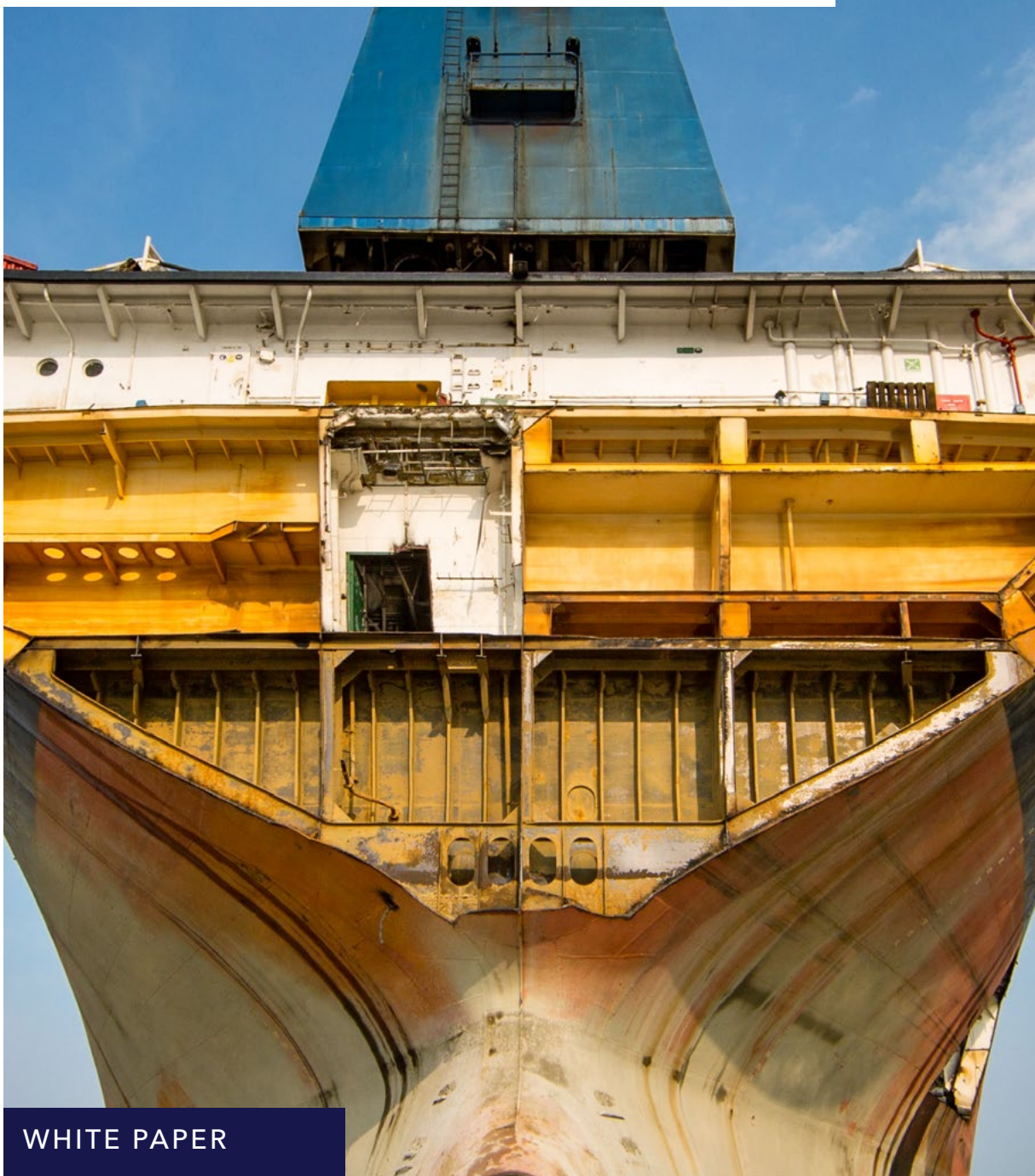
DNV

WHEN TRUST MATTERS

GLOBAL SHIP RECYCLING MARKET OUTLOOK

Capacity, demand and regulatory developments

Prepared for the Norwegian Ministry of Climate and Environment



WHITE PAPER



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Executive summary

DNV has been commissioned by the Norwegian Ministry of Climate and Environment to assess recent developments in the global ship recycling market and to consider factors that may influence recycling activity, available capacity and regulatory implementation in the coming decade. The report examines historical recycling activity, the age profile of the global fleet, simulated fleet renewal requirements, flag State patterns prior to recycling, and the current availability of ship recycling facilities operating under recognized regulatory frameworks. The analysis is intended to support informed and constructive dialogue among flag States, recycling States, industry and other stakeholders.

Market developments

Global vessel recycling activity has declined substantially since the peak around 2012. During the past five years, annual recycling volumes have remained at approximately 7 to 8 million GT and 600 to 800 vessels per year, compared with approximately 40 million GT and more than 2,100 vessels at the 2012 peak. This decline has occurred while the global fleet has continued to grow and age. The world fleet has increased from approximately 685 million GT in 2005 to approximately 1.73 billion GT today, and current recycling volumes therefore represent a much smaller share of the active fleet than during earlier periods of low recycling activity.

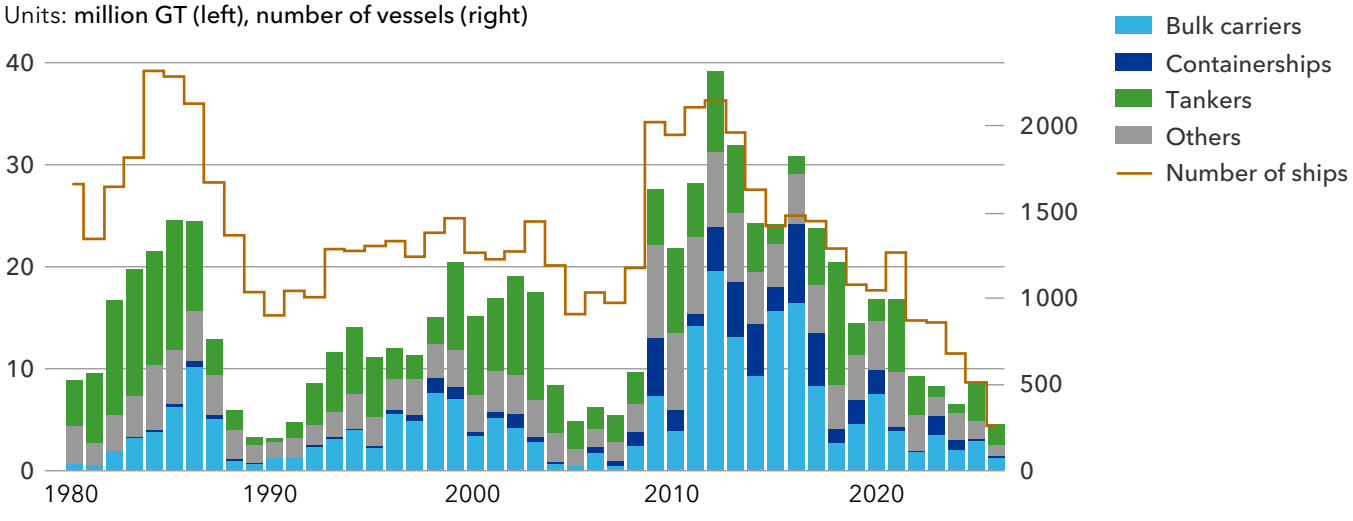
The average age of the world fleet is now approximately 18.6 years. A significant share of the fleet is now approaching ages where shipowners may need to consider continued operation, major investment, replacement or recycling. At the time of writing, approximately 21% of vessels are more than 20 years old, while approximately 44% exceed 15 years of age. Recent years have been characterized by high vessel utilization, disruptions to major trade routes, longer voyage distances and strong earnings across many shipping segments. During the same period, recycling activity has remained low relative to fleet size.

Recycling outlook

The scenario modelling illustrates the scale of fleet renewal that may be required under different assumptions and should be interpreted as scenario outcomes rather than predictions of future market developments. Maintaining the current average fleet age would require approximately 17,255 vessel removals over the 10-year assessment period, corresponding to approximately 1,726 vessels per year. This represents recycling activity approximately 3.2 times higher than that observed during the previous decade. Reducing the average fleet age by approximately two years would require approximately 24,166 vessel removals, corresponding to approximately 2,417 vessels per year, or approximately 4.5 times the recycling activity observed during the previous decade. These findings highlight the scale of fleet

FIGURE 1

Historical ship recycling activity by number of ships and gross tonnage



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Source: S&P Global Sea-web Ship Register, DNV analysis

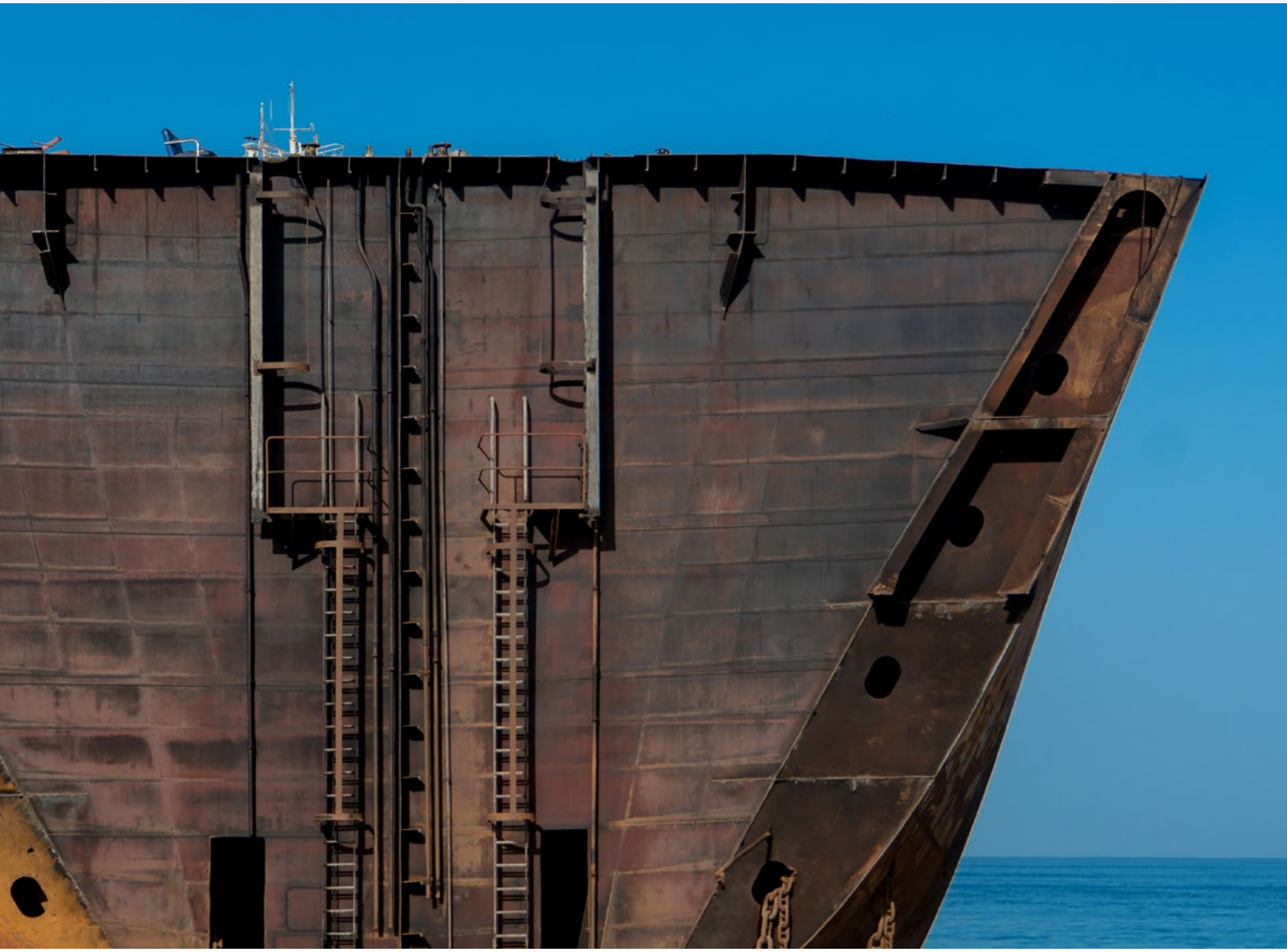
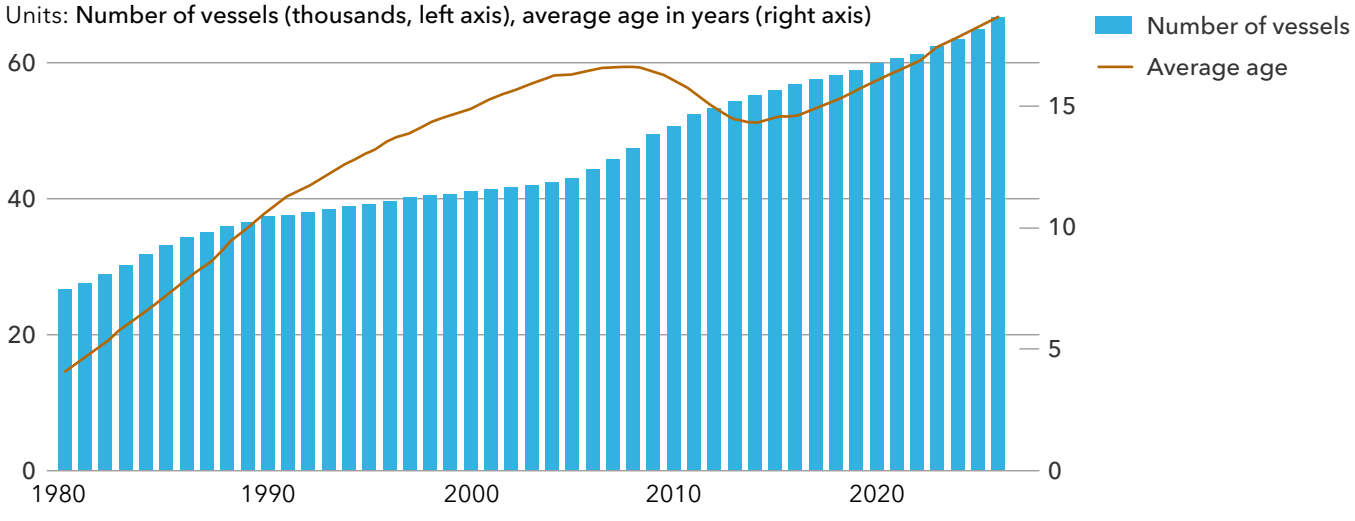


FIGURE 2

Vessel count and average age of the world fleet in service with GT >1,000



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Source: S&P Global Sea-web Ship Register, DNV analysis

renewal that would be required to stabilize or reduce the average age of the global fleet.

Flag State patterns prior to recycling

The analysis of flag State patterns indicates that reflagging to flags that have not ratified the Hong Kong Convention (HKC) prior to recycling remains common. For vessels recycled between 2020 and 2025, a large share remained under non-ratifying flags throughout the two-year lookback period, while other vessels moved between ratifying and non-ratifying flags before recycling. Vessels transitioning from a ratifying to a non-ratifying flag represented 15.4% of the sample and showed high levels of associated ownership change. These observations illustrate the complexity of end-of-life ship ownership, registration and recycling arrangements within the global shipping industry, and provide useful context for discussions concerning the implementation of the HKC and future developments in the ship recycling sector.

Ship recycling capacity

The assessment indicates that the volume of ships expected to reach end of life over the coming decade may exceed the recycling capacity currently operating under recognized regulatory frameworks. Depending on the scenario applied, average annual recycling demand is estimated at approximately 54 to 76 million GT. The capacity assessment indicates that approximately 6 million Light Displacement Tonnage of ship recycling capacity currently operates under either the HKC framework or the EU Ship Recycling Regulation. For comparison, global ship recycling activity reached a historical peak of approximately 38 million GT in 2012, while only around 8 million GT was recycled in 2025. The simulation results therefore suggest that annual recycling activity would need to increase beyond previously observed levels and remain elevated for approximately a decade. Although the simulation results and the assessment of authorized recycling capacity are expressed in different units and therefore cannot be compared directly, the findings indicate that a substantial expansion of compliant ship recycling capacity is likely to be required if the levels of fleet renewal implied by the scenarios are to be achieved.

There is considerable uncertainty regarding the future availability and effective utilization of ship recycling capacity. Additional facilities are expected to obtain authorization as implementation of the HKC progresses, potentially increasing available capacity over time. At the same time, authorized capacity does not necessarily equate to actual operational capacity or sustained compliance. Capacity figures are often derived from historical recycling volumes, and it remains uncertain whether equivalent throughput can be consistently achieved while meeting the HKC's safety, environmental and operational requirements. Continued cooperation between shipowners, flag States and recycling States will therefore be important to expand compliant recycling capacity and support effective implementation of the HKC.

TABLE 1

Key results of the scenario-based modelling

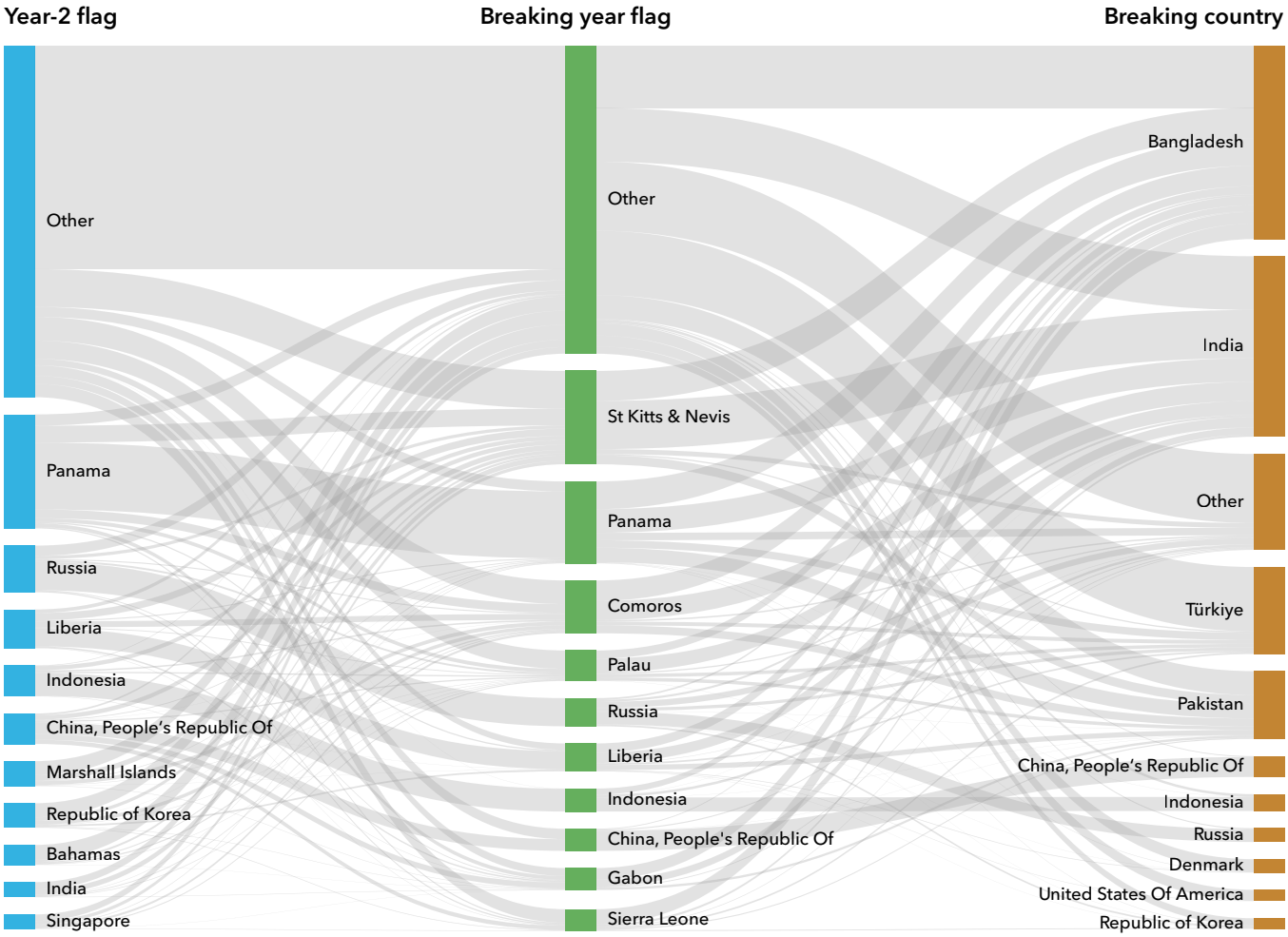
Metric	Scenario 1: prevent further ageing	Scenario 2: reduce average fleet age
Fleet renewal objective	Maintain the current average fleet age.	Reduce the average fleet age by approximately two years.
Simulated vessel removals, 10-year period	17 255 vessels	24 166 vessels
Annualized requirement	Approximately 1 726 vessels per year	Approximately 2 417 vessels per year
Relative scale compared with the past 10 years	Approximately 320% of the past 10-year recycling level	Approximately 448% of the past 10-year recycling level
Gross tonnage	Approximately 54 million GT per year	Approximately 76 million GT per year
Main interpretation	A substantial increase is required even to prevent further ageing.	A materially larger increase is required to achieve a younger fleet.

