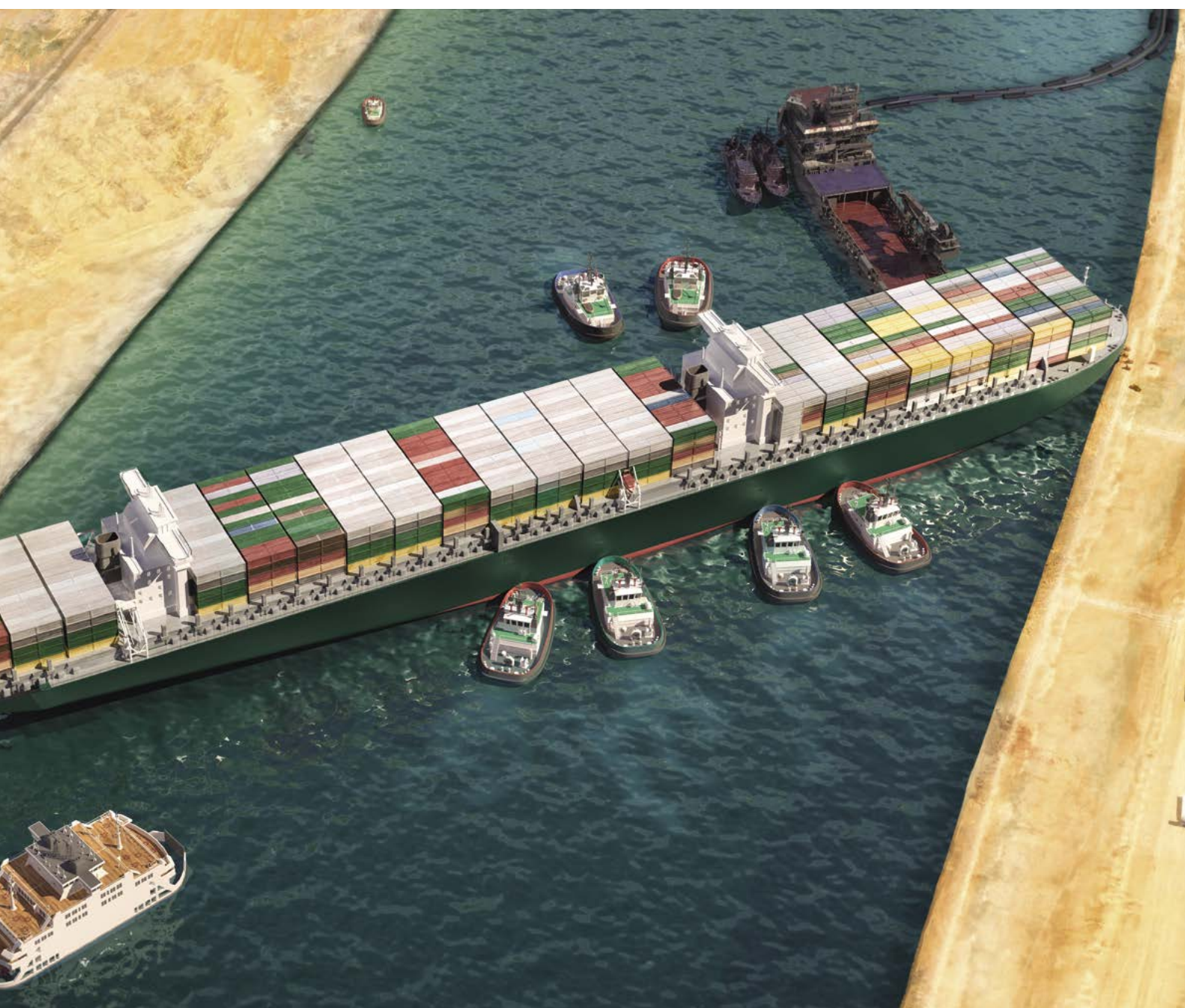


Safety and Shipping Review 2021

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 10 dedicated lines of business.

Our customers are as diverse as business can be, ranging from Fortune Global 500 companies to small businesses, and private individuals. Among them are not only the world's largest consumer brands, tech companies and the global aviation and shipping industry, but also satellite operators or Hollywood film productions. They all look to AGCS for smart answers to 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 31 countries and through the Allianz Group network and partners in over 200 countries and territories, employing around 4,400 people. As one of the largest Property-Casualty units of Allianz Group, we are backed by strong and stable financial ratings. In 2020, AGCS generated a total of €9.3 billion gross premium globally.

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Executive summary

AGCS' **Safety and Shipping Review** identifies loss trends and highlights a number of risk challenges for the maritime sector.

The international shipping industry is responsible for the carriage of around 90% of world trade so the safety of vessels is critical. The sector continued its long-term positive safety trend through 2020 with the number of reported total losses of over 100GT remaining stable at 49 compared with 48 a year earlier. This means annual shipping losses have halved over the past decade (2011 – 98), although 2020 represented the first time in five years that losses have not declined, suggesting the loss total could be stabilizing around the minimum achievable level.

The 2020 loss year represents a significant improvement on the rolling 10-year loss average (88), 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.

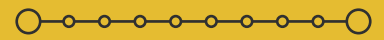
South China, Indochina, Indonesia and Philippines is the global loss hotspot, accounting for a third of all losses in 2020 (16), with incidents up slightly year-on-year (2019: 14). The East Mediterranean and Black Sea (7) and Arabian Gulf (4) regions saw

significant increases in loss activity to rank second and third. South East Asian waters are also the major loss location of the past decade (224 incidents), driven by a number of factors including high levels of local and international trade, congested ports and busy shipping lanes, older fleets and extreme weather exposure. Together, the South China, Indochina, Indonesia and Philippines, East Mediterranean and Black Sea, and Japan, Korea and North China maritime regions account for half of the 876 shipping losses of the past 10 years (437).

Cargo vessels accounted for more than a third (18) of all vessels lost in 2020. The number of losses involving cargo and passenger vessels increased year-on-year. Analysis shows cargo vessels account for 40% of total losses over the past decade (348).

Foundered (sunk/submerged) was the main cause of total losses during 2020, accounting for one in two. Contributing factors include bad weather, poor visibility leading to contact, flooding and water ingress and machinery breakdown. The number of fires/explosions resulting in

Safety and Shipping



876 total losses in 10 years



49 total losses in 2020.
50% decline over a decade



18 cargo ships lost in 2020 –
37% of all vessels lost



2,703 shipping incidents
in 2020 – down 4% year-on-year.
Machinery damage is the top cause

Review 2021 In Numbers

1,500%

increase in container-carrying capacity in 50 years

18,000

containers on the Ever Given during the Suez Canal blockage



6 incidents involving the most accident-prone vessels in **2020** – a **Greek Island ferry** and a **RoRo** in **Canadian waters**

95% of crew kidnappings reported at sea in **2020** in the **Gulf of Guinea**

579 incidents in **2020** in the **British Isles, North Sea, English Channel** and **Bay of Biscay** region

1 in 3 total losses in **2020** occurred in **South China, Indochina, Indonesia** and **Philippines** – the global hotspot

total losses of vessels increased again year-on-year, hitting a four-year high of 10. Collectively, foundered (sunk/submerged) (54%), wrecked/stranded (20%) and fire/explosion (11%) are the top three causes of total losses over the past decade, accounting for 85%.

The number of reported shipping casualties or incidents declined slightly from 2,818 to 2,703 in 2020 or by around 4%. The British Isles, North Sea, English Channel and Bay of Biscay region saw the highest number of reported incidents (579),

although this was down year-on-year. Machinery damage/failure was the top cause of shipping incidents globally, accounting for 40%.

The East Mediterranean and Black Sea region has seen the most shipping incidents over the past decade (4,556). Of the 26,000+ incidents over the past decade, more than a third (9,334) were caused by machinery damage or failure – over twice as many as the next highest – collision.

26,000+ reported shipping incidents over the past decade

Covid-19 factors

Despite the devastating economic impact of Covid-19, the effect on maritime trade has been less than first feared, demonstrating the resilience of the shipping industry. Global seaborne trade volumes declined only by around 3.6% in 2020, and are on course to surpass 2019 levels this year.

While the cruise industry and the car carrier segment have been worst affected by the pandemic, the industry's three largest markets – tankers, bulkers and containers – have been quick to recover. Global container throughput in the first months of 2021 exceeded pre-pandemic levels. However, the recovery is volatile and dependent on the success of vaccinations and the ongoing effects of the pandemic. Surges in demand for goods combined with Covid-19-related delays at ports and shipping capacity management problems have led to congestion at peak times and a shortage of empty containers, particularly in Asia, highlighting the need for effective backhaul of empty containers in the shipping sector. The global nature of the sector, and the lack of spare capacity within it, means problems in one region can have ripple effects around the world. In June 2021 it was estimated that there was a record total of 300 freighters awaiting to enter overcrowded ports.

The crew change situation is a humanitarian crisis which continues to have a major impact on the health and wellbeing of seafarers. In March 2021, it was estimated that some 200,000 seafarers remained on board vessels with a similar number urgently needing to join ships to

replace them. Extended periods at sea can lead to mental fatigue and poor decision making, which ultimately impact safety. Crewing issues came under the spotlight in the wake of the **Wakashio** incident in July 2020 when the vessel ran aground off the coast of Mauritius, spilling oil in the process.

With so many crew members stuck on board vessels there are serious concerns for the next generation of seafarers. Covid-19 is impacting training and development and the sector may struggle to attract new talent due to working conditions. Any shortage could impact the surge in demand for shipping as the economy and international trade rebounds.

Overall, Covid-19 has had only limited impact on marine claims to date. Hull insurance has seen little direct impact. Marine liability insurers are expected to face passenger liability claims from cruise ships. Cargo insurers have seen an uptick in perishable goods claims. However, the surge in demand for shipping, coupled with the pandemic, has put shipyards under pressure. There is an increased cost of hull and machinery claims due to delays in the manufacture and delivery of spare parts, as well as a squeeze on available shipyard space. The costs of salvage and repairs has also increased. Potentially, insurers could see an uptick in machinery breakdown claims if Covid-19 has affected crews' ability to carry out maintenance or follow manufacturers' protocols. Machinery breakdown claims could arise from the reactivation of the cruise ship industry if maintenance protocols have not been followed – there have also been fires on board vessels in lay-up.

Larger vessels. Larger exposures

The blocking of the Suez Canal by the **Ever Given** container ship in March 2021 is the latest in a growing list of incidents involving large vessels. Container ships, car carriers and bulk carriers have grown larger in recent decades as shipping companies seek economies of scale and fuel efficiency, a trend that is likely to continue with environmental pressures. Despite the Covid-19 pandemic, ever larger vessels are on order.

Larger vessels present unique risks. Responding to incidents is more complex and expensive. Port facilities and salvage equipment to handle large ships are specialized and limited. Approach channels to existing ports may have been dredged deeper and berths and wharfs extended to accommodate large vessels but the overall size of ports has remained the same. If the **Ever Given** had not been freed, salvage would have required the lengthy process of unloading some 18,000 containers, requiring specialist cranes. The wreck removal of the large car carrier, **Golden Ray**, which capsized outside the US port of Brunswick with more than 4,000 vehicles on it in 2019, has taken well over a year and cost several hundreds of millions of dollars.

The number of fires on board large vessels has increased significantly in recent years. There was a record 40 cargo related fires or one every 10 days in 2019. In 2020, the number of incidents declined slightly, but was still above the average. Vessel size has a direct correlation to the potential size of loss. Car transporters/RoRo and large container vessels are at higher risk of fire with the potential for greater consequences should one break out.

Container ship fires often start in containers, which can be the result of non-declaration or mis-declaration of hazardous cargo, such as self-igniting charcoal, chemicals and batteries. When mis-declared, these might be improperly packed and stowed on-board, which can result

in ignition and/or complicate detection and firefighting. The other contributing factor is the fire detection and fighting capabilities relative to the size of the vessel. Major incidents have shown container fires can easily get out of control and result in the crew abandoning the vessel on safety grounds, thus increasing the size of loss. An International Union of Marine Insurance working group on container ship fire safety is working on a draft of recommendations to the International Maritime Organization (IMO) in respect of improved fire detection and firefighting capabilities on board container ships. Other industry organizations are also taking action. The problem of mis-declared cargo is not so easily addressed because the problems are often within the supply chains.

Container losses at sea also spiked last year and have continued at a high level in 2021, disrupting supply chains and posing a potential pollution and navigation risk. The number of container losses is the worst in seven years. More than 3,000 containers were lost at sea in 2020, while more than 1,000 alone fell overboard during the first months of 2021. This compares with an average of just 1,382 containers lost each year from around 6,000 container vessels in operation. The rise in container losses may be driven by a combination of factors, such as larger ships, more extreme weather and a surge in freight rates and mis-declared cargo weights (leading to container stack collapse) and the surge in demand for consumer goods. There are growing questions for how containers are secured on board ships.

There have also been a number of losses involving very large ore carriers (VLOCs), particularly converted ones. VLOCs can pose a higher than usual exposure due to the risks of cargo liquefaction, structural failings and the added challenge of salvage and wreck removal. Repeated deviations from the cargo loading plan can lead to structural fatigue in the long-term and result in catastrophic consequences.

Delay, supply chain and port risk accumulation issues

Maritime supply chain resilience is in the spotlight after a series of recent events. The **Ever Given** incident sent shockwaves through global supply chains that are critically dependent on seaborne transport with the repercussions lasting for months. It compounded delays and disruption already caused by trade disputes over the past year, extreme weather in the US and, of course, the fact the shipping industry was already dealing with disruption caused by the pandemic and surges in demand for containerized goods and commodities.

Recent years have also seen major delays to shipping from floods and droughts on key inland shipping routes, including the Mississippi in the US and Rhine in Europe. Climate change volatility is increasingly impacting shipping. Going forward, the shipping industry needs to be more proactive in addressing and mitigating the impacts of extreme weather. More accurate weather forecasting and technology will help shipping companies plan ahead and take action to avoid losses, such as to delay departure, seek shelter, or reroute to an alternative port.

