



Embracing ESG:
The Path to Sustainable Shipping

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Aitolikou 5 & Kastoros 70 | Piraeus, Greece

Phone: +30 2104121578, +30 2104131058 | Fax: +30 2104136667

Email: info@novaelectronics.gr | sales@novaelectronics.gr | technical@novaelectronics.gr

N O V A E L E C T R O N I C S . G R



Editorial | CEO's Note

ESG, which stands for Environmental, Social, and Governance, refers to a set of criteria used to assess the sustainability and ethical impact of an investment or business.

While there is no singular regulatory framework specifically dedicated to ESG, several regulations and guidelines exist that touch upon various aspects of ESG considerations.

On June 7th, 2021, G7 finance ministers announced a commitment to mandate climate reporting in line with the recommendations of the Taskforce on Climate-related Financial Disclosures (TCFD).

While a universal standard does not yet exist, ESG reporting does exist in the form of regional reporting frameworks, voluntary standards, and national legislation that vary significantly. Oftentimes, organizations will include ESG

reporting into their annual reports to demonstrate how sustainable the business is.

Many have come to see environmental, social, and governance (ESG) reporting, not as a regulatory burden, but as a tool to attract investors and financing.

Of course, companies want to do good and be ethical and responsible. But they also want to shine in the eyes of public, stand above the competition, and attract investors and financing. Reporting ESG performance in ESG reports is a way to make this happen.

Before anyone can begin to prepare their processes for ESG compliance, we must build our understanding of ESG, how it differs from sustainability and CSR efforts, and what it means to investors and our customers.

The shipping industry has recognized the urgent need for sustainable practices and is actively embracing ESG principles.

ESG considerations are becoming integral of Arcadia Shipmanagement as stakeholders demand greater transparency and sustainability from companies.

By embracing environmentally responsible practices, prioritizing social responsibility, and implementing sound governance measures, here in Arcadia can navigate the path towards a more sustainable future.

The company's concerted efforts to reduce emissions, improve working conditions, and enhance governance practices contribute not only to the Arcadia's own long-term viability but also to the preservation of the planet and the well-being of its people.

The transformation towards a greener, more socially inclusive, and ethically governed shipping industry is underway, and its success will require the continued commitment and collaboration of all stakeholders involved.

Dimitrios Mattheou

CEO



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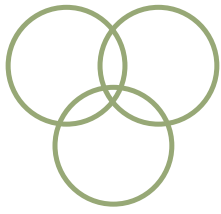


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8 Dragatsaniou Str, 105 59, Athens, HELLAS
info@arcadiasm.gr | www.arcadiasm.gr
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Golden Cargo SA:

62, Dragatsaniou Str., 185 45 Piraeus, Greece

T: +30 210 4061 100 | F: +30 210 4061 111 | E: goldencargo@goldencargo.gr



SIRE 2.0 is closing fast – get ready

Sire (Vetting) inspections are carried-out based on a specific questionnaire (Vessel Inspection Questionnaire), which currently is in its 7th edition (VIQ 7).

The Sire program (within 30 years i.e. 1993 – 2023) has advanced from:

- **Technical Safety Issues** (checking the condition and operational capability of the vessel and equipment, requiring awareness from the crew), to
- **Organizational Safety** Issues (formation of the Company's Management System and crew familiarity), to
- **Human Factor Safety** (interviewing of the crew members and requirement to demonstrate competency).

Through SIRE 2.0 addressed questions, the aim is to find out the crewmembers' familiarity with:

- The Company procedures,
- The written process for each task,
- The use or operation of machinery and equipment onboard.

The Vetting Inspector shall consider whether an assigned task or activity was performed in an appropriate manner by the crew, in accordance with Company procedures, manufacturer's operating instructions and industry guidelines and best practices.

Human Factors are the physical, psychological and social characteristics, that affect the people's interaction with:

- **Equipment**
- **Processes**
- **Systems**
- **Other Humans** (Individuals & Work-teams/ crew members).

A safe or unsafe outcome of people's behaviour and personal / professional efficiency, are the Performance Influencing Factors. These may change under different conditions, affecting positively, or negatively, the result of the work to be done.

List of Performance Influencing Factors

- Recognition of safety criticality of the task or associated steps.
- Custom and practice surrounding the use of procedures.
- Nature of procedures i.e. helpful, understood and accurate for task.
- Team dynamics, communications and coordination with others.
- Evidence of stress, workload, fatigue, time constraints.
- Factors such as morale, motivation, nervousness.
- Workplace ergonomics including signaling, tools, layout, space, noise, light, heat, etc.
- Human-machine interface (e.g., controls, alarms, etc.).
Opportunities to learn or practice.

