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## Abstract

In the past decade (2015 to 2024), the number of Taiwan-registered merchant vessels with over 100 gross tonnage (GT) peaked at 317 in 2021 and 2022, before slightly decreased to 313 in 2024. Total registered GT and deadweight tonnage (DWT) showed a downward trend after reaching a peak in 2020. Conversely, the number of motor fishing boats in Taiwan remained relatively stable at an average of 12,209 boats per year over the past decade.

Among the seven international commercial ports in Taiwan, the Port of Kaohsiung had the highest number of vessel arrivals and departures between 2016 and 2024. However, this figure dropped to 30,947 vessels in 2024, marking the lowest point in its history. The Port of Taichung had the second highest number of vessel, and the number showed an upward trend after 2019, with only slight decrease to 22,722 vessels in 2024 compared to 2023. Overall, there have been no significant change in the total number of vessel arrivals and departures at Taiwan's international commercial ports over the years. Regarding the two industrial ports, Mailiao Industrial Harbor had higher number of vessel arrivals and departures over the years, but its figure showed a downward trend each year after 2018. Overall, the number of vessel arrivals and departures industrial ports in Taiwan over the years showed a downward trend.

From the establishment of the Taiwan Transportation Safety Board (TTSB) on August 1, 2019, to December 31, 2024, the TTSB investigated 225 major marine occurrences. These occurrences were classified into three levels. The number of Level 1 and Level 2 occurrences, which were relatively severe, remained steady between 9 and 11 cases annually from 2021 to 2024, showing no significant decline.

The most common occurrence type was occupational accidents, accounting for 23.1% (52 cases), followed by fire/explosion at 20.4% (46 cases). Occurrences involving collision, occupational accidents, and capsizing decreased slightly after 2022, while grounding, fire/explosion, and contact occurrences increased slightly in 2024. The most common type of vessels involved were fishing boats (162 cases, 72%),

followed by freighters<sup>1</sup>(41 cases, 18.2%). In addition, among the 225 filed cases, 36 were fatal occurrences, accounting for 16%. The proportion of fatal occurrences decreased from 25.6% in 2022 to 15.4% in 2024.

In terms of fatal occurrences, when categorized by occurrence type, "Other "types had the highest rate at 83.3% (5 fatal out of 6 cases), followed by capsizing at 32.1% (9 fatal out of 28 cases), and occupational accidents at 26.9% (14 fatal out of 52 cases).Regarding vessel type, fishing boats accounted for the highest number of fatal occurrences (30 fatal out of 162 cases, 18.5%), followed by general cargo ships at 17.6%(3 fatal out of 17 cases), and container ships at 15.4%(2 fatal out of 13 cases).

Furthermore, from the establishment of the TTSB on August 1, 2019 to December 31, 2024, a total of 290 transportation safety recommendations were issued for the 199 completed major marine occurrences. Of these safety recommendations, 200 were address to government-affiliated agencies/institutions, accounting for the largest proportion at 69%. Regarding vessel types, the highest percentage of safety recommendations was related to freighter occurrences(approx. 45.9%, 133 items), followed by fishing boat occurrences (26.2% ,76 items). As of December 31, 2024, 77 safety recommendations for major marine occurrences remained open, of which 55 still had action plans under the oversight of the Executive Yuan. An analysis of these 77 incomplete recommendations identified five marine safety issues: pilotage operations and management, vessel traffic service (VTS) system operations and management, commercial port operations and management, nautical chart production and issuance, and fishing boat and fishing port operation safety.

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<sup>1</sup> Including container ships, bulk carriers, general cargo ships, oil tankers, and liquefied gas carriers.

## Introduction

The first part of this report is an overview of the operation of merchant vessels and fishing boats registered in Taiwan. The data is courtesy of the Maritime and Port Bureau (MPB) of the Ministry of Transportation and Communications (MOTC) and the Fisheries Agency of the Ministry of Agriculture (MOA). It provides a general perspective of merchant vessels and motor fishing boats with more than 100 GT over the past 10 years (2015 to 2024).

The second part provides an overview of port operations in Taiwan. The source of data is the MPB of the MOTC and the Bureau of Industrial Parks, Ministry of Economic Affairs, providing an overview of the number of ship arrivals and departures at the 7 international commercial ports and 2 industrial ports from 2016 to 2024<sup>2</sup>.

The third part is a statistical analysis of major marine occurrences. It first describes the scope of major marine occurrences, then explains the classification of major marine occurrences. Additionally, it presents a statistical analysis of the number and types of major marine occurrences filed and investigated by the TTSB.

The fourth part presents statistics of the follow-up and control of transportation safety recommendations proposed by the TTSB in its investigation of major marine occurrences, and summarizes the safety issues of major marine occurrences.

This report was compiled using maritime transport technical terms and statistical terms commonly used by the International Maritime Organization (IMO); relevant definitions and descriptions are provided in the appended glossary. For major marine occurrences filed for investigation by the TTSB in 2024, please refer to Appendix 2. For transportation safety recommendations put forward, please refer to Appendix 3.

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<sup>2</sup> The data on the number of vessel that arrivals and departures Taiwan's international commercial ports and industrial ports are from iMarine, the MPB's port development database, which provides data for the years 2016 to 2025.

## I. Operational Overview of Taiwan-Registered Vessels

### 1.1 Taiwan-registered merchant vessels with over 100 GT

Compared with the number registered in 2023, the number of merchant vessels registered in Taiwan with over 100 GT<sup>3</sup> in 2024 decreased by 2, totaling 313 ships. The GT decreased to 4,499,460 tons compared with 2023, and the DWT decreased to 6,296,288 tons, as shown in Table 1.

The changes in the number of merchant vessels registered in Taiwan with over 100 GT from 2015 to 2024 are shown in Figure 1: The 267 vessels in 2018 was the lowest in the past decade, but has been on an upward trend since then. The 317 vessels in 2021 and 2022 was the highest in the past decade, and then decreased in 2023 and 2024 to 313 vessels. GT and DWT have been increasing year by year since 2016, reaching their highest point in 2020; however, there was a slight annual decline from 2021 to 2024, as shown in Figure 2.

Table 1 Number of Taiwan-registered merchant vessels, GT, and DWT from 2015 to 2024

Year	Number of vessel (units)	GT	DWT (tons)
2015	313	3,847,758	5,481,654
2016	278	3,463,074	4,958,454
2017	283	3,578,719	5,120,324
2018	267	4,173,822	6,136,249
2019	285	4,723,929	7,110,663
2020	300	4,913,161	7,571,142
2021	317	4,773,765	7,228,788
2022	317	4,800,890	6,816,889
2023	315	4,567,393	6,372,798
2024	313	4,499,460	6,296,288

Source: MOTC's Annual Transportation Report, compiled by this report

<sup>3</sup> The GT of a vessel refers to the total volume of all enclosed spaces in the vessel. Register tonnage is not expressed in units.

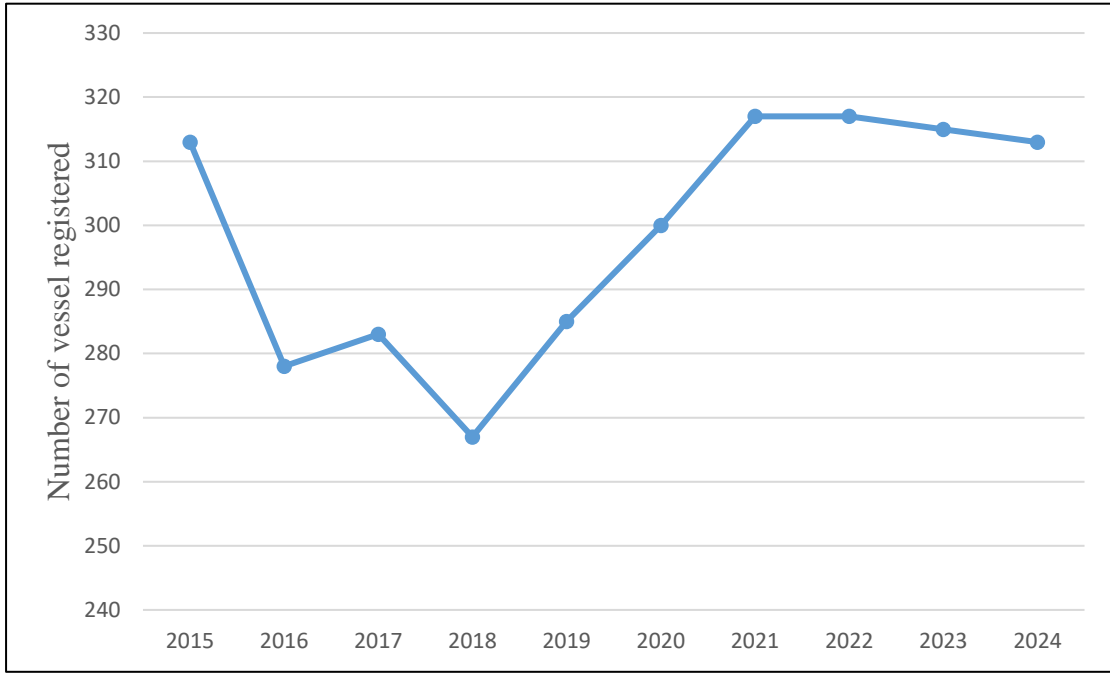


Figure 1 Number of Taiwan-registered merchant vessels from 2015 to 2024

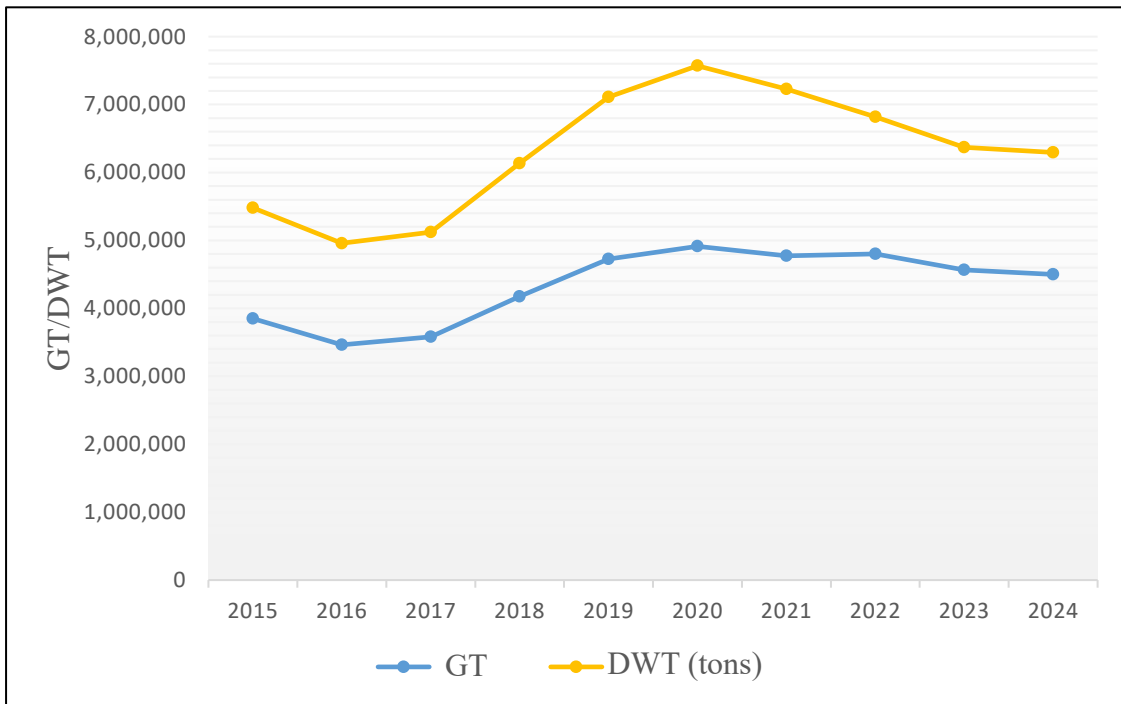


Figure 2 GT and DWT of Taiwan-registered merchant vessels from 2015 to 2024

The total number of Taiwan-registered merchant vessels in 2024 was 313, of which general cargo ships accounted for the highest number, 94, followed by passenger ships, 83, as shown in Table 2.

The changes in the number of Taiwan-registered vessels according to different types from 2015 to 2024 are shown in Figure 3: The number of registered general cargo ships has increased each year over the past 3 years, while the number of container ships, oil tankers, and passenger ships<sup>4</sup> slightly declined.

Table 2 Number of Taiwan-registered merchant vessels of all types from 2015 to 2024

Year	General cargo ship	Bulk carrier	Container ship	Oil tanker	Passenger ship	Other	Total
2015	92	20	51	20	77	53	313
2016	73	14	51	18	73	49	278
2017	69	16	53	21	76	48	283
2018	60	18	59	19	72	39	267
2019	63	25	61	18	77	41	285
2020	78	27	60	18	72	45	300
2021	85	25	63	18	78	48	317
2022	86	20	65	17	81	48	317
2023	87	17	64	15	85	47	315
2024	94	17	62	14	83	43	313

Source: MOTC's Annual Transportation Report, compiled by this report

<sup>4</sup> The term "passenger ship" in this section refers to both passenger ships and passenger-cargo ships.

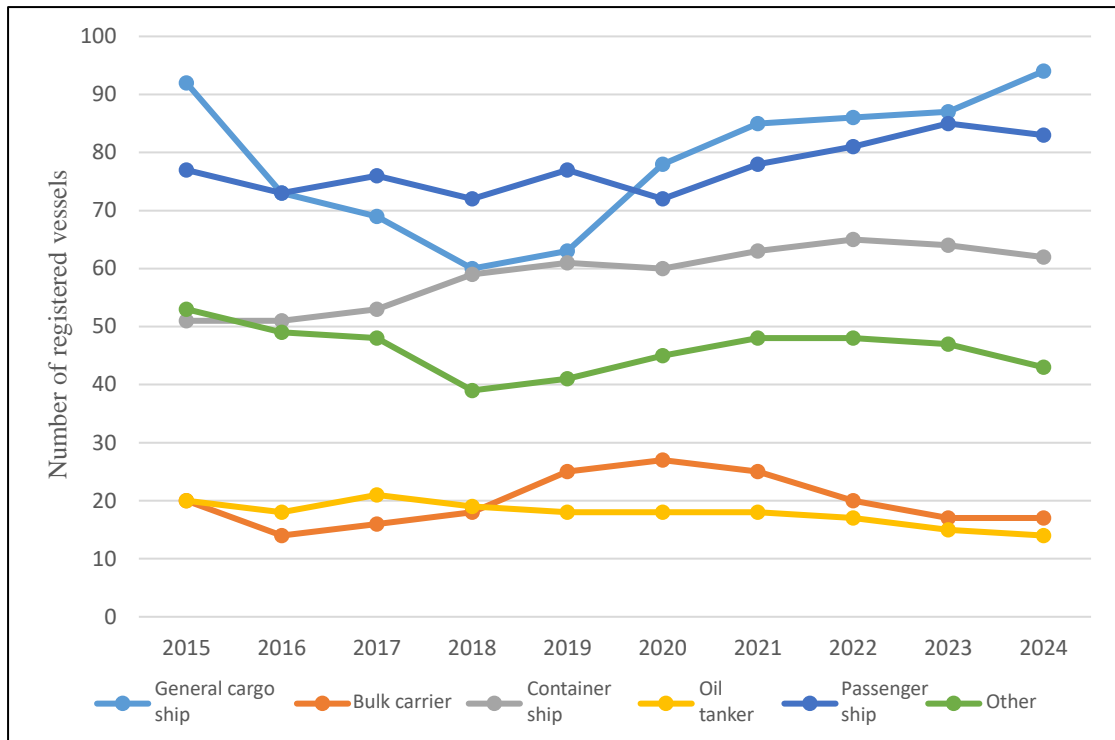


Figure 3 Number of Taiwan-registered merchant vessels from 2015 to 2024 –by vessel type

The total registered DWT of Taiwan-registered merchant vessels in 2024 was 6,296,288 tons, of which the largest belonged to container ships with 2,701,938 tons, and the second largest tonnage to bulk carriers with 2,094,662 tons, as shown in Table 3.