Potential claims scenarios resulting from delays and disruptive weather include spoilage of refrigerated cargoes in container shipments, hull claims from bulk shipments where vessels face longer waiting times at anchor because of high water levels and flooding of stock in RoRo shipments from storms if primary storage areas are at maximum capacity.

Political risks are also impacting maritime transport and supply chains. In 2020, a trade dispute between China and Australia resulted in more than 60 vessels being stranded at sea for up to nine months, unable to deliver their cargoes of thermal coal and unable to change crew. Conflicts in the Middle East and piracy in Africa also continue to threaten.

Last year's devastating explosion at the port of Beirut in Lebanon in August 2020 added to industry concerns over the storage of hazardous goods and concentrations of risk at ports. Ammonium nitrate, which caused the explosion, is a widely used chemical and can be found in ports and warehouses across the world. However, it should be stored away from combustible materials and away from populated areas or critical services. The explosion, which resulted in the total losses of at least three vessels in the port – together with the Tianjin explosion in China in 2015 – also highlight the concentrations of risk in the world's largest ports. Beirut is a major gateway to the

Middle East, processing around two thirds of Lebanon's external trade. Meanwhile, the EU, the US and China have billions of dollars of trade flowing through their ports every quarter. Such exposure in a busy port can have huge consequences. And for insurers, this represents a massive accumulation of risk which requires modeling.

Security and sanctions concern mount

The Gulf of Guinea has emerged as the world's piracy hotspot, accounting for over 95% of crew numbers kidnapped worldwide in 2020. Last year, 130 crew were kidnapped in 22 separate incidents in the region – the highest ever – and the problem has continued in 2021. Vessels are being targeted further away from the shore – over 200 nautical miles (nm) from land in some cases. The Covid-19 pandemic could exacerbate piracy as it is tied to underlying social, political and economic problems, which could deteriorate further. Former hotspots like Somalia could even re-emerge.

The crippling ransomware attack against the Colonial oil pipeline in the US in May 2021 should be a wake-up call for the maritime industry. As a critical part of the global supply chain, the shipping industry could increasingly become an attractive target for criminals and politically motivated attacks. All four of the world's largest shipping companies have already been hit by cyber attacks. Shipping and logistics firms experienced three times as many ransomware attacks last year as in 2019.

Geopolitical conflict is increasingly 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. Concerns have been growing about a potential cyber attack on critical maritime infrastructure, such as a major port or shipping route. Although an accident, the Suez Canal blockage shows the disruption a momentary loss of propulsion or steering failure can cause. Increased awareness of – and regulation around – cyber risk is translating into an uptake of cyber insurance by shipping companies, although mostly for shore-based operations to date.

The burden of international sanctions continues to rise, posing both a compliance and safety risk. In a worrying development, some vessels have been switching off Automatic Identification Systems (AIS) as they seek to hide their location and defy US sanctions. This can obviously have a detrimental impact, given the potential for a serious incident to occur, such as a collision.

The environmental picture

Since January 1, 2020, the cap on the sulphur content of ships' fuel was cut to 0.5% (from 3.5%). Known as IMO 2020, the mandatory limit is expected to reduce emissions of harmful sulphur oxide (SOx) emissions from shipping by 77%. To date, the transition to low-sulphur shipping has been smoother than many predicted, although insurers have seen a number of machinery damage claims related to scrubbers, which remove SOx from exhaust gases for vessels using heavy marine fuel, and arising from the use of "blended" low-sulphur fuels. In some cases, the use of low-sulphur fuels has led to severe damage, and some significant claims from the cost of repairs and loss of earnings because critical spare parts were not available.

Arctic shipping continues to gather momentum. In the last five years, cargo traffic along the Northern Sea Route (NSR) has grown almost fivefold, reaching 33mn tons in 2020 and it is predicted that this could increase to 100mn tons by 2030. However, climate change concerns may hamper further development. A growing number of companies have pledged not to ship goods through the Arctic Ocean on environmental grounds.

Sailing in Arctic waters poses a number of risks, including unpredictable and extreme weather conditions, long periods of darkness, and the remoteness of routes from infrastructure and emergency response services. In the event of an accident the cost of salvage and environmental impact could be considerably higher than in non-Arctic waters. Analysis shows there were 58 reported shipping incidents in Arctic Circle waters during 2020 – up by 17 year-on-year and the highest total for three years.

The international shipping industry produced just over one billion tons of greenhouse gases (GHG) in 2018, almost 10% more than in 2012. Today's existing fleet and technology will not get the shipping industry to the IMO's GHG target of a 50% cut in emissions by 2050. Meeting these targets will require substantial investments in research and development and big changes in ship design and propulsion, which will have implications for risk and supply chains. Ships will be significantly different in 20 years' time. However, an understanding of risk needs to be key to the transition to low-carbon shipping. As seen with large container ships, advancements that do not focus on risk can lead to unintended consequences.

Seafarers stranded
on board vessels in
March 2021

2000,0000

Containers on
the **Ever Given**

18,0000+

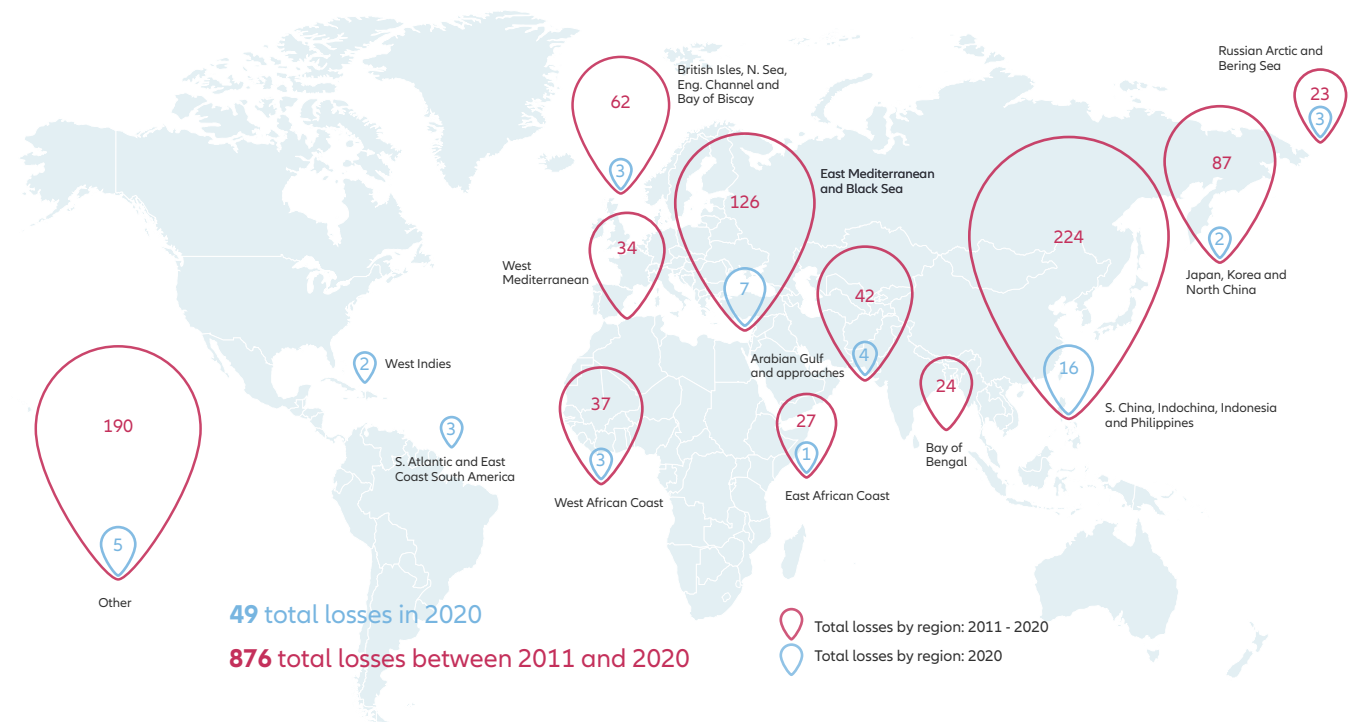
Total losses of vessels
(2011 - 2020)

876

Losses in focus

The analysis over the following pages covers both total losses and casualties/incidents. See page 56 for further details.

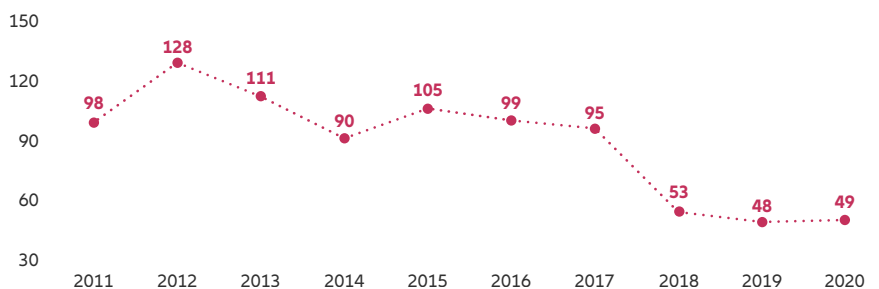
Total losses by top 10 regions 2011-2020 and 2020



Total losses by year 50% drop over a decade

Annual shipping losses have halved compared with 10 years ago, although 2020 represented the first time in five years that losses have not continued to decline.

Vessels over 100GT only



The database shows 49 total losses over 100GT at the end of 2020 around the world – a similar number to 2019 when 48 were reported. South China, Indochina, Indonesia and Philippines remains the main loss hotspot, accounting for a third of all losses (16), representing a small increase year-on-year. The East Mediterranean and Black Sea (7) and Arabian Gulf (4) regions both saw significant increases in loss activity to rank second and third.

The 2020 loss year (49) represents a significant improvement on the rolling 10-year loss average (88) – down 45%. South China, Indochina, Indonesia and Philippines remains the top loss hotspot of the past decade. This is driven by a number of factors including high levels of local and international trade, congested ports and busy shipping lanes, older fleets and exposure to extreme weather.

Together, the top 10 maritime regions account for close to 80% of all losses over the past decade with the South China, Indochina, Indonesia and Philippines, East Mediterranean and Black Sea, and Japan, Korea and North China regions alone accounting for half of all losses.

2020 review

Total losses by top 10 regions

From January 1, 2020 to December 31, 2020

Region	Loss	Annual Change
S. China, Indochina, Indonesia and Philippines	16	↑ 2
East Mediterranean and Black Sea	7	↑ 3
Arabian Gulf and approaches	4	↑ 4
British Isles, N.Sea, Eng. Channel and Bay of Biscay	3	=
Russian Arctic and Bering Sea	3	↑ 2
S. Atlantic and East Coast South America	3	↑ 2
West African Coast	3	=
Japan, Korea and North China	2	=
West Indies	2	↑ 1
East African Coast	1	=
Other	5	
Total	49	↑ 1

2011 - 2020 review

Total losses by top 10 regions

From January 1, 2011 to December 31, 2020

Region	Loss
S. China, Indochina, Indonesia and Philippines	224
East Mediterranean and Black Sea	126
Japan, Korea and North China	87
British Isles, N.Sea, Eng. Channel and Bay of Biscay	62
Arabian Gulf and approaches	42
West African Coast	37
West Mediterranean	34
East African Coast	27
Bay of Bengal	24
Russian Arctic and Bering Sea	23
Other	190
Total	876

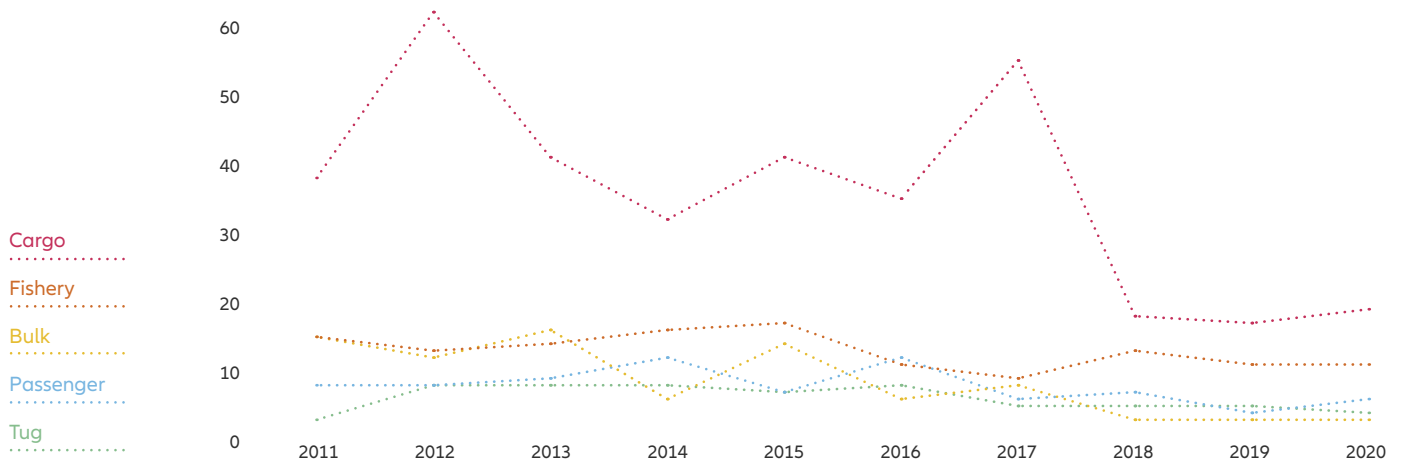
Vessels over 100GT only

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

Total losses by type of vessel 2011 - 2020

Cargo vessels account for 40% of total losses over the past decade.