Best Practices to face a SIRE 2.0 Vetting Inspection

- Be prepared for any inspection at any time. Don't wait "until the last days" to get organized and sort-up.
- Be polite to the Inspector.
- Have evidence ready (as applicable) to answer the Inspector's questions.



- If it takes for you “too long” to find information, this fact gives the impression of a poorly run vessel, even if that isn’t the case.

Maybe you don’t know the answer to a question “by heart”, but you should know where to find the answer.

Appropriate Officer should accompany the Inspector, such as:

- Chief Officer for cargo and deck inspection.
- Navigating Officer for the bridge.
- Engineer for the ER.

The “wrong” Officer (unaware), answering questions incorrectly, can lead to a poor inspection result.

The Inspector discusses any observations upon finding. Accompanying Officer should discuss in a polite manner and show evidence to support vessel’s position.

Deal with each question by staying calm.

Every question is related to the assigned tasks, so, most probably, we know what to respond. If we are not calm and become stressed, then an “easy” answer may skip our minds.

Be sure that you understand the question and where it refers to.

Not every Inspector speaks “clear” English. We all have different pronunciation to various English words.

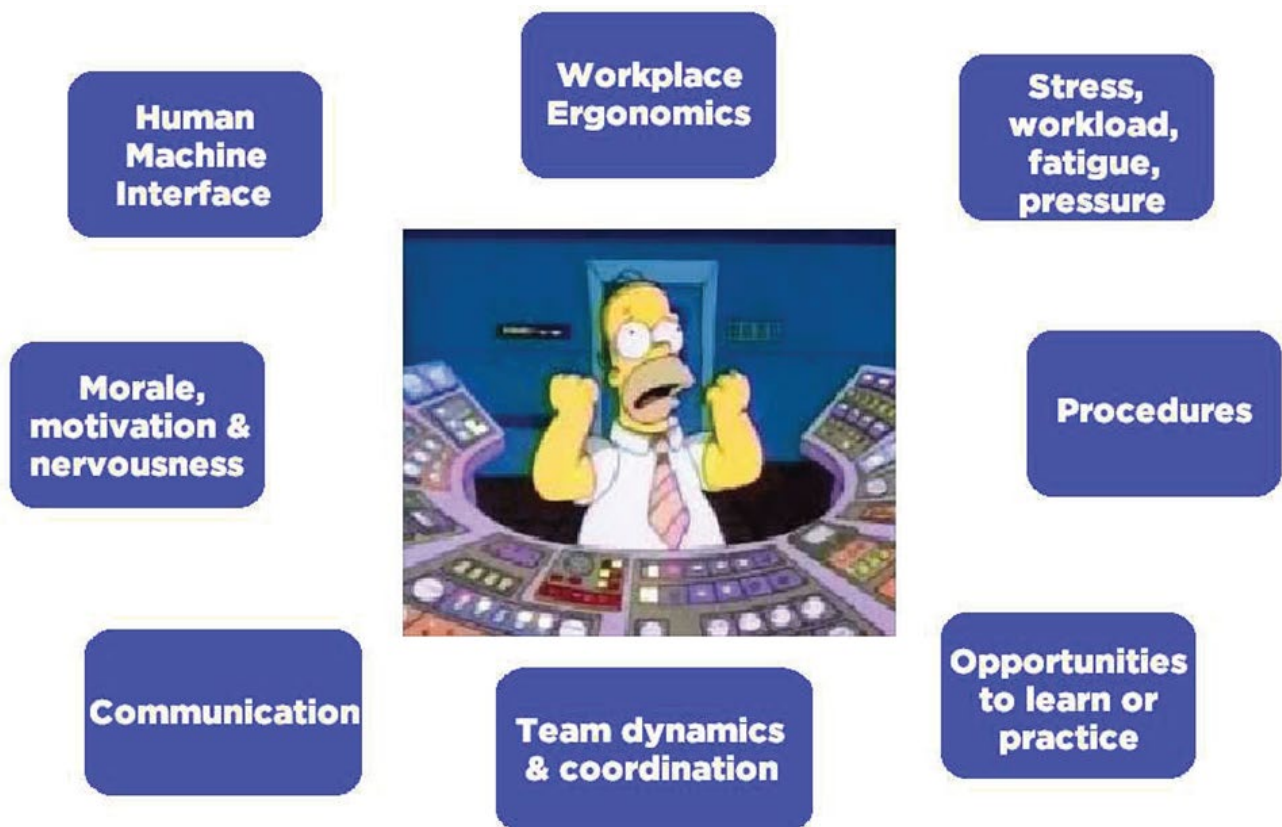
Ask from the Inspector to repeat the question, if in doubt.

You have the right to do so. It doesn’t mean that, because you request for a repeat, the Inspector will assume that you don’t know.

