

# Safety and Shipping Review 2023

An annual review of trends and  
developments in shipping losses and safety



# About AGCS

Allianz Global Corporate & Specialty (AGCS) is a leading global corporate insurance carrier and a key business unit of Allianz Group. We provide risk consultancy, Property-Casualty insurance solutions and alternative risk transfer for a wide spectrum of commercial, corporate and specialty risks across nine dedicated lines of business and six regional hubs.

Our customers are as diverse as business can be, ranging from Fortune Global 500 companies to small businesses. Among them are not only the world's largest consumer brands, financial institutions, tech companies, and the global aviation and shipping industry, but also floating wind parks or Hollywood film productions. They all look to AGCS for smart solutions to, and global programs for, their largest and most complex risks in a dynamic, multinational business environment and trust us to deliver an outstanding claims experience.

Worldwide, AGCS operates with its own teams in more than 30 countries and through the Allianz Group network and partners in over 200 countries and territories, employing more than 4,200 people. As one of the largest Property-Casualty units of Allianz Group, we are backed by strong and stable financial ratings. In 2022, AGCS generated a total of €11.2bn gross premium globally.

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# Contents

---

Page 4

Executive summary

---

Page 11

Losses in focus

---

Page 19

Economic outlook

---

Page 23

Hull and cargo risks

---

Page 29

War and crime

---

Page 35

Claims

---

Page 36

Decarbonization and sustainability

# Executive summary

Allianz Global Corporate & Specialty's (AGCS) annual **Safety and Shipping Review** identifies loss trends and highlights a number of risk challenges for the maritime sector.

## Loss developments [▶ page 11](#)

Shipping transports between 80% to 90% of world trade onboard different vessels so maritime safety is critical. Improvements have been significant over the past decade in particular. Thirty years ago, the global fleet was losing 200+ vessels a year. At the end of 2022 fewer than 40 losses were reported. It has now been six years since a triple-digit total loss year.

The review shows 38 total losses of vessels (over 100 gross tonnage [GT]) during 2022, compared with 59 a year earlier, down by 36%. Annual shipping losses have declined by 65% over the past decade (109 total losses in 2013) reflecting the positive effect of an increased focus on safety measures over time, such as regulation, improved ship design and technology and risk management advances.

South China, Indochina, Indonesia and the Philippines is the global loss hotspot, both over the past year and decade (204 total losses). It accounted for one in four losses in 2022 (10), driven by factors such as high levels of trade, congested ports, older fleets and extreme weather. The Arabian Gulf, British Isles, and West Mediterranean waters were the second top loss locations (3). The past 10 years have seen 807 total losses reported. Three regions, South China, Indochina, Indonesia and the Philippines, East Mediterranean and Black Sea (118), and Japan, Korea and North China (76) account for almost 50% of global loss activity over this time.

Around a quarter of vessels lost in 2022 were cargo (10). Together, fishing (6) and passenger (5) vessels also accounted for a quarter of the total. Foundered (sunk/submerged) was the main cause of total loss across all vessel types (20), accounting for over 50%. Contributing factors included bad weather, poor visibility, flooding and machinery breakdown. Fire/explosion ranked as the second top cause of loss (8). Vessel collision ranked third (4).

Extreme weather was reported as a factor in at least 8 losses during 2022, while January was the most frequent month for losses with 6.

While total losses declined over the past year, the number of shipping casualties or incidents reported remained consistent (3,032 compared to 3,000 a year earlier). The British Isles saw the highest number of incidents (679) while machinery damage/failure accounted for close to half of all incidents globally (1,478). There were over 200 fires reported during 2022 (209) – the highest for a decade, making this the third top cause of incidents with activity up 17% year-on-year.

The East Mediterranean and Black Sea region has seen the most shipping incidents over the past decade (4,969). Globally, most of the 27,477 incidents reported over the past decade have been caused by machinery damage/failure (10,753), followed by collision (3,098) and wrecked/stranded (2,936).

“ Shipping losses are now at the lowest level that we have seen in the 12-year history of our annual review, reflecting the positive impact safety programs, trainings, changes in ship design and regulation have had over time.

Ulrich Kadow, Global Head of Marine, Allianz Global Corporate & Specialty.

# Safety and Shipping Review 2023 **in numbers**

**807**

total losses in 10 years

**38**

total losses in 2022

**65%**

decline over a decade

**679 incidents**

in 2022 in the British Isles

**9 incidents**

involving the most accident-prone vessel in 2022 – a Greek Island ferry

**Around 1 in 4**

total losses in 2022 occurred in the South China Sea region – the global hotspot



**10**

cargo ships lost in 2022 – a 1/4 of all vessels lost



**3,032**

shipping incidents reported in 2022 – Machinery damage is the top cause



**8**

minimum number of total losses in 2022 where extreme weather was reported as being a factor



**January**

the most frequent month for total losses in 2022 (6)



**64**

total losses caused by fire in the past five years.



Fire is the **most expensive**

cause of marine insurance claims

## Economic outlook [▶ page 19](#)

Following the post-pandemic boom in container shipping, economic and geopolitical uncertainty and falling demand have hit freight rates. The cost of shipping a container between Asia and the US or Europe in April 2023 was more than 80% lower than a year earlier. As freight rates have declined, new vessels ordered during the boom have begun to arrive – equivalent to an additional 19% of the fleet size – adding to already excess capacity.

A potential consequence is whether the decline in freight rates, together with the prospect of an economic downturn, will impact maintenance, levels and risk management budgets. Prior downturns have impacted investment in vessel maintenance, leading to losses and an uptick in machinery damage claims. Such conditions could also jeopardize vital investments in fire safety and the industry's decarbonization targets as record profits for the container industry supported innovation in these areas. If the market comes under pressure, there is a risk such initiatives will lose momentum.

Decarbonization and the drive for more efficient shipping will accelerate the trend for larger vessels, which now make up a significant proportion of the world fleet, and account for a disproportionate amount of container trade. Container-carrying capacity has increased by around 1,500% since 1968 with the capacity of the largest vessels doubling in the last 20 years alone. There are currently more than 50 ships with a capacity of over 21,000 teu or more, practically all of them were built in the last five years – 65% of fleet growth over the next two years is expected to be concentrated in the segment of ships larger than 15,000 teu.

An increase in larger vessels leads to higher container cargo accumulation and exposure, a trend which could compound problems seen in recent years such as fires, groundings and port blockages. The salvage cost for large container ships is tremendously high, with only a limited number of ports and shipyards able to service and repair such vessels. Industry analysis of hull claims trends shows the container ship segment is the only large segment with an increase in the frequency of large losses. In particular, the frequency of claims in excess of US\$500,000 remains high.

The larger the vessel, the higher the risk of having multiple interests involved in an incident. Companies need to consider the risks of container shipping cargo delays and prepare contingency plans should their cargo become involved in an incident.

A downturn in freight rates mean shipowners are likely to take the opportunity to scrap older vessels, many of which have had their working lives extended by high demand in recent years. This trend is likely to be reinforced by the industry's move to decarbonize shipping – it is predicted that around 1 million teu could be recycled in the near future. Scrapping older tonnage is a positive from a risk quality perspective. However, the disposal of old ships may challenge the industry's environmental, social, and governance (ESG) credentials. As shipping companies begin to publish ESG information, the sustainability of ship recycling will come under increasing scrutiny.

## Hull and cargo risks [▶ page 23](#)

A combination of factors is increasing the risk of fires at sea and on land. Decarbonization is leading to new types of cargo such as electric vehicles (EVs) and battery-powered goods which bring different risks. Hazardous and combustible goods are increasingly transported by containers, while the prevalence of Lithium-ion (Li-ion) batteries poses a growing risk for container shipping and car carriers – this market is expected to grow by over 30% annually over the next decade. Nearly 10% of global car sales were electric in 2021, four times the market share in 2019.

One of the main hazards of Li-ion batteries is ‘thermal runaway’, a rapid self-heating fire that can cause an explosion. The main causes of Li-ion fires are substandard manufacturing or damaged battery cells or devices, over-charging, and short circuiting. Fires in EVs with Li-ion batteries can burn more ferociously, are difficult to extinguish, and are capable of spontaneously reigniting. Most ships lack the suitable fire protection, firefighting capabilities, and detection systems to tackle such fires at sea. Attention must be focused on pre-emptive measures to help mitigate the peril such as ensuring crew receive adequate training and access to appropriate firefighting equipment, improving early detection systems and developing hazard control and emergency plans. Purpose-built vessels for transporting EVs would be advantageous.

At the same time, hazardous cargos are increasingly transported by larger vessels, meaning the consequences of fires are amplified, resulting in more severe losses and longer delays. Fire is one of the biggest causes of general average (GA) claims on container vessels – GA has a significant impact on cargo customers because the time it takes to release cargo is exponentially longer, impacting supply chains and seasonal goods. Fire is also one of the most frequent causes of total losses across all vessel types with 64 ships lost in the past five years alone. A small container fire can easily take hold and overwhelm the ability of its crew to deal with the situation, leading to the abandonment of the vessel, and potentially its loss.

The cause of many cargo fires can be attributed to mis-declared dangerous goods, such as chemicals, batteries and charcoal. Failure to properly declare, document and pack hazardous cargo can result in containers stowed incorrectly or hamper firefighting efforts. Labeling a cargo as dangerous is more expensive and therefore some companies try to circumvent this by labeling fireworks as toys or Li-ion batteries as computer parts, for example.

A number of large container shipping companies have turned to technology to address this issue, using cargo screening software to detect suspicious bookings and cargo details, while several large container operators are imposing penalties. However, currently, each shipping company and jurisdiction has its own requirements while the rate of container inspections in many countries remains low. Unified requirements and penalties for mis-declared hazardous cargo would be welcomed.

Container losses at sea have spiked in recent years. More than 3,100 containers were lost on average annually during 2020 and 2021 – four times the total reported in the previous period – and incidents have continued, albeit at a lower rate. This increase is driven by factors such as larger ships, extreme weather and mis-declared cargo weights (leading to container stack collapse). Large container vessels, where containers can be stacked as many as 26 deep, are vulnerable to extreme rolling and pitching in certain sea conditions, exerting extreme stress. Human error around storage and lashing of containers needs to be addressed while proposals for the mandatory reporting of lost containers will improve accountability.

Transporting large bulky equipment by sea, such as wind turbines or mining equipment, is a specialized sub-sector of the shipping industry and a recent increase in expensive loss incidents points to a worrying trend at a time of increased activity in the so-called project cargo market. This market has seen increased activity since the Covid-19 pandemic, with growing demand from increasing investment in infrastructure development and the decarbonization of industries. The handling of this critical cargo requires specialist vessels, equipment, and port infrastructure. It also relies on skilled personnel to load and transport project cargo safely but there is concern that these specialist skills are slowly eroding. Many losses are caused by a poor understanding of specialist loading and stowing procedures.

## War and crime [▶ page 29](#)

More than a year after Russia's invasion of Ukraine the ripple effects continue to be felt. As of March 2023, around 300 seafarers, and some 40 or more vessels, remained trapped in the region, in addition to several vessels that were damaged or destroyed in Ukrainian ports during the war. Meanwhile, embargoes and sanctions severely limit trade with Russia.

The longer vessels are trapped, the higher the likely loss. Owners and operators have no access for maintenance or repairs while the passage of time means salvage values decline. The one-year mark is an important trigger for marine insurance policies. Under a war risk policy, a vessel could be considered a total loss when trapped or blocked for a defined period. However, insureds are expected to have taken reasonable measures to try to minimize the loss or secure the vessel's release, such as making use of any safe passage arrangements, for example the Black Sea Grain Agreement.

