49	91.28	7 536	0.34
Belgium	756	0.85	8 609	0.49	91.77	45 548	21.96
Viet Nam	674	0.75	7 351	0.42	92.19	4 499	0.81
Russian Federation	963	1.08	7 221	0.41	92.60	2 974	2.45
France	670	0.75	6 882	0.39	93.00	16 042	-8.85
Philippines	646	0.72	6 850	0.39	93.39	6 149	6.19
Kuwait	765	0.86	5 440	0.31	93.70	40 002	37.91
Thailand	749	0.84	5 070	0.29	93.99	7 636	0.86
Taiwan Province of China	586	0.66	4 829	0.28	94.27	18 431	8.05
Top 35 total	72 377	80.90	1 648 937	94.27	94.27	27 697	3.53
World total	89 464	100.00	1 749 222	100.00	100.00	22 757	3.54

Source: UNCTAD secretariat, based on data supplied by Clarksons Research.

Note: Propelled seagoing merchant vessels of 100 GT and above, ranked by dead-weight tonnage. For a complete list of all countries see http://stats.unctad.org/fleet (accessed 19 September 2015).

Table 2.7. Distribution of dwt capacity of vessel types, by country group of registration, January 2015 (beginning-of-year figures, per cent of dwt, annual growth in percentage points in italics)

	Total fleet	Oil tankers	Bulk carriers	General cargo	Container ships	Others
World total	100.00	100.00	100.00	100.00	100.00	100.00
Developed countries	22.70	26.26	17.82	28.38	26.81	25.75
	-0.02	*-0.09*	*-0.05*	*-0.02*	*0.54*	*-0.08*
Countries with economies	0.71	0.78	0.26	5.35	0.03	1.22
in transition	*0.00*	*0.01*	*0.01*	*-0.03*	*0.00*	*0.01*
Developing countries	76.36	72.91	81.90	65.41	73.14	71.45
	0.03	*0.08*	*0.06*	*-0.05*	*-0.55*	*0.05*
Of which:						
Africa	13.14	17.18	9.98	5.96	20.19	9.93
	-0.46	*-0.25*	*-0.44*	*0.06*	*-1.11*	*-0.51*
America	26.74	20.68	31.93	22.57	19.75	31.53
	-0.68	*-0.24*	*-0.63*	*-0.76*	*-2.24*	*-0.66*
Asia	26.05	21.46	29.46	33.92	28.00	18.92
	0.27	*-0.07*	*-0.10*	*0.67*	*2.27*	*-0.08*
Oceania	10.42	13.60	10.53	2.95	5.20	11.07
	0.85	*1.10*	*0.87*	*0.03*	*0.74*	*0.76*
Unknown and other	0.24	0.05	0.01	0.86	0.02	1.57
	0.00	*0.00*	*-0.03*	*0.10*	*0.01*	*0.02*

Source: UNCTAD secretariat, based on data supplied by Clarksons Research.
Note: Propelled seagoing merchant vessels of 100 GT and above.

shows that both national and open registries can be found among the best and among the worst service providers (International Chamber of Shipping, 2014). The registries with youngest fleets among the top 35 flags were Hong Kong (China), the Marshall Islands and Singapore.

Registries with a good track record usually host far younger fleets and keep a close eye on the compliance of shipowners with international regulations. It is in their interest that their flag is not targeted by port State control authorities, as this would make the flag less attractive to shipowners. It is, in fact, in the interest of these "good" registries that environmental and safety regulations are ambitious and strictly enforced, as this will be more of a challenge to owners and registries with older and less well-maintained ships.

Interestingly, several of the major open registries are located in SIDS. These registries have a double interest in promoting ambitious regulations, for example within IMO. If, for example, lower global limits on CO_2 emissions are imposed, this could further enhance the competitive advantage of those registries that already host more modern and younger fleets. It would also constitute a contribution to climate change mitigation, which is of paramount concern for many island economies.

E. SHIPBUILDING, DEMOLITION AND NEW ORDERS

1. Deliveries of newbuildings

In total, the world fleet grew by 42 million GT in 2014, resulting from newbuildings of almost 64 million GT minus reported demolitions of about 22 million GT.

More than 91 per cent of GT delivered in 2014 was built in just three countries: China (35.9 per cent); the Republic of Korea (34.4 per cent); and Japan (21.0 per cent), with China mostly building dry bulk carriers, followed by container ships and tankers; the Republic of Korea building mostly container ships and oil tankers; and Japan specializing fundamentally in bulk carriers.