Do not provide answers in a hurry!

Think (twice) before you reply. Give accurate and short answers. If the Inspector wants more information, he will address another question.

DO NOT NEVER / EVER TRY TO FOOL THE INSPECTOR.





Corporate Social Responsibility - CSR

What Is Corporate Social Responsibility (CSR)?

Corporate social responsibility (CSR) is a self-regulating business model that helps a company be socially accountable to itself, its stakeholders, and the public.

By practicing corporate social responsibility, also called Corporate Citizenship, companies can be conscious of the kind of impact they are having on all aspects of society, including economic, social, and environmental.

To engage in CSR means that, in the ordinary course of business, a company is operating in ways that enhance society and the environment instead of contributing negatively to them.

Understanding Corporate Social Responsibility (CSR)

Corporate social responsibility is a broad concept that can take many forms depending on the company and industry. Through CSR programs, philanthropy, and volunteer efforts, businesses can benefit society while boosting their brands.

For a company to be socially responsible, it first needs to be accountable to itself and its shareholders. Companies that adopt CSR programs have often grown their business to the point where they can give back to society.

Thus, CSR is typically a strategy that's implemented by large corporations. After all, the more visible and successful a corporation is, the more responsibility it has to set standards of ethical behavior for its peers, competition, and industry.

FAST FACT: Small and midsize businesses also create social responsibility programs, although their initiatives are rarely as well-publicized as those of larger corporations.

Types of Corporate Social Responsibility

In general, there are four main types of corporate social responsibility. A company may choose to engage in any of these separately, and lack of involvement in one area does not necessarily exclude a company from being socially responsible.

Environmental Responsibility

Environmental responsibility is the pillar of corporate social responsibility rooted in preserving mother nature. Through optimal operations and support of related causes, a company can ensure it leaves natural resources better than before its operations. Companies often pursue environmental stewardship through:

- Reducing pollution, waste, natural resource consumption, and emissions through its manufacturing process.

- Recycling goods and materials throughout its processes including promoting re-use practices with its customers.

- Offsetting negative impacts by replenishing natural resources or supporting causes that can help neutralize the company's impact. For example, a manufacturer that deforests trees may commit to planting the same amount or more.

- Distributing goods consciously by choosing methods that have the least impact on emissions and pollution.

- Creating product lines that enhance these values. For example, a company that offers a gas lawnmower may design an electric lawnmower.

Ethical Responsibility

Ethical responsibility is the pillar of corporate social responsibility rooted in acting in a fair, ethical manner.

Companies often set their own standards, though external forces or demands by clients may shape ethical goals. Instances of ethical responsibility include:

- Fair treatment across all types of customers regardless of age, race, culture, or sexual orientation.

- Positive treatment of all employees including favorable pay and benefits in excess of mandated minimums. This includes fair employment consideration for all individuals regardless of personal differences.



- Expansion of vendor use to utilize different suppliers of different races, genders, Veteran statuses, or economic statuses.
- Honest disclosure of operating concerns to investors in a timely and respectful manner. Though not always mandated, a company may choose to manage its relationship with external stakeholders beyond what is legally required.

Philanthropic Responsibility

Philanthropic responsibility is the pillar of corporate social responsibility that challenges how a company acts and how it contributes to society.

In its simplest form, philanthropic responsibility refers to how a company spends its resources to make the world a better place. This includes:

Whether a company donates profit to charities or causes it believes in.

- Whether a company only enters into transactions with suppliers or vendors that align with the company philanthropically.
- Whether a company supports employee philanthropic endeavors through time off or matching contributions.
- Whether a company sponsors fundraising events or has a presence in the community for related events.

Financial Responsibility

Financial responsibility is the pillar of corporate social responsibility that ties together the three areas above.

A company makes plans to be more environmentally, ethically, and philanthropically focused; however, the company must back these plans through financial investments of programs, donations, or product research. This includes spending on:

- Research and development for new products that encourage sustainability.
- Recruiting different types of talent to ensure a diverse workforce.

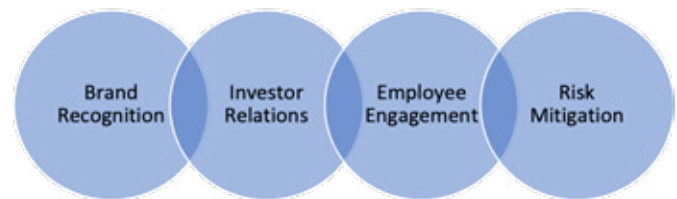
- Initiatives that train employees on DEI, social awareness, or environmental concerns.

- Processes that might be more expensive but yield greater CSR results.

- Ensuring transparent and timely financial reporting including external audits.