The threat of collateral damage on civilian shipping in the war risk area of the Black Sea remains high, while harassment and diversion of shipping, electronic interference and cyber-attacks cannot be excluded. Floating mines will pose a risk, even after the war ends.

Oil embargoes have also resulted in Russia and its allies creating a shadow tanker fleet to transport and sell its oil. Estimates of the size of the fleet vary – from 300 to 600+ – roughly a fifth of the overall global crude oil tanker fleet. Vessels are more likely to be older ships, operating under flags of convenience with lower maintenance standards. Reports indicate there were at least eight groundings, collisions or near misses involving tankers carrying sanctioned oil products in 2022 – the same number as in the previous three years. A major incident could cause loss of life, as well as uninsured damage or pollution – in May 2023 an uninsured tanker exploded in Southeast Asia, reportedly killing crew members.

Globally, maritime piracy is at its lowest level for almost three decades. There were 115 incidents during 2022. Ten years ago there were 138 in the first six months of 2013 alone. The overall reduction in activity in the Gulf of Guinea – down from 35 incidents in 2021 to 19 in 2022 – is a significant contributor. In 2019, it accounted for 90% of global kidnappings reported at sea. However, sustained efforts are needed to ensure the continued safety of seafarers in the region, which remains dangerous. Piracy is tied to underlying social, political and economic problems, which have not disappeared and a number of incidents have occurred in recent months. Seafarers are encouraged to follow industry best management practice recommendations in these waters.

Developments outside of the Gulf of Guinea should also remain on the risk radar. A third of all incidents reported globally in 2022 were in the Singapore Straits with vessels successfully boarded in all 38 incidents. In February 2023, eight incidents of armed robbery against ships were reported in the Straits of Malacca and Singapore.

Shipping also continues to fall victim to cyber-attacks with several ports, companies and classification societies impacted by incidents in 2023. To date, most incidents have been shore-based, such as ransomware attacks against shipping companies' database systems. But with the growing connectivity of shipping, and the fact that geopolitical conflict is increasingly being played out in cyber space, that may change in future. Standard practices can be implemented to reduce cyber risk, such as defining personnel roles and responsibilities and identifying the systems, assets and data that, when disrupted, pose risks to operations. Shipowners also need to implement risk control processes and contingency planning, developing and implementing activities necessary to quickly detect a cyber event. Identifying measures to back up and restore systems is crucial.



Claims [page 35](#)

Increased commodity prices, higher labor costs and supply chain disruption have had a significant impact on marine insurance claims, in particular hull and machinery. The price of steel, a key cost driver in hull claims, increased sharply post-pandemic, as did spare parts. A typical propeller or machinery damage claim now costs around two times more than pre-pandemic.

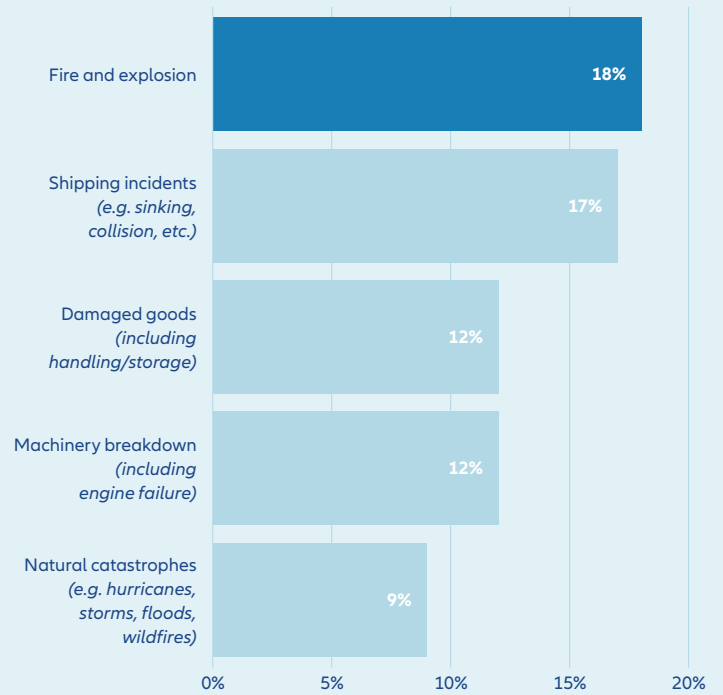
Shortages and delays in obtaining replacement parts have led to longer stays in repair yards. Labor shortages have also increased costs, contributing to longer repair times and increased yard costs. This comes on top of the increased expense of dealing with large vessels, which face higher costs for repairs, salvage and towing. Industry estimates calculate an overall +18% increase in ship repair costs between 2020 and 2022 from inflation. The post-pandemic boom in container shipping has also impacted. Cargo values have risen with the increase in the price of goods and raw materials, while the shift to increased levels of storage in ports and warehouses has led to higher costs and aggregation issues for insurers. Even companies with the best risk management will see the impact of inflation on claims.

AGCS analysis of close to 250,000 marine insurance industry claims shows that fire is the most expensive cause, accounting for 18% of the value of all analyzed.



Top causes of loss by value of claims in marine

Based on analysis of 244,451 insurance claims between January 1, 2017, and December 31, 2021, worth approximately €9.2bn in value. "Other" causes of loss account for 32% of the value of all claims. Claims total includes the share of other insurers in addition to AGCS.



Source: Allianz Global Corporate & Specialty (AGCS)

## Decarbonization and sustainability [▶ page 36](#)

Shipping is thought to contribute almost 3% of global greenhouse gas (GHG) emissions annually. If it were a country, it would be the sixth largest emitter. In 2018, the International Maritime Organization committed to cut annual GHG emissions from international shipping by at least half by 2050, compared with their level in 2008, and work towards phasing out all GHG emissions from shipping as soon as possible in this century. It also set a goal to reduce the carbon intensity of international shipping by at least 40% by 2030, and 70% by 2050.

Decarbonization is by far the sector's biggest challenge. The pace and progress of these efforts are influenced by a range of factors, including technological developments, adoption of energy-efficient fuels, regulatory frameworks, and market forces. Overall, while progress has been made, much more needs to be done.

Reducing GHG emissions will require changes in ship and propulsion design, as well as changes to the way companies operate. Meeting the IMO GHG emission reduction targets could cost as much as \$1.4trn, according to industry estimates. Shipping companies and cargo operators are already switching to vessels powered by liquefied natural gas (LNG), as well as trialing and using alternative fuels such as biofuels, methanol, ammonia and hydrogen, and solar and battery powered all-electric vessels, wind assisted propulsion systems, more efficient propellers and bulbous bow designs.

Transitioning away from carbon-based shipping will involve a challenging period of adjustment and change, taking years to build the scale of infrastructure required. A mix of fuels is likely to exist for the next five to 10 years posing challenges for shipowners, operators and ports.

From a loss perspective the industry has not seen any major claims from alternative technologies like wind-assisted propulsion or alternative fuels like biofuel. However, bigger changes lie ahead. As hydrogen, green methanol, ammonia and battery-assisted technologies are introduced at scale, more issues may surface. Hydrogen and ammonia are not easy to handle and hydrogen is difficult to transport. Collaboration is key when it comes to exposure and innovation and regular exchanges of information and data from testing and experiences between companies and insurers will be important in helping to reduce transition risks.

Decarbonization is also leading to growing interest in autonomous vessels, which present unique risks for operators in addition to benefits. Last year, the world's first fully electric, autonomous container ship completed its maiden voyage (with crew on board). Fire detection, prevention, fighting and emergency response capabilities will be important considerations in the development of their safe operation.

Coastal trade has provided a good testing ground for this technology, and from an insurance perspective, continued testing with smaller coastal vessels, learning and refining systems over time is important before moving on to scaled-up ocean transit operations.

# Losses in focus

The analysis over the following pages covers both total losses and casualties/incidents. See page 42 for further details.



## Total losses by top 10 regions

2013-2022 and 2022. Vessels over 100GT only

**38**

Total losses in 2022

**807**

Total losses between 2013 and 2022

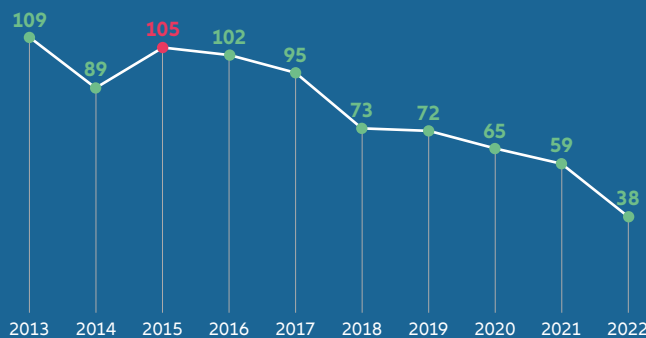
Total losses by region for 2013-2022

Total losses by region for 2022



## Total losses by year

Vessels over 100GT only



**65%**

decline over the past decade

Improvements in maritime safety have been significant over the past 10 years in particular. During the 1990s the global fleet was losing 200+ vessels a year. This total plummeted to fewer than 40 by the end of 2022. It has now been six years since a triple-digit loss year.



## 2022 review

Total losses by top 10 regions. From January 1, 2022 to December 31, 2022. Vessels over 100GT only

Region	Loss	Annual change
S.China, Indochina, Indonesia and Philippines	10	-4
Arabian Gulf and approaches	3	-6
British Isles, N.Sea, Eng. Channel and Bay of Biscay	3	-
West Mediterranean	3	-
Baltic	2	-
East Mediterranean and Black Sea	2	-6
North Atlantic	2	+1
United States Eastern Seaboard	2	-
Australasia	2	+1
Canadian Arctic and Alaska	1	-
Other	8	
<b>Total</b>	<b>38</b>	<b>-21</b>

The database shows 38 total losses of vessels over 100GT at the end of 2022, compared with 59 a year earlier and 109 10 years previously. South China, Indochina, Indonesia and Philippines is the main loss hotspot, both over the past year and the past decade, accounting for one in four losses in 2022. The Arabian Gulf, British Isles and West Mediterranean waters jointly rank as the second top loss location.