To respond to demands for a more environmentally sustainable shipping fleet, shipbuilders, owners and non-governmental technical bodies such as classification societies increasingly collaborate on the development of new technologies and eco-ships. Notably, classification societies have in recent years led research into the use of alternative energies on ships, including wind and solar power.

Table 2.8. Deliveries of newbuildings, major vessel types and countries where built (2014, thousands of GT)

	China	Republic of Korea	Japan	Philippines	Rest of world	World total
Oil tankers	2 896	4 781	891		466	9 034
Bulk carriers	13 304	1 588	10 791	869	167	26 719
General cargo	585	329	199		372	1 485
Container ships	4 986	9 135	188	995	735	16 039
Gas carriers	119	3 528	666		14	4 328
Chemical tankers	113	185	188		57	543
Offshore	714	1 485	51		956	3 206
Ferries and passenger ships	92	5	27		767	892
Other	42	835	391		147	1 415
Total	**22 851**	**21 872**	**13 392**	**1 865**	**3 682**	**63 662**

Source: UNCTAD secretariat, based on data provided by Clarksons Research.

Note: Propelled seagoing merchant vessels of 100 GT and above. More detailed data on other countries where vessels were built is available under http://stats.unctad.org/shipbuilding.

2. Demolition of ships

The scrapping of ships helps reduce the oversupply of tonnage, and it encourages the modernization of the fleet, including from an ecological perspective, as the vessels demolished tend to be less fuel efficient and more detrimental to the environment as far as emissions are concerned. The Government of China has extended a subsidy programme that encourages shipping companies to scrap old vessels. The scheme, which began in 2013, provides financial incentives to shipowners to replace old vessels with newer, more environmentally friendly models (Reuters, 2015).

Table 2.9. Tonnage reported sold for demolition, major vessel types and countries where demolished (2014, thousands of GT)

	India	China	Bangladesh	Pakistan	Turkey	Unknown Indian subcontinent	Others/ unknown	World total
Oil tankers	393	827	368	2 227	86	160	420	4 482
Bulk carriers	1 576	2 771	2 888	1 458	151	111	143	9 098
General cargo	719	301	313	65	349		259	2 008
Container ships	3 455	777	303	32	63		139	4 769
Gas carriers	215	8	62		28		29	342
Chemical tankers	136	3	10	13	34		1	196
Offshore	127	6	199	331	9		26	697
Ferries and passenger ships	74	13	19		67		22	194
Other	270	168	106		53		12	609
Total	**6 965**	**4 873**	**4 269**	**4 127**	**839**	**271**	**1 051**	**22 394**

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

Note: Propelled seagoing merchant vessels of 100 GT and above. More detailed data on other countries where vessels were demolished is available under http://stats.unctad.org/shipscrapping.

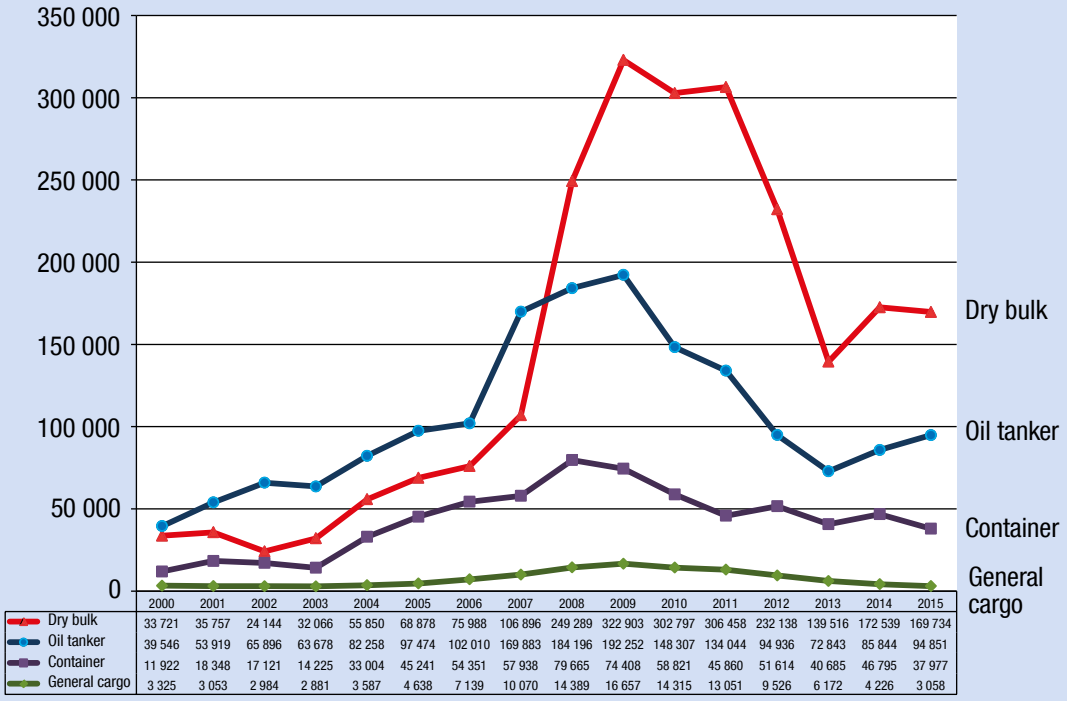
South Asia (Bangladesh, India and Pakistan) and China together account for more than 90 per cent of global ship breaking. Within ship demolition, furthermore, a certain specialization exists, as most container ships are demolished in India, while Bangladesh and China purchased more dry bulk carriers, and Pakistan mostly oil tankers.