Top 5 vessel types lost



Total losses by type of vessel: 2011 – 2020

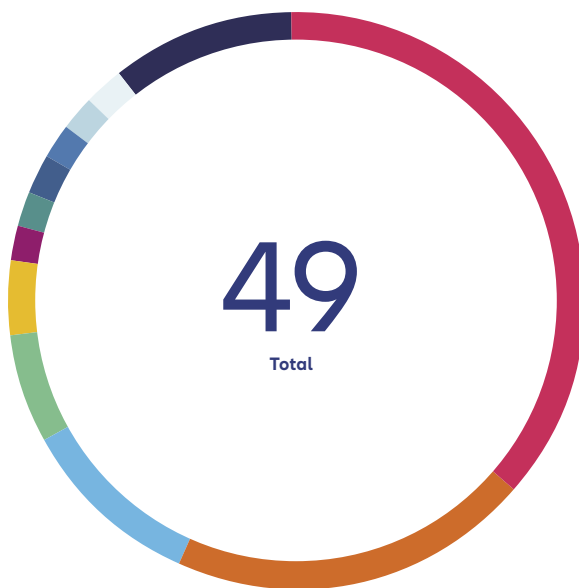
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Cargo	37	61	40	31	40	34	54	17	16	18	348
Fishery	14	12	13	15	16	10	8	12	10	10	120
Bulk	14	11	15	5	13	5	7	2	2	2	76
Passenger	7	7	8	11	6	11	5	6	3	5	69
Tug	2	7	7	7	6	7	4	4	4	3	51
Chemical/Product	4	8	10	2	3	7	4	1		1	40
RoRo	3	6	2	5	6	9		1	4	1	37
Container	3	7	4	4	5	5	3	2	1	1	35
Other	5	3	6	4	4	3	1		4	5	35
Supply/Offshore	2	3	2	3	3	2	2	1		1	19
Dredger	2	1		1	1	1	3	2		1	12
Tanker	4	1		1			2	3		1	12
Barge			3	1		3	1	2	1		11
LPG	1	1				1	1		2		6
Unknown			1		2	1			1		5
Total	98	128	111	90	105	99	95	53	48	49	876

Vessels over 100GT only

2020 review

Total losses by type of vessel

January 1, 2020 to December 31, 2020



Cargo vessels accounted for more than a third of all vessels lost in 2020. Foundering was the most frequent cause of loss and most cargo vessels were lost in South East Asian waters. The number of losses involving cargo and passenger vessels increased year-on-year.

Cargo	18
Fishery	10
Passenger	5
Tug	3
Bulk	2
Chemical/Product	1
Container	1
Dredger	1
RoRo	1
Supply/Offshore	1
Tanker	1
Other	5

The huge explosion in Beirut in Lebanon on August 4, 2020 resulted in the reported total losses of at least three vessels in the port.

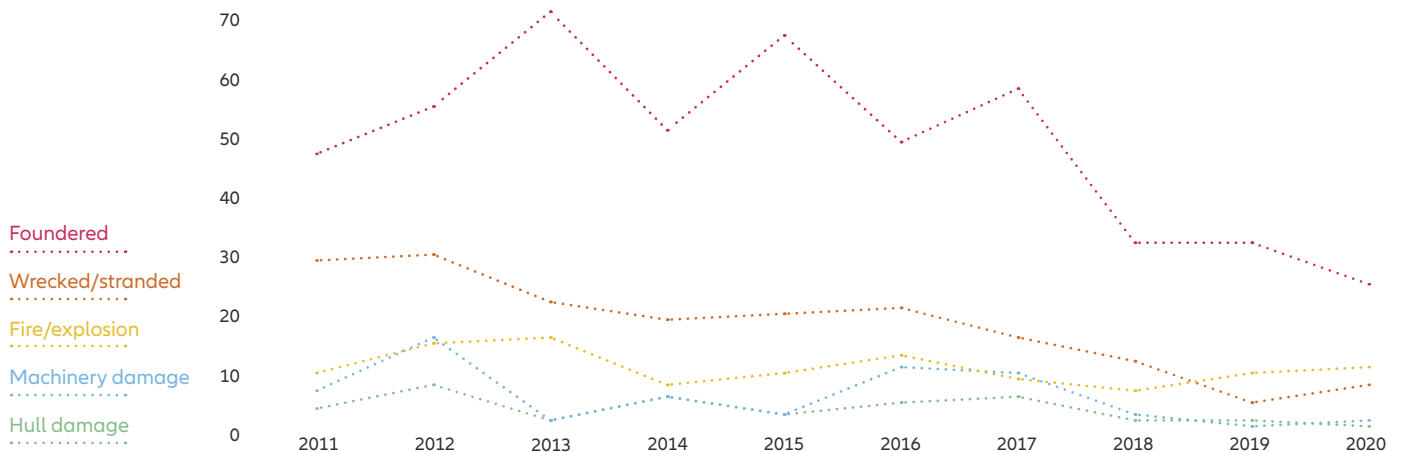
Vessels over 100GT only

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

Total losses by cause 2011 - 2020

Foundered (sunk/submerged) (54%), wrecked/stranded (20%) and fire/explosion (11%) are the top three causes of total losses over the past decade, accounting for 85% of all losses.

Top 5 causes of loss



Total losses by cause: 2011 – 2020

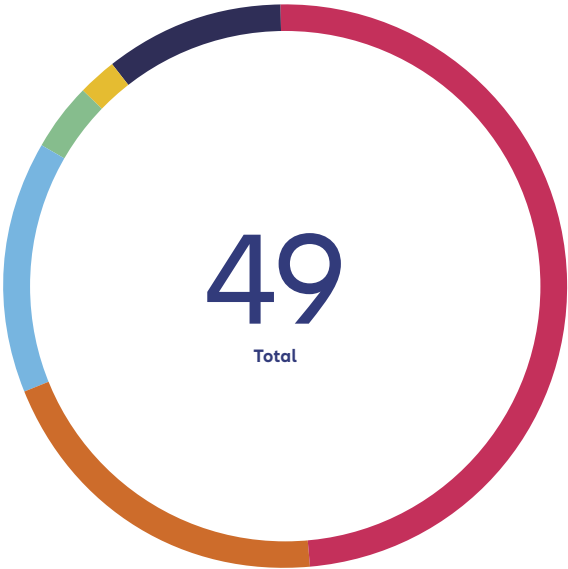
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Foundered (sunk/submerged)	46	54	70	50	66	48	57	31	31	24	477
Wrecked/stranded (grounded)	28	29	21	18	19	20	15	11	4	7	172
Fire/explosion	9	14	15	7	9	12	8	6	9	10	99
Machinery damage/failure	6	15	1	5	2	10	9	2		1	51
Hull damage (holed, cracks etc.)	3	7	1	5	2	4	5	1	1		29
Collision (involving vessels)	3	5	2	2	7	2	1	2	1	2	27
Contact (e.g. harbor wall)		2		1							3
Missing/overdue						2			1		3
Piracy	1										1
Miscellaneous	2	2	1	2		1			1	5	14
Total	98	128	111	90	105	99	95	53	48	49	876

Vessels over 100GT only

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

2020 review

Total losses by cause
January 1, 2020 to December 31, 2020



Foundered (sunk/submerged) was the main cause of total losses reported during 2020, accounting for one in two losses. Contributing factors included bad weather, poor visibility leading to contact, flooding and water ingress and machinery breakdown.

Foundered	24
Fire/explosion	10
Wrecked/stranded	7
Collision	2
Machinery damage/failure	1
Miscellaneous	5

The number of fires/explosions resulting in total losses increased again year-on-year, hitting a four-year high of 10 vessels.

Vessels over 100GT only

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

Total losses in all regions 2020



This map shows the approximate locations of all **49** reported total losses during 2020.

Region	Loss	Share
1 S. China, Indochina, Indonesia and Philippines	16	33%
2 East Mediterranean and Black Sea	7	14%
3 Arabian Gulf and approaches	4	8%
4 British Isles, N. Sea, Eng. Channel and Bay of Biscay	3	6%
4 Russian Arctic and Bering Sea	3	6%
4 S. Atlantic and East Coast South America	3	6%
4 West African Coast	3	6%
5 Japan, Korea and North China	2	4%
5 West Indies	2	4%
6 East African Coast	1	2%
6 Gulf of Mexico	1	2%
6 Newfoundland	1	2%
6 North American West Coast	1	2%
6 South American West Coast	1	2%
6 West Mediterranean	1	2%

2020 review

All casualties/incidents including total losses

From January 1, 2020 to December 31, 2020

Top 10 regions	Loss	Annual Change
British Isles, N.Sea, Eng. Channel and Bay of Biscay	579	↓ 28
East Mediterranean and Black Sea	429	↓ 38
S. China, Indochina, Indonesia and Philippines	265	↑ 10
Great Lakes	180	↓ 16
West African Coast	146	↑ 48
North American West Coast	137	↑ 17
Baltic	113	↓ 29
Iceland and Northern Norway	108	↓ 1
West Mediterranean	105	↓ 48
Japan, Korea and North China	93	↓ 9
Other	548	
Total	2,703	↓ 115

2011 - 2020 review

All casualties/incidents including total losses

2011 – 2020

Top 10 regions	Loss
East Mediterranean and Black Sea	4,556
British Isles, N.Sea, Eng. Channel and Bay of Biscay	4,382
S. China, Indochina, Indonesia and Philippines	2,488
Baltic	1,551
Great Lakes	1,442
Japan, Korea and North China	1,393
Iceland and Northern Norway	1,082
North American West Coast	1,003
West Mediterranean	992
West African Coast	890
Other	6,283
Total	26,062

Vessels over 100GT only

Vessels over 100GT only

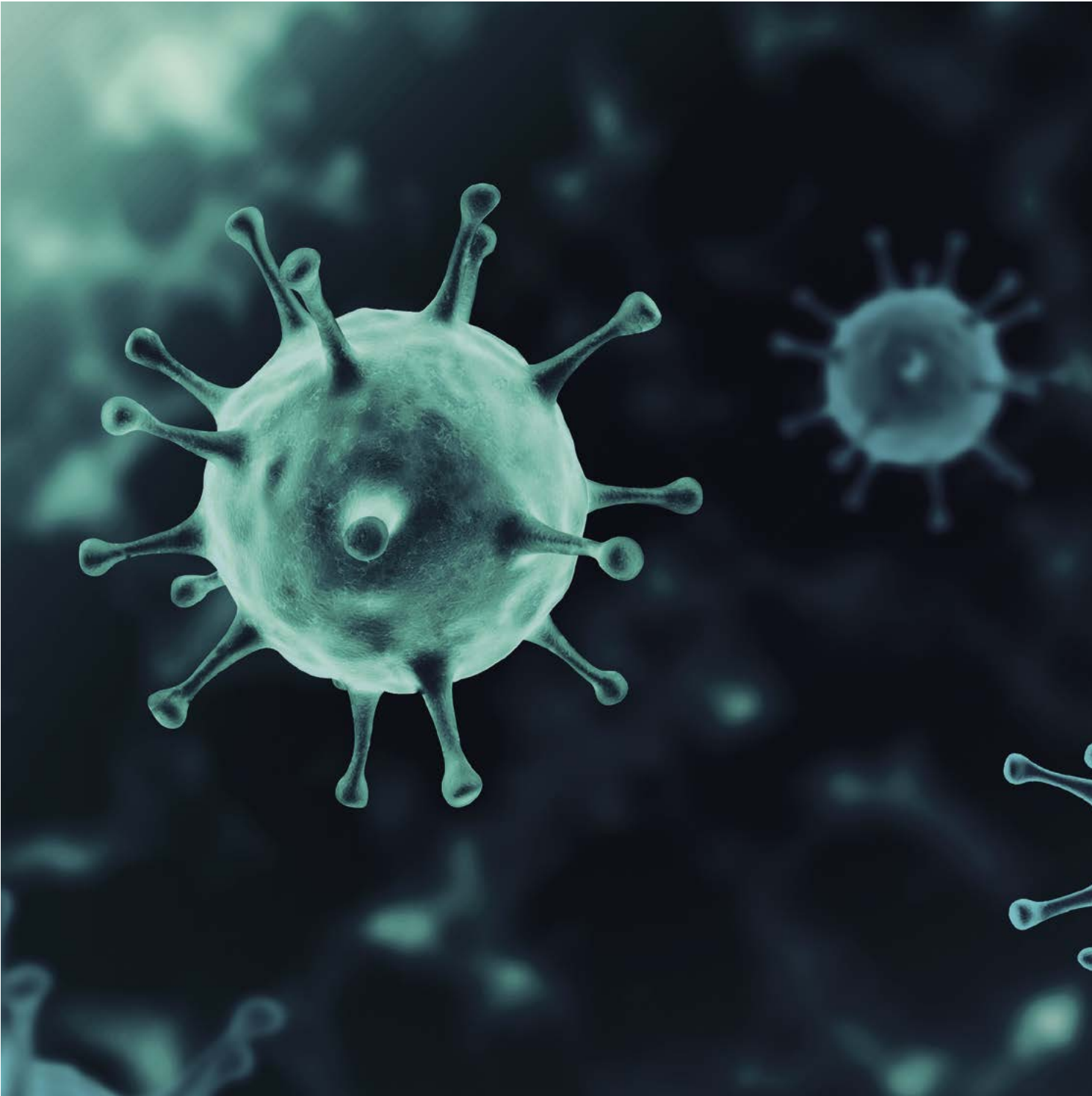
2020: While the number of total losses has remained stable over the past year, the number of reported shipping casualties or incidents declined slightly from 2,818 to 2,703 or by around 4%.

The British Isles, North Sea, English Channel and Bay of Biscay maritime region saw the highest number of reported incidents (579), although this was slightly down year-on-year. Machinery damage/failure was the top cause of shipping incidents, accounting for 40%.

2011 – 2020: The East Mediterranean and Black Sea region is the location of the most shipping incidents over the past decade (4,556), accounting for 17%.

Of the 26,000+ reported incidents over the past decade, more than a third (9,334) were caused by machinery damage or failure – well over twice as many as the next highest cause, collision (3,288).

Note: All figures are based on reported total losses for the year-end 2020. 2020's total losses may increase slightly in future as, based on previous years' experience, developments in losses sometimes lead to a number of total losses being confirmed after year-end. The average variance over the past nine years has been an increase of one total loss per year. However, in some years this can increase, with up to several additional losses being notified for one year.



1. The Covid factors



The shipping industry has shown great resilience through the pandemic but the crew change crisis, volatile trade volumes and constraints on capacity continue to have significant implications. And although the pandemic has had only a limited impact on marine claims to date, that doesn't mean it will be all smooth sailing in the future.

Covid creates surges in trade volumes and risks

Following sharp falls during the early part of the pandemic, global trade volumes have since rebounded. However, volatility in demand, constraints on capacity and the ongoing impact of Covid-19 are causing major congestion at ports and disruption to supply chains. In May 2021, Covid-19 outbreaks at Guangdong Province in southern China and one of the busiest ports in the world, Yantian in the city of Shenzhen, brought further delays.