## 2013 – 2022 review

Total losses by top 10 regions. From January 1, 2013 to December 31, 2022. Vessels over 100GT only

Region	Loss
S.China, Indochina, Indonesia and Philippines	204
East Mediterranean and Black Sea	118
Japan, Korea and North China	76
British Isles, N.Sea, Eng. Channel and Bay of Biscay	54
Arabian Gulf and approaches	45
West African Coast	34
West Mediterranean	32
Bay of Bengal	27
S.Atlantic and East Coast S.America	23
West Indies	20
Other	174
<b>Total</b>	<b>807</b>

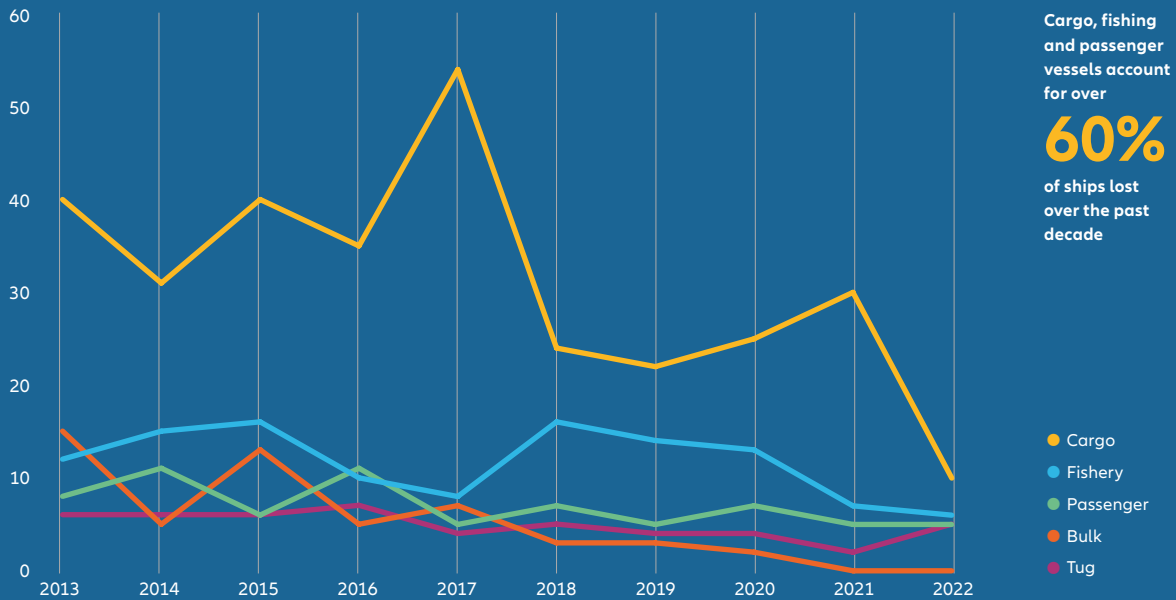
The past 10 years have seen 807 reported total losses, with the 2022 loss year (38) representing a significant improvement on the annual loss average over this period (81). This is even more impressive given the fact that there are well over 100,000 ships in the global fleet (100GT+) compared with around 80,000 30 years ago.

Loss activity in the South China Sea region is typically driven by a number of different factors including high levels of local and international trade, congested ports, older fleets and extreme weather. Together, the top three maritime regions account for almost 50% of loss activity over the past decade.



## Total losses by type of vessel 2013 – 2022

From January 1, 2013 to December 31, 2022. Vessels over 100GT only



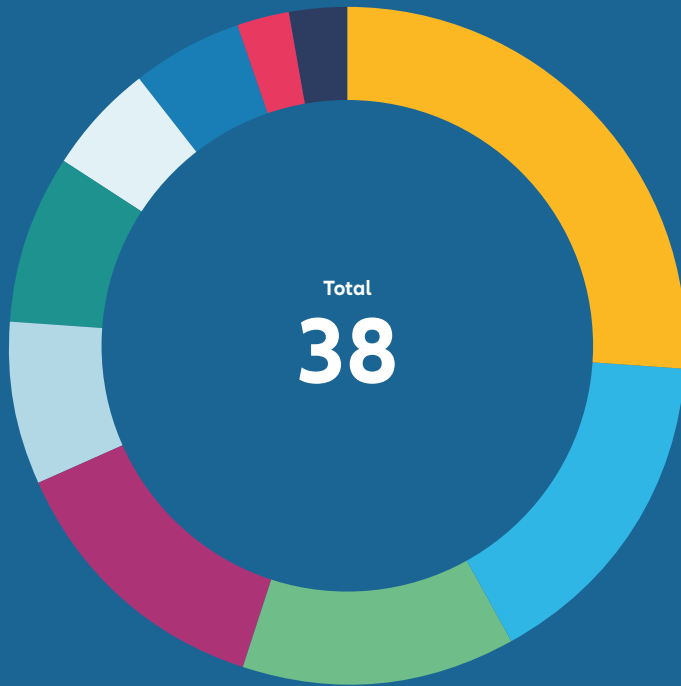
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Cargo	40	31	40	35	54	24	22	25	30	10	311
Fishery	12	15	16	10	8	16	14	13	7	6	117
Passenger	8	11	6	11	5	7	5	7	5	5	70
Bulk	15	5	13	5	7	3	3	2	0	0	53
Tug	6	6	6	7	4	5	4	4	2	5	49
Chemical/Product	10	2	3	7	4	3	2	2	2	3	38
Ro-ro	2	5	6	10	0	3	6	1	1	3	37
Container	4	4	5	5	3	2	1	1	1	1	27
Supply/Offshore	2	3	3	2	2	2	1	1	3	0	19
Dredger	0	1	1	1	3	2	1	2	1	2	14
Barge	3	1	0	3	1	2	1	0	2	0	13
Tanker	0	1	0	0	2	3	0	2	2	2	12
LPG/LNP	0	0	0	1	1	0	2	0	0	0	4
Other	6	4	4	4	1	1	7	5	3	1	36
Unknown	1	0	2	1	0	0	3	0	0	0	7
<b>Total</b>	<b>109</b>	<b>89</b>	<b>105</b>	<b>102</b>	<b>95</b>	<b>73</b>	<b>72</b>	<b>65</b>	<b>59</b>	<b>38</b>	<b>807</b>

Source: Lloyd's List Intelligence Casualty Statistics  
 Data Analysis & Graphic: Allianz Global Corporate & Specialty



## Total losses by type of vessel 2022

From January 1, 2022 to December 31, 2022. Vessels over 100GT only



● Cargo	10
● Fishery	6
● Passenger	5
● Tug	5
● Chemical/Product	3
● Ro-ro	3
● Tanker	2
● Dredger	2
● Container	1
● Other	1

Cargo ships accounted for around a quarter of all vessels lost in 2022. Foundering was the most frequent cause and most of these vessels were lost in South East Asian waters. Collectively fishing and passenger vessels also account for around a quarter of total losses.

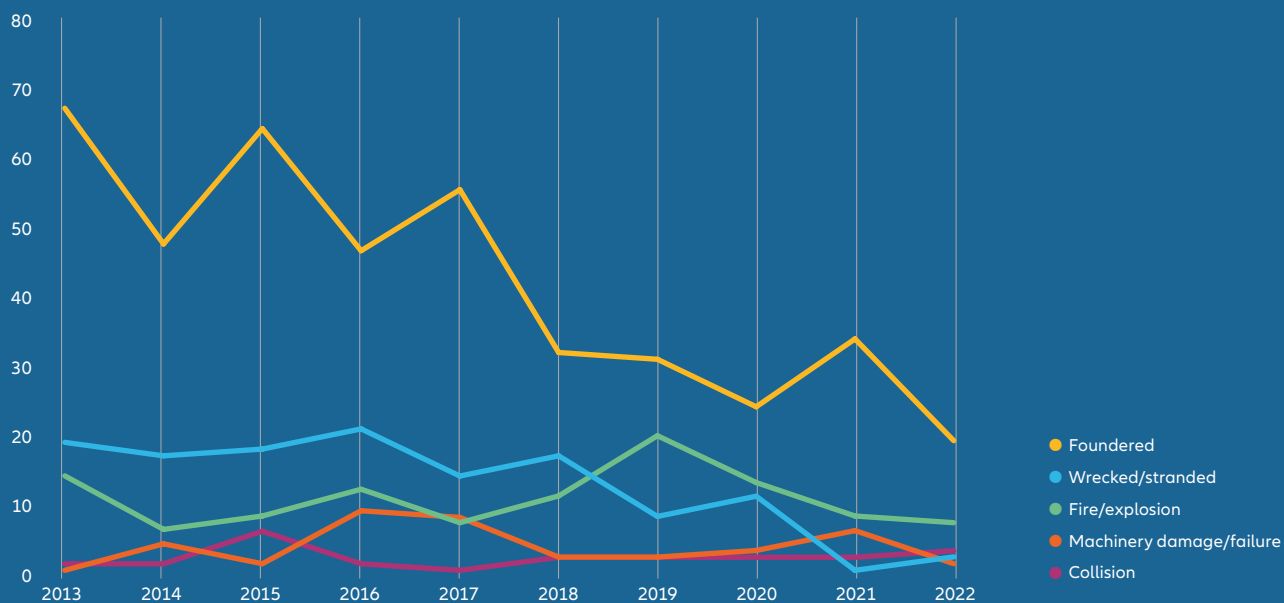
The average age of a vessel involved in a total loss over the past 10 years is

**29**



## Total losses by cause 2013 – 2022

From January 1, 2013 to December 31, 2022. Vessels over 100GT only



	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Foundered (sunk)	69	49	66	48	57	33	32	25	35	20	<b>434</b>
Wrecked/stranded (grounded)	20	18	19	22	15	18	9	12	1	3	<b>137</b>
Fire/explosion	15	7	9	13	8	12	21	14	9	8	<b>116</b>
Machinery damage/failure	1	5	2	10	9	3	3	4	7	2	<b>46</b>
Collision (involving vessels)	2	2	7	2	1	3	3	3	3	4	<b>30</b>
Hull damage (holed, cracks etc.)	1	5	2	4	5	2	1	1	1	1	<b>23</b>
Contact (e.g. harbor wall)	0	1	0	0	0	2	1	0	0	0	<b>4</b>
Missing/overdue	0	0	0	2	0	0	1	0	0	0	<b>3</b>
Miscellaneous	1	2	0	1	0	0	1	6	3	0	<b>14</b>
<b>Total</b>	<b>109</b>	<b>89</b>	<b>105</b>	<b>102</b>	<b>95</b>	<b>73</b>	<b>72</b>	<b>65</b>	<b>59</b>	<b>38</b>	<b>807</b>

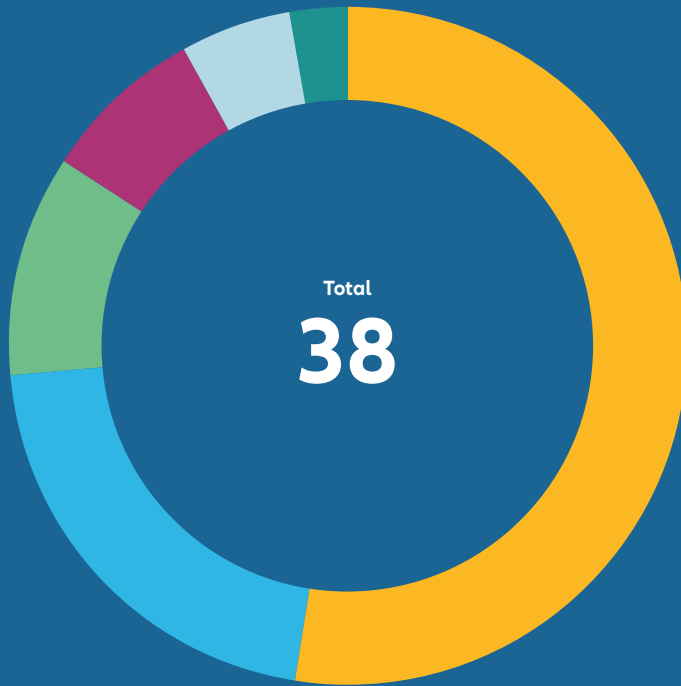
Source: Lloyd's List Intelligence Casualty Statistics

Data Analysis & Graphic: Allianz Global Corporate & Specialty



## Total losses by cause 2022

From January 1, 2022 to December 31, 2022. Vessels over 100GT only



● Foundered (sunk)	20
● Fire/explosion	8
● Collision (involving vessels)	4
● Wrecked/stranded (grounded)	3
● Machinery damage/failure	2
● Hull damage	1

Foundered (sunk) was the main cause of total losses reported during 2022, accounting for over 50%. Fire/explosion ranked second (21%), with collisions involving vessels third (11%).

There have been 64 total losses of vessels caused by fires in the past five years alone.

Extreme weather was reported as being a factor in

# at least 8

losses during 2022.