Benefits of Corporate Social Responsibility

As important as CSR is for the community, it is equally valuable for a company. CSR activities can help forge a stronger bond between employees and corporations, boost morale, and aid both employees and employers in feeling more connected to the world around them. Aside from the positive impacts to the planet, here are some additional reasons businesses pursue corporate social responsibility.



Examples of Corporate Social Responsibility in Arcadia Shipmanagement Co Ltd & Aegean Bulk

- Voluntary beach cleaning of Kimasi beach in Evia island

In June 2018, we took part in HELMEPA's Let's Clean up Europe campaign and we organized voluntary beach cleaning of Kimasi beach in North Evia island in cooperation with Mantoudi's village elementary school teachers and students.

Donation to Agia Sofia children's hospital

In November 2019, our companies donated through Agapi gia Zoi association a wheelchair to Agia Sofia children's hospital.





Donation to Make A Wish Foundation Greece



In September 2022, we supported Make A Wish Greece with the purchase of Chris cuddly bears for employees children. Make A Wish foundation grants wishes that have the power to transform the lives of children with critical illnesses.

Participation in Race for the Cure Athens



In October 2022, during the breast cancer awareness month, we participated in Race for the cure which is one of the most popular races for breast cancer awareness worldwide. The options were 2k walk or 5k run.

Dispatch of necessities to Turkey & Syria



In February 2023, after the devastating earthquakes in Turkey & Syria and in cooperation with "O allos Anthropos" voluntary team in Athens, we collected and sent necessities to both countries.

The Bottom Line

Companies striving to measure success beyond bottom line financial results may adopt corporate social responsibility strategies. These strategies may target environmental, ethical, philanthropic, and fiscal responsibility that extend beyond the products they sell. CSRs aim to make the world a better place beyond transacting with customers and may result in company-specific benefits as well.

Getting back to normal (which can be called “the new normal”)

Throughout history, global pandemics have shaped society, culture, value systems and institutions. As we gradually overcome the COVID-19 crisis, one pandemic and subsequent recovery, that shares several similarities with what we are seeing today, is the bubonic plague — or Black Death — which devastated Europe and Asia in the 14th century. Though the Black Death was as grim as it sounds, there was a silver lining: It’s believed that the socio-economic impacts of the Plague on European society — particularly in Italy — helped create the conditions necessary for arguably the greatest post-pandemic recovery of all time — the Renaissance.

Fast-forward 700 years later and several themes believed to have led Europe out of the Middle Ages, have started to reemerge in the wake of COVID-19’s impact on global commerce, consumer values and shopper behavior.

History’s Seven Deadliest Plagues Number of deaths through the years*	
Black Death	75-200 million (1334-1353)
1918 Flu	50-100 million (1918-1920)
New World Smallpox	25-56 million (1520 – 1610)
Plague of Justinian	30-50 million (541-549)
HIV/AIDS	27-48 million (1981 – current)
COVID-19	5-17 million (2020 – current)
The 3RD Plague	12 million (1855 – 1959)

The official lost body-counts, represent major underestimates (known as statistical abstraction).

The 3 great plague pandemics had different geographic origins and paths of spread. The Justinian Plague of 541 started in central Africa and spread to Egypt and the Mediterranean. The Black Death of 1347 originated in Asia and spread to the Crimea then Europe and Russia. The 3rd pandemic, that of 1894, originated in Yunnan, China, and spread to Hong Kong and India, then to the rest of the world. Plagues changed the social and economic fabric of society.

It is accepted that any threat engenders a point of change. There is no returning to the “status quo” condition. As COVID pandemic proved, certain key precepts of our pre-pandemic existence have been challenged and altered.

As we look forward to a future after COVID-19, the Renaissance is also a useful case study on how a society changed after a pandemic — in this case, the Black Plague — and how artists thrived through the period’s recurring epidemics.

The Black Plague was a pandemic that ravaged the world from the 1330s to 1352, killing an estimated 30% to 60% of the European population alone. When it arrived in

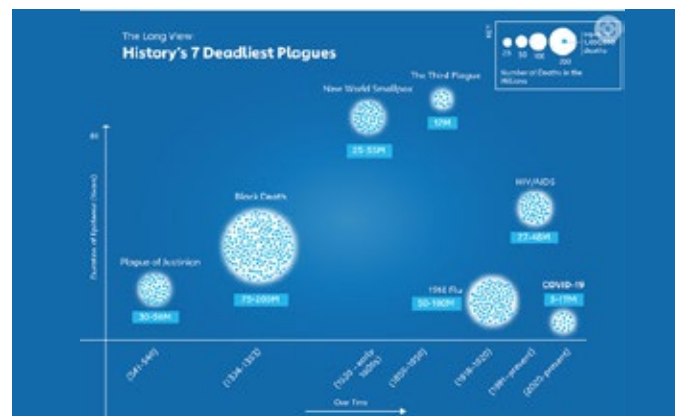
England in 1348, it sparked many societal changes that helped spur the Renaissance movement. This refreshed period saw the rise of an educated middle class and an accompanying interest in science, the arts, global exploration and new theologies and ideologies.