The changes in the DWT of Taiwan-registered merchant vessels according to different types from 2015 to 2024 are shown in Figure 4. The DWT of general cargo ships increased to approximately 350,000 tons in 2024; the DWT of bulk carriers remained the same in 2024; the DWT of container ships, oil tankers, and passenger ships has shown a slight downward trend since 2022.

Table 3 DWT of various types of Taiwan-registered merchant vessels from 2015 to 2024

Year	General cargo ship	Bulk carrier	Container ship	Oil tanker	Passenger ship	Other	Total
2015	354,548	1,984,282	1,892,457	198,855	9,221	1,042,291	5,481,654
2016	329,237	1,484,214	1,891,672	197,541	9,170	1,046,620	4,958,454
2017	307,705	1,515,483	1,946,903	294,866	9,292	1,046,075	5,120,324
2018	284,378	2,343,364	2,170,916	293,785	8,932	1,034,874	6,136,249
2019	278,177	3,224,593	2,260,372	249,332	9,511	1,088,678	7,110,663
2020	380,957	3,690,718	2,248,852	208,459	9,345	1,032,811	7,571,142
2021	378,085	3,273,705	2,324,613	207,350	8,747	1,036,288	7,228,788
2022	344,281	2,504,691	2,750,865	204,753	11,440	1,000,859	6,816,889
2023	343,448	2,094,662	2,723,285	200,712	10,981	999,710	6,372,798
2024	352,228	2,094,662	2,701,938	196,033	10,010	941,417	6,296,288

Source: MOTC's Annual Transportation Report, compiled by this report

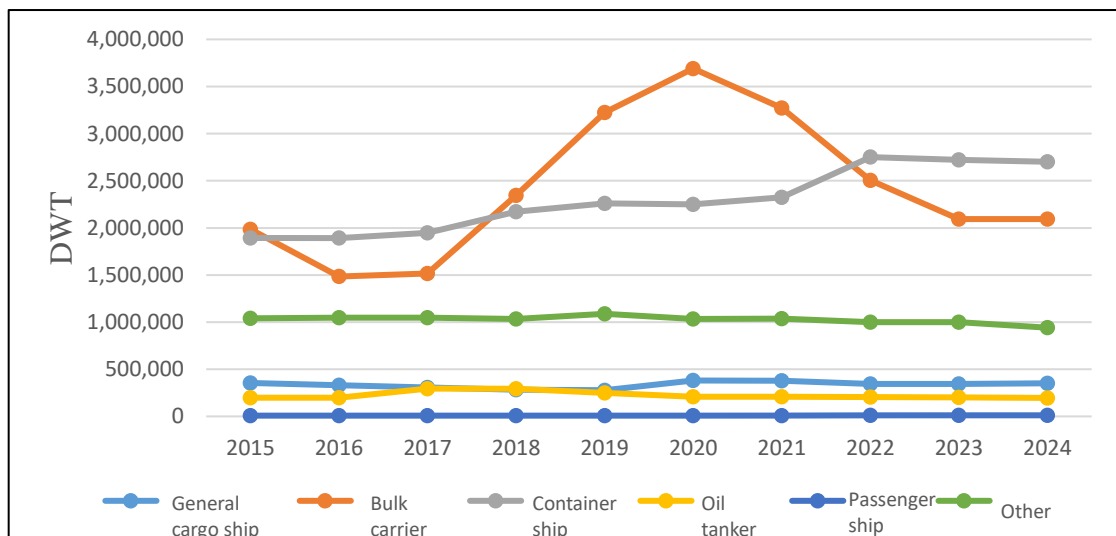


Figure 4 Registered DWT of Taiwan-registered merchant vessels from 2015 to 2024  
– by vessel type

## 1.2 Motor fishing boats

Table 4 and Figure 5 show the number of motor fishing boats in each GT class from 2015 to 2024. Overall, the total number of fishing boats has not changed significantly over the years. Fishing boats with less than 100 GT accounted for more than 90%, of which fishing boats with a 0-4.9 GT have shown an upward trend since 2020. For fishing boats with over 100 GT, those of 100-199.9 GT and 200-499.9 GT have both shown upward trends each year over the past five years. The number of fishing boats with 1,000 GT or above increased to 120 in 2024, the highest in the past decade.

Table 4 Number of motor fishing boats in each GT class from 2015 to 2024

GT class	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
0-4.9	6,555	6,605	6,672	6,635	6,659	6,729	6,752	6,783	6,807	6,824
5-9.9	795	791	786	762	754	766	769	770	777	766
10-19.9	1,452	1,441	1,441	1,406	1,403	1,404	1,401	1,396	1,390	1,385
20-49.9	1,533	1,565	1,572	1,565	1,533	1,546	1,534	1,487	1,453	1,439
50-99.9	1,210	1,200	1,183	1,128	1,098	1,077	1,033	1,010	959	866
100-199.9	154	156	158	156	154	161	191	226	286	370
200-499.9	244	253	251	235	219	219	226	232	246	248
500-999.9	267	257	235	223	213	208	201	182	174	141
Over 1,000	50	50	55	63	68	71	75	92	96	120
Total	12,260	12,318	12,353	12,173	12,101	12,181	12,182	12,178	12,188	12,159

Source: Taiwan Fisheries Yearbook, compiled by this report

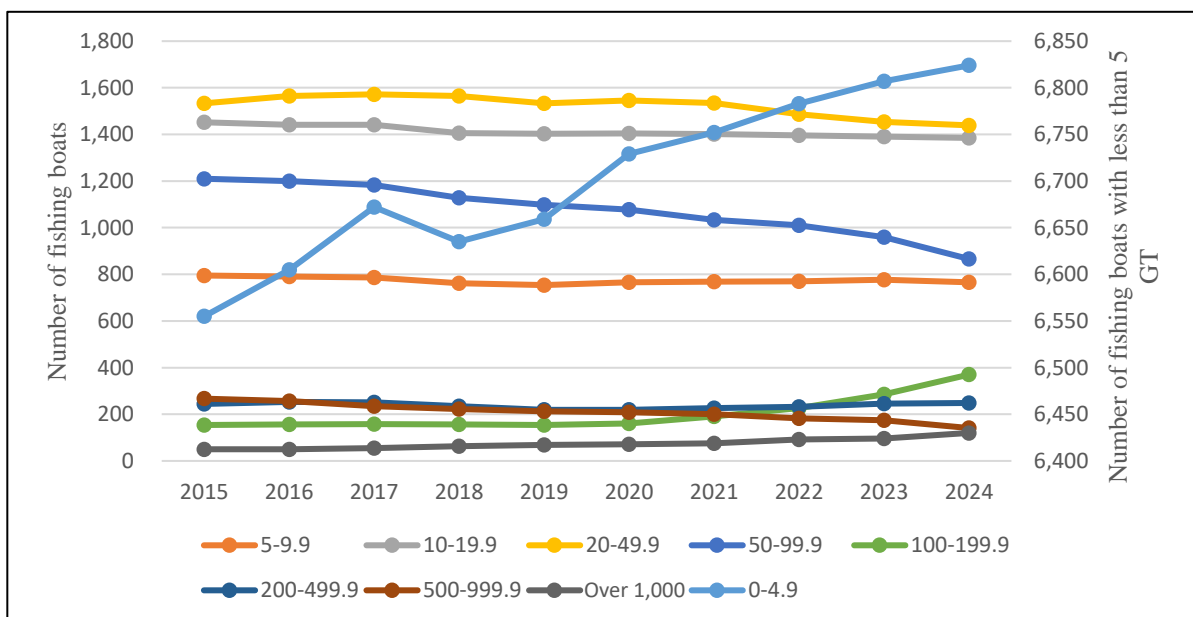


Figure 5 Distribution of motor fishing boats in each GT class from 2015 to 2024

## II. Overview of Taiwan’s Port Operations

### 2.1 International commercial ports

Among international commercial ports in Taiwan, the Port of Kaohsiung had the highest number of vessel<sup>5,6</sup> arrivals and departures in 2024, with 30,947 vessels, followed by the Port of Taichung with 22,722 vessels in total, as shown in Table 5.

Statistics on the number of vessel arrivals and departures international commercial ports in Taiwan from 2016 to 2024 are shown in Figure 6. Among them, the number of vessel that arrivals and departures the Port of Kaohsiung dropped to a record low of 30,947 vessels in 2024. The number of vessel arrivals and departures the Port of Taichung has shown an upward trend since 2019. Overall, there have not been any major changes over the years.

Table 5 Number of vessel arrivals and departures international commercial ports from 2016 to 2024

Year	Keelung	Kaohsiung	Taichung	Hualien	Su’ao	Anping	Taipei	Total
2016	11,231	36,634	17,715	2,188	1,191	1,563	8,440	78,962
2017	10,850	37,437	18,957	1,904	1,081	1,169	8,174	79,572
2018	10,847	35,816	18,462	1,911	1,037	955	8,574	77,602
2019	11,916	34,897	16,920	2,012	1,038	984	9,116	76,883
2020	10,224	32,948	17,994	1,984	928	1,189	9,040	74,307
2021	9,407	31,199	21,081	1,891	853	1,767	9,557	75,755
2022	9,314	31,484	22,569	1,801	735	1,518	8,918	76,339
2023	9,657	31,952	23,476	1,745	737	1,622	9,992	79,181
2024	9,320	30,947	22,722	1,606	812	1,604	9,838	76,849

Source: Compiled by this report from iMarine, the MPB’s maritime and port development database.

<sup>5</sup> The term “vessel” in this section refers to cargo ships, passenger ships, and workboats. It does not include fishing boats and special vessels.

<sup>6</sup> The term “number of vessel” refers to the number of vessel entering (leaving) a port within a specific period of time. If the same vessel enters (leaves) a port multiple times, the number of times is counted as number of vessel.

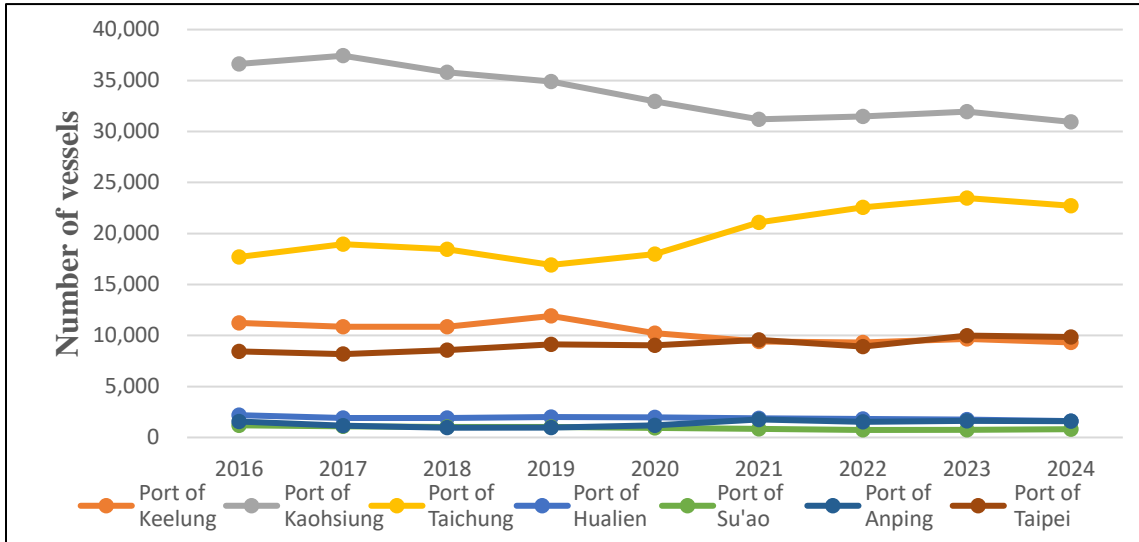


Figure 6 Number of vessel arrivals and departures international commercial ports from 2016 to 2024

## 2.2 Industrial ports

Among industrial ports in Taiwan, Mailiao Industrial Harbor had the highest number of vessel arrivals and departures in 2024, with 3,713 vessels, followed by Hoping Industrial Harbor with 730 vessels in total, as shown in Table 6.

Statistics on the number of vessel arrivals and departures industrial ports in Taiwan from 2016 to 2024 are shown in Figure 7. The number of vessel arrivals and departures Mailiao Industrial Harbor has shown a downward trend since 2018. The number of vessel arrivals and departures Hoping Industrial Harbor has remained relatively stable over the years, except for the 594 vessels in 2023, which was the lowest in the past decade. Overall, the number of vessel has shown a downward trend over the years.