# January

was the most frequent month for losses in 2022 (6).





## Total losses in all regions 2022

This map shows the approximate locations of all 38 reported total losses to date during 2022. Vessels over 100GT only



	Loss	Share
<b>1</b> S.China, Indochina, Indonesia and Philippines	10	26%
<b>2</b> Arabian Gulf and approaches	3	8%
British Isles, N.Sea, Eng. Channel and Bay of Biscay	3	8%
West Mediterranean	3	8%
<b>3</b> Baltic	2	5%
East Mediterranean and Black Sea	2	5%
North Atlantic	2	5%
United States Eastern Seaboard	2	5%
Australasia	2	5%
<b>4</b> Canadian Arctic and Alaska	1	3%
East African Coast	1	3%
Gulf of Mexico	1	3%
Iceland and Northern Norway	1	3%
Newfoundland	1	3%
Red Sea	1	3%
South Pacific	1	3%
West African Coast	1	3%
West Indies	1	3%

## All casualties/incidents (including total losses)

### 2022 review

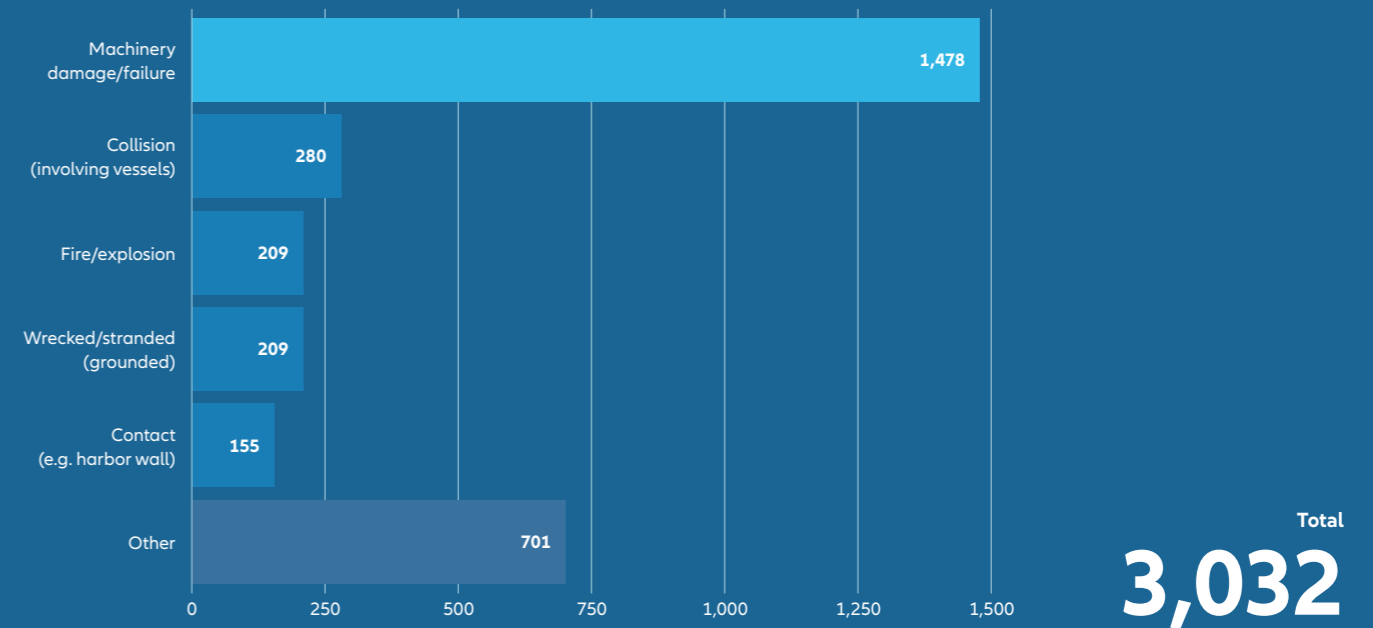
From January 1, 2022 to December 31, 2022. Vessels over 100GT only

Top 10 regions	Loss	Annual change
British Isles, N.Sea, Eng. Channel and Bay of Biscay	679	+9
East Mediterranean and Black Sea	584	+47
S.China, Indochina, Indonesia and Philippines	242	-34
West Mediterranean	191	+14
Great Lakes	186	+64
North American West Coast	148	+10
Iceland and Northern Norway	138	+33
Baltic	119	-5
Newfoundland	108	+22
Japan, Korea and North China	88	-15
Other	549	
<b>Total</b>	<b>3,032</b>	<b>+32</b>

While the number of total losses has declined over the past year, the number of reported shipping casualties or incidents remained relatively consistent (3,032 compared to 3,000). The British Isles region saw the highest number of reported incidents (679). Machinery damage/failure accounted for close to half of all incidents globally (1,478). There were over 200 reported fire incidents during 2022 alone (209) – the highest total for a decade, making this the third top cause of incidents with activity up 17% year-on-year.

### 2022 review

Top causes of incidents. From January 1, 2022 to December 31, 2022. Vessels over 100GT only



### 2013 – 2022 review

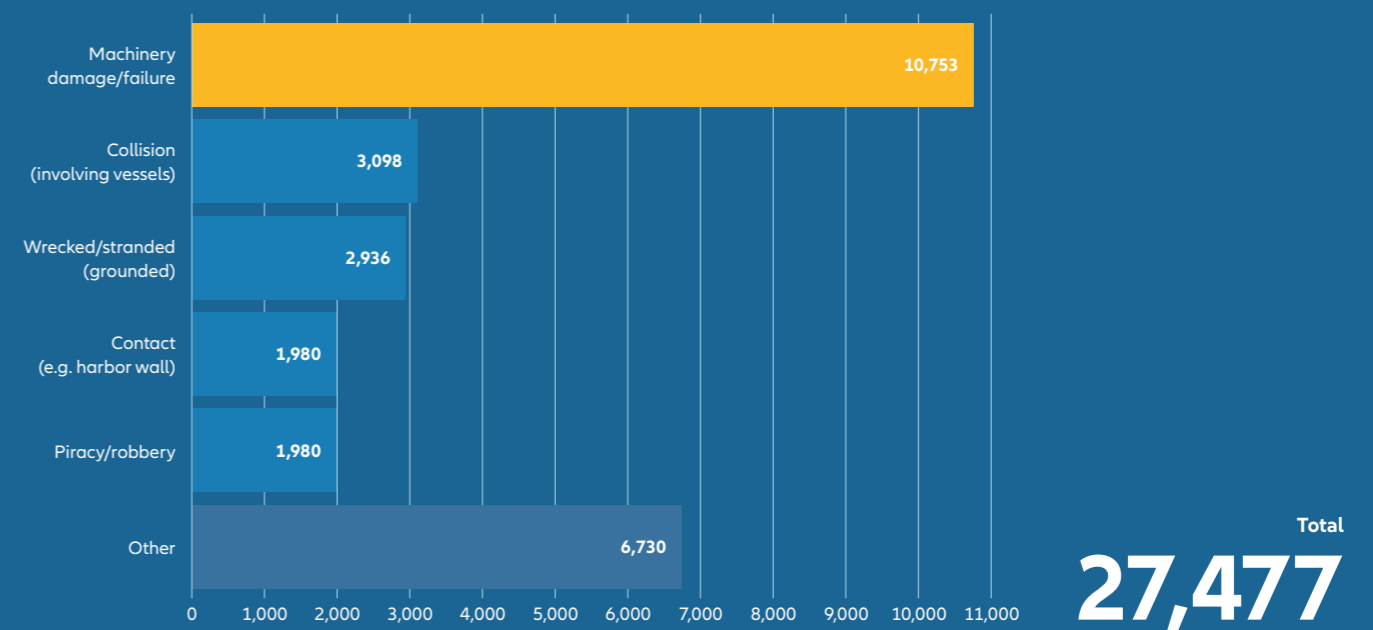
From January 1, 2013 to December 31, 2022. Vessels over 100GT only

Top 10 regions	Loss
East Mediterranean and Black Sea	4,969
British Isles, N.Sea, Eng. Channel and Bay of Biscay	4,938
S.China, Indochina, Indonesia and Philippines	2,598
Great Lakes	1,529
Baltic	1,433
Japan, Korea and North China	1,255
West Mediterranean	1,208
North American West Coast	1,156
Iceland and Northern Norway	1,136
West African Coast	911
Other	6,344
<b>Total</b>	<b>27,477</b>

The East Mediterranean and Black Sea region is the location of the most shipping incidents over the past decade (4,969), accounting for 18%. Globally, most of the 27,477 incidents reported over the past decade have been caused by machinery damage or failure (10,753), followed by collision (3,098) and wrecked/stranded (2,936).

### 2013 – 2022 review

Top causes of incidents. From January 1, 2013 to December 31, 2022. Vessels over 100GT only



Source: Lloyd's List Intelligence Casualty Statistics

Data Analysis & Graphic: Allianz Global Corporate & Specialty

Note: All figures are based on reported total losses for the year-end 2022 as of March 31, 2023. 2022's total losses may increase in future as, based on previous years' experience, developments in losses sometimes lead to a number of total losses being confirmed after year-end, particularly in the case of constructive total losses or because of late reporting, such as during the Covid-19 pandemic or Ukraine war.



Trends |  Economic outlook

# Downturn challenges safety and decarbonization progress

The decline in freight rates threatens future investments in these areas and could impact maintenance levels and risk management budgets.

Following the post-pandemic boom in container shipping, economic and geopolitical uncertainty and falling demand has hit freight rates. The cost of shipping a container between Asia and the US or Europe in April 2023 was more than 80% lower<sup>1</sup> than a year earlier, while some routes are now at pre-pandemic levels.

As freight rates have declined, new vessels ordered during the boom have begun to arrive, adding to already excess capacity. The Mediterranean Shipping Company<sup>2</sup> took delivery of two mega ships in March 2023 – **MSC Tessa** and **MSC Irina** – which are among the world's largest container ships to date at more than 24,000 teu each. It followed the delivery in February of the 24,188 teu **OOCL Spain**, the first of six under construction.



## In prior downturns, investment in vessel maintenance has not always been at the required level, leading to losses and an increase in machinery claims

The Baltic and International Maritime Council (BIMCO)<sup>3</sup> forecasts weak demand for container shipping outstripping supply in 2023, putting freight rates and second-hand ship values under pressure through to next year. The shipping body predicts negative demand growth through the first half of 2023, with a recovery in the second half leading to overall demand growth of 1-2% in 2023, followed by 5-6% in 2024.

The global container fleet is forecast to grow by 6.3% in 2023 and by 8.1% in 2024. Supply is set to rise with the easing of port congestion and deliveries of new vessels ordered during the boom period of the past two years. BIMCO predicts that 4.9 million teu will be delivered during 2023 and 2024, equivalent to an additional 19% of the fleet size at the beginning of 2023.

“A big question is whether the decline in freight rates will result in cost-cutting and, if so, will this impact maintenance levels or result in lower risk management budgets? In prior downturns, investment in vessel maintenance has not always been at the required level, leading to losses and an increase in machinery claims,” says **Justus Heinrich, Global Product Leader Marine Hull at Allianz Global Corporate & Specialty (AGCS)**.

Lower freight rates could also potentially put vital investments in fire safety and decarbonization in jeopardy, according to **Captain Rahul Khanna, Global Head of Marine Risk Consulting at AGCS**.

“We are on the cusp of the delivery of new larger vessels at a time when the industry is already under pressure from lower freight rates. This may be good news for cargo owners, but not so for the container shipping industry,” says Khanna.