Etymologically, Renaissance is “rebirth”. It has come to symbolize (into humankind existence) a period during which, the best of what has gone before is adapted for a “new” age.

Historically, the Renaissance took place within the 15th and 16th Centuries, originating in Italy following the devastation caused by The Black Death. It is a period during which Michelangelo, Da Vinci and Rafael produced works of art, which grace our world today. Galileo, Copernicus, and Newton advanced our understanding of science, to an extent still in place. If that were not enough, the Renaissance included the work of Shakespeare, Gutenberg, and Columbus, respectively providing the words, the books and a marketplace for them, which persist to this day.

Although Renaissance ended so many centuries ago, yet the people and creative works of that era, can tell us a lot about ourselves today. COVID-19 has changed the rules. Brands, marketers and even consumers have been given a chance to restart. We can learn old lessons from the past and apply them to the new challenges of today—using technology, data and creativity to build better experiences and a brighter future. As we enter the recovery phase and many of us eagerly await a return to “normal,” let’s remember one thing: We Are Not Normal—We Are Extraordinary.

We, Seamen, are among the heroes of the pandemic, having helped the world to maintain the supply line of essentials, such as food and water and necessary goods. Apart from a few unfortunate souls, seamen were able to survive, keeping the pandemic away from the vessels where they served, but also away from their homes. This mainly happened, because we, seamen, have a strong sense of safety and protection for ourselves, our co-workers / colleagues and our beloved ones. This has become our 2nd nature. Our safety culture, onboard and ashore, protects us from the worst.





Alternative Marine Fuels



Kouniakis Epameinondas

Chief Engineer, Msc in Marine Engineering
Arcadia Shipmanagement Co Ltd.

The seaborne trade represents 80% of the international's volume trade according to UNCTAD 2021 and is expected to be rapidly growing both in volume and value. That will increase substantially at the same time the GHG emissions in the coming decades.

At present, shipping's emissions constitute about 2,89% of global anthropogenic emissions. Based on that, IMO's strategy is to reduce them by 50% up to 2050 compared to 2008 levels and carbon intensity by 40% up to 2030 and 50% up to 2050 respectively. The Getting Zero Coalition, an alliance of more than 200 organizations, including leading maritime stakeholders, financial and fuel value chains, is committed on making viable zero-emission deep-sea vessels by 2030, moving towards to full decarbonization by 2050.

However, maritime industry is facing the big question of how to comply with these strict regulations and ambitious goals but mostly, which is the most viable and profitable investment decision for the future fleets.

A critical pathway from low to zero carbon emissions is the fuel supply development with cleaner alternative fuels that could replace HFO, responding to EU's regulations and keeping in mind the cost impact on the level of the vessel.

Types of alternative fuels

The most known alternative fuel is LNG which constitutes about 0,1% of the global fuel consumption (IMO, 2021). As fuel has been used for 20 years, it's a fossil fuel consisting of natural gas, and is liquefied at -160°C in order to be transferred on tankers. It does meet IMO's sulfur cap requirements while its carbon emissions are 20% lower than distillate or VLSFO fuels. As of June 2021, 500 LNG fueled ships were operated and on order, excluding LNG carriers, with DNV's Maritime Forecast to 2050 report, underlying that by then more than 40% of propulsion fuel will be LNG. Basically, is widely considered as "bridge fuel" to decarbonization strategy.

However, the consequences from Russia's invasion on Ukraine combined with China's low growth rate and demand due to lockdown restrictions, led to substantial price rises on an already highly volatile market. With \$200/mt more expensive than LSFO and shipowners benefit from the continuously spread between LSFO and HFO, which is shortening the scrubber's payback installation period (about \$4 millions), it is very challenging for LNG to be preferred as fuel onboard, at least in near terms.

It's worth notable that a retrofit of a 160.000dwt vessel could cost nearly \$35millions while an LNG fueled newbuild costs almost \$150millions. Besides that, it has been coming under careful examination because of the unburned methane, the so-called "methane slip", especially at high pressure dual fuel LNG engines. Although the IMO does not have regulations about it, however it's an issue that needs to be addressed both from regulatory bodies and shipping industry, in order to enhance LNG's viability and meet IMO's long term goal of 50% GHG reduction.

Another issue that poses concerns is the limited bunkering infrastructure limiting its use only in short-sea shipping or under the concept of dual fueled engines. Even as retrofit, the requiring tank space is approximately twice that of fuel (48%) resulting in payload losses. So, with the tank cost and gas system installation been very expensive, for the time being is probably a long-term investment under the sight of the future geopolitical status.