Table 6 Number of vessel arrivals and departures industrial ports from 2016 to 2024

Year	Hoping Industrial Harbor	Mailiao Industrial Harbor	Total
2016	690	5,567	6,257
2017	723	5,327	6,050
2018	659	5,362	6,021
2019	752	5,272	6,024
2020	715	4,545	5,260
2021	785	4,494	5,279
2022	706	4,195	4,901
2023	594	3,831	4,425
2024	730	3,713	4,443

Source: Compiled by this report from data on the official website of the Industrial Harbor Administration, Ministry of Economic Affairs

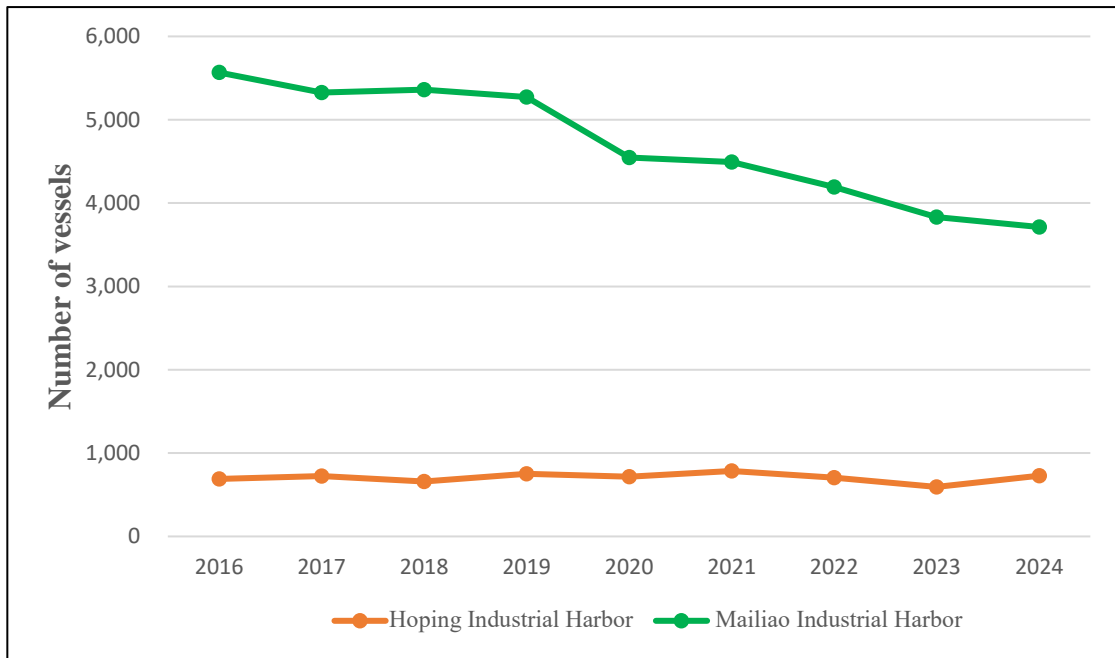


Figure 7 Number of vessel arrivals and departures industrial ports from 2016 to 2024

### **III. Statistical Analysis of Major Marine Occurrence Data**

According to Article 6 of the Transportation Occurrences Investigation Act, the TTSB shall be responsible for the following marine occurrence investigations: Major marine occurrences within Taiwan's territory; major marine occurrences that occur on international waters, are not within the territory of any country, or occur in an uncertain place involving Taiwan-registered vessels or vessels operated by Taiwanese nationals; and major marine occurrences caused by Taiwan-registered vessels, vessels operated by Taiwanese nationals, or designed or manufactured by Taiwan, which occur outside Taiwan's territory, and the investigation authority at the place of the occurrence does not investigate or entrusts TTSB to conduct the investigation.

The following is a detailed description of the scope of major marine occurrences, the classification of major marine occurrences, and the statistics of investigated cases.

#### **3.1 Scope of major marine occurrences**

Major marine occurrence: Refers to an occurrence on a civilian or public vessel that is directly related to the operation of the vessel and is not an intentional act or inaction, resulting in any of the following circumstances:

- (I) Fatalities.
- (II) Total loss of the ship<sup>7</sup>.
- (III) A leak of remaining oil of more than 700 tons on a vessel.
- (IV) Other situations that may significantly affect the lives, bodies, or properties of civilians or the environment, and are found necessary to be investigated by the TTSB.

#### **3.2 Classification of major marine occurrences**

To effectively deploy human and investigation resources, TTSB divides major marine occurrence investigation operations into three levels, as follows:

##### **Level 1**

Refers to a major marine occurrence that results in loss of life, total loss of the ship, and a leak of remaining oil of more than 700 tons on a vessel.

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<sup>7</sup> According to the TTSB's Regulations Governing the Handling of Investigation Procedures for Major Marine Occurrence, a vessel refers to a powered vehicle carrying personnel or cargo on or in the water, including passenger ships, cargo ships, fishing boats, special-purpose vessels, yachts, and small boats, but the regulations are not applicable to the following vessels: (I) Military vessels; (II) Vessels with less than 300 GT and do not carry passengers.

**Level 2**

Refers to major marine occurrences that are not classified as Level 1 or Level 3 major marine occurrence.

**Level 3**

Refers to a major marine occurrence for which evidence cannot be collected and cannot be analyzed and investigated due to insufficient, lost, non-existent, or unobtainable factual information, such as physical evidence and witnesses.

**3.3 Statistics of major marine occurrence investigations**

The TTSB has investigated 225 major marine occurrences from its establishment on August 1, 2019 to December 31, 2024, as shown in Table 7 and Figure 8. Basic information on major marine occurrences filed in 2024 is detailed in Appendix 2.

Table 7 Number of major marine occurrence cases filed from 2019 to 2024

Year	2019	2020	2021	2022	2023	2024	Total
Filing for investigation	34	56	60	39	23	13	225

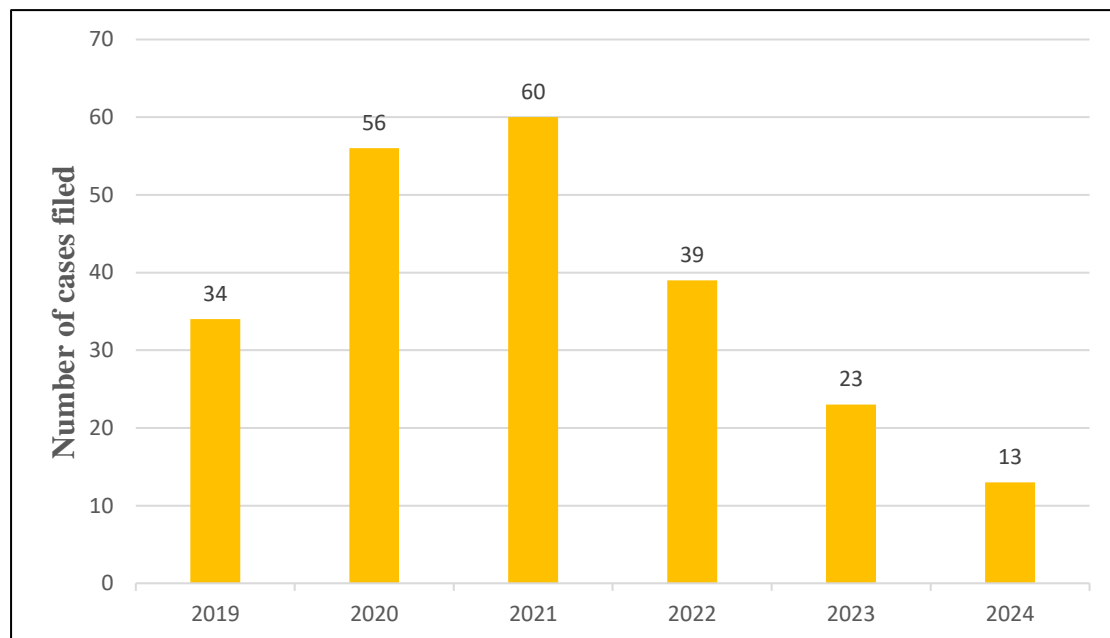


Figure 8 Number of major marine occurrence cases filed from 2019 to 2024

From August 1, 2019, to December 31, 2024, of the 225 major marine occurrence investigations that were conducted, Level 3 cases accounted for the highest proportion at 69.3% (156 cases), followed by Level 2 cases accounting for 25.3% (57 cases), as shown in Table 8. In addition, the TTSB amended the Regulations Governing the Handling of Investigation Procedures for Major Marine Occurrence in June 2023, and excluded vessels with less than 300 GT and not carrying passengers from the definition of vessels. As a result, the number of Level 3 cases showed a significant downward trend in 2023 and 2024, while the number of Level 1 and Level 2 cases did not show a significant decrease, as shown in Figure 9.

Table 8 Number of major marine occurrences by level from 2019 to 2024

Case category	2019	2020	2021	2022	2023	2024	Total	Percentage
Level 1	3	2	0	3	2	2	12	5.3%
Level 2	10	14	11	7	8	7	57	25.3%
Level 3	21	40	49	29	13	4	156	69.3%
Total	34	56	60	39	23	13	225	100%

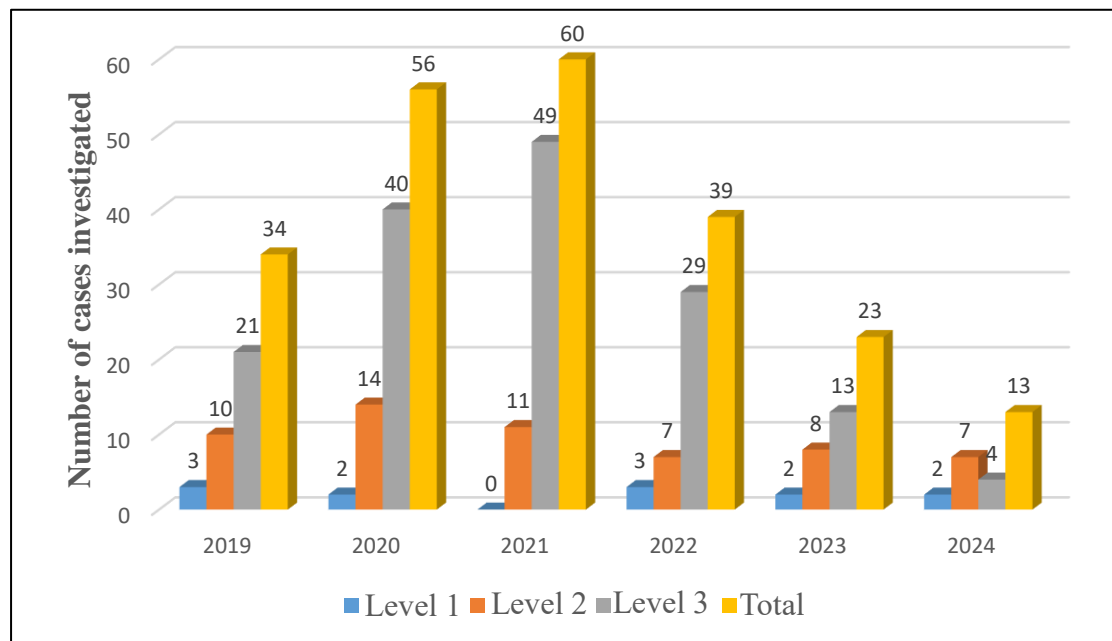


Figure 9 Number of major marine occurrences by level from 2019 to 2024

From August 1, 2019, to December 31, 2024, of the 225 major marine occurrence investigations that were conducted, work safety accounted for the highest proportion at 23.1% (52 cases), followed by fire/explosion accounting for 20.4% (46 cases). In addition, collision, work safety, and capsizing occurrences slightly decreased after 2022, while grounding, fire/explosion, and contact occurrences increased slightly in 2024, as shown in Table 9 and Figure 10.

Table 9 Statistics of occurrence types from 2019 to 2024<sup>8</sup>

Type Year	Grounding	Missing	Fire/ explosion	Collision	Work safety	Machine failure	Flooding and foundering	Capsizing	Contact	Other	Total
2019	3	2	10	5	3	1	6	2	2	0	34
2020	4	1	13	8	15	2	0	8	4	1	56
2021	9	0	13	9	14	1	4	7	2	1	60
2022	3	0	3	5	13	1	1	7	3	3	39
2023	1	0	3	3	7	2	2	3	2	0	23
2024	2	0	4	0	0	0	0	1	5	1	13
Total	22	3	46	30	52	7	13	28	18	6	225
Percentage	9.8%	1.3%	20.4%	13.3%	23.1%	3.1%	5.8%	12.4%	8.0%	2.7%	100%

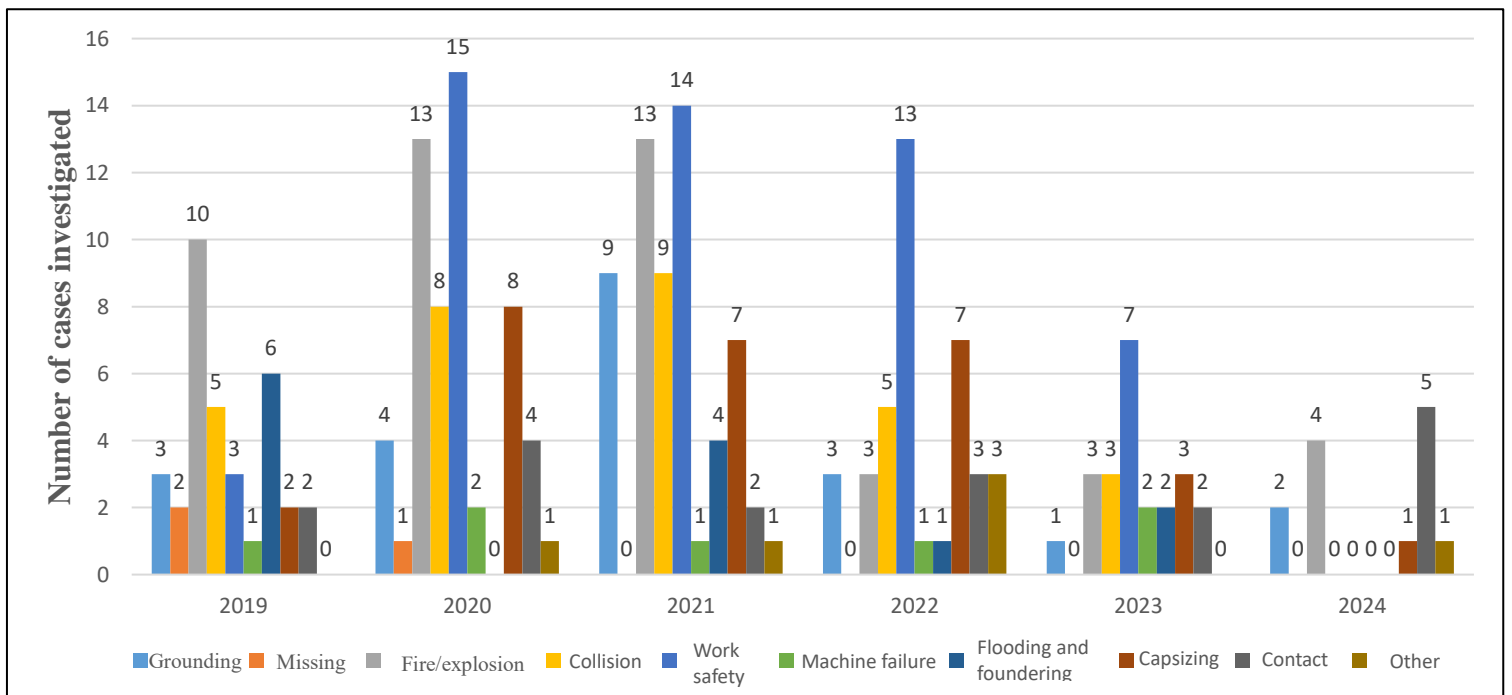


Figure 10 Number of cases by occurrence type from 2019 to 2024

<sup>8</sup> The statistical period for occurrences in 2019 is from August 1, 2019, to December 31, 2019.

From August 1, 2019, to December 31, 2024, of the 225 major marine occurrence investigations, fishing boats accounted for the highest proportion at 72% (162 cases), followed by general cargo ships<sup>9</sup> accounting for 7.6% (17 cases), in which the number of fishing boat occurrences has shown a downward trend since 2022, as shown in Table 10 and Figure 11.