“Record profits for the container industry supported innovation in areas such as decarbonization, alternative fuels and fire detection and prevention. If the market comes under pressure, there is a risk such initiatives will lose momentum. We would not like to see safety initiatives, especially in terms of the improvements we are hoping to see in container ship and roll-off, roll-on (Ro-ro) design and fire protection in particular, take a back seat.”

# Trend towards large ships intensifies

Driven by the downturn and decarbonization targets a high proportion of new container ship orders are concentrated on larger vessels but risk exposures continue to grow too.

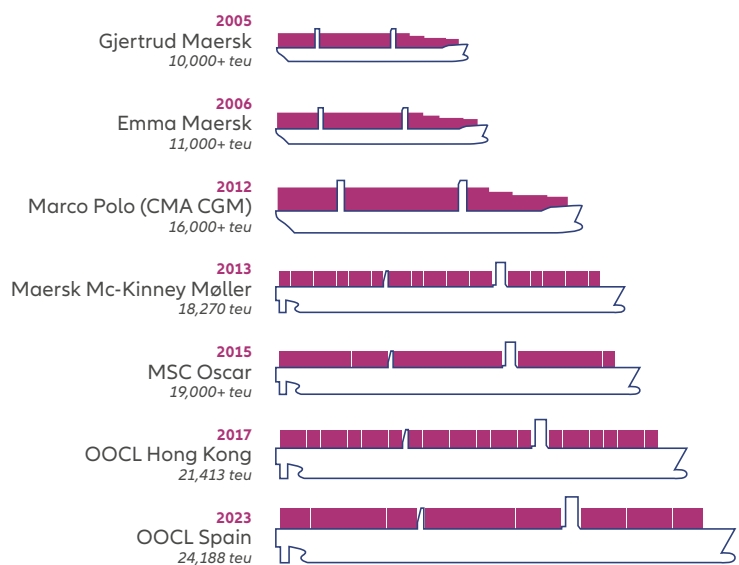
Over two-thirds (65%) of fleet growth over the next two years will be concentrated in the segment of ships larger than 15,000 teu, while the fleet of ships smaller than 3,000 teu will reduce, The Baltic and International Maritime Council (BIMCO) estimates.<sup>4</sup>

“Decarbonization and the drive for more efficient shipping will reinforce and accelerate the trend for large vessels, which now make up a significant proportion of the world fleet, and account for a disproportionate amount of container trade,” says **Captain Rahul Khanna, Global Head of Marine Risk Consulting at Allianz Global Corporate & Specialty (AGCS).**

“Large container vessels are clearly here to stay. Efforts now need to focus squarely on making them more efficient, less polluting, and safer. If the risks are not appropriately managed, some insurers may look to scale back their exposure to large container vessels and other mega ships.”



## 20 years of container ship growth



Capacity of the largest container vessels has doubled in the last 20 years.



## What's in a teu?

Container ship capacity is measured in 20-foot equivalent units (teu). Typical loads are a mix of 20-foot and 40-foot containers. The world's largest container ships have the capacity to carry well over 20,000 containers. Carrying capacity has increased by around 1,500% since 1968 with the capacity of the largest vessels doubling in the last 20 years alone. There are currently more than 50 ships with a capacity of over 21,000 teu or more, practically all of them built in the last five years.





## Scrapping to turn spotlight on ESG issues

With the downturn in freight rates, shipowners are likely to take the opportunity to scrap older vessels, many of which have had their working lives extended by high demand in recent years. This trend is likely to be reinforced by tougher International Maritime Organization (IMO) climate regulations and the industry's move to decarbonize shipping. The Baltic and International Maritime Council (BIMCO) expects that around 1 million teu will now be recycled.<sup>5</sup>

Scrapping older tonnage is a positive trend from a risk quality perspective, and it should help stabilize freight rates, explains **Justus Heinrich, Global Product Leader Marine Hull at Allianz Global Corporate & Specialty (AGCS)**: "Scrapping had all but stopped after the Covid-19 pandemic as every vessel was needed to meet demand, resulting in many vessels operating beyond their usual life expectancy. With the fall in freight rates, we have seen an uptick in the scrapping of older and less efficient vessels."

However, the disposal of old ships may challenge the industry's environmental, social, and governance (ESG) credentials. As shipping companies begin to publish ESG information, the sustainability of ship recycling will come under increasing scrutiny, according to **Captain Nitin Chopra, Senior Marine Risk Consultant at AGCS**.

"With the introduction of ESG requirements, and with Scope 3 emissions (those that are not under a company's direct control, for example in its supply chain), shipowners will need to demonstrate due diligence and responsible behavior, even when scrapping vessels," says Chopra.

## Trends | Economic outlook

As new orders are delivered, smaller, older tonnage is being replaced by large container vessels, **Justus Heinrich, Global Product Leader Marine Hull at AGCS** notes. The 10 largest container operators have 440 new vessels on order, and the majority will be larger than the ships they replace.

"An increase in the number of larger vessels leads to higher container cargo accumulation and exposure," says Heinrich. "This trend could compound the problems seen in recent years with large vessels, including fires, grounding and port blockages. The salvage cost for large container ships is tremendously high, with only a limited number of ports and shipyards able to service and repair such vessels."

According to Cefor (the Nordic Association of Marine Insurers) analysis<sup>6</sup> of hull claims trends, the container ship segment is the only large segment with an increase in the claim cost per vessel between 2020 and 2022 and an increase in the frequency of large losses. The frequency of claims in excess of US\$500,000 remained high, contrary to the bulk and tank segment.

The increase in the number of large vessels may be one of the factors behind high levels of shipping incidents in South East Asia, with the region being something of a hot spot in recent years for marine insurance claims and total losses (*see data, page 12*). "We have seen a number of grounding and collision incidents involving large vessels in both the Singapore Strait and the South China Sea. The waters around Singapore can be congested and the shipping lanes narrow. A small mistake by a large vessel can easily result in a grounding or collision," says **Captain Nitin Chopra, Senior Marine Risk Consultant at AGCS**.

Large vessels can also lead to longer delays for cargo owners. Whether it is a fire or a grounding incident, if it involves a large container vessel it will likely take longer to resolve, leading to increased costs. Large vessels can take longer to re-float when grounded and may have to travel further to reach an appropriate port of refuge or repair yard. "The larger the vessel, the higher the risks of having multiple interests involved in an incident. Companies need to consider the risks of container shipping cargo delays and prepare contingency plans should their cargo become involved in an incident," says **Régis Broudin, Global Head of Marine Claims at AGCS**.

Trends |  Hull and cargo risks

# Cargo fire risks continue to rise

A combination of factors is increasing the risk of blazes at sea and on land.

Hazardous and combustible goods are increasingly transported by containers, while the prevalence of Lithium-ion (Li-ion) batteries poses a growing risk for both container shipping and car carrier vessels. At the same time, these hazardous cargos are increasingly transported by large vessels, where the consequences of fires are amplified, resulting in more severe losses and longer delays.

“Decarbonization is leading to new types of cargo, some more hazardous than in the past, such as electric scooters and battery-powered goods,” says **Captain Rahul Khanna, Global Head of Marine Risk Consulting at Allianz Global Corporate & Specialty (AGCS)**.

“A lot of conventional power sources have been replaced by batteries, and that industry has seen huge increases in demand in recent years, a trend that will only continue. These new cargos mean new risks,” says Khanna.

Fire is one of the biggest causes of general average claims on container vessels, and one of the main causes of total losses across all vessel types with 64 ships lost in the past five years alone. With upwards of 20,000 containers on board some vessels, the risk of a fire originating from a container increase, while detecting and fighting a fire at sea is particularly difficult for a crew of just 20 to 30 people, according to **Marcel Ackermann, Global Product Leader Cargo at AGCS**. A small container fire can easily take hold and overwhelm the ability of crew to deal with the situation, leading to the abandonment of the vessel, and potentially its loss.

Recent incidents include the **ZIM Charleston** fire in August 2022, in which some 300 containers were reportedly damaged.<sup>7</sup> This was followed by the **TSS Pearl** in the Red Sea in October 2022,<sup>8</sup> which sank after the crew were forced to abandon ship. There have also been several fires at ports and warehouses, including the 2022 fire and explosion<sup>9</sup> at a container depot in Chittagong, Bangladesh, which killed 40 people.

“General average has a significant impact on cargo customers because if it occurs, the time it takes to release cargo is exponentially longer on a large container vessel, which has implications for supply chains and seasonal cargo,” says Ackermann.

“When we look at significant general average incidents involving container vessels over the past five years, they are largely related to fires. General average risk these days comes down to fire, and the majority of these incidents are related to mis-declaration of cargo.”

## What is general average?

General average is the long-standing principle of maritime law that all parties share in any damage or expenditure incurred while preserving property, for example to save a vessel and its cargo during a storm. Under the terms of general average, which date back to the **York-Antwerp Rules of 1890**, cargo interests pay a contribution – based on a percentage of their own interests’ value – to cover the damages or costs of others involved in a common maritime venture.

Trends |  Hull and cargo risks

# Addressing the root cause of fires – mis-declared cargo

Fire safety and the problem of mis-declaration must be fixed if the industry is to benefit from the efficiencies of large container vessels.

In recent years the role that mis-declared dangerous goods, such as chemicals, batteries and charcoal, have played in cargo fires has become increasingly documented. Failure to properly declare, document and pack such hazardous cargo can result in containers stowed inappropriately, or hamper firefighting efforts. Labeling a cargo as dangerous is more expensive and therefore some companies try to circumvent this by labeling items such as fireworks as toys or lithium-ion batteries as computer parts for example.

Meanwhile, the Cargo Incident Notification System (CINS<sup>10</sup>) says nearly 25% of all serious incidents onboard container ships are attributable to mis-declared cargo.

In 2020, a US National Cargo Bureau (NCB) survey<sup>11</sup> focusing on 500 containers showed that more than half failed with one or more deficiencies, 69% of the import containers contained dangerous goods and 38% of the export ones. Of the import containers with dangerous goods, 44% had problems with the way cargo was secured, 39% had improper placarding and 8% had mis-declared cargo. Of the export containers with dangerous goods, 25% had securing issues, 15% were improperly placarded and 5% were mis-declared.

A number of large container shipping companies have turned to technology to address mis-declared cargo, using cargo screening software – like the US National Cargo Bureau’s Hazcheck Detect<sup>12</sup> tool – to detect suspicious bookings and cargo details. Several large container operators are now imposing penalties on mis-declared dangerous goods.

“Mis-declaration of cargo is an important factor in many container fires, but no real holistic solution to this problem is in sight. Currently, each shipping company and jurisdiction has its own requirements while the rate of container inspections in many countries is low,” says **Marcel Ackermann, Global Product Leader Cargo at Allianz Global Corporate & Specialty (AGCS).**

“The challenge is how to regulate a global industry in which millions of diversified containers are transported every year. What we would really like to see is unified requirements for mis-declared hazardous cargo on all shippers and fines for those that mis-declare hazardous cargo,” says **Captain Rahul Khanna, Global Head of Marine Risk Consulting at AGCS.**





Trends |  Hull and cargo risks

# Addressing the risks from Li-ion batteries

Lithium-ion (Li-ion) batteries are increasingly impacting shipping safety with a number of fires in shipping containers and onboard roll-on roll-off (Ro-ro) vessels where batteries were a contributing factor.