Biofuels are renewable fuels produced from biomass, meaning the organic mass from agricultural crops, cooking or animal wastes, residues and aquatic plants. These can be used onboard as substitute fuel or blended with the conventional fuels (drop-in to tanks) without significant modifications and in some cases none, offering a cost-effective solution for the existing fleet. The full range of biofuels includes three types:

- Biomass to Liquid (BTL), a synthetic fuel produced by thermo-chemical conversion of biomass,

- the Hydrogen Vegetable Oil (HVO/HDRD), produced of fats and vegetable oils by hydrotreating process, leading to a renewable diesel fuel that can be used onboard without modifications and, the most notable,

- FAME (Fatty Acid Methyl Ester) produced by vegetable oils animal and cooking wastes which can be blended with current diesel engines.

Although the feature of drop into tanks makes them valuable, however the lack of sufficient availability and long-term storage in tanks rises many issues as bacteria's or mould, low temperature and deposits from vegetable oils growing in water may clog pipes and filters or causes oxygen degradation and corrosion.

Hydrogen is produced by electrolysis so it could be an essential alternative fuel. Both in compressed or liquefied form has zero carbon or GHG emissions, is nontoxic, colorless and odorless. Besides natural gas or coal, it can also be produced by water's electrolysis (Green Hydrogen) but is more expensive demanding huge investment in bunkering facilities than LNG. It has the highest energy content per mass compared to traditional fuels - exceeding MGO's by 2,8 times - resulting in engine's cost-effective efficiency. However, due to lower energy density requires approximately 4 times more storage space than MGO or 2 times than LNG, making it not feasible to be used in international deep-sea shipping. Furthermore, DNV's report in July 2021, recognized several issues regarding the safety of handling, bunkering or storing, especially onboard, where Hydrogen properties includes metal's brittle.

The potential of Methanol as marine fuel has been recognized in maritime industry. It can reduce Sox and PM emissions over 95%, CO2 up to 15% and Nox by 80% compared to conventional fossil fuels. As liquid fuel has simple handling, bunkering and storage procedures, similar to diesel's, requires less storage space while is significantly cost efficient for bunkering. The cost of converting diesel engines to dual fuel Methanol vessels is around \$12 millions, about 30% less of the newbuild dual fuel price (MAN-es.com). This is why Mari-

time's industry interest is rapidly growing. Although is available at 100 major ports globally, bunkering facilities cannot meet dee-sea's shipping needs as its still at the beginning of development.

At the present Methanol is mostly produced by natural gas (Grey Methanol) or the coal (Brown Methanol) resulting in negative impact on CO2 emissions compared to diesel. Under the tank-to-wake perspective with 7% reduction on CO2 compared to HFO, only the Green Methanol from biomass or Blue (using blue hydrogen) is a potential alternative fuel meeting the 50% reduction in GHG emissions. Besides that, when compared to diesel price, it can be 15 times more expensive (Wartsila.com), while safety issues are rising as its storage at ambient temperature and normal pressure, makes it toxic and flammable.

Summing-up

Alternative fuels have a long pathway to travel with further analysis on safety and suitability data along with scalability and infrastructure development of supply chain, in order to be viable, which is a lengthy process. This is the main reason that they cannot support the deep-sea vessels and all new-buildings or retrofits are associated with the line or short sea shipping.

Under these conditions and considering that vessel's life is less than 20 years with the IMO's goals so close in time, the decarbonization strategy for ship-owners turns out to be a difficult equation. Until future regulations been clarified and finalized, as the recent report of UCL Energy Institute noted, investing in conventionally fueled vessels as newbuilds or second hand but capable of retrofit into zero-emission fuels, could minimize the risk of fleet's devaluation and payback losses.





Question to Deck & Engine Officers:

The future of “human element” in the shipping industry. Into which of the following ways, our profession should be heading to?

- A- Focus on seamanship.** Seamanship is perishing. We must do something about it. Seamen are mostly dealing with paperwork.
- B- Forget the traditional seamanship.** Seamanship is evolving. Automation, digitalization and remote operation.

This is the future.



Georgios Papoutsis
Master
M/T Aegean Unity

MY OPINION: FOCUS ON SEAMANSHIP

Historic or traditional seamanship skills are less frequently used on modern commercial ships. For example, nowadays most of the watchkeepers' time is occupied by the increasing paperwork, which keeps them very busy, ending-up to distract them from their traditional work, that is ships navigation and handling.

The true seamanship, proper training and knowledge of the sea are remaining of utmost importance, as it used to be in the past, but carries-out until today.