Table 10 Statistics of types of vessels involved in occurrences from 2019 to 2024

Type \ Year	Container ship	Workboat	Bulk carrier	General cargo ship	Passenger and cargo ship	Passenger ship	Fishing boat	Research vessel	Oil tanker	Liquefied gas carrier	Other	Total
2019	0	1	1	8	1	1	22	0	0	0	0	34
2020	2	2	4	2	0	1	42	0	0	0	3	56
2021	5	0	0	4	0	0	49	0	0	0	2	60
2022	1	1	3	1	0	0	30	1	0	0	2	39
2023	3	1	0	0	2	0	15	0	0	0	2	23
2024	2	0	1	2	0	0	4	0	1	1	2	13
Total	13	5	9	17	3	2	162	1	1	1	11	225
Percentage	5.8%	2.2%	4.0%	7.6%	1.3%	0.9%	72.0%	0.4%	0.4%	0.4%	0.4%	100%

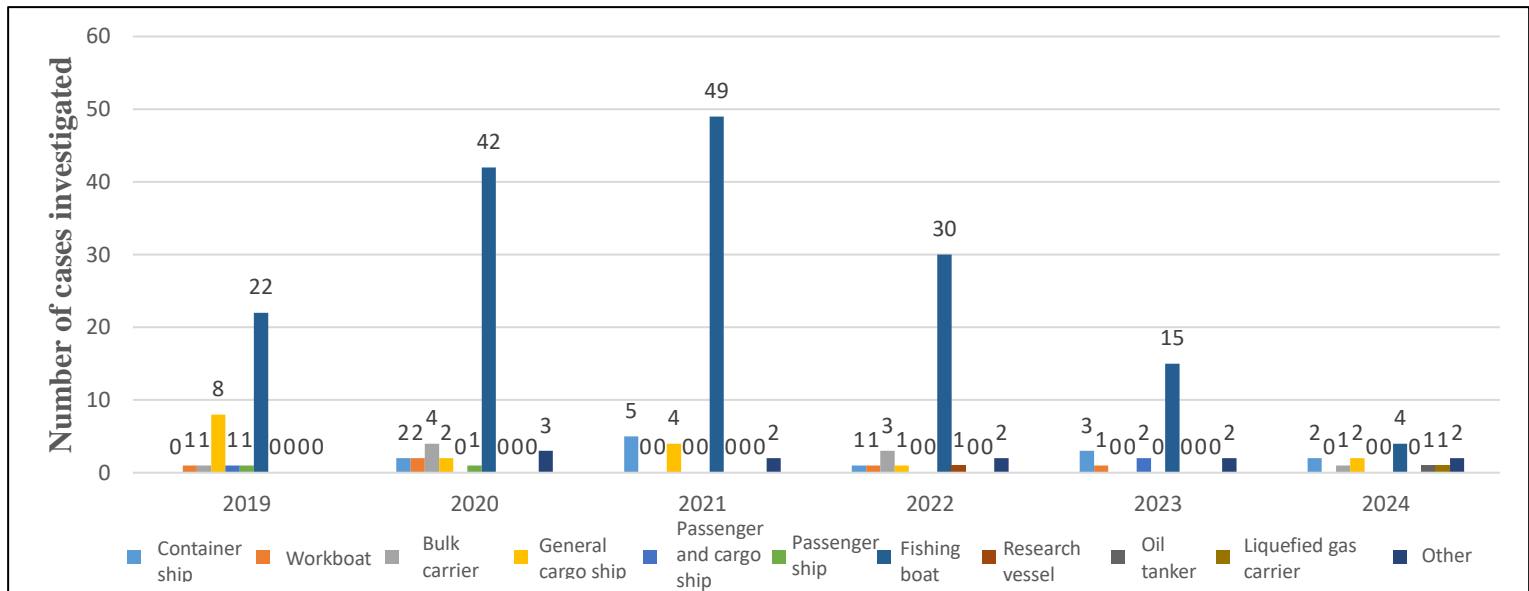


Figure 11 Number of each type of vessel involved in occurrences from 2019 to 2024

<sup>9</sup> The full English name of this type of vessel is “general cargo vessel,” which is translated into Chinese as 雜貨船.

From August 1, 2019 to December 31, 2024, of the 225 major marine occurrences, 189 were non-fatal occurrences. There were 36 fatal occurrences, accounting for 16% of the total number of cases. The highest number of fatal occurrences was 10 in 2022, accounting for 25.6% of the total number of cases that year. The number of fatal occurrences dropped to 2 in 2024, accounting for 15.4% of the total number of cases that year. The proportion of major marine occurrences that were fatal occurrences has shown a downward trend since 2022, as shown in Table 11 and Figure 12.

Table 11 Statistics of fatal occurrences from 2019 to 2024

Occurrence category	Year						Total
	2019	2020	2021	2022	2023	2024	
Fatal occurrence	5	8	7	10	4	2	36
Non-fatal occurrence	29	48	53	29	19	11	189
Total	34	56	60	39	23	13	225
Fatal occurrence percentage	14.7%	14.3%	11.7%	25.6%	17.4%	15.4%	16%

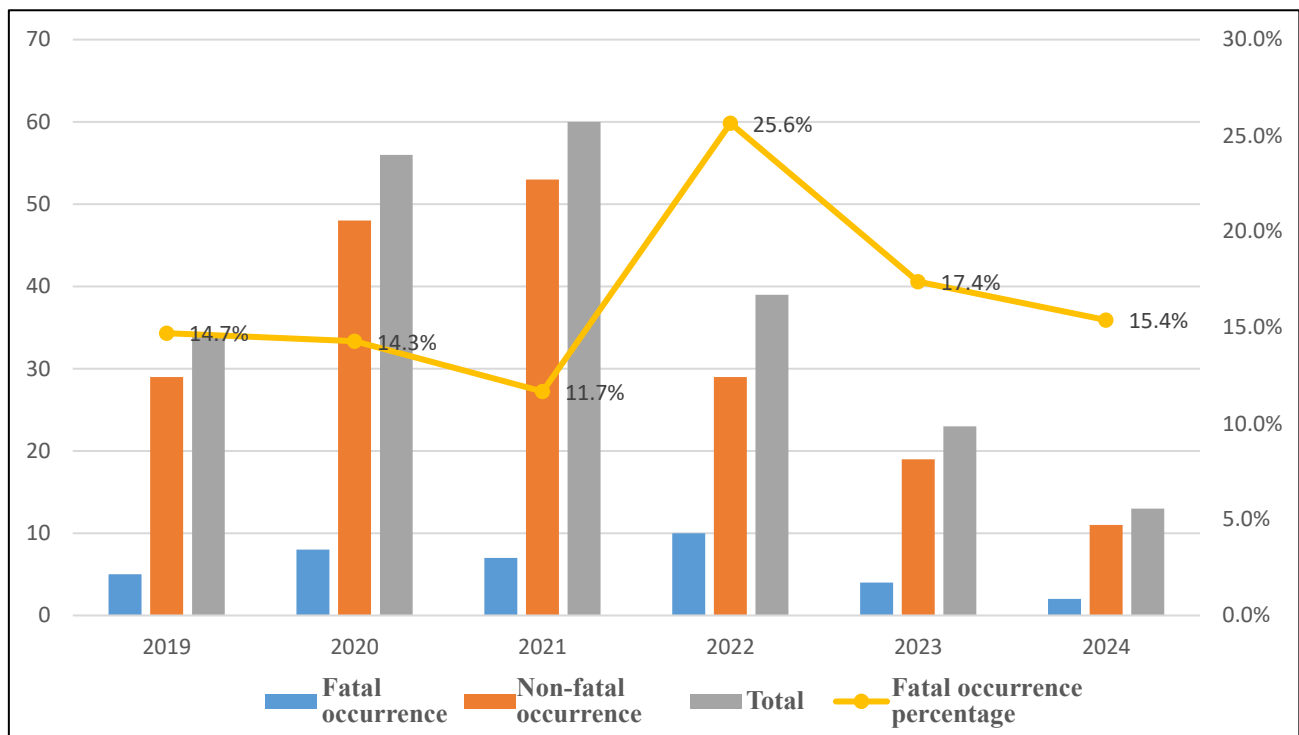


Figure 12 Percentage of fatal occurrences from 2019 to 2024

Among the 36 fatal occurrences, other types of cases accounted for the highest proportion at 83.3% (occurred in 5 out of the 6 cases<sup>10</sup>), followed by capsizing occurrences accounting for 32.1% (occurred in 9 out of the 28 cases), and work safety occurrences accounting for 26.9% (occurred in 14 out of the 52 cases), as shown in Table 12 and Figure 13.

Table 12 Statistics of types of fatal occurrences from 2019 to 2024

Occurrence category \ Occurrence type	Grounding	Missing	Fire/explosion	Collision	Work safety	Machine failure	Flooding and foundering	Capsizing	Contact	Other	Total
Fatal occurrence	1	0	2	3	14	0	2	9	0	5	36
Non-fatal occurrence	21	3	44	27	38	7	11	19	18	1	189
Total	22	3	46	30	52	7	13	28	18	6	225
Fatal occurrence percentage	4.5%	0%	4.3%	10.0%	26.9%	0%	15.4%	32.1%	0%	83.3%	16%

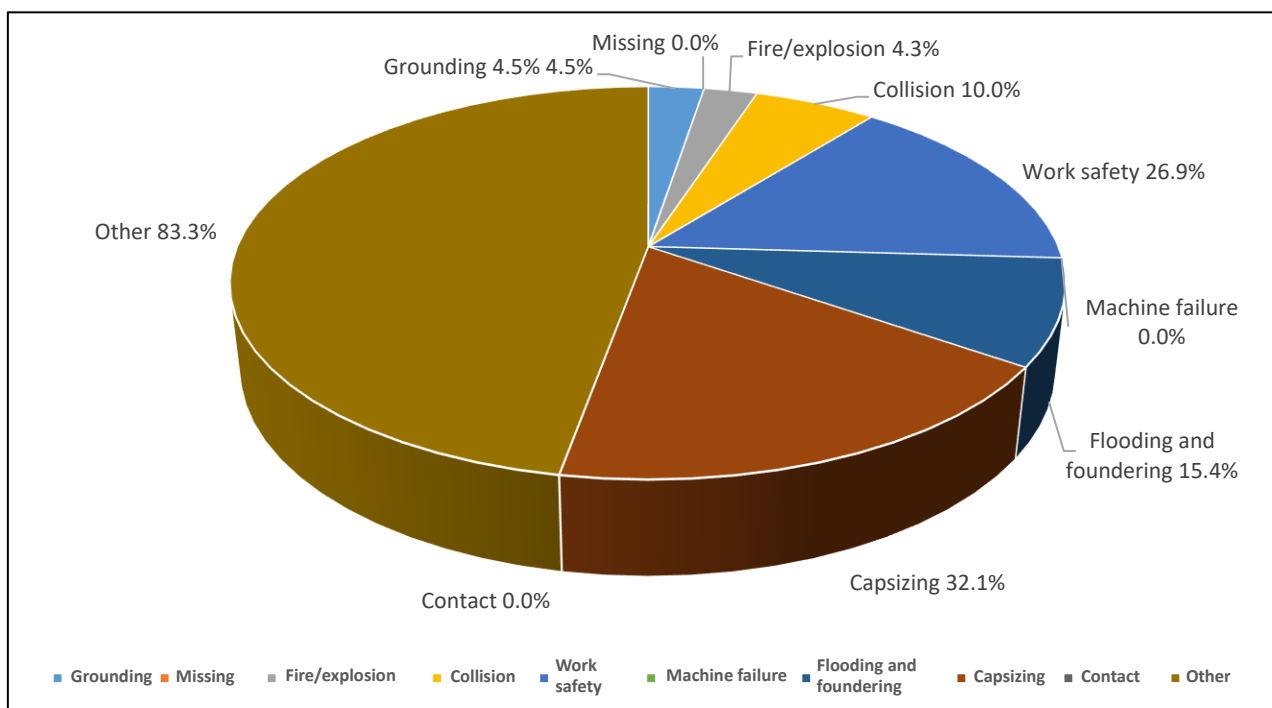


Figure 13 Percentage of fatal occurrence types from 2019 to 2024

<sup>10</sup> There were 5 other types of fatal occurrences from 2019 to 2024, namely the occurrence 20210103 in which crew members of the fishing boat Shiu Hung Sheng No. 6 fell overboard and died off the coast of Qimei, Penghu; the occurrence 20221115 in which crew members of the fishing raft Nan Shi Fu No. 1725 fell overboard and went missing off the coast of Jiangjun Fishing Harbor; the occurrence 20220729 in which crew members of the Shiao Hei sampan fell overboard and went missing in the waters of Fuguodun; the occurrence 20220221 in which the pilot of the container ship Blue Ocean fell overboard and died at the Port of Taichung; and the occurrence 20240421 in which a passenger on recreational fishing vessel Guishan Sunrise No. 2 fell overboard and died off the coast of Yilan.

Among the 36 fatal occurrences, the highest number of fatal occurrences occurred on fishing boats at 30, accounting for 18.5% of the total number of fishing boat investigations. The second highest number of fatal occurrences occurred on general cargo ships at 3, accounting for 17.6%. The type of vessel with the highest proportion of fatal occurrences was workboats at 20%, as shown in Table 13 and Figure 14.