Ship breaking itself is also under scrutiny for its environmental impact, particularly the method of "beaching" applied in South Asia, which tends to be harmful to the local environment and often lacks health and safety measures. Ongoing projects aim at the development of safe and environmentally sound ship recycling, with the goal of improving the standards and, therefore, the sustainability of the industry (IMO, 2015).

3. Tonnage on order

The world order book in early 2015 is far below its peak of 2008–2009. Between 2014 and 2015, the order book declined for most vessel types except for oil tankers. Those who did place new orders did so for two main reasons: first, they expect future demand to grow sufficiently to cater for the new deliveries; second, new ships are more fuel efficient and less polluting. To comply with new regulations having as objective the long-term environmental sustainability of international shipping, shipowners find additional motivations to replace old tonnage with newbuildings. In April 2015, the container ship order book stood at 18 per cent of existing capacity, its lowest level for over a decade (Clarksons Research, 2015b).

Figure 2.7. World tonnage on order, 2000–2015 (thousands of dwt)



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Dry bulk	33 721	35 757	24 144	32 066	55 850	68 878	75 988	106 896	249 289	322 903	302 797	306 458	232 138	139 516	172 539	169 734
Oil tanker	39 546	53 919	65 896	63 678	82 258	97 474	102 010	169 883	184 196	192 252	148 307	134 044	94 936	72 843	85 844	94 851
Container	11 922	18 348	17 121	14 225	33 004	45 241	54 351	57 938	79 665	74 408	58 821	45 860	51 614	40 685	46 795	37 977
General cargo	3 325	3 053	2 984	2 881	3 587	4 638	7 139	10 070	14 389	16 657	14 315	13 051	9 526	6 172	4 226	3 058

Source: UNCTAD secretariat, based on data supplied by Clarksons Research.
Note: Propelled seagoing merchant vessels of 100 GT and above, beginning of year figures.

4. Outlook

Economic and regulatory incentives will continue to encourage individual owners to invest in modernizing their fleets. Unless older tonnage is demolished, this would lead to further global overcapacity, continuing the downward pressure on freight and charter rates (see also chapter 3). The interplay between more stringent environmental regulations and low freight and charter rates should encourage the further demolition of older vessels; this would not only help reduce the oversupply in the market, but also contribute to lowering the global environmental impact of shipping.

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ENDNOTES

[1] The underlying data on the world fleet for chapter 2 has been provided by Clarksons Research, London. The vessels covered in UNCTAD's analysis include all propelled seagoing merchant vessels of 100 GT and above, including offshore drillships, FPSOs and the Great Lakes fleets of Canada and the United States, which for historical reasons had been excluded in earlier issues of the *Review of Maritime Transport*. Military vessels, yachts, waterway vessels, fishing vessels and offshore fixed and mobile platforms and barges are excluded. As regards the main vessel types (oil tankers, dry bulk, container and general cargo carriers), there is no change compared to previous issues of the *Review of Maritime Transport*. As regards "other" vessels, the new data include a smaller number of ships (previously, fishing vessels with little cargo-carrying capacity had been included) and a slightly higher tonnage due to the inclusion of ships used in offshore transport and storage. To ensure full comparability of 2015 data with the four previous years, UNCTAD has updated the fleet data available online for the years 2011 to 2015, applying the same criteria (see http://stats.unctad.org/fleet). As in previous years, the data on fleet ownership covers only ships of 1,000 GT and above, as information on the true ownership is often not available for smaller ships. For more detailed data on fleet ownership see http://stats.unctad.org/fleetownership.