However, despite the devastating economic impact of Covid-19, the effect on maritime trade has been less than first feared. According to [Clarksons Research](#)¹, global seaborne trade volumes declined only by an estimated 3.6% in 2020, and are on course to surpass 2019 levels this year. The roll-out of Covid-19 vaccines is expected to “supercharge” global growth in 2021, said [Euler Hermes](#)² at the end of 2020. Vaccines could push forward the global trade recovery by one year, with trade in goods already returning to pre-crisis value levels at end-2020, it said at the time.

While the cruise industry and the car carrier segment have been worst affected by the pandemic, the industry’s three largest markets – tankers, bulkers and containers – have been quick to recover. The container market has staged a remarkable recovery, as increased demand and restricted supply resulted in a surge in freight rates. By early 2021, freight rates from China to South America had jumped 443% and by 63% on the route between Asia and North America’s eastern coast, according to the [United Nations Conference on Trade and Development](#)³.

“Coronavirus has shown that unpredictable events are just that,” says **Justus Heinrich, Global Product Leader Marine Hull at AGCS.**

“Trade volumes did not fall off a cliff as expected and now we see a strong recovery in several parts of the industry. The pandemic is also testament to the reliance of the shipping industry. Shipping companies learned the lessons of the global financial crisis, and as a result, are in a good position this time around.”

Data from the [Institute of Shipping](#)⁴ showed global container throughput in the first months of 2021 exceeded pre-pandemic levels, increasing by **6.4%**⁵ in January 2021 compared to January 2020. Changes in consumption and shopping patterns triggered by the pandemic, combined with an easing of lockdowns and government stimulus packages, has led to increased demand for manufactured consumer goods, typically moved in shipping containers.

Similarly, the dry bulk market has benefited from the recovery of commodity prices. Demand for agricultural materials, coal, iron ore and other metals has caused commodity prices to rise sharply, helping drive up transportation costs by more **than 50%**⁶. The average daily earnings of dry bulk carriers saw a more than threefold increase in the first three months of 2021 compared to the start of 2020, its highest value in 10 years.



There has been increased demand for manufactured consumer goods, typically moved in containers

However, the recovery is volatile and dependent on the success of vaccinations and the ongoing effects of the pandemic. Despite a recovery in the price of oil, seaborne oil shipments in 2020 ended the year lower – crude oil trade down 8% and oil product trade down 12% – while tanker revenues per day⁷ fell from a peak in April 2020 to their lowest level in over 20 years in January 2021.

Even the container market has had its ups and downs. Surges in demand combined with Covid-19-related delays at ports and shipping capacity management problems led to congestion at peak times. Having retrenched at the start of the pandemic, carriers, ports and shippers were all taken by surprise by the stronger than expected demand in the second half of 2020, which led to a shortage of empty containers in Asia.

“The current supply chain disarray in the container trade highlights the need for effective backhaul of empty containers,” says **Captain Andrew Kinsey, Senior Marine Risk Consultant at AGCS**. “As a result of trade imbalances shipping lines are faced with significant volumes of empty containers in the US and North Europe that need to be returned to Asian ports. When callings are canceled due to congestion this exasperates the shortage of available teus to load out bound cargoes.”

Other factors are likely to affect shipping capacity in the months ahead. In the dry bulk market, few ships were ordered in 2020 while the scrapping rate was twice as high as in 2019. Orders for new container ships picked up in the last quarter of 2020, following several years of deferred orders, although there is a lag of two to three years between the placement of vessel orders and delivery.

There are risks associated with volatile trade volumes, says **Captain Rahul Khanna, Global Head of Marine Risk Consulting at AGCS**: “Unpredictable, sudden sharp downturns and surges in demand are difficult to manage at the best of times, and can lead to capacity issues and supply chain disruption. In the early stage of Covid-19, many ships were taken out of service – either scrapped or in layup – and this has led to some supply constraints.”

The surge in demand for consumer goods has also been cited as a potential contributing factor in the recent rise in incidents of containers lost at sea. Stacking of containers on vessels is reported to be at very high levels in order to service this demand with concerns growing about whether containers are being safely secured on board.

1 Splash247.com, Clarksons predicts seaborne trade volumes will surpass 2019 levels this year, March 8, 2021

2 Allianz Research, Vaccine Economics, December 18, 2020

3 UNCTAD, Shipping during Covid-19: Why container freights have surged, April 23, 2021

4 Institute of Shipping Economics and Logistics, Container throughput still above level before Corona crisis, March 30, 2021

5 Institute of Shipping Economics and Logistics, Leading container ports again achieve double digit growth rates, January 2021

6 Institute of Shipping Economics and Logistics, 2020/2021 dry bulk traffic development - ore export ports are back on track, March 2021

7 Institute of Shipping Economics and Logistics, The poor start in 2021 leaves quite some room for recovery in the tanker market, March 2021

Crew change crisis could have long-term consequences

The crew change crisis continues to have a major impact on the health and wellbeing of seafarers, with potentially long-term implications for safety.

Covid-19-related travel and border restrictions, and the widespread suspension of international flights, have significantly impacted the ability of ship operators to conduct crew changes. Between March and August 2020 only 25% of normal crew changes were able to take place (ICS)⁸ while at least half a million seafarers have been affected.

As of March 2021, it is estimated that some **200,000 seafarers**⁹ remained on board commercial vessels, unable to be repatriated and past the expiry of their contracts, with a similar number of seafarers urgently needed to join ships to replace them. On any given day, nearly one million seafarers are working on some 60,000 large cargo vessels worldwide, according to the IMO.

The crisis raises serious welfare, safety and regulatory concerns. In addition to humanitarian and crew welfare issues, there is an increasing risk that crew fatigue could lead to human error and even serious accidents.

“Timely crew changes are vital to the safe operation of shipping, and seafarers spending extended periods on board are more at risk of mental health issues, exhaustion, fatigue, anxiety and mental stress,” says **Captain Nitin Chopra, Senior Marine Risk Consultant at AGCS.**

“There needs to be a global collaborative effort to get crews off ships. But the industry also may need to take measures to give crew some respite, such as adjustments to working hours.

If crews are fatigued a vessel could potentially be considered unseaworthy under international maritime law.”

Crew changes are also a compliance risk. According to the International Labour Organization (ILO) Maritime Labour Convention (MLC) crew should serve no more than 11 months continuously at sea and are entitled to access onshore medical facilities and care. According to the **IMO**, Covid-19 has caused many seafarers to serve significantly longer than the 11 months agreed by the ILO. If ships are unable to operate safely in compliance with international rules, vessels may have to suspend their operations.

The ongoing crew crisis is likely to have long-term consequences for the shipping industry, according to Kinsey. “With hundreds of thousands of crew members stuck on board vessels or on extended contracts, I have serious concerns for the next generation of seafarers. The situation with Covid-19 means that we are not training and developing them, while the sector may struggle to attract new blood due to current working conditions,” says Kinsey.

“Shipping is likely to experience a surge in demand as the economy and international trade rebounds with vaccinations. However, many crews are fatigued and have been under immense strain from Covid-19 for over a year. Potentially, we could see a shortage of seamen if the industry struggles to retain or recruit.”

The crew crisis took on a new dimension in 2021. As Covid-19 infection rates escalated in India, one of the world's largest sources of seafarers, ports – including Singapore, Hong Kong and the UK - barred vessels and crew that had recently visited India. Vessels also stopped calling at Indian ports, which are an important stopover for trade between Europe, Africa and Asia.

In a bid to resolve the current crisis, the IMO established a Seafarer Crisis Action Team and, working with the International Chamber of Shipping (ICS), developed a 'Framework of Protocols' for safely conducting crew changes. The IMO and other organizations have repeatedly urged governments to designate seafarers and port personnel as "key workers", exempt them from national travel or movement restrictions, facilitate emergency repatriation and prioritize vaccinations. Mirroring these calls, more than 450 shipping companies and allied organizations signed the Neptune Declaration on Seafarer Wellbeing and Crew Change¹⁰.

Extended periods at sea can lead to mental fatigue and poor decision making, which ultimately impact safety, says Khanna. "The mental health and wellbeing of seafarers is a massive issue that desperately needs to be dealt with. While there is recognition of the problem – as seen in the Neptune Declaration – this issue cannot be dealt with by the shipping industry alone and can only be solved in partnership with governments and other stakeholders."

Crewing issues came under the spotlight in the wake of the **Wakashio** incident in July 2020 when the vessel ran aground off the coast of Mauritius, spilling hundreds of tons of oil in the process. Reports¹¹ indicated at least two of the crew had been on board the vessel for more than 12 months, unable to disembark when their contracts expired because of restrictive quarantine rules worldwide.



The Wakashio ran aground off the coast of Mauritius in July 2020

A global vaccination programme is likely to be the answer to the crew change crisis, although the situation is complicated by the international nature of shipping, explains Khanna.

In March 2021, the ICS¹² warned that lack of access to vaccinations for seafarers is placing shipping in a "legal minefield", and could cause disruption to supply chains from cancelled sailings and port delays. Vaccinations could soon become a compulsory requirement for work at sea because of reports that some states are insisting all crew be vaccinated as a pre-condition of entering their ports. However, over half the global maritime workforce is currently sourced from developing nations, which could take many years to vaccinate. In addition, the vaccination of seafarers by shipping companies could also raise liability and insurance issues, including around mandatory vaccination and privacy issues.

8 International Chamber of Shipping, The Covid-19 pandemic: The crew change crisis

9 International Maritime Organization, Crew changes: A humanitarian, safety and economic crisis

10 The Neptune Declaration on Seafarer Wellbeing and Crew Change

11 Lloyd's List, Two Wakashio crew were on board for more than a year, August 17, 2020

12 International Chamber of Shipping, Shipping companies in 'impossible position' as proof of seafarer vaccinations poses legal minefield, March 22, 2021



The **Golden Ray** salvage operation has been complex and costly

Covid-19 delays hit cost of claims

Overall, Covid-19 has had only limited impact on marine claims to date, although the pandemic has increased the cost of some large claims, and may yet result in claims in future as vessels in lay-up return to service, and as the potential impact of the crew crisis and any delays in maintenance is revealed.

Hull insurance has seen little direct impact from the pandemic, although vessels in lay-up, in particular cruise ships, led to some large accumulation exposures, especially in hurricane-exposed Florida and the Caribbean. Marine liability insurers are expected to face passenger liability claims related to cruise ships, while cargo insurers have experienced an uptick in perishable goods claims.

It is still early days however, according to Heinrich. "The frequency of marine claims has not reduced, despite the slowdown in trade in 2020. Most ship owners have maintained operations throughout the pandemic, and now we see a surge in demand and increased freight rates for container shipping and bulk carriers. Before we draw conclusions on the impact of Covid-19, we will have to see how claims develop in 2021."

The surge in demand for shipping, coupled with the pandemic, has put shipyards under pressure, Heinrich continues. "We are seeing an increased cost of hull and machinery claims due to delays in the manufacture and delivery of spare parts, as well as a squeeze on available shipyard space, which is in short supply."

Salvage is another impacted area. For example, the salvage and wreck removal of the **Golden Ray** car carrier, which ran aground near the Port of Brunswick in the US state of Georgia in 2019, suffered a setback when a number of the salvage crew tested positive for Covid-19.

"The availability of resources and the movement of people has been significantly impacted by Covid-19 and the imposition of border and travel restrictions. This has resulted in delays for hull and machinery claims, pushing up costs of salvage and repairs," says Khanna.

Chopra also believes the pandemic may influence marine insurance claims further down the line: "Covid-19 has created an environment of elevated risk for the shipping industry, which is having to operate under very difficult circumstances. Covid-19 measures at ports, crew fatigue, disruption to maritime supply chains, surges in demand for shipping and the increased use of virtual pilots can all affect exposures."

Potentially, insurers could see an uptick in machinery breakdown claims if Covid-19 has affected crews' ability to carry out maintenance and repairs, or follow manufacturers' protocols, Chopra concludes.



Cruise ships – return to service brings reactivation risks

In May 2021, the MSC Virtuosa became the first cruise ship to set sail from the UK in 14 months. A few weeks prior to that, Carnival's Costa Cruises returned to service for the first time in 2021 in the Mediterranean, with sailings from Italy.

Machinery breakdown claims could arise if reactivation or maintenance protocols are not followed on cruise ships



With the roll-out of Covid-19 vaccinations, most cruise operators have been tentatively preparing for a limited return to operations. A more substantial return to service is expected later in 2021 with the reopening of the US market.

For the cruise industry, reopening will mean reactivating the 300-strong global cruise ship fleet, which has been in lay-up. Although some operators have taken the opportunity to retire some older vessels early. Last year Carnival announced it is to remove 13 ships from its fleet and delayed deliveries of new ships.

The cruise fleet that emerges from the pandemic will be younger and more modern, although there are potential risks as vessels come out of lay-up, according to **Chris Turberville, Head of Marine Hull and Liabilities UK at AGCS.**

“Most cruise ships have been in warm lay-up, and would have been frequently moved and maintained by a skeleton crew. Machinery breakdown claims could arise if reactivation or maintenance protocols are not followed, but cruise ships typically have some of the highest standards of maintenance,” says Turberville.

In March 2021, a fire broke out on the **MSC Lirica** cruise ship, which was in warm lay-up in the port of Corfu. The fire reportedly started in a lifeboat, although all 51 crew were unharmed. In June 2020, a fire broke out on the cruise ship **Asuka II**, which was also in lay-up at the port of Yokohama, although it was quickly extinguished.

2. Larger vessels. Larger exposures

As the Suez Canal incident demonstrated only too well, ever-increasing vessel sizes continue to pose a disproportionately large risk with costly groundings, fires and record levels of container losses at sea.

Mega-ship risks are occupying the attention of insurers after the Suez Canal blockage



Suez Canal incident latest to cause concern

The blocking of the Suez Canal by one of the largest container ships in service in the world – the **Ever Given** – in March 2021 caused huge delays to hundreds of vessels waiting to transit the canal, one of the biggest chokepoints on the critical East-West trade shipping route. The blockage was estimated to have affected an estimated \$9.6bn of goods each day, or around 12% of total world trade.