Table 13 Statistics of fatal occurrences by vessel type from 2019 to 2024

Vessel type \ Occurrence type	Vessel type											Total
	Container ship	Workboat	Bulk carrier	General cargo ship	Passenger and cargo ship	Passenger ship	Fishing boat	Research vessel	Oil tanker	Liquefied gas carrier	Other	
Fatal occurrence	2	1	0	3	0	0	30	0	0	0	0	36
Non-fatal occurrence	11	4	9	14	3	2	132	1	1	1	11	189
Total	13	5	9	17	3	2	162	1	1	1	11	225
Fatal occurrence percentage	15.4%	20.0%	0%	17.6%	0%	0%	18.5%	0%	0%	0%	0%	16%

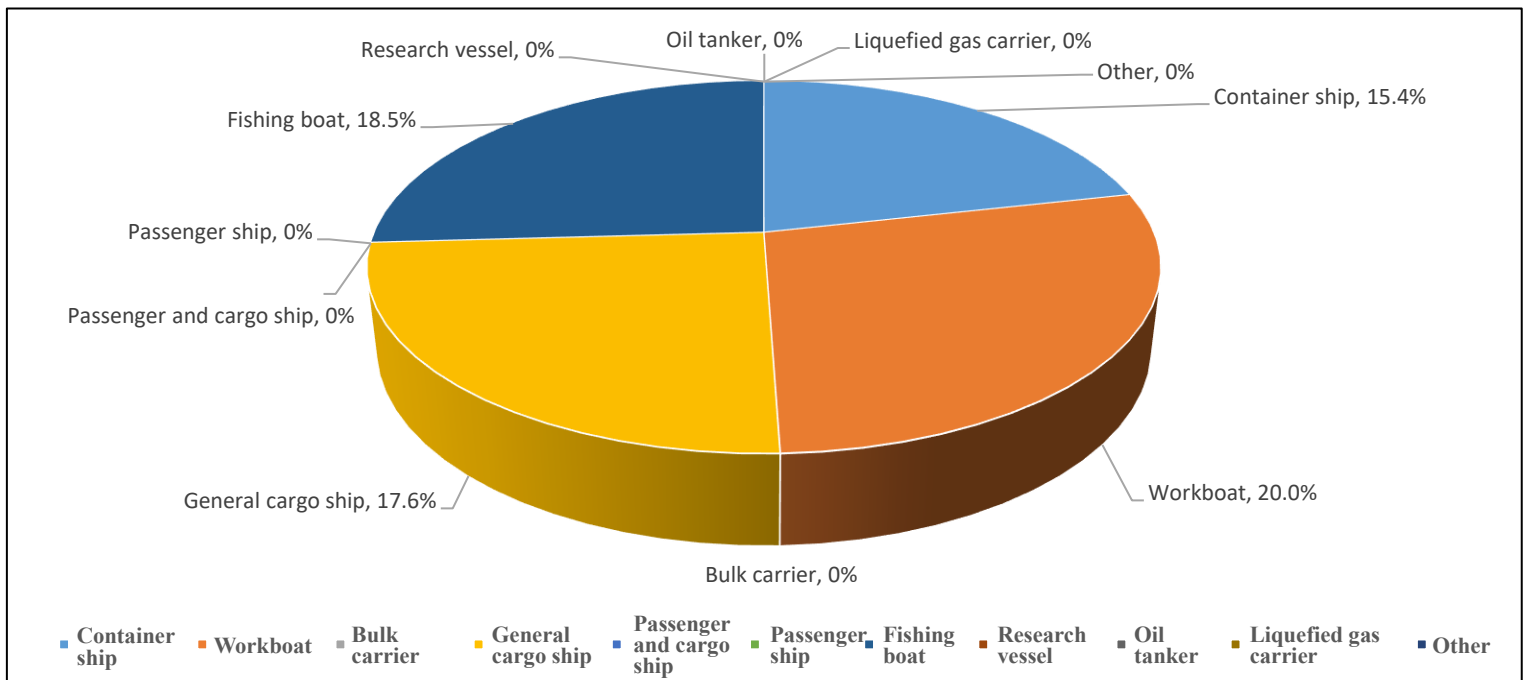


Figure 14 Percentage of fatal occurrences by vessel type from 2019 to 2024

## IV. Statistics Analysis of Transportation Safety Recommendations

### 4.1 Safety recommendations by Category

The purpose of systematically investigating transportation occurrences is to determine their causes and provide appropriate safety recommendations to relevant institutions to prevent similar occurrences. From August 1, 2019, to December 31, 2024, the TTSB investigated 199 major marine occurrences and provided 290 transportation safety recommendations, in which 213 were completed or do not require follow-up, with a safety recommendation completion rate of 73.4%.

If categorized by the recipient, the highest proportion of safety recommendations was made to government-affiliated agencies/institutions (200 items; approximately 69.0%), followed by maritime transport businesses (66 items; approximately 22.7%). International institutions received the fewest safety recommendations (24 items; approximately 8.3%). Regarding vessel types, the highest proportion of safety recommendations was given with regards to freighter<sup>11</sup> incidents (133 items; approximately 45.9%), followed by fishing boats (76 items; approximately 26.2%), passenger ships<sup>12</sup> and other (each with 29 items; approximately 10.0%), as shown in Table 14 and Figure 15.

Table 14 Transportation safety recommendations by type from 2019 to 2024

Recipient Operational type	International institutions	Maritime transport businesses	Government-affiliated agencies/institutions	Total	Percentage
Fishing boat	7	10	59	76	26.2%
Freighter	14	31	88	133	45.9%
Passenger ship	0	8	21	29	10.0%
Workboat	0	9	14	23	7.9%
Other	3	8	18	29	10.0%
Total	24	66	200	290	
Percentage	8.3%	22.7%	69.0%	100%	100%

<sup>11</sup> “Freighters” in this report collectively refer to container ships, bulk carriers, general cargo ships, oil tankers, and liquefied gas carriers.

<sup>12</sup> The term “passenger ship” in this section refers to both passenger ships and passenger-cargo ships.

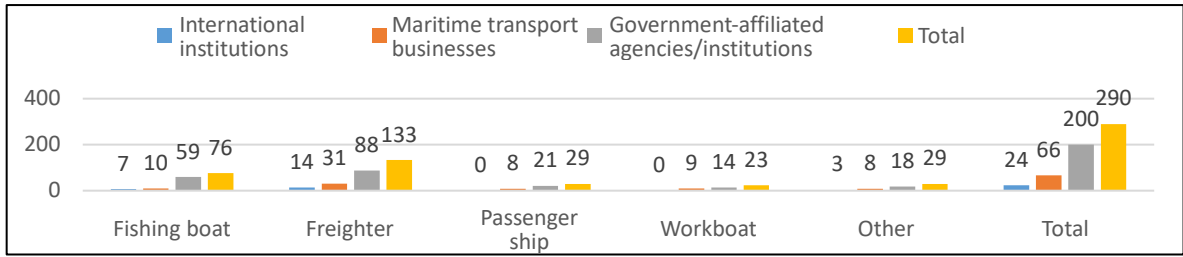


Figure 15 Transportation safety recommendations by type from 2019 to 2024

## **4.2 Statistics on the implementation status of action plans for transportation safety recommendations**

According to Article 27 of the Transportation Occurrences Investigation Act, “The government authorities concerned shall submit a management report to the Executive Yuan within 90 days after the receipt of the transportation occurrence investigation report and send a copy to the TTSB. The management report shall contain detailed and concrete implementation plans responding to the transportation safety recommendations that are considered practicable. In response to the recommendations considered impracticable, detailed reasons shall also be stated. The execution of the detailed implementation plans, mentioned in Paragraph 1, shall be supervised by the Executive Yuan and tracked by the TTSB.”

Upon being notified by government-affiliated agencies/institutions and receiving copies of their action plans, the TTSB shall categorize these plans according to their handling statuses. The TTSB shall suggest that the Executive Yuan accept implementation plans that are concrete, actionable, and completed, and then close the case in question. For implementation plans that fail to achieve their improvement targets, the affiliated agencies/institutions will be asked to resubmit a new plan or supplemental information. If the action plan has a long schedule or must be completed in stages, the TTSB suggests the plan be supervised by the Executive Yuan and that its status be tracked every 6 months until improvements are completed so that the case may then be closed.

From August 1, 2019, to December 31, 2024, the TTSB made 200 transportation safety recommendations to government-affiliated agencies/institutions regarding the 199 major marine occurrences that were investigated. Among them, 55 action plans are under supervision, 123 cases have been closed, and 22 are awaiting response or processing by government-affiliated agencies/institutions, as shown in Table 15 and Figure 16.

Table 15 Transportation safety recommendation statistics as of the end of 2024

Occurrence type	Government-affiliated agencies/institutions				Non-national government agencies supervised by their relevant competent authorities	Total
	Closed	Under supervision	Awaiting response	Subtotal		
Marine occurrence	123	55	22	200(69%)	90(31%)	290

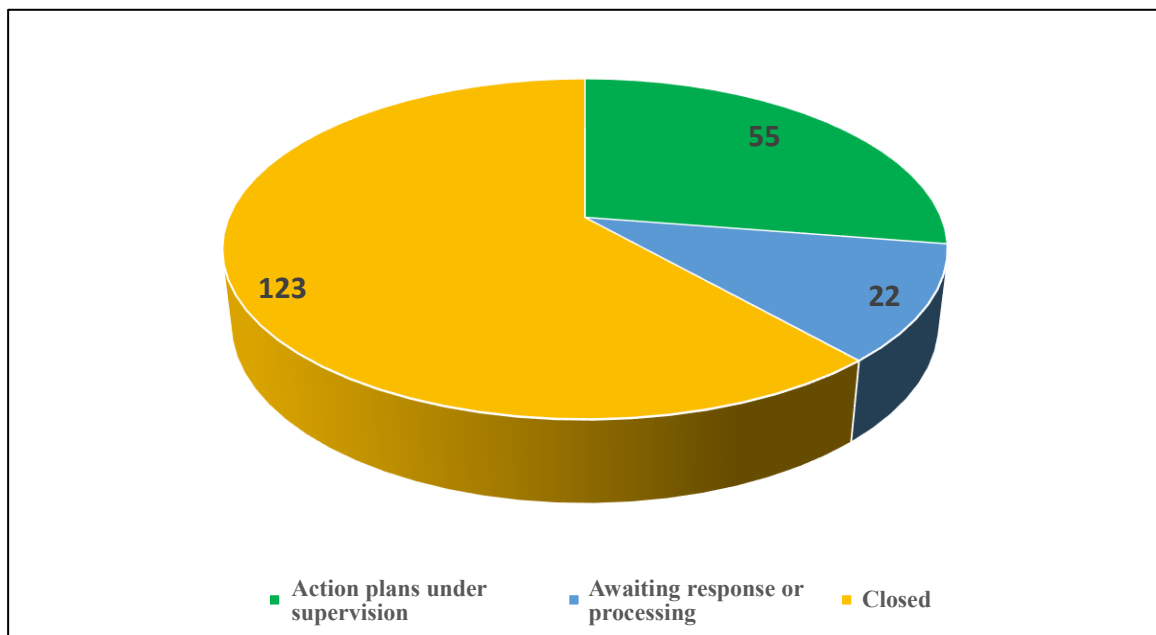


Figure 16 Statistics on safety recommendations made to government-affiliated agencies/institutions as of the end of 2024

### 4.3 Safety issues analysis for major marine occurrences

As of the end of 2024, the TTSB has completed investigations into 199 major marine occurrences and made 290 safety recommendations, in which 77 have not yet been completed, including 55 of which still have related action plans under the control of the Executive Yuan, and 22 were pending the submission of or are currently processing safety recommendation reports from relevant agencies. Marine safety issues were then summarized based on the 77 safety recommendations, as shown in Figure 17. The issues continued from 2023 include pilotage operations and management, vessel traffic service system operations and management, and fishing boat operation safety. Fishing port operation safety was included in fishing boat operation safety in 2024, and the issue was thus adjusted to fishing boat and fishing port operation safety.

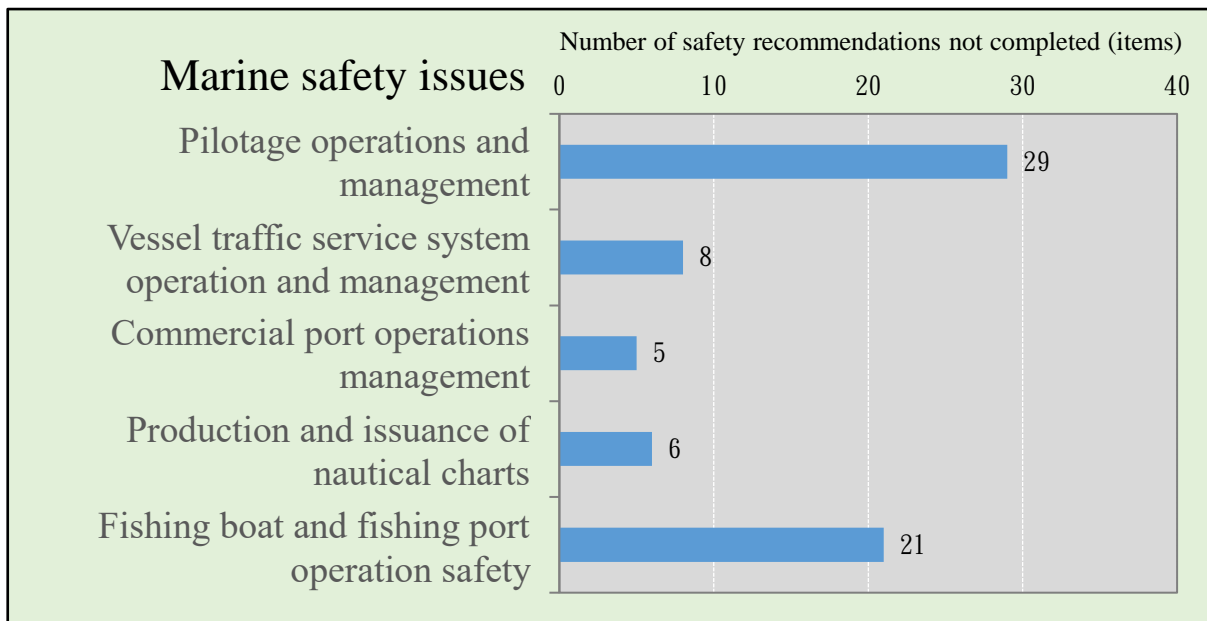


Figure 17 Statistics on the number of safety recommendations regarding marine safety issues not completed

### **Pilotage operations and management**

A pilot is a professional who guides vessels in and out of ports, coastal areas, inland waterways, and other waters. Pursuant to Article 6 and Article 16 of Taiwan's Pilotage Law, all non-national vessels with over 500 GT and all Taiwan-registered vessels with over 1,000 GT, except those excluded in Article 6, shall employ a pilot when sailing in compulsory pilotage districts or entering or leaving any ports where compulsory pilotage is required. Pursuant to Article 2 of the Regulations for Administrating Pilots, pilots serving in each pilotage district must organize a pilot office to manage the procedures for requesting pilotage services. Each pilot office shall draw working rules for its member pilots to follow; the rules shall be enforced after being approved by the shipping administration authority. Article 3 stipulates that any pilot office shall provide the duty book in its office for each shift of member pilots to go on duty by turn by day accordingly; the name list of the pilots on duty in turn each day shall be filed with the shipping administration authority.

As vessel piloting is a highly specialized profession, to become a pilot in Taiwan one must pass a professional and technical examination and complete three months of internship to obtain a practicing certificate. The practice process must also comply with the Pilotage Law, Regulations for Administrating Pilots, Commercial Port Law, Convention on the International Regulations for Preventing Collisions at Sea, and local port and shipping regulations. During the piloting process, the pilot boat and personnel related to port operation also need to include: communication and coordination between

Vessel Traffic Service Officer(VTSSO), pilot boat seafarer, tugboat workers, and mooring man. In practice, the work of a pilot involves considerable risks, especially when climbing a pilot ladder or gangway to board a large vessel in bad weather.