Decarbonization and electrification are increasing the number of shipping goods that contain Li-ion batteries, from electric vehicles to a wide range of consumer and electronic goods. The global Li-ion battery market is expected to grow by over 30% annually from 2022 to 2030, according to McKinsey.<sup>13</sup> The number of electric vehicles (EVs) is also growing at a fast pace: Nearly 10%<sup>14</sup> of global car sales were electric in 2021, four times the market share in 2019.

The main hazards of Li-ion batteries are fire, explosion, and 'thermal runaway', a rapid self-heating fire that can cause an explosion. They can also produce irritating, corrosive or poisonous gases that cause an explosion in a confined space. The main causes of Li-ion fires are substandard manufacturing or damaged battery cells or devices, over-charging, and short circuiting.

Fires in EVs with Li-ion batteries can burn more ferociously, are very difficult to extinguish, and are capable of spontaneously reigniting hours or even days after they have been put out. Most ships lack the suitable fire protection, firefighting capabilities, and detection systems to tackle such fires at sea, which has been made more difficult by the dramatic increase in ship size.

"Li-ion batteries on their own are not new, and the risks are well documented," says **Captain Randall Lund, Senior Marine Risk Consultant at Allianz Global Corporate & Specialty (AGCS)**. "But the explosion of demand for these batteries is flooding the market with new manufacturers, raising questions around quality control. We have seen many fires where the cause has been traced to malfunctioning or damaged batteries."



AGCS has warned about the risks associated with Li-ion batteries in shipping for a number of years, first highlighting this issue in 2017. Its latest report highlights a full list of loss prevention measures to consider.

[➔ Download](#)





## Making progress on container ship fire safety

For almost a decade Allianz Global Corporate & Specialty (AGCS) and others in the insurance industry have called for enhanced fire detection and fighting systems for container ships. In 2017, the International Union of Marine Insurance (IUMI) co-sponsored a submission to the International Maritime Organization (IMO) Maritime Safety Committee with a view to amending The International Convention for the Safety of Life at Sea (SOLAS) to enhance provisions for early fire detection and effective control of fires in containerized cargos. Although delayed by Covid-19, the process to amend SOLAS is underway.

In March 2023, the European Maritime Safety Agency published its CARGOSAFE study,<sup>15</sup> which assesses the risks associated with fires on container ships and evaluates prevention, detection, firefighting, and containment measures. The IMO is to review the study, alongside other industry and insurer proposals to improve the firefighting capability for the cargo deck area of container ships. The amendments to SOLAS, which apply to new ships, are expected to enter into force on January 1, 2028.

In addition to the IMO work, the private sector has been developing technical solutions to the problem, such as using sensors and thermal imaging to detect fires early. In another positive development, a group of leading shipping companies<sup>16</sup> launched the Cargo Fire & Loss Innovation Initiative, which aims to reduce the impact of cargo fires and cargo loss through joint requirements, technology solutions, and best practices and recommendations.

“We are seeing innovation in the private sector to address the issue of fires on container ships, and inside containers, which makes us optimistic that realization of the problem has increased. This is no longer about raising awareness but moving to concrete measures through investment in fire detection and protection for existing vessels, in combination with discussions at IMO level on new ship design,” says **Captain Rahul Khanna, Global Head of Marine Risk Consulting at AGCS.**

## Trends | Hull and cargo risks

Li-ion fire risks will likely ease over time as manufacturers, carriers, and regulators address the current challenges. In the meantime, attention must be focused on pre-emptive measures to help mitigate the peril. Measures to consider include ensuring staff/crew receive adequate training and access to appropriate firefighting equipment, improving early detection systems and developing hazard control and emergency plans.

“The debate about electric vehicles in the shipping industry is ongoing, with conversations about whether there is a need for dedicated Ro-ro vessels for EVs. From an insurance perspective, this is something we would like to see – purpose built vessels for transporting electric vehicles, designed to substantially reduce the risk of fire,” says **Captain Rahul Khanna, Global Head of Marine Risk Consulting at AGCS.**

When it comes to concrete actions to mitigate battery fire risk in containers and on Ro-Ros, there is no clear universal solution as yet, says **Justus Heinrich, Global Product Leader Marine Hull at AGCS:** “If this risk is not properly mitigated, insurers will have to address it through portfolio management methods.”



## Containers overboard

**New regulations will require operators to keep track of shipping containers lost at sea, which pose a threat to navigation and the environment.**

In March, 2023, an MSC container ship<sup>17</sup> lost 46 empty shipping containers at three different times during bad weather east of Bermuda. The incident followed one of the worst periods on record for container losses. According to the World Shipping Council<sup>18</sup> (WSC), over 3,100 containers were lost on average annually for the two-year period 2020-2021, more than four times the 779 reported in the previous period.

Last year, the International Maritime Organization (IMO) agreed proposals for the mandatory reporting of lost containers. The draft amendments to the International Convention for the Safety of Life at Sea (SOLAS) and the International Convention for the Prevention of Pollution from Ships (MARPOL) treaties will require vessels to report the loss of freight containers without delay to ships in the vicinity, and to the nearest coastal state and flag state. The draft amendments are expected to enter into force on January 1, 2026.

“Shipowners will be required to trace container losses at sea in order to recover them. It is no longer acceptable that a vessel can easily lose containers which are a danger to navigation and a threat to the environment,” says **Régis Broudin, Global Head of Marine Claims at Allianz Global Corporate & Specialty.**

“There were fewer incidents in 2022, but this remains an important issue for the container industry, in particular large container ships, where the size of vessels may be a factor in the loss of containers in heavy seas,” says Broudin.

Large container vessels, where containers can be stacked as many as 26 deep, are vulnerable to parametric rolling (extreme rolling and pitching) in certain sea conditions, exerting extreme stresses on container stacks and their securing systems.

“We cannot stop stronger weather conditions at sea. But we can address the risk of human error with storage and lashing of containers,” says Broudin.

Trends |  Hull and cargo risks

# Erosion of specialist skills leads to project cargo losses

Transporting large bulky equipment by sea, such as engineered project cargo, heavy modules, wind turbines or mining equipment, is a highly specialized sub-sector of the shipping industry. However, recent incidents point to a worrying trend at a time of increased activity.



AGCS has previously issued safety guidance on handling project cargo.

How to safely load, stow, secure and discharge heavy lifts and project cargo.

[➔ Download](#)

In January 2023, a 375-ton column broke free and fell off the deck of a bulk carrier into the Adriatic Sea near Italy. Both the shipping company and the vessel were not specialist project cargo carriers. This is not the only such incident seen by insurers in recent years.

Critical project cargo is typically high value, with long lead times, explains **Captain Rahul Khanna, Global Head of Marine Risk Consulting at Allianz Global Corporate & Specialty (AGCS)**: “Values can range from under \$1mn to tens of millions of dollars, but delay in start-up claims can be many times the value of the cargo. A damaged turbine could take 12 to 18 months to replace, for example.”

The project cargo market has seen increased activity since the Covid-19 pandemic, with growing demand from increasing investment in infrastructure development and the decarbonization of industries. However, handling critical cargo requires specialist vessels, equipment, and port infrastructure. Being heavy and cumbersome, it also relies on skilled personnel and robust procedures to load and transport project cargo safely.

“The specialist skills and vessels required to transport project cargo are in high demand as the number of such items has increased since the pandemic. But there is concern in the insurance industry that the specialist skills required to load and transport project cargo are slowly eroding,” says Khanna.

“We are experiencing an increase in losses, and we need to see a tightening up of processes and procedures. Ships and crews and levels of training should be of the highest level when handling critical cargo. It is important they are not carried on non-specialist ships with crews that are not trained for heavy lift vessels.

“Many of the losses are caused by a poor understanding of procedures to load and stow project cargo. Damage typically happens due to usage of inadequate lifting equipment or poor cargo securing arrangements. It is therefore imperative that experienced personnel are in charge of such operations and marine warranty surveyors are appointed,” says Khanna.

“

We need to see a tightening up of processes and procedures



Trends |  War and crime

## Ukraine hull and cargo claims crystalize

Black Sea shipping risks remain heightened as the insurance industry faces unprecedented total loss scenarios from trapped vessels and cargo.

More than a year after Russia's invasion of Ukraine, and the ripple effects of the conflict continue to be felt by shipping companies and insurers, while embargoes and sanctions severely limit trade with Russia.

When Russia invaded Ukraine in February 2022, 112 vessels crewed by more than 2,000 seafarers were caught in Ukrainian ports across the Black Sea and the Sea of Azov. One year later, and 331 seafarers were still stuck in Ukrainian ports, according to the UN.<sup>19</sup> Some 40 or more vessels were believed to still be trapped in the region as of March 2023, in addition to several merchant vessels that were damaged or destroyed in Ukrainian ports in the first months of the war.

The longer vessels are trapped, the higher the likely loss for insurers. Owners and operators have no access to trapped vessels for maintenance or repairs, while insurers are not able to carry out loss assessments. With the passage of time, salvage values decline.

The one-year mark is an important trigger for marine insurance policies. Under a marine war risk policy, a vessel could be considered a total loss when trapped or blocked for a defined period, typically one year for a hull policy, but as little as six months for cargo.

Trends |  War and crime

“As we have passed the 12-month time period, outstanding claims for trapped vessels have been declared as total losses,” says **Régis Broudin, Global Head of Marine Claims at Allianz Global Corporate & Specialty (AGCS)**. “In almost 30 years of experience, this is the first time I have seen this theoretical total loss scenario realized under a blocking and trapping hull cover. This situation is unprecedented.”

Insureds would, however, be expected to take reasonable measures to try minimizing the loss or secure the vessel’s release, such as making use of any safe passage agreements. Signed in Istanbul on July 22, 2022, facilitated by the United Nations and Turkey, the Black Sea Grain Agreement is intended to create safe passage for vessels in the Black Sea exporting grain and fertilizer.

The grain corridor has enabled some vessels trapped by the war in Ukraine to escape. Vessels using the corridor are covered by a special insurance facility.

Despite the Black Sea Grain Agreement, risks for shipping in the Black Sea remain at a high level, with an ever-present threat of war. NATO<sup>20</sup> recently warned that the threat of collateral damage or direct hits on civilian shipping in the war risk area of the Black Sea remains high, while harassment and diversion of shipping in the area cannot be excluded. The threat of Global Positioning System (GPS) jamming, Automatic Identification System (AIS) spoofing, communications jamming, electronic interference and cyber-attacks in the area are also considered high.

Mines also continue to pose a threat, and a number have been detected and deactivated in the western Black Sea by coastal nations’ authorities in 2023. During a storm in March 2023, a stray mine drifted ashore and exploded, damaging the dock at a Ukrainian resort. Last year a Romanian minesweeper was damaged by a floating mine.<sup>21</sup>

“Floating mines will continue to pose a risk, even after the war ends. There is no reliable information on where mines are located, and many can go missing or drift, and that would be a big risk for vessels navigating these waters for some years,” says **Captain Nitin Chopra, Senior Marine Risk Consultant at AGCS**.



Trends |  War and crime

# Shadow tanker fleet poses safety and environmental risk

Concerns grow as Russia oil embargoes create shadow tanker fleet and sanctions challenge.

In December 2022, the G7, the European Union and Australia agreed to set a maximum price of \$60 per barrel for seaborne Russian oil products, with an option to adjust the price cap in the future to respond to market developments.

The price cap, which is in addition to US, UK and EU bans on Russian oil imports, prohibits operators and service providers in participating countries – including insurers – from facilitating the transportation of Russian oil above the price cap. Even above the price cap, there is limited appetite among insurers and reinsurers to underwrite Russian oil trade due to the administrative burden and enhanced safety and pollution concerns. Where insurance is provided, any breach of the price cap would result in the vessel being uninsured.