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FIGURE 3

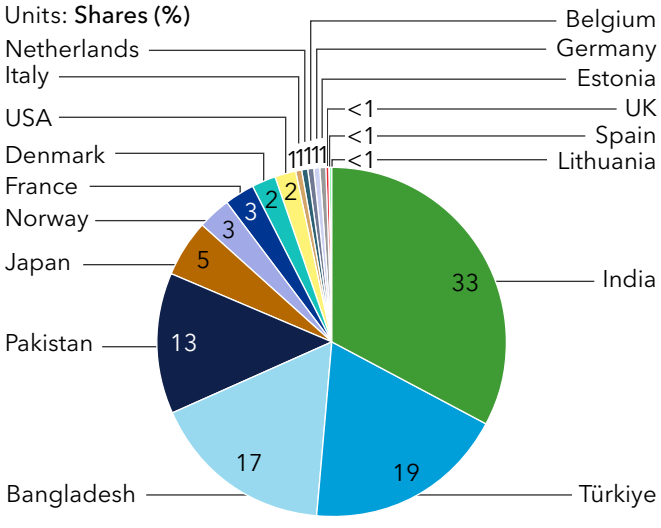
Flag State two years before recycling, flag State in the breaking year (BY), and breaking country for ships recycled between 2020 and 2025

Ship recycling flag flow: year-2 flag → breaking year flag → breaking country (3,337 vessels)



©DNV 2026

Source: S&P Global Sea-web Ship Register, DNV analysis



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EU and IMO combined; Source: Draft EU List, 16th edition, and IMO list, September 2026

FIGURE 4

Distribution of authorized annual recycling capacity by country for facilities operating under either the HKC framework (September 2026) or the EU Ship Recycling Regulation (draft 16 edition), after removal of double counting for facilities appearing on both lists. Total authorized capacity: approximately 6 million LDT.

2 Introduction

This study commissioned by the Norwegian Ministry of Climate and Environment aims to contribute to ongoing discussions on ship recycling by providing an independent assessment of selected aspects of the global ship recycling market. The report examines historical recycling activity, fleet renewal requirements, ship recycling capacity, flag State patterns prior to recycling, and discusses developments in ship recycling. The intention is not to advocate a particular policy position, but to provide a knowledge basis for discussion among flag States, recycling States, industry and other stakeholders.



The report is structured as follows:

- Chapter 3 presents the overall approach of this study;
- Chapter 4 examines historical ship recycling activity and presents scenario modelling illustrating the scale of recycling activity associated with different fleet renewal assumptions;
- Chapter 5 analyses flag State patterns and reflagging trends prior to recycling;
- Chapter 6 provides an overview of ship recycling facilities, regulatory developments and facility authorization frameworks, including facilities operating under the Hong Kong Convention (HKC) framework and the EU Ship Recycling Regulation (EU SRR);
- Chapter 7 discusses the results of the analyses and factors that may influence future developments in the ship recycling industry; and
- Chapter 8 presents the main conclusions of the study.

3 Approach

This study combines quantitative and qualitative analyses of global ship recycling developments. Multiple datasets, regulatory sources and industry information sources were reviewed to assess historical trends, future recycling requirements, ship recycling capacity and implementation of regulatory frameworks.

The assessment consists of four main analytical elements:

- historical recycling trends and fleet renewal scenarios, based primarily on vessel and fleet data, combined with scenario modelling of future recycling requirements;
- analysis of flag State transitions prior to recycling, based on historical ship registry data;
- assessment of ship recycling facilities and regulatory developments, based on official information from the International Maritime Organization (IMO), the European Commission, national authorities, publicly available information sources and direct correspondence with recycling States; and
- assessment of available ship recycling capacity, based on information submitted under the HKC framework, information relating to facilities included on the European List, and supplementary information obtained directly from relevant stakeholders.

More detailed methods, assumptions and data sources are presented in the relevant chapters, as each analysis relies on different datasets and analytical approaches. Publicly available sources used in the assessment are referenced in footnotes. References are presented using a consistent format comprising the author or responsible organization, publication year, title, source and web address to facilitate traceability and verification of information.

3.1 Limitations

The availability, quality and transparency of ship recycling data vary considerably between countries and market segments. Information relating to ship recycling capacity, operational throughput, facility performance and recycling activity is not reported consistently across jurisdictions. Consequently, some assessments presented in this report should be regarded as indicative rather than definitive.

Where information from a single source was incomplete, multiple sources were reviewed to improve data quality and reduce uncertainty. Nevertheless, limitations remain, particularly with respect to facility-level capacity estimates and operational performance. Assumptions, data limitations and sources of uncertainty are described in the relevant chapters where applicable.

The analyses presented in this report are based on information available at the time of writing and should be interpreted within the context of the assumptions and methodologies applied. The results from the scenario modelling are intended to illustrate the implications of different fleet renewal assumptions and should not be interpreted as predictions of future market developments.

This report does not constitute legal advice or a definitive interpretation of applicable laws, regulations or international conventions. Responsibility for interpretation, implementation and compliance with applicable requirements remains with the relevant authorities and stakeholders.

The report has been prepared for the purposes described herein and should be read in its entirety. Unless explicitly stated, the report does not assess or verify the compliance status or performance of individual facilities, jurisdictions or stakeholders.



4 Ship recycling outlook

This chapter uses scenario modelling to examine the scale of ship recycling that would be required under alternative fleet renewal objectives. The scenarios illustrate the number of vessels that would need to be removed from service to stabilize or reduce the average age of the global fleet under defined assumptions. The results are subsequently used to inform the assessment of ship recycling capacity.

Note that the scenarios are not intended to forecast future recycling activity. Future recycling demand is not only a question of how many vessels may become candidates for recycling, but also whether sufficient safe and environmentally sound recycling capacity is available when demand increases.

4.1 Historical recycling activity and rationale for the scenario modelling

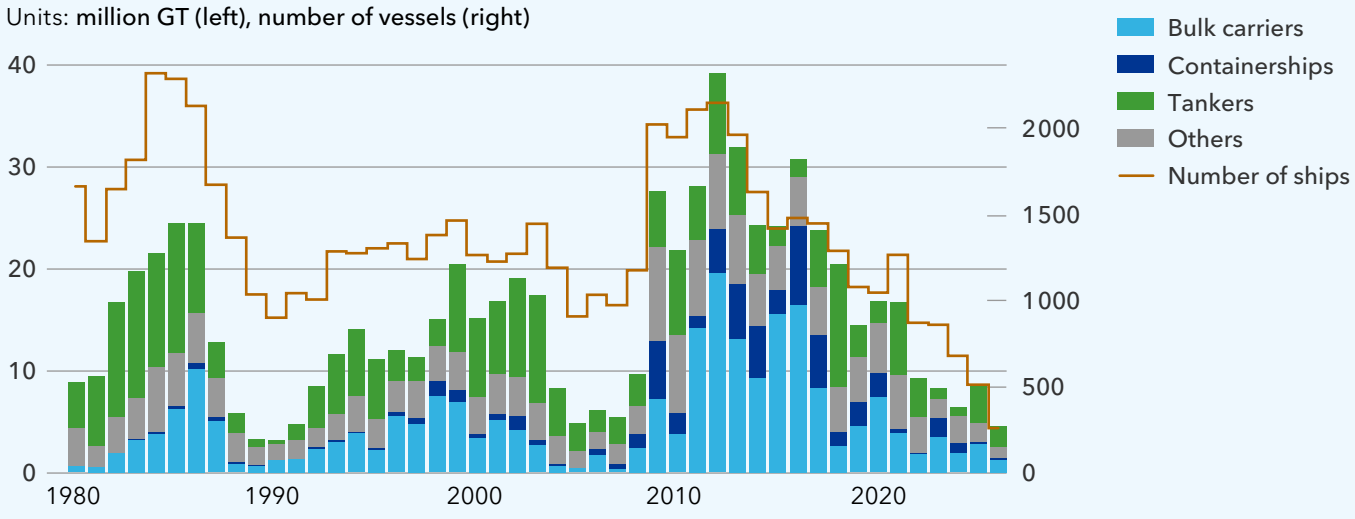
Historical recycling activity provides important context for the scenario modelling. Recent recycling volumes have remained well below the peak observed in 2012, when weak shipping markets, excess fleet capacity, favourable scrap prices and an ageing fleet combined to drive high levels of recycling activity. This is relevant as the global fleet has continued to grow and age over the same period, potentially increasing future recycling demand.

Figure 4-1shows that ship recycling activity has varied significantly over time. The peak around 2012 was followed by a sustained decline in both the number of ships recycled and the associated gross tonnage. In recent years, recycling volumes have remained low when compared with earlier periods of high recycling activity.

This decline does not by itself demonstrate future recycling demand. However, it provides important context for the scenario modelling. If low recycling volumes persist while the fleet continues to age, a growing number of vessels may approach ages where shipowners face decisions relating to life extension, major investment, replacement or recycling.

FIGURE 4-1

Historical annual ship recycling activity by number of ships and gross tonnage



©DNV 2026

Source: S&P Global Sea-web Ship Register, DNV analysis

FIGURE 4-2

Average age of vessels recycled in 2026



©DNV 2026

Source: S&P Global

The recent decline in vessel recycling activity is not unprecedented. Similar periods of reduced recycling were observed around 1990 and during the mid-2000s. However, these periods occurred in the context of a substantially smaller global fleet. In 1990, the world fleet in service amounted to approximately 472 million GT. By 2005, the fleet had grown to approximately 685 million GT, compared with approximately 1.73 billion GT today. Current recycling volumes therefore represent a significantly smaller proportion of the active fleet than in earlier periods of low recycling activity.

Vessels sold for recycling in recent years have generally reached a relatively advanced age, often exceeding 30 years and, in some cases, 40 years, as presented in Figure 4-2. This indicates that a substantial share of the existing fleet remains in service for longer periods before being recycled.

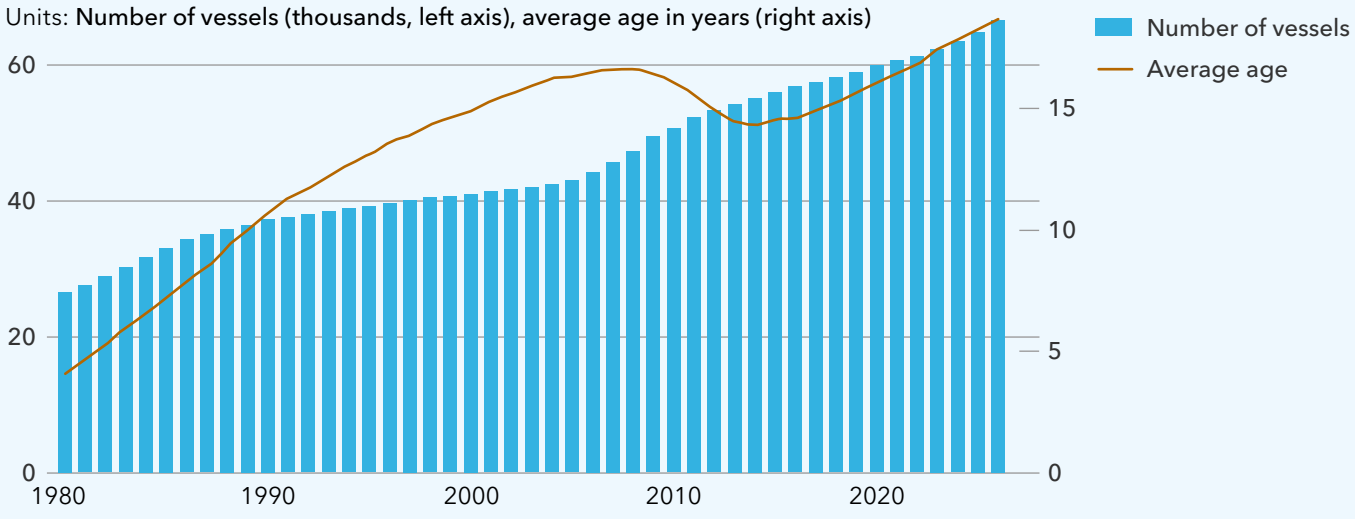
The average age of the world fleet has also increased in recent years. Except for in the past two years, relatively limited newbuilding activity combined with low levels of vessel recycling has contributed to an ageing fleet profile. The average age of the world fleet, for vessels above 1,000 GT, has increased from 16.1 years in 2020 to approximately 18.6 years today.

Recent market conditions provide further context for the low level of recycling activity. Disruptions to major trade routes, longer voyage distances and high vessel utilization have supported demand for tonnage in several shipping segments. During the same period, recycling activity has remained low relative to fleet size.

Recycling decisions are influenced by a combination of factors, including vessel earnings, maintenance and com-

FIGURE 4-3

Vessel count and average age of the world fleet in service with GT >1,000



©DNV 2026

Source: S&P Global Sea-web Ship Register, DNV analysis

pliance costs, replacement options, scrap prices, access to recycling facilities, and applicable regulatory requirements. It is therefore important to consider the interaction between market conditions, fleet age, recycling capacity and economic incentives when assessing future recycling activity and fleet renewal.

4.2 Method

The scenario model was developed to examine the relationship between vessel recycling volumes and fleet age development. The objective is to assess how different recycling assumptions may influence the age profile of the world fleet over time. The analysis is scenario-based and is intended to illustrate potential outcomes under specified assumptions. It should therefore not be interpreted as a forecast of future recycling activity.

The model evaluates the balance between two central variables: the number of vessels removed from the fleet and the minimum age at which vessels are assumed to be recycled. These variables are closely linked. If vessels are assumed to be recycled at relatively low age thresholds, the number of vessels requiring recycling may exceed practical recycling capacity. Conversely, if vessels are assumed to remain in service until relatively high ages, the number of recycling candidates is reduced, but the overall age profile of the fleet continues to increase. The model therefore examines how different combinations of recycling volumes and recycling age thresholds affect fleet renewal over time.

The analysis is performed separately for relevant vessel categories and market segments. This segmentation is necessary because fleet age profiles, vessel sizes, order book levels and historical recycling patterns vary significantly between ship types and size segments. Applying the simulation separately to each segment improves the relevance of the results and avoids treating the global fleet as a single uniform population.

The underlying dataset includes vessels currently in service, vessels on order, and vessels historically removed from the market. The scenario modelling is performed for the period to 2036. Although the analysis is not intended to predict future recycling activity, assumptions regarding future contracting are required to avoid an unrealistic reduction in the fleet over the analysed period. Future vessel contracting is therefore based on the Clarksons Research 10-year contracting outlook, applying the base-case scenario throughout the analysis. This scenario is used as a moderate assumption for future fleet replenishment.

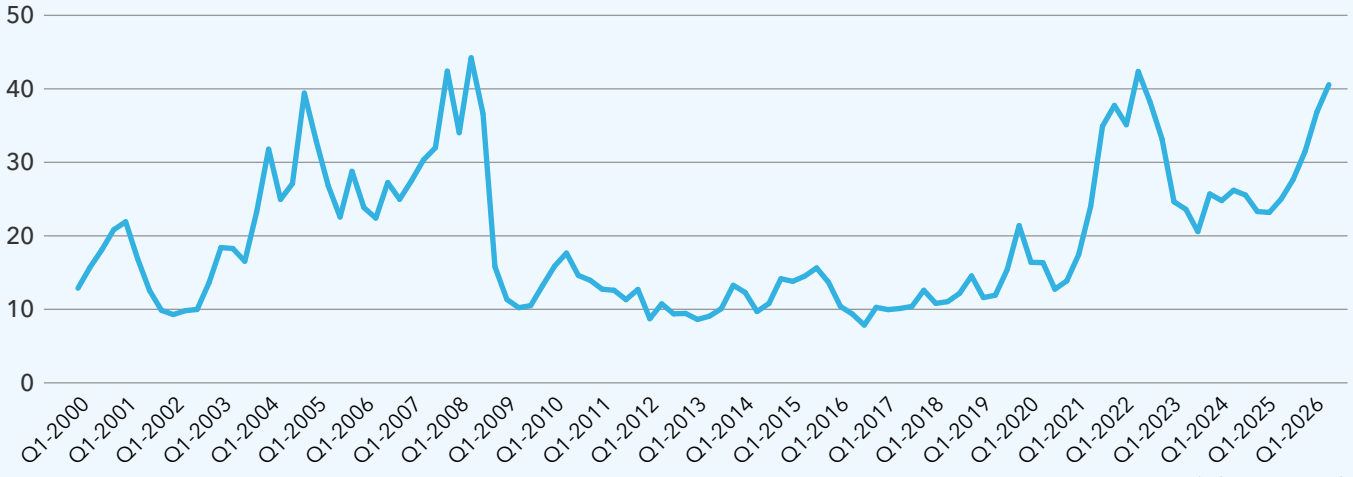
Two model scenarios are applied. The simulations are performed separately for each vessel segment to reflect differences in fleet age profiles and renewal patterns. The first scenario assesses the level of recycling required to prevent further ageing of the fleet. Under this scenario, the model removes sufficient vessels to maintain approximately the same average fleet age by 2036 as in 2026. The second scenario assesses the level of recycling required to reduce the average fleet age by two years by 2036 compared with 2026. This scenario requires higher recycling volumes and is intended to illustrate the scale of recycling activity that would be required to achieve a reduction in fleet age.

The main outputs of the analysis are the number of vessels removed, the average age of vessels removed, the number

FIGURE 4-4

The ClarkSea index – average earnings quarterly (volume markets)

Units: **USD/day (thousands)**



©DNV 2026

Source: Clarksons Research

of vessels requiring recycling over the coming decade and the minimum age at which vessels are removed in each year of the simulation period. These outputs are used to assess the scale of potential future recycling demand and to compare recycling requirements across vessel segments and scenarios.

4.3 Scenarios

Two scenarios were developed for the analysis, representing different levels of fleet renewal ambition. The first scenario describes the recycling effort required to stabilize the fleet age profile, while the second scenario describes the additional effort required to achieve a younger fleet:

- **Scenario 1, prevent further ageing:** this scenario estimates the recycling activity required to maintain the average fleet age at approximately the current level throughout the simulation period.
- **Scenario 2, reduce average fleet age:** this scenario estimates the recycling activity required to reduce the average fleet age by approximately two years by the end of the simulation period.