The latest in a growing list of incidents involving large vessels, the **Ever Given** has added to concerns in the industry that the risks associated with large ships may soon outweigh the benefits.

“We need to look more closely at how we can minimize the risks of mega-ships, especially in ports or in bottleneck passages like the Suez Canal or the Panama Canal, given the disruption we have seen that grounding incidents can cause. If a ship runs aground in one of these waterways, specialized tugs would be needed and the port and canals should have access to adequate resources in relatively short time,” says **Captain Rahul Khanna, Global Head of Marine Risk Consulting at AGCS.**

Container ships, car carriers and bulk carriers have grown larger in recent decades as shipping companies seek economies of scale and fuel efficiency, a trend that is likely to continue with climate change and the introduction of greenhouse gas emissions reduction targets for the industry. Despite the Covid-19 pandemic, ever larger vessels are on order. In December 2020, Ocean Network Express ordered six new container ships with capacity in excess of 24,000 teu. The **HMM Algeciras**, introduced in April 2020, is currently considered to be the world's largest container ship with capacity of just under 24,000 teu.

While economies of scale have helped drive the trend for larger and larger vessels, there have been unintended consequences, according to **Captain Andrew Kinsey, Senior Marine Risk Consultant at AGCS**.

"Just because it is possible to build large ships, it does not mean we should," says Kinsey. "The different consequences of larger vessels are now becoming more apparent, including impacting supply chains. Large vessels and the ports required to handle them present a massive accumulation of risk, while the costs are disproportionately greater when things go wrong."

For a number of years insurers have warned about the growing risks associated with larger vessels, including the problem of fires on large container ships, says **Justus Heinrich, Global Product Leader Marine Hull at AGCS**. "Exposure continues to grow as more large container ships and cruise ships are added to the world shipping fleet. We have continued to see a number of near misses over the past year. The blocking of the Suez Canal shows these concerns are valid."

Insurers have already seen a number of very large claims from fires and groundings for large container ships as well as fire and stability issues for car carriers. Large ore carriers have also seen losses while the grounding of the cruise ship **Costa Concordia** remains one of the most expensive marine insurance losses in modern times at almost \$2bn. The Suez Canal Authority has sought around \$600mn from the **Ever Given's** liability insurer and the Egyptian government detained the vessel as it negotiated with insurers. A compensation deal was eventually signed in July 2021, leaving the vessel free to leave the waterway.

More recently, the industry is seeing the biggest spike in lost containers at sea in seven years. "Large claims from container ship fires and groundings, as well as the loss of thousands of containers at sea, all have one common thread – the increasing size of vessels," says Khanna.

Unique risks

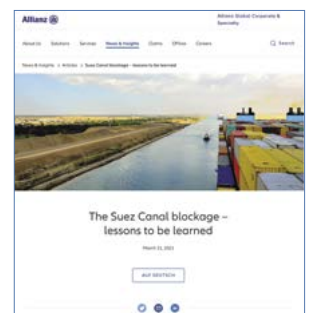
Very large vessels present some unique risks. In particular, responding to incidents is more complex and expensive. Port facilities and salvage equipment to handle large ships is specialized and limited, while salvage and wreck removal is more expensive and often still uncharted territory.

"Port infrastructure has not kept pace with the increasing size of vessels," says **Captain Nitin Chopra, Senior Marine Risk Consultant at AGCS**. "While approach channels to existing ports have been dredged deeper and berths and wharfs extended to accommodate ultra large vessels, the overall size of existing ports has remained the same. As a result, 'a miss' can turn into 'a hit' more often for the ultra large container vessels." Last year, a container ship collided with another vessel and a dock crane in the port of Busan due to **insufficient ballast water**¹, Chopra notes.

In the case of the **Ever Given**, had the vessel not been freed, salvage would have required the lengthy process of unloading some 18,000 containers, requiring specialist cranes. The wreck removal of the large car carrier, **Golden Ray**, which capsized outside the US port of Brunswick with more than 4,000 vehicles on it in 2019, has taken well over a year and cost insurers several hundreds of millions of dollars. The complex salvage operation, which has required the vessel to be cut into sections in situ, has been plagued by delays from Covid-19 infections, winter weather, fires and chain link failures.

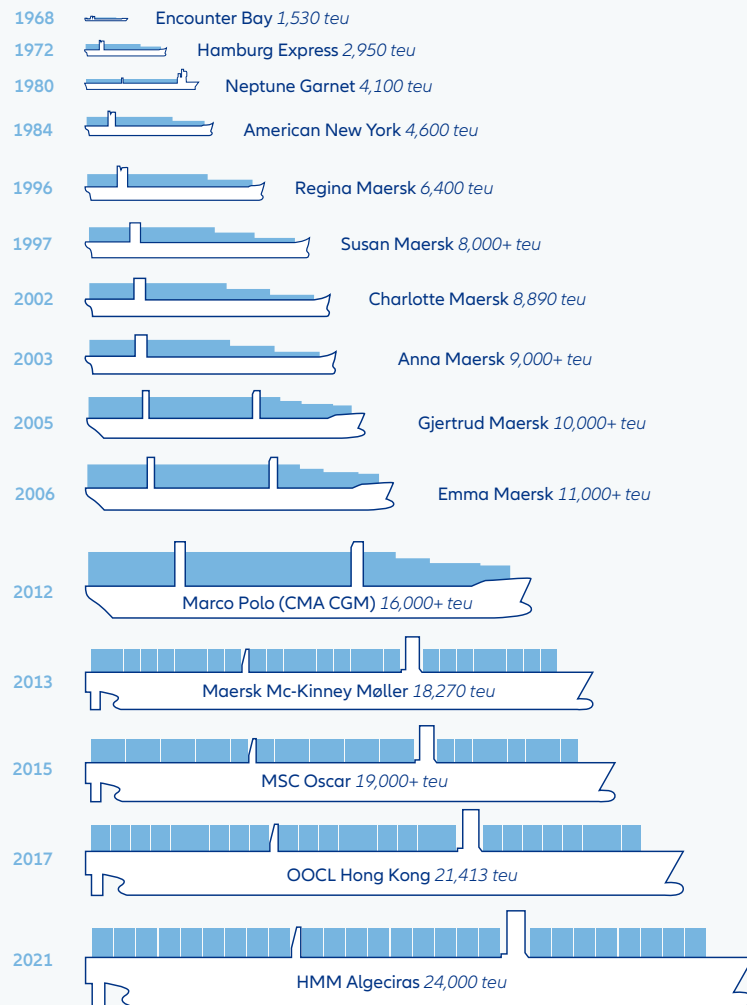
"Very large container ships and other large vessels are a volatile risk for insurers to underwrite and will increasingly require more and more input from risk consulting and claims," says Heinrich. "As exposures grow, insurers will have to ask if they are able to insure some types of large vessels, or if they can only be underwritten as part of a mixed fleet."

AGCS is undertaking analysis of losses involving large vessels by size and type to identify areas of potential volatility and to better understand the potential loss, Heinrich adds.



What are some of the lessons to be learned from the Suez Canal blockage?

50 years of container ship growth



Container-carrying capacity has increased by around 1,500% since 1968 and has almost doubled over the past decade. Ever larger vessels are on order.

Increase in size of ships in graphic is not to scale

Approximate ship capacity data: Container-transportation.com; AGCS

Source: Allianz Global Corporate & Specialty



The Maersk Honam caught fire in March 2018 while sailing in the Arabian Sea

Photo: Wikimedia Commons

Fire claims buck the positive overall trend for hull losses

The number of fires on board container ships has increased significantly in recent years, which may in part be a reflection of their increasing number in the global fleet – 2019 saw a record year (40 cargo-related fires or one every 10 days)².



In 2020, the number of incidents fell slightly, but was still above the average, according to the Norwegian Association of Marine Insurers (**Cefor**)³. Although the past year has not seen container ship fires on the scale of the **Yantian Express**, **Maersk Honam** and the **MSC Flaminia** incidents that have made headlines in recent years, smaller fires and near misses are still a regular occurrence. On average⁴ there was approximately one fire every two weeks in 2020. In May 2021, the Singapore-registered container ship **X-Press Pearl**, which had been carrying 25 tonnes of nitric acid, along with other chemicals and cosmetics, became the latest casualty when it caught fire and sank off Sri Lanka, resulting in the potential loss of almost 1,500 containers and the prospect of significant environmental pollution.

The Cefor statistics found no reduction in large loss frequency for container vessels, despite a substantial reduction in claims frequency and cost for hull claims overall in 2020. Container ship fires were especially prevalent, with a notable increase in the frequency of fires costing over \$500,000.

Vessel size has a direct correlation to the potential size of loss. Car transporters/RoRo and large container vessels are at higher risk of fire with the potential for greater consequences should a fire break out, according to Cefor analysis. The larger the number of containers on board, the higher the probability that at least one could ignite and cause a fire, and the harder it is to contain and extinguish the fire.

Container ship fires often start in containers, which can be the result of non-declaration or mis-declaration of hazardous cargo, such as self-igniting charcoal, chemicals and batteries. When mis-declared, these might be improperly packed and stowed on-board, which can result in ignition and/or complicate detection and firefighting. The other contributing factor is the fire detection and fighting capabilities relative to the size of the vessel. Major incidents have shown container fires can easily get out of control and result in the crew abandoning the vessel on safety grounds, thus increasing the size of loss.

Following an investigation into the 2018 **Maersk Honam** container ship fire, the **Transport Safety Investigation Bureau**⁵ (TSIB) of Singapore became the latest organization to call for improvements to fire detection and prevention on large container ships. The Flag State and World Shipping Council subsequently submitted a joint paper to the International Maritime Organization (IMO) suggesting amendments to the international maritime safety law SOLAS and the International Code for Fire Safety Systems regarding fire protection, detection and extinction arrangements on large container ships. TSIB's investigation was unable to conclusively determine the cause of the fire on the **Maersk Honam**, which resulted in the death of five crew. However, it suggested the spontaneous self-decomposition of sodium dichloroisocyanurate dihydrate (SDID), which is commonly used in bleach and cleaning products, may have been to blame. TSIB recommended the IMO review SP 135 for the carriage of SDID.

The International Union of Marine Insurance working group on container ship fire safety is now working on a draft of recommendations to the IMO in respect of improved fire detection and firefighting capabilities on board container ships. A group of shipping organizations has also made submissions to the IMO calling for a holistic approach to the issue, with a particular focus on risk prevention through more robust container inspection programs. In addition, a number of class societies have introduced guidelines for fire detection and fighting, as well as for the stowage of dangerous goods.

“AGCS first raised the issue of container ship fires over five years ago. Now we are starting to see some traction. The IMO and class societies have taken up the issue of fire detection and firefighting, although the ongoing problem of mis-declared cargo is not so easily addressed because the problems are within the supply chains,” says Khanna.

2 IUMI, Container ship fires from the insurer's perspective, March 4, 2020

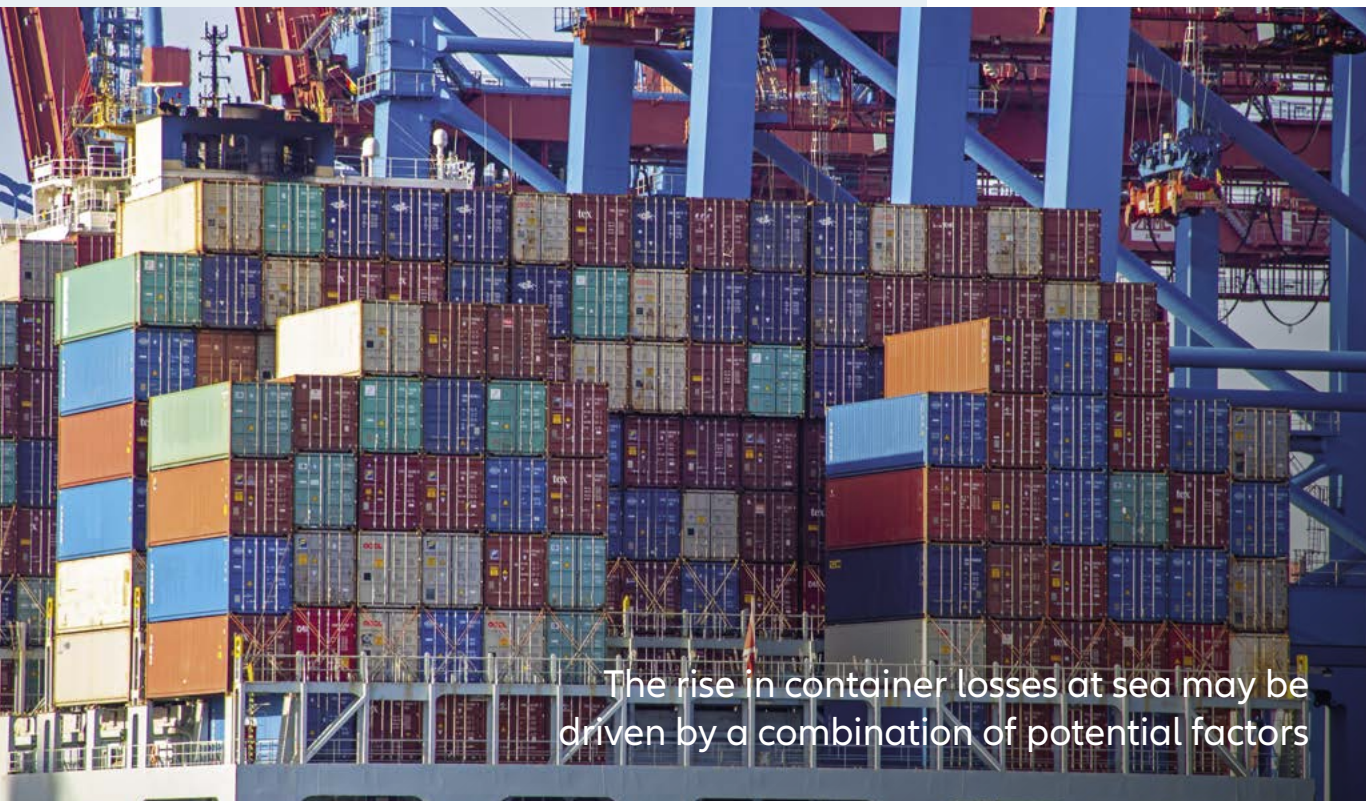
3 Cefor, Fires - No All-Clear Signal

4 Gard, Container ship fires - keeping up the pressure for change, November 3, 2020

5 Transport Safety Investigation Bureau, Ministry of Transport, Singapore, Fire on board Maersk Honam, at Arabian Sea on March 6, 2018

Spike in container losses warrants further investigation

Container losses at sea spiked⁶ last year and have continued at a high level in 2021, disrupting supply chains and posing a potential pollution and navigation risk.