As of the end of 2024, 29 safety recommendations related to major marine occurrences and pilotage operations and management were not yet completed. This includes 28 items with action plans still under control and 1 item pending the submission or processing of the safety recommendation report from the unit that made the recommendation. This is slightly fewer than the 33 items at the end of 2023. The units responsible for improvement include the Maritime and Port Bureau, Ministry of Transportation and Communications (23 items), the Ministry of Transportation and Communications (3 items), and Taiwan International Ports Corporation (3 items). Related issues include:

- **Establishment, announcement, and implementation of compulsory pilotage districts and pilot boarding/disembarking points:** Establish and announce Taiwan's compulsory pilotage districts, announce the locations of pilot boarding/disembarking points, and mark them on nautical charts. Supervise the pilot office of each port to prohibit pilots from leaving ships midway in compulsory pilotage ports, except due to weather factors. Require all ports to ensure that pilots board and disembark vessels on the open sea under normal circumstances.
- **Safety management functions of pilot offices:** Assist the pilot office of each port in establishing a safety management system. Supervise the MPB in implementing an independent safety management and supervision system.
- **Pilot supervision and assessment:** Revise the pilot supervision and assessment system, and clearly define the procedures and standards for revoking professional certificates or ceasing practice. Formulate effective mechanisms and supporting measures to strengthen the supervision, management, assessment, and elimination of pilots, in order to ensure their suitability and competence. Review relevant regulations for pilots supporting pilotage operations in other ports, and supervise the pilots to ensure they are familiar with the port environment.

- **Sobriety test and physical examination for pilots:** Establish sobriety test regulations and standards for pilots in Taiwan. Improve the physical examination system and supporting measures for pilots in Taiwan, including at least stricter standards for physical examinations of pilots, and guidance on the key points of each examination in the process; these measures must be followed by examining physicians to ensure the consistency of physical examination results.
- **Pilot shifts and fatigue management:** Conduct a comprehensive review and study on increasing the minimum number of pilots in all pilotage areas across Taiwan, so as to avoid work fatigue among pilots and ensure there are enough personnel to take shifts; assist pilot offices in reviewing pilots' schedules, including the potential risk of fatigue from consecutive night shifts.
- **On-the-job training for pilots:** Include the knowledge and technical training required by pilots in accordance with international standards into the scope of amendment to Taiwan's pilotage laws and regulations. Plan and implement regular refresher training (at least once every 5 years) and on-the-job training courses for pilots to ensure they remain proficient in their professional capabilities and stay up-to-date on the latest knowledge.
- **Specifications and safety equipment of pilot boats:** Formulate standards and guidelines for dedicated pilot boats and strengthen the allocation of life-saving equipment for pilots who fall into the water. Establish pilot boats suitable for each port after taking into consideration the characteristics and weather conditions of each port, so as to ensure the safety of pilots boarding and disembarking.
- **Emergency response and rescue in case a pilot falls overboard:** In accordance with the disaster emergency response procedures of the marine casualty disaster prevention and rescue plan, formulate standard communication terminology to enhance communication efficiency and the timeliness of rescue when marine casualties and unexpected incidents occur.
- **Piloting communication and coordination as well as resource utilization:** Supervise skippers to ensure that they implement the vessel entry and exit navigation plan, effectively exchange information with the bridge team, and sail at a safe speed during pilotage operations. Clearly define the reporting mechanism for pilots before the completion of pilotage operations.

## **Vessel traffic service system operation and management**

The vessel traffic service (VTS) assists in navigation and guidance of vessels arrivals and departures ports, controls port traffic volume, assists in maritime search and emergency rescue, and provides environmental protection and other operational services. Since Taiwan's implementation of the "separation of government and business" policy in 2012, the VTS of international commercial ports has been operated and managed by the TIPC. As one of the important functions of the VTS is to ensure the safe navigation of vessels arrivals and departures ports, the operating organization shall establish and comply with relevant safety management regulations, employ qualified VTSO, and install various hardware and software equipment and facilities required for the VTS, so as to ensure that vessels enter and leave ports in accordance with relevant laws and international standards.

As of the end of 2024, there were 8 action plans of safety recommendations related to VTS operations and management for major marine occurrences still under control, fewer than the 15 items at the end of 2023. The units responsible for these improvements included Taiwan International Ports Corporation (5 items), the Ministry of Transportation and Communications (2 items), and the Maritime and Port Bureau of the Ministry of Transportation and Communications (1 item). Relevant issues include:

- **VTS supervision and management mechanisms:** Formulate regulations related to the legal status of VTS and relevant standards for the training, certification, and employment of VTS personnel. Refer to relevant contents of the IMO's Guidelines for Vessel Traffic Services to improve the employment standards of VTSO. Implement the division of labor and responsibilities of each VTSO to effectively monitor the movements of vessels in and outside ports.
- **VTSO training and competence:** Provide appropriate training to ensure that VTSO promptly provide the captain or pilot with appropriate navigational safety control measures; use standard terminology to provide messages, advice, warnings, and instructions for monitoring ship movement; and strengthen emergency response and communication skills.

## **Commercial port<sup>13</sup> operations management**

This marine safety issue was added in 2024. As of the end of 2024, there were 5 safety recommendations related to the operation and management of commercial ports that had not yet been completed, including 3 items with action plans still under control, and 2 items pending the submission or processing of the safety recommendation report from the unit that made the recommendation. The units responsible for these improvements include Taiwan International Ports Corporation (4 items) and the Maritime and Port Bureau, Ministry of Transportation and Communications (1 item). Related issues include:

- **Commercial port tugboat operations:** Formulate regulations or recommend conditions and areas for tugboats to complete their duties in ports, and formulate guidelines for the use of tugboats in ports to ensure that tugboats are ready and provide assistance before vessels enter the turning basin.
- **Commercial port navigation aids and inspections:** Establish standards for the size and visibility ranges of navigation aids to ensure that they effectively serve their warning function. Review navigational aids in ports to verify that all facilities are operating normally, and formulate necessary inspection plans.
- **Speed limits for vessels in commercial ports:** Require vessels to navigate slowly in ports as a principle, and review supporting measures for speed limits in ports in coordination with the pilot navigation plan.

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<sup>13</sup> According to Articles 2 and 3 of the Commercial Port Law (amended on June 28, 2023), a commercial port refers to a port where merchant ships enter in and depart from. Commercial ports are divided into international commercial ports and domestic commercial ports. “International commercial port” refers to a port where ROC-flagged ships and foreign-flagged ships are allowed to enter in and depart from, and are managed and governed by state-operated enterprises mandated from the competent authority (MOTC). Furthermore, should management-related items involve public authority, such items shall be handled by the MPB of the MOTC. “Domestic commercial port” refers to a port where only ROC-flagged ships are allowed to enter in and depart from. Foreign-flagged ships are only allowed to enter in and depart from such a port if a special permission is granted from the competent authorities or for the mere purpose of taking shelter. Domestic commercial ports shall be managed and governed by institutions designated by the MPB or Executive Yuan.

Since the maritime and port system reform in March 2012, Taiwan International Ports Corporation has been responsible for the operation and management of 7 international commercial ports in Taiwan: Kaohsiung, Taichung, Keelung, Taipei, Hualien, Su’ao, and Anping, as well as the management of two domestic commercial ports: Budai and Penghu. Please visit the official website of Taiwan International Ports Corporation for details: <https://www.twport.com.tw/about/ArticlesFull?a=70>.

## **Production and issuance of nautical charts**

This marine safety issue was added in 2024. As of the end of 2024, there were 6 safety recommendations related to nautical chart production and issuance pending the submission or processing of the safety recommendation report from the unit that made the recommendation. The units responsible for these improvements include the Maritime and Port Bureau, Ministry of Transportation and Communications (3 items), the Fisheries Agency of the Ministry of Agriculture, the Taiwan ENC Center of the Ministry of the Interior, and the Naval Meteorological and Oceanographic Office (1 item each). Related issues include:

- **Electronic nautical chart updates and verification:** Revise the inspection items in the pre-departure safety checklist for passenger ships, and add records of updates to nautical charts of ports of call (or fishing ports) or the electronic chart system. Formulate guidelines for the use of nautical charts and electronic chart systems applicable to vessels with less than 500 GT on domestic and international routes, and add verification mechanisms for nautical charts and the electronic chart system.
- **Fishing port nautical chart production and issuance:** Announce water depth information of Category I fishing ports after dredging, and provide the information to the Ministry of the Interior for the production and issuance of electronic nautical charts; produce and issue electronic nautical charts for fishing ports nationwide; and assess the feasibility of producing and issuing paper nautical charts of fishing ports nationwide.

## **Fishing boat<sup>14</sup> and fishing port<sup>15</sup> operation safety**

According to statistics, as of the end of 2024, the TTSB has investigated a total of 162 major marine occurrences involving fishing boats, accounting for 72% of all 225

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<sup>14</sup> According to the Regulations on the Management of Crew Members of Fishing Vessels (amended on November 5, 2024), fishing vessels refer to any vessel, sampan, and fishing raft used for the purpose of fisheries operation, and fishery patrol vessel, fishery research vessel, and fishery training vessel. According to the amended Regulations Governing the Handling of Investigation Procedures for Major Marine Occurrence promulgated on June 1, 2023, occurrences involving fishing boats with less than 300 GT and not carrying passengers are no longer included in the scope investigated by the TTSB.

<sup>15</sup> According to Article 3 of the Fishing Port Act (amended on January 27, 2006), a fishing port means a port mainly used by fishing vessels. According to Article 4 of the Fishing Port Act, fishing ports are categorized into first and second categories, which are managed by the central competent authority (Council of Agriculture, Executive Yuan) and municipal and county (city) governments, respectively. Categorization of a fishing port is designated by the central competent authority in consultation with the municipal/county (city) government where the fishing port is located, and based on fishery development need(s) and purpose(s) of usage.

major marine occurrences. This shows that occurrences involving Taiwan-registered fishing boats is a type of occurrence that demands attention. In addition, 21 safety recommendations related to fishing boat and fishing port safety operations have not yet been completed, slightly fewer than the 24 items at the end of 2023. This includes 13 items with action plans still under control and 8 items pending the submission or processing of the safety recommendation report from the unit that made the recommendation. The units responsible for these improvements are the Fisheries Agency, Ministry of Agriculture (10 items), the Maritime and Port Bureau, Ministry of Transportation and Communications (3 items), the Occupational Safety and Health Administration, Ministry of Labor (3 items), Tainan City Government and Yilan County Government (2 items each), and the National Communications Commission (1 item). Related issues include:

- **Fishing boat operation safety:** Require all Taiwan-registered fishing boats to install and activate automatic identification systems (AIS<sup>16</sup>) and vessel monitoring systems (VMS<sup>17</sup>) in accordance with regulations. Implement the safety and hygiene self-inspection checklist for fishing boats to prevent hazards caused by crew members operating machinery, equipment, or fishing gear on board. Formulate the Regulations for the Safety of Crew Members of Distant-Water Fishing Vessels and strengthen the promotion of Taiwan-registered fishing boat owners and crew members signing occupational safety and health work rules for fishing boats, in order to raise the safety awareness of fishing boat crew members. Assess raising the minimum bulwark height requirement for fishing boats, as well as other measures to prevent crew members from falling overboard. Formulate safety protection measures for the freezer fish holds of fishing boats to prevent hypoxia or poisoning of crew members.

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<sup>16</sup> An automatic identification system (AIS) is an automatic tracking system installed on ships. AIS data can be provided to marine radars by exchanging data with nearby ships, AIS shore stations, and satellites, in order to prevent collisions at sea. The AIS can also broadcast sea conditions and dangerous areas to improve navigation safety for ships. Messages sent by the AIS include: Maritime mobile service identity, vessel name, location, course, and speed.

<sup>17</sup> A vessel monitoring system (VMS) can transmit vessel position data to shore-based monitoring centers via satellite communication equipment, enabling real-time monitoring of vessel operations. Hence, many regional fishery management organizations (RFMOs) and coastal states require fishing boats operating in their jurisdictions to install VMS to obtain real-time information for monitoring and management, in order to effectively ensure that fishing boats operate in an orderly manner and to conserve fishery resources.

- **Recreational<sup>18</sup> fishing vessels:** Perform passenger roll calls before departure and after ships return, and ensure that necessary emergency search and rescue measures are taken in a timely manner. Raise awareness among captains to require passengers to wear life jackets. Consider plans to monitor surveillance cameras and have crew members patrol vessels that are carrying passengers to ensure timely detection of any abnormalities. Strengthen the ability of crew members on duty in the bridge to fully utilize navigation instruments and available methods, in order to ensure navigational safety and maintain proper lookout. Strengthen operating procedures for examining the installation of emergency position indicator radio beacons (EPIRB)<sup>19</sup>.
- **Fishing port operation safety:** Examine the issue with siltation in the channels of Category I and Category II fishing ports, formulate regular and effective dredging plans, and announce water depth information after dredging.

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<sup>18</sup> According to Article 2 of the Fisheries Act (amended on December 26, 2018), the term “competent authority” means the Council of Agriculture of the Executive Yuan at the central government level, municipal governments at municipality level, and county/city governments at county/city level. According to Article 41 of the Fisheries Act, the term “recreational fishery” means the fishery that catches/harvests aquatic fauna and flora for recreational purpose by using any fishing vessel to conduct such activity on the water or by using any fishing vessel to carry passenger(s) to conduct such activity on island(s) or reef, or that engages in tourism by using any fishing vessel to conduct such activity on the water or by using any fishing vessel to carry passenger(s) to conduct such activity on island(s) or reef. Furthermore, according to Article 41-1, the inspection, measurement, certified number of passengers, navigable waters, and other requirements for full-time or part-time recreational fishing vessels shall be subject to the regulations prescribed by the shipping administration authority on passenger ships and passenger small ships. Any recreational fishing vessels shall not carry passengers in excess of the number certified pursuant to the preceding paragraph, and shall not carry passengers outside the navigable waters as specified pursuant to the preceding paragraph.

<sup>19</sup> An EPIRB is a radio transmitter designed to be manually activated or automatically triggered upon contact with water in case of emergencies during a vessel’s voyage, such as crew abandonment, distress incidents, or ship foundering. It transmits distress signals via search-and-rescue satellites to facilitate signal transmission and location tracking, with the primary purpose of aiding search and rescue operations.

## V. Conclusion

This report analyzes the operations of merchant ships and fishing boats in Taiwan, as well as the operations of Taiwan's international commercial ports and industrial ports, based on data from the Ministry of Transportation and Communications (MOTC), the Maritime and Port Bureau (MPB) of the MOTC, the Bureau of Industrial Parks of the Ministry of Economic Affairs, and the Fisheries Agency of the Ministry of Agriculture. In addition, statistical analysis was conducted based on data on major marine occurrences and transportation safety recommendations from the establishment of the TTSB on August 1, 2019 to the end of 2024. Based on chapters one through four of this report, the conclusions are summarized below:

1. In 2024, there was a total of 313 Taiwan-registered merchant vessels, gross tonnage decreased to 4,499,460 tons, lower than in 2023, while deadweight tonnage decreased to 6,296,288 tons. Over the past decade (2015 to 2024), the number of Taiwan-registered merchant vessels peaked at 317 vessels in 2021 and 2022, and then slightly declined. Overall, there has been no significant increase over the past decade. The GT and DWT of vessels peaked in 2020 and have shown a downward trend ever since.
2. The total number of fishing boats in Taiwan remained relatively stable between 2015 and 2024, averaging about 12,209 vessels per year, with over 90% of vessels under 100 GT. Vessels with 0-4.9 GT have shown an upward trend since 2020; The number of fishing boats with 100-199.9 GT and 200-499.9 GT have both shown an upward trend since 2019. The number of fishing boats with 1,000 GT or above increased to 120 in 2024, the highest in the past decade.
3. Among the 7 international commercial ports in Taiwan, the highest number of vessel arrivals and departures the Port of Kaohsiung with 30,947 vessels in 2024, followed by the Port of Taichung with 22,722 vessels, and the Port of Taipei, the Port of Keelung, the Port of Hualien, the Port of Anping, and the Port of Su'ao. The number of vessel arrivals and departures the Port of Kaohsiung between 2016 and 2024 dropped to its lowest level ever in 2024. The number of vessel arrivals and departures the Port of Taichung has shown an upward trend since 2019. Overall, there have not been any major changes.
4. Among the 2 industrial ports in Taiwan, Mailiao Industrial Harbor had the highest number of vessel arrivals and departures in 2024, with 3,713 vessels, followed by Hoping Industrial Harbor with 730 vessels in total. The number of vessel arrivals and departures Mailiao Industrial Harbor between 2016 and

2024 has shown a downward trend since 2018. The number of vessel arrivals and departures Hoping Industrial Harbor has remained relatively stable over the years, except for the 594 vessels in 2023, which was the lowest in the past decade. Overall, it has shown a downward trend.