4.4 Key results

Table 4-1 presents the key results of the scenario-based modelling, following by detailed figures in the subsequent sections of the chapter.

The results show that maintaining the present average age of the fleet is already a demanding fleet renewal objective. Reducing the average age requires a further increase in vessel removals. This distinction is important when the results are later compared with available compliant recycling capacity.

4.5 Scenario 1: Preventing further ageing of the fleet

The first scenario (Table 4-2) estimates the number of vessels that would need to be removed from service to prevent the average fleet age from increasing further. This scenario does not seek to rejuvenate the fleet. It represents the recycling effort required to maintain the current age profile at aggregate level.

The scenario indicates that approximately 17,255 vessels would need to be recycled over the 10-year simulation period. This corresponds to an annualized requirement of approximately 1,726 vessels per year. The result is substantially above the recycling activity observed during the previous decade and indicates that current recycling levels would not be sufficient to stabilize the average fleet age in this scenario. The analysis estimates that approximately 542 million GT of shipping tonnage could reach end of life during the coming decade, corresponding to an average of approximately 54 million GT per year under Scenario 1.

The scenario also shows that recycling requirements differ between vessel segments. This reflects differences in fleet age profiles, order books and expected fleet growth. As a result, the demand for recycling capacity is unlikely to rise evenly across all ship types.

TABLE 4-1

Key results of the scenario-based modelling

Metric	Scenario 1: prevent further ageing	Scenario 2: reduce average fleet age
Fleet renewal objective	Maintain the current average fleet age.	Reduce the average fleet age by approximately two years.
Simulated vessel removals, 10-year period	17 255 vessels	24 166 vessels
Annualized requirement	Approximately 1 726 vessels per year	Approximately 2 417 vessels per year
Relative scale compared with the past 10 years	Approximately 320% of the past 10-year recycling level	Approximately 448% of the past 10-year recycling level
Gross tonnage	Approximately 54 million GT per year	Approximately 76 million GT per year
Main interpretation	A substantial increase is required even to prevent further ageing.	A materially larger increase is required to achieve a younger fleet.

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TABLE 4-2

Summary of simulation results for Scenario 1, preventing further ageing of the fleet

Type	Segment	Long-term historical average number of ships scrapped per annum	Long-term historical average age when scrapped	Total number of ships scrapped in the past 10 years	Average number of ships scrapped per annum in the past 10 years	Average age when scrapped in the past 10 years	Total number of ships to be scrapped in the next 10 years	Average number of ships to be scrapped per annum in the next 10 years	Assumed future minimum age of scrapping in the next 10 years	Average age of the fleet by the end of 2026	Average age of the fleet by the end of 2036	% of ships over 15 years old today	% of ships over 15 years old in 2036	Av. Size (GT)	Accumulated GT to be scrapped in the next 10 years	Average GT to be scrapped per annum in the next 10 years
Oil	VLCC	17	18.4	60	7.5	20.4	244	24	28	12.8	12.2	44%	40%	159878	39010232	3837072
	Suezmax	8	21.3	75	8.3	22.4	239	24	27	12.1	11.9	42%	36%	82810	19791590	1987440
	Aframax/LR2	14	21.9	149	14.9	21.6	418	42	28	12.6	12.4	49%	40%	61451	25686518	2580942
	Panamax/LR1	13	22.7	47	6.7	22.5	243	24	28	15.4	14.5	68%	50%	41999	10205757	1007976
	MR/Handy	54	27.2	385	38.5	26.9	2195	220	27	13.4	13.6	52%	47%	20603	45223585	4532660
	Small 2-10k DWT	34	30.6	434	43.4	33.2	1183	118	40	20.6	19.7	62%	66%	3129	3701607	369222
Bulk	Capesize	20	22.6	262	26.2	22.5	868	87	25	12.1	11.9	40%	43%	102594	89051592	8925678
	Panamax	13	23	209	20.9	22.5	1290	129	25	12.4	12.6	37%	43%	43963	56712270	5671227
	Handymax	27	25	260	26.0	24.5	1990	199	24	12	11.8	38%	38%	33238	66143620	6614362
	Handysize	95	27.7	471	47.1	30.7	1645	165	25	12.8	12.9	43%	43%	19576	32202520	3230040
	Small 2-10k DWT	7	32.4	66	6.6	40.3	154	15	38	18.7	18.3	62%	64%	4015	618310	60225
Container	17k+ TEU	0	0	0	0.0	0.0	8	1	25	7.3	10.5	3%	27%	212533	1700264	212533
	12-17k TEU	7	0	0	0.0	0.0	66	7	25	6.5	10.4	11%	23%	147300	9721800	1031100
	8-12k TEU	1	15	2	1.0	20.0	244	24	27	12.8	13	43%	41%	99740	24336560	2393760
	3-8k TEU	24	20.3	237	29.6	18.8	528	53	30	15.1	15.4	65%	43%	53333	28159824	2826649
	2-3k TEU	12	24.3	110	11.0	22.0	96	10	36	14.4	14.4	54%	43%	27902	2678592	279020
	0.1-2k TEU	33	25.2	426	42.6	25.3	950	95	30	15	15.2	56%	47%	11989	11389550	1138955
Gas	LNG >40k cbm	3	33.3	49	4.9	34.2	248	25	26	9.3	9.8	29%	23%	113933	28255384	2848325
	LNG <40k cbm	1	35.7	1	1.0	28.0	1	0	40	12.3	8.9	40%	22%	3407	3407	0
	VLGC	4	26.5	13	2.6	29.4	79	8	30	10.5	10.7	28%	28%	48797	3854963	390376
	LPG 15-55k cbm	2	29.6	20	3.3	30.7	62	6	29	12.2	12.1	39%	38%	21982	1362884	131892
	LPG <15k cbm	13	28.4	151	15.1	32.5	133	13	50	20.4	20.4	62%	62%	3919	521227	50947
GC, Reefer and MPP	ALL	91	24.5	1370	137.0	29.0	3432	343	45	22.5	22.4	73%	68%	4720	16199040	1618960
RoRo and PCC	RoRo >10 DWT	5	29	15	2.1	31.8	64	6	33	15.2	14.9	56%	53%	26852	1718528	161112
	RoRo 2-10k DWT	9	29.3	79	7.9	34.4	61	6	54	25.5	24.7	72%	67%	4825	294325	28950
	PCC >6k CEU	2	21.8	14	2.8	22.4	191	19	28	11.6	12.1	45%	34%	66330	12669030	1260270
	PCC <6k CEU	12	25.4	116	11.6	28.2	68	7	39	20.8	21	86%	67%	33143	2253724	232001
Passenger and Cruise	Pax > 30k GT	1	31.3	9	1.5	33.2	8	1	50	19.2	19.1	65%	52%	41544	332352	41544
	Pax < 30k GT	19	34.5	148	14.8	39.2	445	45	43	23.4	23.2	65%	76%	1843	820135	82935
	Cruise >100k GT	1	6	148	14.8	39.2	43	4	26	10.4	10.8	31%	32%	148057	6366451	592228
	Cruise <100k GT	6	39.4	68	7.6	36.4	59	6	65	26.3	25	66%	66%	20631	1217229	123786
TOTAL	**ALL**			**5394**			**17255**								**542202870**	**54220287**

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Source: DNV simulation results

TABLE 4-3

Summary of simulation results for Scenario 2, reducing the average fleet age

Type	Segment	Long-term historical average number of ships scrapped per annum	Long-term historical average age when scrapped	Total number of ships scrapped in the past 10 years	Average number of ships scrapped per annum in the past 10 years	Average age when scrapped in the past 10 years	Total number of ships to be scrapped in the next 10 years	Average number of ships to be scrapped per annum in the next 10 years	Assumed future minimum age of scrapping in the next 10 years	Average age of the fleet by the end of 2026	Average age of the fleet by the end of 2036	% of ships over 15 years old today	% of ships over 15 years old in 2036	Av. Size (GT)	Accumulated GT to be scrapped in the next 10 years	Average GT to be scrapped per annum in the next 10 years
Oil	VLCC	17	18.4	60	7.5	20.4	419	42	25	12.3	10.3	42%	32%	159 878	66 988 882	6 714 876
	Suezmax	8	21.3	75	8.3	22.4	364	36	24	12.3	10	42%	27%	82 810	30 142 840	2 981 160
	Aframax/LR2	14	21.9	149	14.9	21.6	640	64	25	12.6	10.1	48%	30%	61 451	39 328 640	3 932 864
	Panamax/LR1	13	22.7	47	6.7	22.5	281	28	27	15.4	13.3	68%	45%	41 999	11 801 719	1 175 972
	MR/Handy	54	27.2	385	38.5	26.9	2 859	286	23	13.6	11.4	52%	37%	20 603	58 903 977	5 892 458
	Small 2-10k DWT	34	30.6	434	43.4	33.2	1 511	151	34	20.7	18.3	62%	64%	3 129	4 727 919	472 479
Bulk	Capesize	20	22.6	262	26.2	22.5	1 186	119	23	11.9	10.1	40%	34%	102 594	121 676 484	12 208 686
	Panamax	13	23	209	20.9	22.5	1 846	185	23	12.4	10.5	37%	32%	43 963	81 155 698	8 133 155
	Handymax	27	25	260	26.0	24.5	2 619	262	21	12	9.8	38%	25%	33 238	87 050 322	8 708 356
	Handysize	95	27.7	471	47.1	30.7	2 102	210	23	12.9	10.9	43%	32%	19 576	41 148 752	4 110 960
	Small 2-10k DWT	7	32.4	66	6.6	40.3	198	20	32	19.1	17.1	62%	61%	4 015	794 970	80 300
Container	17k+ TEU	0	0	0	0.0	0.0	8	1	25	7.3	10.5	3%	27%	212 533	1 700 264	212 533
	12-17k TEU	7	0	0	0.0	0.0	66	7	25	6.5	10.4	11%	23%	147 300	9 721 800	1 031 100
	8-12k TEU	1	15	2	1.0	20.0	359	36	24	13	11.4	43%	33%	99 740	35 806 660	3 590 640
	3-8k TEU	24	20.3	237	29.6	18.8	903	90	27	14.8	12.2	64%	29%	53 333	48 159 699	4 799 970
	2-3k TEU	12	24.3	110	11.0	22.0	232	23	32	14.3	12.4	53%	37%	27 902	6 473 264	641 746
	0.1-2k TEU	33	25.2	426	42.6	25.3	1 336	134	28	15	12.9	56%	38%	11 989	16 017 304	1 606 526
Gas	LNG >40k cbm	3	33.3	49	4.9	34.2	248	25	26	9.3	9.8	29%	23%	113 933	28 255 384	2 848 325
	LNG <40k cbm	1	35.7	1	1.0	28.0	1	0	40	12.3	8.9	40%	22%	3 407	3 407	0
	VLGC	4	26.5	13	2.6	29.4	208	21	21	10.4	8.5	28%	17%	48 797	10 149 776	1 024 737
	LPG 15-55k cbm	2	29.6	20	3.3	30.7	115	12	25	12.1	10.1	39%	29%	21 982	2 527 930	263 784
	LPG <15k cbm	13	28.4	151	15.1	32.5	214	21	42	20.8	18.7	63%	60%	3 919	838 666	82 299
GC, Reefer and MPP	ALL	91	24.5	1 370	137.0	29.0	5 141	514	40	22.6	19.8	73%	64%	4 720	24 265 520	2 426 080
RoRo and PCC	RoRo >10 DWT	5	29	15	2.1	31.8	81	8	30	16.9	13.8	58%	50%	26 852	2 175 012	214 816
	RoRo 2-10k DWT	9	29.3	79	7.9	34.4	90	9	50	24.9	22.6	72%	64%	4 825	434 250	43 425
	PCC >6k CEU	2	21.8	14	2.8	22.4	288	29	25	12	9.9	47%	23%	66 330	19 103 040	1 923 570
	PCC <6k CEU	12	25.4	116	11.6	28.2	137	14	35	20	17.8	85%	60%	33 143	4 540 591	464 002
Passenger and Cruise	Pax > 30k GT	1	31.3	9	1.5	33.2	36	4	40	18.3	16.2	64%	46%	41 544	1 495 584	166 176
	Pax < 30k GT	19	34.5	148	14.8	39.2	541	54	40	23.5	21.5	66%	74%	1 843	997 063	99 522
	Cruise >100k GT	1	6	148	14.8	39.2	58	6	22	11.1	9.7	34%	26%	148 057	8 587 306	888 342
	Cruise <100k GT	6	39.4	68	7.6	36.4	79	8	60	26.2	23.9	66%	65%	20 631		
TOTAL	**ALL**			**5 394**			**24 166**								**764 972 723**	**76 497 272,3**

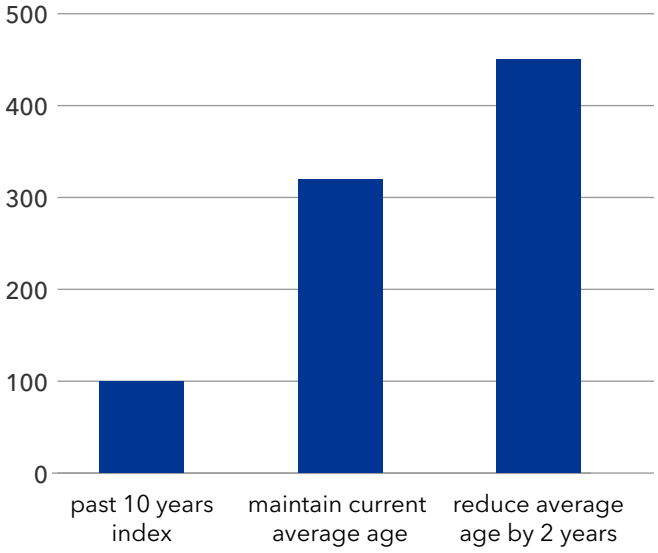
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Source: DNV simulation results

FIGURE 4-5

Simulated recycling relative to recycling activity during the past 10 years

Units: Index (past 10 years = 100)



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Source: DNV simulation results

Maintaining the current average fleet age would require recycling activity approximately 3.2 times higher than the previous decade's level.

4.6 Scenario 2: Reducing the average fleet age

The second scenario (Table 4-3) estimates the recycling activity required to reduce the average fleet age by approximately two years by the end of the simulation period. This scenario represents a more ambitious fleet renewal pathway than simply preventing further ageing.

The scenario indicates that approximately 24,166 vessels would need to be removed from service over the 10-year simulation period. This corresponds to an annualized requirement of approximately 2,417 vessels per year. The result is materially higher than the requirement under the stabilization scenario.

The analysis estimates that approximately 760 million GT of shipping tonnage could reach end of life during the coming decade, corresponding to an average of approximately 76 million GT per year under Scenario 2.

The comparison between the two scenarios is important. It shows that reducing average fleet age requires more than a moderate increase in recycling. A younger fleet profile would require a step change in the number of vessels removed from service, with corresponding implications for available recycling capacity, workforce mobilization, downstream waste management and regulatory oversight.

4.7 Comparison of the two scenario requirements

Figure 4-5 presents the simulated recycling requirements relative to recycling activity during the previous 10 years. Maintaining the current average fleet age would require recycling activity approximately 3.2 times higher than the previous decade's level, while reducing the average fleet age would require activity approximately 4.5 times higher.

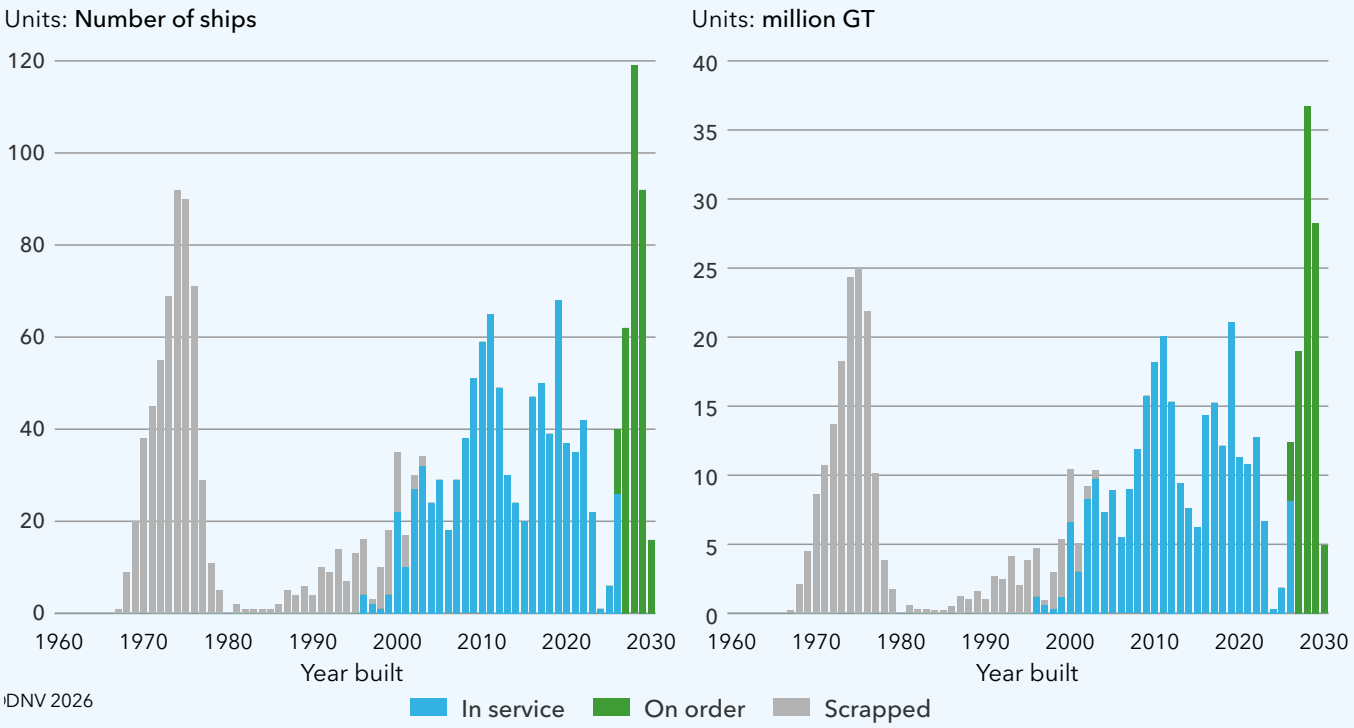
4.8 Age distribution and future recycling pressure

An age distribution analysis provides context for the scenario results. Future recycling pressure will not be uniform across ship types. Some vessel segments have a larger share of older tonnage, while other segments have younger fleet profiles or stronger order books.