The rise in container losses at sea may be driven by a combination of potential factors

In November 2020, the container ship **One Apus** lost almost 2,000 containers in rough seas in the Pacific, with hundreds more containers left damaged on board the vessel. The incident was the worst since 4,293 containers were lost with the sinking of the container ship **MOL Comfort** in 2013. In January 2021, the **Maersk Essen** lost about 750 boxes while sailing from China to Los Angeles. A month later, 260 containers fell off the **Maersk Eindhoven** when it lost power in heavy seas.

The number of container losses is the worst in seven years. More than 3,000 containers were lost at sea last year, while more than 1,000 fell overboard during the first months of 2021. This compares with an average of just 1,382 containers lost each year from around 6,000 container vessels in operation, according to a [World Shipping Council](#)⁷ report in November 2020. The accidents are disrupting supply chains for retailers and manufacturers - from Amazon to Tesla.

The rise in container losses may be driven by a combination of potential factors. Larger ships, more extreme weather and a surge in freight rates and mis-declared cargo weights could all be at play, but there are also growing questions for how containers are secured on board ships. Of six cases of container losses in the North Pacific between November 2020 and March 2021 analyzed by AGCS (**One Apus, Maersk Essen, Maersk Eindhoven, Ever Liberal, Tianping** and **MSC Aries**) there were a number of common factors, according to Chopra.

“All container losses occurred in rough seas and when the vessels were on a westerly heading during the voyage from Asia to the US.

The loss of containers could be the result of a combination of various factors like synchronous and parametric rolling. But there may also be other issues at play, such as container stack collapse due to mis-declaration of cargo weights at a time when freight rates have been increasing,” says Chopra.

In 2018, the container ship **CMA CGM G. Washington** lost 137 containers overboard and a further 85 were damaged after the vessels unexpectedly pitched in heavy seas in the North Pacific while on passage from China to Los Angeles. The [UK Marine Accident Investigation Branch](#)⁸ (MAIB) investigation into the incident said inaccurate container weight declarations and mis-stowed containers and loose lashings had contributed to the loss.

The MAIB recommended that cargo plans are updated to reflect container weights as weighed at the port, and that on board lashing software displays maximum pitch and roll angles for the vessel’s condition. It also noted that large container ships are particularly vulnerable to parametric rolling, where a ship experiences larger than expected roll behavior due to the position of wave crests and troughs.

“While there has been a large number of container losses in the North Pacific during the winter, this is a global problem. The size of vessels is the common thread, combined with the hydrodynamic forces exerted on containers and the way they are stowed and lashed. This is an issue that class societies urgently need to take up, and shed further light on what might be causing these losses,” says Kinsey.

6 Bloomberg, Shipping Containers Fall Overboard at Fastest Rate in Seven Years, April 26, 2021

7 International Institute of Marine Surveying, World Shipping Council containers lost at sea 2020 report issued and shows a decrease, November 5, 2020

8 UK Marine Accident Investigation Branch, Loss of cargo containers overboard from container ship CMA CGM G. Washington, January 16, 2020



VLOCs under the spotlight after string of losses

In June 2020 the very large ore carrier (VLOC) **Stellar Banner** was scuttled off the coast of Brazil after the vessel ran aground to avoid sinking in February. Salvage teams briefly re-floated the vessel in order to remove just over half of the 270,000 metric tons of iron ore cargo and de-bunker, although the ship was declared a total constructive loss and deliberately sunk.



Large ore carriers, particularly converted ones, can pose a higher exposure due to the risks of cargo liquefaction and structural failings

The grounding of the **Stellar Banner** follows a number of incidents involving VLOCs. In 2017, the **Stellar Daisy** sank in the South Atlantic with the loss of 22 crew. The accident investigation later concluded the vessel sank after listing caused by a catastrophic structural failure of the ship's hull related to the vessel's conversion from a very large crude carrier in 2008. The accident report said the strength of the ship's structure had been compromised over time due to fatigue, corrosion, unidentified structural defects, multi-port loading, and the forces imposed on the hull as a result of the weather conditions.

VLOCs can pose a higher than usual exposure due to the risks of cargo liquefaction, structural failings and the added challenge of salvage and wreck removal, according to Chopra.

"There have been a number of VLOC losses involving both converted and unconverted vessels. VLOCs experience higher hull forces

(bending moments and shear forces) due to their sheer size and carriage of high-density cargoes. When high capacity shore cranes are used for loading these vessels careful planning, monitoring and execution is required to prevent overloading of the hull structures. Repeated deviations from the cargo loading plan can lead to structural fatigue in the long term and result in catastrophic consequences," says Chopra.

Converted VLOCs like the **Stellar Daisy** are, however, on their way out, as newer and more reliable ships replace older converted vessels and as freight contracts expire. According to **BIMCO**⁹, three out of five converted VLOCs are no longer operating. Since June 2017, 43% of the VLOC fleet has been scrapped while 18% is idled or damaged. "Converted VLOCs are a red flag. Investigations into prior losses have found structural failings linked to the vessel's conversion," says Chopra.

9 BIMCO, Three out of five converted VLOCs are no longer operating,



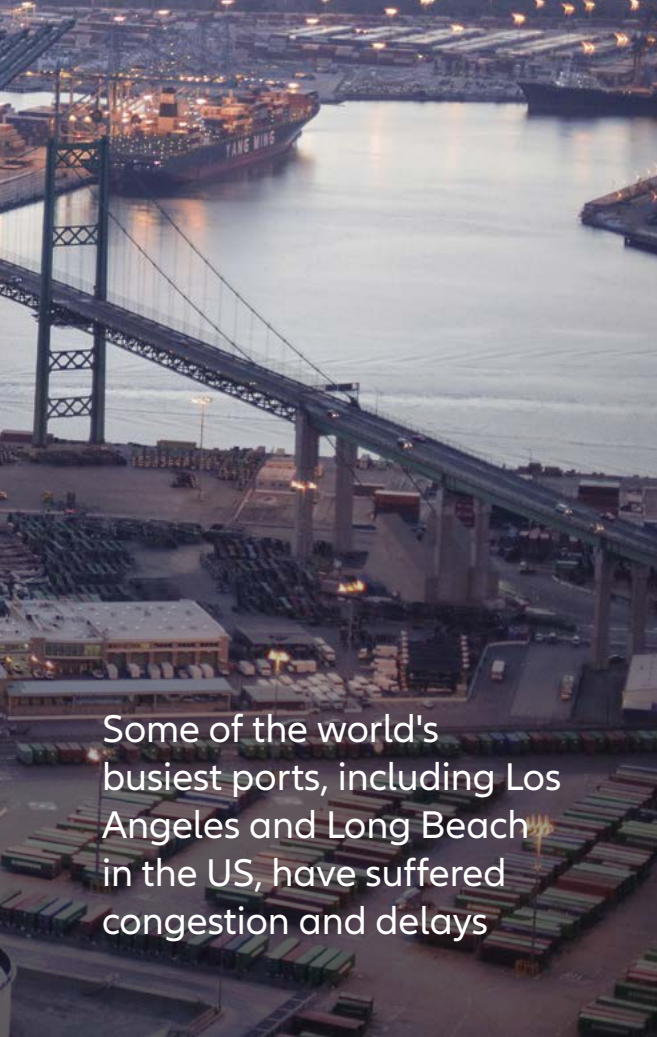
3. Delay, supply chain accumulation issues take center stage

Vulnerabilities in the supply chain

The blocking of the Suez Canal by the container ship **Ever Given** in March 2021 sent shockwaves through global supply chains that are critically dependent on seaborne transport. The six-day closure of one of the world's busiest shipping routes saw hundreds of vessels backed up, while many more were rerouted or held in ports. The repercussions lasted for months, with product shortages for European retailers and delays in supply chains for manufacturers, as well as a logistical backlog for shipping companies and container ports.

The incident exposed potentially serious vulnerabilities in the maritime supply chain, demonstrating the potential for global-scale disruption from chokepoints, such as major ports and shipping routes. It compounded delays and disruption already caused by trade disputes over the past year, extreme weather in the US and, of course, the fact that the shipping industry was already dealing with disruption caused by the pandemic, the result of coronavirus measures and restrictions, the Covid-19 crew crisis, and surges in demand for containerized goods and commodities.

At the end of 2020, container ships were forced to queue at some of the world's busiest ports – including Los Angeles and Long Beach in the US – resulting in cancelled sailings and re-routing of vessels by shipping companies. The problem was exacerbated by a shortage of shipping



Some of the world's busiest ports, including Los Angeles and Long Beach in the US, have suffered congestion and delays

Maritime supply chain resilience has been thrown into the spotlight after a series of recent events including the Suez Canal blockage, Covid-19, extreme weather, as well as trade and political disputes, collided to cause unprecedented disruption to shipping and the flow of goods. Meanwhile last year's explosion in Beirut highlights concerns over the storage of hazardous goods and concentrations of risk at ports. A similar event in a busy US, European or Asian port could be even more catastrophic.

containers in Asia, caused by increased demand and port delays. In May 2021, Covid-19 outbreaks at Guangdong Province in southern China caused acute congestion at the region's ports while one of the world's busiest ports, Yantian in Shenzhen – which services about 100 ships a week – was already operating at a fraction of its normal capacity due to the pandemic. The global nature of the sector, and the lack of spare capacity within it, means problems in one region can have ripple effects around the world for months.

In June 2021, it was estimated that there was a record total of more than 300 freighters awaiting to enter overcrowded ports. In addition, the time container ships are spending waiting for port berths has more than doubled¹ since 2019.

Meanwhile, last year's hurricane season and winter storms caused significant disruption throughout the transport and logistics chain, from ports and international shipping, through to inland marine, rail and road. Recent years have also seen major delays to shipping from floods and droughts on key inland shipping routes, including the Mississippi in the US and Rhine in Europe. Last year also saw large cargo losses for insurers after a series of tornadoes tore through large warehouses in Nashville.

Climate change volatility is increasingly impacting shipping and logistics, says **Captain Andrew Kinsey, Senior Marine Risk Consultant at AGCS**. "Weather is no longer seasonal. Year round we see tornadoes, hurricanes, floods and storms affecting shipping and inland marine, as well as associated infrastructure. Almost every mode of transport is affected, with a knock-on effect for supply chains," says Kinsey.

¹ IHS Markit's Port Performance Data, The Maritime Executive, Time Containerships Spent Waiting for Berths Doubled in Two Years, July 16, 2021

Going forward, the shipping industry needs to be more proactive in addressing and mitigating the impacts of extreme weather, says Kinsey.

“More accurate weather forecasting and technology will help shipping companies plan ahead and take action to avoid losses. If we can track and predict storms, shipping companies can consider their best options – such as to delay departure, seek shelter, or reroute to an alternative port. It’s about planning, understanding when it is safe to proceed and identifying safe harbors and alternatives,” says Kinsey.

“Companies can be more proactive and address loss control and not just wait for a crisis. Planning needs to take place early on, even before the vessel sets sail, and plans will need revisiting and adjusting during the life of a project.”

Extreme weather events and Covid-19 have also exposed vulnerabilities in critical infrastructure, demonstrating the need to invest in resilience against future events, says Kinsey. “US inland infrastructure and other critical infrastructure is ageing and is in urgent need of investment. There is a need for more resilient infrastructure in the transportation network, power and refining. At present, investment is not keeping pace with demands on infrastructure, which could result in future claims for insurers and supply chain disruption,” says Kinsey.

Don't delay: potential disruption claims scenarios

- For container shipments: if there are risk accumulations in a port due to weather delays there could be a potential shortage of refrigerated container plugs, resulting in spoilage of refrigerated cargoes.
- For bulk shipments: vessels that faced longer waiting times at anchor in the Mississippi River due to high water levels had anchor windlass and ground tackle failures, resulting in hull claims.
- For RoRo shipments: excessive accumulation of rolling stock can lead to storage in areas that are subject to flooding in the event of storms, as the primary storage areas are at maximum capacity.

The severe cold snap in February 2021 that hit parts of the US with record freezing temperatures caused crippling power outages, severe disruption to transport, and the closure of ports and oil and gas facilities. Then in May, 2021, a crack in the Hernando de Soto Bridge in Tennessee closed an important road and river route over the Mississippi River. Within days of the closure to boat traffic there were at least **24 vessels with a total of 346 barges**² waiting to travel the Lower Mississippi River.

Political risks are also affecting maritime transport and supply chains. A trade dispute between China and Australia, which led to an unofficial ban on Australian coal imports in 2020, resulted in more than **60 vessels**³ stranded at sea, unable to deliver their cargoes of thermal coal. Almost nine months later, some 40 vessels were still waiting to unload in March 2021, with many unable to change crew. Conflicts in the Middle East and piracy in Africa also continue to threaten shipping. In April, **Saudi Arabia**⁴ intercepted an explosive-laden boat off the Red Sea port of Yanbu, thought to be targeting an oil tanker. In December 2020, a tanker anchored at the Jeddah port was hit by an explosive-laden boat.

The shortage of high-performance semi-conductors illustrates how critical supplies can be impacted by a series of unrelated events. Auto manufacturers around the world have halted production of some models due to the shortage of chips while supplies of consumer electronics are also being impacted. The shortage of chips is being blamed on a surge in demand, in part related to Covid-19, coinciding with supply constraints. However, other factors have included a fire at a major chip manufacturing facility in Japan while the Texas Big Freeze in February also caused chip makers in the state to shut factories. The worst drought in 50 years threatens semi-conductor manufacturing in Taiwan, which accounts for two thirds of semi-conductors overall. Tensions between the US and China also may have played a role after sanctions caused Chinese firms to stockpile chips.