Because in emergency situations these will be the factors that will make the seafarers to respond appropriately at any incident and eventually survive. So, we need to focus on seamanship and stop being so attached to paperwork, even if it is important – it's not the most.



Dimitrios Fourikis
2nd Officer
M/T Aegean Unity

MY OPINION: FOCUS ON SEAMANSHIP

The future of the human element in the shipping industry is at risk, due to the rapid change in the nature of work onboard a vessel. During the last years, seamanship inside the minds of people has already started to disappear, because of the transit towards a more automated generation.

This has happened as a result to transit of seafarers' occupation, at this stage, giving more attention in the installation of advanced automated systems and the increasing paperwork and this has, as bottom line, occupied more time and space during our daily routine.

In conclusion, if we accomplish to retain the amount of paperwork and control the pace of automation, we will once again focus on our real occupation, which is to always think as a seaman.



Dimitrios Trispiotis
Chief Officer
M/T Aegean Unity

MY OPINION: FORGET THE TRADITIONAL SEAMANSHIP

In this new era of seamanship, we must keep up with the new technology, because this can really help the way of conducting voyages around the world. For example, automation, digitalization and remote operation, can aid the seaman to avoid any unnecessary mistakes and give him precise information about a wide variety of things. Such as real time updates about navigational charts, potential dangers to navigation, areas to be avoided and second-by-second updates about ships in the vicinity and, so many other useful aids to the Officer in charge of a navigational watch. So, as technology advances, as well the minds of people must and, not to stick in old ways of doing operations. They must also not rely solely on the information that they are been given by the instruments, but to be able to trust themselves and be confident enough to act accordingly, when the circumstances of the case permit.



Christian Erik Garin
2nd Officer
M/T Aegean Unity

MY OPINION: FORGET THE TRADITIONAL SEAMANSHIP

As technology advances, automation, digitalization and remote operation is evolving.

Now that the new age of seamanship has come, we have to adapt to the new technology that will help us doing our job in a smart way, not in the hard way.

For example: Navigation charts now in ENC format - updating is more easy and accessible, compared to the old days of the paper charts. When it is about safety and security, the response is faster and accurate.

Now that the technology is advancing rapidly, we must also upgrade our knowledge, so as not to stick our mind in the old traditional seamanship. We should implement and follow a modern seamanship pattern.



Matthaiou Alexandros
Master
M/T Aegean Nobility

MY OPINION: A BALANCE OF SKILLS AND PRACTICAL KNOWLEDGE IS NECESSARY FOR THE FUTURE OF SEAFARING

While technology and customization is reducing the need for manual labour, seamanship highlights significance of practical knowledge and expertise in navigating and operating ships. Being a seafarer is a distinctive and specialized profession, through a rising controversy about the emphasizing use of technology and automation which has caused deterioration in seamanship abilities among seafarers. While paperwork and administrative tasks are necessary, they do not represent the seafaring profession entirely. It also sparks questions about the seafaring future, chances that sailors will become less active in managing day-to-day operations of the vessels, as more jobs are automated and remote operations becoming widespread. The relevance of the traditional seamanship skills ensures, that seafarers are prepared for unexpected situations and maintain the "human element" in maritime operations, by handling adverse conditions ensuring the safety of their crew and vessel.

There is no doubt that automation, digitalization and remote operations are making great strides in the seafaring industry, but it would be a mistake to forget the traditional seamanship. The "human element" continues to be critical for the safe and efficient transportation of goods / cargoes around the globe. Traditional seamanship skills such as navigation, communication and teamwork are essential to deal with contingencies and ensure crew operates the ships safely. Rather than abandoning these skills, seafarers must adopt and develop new skills through training programs that integrate technological advances. This approach ensures that the seafaring profession remains competitive and relevant in the future.



Panagiotis Dermatas
Chief Officer
M/T Aegean Nobility

MY OPINION: FORGET THE TRADITIONAL SEAMANSHIP

Seafaring professionals must become familiar with new technology that is incorporating nowadays, since it has sophisticated systems such as automation, big data and artificial intelligence to remain competitive in the industry. Companies must develop and promote best practices, strengthening cooperation and integration between crews onboard ships, within the shipping industry and even between other industries.



Ioannis Tsermoulas
2nd Officer
M/T Aegean Nobility

MY OPINION: A BALANCE OF BOTH

The human element of the shipping industry remains indispensable, even as technological advancements continue to revolutionize the sector.

Seafarers are responsible for ensuring the safe and efficient transportations of goods and they play a critical role in maintaining the ship's equipment and complying with various regulations and protocols.

As the industry embraces new technologies, seafarers must adopt and acquire new skills and knowledge to operate and maintain them effectively.

To support seafarers in this regard, shipping companies must provide access to quality training and education programs, as well as encourage a culture of continuous learning and improvement.