The projected recycling demand is concentrated in a relatively small number of vessel segments. General cargo, reefer and multi-purpose vessels represent the largest share of vessels expected to reach end of life in both scenarios, followed by MR/Handy tankers and Handymax and Handysize bulk carriers. These vessel categories are generally characterized by large existing fleets and relatively high average ages, resulting in a disproportionate share of future recycling demand. While larger vessel classes such as very large crude carriers (VLCCs) and Capesize bulk car-

FIGURE 4-6

Age distribution for VLCC vessels presented as number of ships (NoS) and deadweight tonnage (DWT)

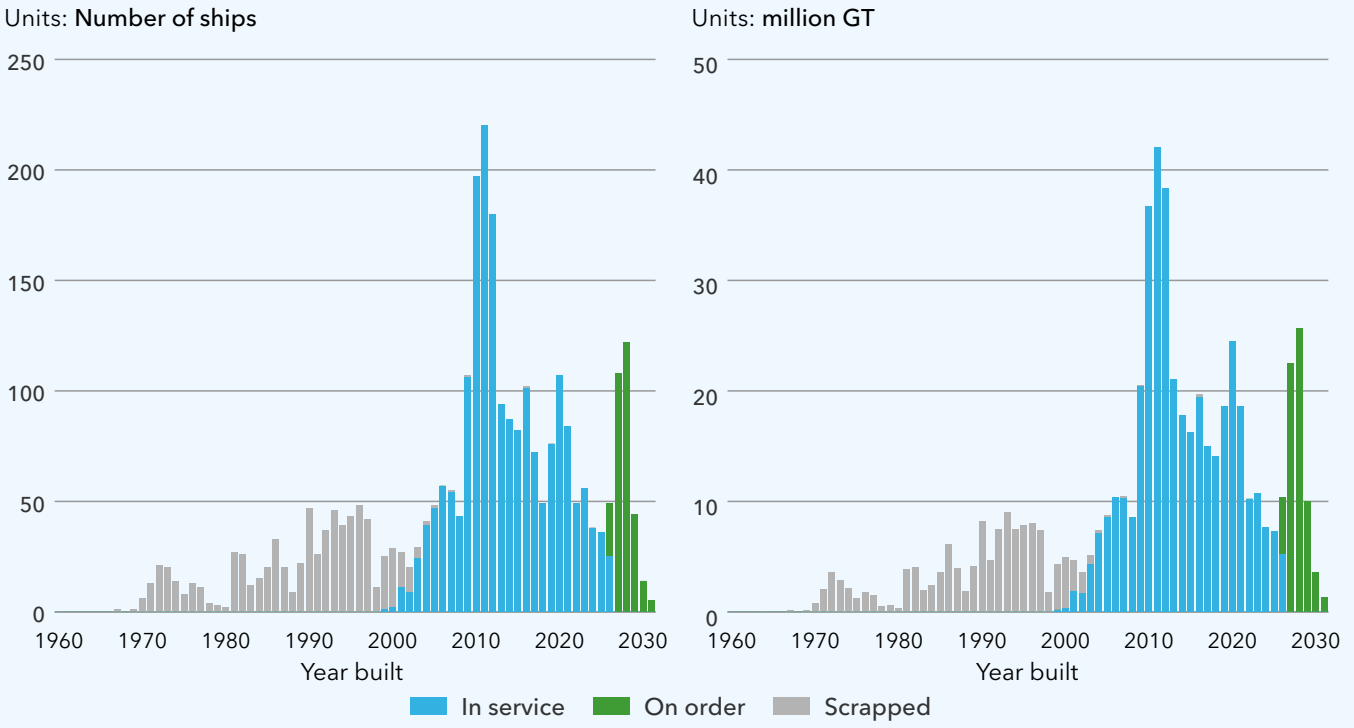


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Source: DNV simulation dataset

FIGURE 4-7

Age distribution for Capesize and VLBC bulk carriers presented as number of ships (NoS) and deadweight tonnage (DWT)

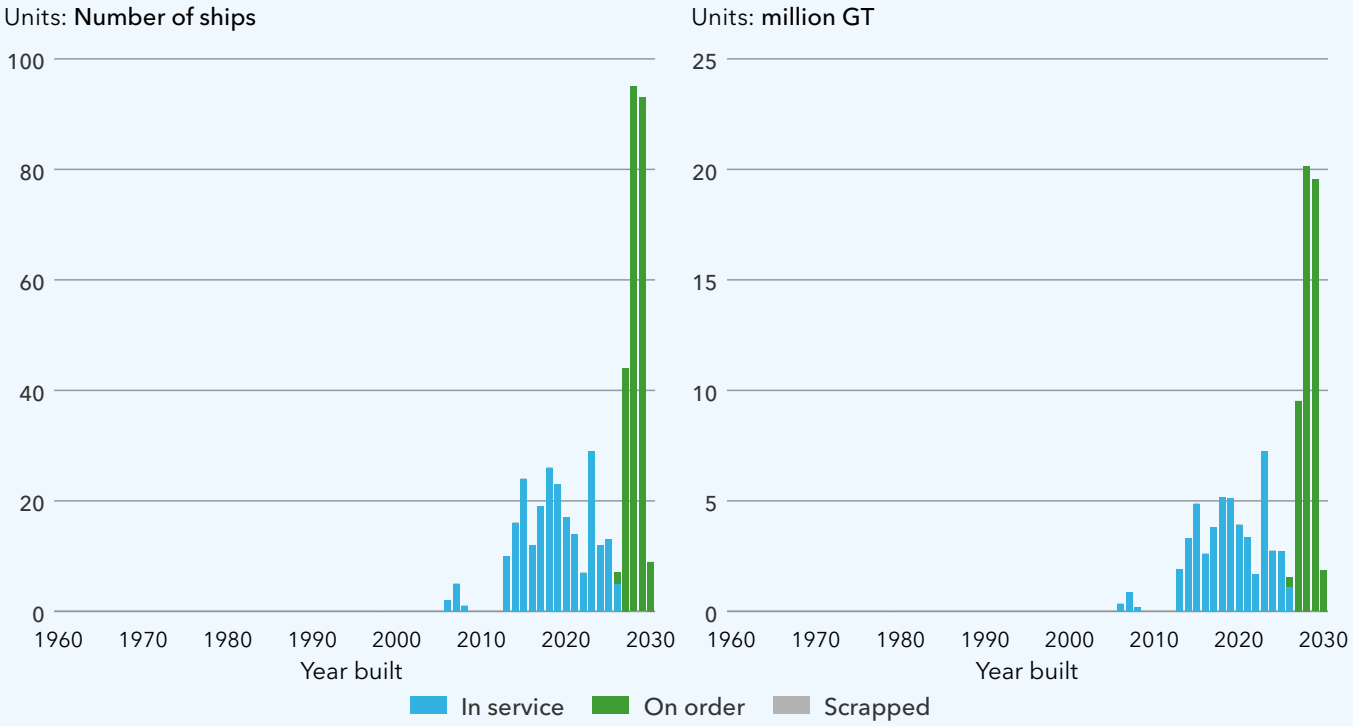


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Source: DNV simulation dataset

FIGURE 4-8

Age distribution for container carriers above 17,000 TEU presented as number of ships (NoS) and deadweight tonnage (DWT)

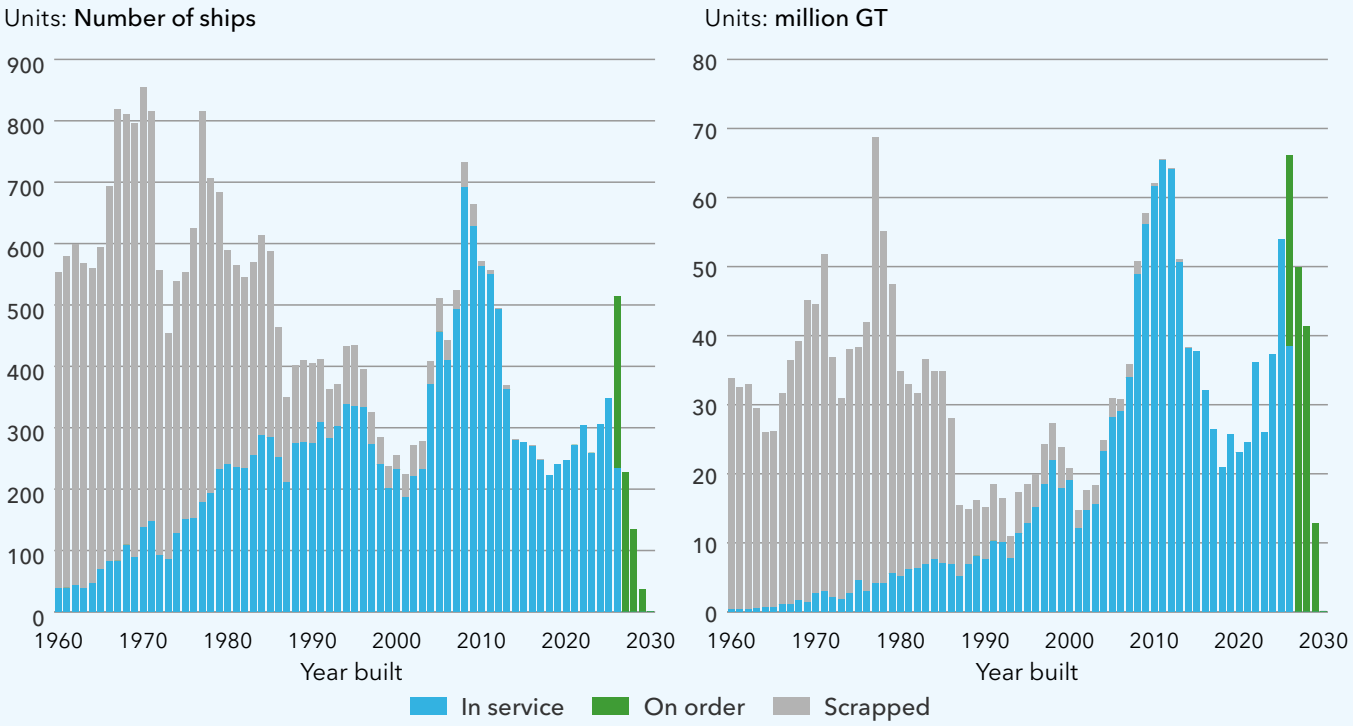


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Source: DNV simulation dataset

FIGURE 4-9

Age distribution for general cargo and multi-purpose vessels presented as number of ships (NoS) and deadweight tonnage (DWT)



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Source: DNV simulation dataset



Maintaining the current average fleet age would require approximately 17,255 vessel removals over the next decade.

riers contribute fewer vessels, they account for a substantial share of the total tonnage requiring recycling because of their significantly larger size.

Figures 4-6 to 4-9 are therefore included as selected examples, not as a complete presentation of all vessel segments.

The selected examples illustrate that future recycling pressure is unlikely to arise uniformly across vessel segments. Differences in age profiles, fleet growth, replacement patterns and market conditions are likely to influence the timing and scale of recycling activity within individual sectors. The modelling results should therefore be interpreted as aggregate fleet renewal scenarios rather than a uniform increase in recycling activity across all vessel categories. Additional vessel-segment figures are provided in the appendix to this report.

Periodic class renewal surveys and special surveys at around 25 to 30 years of age may act as triggers for recycling decisions, as they can require extensive structural inspections, repairs and potential steel renewals. However, this factor was not explicitly incorporated into the simulation. In practice, recycling decisions are influenced by a combination of technical, regulatory and economic considerations. Recent market developments have demonstrated that older vessels can continue trading well beyond traditional retirement ages when freight markets remain favourable and vessel earnings exceed the costs associated with maintaining compliance and class certification. In the current market environment, characterized by geopolitical uncertainty, strong demand in certain segments and capacity constraints, shipowners may therefore choose to retain older vessels in service despite approaching major survey milestones.

A further factor that may influence interpretation of the results is the long-term trend towards larger vessels. In many shipping sectors, newbuildings provide greater transport capacity than the vessels they replace. Fleet renewal does not therefore necessarily require a one-to-one replacement of existing vessels. This effect is not explicitly incorporated into the scenario model and should be considered when interpreting the vessel-number requirements presented in this chapter.

Overall, the scenario modelling indicates that maintaining the current average fleet age would require approximately 17,255 vessel removals over the next decade, while reducing the average fleet age by two years would require approximately 24,166 removals. The projected recycling demand is concentrated in a limited number of vessel segments, particularly general cargo and multi-purpose vessels, MR/Handy tankers, and Handymax and Handysize bulk carriers. Although major class renewal and special surveys may influence recycling decisions for older vessels, recycling remains primarily driven by commercial considerations. As long as vessel earnings justify the costs of maintaining class and regulatory compliance, shipowners may choose to retain older vessels in service despite increasing age.

5 Flag State at the time of recycling and reflagging patterns

This chapter investigates flag histories and vessel ownership and provides an overview of observed flag State-change patterns prior to ship recycling. The results are intended to support transparency and informed discussion of trends at a general level, but do not assess compliance with international or regional regulatory frameworks or draw conclusions regarding intent or causality.

Differences between this dataset and other published figures may arise from variations in filtering criteria (e.g. ship status or ship characteristics), or analysis specifics. Findings should thus be interpreted as indicative and are also subject to data availability and reporting limitations.

5.1 Method

Ship recycling patterns are examined for vessels of 500 GT or more that are broken up between 2000 and 2026, the year of analysis. Data are extracted from the S&P Global Sea-web Ship Register (accessed 10 August 2026), which maintains a complete historical record of vessel attributes including status, flag, ownership and gross tonnage.
The dataset is initially filtered to identify candidate IMO numbers for vessels with death dates between 2000 and 2026 (34,788 unique vessels by distinct IMO number). It is subsequently refined to include only vessels whose most recent registry records show status "BROKEN UP" with a death date within 2000–2026 (28,615 vessels), and is further filtered to include only those with a gross tonnage of 500 or more (23,001 vessels). The full registry history for qualifying vessels is retained in the extract together with death dates, preserving records of flag changes, ownership transfers and other attribute changes where available over each vessel's lifetime. Information on ship facilities where vessels are broken up is also included and is used for subsequent analysis (see Section 6.7). Quality checks are performed to identify and document records with missing critical fields and to standardise flag-country names.

To examine flag histories and vessel ownership prior to recycling, the analysis applies a two-year lookback period. Vessel data are expanded into annual offsets ranging from 0, representing the recycling year, to 2, representing two years before recycling. At each offset, the vessel is matched to the corresponding flag, registered owner and beneficial owner. Where multiple registry entries are available for a given year, tie-breaking logic selects the oldest available record for year −2 to capture the earliest known flag status, while the most recent records are selected for the intermediate and recycling years. Flag changes are directly counted only where information is available for both the initial flag and the flag recorded in the recycling year. Each flag is then classified as either "Ratified" or "Not Ratified" based on its HKC ratification status at the time of analysis in 2026. It should be noted that this may differ from the ratification status at the time the vessel was recycled.

In addition to descriptive statistics, two principal analyses are conducted: a snapshot analysis of recent years using Sankey diagrams and a time-series analysis. The snapshot analysis covers vessels broken up between 2020 and 2025 (3,337 vessels) and uses Sankey diagrams to trace flag transitions and recycling patterns. Three Sankey visualizations are produced: (1) all vessels, showing the three-stage flow from the flag recorded two years before recycling, through the recycling-year flag, to the final recycling country; (2) vessels broken up in countries that have ratified the Hong Kong Convention (HKC), highlighting transitions from ratified to non-ratified flags by the recycling year; and (3) vessels broken up within the EU and EEA, focusing on regional recycling flows. In each Sankey diagram, country-name variants are standardized, while less frequent flags and countries (those not included among the most frequent) are grouped within an "Other" category.

The time-series analysis uses the full historical dataset from 2000 to 2026 and examines the percentage of vessels that change flag during the two-year period before recycling. A further analysis examines the percentage of vessels switching from a ratified to a non-ratified flag during the period following HKC ratification, from 2024 onwards, on a monthly basis. The total number of vessels recycled is also presented on each figure.

5.2 Recent trends 2020–2025

A snapshot analysis of recent flag status trends is first presented in this section, based on data for all vessels above 500 GT recycled during the period 2020–2025 and fulfilling other filtering criteria. Results are given in Figure 5-1, which

illustrates the relationship between vessels' registered flag two years prior to recycling, the flag at the year of recycling, and the country where recycling took place. Only the top 10 countries are shown on each axis, with all other countries grouped into the category 'Other'' for clarity.

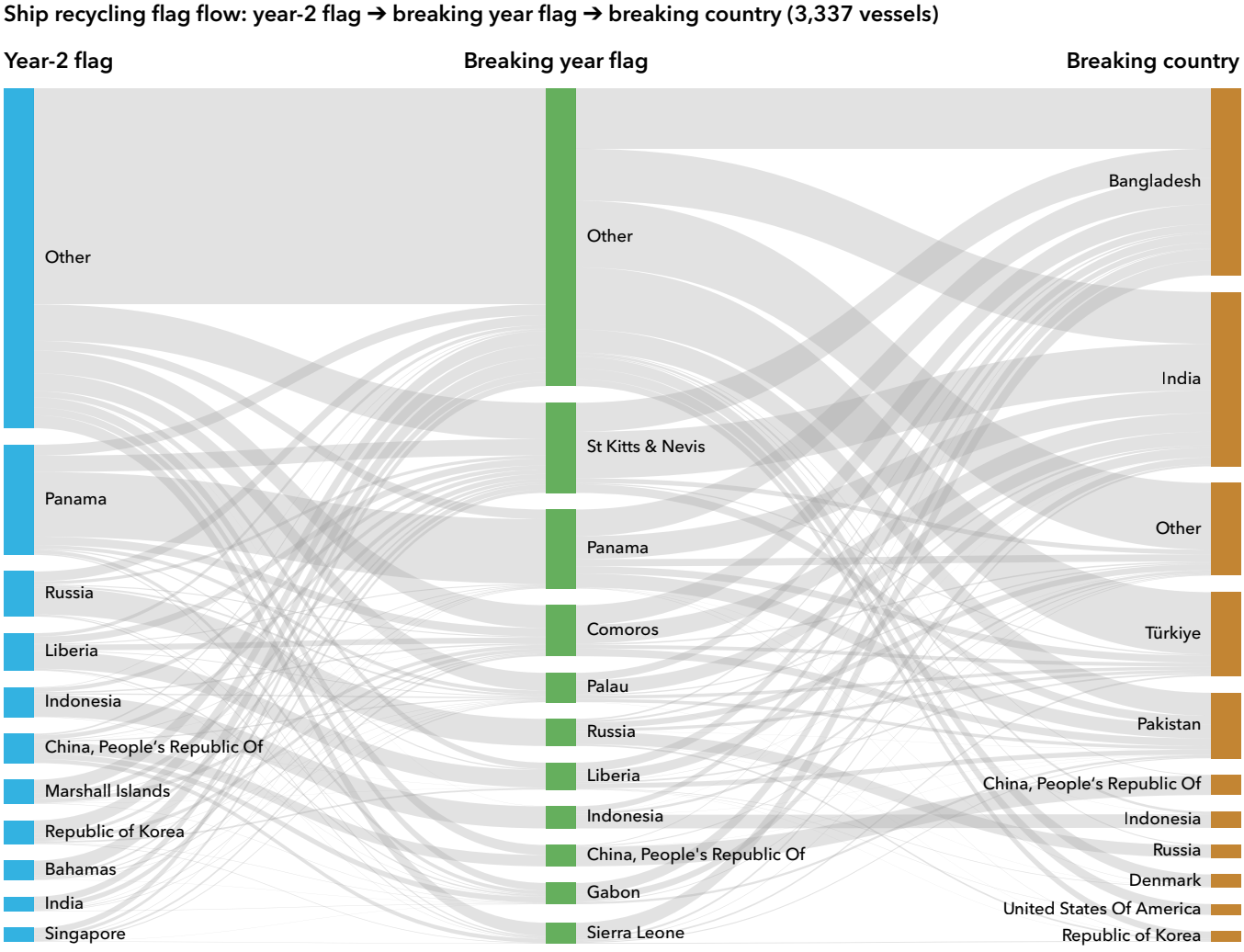
Figure 5-1 shows widespread reflagging before recycling, with many vessels transferring to open registries such as St. Kitts & Nevis, Comoros, and Palau, in the year of dismantling, representing 13.1%, 7.4% and 4.3% of breaking-year flags, respectively. Panama also represented a large share of breaking-year flags (11.5%), but with lower shares of late-stage reflagging. Despite the diversity of flag States, recycling activity is concentrated, with Bangladesh (27.2%), India (25.4%), Türkiye (12.2%), and Pakistan (9.5%) receiving the majority of vessels.

Figure 5-2 plots the same data but with flags grouped according to whether or not the flag State had ratified the HKC, or had an unknown ratification status due to the flag being recorded as 'unknown' in the dataset. Only the top five breaking countries are shown, with the rest grouped into the category 'other'. Note that ratification status is assessed using each country's HKC status as of 2026 and may therefore differ from the ratification status applicable at the time individual vessels were recycled.