“Such events expose the weak links in supply chains and have magnified them. Developing more robust and diversified supply chains will become increasingly important, as will understanding pinch points and supply chain nodes,” says Kinsey.

2 CNN, The repair of a vital Memphis bridge could take 2 months, chief engineer says. The impacts are already being felt, May 14, 2021

3 Bloomberg, China Set To Unload Some Stranded Australian Coal Amid Ban, February 8, 2021

4 Reuters, Saudi Arabia says it foiled boat attack off Yanbu, April 27, 2021

5 Insurance Business, Revealed: Trade exposures across UK ports, December 21, 2020

The Beirut explosion

– a wake-up call for port accumulation

Last year's devastating explosion at the port of Beirut in Lebanon on August 4, 2020 has added to industry concerns over the storage of hazardous goods and concentrations of risk at ports.

The explosion caused wide-scale damage to the docks and surrounding city, killing around 200 people and was caused by the detonation of an estimated 2,750 tons of ammonium nitrate – the largest single recorded explosion ever to occur in the region and one of the largest worldwide. The World Bank estimated the damage caused to be in the range of \$3.8bn to \$4.6bn, with economic losses adding a further \$2.9bn to \$3.5bn. Insured losses are estimated to be around \$1.5bn.

This incident follows the fire and explosion at the Chinese port of Tianjin in 2015, caused by the spontaneous ignition of nitrocellulose at a warehouse storing other hazardous and flammable materials, including ammonium nitrate (which is typically used to make fertilizers and explosives). The resulting insured damage cost \$2.5bn to \$3.5bn, one of the largest man-made insurance losses in modern times. Similarly, in 2013, a fatal explosion ripped through an ammonium nitrate storage facility in Texas, killing 15 people.

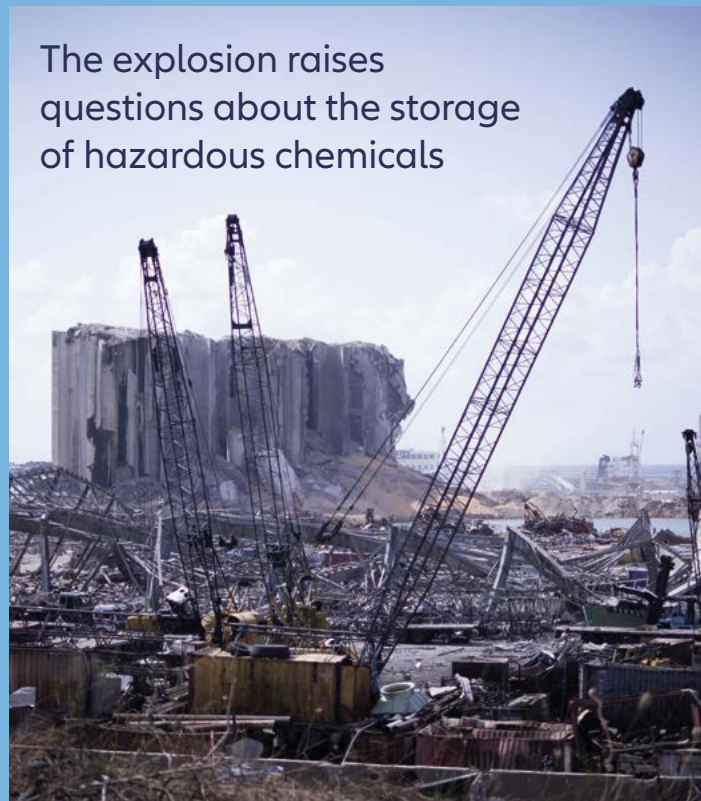
The Beirut port and Tianjin explosions raise questions about risk controls for the storage of hazardous chemicals – such as ammonium nitrate – as well as the potential for very large accumulations of risks at ports and surrounding areas. Ammonium nitrate is a widely used chemical and can be found in ports and warehouses across the world. However, it should be stored away from combustible materials or other sensitizers and away from populated areas or critical services.

The explosions also highlight the concentrations of risk in the world's largest ports. Beirut port, for example, is a major gateway to the Middle East, processing around 68% of Lebanon's total external trade. According to the [Russell Group](#)⁵, the EU had the highest port exposure in Q4, 2020, with \$509bn in trade flow, followed by the US with \$262bn and China with \$176bn.

"The Beirut port explosion has thrown light on an issue that is known, but where the impact is underestimated," says **Captain Rahul Khanna, Global Head of Marine Risk Consulting at AGCS**. "Ammonium nitrate is a widely used product, so the fact that it caused devastation on that scale should remind us all that an everyday product has the potential to cause such damage. It is clear that higher standards of cargo storage are key," says Khanna.

"Along with the Tianjin incident, the Beirut port explosion also shows that this type of exposure in a busy port can have huge consequences, financially and for trade. And for insurers, this represents a massive accumulation of risk, which requires modeling. A similar event in a busy US or European port could be catastrophic."

The explosion raises questions about the storage of hazardous chemicals



4. Security and sanctions safety concerns mount

The piracy threat remains, driven by record numbers of crew kidnappings and vessels targeted further out at sea. Covid-19 could make it worse. Cyber bring both business interruption and regulatory risk for shippers. At the same time, the burden of international sanctions continues to rise, posing both a compliance and safety risk, as a number of vessels turn off transponders to avoid detection.

Gulf of Guinea and crew kidnappings keep piracy in the spotlight

On March 11, 2021, pirates boarded the Maltese-flagged chemical tanker **Daive B** in the Gulf of Guinea, kidnapping 15 of the 21 crew. The incident followed a similar attack in January against Liberian-flagged container vessel **Mozart**, which resulted in the death of one crew member and the kidnapping of 15 others.

The Gulf of Guinea has emerged as the world's piracy hotspot. It accounted for over 95% of crew numbers kidnapped worldwide in 2020, as well as the sole crew fatality, according to the International Maritime Bureau (IMB)¹. Last year, 130 crew were kidnapped in 22 separate incidents² in the region, the highest ever number. The problem has continued into 2021, with the Gulf of Guinea accounting for a third of all reported piracy incidents in the first half of 2021³.

The International Maritime Organization (IMO)⁴ recently warned that piracy in the Gulf of Guinea poses a "serious and immediate" threat to global trade and the safety of seafarers working in the region.

"Attacks against the **Daive B** and **Mozart** are symbolic of the growing problem of piracy in West Africa, with an increase in the number, sophistication and violence of piracy attacks in the past year," says **Captain Rahul Khanna, Global Head of Marine Risk Consulting at AGCS**. "Perpetrators are now well-equipped to target vessels further away from the shore - the furthest crew kidnapping occurred just over 200 nautical miles (nm) from land."

As a result, the IMB recommends vessels in the Gulf of Guinea remain at least 250nm from the coast at all times.

Piracy in the Gulf of Guinea contributed to an overall increase in piracy worldwide in 2020 with the number of incidents up by more than 20% year-on-year (195 incidents in comparison to 162 in 2019, according to IMB). However, the total of incidents declined to a 27-year low during the first six months of 2021 (68). Despite the reduction, violence against crew has continued with 50 crew kidnapped, three each threatened and taken hostage, two assaulted, one injured and one killed throughout the first half of 2021. Vessels were boarded in 91% of the reported incidents.

Last year marked another year without incident in Somalia, the world's former piracy hotspot. However, crew must maintain vigilance when transiting the Somali Basin and wider Indian Ocean as Somali pirates continue to possess the capacity to carry out attacks. During the first three months of 2021, a bulk carrier repulsed an attack by armed pirates in the Gulf of Aden.

The economic and political consequences of the Covid-19 pandemic could exacerbate piracy, according to **Captain Andrew Kinsey, Senior Marine Risk Consultant at AGCS**. "Piracy is tied to underlying social, political and economic problems, which could deteriorate further with the impact of Covid-19. We may yet see recent piracy hotspots like Somalia re-emerge, in addition to the tragedy we already see in West Africa," says Kinsey.

1 International Maritime Bureau, Gulf of Guinea remains world's piracy hotspot in 2021, according to IMB's latest figures, April 14, 2021

2 International Maritime Bureau, Latest Gulf of Guinea piracy attack alarming, warns IMB

3 International Maritime Bureau, Piracy and armed robbery incidents at lowest level in 27 years, but risks remain to seafarers, IMB cautions, July 12, 2021

4 Global Trade Review, Piracy in Gulf of Guinea poses "serious" trade threat, February 17, 2021

Colonial Pipeline attack raises questions for shipping cyber security

The crippling ransomware attack against the Colonial oil pipeline in the US in May 2021 should be a wake-up call for the maritime industry. As a critical part of the global supply chain, the shipping industry could become an attractive target for cyber criminals and politically motivated attacks.

The 9,000km-long Colonial Pipeline, which connects some 30 oil refineries and nearly 300 fuel distribution terminals, was brought down by a cyber attack which resulted in petrol shortages across the eastern US. The company paid a **\$4.4mn**⁵ ransomware demand to hacking group DarkSide in return for getting its systems back online.

The attack has far-reaching implications for critical industries, including shipping. Not only did it reveal weaknesses in cyber security, but also the attractiveness of critical infrastructure to cyber criminals and nation states. Given its perceived success, the attack could encourage similar attacks, and result in tougher cyber security requirements and higher penalties for critical service providers.

Ransomware has become a global problem. All four of the world's largest shipping companies have been hit by cyber attacks, including the Mediterranean Shipping Company (MSC), which suffered a network outage in April 2020 from a malware attack, and CMA CGM SA, which was hit with a ransomware attack in September 2020. Even the IMO was recently targeted by a cyber attack, forcing some of its services offline.

According to security services provider **BlueVoyant**⁶, shipping and logistics firms in 2020 experienced three times as many ransomware attacks last year as in 2019. A spike in malware, ransomware, and phishing emails during the pandemic helped drive a 400% increase in attempted cyber attacks against shipping companies through the first months of 2020.

"To date, most cyber incidents in the shipping industry have been shore-based, including ransomware and malware attacks against shipping companies and ports," says **Captain Nitin Chopra, Senior Marine Risk Consultant at AGCS**. "But with growing connectivity of shipping, and with the concept of autonomous shipping, cyber will become a more important exposure that will require more detailed risk assessment going forward."

The shipping community has grown more alert to cyber risk over the past couple of years, in particular in the wake of the 2017 NotPetya malware attack that crippled ports, terminals and cargo handling operations. However, reporting of incidents is still uncommon as owners fear reputational risk and delays from investigations. Meanwhile, cyber security regulation for ships and ports has been increasing. In January 2021, the International Maritime Organization's (IMO) Resolution MSC.428(98) came into effect, requiring cyber risks to be addressed in safety management systems. The EU's Network and Information Systems Directive also extends to ports and shipping.

Increased awareness has translated into an increased uptake of cyber insurance by shipping companies, although mostly for shore-based operations, according to **Justus Heinrich, Global Product Leader Marine Hull at AGCS**.

“However, the threat to vessels is growing as more and more ships are linked to onshore systems for navigation and performance management. Smart ships are coming, and we would expect demand for insurance to develop accordingly,” says Heinrich.

Geopolitical conflict is increasingly played out in cyber space, as illustrated by spoofing attacks on ships. 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, while concerns have been growing for a potential cyber attack on critical maritime infrastructure, such as a major port or shipping route.

“From a hull perspective, the worst-case scenario is a terrorist attack or nation state group targeting shipping in a bid to inflict damage or major disruption to trade, such as blocking a major shipping route or port. While this would seem a remote possibility, it is a scenario we need to understand and monitor,” says Chopra.

“Although an accident, the recent blockage of the Suez Canal by the ultra-large vessel **Ever Given** is an eye-opener on many fronts as it shows the disruption a momentary loss of propulsion or steering failure on a vessel navigating a narrow waterway can cause.”

The Colonial Pipeline attack has implications for critical industries, including shipping



5 Reuters, Colonial Pipeline CEO acknowledges paying hackers to restore pipeline, May 19, 2021

6 BlueVoyant, Cyber Security And Attacks In The Logistics Industry

Sanctions enforcement has AIS risk implications

The burden of international sanctions continues to rise, posing both a compliance and safety risk, as a growing number of vessels turn off transponders to avoid detection.

The use of trade sanctions continues to grow. A myriad of US, EU and national sanctions currently target government agencies, individuals and commercial operators in countries like Iran, Russia, Venezuela and China. Increasingly, sanctions are targeting the sectors that facilitate trade, including shipping companies, their financiers and insurers.

Sanctions are a growing issue for the shipping industry and for insurers, according to **Justus Heinrich, Global Product Leader Marine Hull at AGCS**. "They pose a significant compliance burden. As a result of sanctions, we need to ask more and more questions of our clients," says Heinrich.

Sanctions regimes in Iran and Venezuela, for example, have expanded to include the energy and shipping industry. Earlier this year, the **US blacklisted**⁷ 14 largely European companies and six tankers over alleged **involvement in the trade of Venezuelan crude oil**⁸. Last year, the **US sanctioned a number**⁹ of shipping companies in Hong Kong for their dealings with Iran.

In a worrying development, some vessels have been switching off Automatic Identification Systems (AIS) as they seek to hide their location and defy US sanctions. In April, **the US seized a Cameroon-flagged oil tanker**¹⁰ for evading the country's sanctions on trade with North Korea. The vessel is alleged to have engaged in a ship-to-ship transfer of more than \$1.5m worth of oil to a North Korean ship, and to have stopped transmitting location information in a bid to avoid detection.

"The use of AIS for sanctions enforcement has an unintended result," says Kinsey. "It was introduced to make navigation of the seas safer, but now we see it is being used to track vessels. As a result, some ships have disabled AIS, which could obviously have a detrimental impact on maritime safety, given the potential for a serious incident to occur, such as a collision."