Russia and its allies, however, are seeking to circumvent these sanctions. According to the International Union of Marine Insurance (IUMI), Russia has assembled its own fleet of about 100 vessels to transport its oil and may have access to a further 200 vessels from countries like Venezuela and North Korea.<sup>22</sup> Estimates of the size of the shadow fleet vary, and range to more than 600, or roughly a fifth of the overall global crude oil tanker fleet, according to Reuters.<sup>23</sup>

This so-called shadow fleet enables Russia to sell its oil effectively without valid insurance. Of the 900 or so very large and ultra large tankers operating worldwide, around 20% were operating in a way that technically breaks sanctions against Iran, Venezuela or, increasingly, Russia, according to TankerTrackers.<sup>24</sup> Some 15% of the suezmax fleet and 11% of the aframax fleet were breaking rules.

Sanctions and Russia's invasion of Ukraine have caused many leading certification providers, engine makers and insurers to withdraw their services from ships carrying oil from sanctioned Iran, Russia and Venezuela, resulting in reduced oversight of vessels carrying oil exports from these countries. Vessels in the shadow fleet are more likely to be older ships, operating under flags of convenience and under lower maintenance standards, explains **Justus Heinrich, Global Product Leader Marine Hull at Allianz Global Corporate & Specialty (AGCS)**: "The sanctions environment has intensified significantly over the past year and the complexity of doing business for insurers and customers has increased significantly. At the same time, the increase in the number of shadow tankers is a worrying development, threatening the world fleet and the environment."

Trends |  War and crime

According to analysis<sup>25</sup> of ship tracking and accident data, there were at least eight groundings, collisions or near misses involving tankers carrying sanctioned oil products in 2022 – the same number as in the previous three years combined. In March last year, shadow tanker **Arzoyi** ran aground off eastern China. Just days later the **Petion** was involved in a collision near Cuba. In November 2022, oil tanker **Linda I** was seized in Spain for drifting out of control – it was found to have several deficiencies and was in contravention of pollution regulations for using high-sulphur marine fuel without an exhaust gas cleaning system.

In May 2023, an uninsured, unladen 1997-built tanker, **Pablo**, exploded in Southeast Asia, reportedly killing three crew and washing oil up on nearby shores.<sup>26</sup>

“As this incident shows, there are a number of worrying scenarios, such as a collision with an uninsured shadow fleet vessel that causes major environmental damage,” says **Captain Nitin Chopra, Senior Marine Risk Consultant at AGCS.**



Trends |  War and crime

# Progress made in fighting piracy but recent activity shows no room for complacency

Globally, maritime piracy is at its lowest recorded level in almost three decades, but the root cause of these incidents has not gone away.

There were just 115 recorded piracy incidents during 2022, down from 132 in 2021 according to the International Maritime Bureau.<sup>27</sup> Ten years ago there were 138 incidents recorded in the first six months of 2013 alone.

The overall reduction in piracy activity in the high-risk waters of the Gulf of Guinea – down from 35 incidents in 2021 to 19 in 2022 – is a significant contributor to this decreased activity overall. In 2019, the Gulf of Guinea was the global piracy hotspot, accounting for 90% of global kidnappings reported at sea, with the number of crew taken increasing by more than 50% to 121. Today, piracy is at a near three decade low in the region.

The prompt and decisive actions and collaboration between international navies and regional authorities and navies in the region, such as the Nigerian Maritime Administration and Safety Agency (NIMASA) and initiatives such as the Gulf of Guinea Maritime Collaboration Forum SHADE (which was established to implement more effective operational counter piracy cooperation between navies, both regional and international, as well as the shipping industry and reporting centers) have positively contributed to the drop in reported incidents.

“However, sustained efforts are needed to ensure the continued safety of seafarers in the Gulf of Guinea region. Piracy is tied to underlying social, political and economic problems, which could deteriorate further. The region remains dangerous,” says **Captain Rahul Khanna, Global Head of Marine Risk Consulting at Allianz Global Corporate & Specialty (AGCS)**. Two incidents were reported in the last quarter of 2022. In March 2023 pirates boarded a product tanker off the coast of Democratic Republic of the Congo, while in April another tanker was boarded about 300 nautical miles southwest of Abidjan, Ivory Coast – all crew were later reported safe with the oil cargo the target<sup>28</sup>. Seafarers are encouraged to follow industry best management practice recommendations in these waters.

Developments outside of the Gulf of Guinea should remain on the risk radar. A third of all incidents reported globally in 2022 were in the Singapore Strait with underway vessels successfully boarded in all 38 incidents. These incidents fall under the definition of armed robbery, but crews continue to be at risk. In February 2023, the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia Information Sharing Centre (ReCAAP ISC) reported nine incidents of armed robbery against ships in Asia (8 in the Straits of Malacca and Singapore).<sup>29</sup> Armed robbery is distinguished from piracy in that the former occurs in internal waters, archipelagic waters and territorial seas, rather than on the international high seas.

Trends |  War and crime

# Shipping continues to fall victim to cyber-attacks

IT security should not be put on the backburner despite industry challenges and economic pressures.

In January 2023, DNV,<sup>30</sup> a Norwegian shipping classification society confirmed its systems had been disrupted by a ransomware attack, affecting around 1,000 vessels that rely on its technology. In April 2023, several ports in Canada including Halifax, Montreal, and Québec, suffered multiple cyber-attacks after being targeted by a distributed denial-of-service attack (DDOS) which caused their websites to crash. Reports indicated that a pro-Russian hacking group had claimed responsibility.<sup>31</sup>

The digital era may be opening up new possibilities for the maritime industry but its growing reliance on computer and software and increasing interconnectivity within the sector is also making it highly vulnerable. All four of the largest shipping companies, Maersk, Cosco, MSC, and CMA CGM have been victims of cyber-attacks in recent years. And according to an industry survey<sup>32</sup> just under half (44%) of maritime professionals reported that their organization has been the subject of a cyber-attack over a three year period. It also found almost a third of organizations do not conduct regular cyber security training while 38% do not have a cyber response plan.

To date, most cyber incidents in the shipping industry have been shore-based, such as ransomware and malware attacks against shipping companies' and ports' database systems. But with the growing connectivity of shipping, the fact that geopolitical conflict is increasingly being played out in cyber space – recent years have seen a growing number of GPS spoofing incidents, particularly in the Middle East and China, which can cause vessels to believe they are in a different position than they actually are – and with the advancement of autonomous shipping, there is little doubt that cyber risk has become an important exposure that will require much more detailed risk assessment going forward.

Fortunately, there are also a growing number of resources available to help mariners learn about common vulnerabilities. Just one example is the internationally-recognized United States Maritime Resource Center, which assists the industry in cyber awareness, safety and security through evidence-based research. Then there are an increasing number of cyber security guidelines which can be followed, such as those from the International Maritime Organization, but also from other important organizations such as the Baltic and International Maritime Council (BIMCO), the Cruise Lines International Association (CLIA), Intercargo and Intertanko.

“There are also standard practices that can be implemented to reduce cyber risk, such as defining personnel roles and responsibilities for cyber risk management and identifying the systems, assets and data that, when disrupted, pose risks to ship operations,” says **Captain Rahul Khanna, Global Head of Marine Risk Consulting at Allianz Global Corporate & Specialty (AGCS)**. “Shipowners also need to implement risk control processes and contingency planning, developing and implementing activities necessary to quickly detect a cyber event. Identifying measures to back up and restore cyber systems impacted by a cyber event is obviously crucial.”

These are challenging times for the shipping industry, but it is vital that investment in cyber risk education and security is not neglected at this time, despite economic and decarbonization pressures, as this risk has the potential to have catastrophic consequences, given the right confluence of events.

# Inflation pushes up severity of hull and machinery losses

Supply chain disruption, labor and material costs and delays are driving up the cost of hull and machinery claims.

Global inflation hit 8.8% in 2022, more than double its pre-pandemic level, although it is forecast to fall back to 6.6% in 2023 and 4.3% in 2024.<sup>33</sup> However, higher prices are now baked in, while the outlook for inflation is uncertain, given current geopolitical and financial market instability.

Increased commodity prices, higher labor costs and supply chain disruption have had a significant impact on marine insurance claims, in particular hull and machinery claims. The price of steel, a key cost driver in hull claims, increased sharply post-pandemic, as did the price of spare parts. A typical propeller or machinery damage claim, for example, now costs around two times more than it did pre-pandemic.

Shortages and delays in obtaining replacement parts also led to longer stays in repair yards. Labor shortages have also increased costs, contributing to longer repair times and increased yard costs. Industry estimates calculate a +18% increase in ship repair costs between 2020 and 2022 from inflation.

The severity of partial and attritional claims has risen since the pandemic, according to **Régis Broudin, Global Head of Marine Claims at Allianz Global Corporate & Specialty (AGCS)**. "Analysis of claims across our portfolio shows an increased severity for attritional claims for hull and machinery from higher labor, repair costs, availability of spare parts and dry docking for repairs, as well as the increased cost of materials like steel. This comes on top of the increased expense of dealing with large vessels, which face higher costs for repairs, salvage and towing," says Broudin.

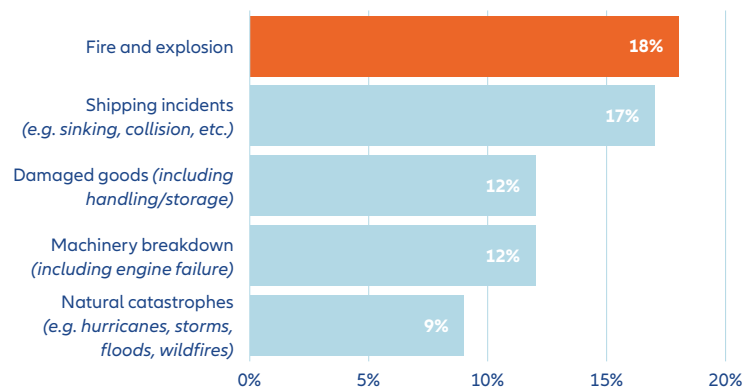
Addressing inflation is a challenge for both ship owners and insurers in the current environment, says **Justus Heinrich, Global Product Leader Marine Hull at AGCS**. "Inflation-led increases in repair and yard costs are beyond the control of shipowners and can significantly increase the cost of claims for insurers. Even companies with the best risk management on earth will see the impact of inflation on claims."

The post-pandemic boom in container shipping has also impacted values. Cargo values have risen with the increase in the price of goods and raw materials, while the shift to increased levels of cargo storage in ports and warehouses has led to higher costs and aggregation issues for insurers. The value of container vessels has also been volatile, having doubled in 2021, but since falling back sharply with the decline in freight rates.



## Top causes of loss by value of claims in marine

Based on analysis of 244,451 insurance claims between January 1, 2017, and December 31, 2021, worth approximately €9.2bn in value. "Other" causes of loss account for 32% of the value of all claims. Claims total includes the share of other insurers in addition to AGCS.



Source: Allianz Global Corporate & Specialty (AGCS)



Trends |  Decarbonization and sustainability

# Green efforts progress and evolve but acceleration needed

Decarbonization of shipping is now well underway, but the pace of these efforts is influenced by range of factors, including green tech, regulation and market forces.

It needs to be full steam ahead for the decarbonization of shipping, which is thought to contribute almost 3% of global greenhouse gas (GHG) emissions annually<sup>34</sup>. If it were a country, the shipping industry would be considered the sixth largest<sup>35</sup> emitter.