Figure 5-2 indicates that most vessels remained under the same ratification status throughout this period, with a large share staying under non-ratifying flags. However, the figure also shows transitions in both directions, with some vessels moving from ratifying to non-ratifying flags and others reflagging to ratifying flags before recycling. To examine these groups in more detail and reveal magnitudes, Table 5-1 provides a comprehensive breakdown of all vessels by ratification transition type during this two year window before breaking year. For each transition group, the table shows what proportion of vessels changed flag, and also the proportion that experienced changes in registered ownership and beneficial ownership during this time period. The table

FIGURE 5-1

Flag State two years before recycling, flag State in the breaking year, and breaking country for ships recycled between 2020 and 2025

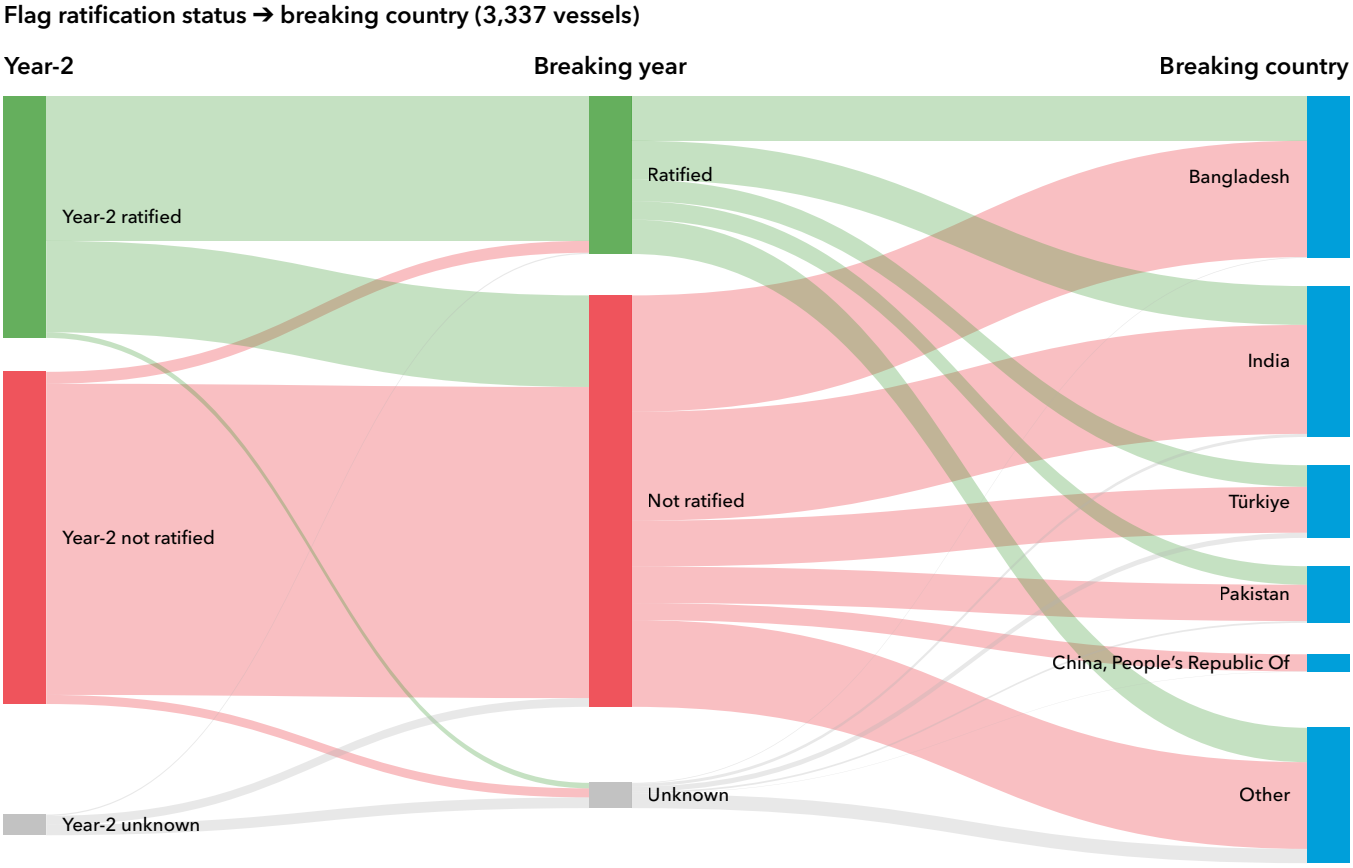


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Source: S&P Global Sea-web Ship Register, DNV analysis

FIGURE 5-2

HKC ratification status for the flag State two years before recycling, the flag State in the breaking year, and the breaking country for ships recycled between 2020 and 2025



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Source: S&P Global Sea-web Ship Register, DNV analysis

TABLE 5-1

Overview of HKC ratification status transitions from two years before recycling to the breaking year for ships recycled between 2020 and 2025, including associated changes in flag State, registered ownership and beneficial ownership

Transition group (ratification status in Year-2 from breaking year, to ratification status in breaking year)	Number of vessels	Percentage of all vessels (%)	Percentage of vessels in group where the flag changed (%)	Percentage of vessels in group where the registered owner changed (%)	Percentage of vessels in group where the group beneficial owner changed (%)
Not ratified ➔ Not ratified	1 747	52.4	46.0	42.3	28.8
Ratified ➔ Ratified	811	24.3	14.5	28.4	17.9
Ratified ➔ Not ratified	514	15.4	100.0	83.1	52.3
Not ratified ➔ Ratified	67	2.0	100.0	77.6	32.8
Unknown ➔ Unknown	60	1.8	71.7	10.0	8.3
Not ratified ➔ Unknown	51	1.5	100.0	21.6	11.8
Unknown ➔ Not ratified	49	1.5	100.0	73.5	30.6
Ratified ➔ Unknown	31	0.9	100.0	45.2	22.6
Unknown ➔ Ratified	7	0.2	100.0	71.4	14.3

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Source: S&P Global Sea-web Ship Register, DNV analysis

also shows the share of the total vessel sample represented by each transition group.

Table 5-1 shows that the largest share of vessels in the sample was flagged to non-ratified countries both two years before recycling and in the breaking year. This group accounted for 52.4% of the sample (n=1,747), with 46.0% of these vessels changing flag internally in this group during the period. The second largest group comprised vessels that remained under ratified flags, representing 24.3% of the sample (n=811), and showed a lower flag change rate of 14.5%. Vessels transitioning from a ratified to a non-ratified flag accounted for 15.4% of the fleet (n=514). This group had, by definition, all vessels changing flag, and also recorded the highest rates of both registered owner change and beneficial owner change across the transition groups, at 83.1% and 52.3%, respectively. The reverse transition, from a non-ratified to a ratified flag, was less common, accounting for 2.0% of vessels (n=67). Transitions involving an unknown ratification status at either point were limited, representing less than 6% of the sample.

A more detailed view of vessels that changed flag from a ratified to an unratified State within two years prior to recycling is shown in Figure 5-3 below, highlighting the most frequently observed flag transitions within this subset of the dataset. Only the top five countries in each category are shown, with the rest grouped into the category 'Other'.

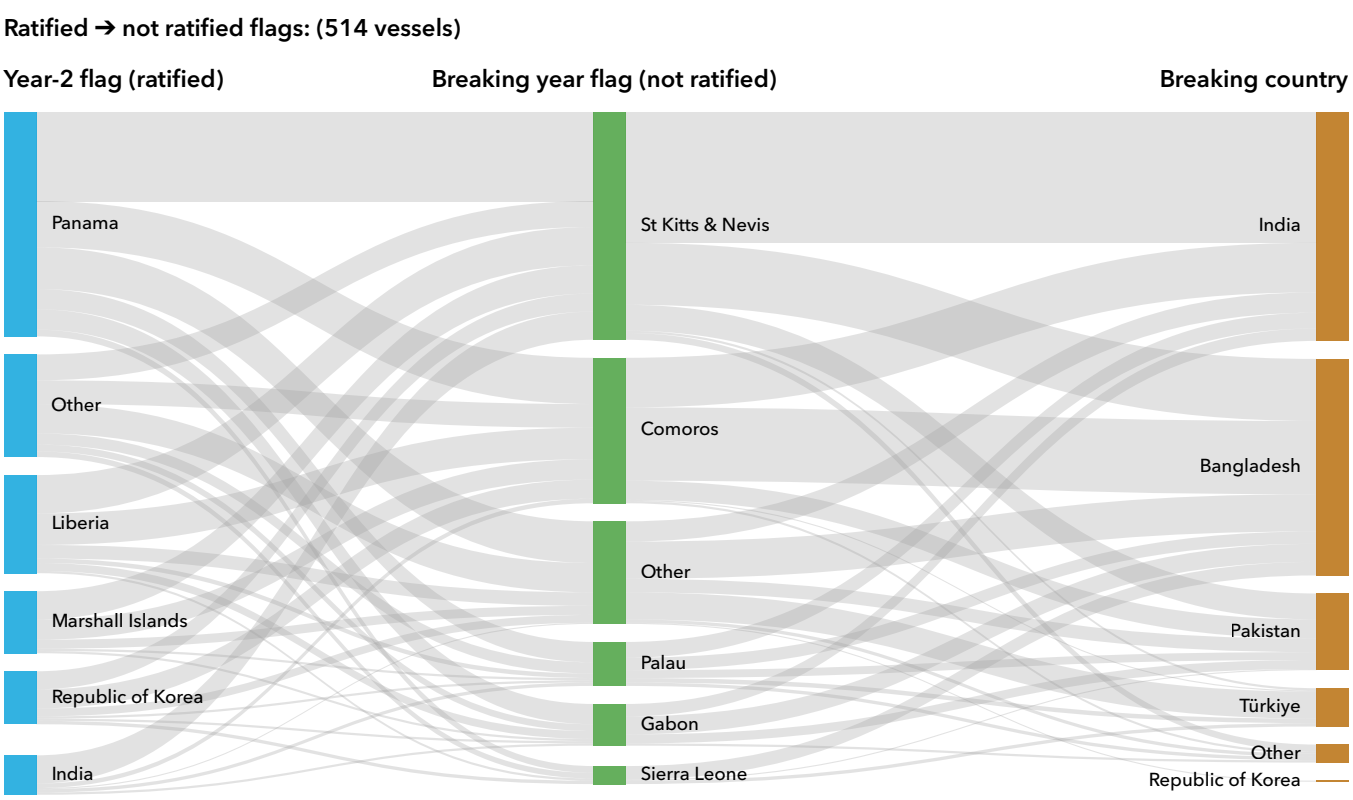
Figure 5-3 shows that a relatively limited number of flag combinations account for a comparatively large share of these cases. One of the more frequently observed transitions in the dataset is from Panama to St Kitts & Nevis (15.4% of all vessels going from Ratified to Not Ratified). The analysis reflects frequency within the analysed dataset and does not imply that such transitions represent standard practice or are associated with specific outcomes.

Further analysis of the vessels in the ratified-to-unratified flag group showed that the three most common vessel types were bulk carriers (11.9%; median 38,364 GT), platforms (9.7%; median 11,380 GT), and containerships (9.1%; median 14,807 GT). In comparison, the three most common vessel types in the full sample were general cargo vessels (14.7%; median 3,264 GT), bulk carriers (11.0%; median 26,341 GT), and oil products tankers (8.9%; median 3,415 GT).

Of the vessels that changed from a non-ratified flag State to a ratified flag State prior to recycling (approximately 2% of the vessels analysed), beneficial ownership information was unavailable for the majority of cases. Among the vessels for

FIGURE 5-3

Flag State two years before recycling, flag State in the breaking year, and breaking country for ships recycled between 2020 and 2025 and belonging to the ratified-to-unratified flag transition group



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Source: S&P Global Sea-web Ship Register, DNV analysis

which beneficial ownership could be identified, the owners were predominantly headquartered in EU, EEA or other OECD countries.

Figure 5-4 shows vessels recycled within the EU and EEA countries between 2020 and 2025, including vessels of all flags. In total, 179 vessels in the dataset were recycled at these facilities during this period.

Figure 5-4 indicates that Denmark accounts for the highest number of recycling cases among European countries in the dataset (35.2%), with vessels mostly originating elsewhere within Europe. The analysis also indicates that a substantial share of vessels recycled in Europe are vessels that remained under the same national flag.

5.3 Time series analysis

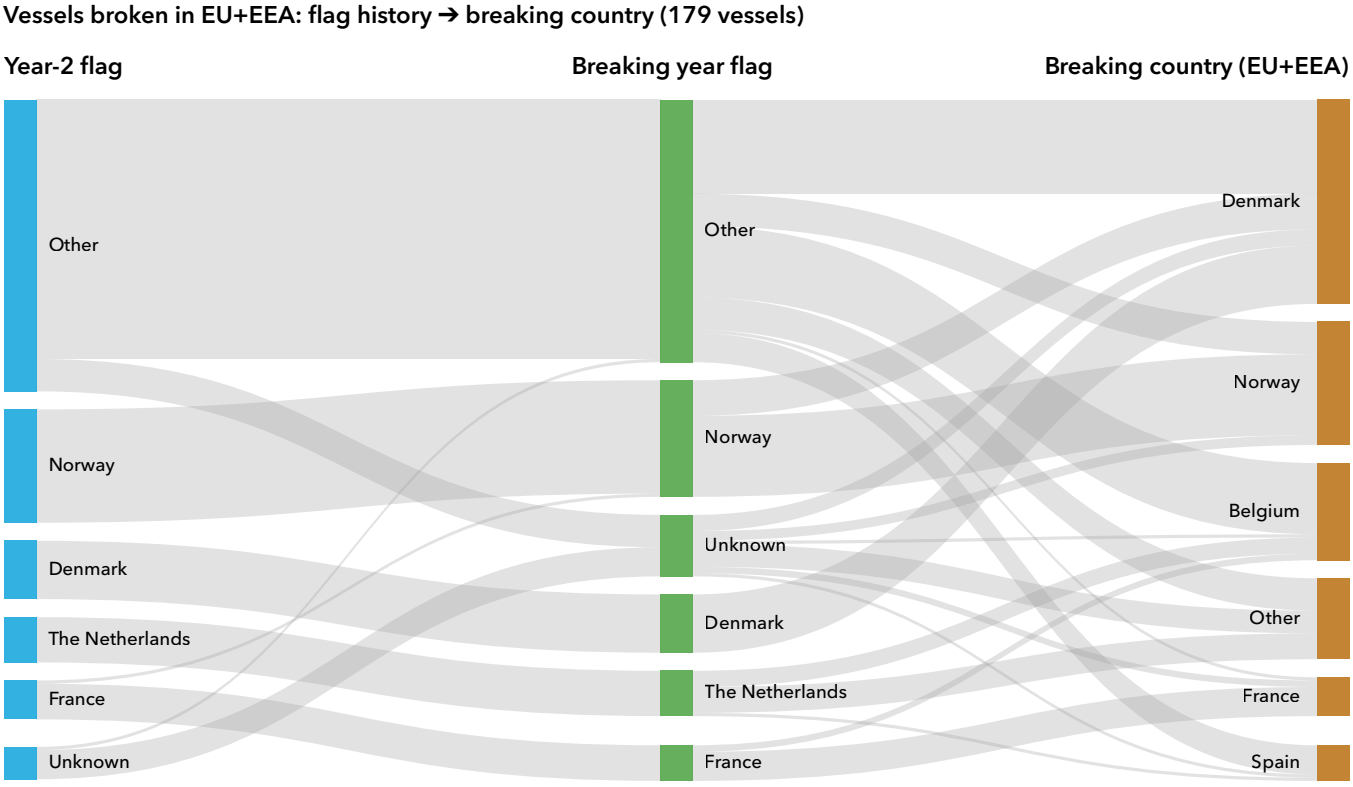
A time series analysis of flag Status trends is presented in this section, first considering annual trends over the period 2000–2025, followed by a more detailed monthly analysis for 2024–2026.

Figure 5-5 shows the proportion of vessels that changed registered flag within the two years prior to recycling between 2000 and 2025. The year 2026 is excluded from the annual analysis, as it was incomplete at the time of writing. All flag changes are included, irrespective of whether the change involves ratified or unratified States. Vessels with missing or unknown flag information in either the starting year or the recycling year were excluded to maintain consistency in the analysis.

The results in Figure 5-5 show year-to-year variation in the share of vessels changing flag in the two years before breaking year, as well as the number of vessels recycled. Between 2000 and 2015, the share of vessels undergoing a flag change remained relatively stable at around 25–35%. However, from 2015 onwards, the proportion has increased, reaching 45–50% from year 2018 onwards. The number of vessels recycled also varies across the period, declining in recent years, which means that the observed percentages are based on different annual sample sizes. The observed increase in reflagging after 2015 may be linked to the adoption of the EU Ship Recycling Regulation in 2013. Ahead of the practical application of key requirements, shipowners and cash buyers may increasingly have sought to avoid the obligation for EU-flagged ships to be recycled only in facilities included on the European List. The Commission evaluation indicates that the main driver for reflagging is the higher price offered by non-listed recycling facilities, particularly in South Asia.[1]

FIGURE 5-4

Flag State two years before recycling, flag State in the breaking year, and breaking country for ships recycled between 2020 and 2025 and broken up in EU and EEA countries



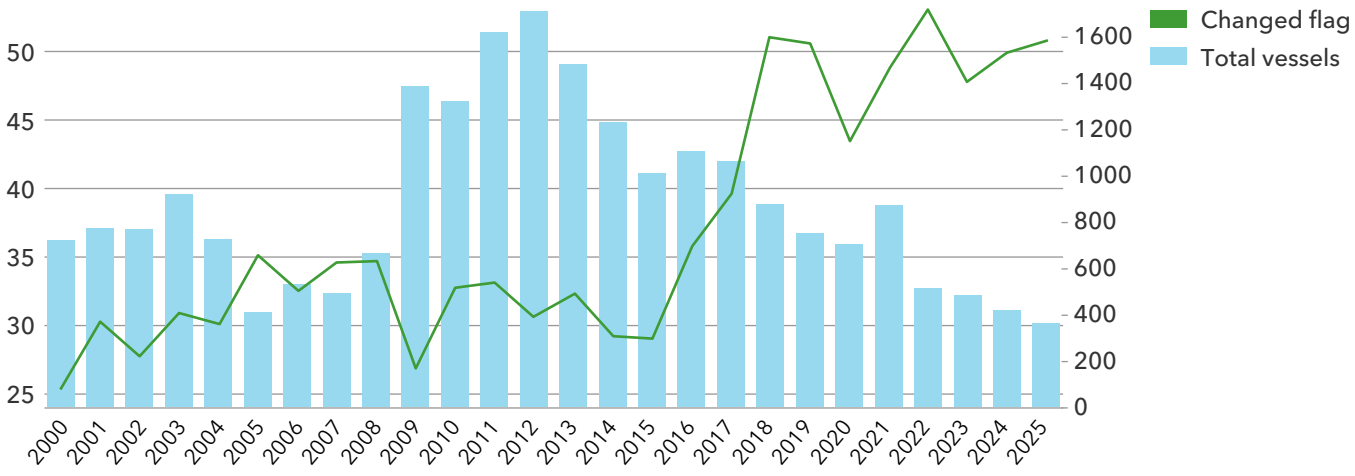
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Source: S&P Global Sea-web Ship Register, DNV analysis

FIGURE 5-5

Percentage of vessels changing flag between 2000 and 2020 (left axis, green) along with the number of vessels annually broken up in the sample (right axis, blue)

Units: Changed flag (in %, last two years, left axis), number of vessels (right axis)



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Source: S&P Global Sea-web Ship Register, DNV analysis

Further time series analysis was performed on a monthly level to investigate the percentage of vessels transitioning from a flag State with ratified to an unratified HKC status, in the two years before breaking, between 2024 and July 2026. Results are shown in Figure 5-6. The HKC entered into force on 26 June 2025, which falls within the period covered by the time series.