5. The TTSB has investigated 225 major marine occurrences since it was established to the end of 2024. The highest proportion was Level 3 cases accounting for 69.3% (156 cases), followed by Level 2 cases accounting for 25.3% (57 cases), and Level 1 cases accounting for the lowest proportion at 5.3% (12 cases). Since 2019, the number of Level 3 cases significantly decreased in 2023 and 2024 due to the TTSB's amendment to the Regulations Governing the Handling of Investigation Procedures for Major Marine Occurrence. The total number of Level 1 and Level 2 cases has remained between 9 and 11 since 2021 and did not show any significant decrease.
6. From the establishment of the TTSB to the end of 2024, of the 225 major marine occurrences, work safety accounted for the highest proportion at 23.1% (52 cases), followed by fire/explosion accounting for 20.4% (46 cases). In addition, collision, work safety, and capsizing occurrences slightly decreased after 2022, while grounding, fire/explosion, and contact occurrences increased slightly in 2024.
7. From the establishment of the TTSB to the end of 2024, of the 225 major marine occurrences, fishing boats accounted for the highest proportion at 72% (162 cases), followed by freighters accounting for 18.2% (41 cases).
8. From the establishment of the TTSB to the end of 2024, of 225 major marine occurrences, 36 were fatal occurrences (16%). The highest number of fatal occurrences in a year was 10 in 2022, accounting for 25.6% of the total number of cases that year. The number of fatal occurrences then showed a downward trend and declined to 2 cases in 2024, accounting for 15.4% of the total number of cases that year.

9. From the establishment of the TTSB to the end of 2024, of the 36 fatal occurrences, other types of cases accounted for the highest proportion at 83.3% (occurred in 5 out of the 6 cases), followed by capsizing occurrences accounting for 32.1% (occurred in 9 out of the 28 cases), and work safety occurrences accounting for 26.9% (occurred in 14 out of the 52 cases). According to vessel type, fishing boats accounted for the highest proportion at 18.5% (30 out of 162 cases), followed by general cargo ships at 17.6% (3 out of 17 cases) and container ships at 15.4% (2 out of 13 cases).
10. From the establishment of the TTSB to the end of 2024, the TTSB completed the investigation of 199 major marine occurrences and provided 290 transportation safety recommendations, in which 213 were completed or do not require follow-up, with a safety recommendation completion rate of 73.4%. The highest proportion of safety recommendations was made to government-affiliated agencies/institutions (200 items; approximately 69.0%), followed by maritime transport businesses (66 items; approximately 22.7%). International institutions accounted for the lowest proportion (24 items; approximately 8.3%). In terms of vessel types, the highest proportion was freighter occurrences (133 items; approximately 45.9%), followed by fishing boats (76 items; approximately 26.2%), passenger ships and other (each with 29 items; approximately 10.0%).
11. As of the end of 2024, a total of 290 safety recommendations were made in investigations of major marine occurrences, in which 77 have not yet been completed, including 55 items with action plans still under control, and 22 items were waiting for responses or currently being processed by government-affiliated agencies/institutions. Safety issues are summarized below:
  - (1) **Pilotage operations and management:** This safety issue is continued from 2023. Related issues include the establishment, announcement, and implementation of compulsory pilotage districts and pilot boarding/disembarking points; Safety management functions of pilot offices; Pilot supervision and assessment; Sobriety test and physical examination for pilots; Pilot shifts and fatigue management; On-the-job training for pilots; Specifications and safety equipment of pilot boats; Emergency response and rescue in case a pilot falls overboard; Piloting communication and coordination as well as resource utilization. Safety recommendations that have not yet been completed can be broken down

by responsible unit as follows: the MPB of the MOTC with 23 items, followed by the MOTC with 3 items, and Taiwan International Ports Corporation with 3 items. A total of 29 safety recommendations have not yet been completed, slightly fewer than the 33 safety recommendations as of the end of 2023.

- (2) **Vessel traffic service system operation and management:** This safety issue is continued from 2023. Related issues include VTS supervision and management mechanisms, and the training and competence of VTSO. Safety recommendations that have not yet been completed can be broken down by responsible unit as follows: Taiwan International Ports Corporation with 5 items, the MOTC with 2 items, and the MPB of the MOTC with 1 item. A total of 8 safety recommendations have not yet been completed, fewer than the 15 safety recommendations as of the end of 2023.
- (3) **Commercial port operations management:** This marine safety issue was added in 2024. Related issues include commercial port tugboat operations, commercial port navigation aids and inspections, and speed limits for vessels in commercial ports. Safety recommendations that have not yet been completed can be broken down by responsible unit as follows: Taiwan International Ports Corporation with 4 items and the MPB of the MOTC with 1 item.
- (4) **Production and issuance of nautical charts:** This marine safety issue was added in 2024. Related issues include electronic nautical chart updates and verification, and fishing port nautical chart production and issuance. Safety recommendations that have not yet been completed can be broken down by responsible unit as follows: the MPB of the MOTC with 3 items, and the Fisheries Agency of the MOA, the Taiwan ENC Center of the Ministry of the Interior, and the Naval Meteorological and Oceanographic Office with 1 item each.
- (5) **Fishing boat and fishing port operation safety:** The part on fishing port operation safety was added as a marine safety issue in 2024. Related issues include fishing boat operation safety, recreational fishing vessels, and fishing port operation safety. Safety recommendations that have not yet been completed can be broken down by responsible unit as follows: the Fisheries Agency of the Ministry of Agriculture with 10 items, the MPB of the MOTC with 3 items, the Occupational Safety and Health Administration of the Ministry of Labor with 3 items, Tainan City

Government and Yilan County Government with 2 items each, and the National Communications Commission with 1 item. A total of 21 safety recommendations have not yet been completed, slightly fewer than the 24 safety recommendations as of the end of 2023.

## Appendix 1 Glossary

The terms used for marine occurrences in the international conventions, resolutions of Committee meetings, regulations, and guidelines of the IMO consist mainly of words such as “marine casualty,” “marine incident,” or “maritime casualty.” For example, in the Code of International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident (CI Code) (MSC.255[84]) passed in 2008, Item 2.9 of Chapter 2 defines a maritime casualty as an event leading to any of the following situations (IMO, 2008):

1. Death or serious injury of personnel caused by or related to the operation of a vessel;
2. Missing personnel on board caused by or related to the operation of a vessel;
3. Total loss of the ship, constructive total loss, or abandonment of the vessel;
4. Material damage to the vessel;
5. Grounding of the vessel, loss of navigational capability, or involvement in a collision occurrence;
6. Material damage to the vessel caused by or related to the operation of a vessel;
7. Material damage to the environment caused by or related to the operation of a vessel.

According to Appendix 5 of MSC-MEPC.3/Circ.4/Rev.1 of the IMO released in 2014, marine casualties are divided into collision, grounding, contact, fire/explosion, hull failure, equipment failure/loss of control, ship/equipment damage, capsize/listing, flooding/foundering, ship missing, and occupational accident based on the principle of initial event, as detailed below (IMO, 2014):

1. Collision: The vessel collides with another vessel or vessels during navigation, or the vessel collides with another vessel or vessels other than during navigation;
2. Grounding: The vessel is grounded, whether powered by a motor or not;
3. Contact: Collision with fixed objects, floating objects, and flying objects;
4. Fire/explosion: The initial event is caused by a fire or explosion on board the vessel;

5. Hull failure: Hull damage of the vessel not caused by any of the reasons listed in 1 to 4;
6. Equipment failure/loss of control of sea worthiness equipment: Loss of control of the vessel due to failure of important machines and equipment not caused by any of the reasons listed in 1 to 5;
7. Ship/facility damage: Damage to the vessel or equipment not caused by any of the reasons listed in 1 to 6;
8. Capsize/listing: Capsizing or listing of the vessel not caused by any of the reasons listed in 1 to 7;
9. Flooding/foundering: Flooding or foundering of the vessel not caused by any of the reasons listed in 1 to 7;
10. Vessel missing: The vessel loses contact, and its position cannot be confirmed;
11. Occupational accident: Objects on board shifting, bursting, being damaged, cracking, falling, or collapsing; the spillage, capsizing, leakage, flow, evaporation, or dispersion of materials on board; power-related issues on board; loss of control of machines, transport/loading equipment, manual machines, and animals on board; or injury or death of any person on board due to shock, fright, slip, trip, or fall.
12. Other: Such as crew suicide or unexplained failure of a crew member to return to the vessel.
13. Unknown: Unknown cause of marine casualty.

Chapter 2 of the CI Code and the IMO's 2014 MSC-MEPC.3/Circ.4/Rev.1 also classify marine casualties into very serious marine casualty, marine casualty, and marine incident according to their severity. The detailed descriptions are as follows:

1. Very serious marine casualty: Refers to an occurrence involving a vessel that results in loss of life, total loss of the ship, or severe environmental damage.
2. Marine casualty: An event directly related to the operation of a vessel that results in any of the following consequences:
  - (1) Serious injury;
  - (2) Missing personnel on board;

- (3) Material damage to the vessel;
  - (4) Grounding of the vessel, loss of operational capability, or involvement in a collision;
  - (5) Damage to maritime infrastructure that causes material structural damage to the vessel, endangering the vessel itself, other vessels, or individuals; Potential severe environmental damage.
3. Marine incident: An event, other than a marine casualty, caused by or related to the operation of a vessel, where the event has endangered the vessel or any personnel, or could result in material structural damage to the vessel or environmental damage.

## Appendix 2 Major Marine Occurrences Initiated in 2024

No.	Date	Vessel type/name/ registration number or serial number	Occurrence description	Casualties	Occurrence category
1	3/29	Fishing boat/Sheng Fan No. 188/CT7-0678	Sheng Fan No. 188 caught fire in the engine room approximately 605 nautical miles northeast of Victoria Port, in the Seychelles (Western Indian Ocean). The 25 crew members of the vessel were rescued by a nearby friendly vessel after the occurrence. Sheng Fan No.188 continued to burn and eventually sank around 0800 hours on March 30 (local time in Taipei). There were no casualties in this occurrence.	None	3
2	4/21	Recreational fishing vessel/Guei Shan Jau Ryh II/CTF3-0052	Guei Shan Jau Ryh II navigated the waters off Yilan for a whale-watching trip. After the trip ended, it was discovered that one passenger had left behind personal belongings on the vessel. The body of the passenger was found on April 28, 2024.	1 dead	3
3	5/20	Container ship/Hua Hang 1/9388285	Hua Hang 1 contacted wharf No. 43 with its stern while departing from wharf No. 42 in the Port of Kaohsiung, causing damage to both the stern of the vessel and the wharf. No casualties or environmental pollution resulted from this occurrence.	None	2
4	6/4	Fishing boat/Ji Wen No. 1688/CT6-1471	A fire broke out on the ship approximately 448 nautical miles southwest of Betio Island, Kiribati in the South Pacific Ocean. The 4 crew members were rescued by a nearby friendly vessel. Ji Wen No. 1688 continued to burn and eventually sank on the night of June 4. There were no casualties in this occurrence.	None	3
5	6/7	Bulk carrier/YUAN SHUN/9252058	Yuan Shun contacted west no.24 wharf when berthing at the Port of Keelung. The occurrence caused flooding of the fore peak tank of Yuan Shun and damage to the curb and the underwater steel plate of the wharf. There were no casualties or environmental pollution in this occurrence.	None	2
6	6/8	Oil tanker/Tong Yun/9566356	Tong Yun met with a Liberian-registered bulk carrier FPMC B FOREVER at the	None	2

No.	Date	Vessel type/name/ registration number or serial number	Occurrence description	Casualties	Occurrence category
			traffic lane of the Port of Kaohsiung. After the meeting, the oil tanker's starboard side contacted the offshore breakwater of Kaohsiung Port No.2 entrance, causing damage to both the hull and the breakwater. No casualties or environmental pollution resulted from this occurrence.		
7	6/12	General cargo ship/Hui Feng/013083	An explosion and fire occurred on the ship 17 nautical miles off the south breakwater of the Port of Kaohsiung. Due to the fire being out of control, the captain ordered to abandon the ship. The occurrence resulted in 3 injuries that were sent to the hospital. The fire destroyed parts of the engine room, accommodation, and the bridge of Hui Feng.	3 injured	2
8	6/22	Recreational fishing vessel/Chao Yao No. 1/CT2- 6502	The ship caught fire during a security check when entering Jiangjun Fishing Port in Tainan City, and the entire hull was destroyed. There were no casualties or environmental pollution in this occurrence.	None	3
9	7/25	General cargo ship/Fu Shun/8510221	The ship suffered listing and water ingress at 15.4 nautical miles off of the Port of Kaohsiung First Entrance. The captain announced to abandon ship. The occurrence resulted in the sinking and total loss of the Fu Shun, with 2 crew members killed and 3 crew members missing.	3 dead/2 missing	1
10	10/14	Cargo ship/Yu Zhou Qi Hang/9643776	During berthing at the Port of Keelung, the ship contacted a bridge crane at West Pier 20, resulting in damage to one bridge crane on shore and one on board the ship. There were no casualties or environmental pollution in this occurrence.	None	2
11	10/23	LNG carrier/Taitar No.2 /9403645	The ship made contact with the north breakwater after passing the south breakwater while departing the Port of Taichung. This occurrence caused damage to the bow of the vessel and the breakwater. There were no casualties or	None	2

No.	Date	Vessel type/name/ registration number or serial number	Occurrence description	Casualties	Occurrence category
			environmental pollution in this occurrence.		
12	10/29	Cargo ship/Yu Zhou Qi Hang/9643776	The ship encountered severe weather while navigating 2.4 nautical miles north-northwest of Yehliu Geopark near Keelung. Due to the severe weather, the vessel was unable to continue safe navigation, and the captain ordered the crew to abandon the ship. On October 31, at 0745 hours, the vessel grounded near the Yehliu coastline. This occurrence led to the vessel striking rocks, resulting in a list and water ingress, causing extensive damage to the hull.	1 injured	1
13	12/11	Container ship/YM Unicorn/9462732	The ship grounded at the west breakwater while entering the Port of Keelung. The occurrence caused damage to the bow of the vessel and the breakwater. There were no casualties or environmental pollution in this occurrence.	None	2