7 S&P Global Platts, US sanctions European oil traders, tankers for violating Venezuelan crude oil sanctions, January 19, 2021

8 Reuters, US blacklists oil traders, tankers for undermining Venezuela sanctions, January 19, 2021

9 Marine Log, Hong Kong shipping companies hit with US sanctions, October 20, 2020

10 US Government Seizes Oil Tanker Used To Violate US And UN Sanctions Against North Korea, April 23, 2021.

Sanctions regimes in Iran and Venezuela have expanded to include the energy and shipping industry



5. The environmental picture

Efforts to reduce emissions need to move up a gear while ESG reporting requirements will increasingly impact. The transition to low-sulphur shipping has gone well to date but has also brought machinery and fuel damage claims and fire risks. Meanwhile, sailing in Arctic waters continues to make waves but means unpredictable conditions, significantly higher environmental and salvage costs in the event of an incident and a lack of detailed voyage and hydrographic data.



Shipping activity in the Arctic region grew 25% over six years

Pressure to cut global shipping emissions mounts

The international shipping industry produced just over one billion tons of greenhouse gases (GHG) in 2018, almost 10% more than in 2012. The rise in GHG emissions was mostly due to an increase of global maritime trade, according to the latest **IMO**¹ GHG study. Despite an expected short-term reduction due to the pandemic, emissions are forecast to increase further - from about 90% (of 2008 levels) in 2018 to 90% to 130% (of 2008 emissions) by 2050.

The shipping industry broadly acknowledges the need to reduce emissions, although progress has been slow. The **IMO** GHG Strategy of 2018 set ambitious targets to halve emissions from international shipping by 2050 and reduce carbon intensity by 40% by 2030, and 70% by 2050. A revised GHG strategy is due to be adopted in 2023.

With momentum gathering behind international efforts to tackle climate change, the industry is likely to come under increasing pressure to accelerate its efforts, according to **Captain Rahul Khanna, Global Head of Marine Risk Consulting at AGCS.**

“The shipping industry will need to step up a gear in its efforts to reduce emissions. A huge investment in research and development is

required if the industry is to meet the challenging targets being set by the IMO and national governments. Today’s existing fleet and technology will not get the shipping industry to the IMO’s GHG target of a 50% cut in emissions by 2050, let alone the more ambitious targets being discussed by national governments,” says Khanna.

Ahead of the UN’s COP26 climate change summit in November 2021, shipping industry emissions are coming into sharp focus. The UK government recently added shipping to its plans for a 78% cut in GHG emissions by 2035. In April, the US called for the IMO to target **net-zero**² emissions by 2050, and said it would consider domestic measures to cut emissions from shipping.

In October 2020, the **IMO**’s³ Intersessional Working Group on Reduction of GHG Emissions from Ships pushed ahead with its GHG-cutting strategy, approving amendments to the pollution prevention treaty MARPOL. Due to be adopted by the IMO in June 2021, the amendments pave the way for a carbon-intensity rating for vessels above 5,000 gross tonnage, as well as adding further technical and operational carbon-intensity reduction requirements for all ships.



1 International Maritime Organization, Fourth IMO GHG Study 2020

2 gCaptain, Biden to Push IMO Member States to Adopt Zero Emissions by 2050 Goal for Shipping, April 26, 2021

3 International Maritime Organization, IMO working group agrees further measures to cut ship emissions, October 23, 2020

In addition to tougher emissions targets, growing Environmental, Social and Governance (ESG) reporting requirements will increasingly affect shipping. Investors, banks, insurers and customers will require information on the environmental impact of shipping companies. Going forward, shipping companies will be required to demonstrate their environmental impact when seeking investment, accessing financing and arranging insurance.

“Demand for green investments is rising and a growing number of financial institutions, including insurers, have committed to reducing their environmental impact, including through their investments, underwriting and lending activities. Insurers are increasingly subject to ESG reporting requirements, which will require insurers to incorporate ESG principles and the green credentials of vessels into underwriting,” says **Justus Heinrich, Global Product Leader Marine Hull at AGCS**.

According to the IMO, short-term options for reducing GHGs include operational changes – such as speed optimization – and the use of biofuels, as well as initiating research into alternative low-carbon and zero-carbon fuels. Potentially, the industry could face a carbon tax, or a levy on emissions – the **Marshall Islands and the Solomon Islands**⁴ have called for the IMO to impose a levy on carbon emissions by ships from 2025.

In April 2021, a group of prominent shipping organizations called on world leaders to bring forward discussions on the development of market-based measures to incentivize the industry to reduce greenhouse gases and adopt green technologies and fuels. The group, including the International Chamber of Shipping, BIMCO and the World Shipping Council, submitted a proposal to the IMO to expedite the development of market-based measures (such as a global carbon tax on shipping fuel), as well as accelerate research and development efforts for zero-carbon technologies.

According to the **ICS**⁵, the industry needs to invest billions of dollars in the development of zero-emissions ships and fuels – such as those based on ammonia and hydrogen, as well as a wider roll-out of electrification – at speed and scale. A group of shipping organizations and maritime nations have asked the IMO to establish an International Maritime Research and Development Board to help develop green shipping technologies.

According to the IMO, the carbon intensity of the shipping industry as a whole improved by 20% to 30% between 2012 and 2018 – due to the increased size of vessels, as well as design and operational improvement – although the pace of reduction has slowed since 2015. Going forward, the **IMO**⁶ says it will be difficult to achieve the 2050 GHG reduction ambition through energy-saving technologies and speed reduction of ships alone. A large share of the total amount of CO₂ reduction will have to come from the use of low-carbon alternative fuels.

Meeting GHG emission-cutting targets will require substantial investments in research and development and big changes in ship design and propulsion, which will have implications for risk and supply chains, says Khanna.

“I would expect ships to be significantly different in 20 years’ time, in terms of design and fuels. However, an understanding of the risk needs to be central to the transition to low-carbon shipping. As we have seen with large container ships, developments that do not focus on risk can lead to unintended consequences and increased exposures, with a wider impact on supply chains,” says Khanna.

4 Hellenic Shipping News, MI and SI proposed carbon tax contractual considerations

5 International Chamber of Shipping, Catalysing the fourth propulsion revolution

6 International Maritime Organization, Fourth IMO GHG Study 2020





In addition to tougher emissions targets, growing ESG reporting requirements will increasingly affect shipping



IMO 2020: transition to low-sulphur shipping not without challenges or marine claims

The transition to low-sulphur shipping has been smoother than many predicted, although there have been some issues with bunkering and the use of scrubbers.

Since January 1, 2020, the cap on the sulphur content of ships' fuel oil was cut to 0.5% (from 3.5%). Known as IMO 2020, the mandatory limit is expected to reduce emissions of harmful sulphur oxide (SOx) emissions from shipping by 77%, which should bring huge environmental and health benefits.

Vessels have several options to comply with IMO 2020, namely switching to low-sulphur fuels or the fitting of so-called scrubbers, which remove SOx from exhaust gases for vessels using heavy marine fuel. However, open loop scrubbers, which discharge sulphur contaminated wash water into the sea, face restrictions and bans in many ports and waters, including the US, Europe and parts of Asia. A number of ports and countries, including the US Coast Guard, say they plan to rigorously enforce IMO 2020, and could detain ships or impose large fines for vessels found in non-compliance.

By and large the shipping industry has responded well to the new low-sulphur regulations

Most vessels have so far opted for low-sulphur fuels, although the number fitting scrubbers is expected to rise as operators become more comfortable with the technology. According to [BIMCO](#)⁷ the number of ships fitted with scrubbers doubled to just over 4,000 in the 13 months after IMO 2020 came into force. [Around 16% of container ships](#)⁸, representing 36% of container-carrying capacity, are expected to have scrubbers in 2021, 15% of bulk carriers and one in 10 oil tankers.

Insurers have seen a number of machinery damage claims related to scrubbers and some arising from the use of 'blended' low-sulphur fuels. For example, there have been instances of [aviation fuel](#)⁹ – sold off cheaply due to a drop off in air traffic during the pandemic – being added to bunkers in Asia to produce blended low-sulphur fuel, which could cause resulting issues for shippers. Jet fuel has a lower flash-point and adding too much can lower the temperature at which fuels catch fire, creating a serious risk for vessels.

A study on the impact of IMO 2020 by [Cefor](#)¹⁰ noted that the transition to low-sulphur fuels had not been without challenges. In some cases, the use of low-sulphur fuels has led to severe damage, and some significant claims for insurers from the cost of repairs and loss of earnings while awaiting repairs, often because critical spare parts were not available from stock. The cause of damage was often related to the cleaning of tanks, condition of filters, fuel stability and the effect of lube oil. Bunkering of fuels remains a complex issue, and poor fuels and poor handling of fuels constitute a significant risk for vessels.

“By and large the shipping industry has responded well to the new regulations, and the increased cost of using low-sulphur fuel has been in part compensated by higher freight rates. We have seen a small number of machinery claims related to the use of low-sulphur fuels and scrubbers, and this is an area we continue to monitor. However, scrubbers are just an interim solution and ultimately the industry will need to invest in cleaner vessels,” says Heinrich.

⁷ Hellenic Shipping News, Second wave of scrubber installations to support HSFO sales despite cleaner fuels shift, May 5, 2021

⁸ The International Council On Clear Transportation, Scrubbers on ships: Time to close the open loop(hole), June 18, 2020

⁹ World Oil Magazine, Suddenly-cheap jet fuel being blended for ships as aviation craters, September 21, 2020

¹⁰ Cefor, Post-IMO 2020 experiences, April 7, 2021

Arctic shipping requires new ways to manage risks

In February 2021, LNG carrier **Christophe de Margerie**, escorted by a nuclear icebreaker, became the first large-capacity cargo vessel to transit the eastern sector of the Northern Sea Route (NSR). The voyage demonstrated that year-round safe navigation is possible¹¹ along the entire length of the Northern Sea Route (NSR).

In the last five years, cargo traffic along the NSR has grown¹² almost fivefold, reaching 33 million tons in 2020. Last year there were 64 voyages on the NSR compared with 37 in 2019. Overall, shipping activity in the Arctic has grown 25% in the six year period 2013 to 2019, while the distance sailed by vessels in the region increased by 75%, according to the Arctic Shipping Status Report¹³. In 2019, 977 vessels entered the IMO Arctic Polar Code area. Bulk carrier activity, in particular, has increased significantly (the distance sailed increased by 160% during the six-year period) with the increase in iron ore extraction in Canada. In future, Russian officials have predicted that cargo traffic along the NSR could increase to 100mn tons by 2030.

The increase in Arctic shipping is made possible by the year-on-year reduction in sea ice. Data from the US National Snow and Ice Data Center shows the average Arctic sea ice extent decreased to 4.3 million sq km in 2019 from 6.1 million sq km 10 years earlier.

The grounding of the container ship **Ever Given** and blocking of the Suez Canal has also added to the case for shippers using the NSR, which can shave 4,000 nautical miles off traditional

Asia to Europe shipping routes. However, climate-change concerns may also hamper development. A growing number of companies, including major manufacturers and shipping companies, have pledged not to ship goods through the Arctic Ocean on the grounds of the potential environmental impact.

In a bid to ensure Arctic shipping develops safely and environmentally, a mandatory code for ships operating in polar waters (the Polar Code) entered force in January 2017. It sets standards for vessel design, construction, equipment, operational, training, search and rescue, and environmental protection activities for ships operating in Polar waters.

Sailing in Arctic waters poses a number of risks, including unpredictable and extreme weather conditions, long periods of darkness, and the remoteness of the shipping routes from infrastructure and emergency response services. In the event of an accident, such as a grounding or a fire, the cost of salvage and environmental impact could be considerably higher than in non-Arctic waters, says Heinrich.

There is also currently a lack of good data on Arctic shipping, in particular detailed navigational charts and hydrography, according to **Captain Andrew Kinsey, Senior Marine Risk Consultant at AGCS**.

“The industry will need to find new ways to manage Arctic risks. In my career there has never been a new shipping route, so the challenges are mind-boggling. We need to actively collect voyage data and change the mindset of seafarers. Polar shipping requires a much more proactive approach to risk management. We need a new framework for data, technology and training, and not just wait to study casualties if this is to become a viable and safe shipping route,” says Kinsey.

¹¹ The Maritime Executive, Russian LNG Carrier Completes Winter Trips on the Northern Sea Route, February 19, 2021

¹² Northern Sea Route Information Office, NSR Shipping Traffic – Transit Voyages in 2020

¹³ PAME, The Increase In Arctic Shipping 2013-2019, March 31, 2020

Incidents in Arctic Circle waters

There have been 520 shipping incidents reported in the Arctic Circle waters over the past decade. The harsh operating environment means machinery damage/failure is the most frequent cause, accounting for almost half (48%) of this total.

All causes of casualties/incidents 2011 – 2020

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Machinery damage/failure	12	13	20	27	44	32	46	23	14	18	249
Wrecked/stranded (grounded)	9	8	10	14	6	11	9	8	6	8	89
Fire/explosion	6	2	4	2	4	1	3	6	8	8	44
Collision (involving vessels)	4	4	2		3	2	4	2	3	6	30
Contact (e.g. harbor wall)	1	3	6	4	5	1	1		1	1	23
Foundered (sunk)	3	1	1	2		1		1	1	2	12
Hull damage (holed, cracks etc.)	2	1	2	1	1	2	2				11
Labor dispute						1					1
Miscellaneous	2	6	5	5	6	4	6	4	8	15	61
Total	39	38	50	55	69	55	71	44	41	58	520

Including 14 total losses

2020 review

Causes of casualties/incidents 2020



Machinery damage/failure	18
Fire/explosion	8
Wrecked/stranded	8
Collision	6
Foundered	2
Contact	1
Miscellaneous	15

Including 2 total losses

total 58
up 17 year-on-year

Analysis shows there were 58 reported shipping incidents in Arctic Circle waters during 2020 – up by 17 year-on-year. This represents the highest total for three years. There were two total losses involving fishing vessels. The number of miscellaneous events was driven by incidents involving crew members on vessels testing positive for Covid-19, requiring quarantine and delays to journeys.

Vessels over 100GT only

Source: Lloyd's List Intelligence Casualty Statistics

Data Analysis & Graphic: Allianz Global Corporate & Specialty

Data and sources

The primary data source for total loss and casualty statistics is Lloyd's List Intelligence Casualty Statistics (data run on May 1, 2021). Total losses are defined as actual total losses or constructive total losses recorded for vessels over 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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