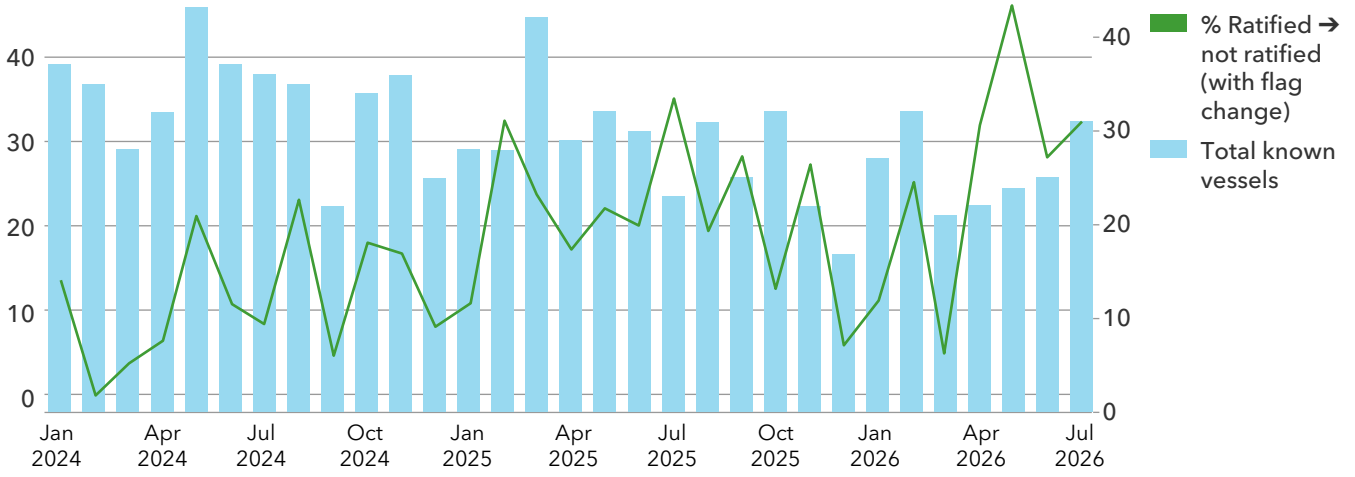
Figure 5-6 shows substantial month-to-month variation in the share of vessels transitioning from ratified to non-ratified flag States prior to recycling. Given the relatively low number of vessels recycled in some months, individual vessel movements can have a noticeable influence on the results.

The analysis indicates that reflagging prior to recycling remains common. Vessels are frequently transferred to open registries or to flags of non-Parties within the two years preceding recycling, often following sale to cash buyers shortly before dismantling. The observed patterns are consistent with commercial and regulatory considerations continuing to influence end-of-life vessel decisions.

FIGURE 5-6

Monthly percentage of vessels broken up in each month that had transitioned from a flag State with ratified HKC status to one with unratified HKC status within the two years preceding their breaking date (left axis, green), together with the monthly number of vessels broken up with known flag status (right axis, blue), from January 2024 to July 2026

Units: Broken up (in %, last two years, left axis), number of vessels (right axis)



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Source: S&P Global Sea-web Ship Register, DNV analysis

6 Ship recycling facilities

How does ship recycling map across the world, and for what types of work? Analysis in this chapter shows global ship recycling activity heavily concentrated, primarily in South Asia. Bangladesh, India, and Pakistan account for most of the global dismantling capacity, supported by established infrastructure, availability of labour, and strong domestic demand for scrap steel. In parallel, Türkiye represents an additional and distinct segment of the global ship recycling market.

While operating under a different regulatory and operational context compared to South Asian destinations, Türkiye remains an important regional recycling hub, particularly for certain trading patterns. Recycling destinations differ in terms of regulatory frameworks, implementation approaches, and operational practices at facility level.

The following sections provide a more detailed overview of ship recycling developments in Bangladesh, India, Pakistan, and Türkiye, including capacity, regulatory progress, and current challenges related to compliance and standardization.

Note that for this report, the term 'plot' is used to describe an area designated for ship recycling within an industrial area developed for such activities, such as Alang in India, or Chattogram in Bangladesh. A ship recycling facility may comprise one or more plots.

6.1 Method

The assessment of ship recycling facilities is based on a combination of information published by the IMO, information provided by competent authorities and industry representatives in ship recycling States, publicly available information, and DNV's experience from ship recycling facility assessments and related projects. The objective is to establish an overview of global ship recycling capacity and the status of facilities operating under recognized regulatory frameworks.

Information on facilities holding a valid Document of Authorization to conduct Ship Recycling (DASR) is obtained primarily from the official lists submitted to the IMO by Parties to the HKC. This data was supplemented through direct correspondence with national authorities in the principal ship recycling countries. Where updated information was provided directly by a country or competent authority, this information was used.

For facilities included on the European List of ship recycling facilities, information is obtained from the most recent version of the list published by the European Commission. Additional publicly available sources are reviewed where relevant to provide context regarding facility development, regulatory status and operational condition

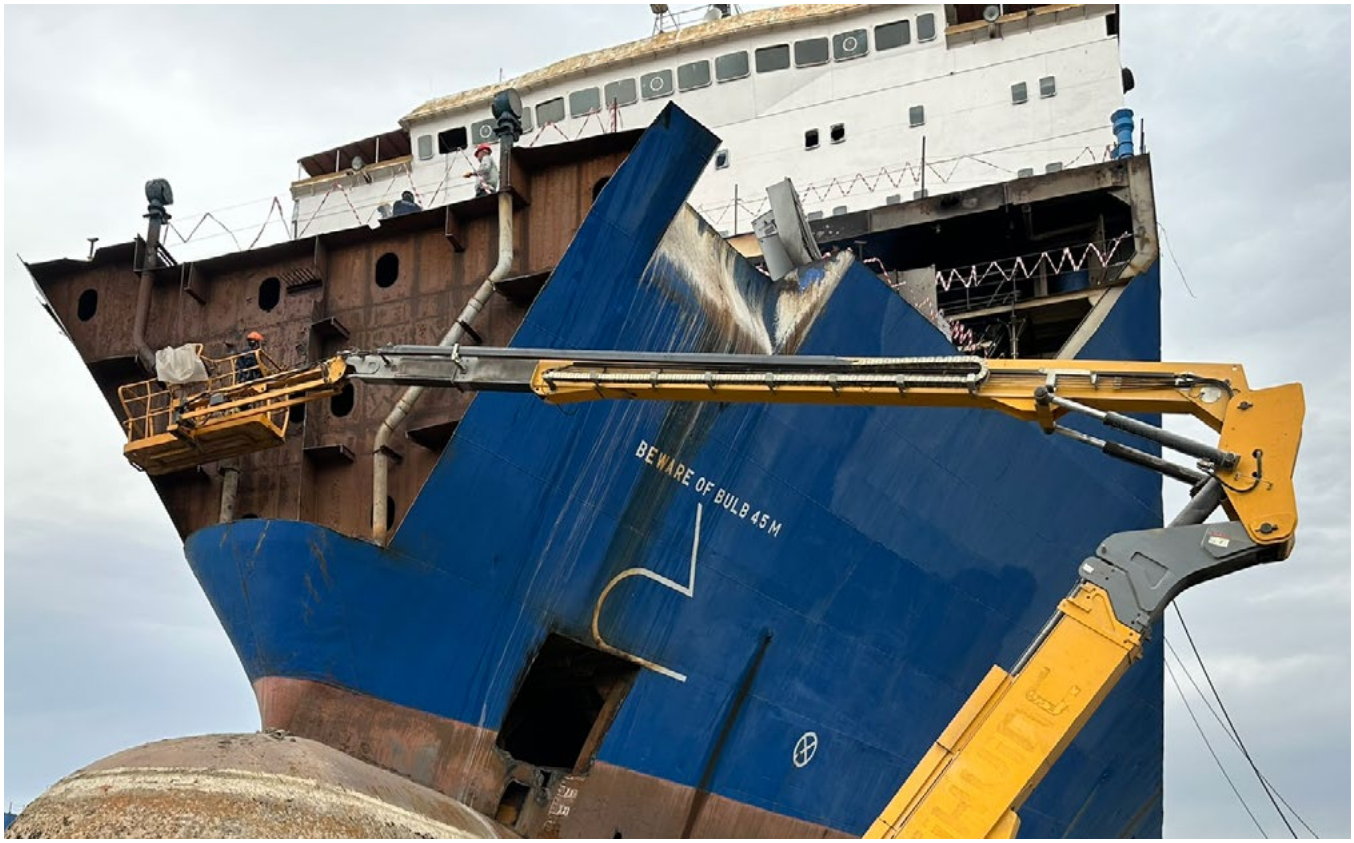
Available capacity is assessed using both facility numbers and capacity expressed in Light Displacement Tonnage (LDT). Where official capacity information is available through IMO submissions, regulatory documentation or direct correspondence with competent authorities, these values are used directly. Some countries provide supplementary information on operational capacity that is not included in the documentation submitted to the IMO, and this information is incorporated into the assessment. Where capacity information is unavailable and no response is received following requests for information, capacity is estimated using information from comparable facilities operating under similar conditions. Such estimates should therefore be regarded as indicative only. The analysis is limited to facilities holding a valid DASR under the HKC and facilities included on the European List

Statements of Compliance (SoCs) were not used as inclusion criteria for the capacity assessment. This approach was adopted because a DASR represents formal authorization by a competent authority, whereas private certification schemes may differ in scope, method and level of assurance.

The assessment should be regarded as a snapshot based on information available at the time of writing. Ship recycling capacity is dynamic and may change as facilities obtain or lose authorizations, suspend operations, expand capacity, or apply for inclusion on the European List. Consequently, facility numbers and capacity estimates may differ from those reported in future updates.

6.2 Regulatory authorization of ship recycling facilities

This section describes the principal mechanisms used to authorize and assess ship recycling facilities under the HKC, the EU SRR, and national legal frameworks. Particular atten-



tion is given to the Document of Authorization to conduct Ship Recycling (DASR), as this represents the formal regulatory authorization mechanism established under the HKC.

Regulatory approval frameworks differ across jurisdictions in terms of legal basis, assessment processes, transparency requirements and regulatory oversight. These differences influence both the level of assurance associated with facility approval and the extent to which authorization decisions are subject to ongoing review, inspection and enforcement. Authorization should also not automatically be interpreted as evidence of operational performance or continued compliance. While authorization constitutes an important regulatory milestone, actual facility performance depends on implementation, oversight and the effectiveness of day-to-day operations.

Under the HKC, ship recycling facilities must be authorized by the competent authority of the recycling State before conducting such activities. The DASR therefore constitutes the central authorization mechanism established by the HKC and provides the legal basis for a facility to undertake ship recycling operations. The authorization process includes an assessment of the facility's infrastructure, operational procedures, management systems and Ship Recycling Facility Plan. The DASR may include specific conditions and limitations relating to vessel types, recycling methods, hazardous materials management and waste handling. Continued compliance is subject to oversight by the competent authority through inspections, audits and other regulatory activities.

A clear distinction should be made between a DASR and a Statement of Compliance (SoC). A DASR is a formal regulatory authorization issued by a competent authority under national legislation implementing the HKC. By contrast, a SoC is typically issued by a Recognized Organization (RO), such as a classification society or another organization recognized by a competent authority to perform technical assessments, following an evaluation against criteria intended to align with the HKC. While SoCs have played an important role in supporting facilities seeking to improve operations and prepare for implementation of the HKC, they do not constitute regulatory authorization and should not be considered equivalent to a DASR.

The scope, methodology and level of assurance associated with SoCs may vary between RO and certification schemes. Section 3 of the Guidelines for the Authorization of Ship Recycling Facilities (resolution MEPC.211(63)) refers in general terms to guidance to be developed by theIMO regarding the qualifications and expertise of organizations recognized by a competent authority. At present, however, there is no dedicated IMO instrument establishing detailed and specific criteria for such RO in the context of authorizing ship recycling facilities. Assessment approaches may therefore differ with respect to document review, site inspections, surveillance activities and the treatment of downstream waste-management arrangements. Consequently, care should be exercised when comparing facilities based solely on SoCs.

The EU SRR applies a different approval mechanism. Facilities authorized to recycle EU-flagged vessels must be included



on the European List of ship recycling facilities. Inclusion on the European List therefore functions both as regulatory approval and as a prerequisite for access to the EU market. Facilities located outside the EU are required to undergo a dedicated application and assessment process, including the submission of extensive technical documentation and independent verification. Continued inclusion is subject to periodic reassessment, and facilities may be removed from the list if the European Commission determines that the applicable requirements are no longer fulfilled.

The level of transparency associated with facility approval also differs between regulatory frameworks. Several EU Member States and EEA States maintain systems through which permits, inspection reports, emissions data and other regulatory information are publicly available. Facilities located outside the EU are also subject to periodic reassessment in connection with continued inclusion on the European List, and inspection reports are published by the European Commission. By contrast, the availability of comparable information for facilities operating solely under national authorization frameworks varies considerably between jurisdictions.

In practice, ship recycling facilities may hold multiple forms of approval or recognition, including DASRs, SoCs and inclusion on the European List. These mechanisms, however, serve different functions and should not be considered equivalent. For the purposes of this report, ship recycling capacity has therefore been assessed using facilities holding a valid DASR and facilities included on the European List. SoCs have not been used as inclusion criteria, because they do not constitute regulatory authorization to conduct ship recycling. The use of DASRs and the European List provides the most consistent basis for assessing capacity operating under recognized regulatory frameworks.

6.3 Ship recycling in Pakistan

The Gadani area comprises around 135 ship recycling plots distributed along a 10 km coastal stretch. Of these, around 25 are currently active in the sense that they are processing vessels. However, other sources indicate a continued decline in operational activity, with significantly fewer facilities engaged in dismantling in recent years. The area is characterized by sandy soils, a tidal range of just over two metres, and low rainfall. According to industry stakeholders, these conditions facilitate beaching operations, as vessels land on dry ground while the aft section remains largely afloat.

A federal project[2] valued at PKR 12 billion (Pakistan Rupees) has been approved to modernize the Gadani shipbreaking facilities with hazardous-waste treatment, a one-window facilitation centre, rescue and fire services, a hospital, clean-water infrastructure, and upgraded roads, as part of efforts to make ship recycling safer and more environmentally sustainable. The project will be managed by the Balochistan Development Authority (BDA).[3]

Since 2023, the joint IMO-International Labour Organization project Safe and Environmentally Sound Ship Recycling and Decent Work (SENSREC-DW) has enhanced Pakistan's capacity to drive a just transition in its ship recycling industry. By supporting the implementation of robust, HKC-compliant measures, the project aims to elevate health, occupational safety, and environmental standards at recycling facilities. The project promotes decent working conditions, including labour and social protection.

At the time of finalizing this report, five facilities hold a valid DASR. According to correspondence with the Pakistan Ship Breakers & Recyclers Association, additional facilities are expected to obtain a DASR within the coming months. For the purposes of this assessment, the authorized recycling capacity associated with the currently authorized facilities has been estimated at approximately 780,000 LDT per year. The Association has indicated that authorized capacity could increase to approximately 3 million LDT per year if additional facilities obtain authorization. No facilities have applied for inclusion on the European List.

6.4 Ship recycling in India

Approximately 153 plots[4] have been developed along the 10 km coastline at Alang for ship recycling activities. Of these, around 131 are generally described as formally allocated for ship recycling operations. However, significantly fewer plots are currently operational, reflecting the low level of recycling activity.

Since acceding to the HKC in November 2019, India's ship recycling industry has undergone a notable transformation. The country has transposed the requirements of the HKC into domestic law through the Recycling of Ships Act (2019), its implementing rules, and the Recycling of Ships Regulations (2026). The 2026 Regulations provide detailed operational, safety, environmental, certification, and monitoring requirements for ship recycling facilities and ships destined for recycling, thereby strengthening India's HKC-compliant regulatory framework.[5]

At the time of finalizing this report, 31 facilities hold a valid DASR[6], while the total number of facilities is significantly higher. More than 30 facilities have applied to the EU list, and two Indian facilities have been listed in the draft European List of ship recycling facilities (16th edition). This represents a significant development following India's accession to the HKC, while also illustrating that a substantial proportion of the industry has yet to obtain authorization.

6.5 Ship recycling in Bangladesh

Ship recycling in Bangladesh is concentrated in the Sitakunda area north of Chattogram, along a coastal strip of roughly 15–18 km. Estimates of the number of ship-recycling facilities vary by source and by counting method, but figures around 150–186 are commonly cited. The Ministry of Industries reports 186 facilities.[7]

The IMO has supported ship recycling in Bangladesh through the Safe and Environmentally Sound Recycling of Ships (SENSREC) programme. Implemented jointly by the IMO and the Government of Bangladesh with Norwegian funding, SENSREC has been carried out through multiple phases since 2015. The programme has supported economic and environmental assessments, occupational-safety training, hazardous-waste management planning, legislative reform, institutional capacity building, and the upgrading of ship-recycling facilities to align with the requirements of the HKC. It played a significant role in Bangladesh's preparation for accession to the Convention and in the subsequent development of a national HKC-compliance framework.[8]

Bangladesh ratified the HKC in 2023 and has incorporated several of its requirements into its ship recycling legal framework, notably through the Ship Recycling Act 2018 and subsequent regulatory measures. However, assessments differ regarding the extent to which these provisions have been effectively implemented and enforced in practice. At the time of finalizing this report, 17 facilities hold a valid DASR.[6] This represents a significant development following Bangladesh's accession to the HKC, while also illustrating that a substantial proportion of the industry has yet to obtain authorization. No facilities have applied to the EU list.

6.6 Ship recycling in Türkiye

Ship recycling activities in Türkiye are concentrated in the Aliağa region on the Aegean coast, which constitutes the country's principal ship recycling cluster. A total of 22 ship recycling facilities operate in this area, although not all are currently operational. The recycling method involves landing the vessel and progressively winching it further onto a concrete slipway as sections are removed. Due to the deep-water conditions and limited tidal range, the aft part of the vessel typically remains afloat while dismantling proceeds from the bow towards the stern.

Türkiye adopted new national ship recycling rules on 22 June 2026, replacing the 2004 Ship Breaking Regulation with a new authorization regime aligned with the HKC and relevant EU ship recycling requirements.

Türkiye implements the requirements of the HKC primarily through sector-specific regulatory instruments and administrative controls. At the time of finalizing this report, 19 facilities in Türkiye hold a DASR, according to the latest IMO list, however they all expired on 17 July 2026.6 The timeline for renewal is not known.

Several facilities have been included on the European List, while others have subsequently been removed following periodic reassessments. The removals indicate that challenges remain in maintaining compliance with all applicable requirements over time, despite the relatively mature status of the Turkish ship recycling sector.

6.7 Other ship recycling facilities

In addition to the primary recycling States – Bangladesh, India, Pakistan, and Türkiye – which collectively account for the majority of global ship recycling capacity, several other States maintain or are developing ship recycling activities. These locations currently represent a limited share of global capacity but may be relevant in the context of regulatory developments, regional diversification, and future capacity expansion. This section provides a brief overview of developments in key regions and countries.

6.7.1 Europe

Ship recycling activities within Europe are carried out in a limited number of facilities operating under established environmental, health and safety regulatory frameworks at both national and EU level. These facilities are included on the European List of ship recycling facilities

maintained by the European Commission, which currently includes 26 facilities in the EU, Norway and the United Kingdom.

The technical capabilities of European facilities vary significantly from alongside recycling (while the ship is afloat) to dry-docks. Maximum vessel sizes range from approximately 150–200 metres at smaller facilities to as much as 400–500 metres at a limited number of large dry-dock or offshore-capable sites. In practice, only a limited number of facilities can accommodate large ocean-going vessels, while the majority are designed for smaller ship segments or specialized tonnage. Despite the high level of regulatory oversight and compliance, available capacity in Europe therefore remains limited when assessed against projected global demand for ship recycling.