### Appendix 3 Safety Recommendations from Major Marine Occurrences Investigations in 2024

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
1	20230320 The container ship HYUNDAI TOKYO contacted Pier 77 of the Port of Kaohsiung	Maritime and Port Bureau, MOTC	Referring to practices in domestic and international transportation industries as well as international pilot alcohol testing management practices, establish alcohol testing regulations and standards for pilots in our country to prevent pilots from being affected by alcohol during duty, leading to impaired cognitive functions and posing risks to the safe execution of ship navigation capabilities.
2			Based on the investigation of this occurrence and referencing to the recommendations from past research projects on our country's pilot management system, formulate effective measures to strengthen the supervision, management, assessment, and elimination mechanisms for pilots, along with corresponding measures. This will promote reforms in the pilot management system to ensure the suitability and competence of pilots, thus enhancing the safety of vessels arriving and departing.
3			Supervise the Kaohsiung Harbor Port Office to completely review the potential risks of cumulative fatigue from consecutive night shifts among pilots, and devise mitigating measures.
4			Take stock of the current maritime administrative investigation personnel in each maritime affairs center, and assess the efficiency of administrative investigations, with the goal of training dedicated maritime administrative investigation personnel, enhancing maritime administrative investigation capabilities, and improving the safety of our country's ports and vessels.
5		Taiwan International Ports Corporation, Ltd.	Enhance the safety of ship operations and navigation within Kaohsiung Port, develop guidelines for the use of tugboats. These guidelines aim to ensure that tugboats are ready and available to assist vessels before entering the turning basin, thereby preventing situations where vessels are not under command or have restricted maneuverability upon entry. Tugboats can provide rapid support in such cases, reducing the risk of occurrences.
6		Port of Kaohsiung Pilot Office	Review the potential risks of accumulated fatigue from pilots' consecutive night shifts and devise mitigation measures to prevent pilots from being affected by fatigue, thus safeguarding navigational safety.
7		NAVIOS SHIPMANAGEMENT INC	Promote the implementation of Master-Pilot Exchange (MPX) within the fleet and assess the feasibility of the pilot's berthing plans, effectively monitoring the piloting process, thereby reducing the risk of occurrences during vessel entry and departure from ports.

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
8			Promote within the fleet the adherence to IMO Resolution A.960(23), which states that although pilots take charge of navigation and berthing after boarding, they must still respect the authority of the master. If unsafe operations or behaviors are observed during piloting, the master must promptly intervene and take over control of the vessel.
9		Guo Tong Fishery Co., Ltd.	Strengthen the safety promotion of onboard safety and health equipment to prevent crew members from being harmed by machinery, equipment, or fishing gear.
10	20231003 Casualties of crew members of fishing boat Guo Tong No. 3 off the coast of Kushiro Port, Japan	Fisheries Agency, MOA	Continue to study the types of fishing vessel accidents and crew casualties in our country, propose the " Safe Operation Guidelines for the crews of ocean-going fishery vessels", to enhance the safety awareness of fishing vessel crews, and ensure fishing vessel navigation safety.
11		Occupational Safety and Health Administration, Ministry of Labor	Guide the ocean-going fishery operators to faithfully comply with the Occupational Safety and Health Act, strengthen the content of the "Occupational Safety and Health Manual for Fishing Vessels", and implement the fishing vessel self-safety and health inspection checklist, to prevent crew members harm from operating on-board machinery, equipment or fishing gear.
12			Cooperate with the Occupational Safety and Health Administration, Ministry of Labor, and the Maritime and Port Bureau, Ministry of Transportation and Communications, to develop safety measures for the freezing compartments of fishing vessels to prevent crew members from suffering from oxygen deficiency or poisoning accidents.
13	20230324 Casualties of crew members of fishing boat Sheng Feng 266 off the coast of the Port of Rabaul, Papua New Guinea	Fisheries Agency, MOA	Cooperate with the Occupational Safety and Health Administration, Ministry of Labor, to encourage the employer and crew of Taiwanese fishing vessels to jointly sign an occupational safety and health code for fishing vessels to ensure compliance with the relevant provisions of the Occupational Safety and Health Act.
14			Amend the "Occupational Safety and Health Manual for Fishing Vessels" and the "Occupational Safety and Health Work Rules for Fishing Vessels" to include safety measures for working in fish holds. This includes preventing crew members from suffering from oxygen deficiency or poisoning due to poor ventilation in the fish hold and implementing inspection and protection measures for cooling coils on the floor to prevent damage from being stepped on, heavy pressure, or corrosion. Upon completion, these guidelines would be provided and followed by the employer and crew of Taiwanese fishing vessels.

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
15		Maritime and Port Bureau, MOTC	Assist the Fisheries Agency of the Ministry of Agriculture in developing safety measures for the freezing compartments of fishing vessels to prevent crew members from suffering from oxygen deficiency or poisoning accidents.
16		Occupational Safety and Health Administration, MOL	Assist the Fisheries Agency of the Ministry of Agriculture in developing safety measures for the freezing compartments of fishing vessels to prevent crew members from suffering from oxygen deficiency or poisoning accidents.
17		Owner of fishing boat Sheng Feng No. 266	Enhance the safety measures for cooling coils on the floor of fish holds. Perform regular inspections of the coils to reduce the risk of damage due to personnel stepping on them, heavy pressure, or corrosion, which could lead to refrigerant leakage.
18			Enhance safety training and awareness for crew members working in fish holds, or equip gas detectors to reduce the risk of crew members suffering from oxygen deficiency or poisoning accidents in the fish holds.
19			Accelerate the joint signing of occupational work rules for fishing vessels with crew members to implement relevant provisions of the Occupational Safety and Health Act.
20	The passenger-cargo ship Taima Star lost power off the coast of Fu'ao Port in Lienchiang County on June 3, 2023.	Maritime and Port Bureau, MOTC	Enhance and implement the interim verification system for our nation's ships by the requirements of the National Vessel Safety Management (NSM) and the International Safety Management (ISM) Code. Strengthen the capabilities of auditors to ensure that ship management companies and ships achieve effective safety management.
21		Lienchiang County Government	Oversee the review process of current ship handover procedures by the Lienchiang County Matsu Lienchiang Navigation Ltd. Establish a supervisory mechanism for familiarizing with ship operations, and assist newly assigned crew members in becoming acquainted with the operation of all equipment on the ship. Ensure that the ship management company can safely operate those ships under their management.
22	The passenger-cargo ship Taima Star lost power off the coast of Fu'ao Port in Lienchiang County on June 3, 2023.	Lienchiang Navigation Co., Ltd.	Review the current handover procedures for the ships under management, establish a supervisory mechanism for familiarizing crew members with ship operations, and assist newly assigned crew in becoming acquainted with the operation of all ship equipment. Ensure that the ship management company can safely operate the ships under their management.
23		Ocean World Engineering & Technology Co., Ltd.	Review the current safety management system procedures to ensure they align with the ship's real conditions. Clearly define the company's supervisory role in critical operations and ensure the implementation of relevant documentation

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			and checklists.
24			Enhance the on-the-job training for crew members on watchkeeping and equipment operation to ensure they are familiar with their watch duties and emergency procedures with the requirements of the National Vessel Safety Management (NSM) system.
25			Review the relevant ship equipment and place operation and emergency procedure documents at the main switchboard and other critical equipment locations. This ensures that the crew can follow these procedures during emergencies.
26	The passenger-cargo ship Double Lucky was grounded next to the breakwater channel of Jiangjun Fishing Harbor in Tainan City on July 3, 2023.	Yong Jay Technologies Co., Ltd.	Review the berthing plans and the accuracy of the electronic chart systems for the ships.
27			Strengthen the safety management awareness and evasive maneuvering capabilities of the captain when encountering potential dangers.
28		Tainan City Government	Re-examine the siltation issues in the navigation channels of second-type fishing harbors under its jurisdiction, formulate effective periodic dredging plans, and timely publish the water depth information after dredging.
29		Maritime and Port Bureau, MOTC	Supervise the Yongjay Technologies Co., Ltd. to review the berthing plans and the accuracy of the electronic chart systems for its ships, avoid entering the port during low tide to ensure sufficient under-keel clearance.
30			Revise the items in the Passenger Vessel Pre-Departure Safety Checklist to include updating records of the nautical charts or electronic chart systems of the berthing port (or fishing harbor) to ensure the safety of ship navigation.
31			Cooperate with relevant government agencies to formulate guidelines for the use of nautical charts and electronic chart systems for the ships of domestic route, and the international ships under 500 gross tons, and include inspection mechanisms for nautical charts and electronic chart systems.
32		Fisheries Agency, MOA	Conduct a nationwide inventory of siltation issues in the navigation channels of first-type fishing harbors, formulate effective periodic dredging plans, provide guidance to local governments for dredging secondary fishing ports, and publish the water depth information after dredging.
33			Regularly inspect the water depth conditions of the navigation channels and berth areas of first-type fishing harbors, publish the water depth information after dredging, and provide it to the Ministry of the Interior for the production and issuance of electronic navigational charts.

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
34		Taiwan ENC Center, Ministry of the Interior	Cooperate with the Fisheries Agency to establish and issue electronic navigational charts for all fishing harbors nationwide, and provide them for use by Taiwan's fishermen and relevant government agencies.
35		Naval Meteorological and Oceanographic Office	Cooperate with the Fisheries Agency to evaluate the feasibility of establishing and issuing paper nautical charts for all fishing harbors nationwide, and provide them for use by Taiwan's fishermen and relevant government agencies.
36		Maritime and Port Bureau, MOTC	Supervise the pilot offices at each port to ensure that pilots implement the vessel arrival and departure pilotage plans during navigation, conduct effective master pilot information exchange (MPX) with the bridge team, and maintain safe speeds during piloting to ensure the safety of the vessel and port, thereby reducing the risk of occurrences.
37	20230710 Container ship WAN HAI 312 made contact with the revetment when departing from the Port of Kaohsiung	Taiwan International Ports Corporation, Ltd.	Enhance maritime operations and navigation safety within Kaohsiung Port, propose procedures or recommendations regarding the conditions and areas for ending tugboat tasks, to reduce the risk of vessels experiencing sudden loss of propulsion or restricted maneuverability.
38			Set the safety of the port and ships as a higher priority, and adopt the principle of reduced speed of vessels in the port area to ensure the navigation safety in the port. Review the supporting measures for the speed limit in the Kaohsiung Port in conjunction with the pilotage plan.
39			Port of Kaohsiung Pilot Office
40	20240329 The fishing boat Sheng Fan No. 188 sank after catching fire in the western Indian Ocean	Sheng Fan Fishery Co., Ltd.	Educate the crew on the self-check procedures for the Emergency Position Indicating Radio Beacon (EPIRB). If the captain finds that the EPIRB is not installed in an open space outside the cabin, immediate correction should be made.
41	20240421 The occurrence of a passenger falling overboard and drowning from the recreational fishing vessel	Toucheng District Fishermen's Association	Evaluate the planning of ship surveillance systems and crew patrol arrangements when the ship is carrying passengers, to ensure timely detection of any abnormal situations and safeguard passenger safety.
42			Implement the roll call system for passengers boarding and disembarking before departure and after return to ensure that necessary emergency search and rescue measures can be taken promptly.

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
43	"Guei shan jau ryh II" off the coast of Yilan	Yilan County Government	Supervise the affiliated fishermen's associations in evaluating the planning of ship surveillance systems and crew patrol arrangements while the ship is carrying passengers, to ensure timely detection of any abnormal situations and safeguard passenger safety.
44			Supervise the affiliated fishermen's associations in implementing a roll call system for passengers boarding and disembarking before departure and after return to ensure that necessary emergency search and rescue measures can be taken promptly.
45	The recreational fishing vessel Jin An Hai Bao collided with the tugboat Bihn An off the coast of An-Ping Fishing Harbor on November 25, 2023 and resulted in people falling overboard and going missing.	PetroVietnam Technical Services Corporation (PTSC)	Strengthen fleet safety management to ensure compliance with the International Regulations for Preventing Collisions at Sea (COLREGs) during navigation. On-duty officers should effectively utilize visual and auditory aids, navigational instruments, and appropriate methods to maintain a proper lookout and avoid collision risks.
46		Maritime and Port Bureau, MOTC	Assess the issue of unmanned transport barges using solar-powered navigation lights under the Taiwan flag. Strengthen inspection procedures to ensure that navigation lights comply with COLREGs. Navigation lights installed on such vessels should be inspected and approved by the maritime authority or a recognized inspection agency before being used during navigation.
47		Fisheries Agency, MOA	Enhance navigation training and safety promotion for recreational fishing vessels. Crew members on duty should effectively use visual and auditory aids, navigational instruments, and appropriate methods to maintain a proper lookout and avoid collision risks, particularly regarding the recognition of towing lights and avoidance measures by Fishing Vessel captains.
48			Implement the installation of Automatic Identification Systems (AIS) or Vessel Monitoring Systems (VMS) as designated by central competent authorities on recreational fishing vessels. Before departure, ship owners or captains should check and confirm that the ship's position signals have been reported to the Fisheries Monitoring Center.
49		Tainan City Government	Strengthen the management and promotion of safety for recreational fishing boats, ensuring that captains require passengers to wear life jackets for their safety.
50		National Communications Commission	Re-examine the inspection regulations for Emergency Position Indicating Radio Beacons (EPIRB). Strengthen operational procedures and maintain detailed records of related documents (including photos).
51	Coast Guard Administration, Ocean Affairs Council	Strengthen training and awareness programs for bridge watchkeepers of the fleet to ensure compliance with the International Regulations for Preventing Collisions at Sea (COLREGs), with particular emphasis on maintaining	

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			proper lookout during vessel operations. Additionally, ensure that on-duty personnel are familiar with navigational equipment to assist with their duties.
52	Fishery patrol vessel Hsun Hu No. 9 collided with the semi-container ship Da Yang off the coast of Qimei Island, Penghu County on December 13, 2023.		Evaluate the timing and content of the Automatic Identification System (AIS) signals sent by the fleet's vessels, balancing the need for confidentiality in law enforcement operations of public service vessels while ensuring that vessels in the vicinity can promptly obtain relevant information and take collision avoidance measures.
53			Develop and establish procedures for the inspection and performance testing of Voyage Data Recorders (VDR) for the fleet's vessels to ensure the integrity and accuracy of recorded data, including vessel position, bridge audio, and navigational equipment images.
54			Develop and establish procedures for the onboard storage of Voyage Data Recorder (VDR) data for the fleet's vessels, and ensure these procedures are well communicated so that necessary assistance can be provided during near-miss incidents or maritime investigations.
55			Kaochin Shipping Co., Ltd.