In 2018, the International Maritime Organization (IMO) committed to cut annual GHG emissions from international shipping by at least half by 2050, compared with their level in 2008, and work towards phasing out all GHG emissions from shipping as soon as possible in this century. It also set a goal to reduce the carbon intensity of international shipping by at least 40% by 2030, and 70% by 2050.

“Decarbonization is by far the biggest challenge for the sector, but the shipping industry’s efforts are progressing and rapidly evolving,” explains **Captain Rahul Khanna, Global Head of Marine Risk Consulting at Allianz Global Corporate & Specialty (AGCS)**. “The pace and progress of these efforts are influenced by a range of factors, including technological developments, regulatory frameworks, and market forces.”

One key indicator of progress is the reduction in carbon intensity, which is the amount of carbon emissions per unit of transport work (such as per ton-mile). “The IMO’s target of reducing the shipping industry’s carbon intensity by 40% by 2030, compared to 2008 levels, is ambitious and the industry will need to accelerate its adoption of energy-efficient technologies and fuels, such as wind propulsion, biofuels, hydrogen, and ammonia,” Khanna explains.



## AGCS pilots ESG Transportation Index

Allianz has committed to transition all greenhouse gas (GHG) emissions from its underwriting portfolios to net-zero by 2050 consistent with a maximum temperature rise of 1.5°C in order to contribute to the implementation of the Paris Agreement on Climate Change. Additionally, it is actively engaging with clients on their own decarbonization strategies. One pilot project that Allianz Global Corporate & Specialty (AGCS) is running in 2023 is the **AGCS ESG Transportation Index**, which involves collaborating with selected clients in the marine cargo and hull sectors (as well as in the aviation industry) on a survey to gather much-needed data on the maturity of companies' environmental, social, and governance (ESG), and sustainability initiatives and commitments.

Once the pilot is completed the aim of the index is to offer access to up-to-date information on ESG best practices and trends, and benchmarking, which measures the ESG maturity of companies against industry peers, with the longer-term goal of developing sustainable insurance products and services. AGCS will also offer discussions to support clients' sustainability agendas and additional risk consulting based on the results of the index.

## Trends | Decarbonization and sustainability

Another indicator of progress is the adoption of regulatory frameworks aimed at reducing emissions. The IMO has introduced a range of measures to promote energy efficiency and reduce emissions, including the Energy Efficiency Design Index (EEDI), the Ship Energy Efficiency Management Plan (SEEMP), and the Carbon Intensity Indicator (CII). The CII regulations have come into force from January 1, 2023, and this should help accelerate the pace of transition.

Market forces are also driving decarbonization efforts in the shipping sector. Increasingly, consumers and investors are demanding sustainable and low-carbon supply chains, and shipping companies are responding by adopting cleaner technologies and fuels. New ships with engine propulsion using biofuels and methanol are already in the service. The availability and affordability of such low-carbon fuels will also play a significant role in the sector's decarbonization efforts and in part is dependent on upstream producers.

Establishing green corridors is also an idea gaining in popularity. These are dedicated routes or lanes where special measures are taken to promote sustainable shipping and are collaborations between industry stakeholders such as shipping companies, ports and local authorities.

"Overall, while progress has been made in the shipping sector's decarbonization efforts, much more needs to be done to achieve the targets set by the IMO," says Khanna. "We also need to keep in mind these targets are less ambitious than the net zero target being set by many other industries and IMO will face further pressure to revise these."

According to **Justus Heinrich, Global Product Leader Marine Hull at AGCS**, the sector's decarbonization journey will also have significant implications for exposure and underwriting: "The big shipping companies have solid controls and steering measures to reduce carbon intensity, and many are in the process of modernizing their fleet, retrofitting existing vessels, testing alternative fuels, and ordering new greener vessels."

Trends |  Decarbonization and sustainability

# Investment in alternative fuels takes off

Collaboration is key when it comes to innovation and regular exchanges of information from testing and experiences between companies and insurers will be important in helping to reduce transition risks.

Shipping companies and cargo operators are already switching to vessels powered by liquefied natural gas (LNG), as well as trialing and using alternative fuels, wind-assisted propulsion systems, more efficient propellers and bulbous bow designs. Meeting the International Maritime Organization (IMO) greenhouse gas emission reduction targets will cost as much as \$1.4trn, according to a 2020 study from the Global Maritime Forum.<sup>36</sup>

Much of the current activity is focused on experimenting with alternative fuels, including biofuels, methanol, ammonia and hydrogen power, as well as solar and battery powered all-electric vessels and hybrid propulsion systems. “We are seeing a lot of investment in alternative fuels. The challenge is to find the one that will take us across the line and meet decarbonization targets,” says **Captain Rahul Khanna Global Head of Marine Risk Consulting at Allianz Global Corporate & Specialty (AGCS)** “LNG is helping transition away from the heavy fuels of the past. But it is not the solution that will take us there and will only provide short-term temporary relief.”

According to the IMO,<sup>37</sup> some 99.89% of the fuel used by shipping in 2021 was carbon-based, yet for the shipping industry to meet a 1.5°C target in line with the Paris Agreement, net zero-emission fuels must make up 5%<sup>38</sup> of the international shipping fuel mix by 2030.

AGCS is already supporting ship owners as they test and transition to alternative fuels, in particular biofuels. Derived from agriculture and forestry, biofuels can replace conventional shipping fuel without substantial modifications to engines, fuel tanks, pumps or supply systems. However, there are likely to be challenges with scalability and sustainability, with questions over the ability of the supply chain and logistics to meet growing demand for biofuels.

Transitioning away from carbon-based shipping will involve a challenging period of adjustment and change, according to Khanna. “It will take years to build the scale of infrastructure required to support the transition to alternative fuels, and a mix of fuels is likely to exist for the next five to 10 years, which poses a challenge for shipowners and operators, ports, and bunker operators,” says Khanna.

The shipping industry also has only limited experience of using and handling biofuels, while the long-term effects of alternative fuels on engines and fuel systems have yet to be borne out.

“Increasing the efficiency of vessels is a move welcomed by insurers, which share the industry’s commitment to decarbonization and net zero targets. However, this is a new field that our customers are exploring, and as insurers we share in the risks. However, while there is an increase in testing, we have very little data or loss history on alternative fuels,” says **Justus Heinrich, Global Product Leader Marine Hull at AGCS**. “Collaboration is key when it comes to exposure and innovation and regular data, experience and information exchanges with a willing client base that wants to partner with us will go a long way towards improving this.”

## Trends | Decarbonization and sustainability

While the testing of biofuels is already well underway, the industry is also exploring other potential low-carbon or zero-carbon fuels, including hydrogen, green methanol and ammonia, as well as battery-powered vessels.

“As yet we have not seen any major claims from alternative technologies like wind-assisted propulsion or alternative fuels like biofuel. However, bigger changes lie ahead. As hydrogen, green methanol, ammonia and battery-assisted technologies are introduced at scale, then we will potentially see more issues,” says **Régis Broudin, Global Head of Marine Claims at AGCS.**

Dutch logistics company Samskip recently ordered two hydrogen-powered feeder container vessels while Norwegian ferry line Torghatten Nord is developing hydrogen-powered ferries.<sup>39</sup> Shipping companies are also ordering vessels capable of running on green methanol. Almost two-thirds of new container ship orders this year will be capable of using green methanol.<sup>40</sup>

“Hydrogen and ammonia have been touted as possible fuels that could help meet decarbonization targets, but it is early days in terms of the additional risks these fuels present to the industry, especially once they start mass production of such vessels. Hydrogen and ammonia are not easy to handle, and hydrogen, in particular, is difficult to transport,” says Khanna. In February 2023, a report<sup>41</sup> by the Australian Transport Safety Bureau revealed that an electrical failure blamed on incorrect fitting work caused a “serious” incident during the world’s first international transport of liquefied hydrogen in January 2022. A one-meter-high yellow flame erupted from a gas combustion unit on the liquefied hydrogen carrier but there was no subsequent fire, explosion or injuries.



# Electric and autonomous vessels bring benefits and new risks

The decarbonization of shipping is leading to growing interest, continued testing is key to their safe development.

Last year, the world's first fully electric, autonomous container ship, the **Yara Birkeland**, completed its maiden voyage, sailing along the Norwegian coast from Horten to Oslo. By the end of this year, the number of crew on board the 80m-long vessel could be halved,<sup>42</sup> and potentially removed completely within two years, if trials go according to plan.

The builder of the **Yara Birkeland**, Kongsberg, is also now developing battery-powered autonomous barges for Norwegian grocery wholesaler Asko. In Sweden, the city of Stockholm is due to commence electric autonomous car ferries by mid-2024,<sup>43</sup> although they will be remotely controlled from the shore, and will still have crew on board empowered to take over control if needed. The city also has plans to pilot an electric hydrofoil commuter ferry later this year.

The lithium-ion (Li-ion) batteries used in electric vessels are an important risk factor, explains **Captain Nitin Chopra, Senior Marine Risk Consultant at Allianz Global Corporate & Specialty (AGCS)**. Container ship and car-carrier fires in recent years have highlighted that these batteries can combust or explode when damaged, or due to faulty manufacturing. Battery fires are also more difficult to extinguish and prone to self-reigniting.

"The battery power banks, if damaged, could cause a serious fire. It is well documented that Li-ion battery fires are very hard to extinguish and require additional firefighting measures. As electrification moves to larger vessels, it will require special measures for fire protection and fighting, especially in the battery storage area," says Chopra.

Fire detection, prevention and fighting capabilities will be an important consideration in the development of safe operation of electric-powered vessels, explains Chopra. Crew training and procedures will also need to reflect the potential fire risks.

While electric and autonomous vessel development has so far focused on smaller coastal vessels, the technology could be deployed in larger ocean-going vessels. Last year, a subsidiary of South Korean shipbuilder HD Hyundai completed the world's first ocean crossing by a large autonomous ship. The LNG carrier **Prism Courage**<sup>44</sup> sailed 10,800 nautical miles from Texas to South Korea in 33 days, of which half was navigated autonomously.

"Coastal trade has provided a good testing ground for this technology, and from an insurance perspective, we would like to see continued testing with smaller coastal vessels, learning and refining systems over time, before moving on to scaled-up ocean transit operations," says Chopra.

With no crew on board, autonomous technology raises questions around emergency response, Chopra adds. "If there was a cargo or engine fire, collision or grounding, any event, small or large, would be amplified and potentially turn into a total loss."

The International Maritime Organization's Maritime Safety Committee is in the process of developing new regulations for the operation of maritime autonomous surface ships (MASS), including the role, competencies and responsibilities of MASS master and crew. The aim is to adopt a non-mandatory goal-based MASS Code to take effect in 2025, which will form the basis for a mandatory goal-based MASS Code, expected to enter into force on January 1, 2028.



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# Data and sources

The primary data source for total loss and casualty statistics is Lloyd's List Intelligence Casualty Statistics (data run on March 31, 2023).

Total losses are defined as actual total losses or constructive total losses recorded for vessels of 100 gross tons (GT) or over (excluding, for example, pleasure craft and smaller vessels), as at the time of the analysis.

Some losses may be unreported at this time and, as a result, losses (especially for the most recent period) can be expected to change as late loss reports are made. As a result, this report does not provide a comprehensive analysis of all maritime accidents, due to the large number of minor incidents, which do not result in a "total loss", and to some casualties which may not be reported in this database.

This year's study analyzes reported shipping losses on a January 1 to December 31 basis.

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Cover image: The OS 35 bulk carrier which collided with the Adam LNG tanker off Gibraltar, September 5, 2022. Images: Shutterstock/Adobe Stock

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