6.7.2 United States (US)

Ship recycling activities in the US are carried out in a small number of specialized facilities operating under environmental, health and safety regulations at both federal and state level. This recycling capacity is concentrated in a few industrial locations, mainly along the Gulf Coast. The Port of Brownsville in Texas is the main ship recycling hub, with three major facilities and a large share of domestic recycling activity.

Unlike major recycling regions in South Asia, US facilities operate in controlled industrial settings using dockside dismantling methods, supported by established infrastructure and regulatory oversight. As of August 2026, one US ship recycling facility is included on the European List. Ship recycling capacity in the US remains limited compared to expected global demand.

6.7.3 Middle East

Certain States in the Middle East[9], such as Bahrain[10], are in the process of developing or upgrading ship recycling facilities with the explicit objective of meeting the requirements for inclusion in the European List. Available information indicates that these facilities have established technical capabilities and operate within a regulatory framework that, in certain areas, exceeds the requirements of the EU Ship Recycling Regulation. However, ship recycling activity at these facilities remains relatively limited and their contribution to global ship recycling volumes is currently modest. As a result, there remains limited operational experience and publicly available evidence regarding throughput at scale. Notwithstanding this, such initiatives may be indicative of a broader trend towards the establishment of additional compliant recycling capacity outside the traditionally dominant recycling regions.

6.7.4 Southeast Asia

Ship recycling activities are observed in parts of Southeast Asia, including Indonesia, as well as in other States where dismantling capacity is being developed or expanded. The characteristics of these locations vary, and a more differentiated assessment is therefore warranted. In Indonesia, one facility is aiming to align its operations with internationally recognized standards, including requirements associated with the European List of ship recycling facilities[11].

Malaysia[12] has an active offshore decommissioning sector, supported by companies providing engineering, removal, disposal and recycling services for ageing offshore assets. At the same time, onshore infrastructure dedicated specifically to the dismantling and recycling of large offshore structures has historically been less developed than in some established international decommissioning hubs. Recent developments, however, indicate a gradual expansion of capacity, including projects aimed at establishing dedicated facilities capable of handling both ship recycling and the dismantling of offshore installations, with provisions for processing large structural components and associated waste streams. Available information therefore suggests that, while capability is emerging, the role of Malaysia as a destination for large-scale recycling of offshore structures remains under development.

6.7.5 Brazil

Brazil is positioning itself to develop a regulated domestic ship recycling industry through legislative initiatives that draw on both the HKC and the EU SRR.[13] While the sector remains at an early stage of development, the proposed framework signals an intention to establish recycling capacity consistent with internationally recognized environmental and safety standards.

6.7.6 China

Ship recycling activities in China are carried out in industrial facilities operating under domestic regulatory frameworks. Unlike the beaching methods used in several major recycling States, Chinese facilities have traditionally operated from purpose-built industrial sites with quayside or alongside dismantling arrangements. Many of these facilities have infrastructure and management systems that are considered broadly aligned with the technical requirements of the HKC.

China retains significant ship recycling capacity. However, this capacity is largely unavailable to the international market due to a policy introduced in 2019 restricting the import of foreign-flagged vessels for recycling as part of broader measures targeting waste imports. As a result, Chinese recycling facilities primarily serve the domestic market.

7 Transparency in ship recycling

Ship recycling is neither an 'open book' nor a 'level playing field' when it comes to accessing data for comparing locations. Data availability, quality and transparency are key challenges in assessing the sector globally. This chapter analyses data that can be sourced, and discusses its limitations for evidence-based studies and decision-making.

A key takeaway is that while some jurisdictions provide public information on facility authorizations, environmental permits, inspection programmes and compliance activities, such information is not consistently available across major recycling countries. This limits independent verification of facility performance and reduces comparability between jurisdictions.

7.1 Method

Transparency was investigated in this section using the availability of ship recycling yards as a proxy. The analysis draws on the same dataset of confirmed recycled vessels described in Section 5.1, comprising vessels of 500 GT or above with a confirmed "Broken Up" status in the S&P Global Sea-web Ship Register, accessed 10 August 2026. For this investigation, the dataset was filtered to a five-year window from July 2021 to June 2026 (2,324 vessels) and disaggregated by calendar month and country of breaking. The recycling yard name field was classified as unknown if it was null (no data entry), an empty string, or contained the substring "Unknown"; the latter capturing 152 distinct placeholder variants used by the data provider (e.g. "Unknown Shipbreaker", "Unknown Shipbreakers, India", "Unknown Shipbrkrs, Bangladesh", etc.). Vessels were grouped by breaking country into Bangladesh, India, Pakistan, Türkiye, and Other (including all remaining countries). For each month and country group, the percentage of vessels with an unidentified yard was calculated as the count of unknown-yard vessels divided by the total vessel count.

7.2 Publicly available information

Publicly available information can be obtained from sources such as the European List of ship recycling facilities, national environmental permitting authorities, environmental impact assessments, monitoring reports, and the IMO list of authorized ship recycling facilities. However, the level of detail varies substantially between jurisdictions and facilities. A further limitation is that comprehensive facility-level



recycling statistics are not yet routinely published through the mechanisms established under the HKC. As a result, independent assessment of facility utilization, compliance performance, and recycling trends remains challenging in many regions.

The entry into force of the HKC also creates opportunities for improved transparency through the reporting mechanisms established under Article 12. These provisions require Parties to submit information on authorized ship recycling facilities and annual information on ships recycled under their jurisdiction. Reporting formats have been developed by the IMO; however, the availability of publicly accessible data remains limited at present. As implementation progresses, publication of consistent and comprehensive Article 12 information could improve transparency, facilitate independent analysis, and support more robust assessments of global ship recycling activity.

7.3 Identifying where a ship is recycled

A further challenge relates to the identification of the specific ship recycling facility where a vessel is recycled. Several maritime databases record the recycling country but do not consistently identify the final recycling facility. As a result, a proportion of vessels are recorded as having been delivered to an "unknown recycler" despite the recycling country being known. This limits the ability to assess facility-level activity, compare utilization across facilities, and analyse recycling trends at yard level. It also makes it difficult to determine whether vessels are being recycled at facilities authorized by the competent authority under the HKC, or at facilities operating outside recognized authorization frameworks.

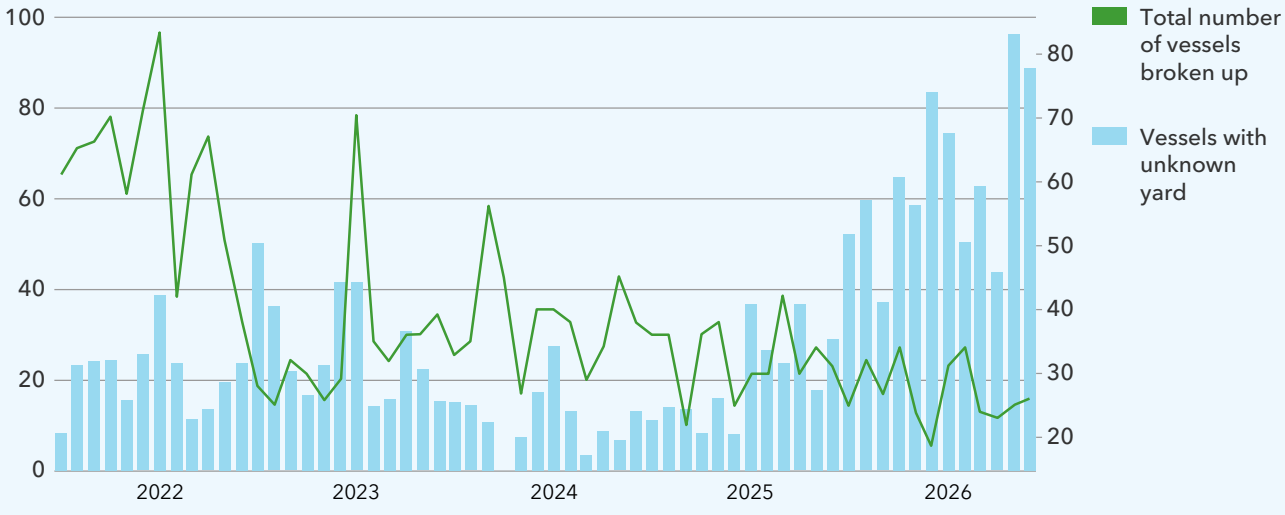
Figure 7-1 shows the monthly percentage of vessels with an unidentified recycling yard (bars, left axis) alongside the total number of vessels broken up each month (dark green line, right axis) from July 2021 to June 2026. Monthly recycling volumes declined over the period, from around 60–80 vessels per month in late 2021 to approximately 25–35 per month by 2025–2026. The proportion of vessels with unknown yard attribution remained variable but generally below 30%, before increasing markedly during 2025 and 2026, coinciding with the period surrounding the entry into force of the HKC. In several months of 2026, more than 80% of vessels in the dataset were recorded with an unidentified recycling facility. While the reasons for this increase cannot be determined from the available data, it may reflect a combination of reporting practices, reporting lag, and changes associated with the implementation of the HKC. It should also be noted that the elevated proportions observed in the most recent months may be reduced retrospectively as registry data is updated.

Figure 7-2 presents the monthly percentage of vessels for which the specific recycling facility could not be identified, disaggregated by recycling country. The analysis reveals significant differences in transparency between recycling States. India demonstrates a consistently high level of transparency, with a low proportion of vessels recorded with an unidentified recycling facility throughout most of the study period. In contrast, Bangladesh, Pakistan and Türkiye exhibit

FIGURE 7-1

Percentage of vessels with unknown yard reported and the total number of vessels broken up by month between June 2021 and June 2026

Units: Vessels with unknown yard (in %, left axis), number of vessels (right axis)



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Source: S&P Global Sea-web Ship Register, DNV analysis

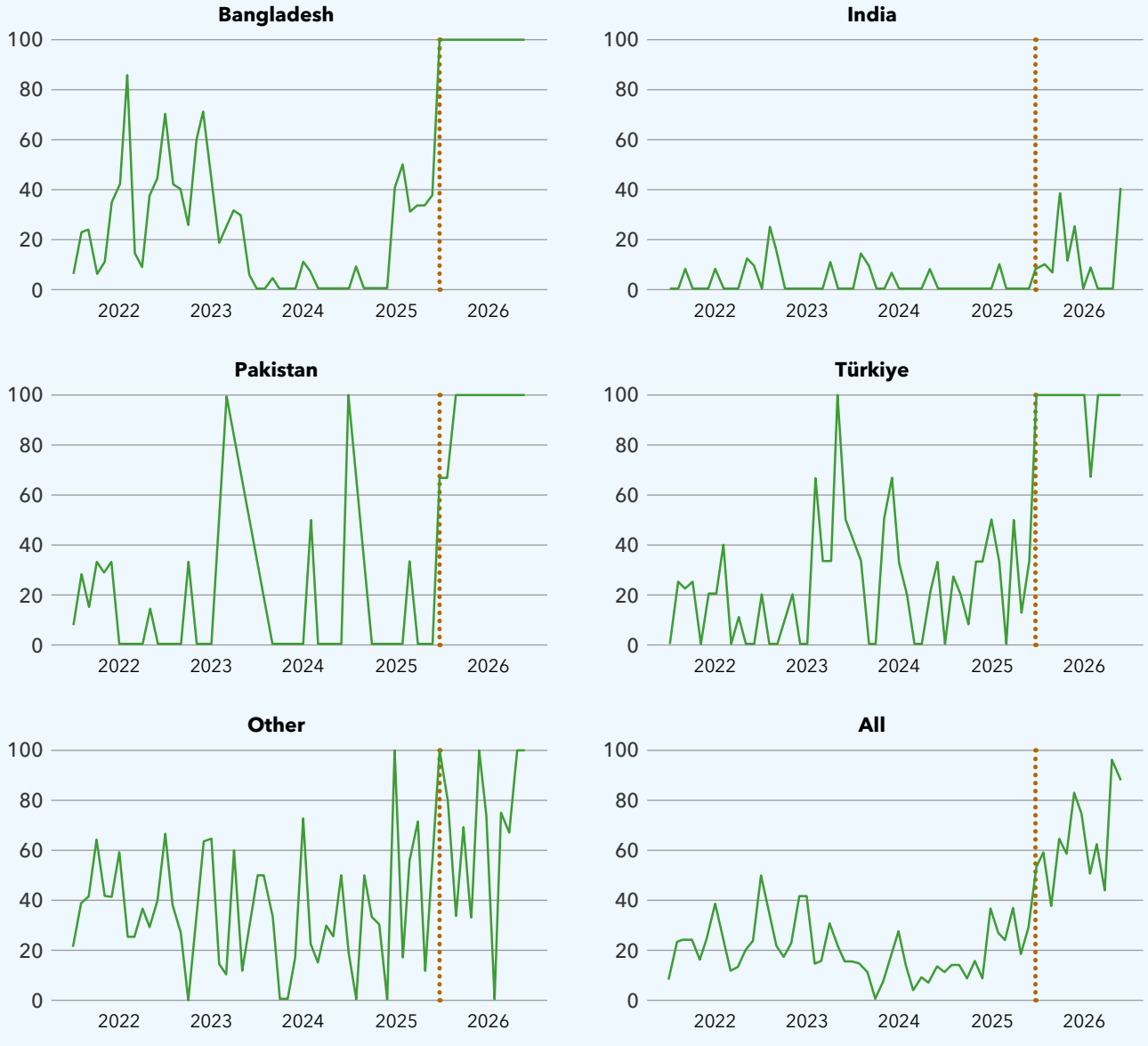
greater variability, with the proportion of vessels linked to an unknown recycling facility increasing substantially in 2025 and 2026. A similar increase is also evident in the aggregated dataset following the entry into force of the HKC. While the available data do not allow conclusions regarding causality, the findings indicate that transparency regarding the identification of individual recycling facilities remains limited and may have deteriorated during the period examined.

The inability to identify the recycling facility limits independent assessment of recycling activity and makes it difficult to determine whether vessels are recycled at facilities operating under recognized regulatory frameworks. Improved availability of facility-level information would strengthen transparency and support implementation of Article 12 of the HKC, which includes provisions for reporting information on ships recycled and the facilities involved. Although reporting lag may partly explain the high proportion of unidentified facilities in the most recent months, the results nevertheless suggest that greater visibility of recycling destinations remains an important challenge for the sector.

FIGURE 7-2

Percentage of vessels with unknown yard reported from Bangladesh, India, Pakistan, Türkiye, 'Other' countries and across all countries by month between June 2021 and June 2026

Units: Vessels with unknown yard (%)



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Source: S&P Global Sea-web Ship Register, DNV analysis

8 Capacity at HKC and EU SRR ship recycling facilities September 2026

How much authorized ship recycling capacity is there, and where? This chapter runs the numbers. The findings suggest the need for a significant expansion of authorized ship recycling capacity if future demand approaches the levels indicated by this study's scenario modelling.

The entry into force of the HKC in June 2025 has increased attention on the availability of ship recycling capacity operating under recognized regulatory frameworks. For the purposes of this assessment, capacity has been considered for facilities holding a valid DASR under the HKC and facilities included on the draft 16th edition of the EU list. SoC and other forms of private certification have not been used as inclusion criteria, as they do not constitute regulatory authorization to conduct ship recycling.

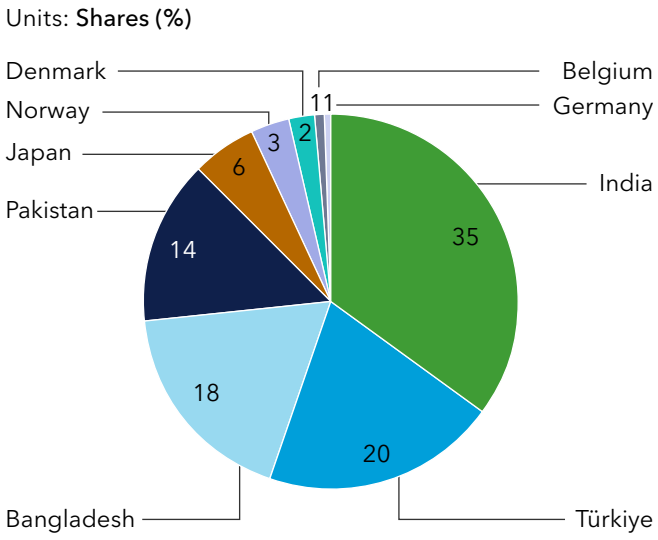
Figure 8-1shows the distribution of authorized ship recycling capacity among countries with facilities holding a valid DASR as of September 2026. Based on information submitted under the HKC framework, supplemented by direct correspondence with recycling States and capacity estimates where official information was unavailable, the total authorized capacity associated with these facilities is estimated at approximately 5.6 million LDT per year.

The capacity figures represent authorized capacity reported for facilities holding a valid DASR at the time of writing. Additional capacity may become available as further facilities obtain authorization and should therefore be regarded as outside the scope of the current assessment.

Figure 8-2 presents the distribution of authorized recycling capacity among countries with facilities included on the European List. As of August 2026, the combined authorized capacity of listed facilities is estimated at approximately 1.4 million LDT per year. This estimate is based on reported facility capacities where available and on capacity estimates for facilities that have not published annual capacity figures. The capacity is unevenly distributed across participating countries.

FIGURE 8-1

Distribution of authorized annual recycling capacity by country for facilities holding a valid DASR under the HKC as of September 2026. Total authorized capacity: approximately 5.6 million LDT.

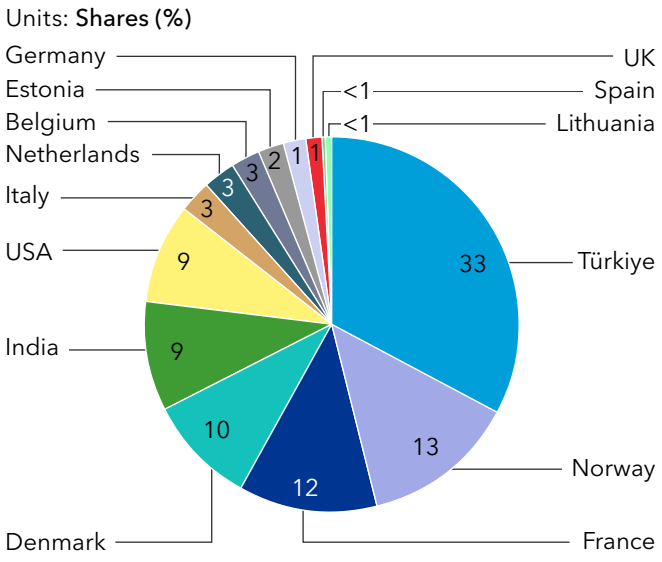


©DNV 2026

IMO List only; Source: IMO list, 8 September 2026

FIGURE 8-2

Distribution of authorized annual recycling capacity by country for facilities included on the draft European List, 16th edition, as of September 2026. Total authorized capacity: approximately 1.4 million LDT.



©DNV 2026

EU List only; Source: Draft EU List, 16th edition

TABLE 8-1

Ship tonnage sold for scrapping in 2025, based on GT, ships over 100 GT, in thousands GT

	India	Bangla-desh	Türkiye	China	Pakistan	Unknown	Indo-nesia	Others	UAE	Belgium	Denmark	Grand total	Share (%)
Bulk carrier	468.379	1 202.477	112.627	451.764	290.453	154.208	–	1.996	–	–	–	2681.904	31.5
Oil tanker	1 434.467	218.371	166.926	–	84.598	14.822	59.988	–	–	–	14.937	1994.109	23.4
Liquefied gas tanker	974.596	779.156	–	3.496	–	–	–	–	–	–	–	1757.248	20.6
Offshore	202.93	215.848	124.862	–	1.151	0.926	63.876	3.347	–	–	4.422	617.362	7.2
Others	71.248	163.863	175.699	9.091	36.801	62.854	0.158	24.933	–	0.217	1.105	545.969	6.4
General cargo ship	164.37	48.513	60.493	8.608	26.094	64.941	0.711	14.39	–	–	–	388.12	4.6
Passenger/ferry	63.384	23.382	176.366	–	–	13.937	13.863	8.238	–	16.144	0.235	315.549	3.7
Containership	52.996	25.453	6.378	–	–	46.948	–	–	42.532	7.852	–	182.159	2.1
Chemical tanker	7.922	27.526	–	–	–	1.624	–	–	–	–	–	37.072	0.4
Grand total	3 440.292	2 704.589	823.351	472.959	439.097	360.26	138.596	52.904	42.532	24.213	20.699	8519.492	100
Share (%)	40.4 %	31.7 %	9.7 %	5.6 %	5.2 %	4.2 %	1.6 %	0.6 %	0.5 %	0.3 %	0.2 %	100.0 %	

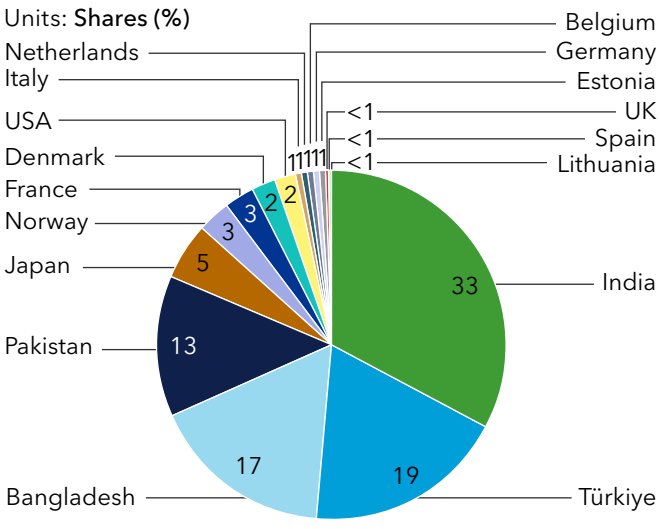
©DNV 2026

Source: S&P Global Sea-web Ship Register, DNV analysis

Figure 8-3 presents the distribution of authorized ship recycling capacity by country for facilities operating under either the HKC framework or the EU Ship Recycling Regulation (EU SRR), after removing double counting of facilities appearing on both lists. The combined authorized capacity is estimated at approximately 6 million LDT per year. The distribution shows that most currently authorized capacity is concentrated in a limited number of recycling States, particularly Bangladesh, India, Pakistan, and Türkiye. While additional capacity exists in Europe, Japan, and North America, these facilities represent a comparatively smaller share of the total.

FIGURE 8-3

Distribution of authorized annual recycling capacity by country for facilities operating under either the HKC framework (Sept 2026) or the EU Ship Recycling Regulation (draft 16th edition), after removal of double counting for facilities appearing on both lists. Total authorized capacity: approximately 6 million LDT.



©DNV 2026

EU and IMO combined; Source: Draft EU List, 16th edition, and IMO list, September 2026

The results illustrate that the development of compliant ship recycling capacity remains heavily concentrated in a few established recycling regions and that future growth in authorized capacity is likely to depend largely on additional facilities obtaining authorization in these countries.

Table 8-1 shows that ship recycling activity in 2025 was dominated by Bangladesh and India, which together accounted for over 72% of global ship recycling tonnage (based on GT). India remained the largest recycling destination with 40.4% of total tonnage, followed by Bangladesh with 31.7%, while Türkiye ranked third with 9.7%.

By vessel type, bulk carriers (31.5%), oil tankers (23.4%), and liquefied gas tankers (20.6%) represented most recycled tonnage, together accounting for approximately 76% of all ships sold for recycling. India received the largest share of bulk carriers, oil tankers, and gas carriers, while Bangladesh was another major destination for these vessel types. Offshore units accounted for 7.2% of recycled tonnage, with the principal recycling locations being Bangladesh, India, and Türkiye.

Overall, 8.52 million GT of ships over 100 GT were reported sold for recycling in 2025. The geographic distribution of authorized capacity is consistent with recent recycling patterns, with much of the capacity located in countries that currently dominate global ship recycling activity.

When compared with the recycling demand projected under the scenario modelling, the currently authorized capacity appears limited. However, the capacity assessment represents a snapshot as of September 2026. Additional facilities are expected to obtain authorization under the HKC, and capacity may therefore increase over time. Nevertheless, the findings suggest that a significant expansion of authorized ship recycling capacity will be required if future recycling demand approaches the levels indicated by the scenario modelling.

9 Price levels

Ship recycling prices have generally trended downward since early 2022 on reduced demand for steel amid economic volatility and uncertainty. Price analysis in this chapter reveals that the general trend is more nuanced when it comes to locations. The findings suggest that, based purely on price considerations, millions of dollars can be at stake in the choice of recycling destination.

Figure 9-1 presents monthly ship recycling prices between January 2012 and August 2026 for representative vessel categories in Bangladesh, China, India, Pakistan, and Türkiye. The figure shows that Bangladesh, India and Pakistan consistently offered the highest prices throughout the period, generally ranging between approximately USD 200 and 700 per light displacement tonne (LDT). Prices in all the three countries followed a similar trend, peaking in early 2022 before gradually declining through 2023, 2024 and 2025.

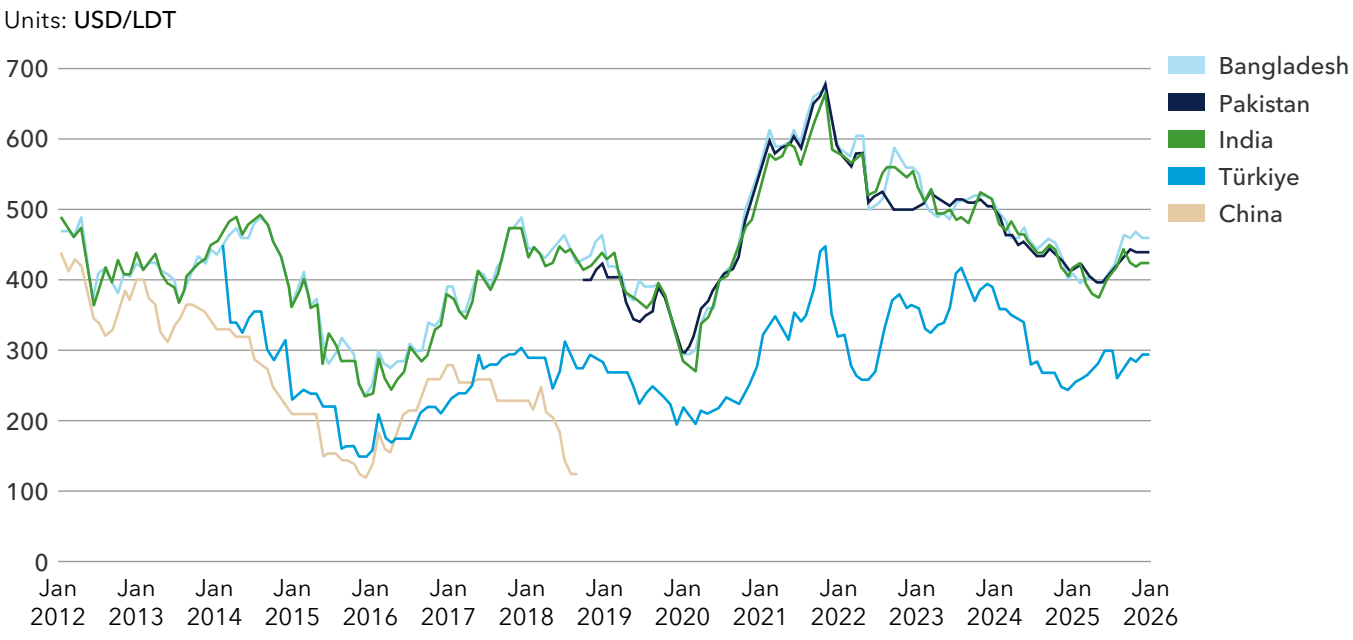
By contrast, prices in Türkiye were substantially lower, fluctuating between approximately USD 150 and 450 per LDT over the same period. Although Türkiye experienced a temporary price increase during 2022, 2023 and early 2024, prices subsequently declined and remained well below levels observed in the South Asian recycling markets.

Across all recycling destinations, ship recycling prices exhibited a downward trend from early 2022 onwards, reflecting weaker steel markets and less favourable economic conditions. By August 2025, prices had converged towards approximately USD 400–450 per LDT in Bangladesh and India, while Turkish prices had fallen to approximately USD 250 per LDT. There is a persistent price differential between South Asia and Türkiye.

The dataset contains recycling price information for several vessel types across different countries. As price movements are broadly consistent across vessel categories, Capesize bulk carriers have been selected as the reference vessel type for Bangladesh, India, and Pakistan. The figures presented should therefore be regarded as representative of general market trends, although prices for individual vessel types may differ slightly. For Türkiye, the underlying

FIGURE 9-1

Ship recycling prices per month from 2012 to August 2026



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Source: Clarksons Research



dataset does not apply the same vessel classification system as the South Asian markets and therefore uses the broader category "Tanker" as the reference vessel type. Chinese recycling prices are presented only until 2019. Following policy changes introduced that year, China largely ceased recycling internationally flagged vessels and is therefore excluded from the subsequent comparison. Price data for Pakistan is available from January 2019 onwards.

Prices for ship recycling in Europe are rarely quoted on an LDT basis due to the relatively small number of end-of-life ocean-going commercial vessels recycled within the region and the limited availability of market transaction data. Unlike the established pricing mechanisms observed in major recycling markets, European recycling activity is characterized by a small number of specialized facilities and relatively low transaction volumes. In addition, European facilities operate within a cost environment that differs significantly from the major recycling markets, particularly with respect to labour costs, regulatory requirements, and waste management obligations. These factors can influence the economics of recycling projects and may result in lower net returns to shipowners than those reported in leading international recycling markets.

Across all recycling destinations, ship recycling prices exhibited a downward trend from early 2022 onwards, reflecting weaker steel markets and less favourable economic conditions. There is a persistent price differential between South Asia and Türkiye. For shipowners, this translates directly into higher recycling revenues when vessels are sold to South Asian recycling markets. Depending on vessel size, the difference may amount to several million US dollars per vessel, creating a significant commercial incentive that may influence the choice of recycling destination.

Across all recycling destinations, ship recycling prices exhibited a downward trend from early 2022 onwards.

10 Discussion

The analyses presented in this report indicate that the global ship recycling sector is entering a period characterized by an ageing world fleet, historically low levels of recycling activity, increasing fleet renewal requirements and the ongoing implementation of the HKC. While each of these developments can be considered separately, their interaction is likely to influence future recycling activity, market dynamics and capacity requirements.

The modelling results indicate that substantially higher levels of vessel recycling would be required to maintain or reduce the current average age of the global fleet. Maintaining the present average fleet age would require approximately 17,255 vessel removals over the next 10 years, while reducing the average fleet age by approximately 2 years would require approximately 24,166 vessel removals. These values are considerably higher than recycling activity observed during the previous decade (5,394 vessels over the last 10 years). The scenario modelling does not represent forecasts of future recycling activity; however, the analysis illustrates the scale of fleet renewal that would be required under the assumptions applied in this study.

At the same time, recycling decisions continue to be influenced primarily by commercial factors. Vessel earnings, freight market conditions, alternative employment opportunities for older vessels, scrap prices, replacement costs and access to recycling facilities all influence the timing of recycling decisions. Recent market conditions have supported continued operation of ageing vessels in several shipping segments, reducing incentives for fleet renewal despite the increasing age of the global fleet. The pace at which older vessels are removed from service will therefore depend not only on fleet demographics, but also on future market developments.

The assessment of ship recycling facilities indicates continued development in the implementation of the Hong Kong Convention (HKC), although at different rates across recycling States. The number of facilities holding a valid Document of Authorization to conduct Ship Recycling has increased since the HKC entered into force, and additional facilities are expected to obtain authorization in the coming years. At the same time, significant differences remain between recycling States with respect to regulatory maturity, authorization status, supporting infrastructure, downstream waste management arrangements and transparency.

A further consideration relates to Article 3(4) of the HKC, which establishes the principle of "no more favourable treatment" for ships flying the flags of non-Parties. The HKC therefore anticipates that ships delivered for recycling under non-Party flags should be subject to requirements equivalent to those applied to ships flying the flags of Parties. In practice, this places significant responsibility on recycling States and authorized facilities to ensure that vessels arriving under non-Party flags are appropriately prepared for recycling and subject to equivalent levels of oversight. The effectiveness of the HKC may therefore depend not only on the number of authorized facilities, but also on how consistently this principle is implemented and enforced.

The analysis also indicates that end-of-life recycling activity is concentrated among a relatively limited number of flag States. Although vessels operate under a wide range of registries during their operational lives, a smaller group of flags appears to account for a disproportionately large share of vessels at the time of recycling. This concentration may have implications for the practical implementation of the HKC, as the effectiveness of the regulatory framework depends on the participation and enforcement practices of those flag States associated with ships approaching end of life.

The capacity assessment indicates that approximately 6 million LDT of ship recycling capacity currently operates under either the HKC framework or the EU Ship Recycling Regulation (EU SRR). However, authorized capacity should not automatically be interpreted as equivalent to operational throughput.

The simulation results indicate that substantially higher levels of ship recycling activity would be required than have been observed in recent years. Depending on the scenario applied, average annual recycling demand is estimated at approximately 54 to 76 million GT. For comparison, global ship recycling activity reached a historical peak of approximately 38 million GT in 2012, while only around 8 million GT was recycled in 2025. The simulation results therefore imply annual recycling volumes significantly above both recent recycling activity and the highest levels historically observed. Achieving such recycling volumes would require a sustained increase in global recycling activity over an extended period and illustrates the scale of fleet renewal implied by the scenarios examined in this study.



Although the simulation results and the assessment of authorized ship recycling capacity are expressed in different units and therefore cannot be compared directly, the findings nevertheless raise important questions regarding the future availability of compliant recycling capacity. The current authorized capacity of facilities operating under the HKC framework and the EU SRR represents only part of the capacity that may become available as implementation of the HKC progresses. However, if recycling activity were to approach the levels implied by the simulation scenarios, substantial expansion and utilization of compliant ship recycling capacity would be required.

The current capacity situation should, however, be viewed as a snapshot in time. As implementation of the HKC progresses, additional facilities are expected to obtain authorization, potentially increasing the amount of compliant recycling capacity available to the market. Consequently, authorized capacity is likely to increase over the coming years. Nevertheless, authorized capacity figures should be interpreted with caution. Authorization represents an important regulatory milestone but should not be regarded as evidence of operational performance or continuous compliance.

The practical capacity available under a fully implemented HKC framework may therefore differ from the authorized capacity reported by facilities and authorities. In addition, some authorized capacity figures are based on historical recycling activity achieved prior to authorization. For example, capacity figures reported for facilities included on the European List are generally based on the maximum annual recycling volume achieved within the preceding 10-year period. It remains uncertain whether equivalent throughput can be consistently maintained while meeting the operational, safety, environmental and training requirements associated with the HKC. As a result, actual effective recycling capacity may differ from the authorized capacity figures used in this assessment.

The analysis of flag State patterns provides additional context concerning vessel ownership, registration and recycling arrangements prior to recycling. Reflagging remains common, and vessels recycled during the study period operated under a wide range of flag States. A substantial proportion of vessels changed flag during the two years preceding recycling, including transitions from ratifying to non-ratifying flag States. These findings illustrate the complexity of end-of-life ship ownership and registration arrangements and provide useful context for discussions concerning the implementation of the HKC and future regulatory developments in the ship-recycling sector.

Transparency remains an important challenge for the sector. Public availability of information relating to permits, inspections, environmental monitoring, enforcement actions and facility-level performance varies considerably between jurisdictions. The analysis also shows that a significant proportion of vessels are recorded in commercial databases as having been delivered to unidentified recycling facilities, despite the recycling country being known. These limitations do not prevent analysis of broader trends, but they complicate comparisons between jurisdictions and reduce visibility at facility level. The entry into force of the HKC creates opportunities for improved transparency through the reporting mechanisms established under Article 12. Over time, publication of consistent information relating to authorized facilities and ships recycled under the HKC may improve visibility of recycling activity and support independent assessments of implementation.

Price data demonstrate that financial incentives remain a significant driver of ship recycling decisions. Throughout the period analysed, India and Bangladesh consistently offered higher recycling prices than Türkiye, often USD 150-200 more per LDT. For a large vessel, such price differences translate into several million US dollars in additional recycling revenue. Although all markets experienced a downward price trend from 2023 onwards, the relative advantage of South Asian recycling destinations remained largely unchanged. This suggests that compliance requirements alone may not be sufficient to influence recycling decisions where significant price differentials persist between competing recycling markets.

Taken together, the findings illustrate a sector undergoing significant regulatory and operational development. Future recycling activity will be shaped by the interaction between fleet renewal volumes, market conditions, available recycling capacity, and the implementation of recognized regulatory frameworks and broader developments within the shipping industry.

Over time, the availability of compliant recycling capacity may increase as additional facilities obtain authorization and implementation of the HKC matures. However, the simulation results indicate that achieving meaningful fleet renewal would require recycling activity substantially above both current levels and the historical peak observed in 2012. Continued improvements in facility standards, regulatory oversight, transparency and international cooperation will therefore be important factors in determining whether sufficient compliant recycling capacity can be developed while maintaining the HKC's environmental and safety objectives.

11 Conclusions

This report has examined recent developments in the global ship recycling sector, including historical recycling activity, fleet renewal requirements, ship recycling capacity, flag State patterns prior to recycling, and regulatory developments associated with the implementation of the HKC.

The analysis shows that global ship recycling activity remains at historically low levels relative to fleet size, while the world fleet continues to age. Around 21% of vessels are now more than 20 years old and 44% are more than 15 years old. The scenario modelling indicates that substantially higher levels of recycling activity would be required to maintain or reduce the current average age of the global fleet. Maintaining the current average fleet age would require approximately 17,255 vessel removals over the coming decade, equivalent to recycling activity approximately 3.2 times higher than that observed during the previous decade. Reducing the average fleet age by approximately two years would require approximately 24,166 vessel removals, corresponding to recycling activity approximately 4.5 times higher than historical levels. These results should be interpreted as scenario outcomes rather than forecasts of future recycling activity.

The assessment further indicates that implementation of the HKC is progressing and that the number of authorized ship recycling facilities is increasing. As of September 2026, facilities operating under the HKC framework or included on the European List represent an estimated combined annual capacity of approximately 6 million LDT, after accounting for overlap between the two systems. Additional capacity may become available as more facilities obtain authorization in the coming years.

A significant additional compliant recycling capacity will be required to accommodate the volume of ships expected to reach end of life over the coming decade. Although additional facilities are expected to obtain authorization as implementation of the HKC progresses, the simulation results indicate that future fleet renewal may require recycling activity at levels substantially above those observed in recent years. Continued expansion and effective utilization of compliant recycling capacity will therefore be important to support future recycling demand.

The analysis of flag State patterns demonstrates that reflagging prior to recycling remains common and highlights the complexity of ownership, registration and recycling arrangements at the end of a vessel's life. Together with the findings on transparency, facility authorization and regulatory implementation, these results indicate the practical challenges associated with implementing and monitoring the HKC across the ship recycling value chain.

Taken together, the findings suggest that the coming decade will be a critical period for the development of the global ship recycling sector. Whether future recycling demand can be accommodated within recognized regulatory frameworks will depend on the pace at which compliant capacity expands and on the effectiveness of HKC implementation and enforcement.

Continued expansion and effective utilization of compliant recycling capacity will be important to support future recycling demand.

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