By doing so, seafarers remain competent and motivated, thus contributing to the safe and efficient operation of ships.

The shipping industry is one of the oldest industries in the world and it has undergone significant transformations over the years. With technological advancements, the industry has become more efficient, reliable and safe.

However, the industry's progress should not overshadow the human element significance in the sector.

The importance of human element must be recognized and the necessary support must be provided to seafarers, to help them adapt to the changing technology and excel in their roles.

In order to reduce the paper load on board, digitization and automation of tasks will reduce the burden of paperwork, allowing seamen to focus on vital tasks that require a human touch. In addition, it is still important to improve the education and training of seafarers. A robust education and training program, aimed at developing these skills that help seafarers to better understand and promote the application of good practices.

Lastly, having a good mental health, will help a seafarer to cope with the emerging technology. Seafarers are very prone to stress, loneliness and depression. They must be given the necessary support to prevent burnout or worse. In the future, a comprehensive approach will be needed to promote the knowledge and abilities of everyone involved in seafaring. This involves providing both personal and technical skills that can guarantee the safety and welfare of seafarers. All seafarers must be digitally skilled, data driven and discerning to handle the changes in technology.



Georgios Chionidis
2nd Officer
M/T Aegean Nobility

MY OPINION: FOCUS ON SEAMANSHIP

With the automation and digitalization of the operation in the ships, seafarers work is fading from its roots and heading towards a more-papers, more-responsibilities, job. The concerning subject does not offend only the "way" that jobs are being completed, but also the people required for the job.

This means that, although the continuous and fast development of automation has its cons, by making work on-board vessels more safe, the manning of positions required will decrease in the following years, thus leaving a lot of mariners without a job?

Maritime companies should start focusing on the correct and proper training of the seafarers, instead of installing more technology and lessen the completion of papers, which a lot of times is proven unnecessary and more time spending for the crew.

Such trainings could be about work organization, on-board equipment operation, awareness of regulations, preparation for inspections, safe practices and good seamanship, in order to deliver a more efficient workplace and make life on board more proper for the crew and as much as possible happy.



Randy Oco
3rd Engineer
M/T Aegean Nobility

MY OPINION: FOCUS ON SEAMANSHIP

Nowadays, our daily life depends on using modern technology. Our work has been made easier, because of the computerized tools. Also in seamanship, almost every year we use to train over modern technology, on how to use it properly.

Seamanship is the art, knowledge and competence of operating a ship, the skill, techniques or practice of handling a ship or boat at sea.

There are differences between seamen before modern technology and seamen at present. Before, there were so many accidents like collisions, groundings, fires and pollution. Now we see less accidents, thanks to technology advancement. But for me, seamanship is using the resources that are available to you, to the best. Whether you're a seaman or not, whatever you have or you are doing in your life to that particular moment, you should "do your best" and that is what we call seamanship. Because "out at sea" there are very little and limited available means to help you, but you should make the best of it.



Giovanni Dolor
2nd Officer
M/T Aegean Nobility

MY OPINION: FOCUS ON SEAMANSHIP

Globalization has been around for decades and most industries, including shipping industry, are reaping the benefits. The employment of technologies, machines, automation, digitalization, and remote operation were some of the most major benefits brought forth by globalization. However, seamanship is dying and, we must take action.

As technology has altered our lives, this has an impact on all industries. When considering the future of maritime sector, it is not possible that automation, digitalization and remote operation will be even more transformational in the next generation. What about the so-called "human element"? According to the research, millions of jobs may be lost if the shipping industry will become increasingly automated, thus reducing the requirement for human resources in the transportation business.

Yes, technology is quite useful, but we must not overlook the value of the human touch in any work. Humans have the upper hand over machines, therefore seamen must deal with much more than just paperwork. Humans can investigate, ask questions and be receptive to new ideas and methods of operation. Humans are capable of empathy, which is required to connect with others and form meaningful connections. Human decision-making has the ability to transverse more open-ended settings. As a result, we must concentrate on seamanship and provide what is required to upskill and improve the capabilities of mariners.



John Michael Degoma
2nd Officer
M/T Aegean Myth

MY OPINION: FOCUS ON SEAMANSHIP

As part of the human element, we must admit that nowadays the load on paperwork is greater than before. As the word seamanship means, it is the art or skill of handling and navigating the ship. The paperwork is just additional tasks.

Focus in good seamanship shall always be our priority for the safety of the ship, the environment and to all the Officers/ crew working aboard the vessel, including its cargo and passengers. All the additional tasks shall be managed accordingly, so that seamanship will never be perished.

As the seamanship is evolving, my insight in this matter is that the traditional seamanship shall not be forgotten, instead it must remain as fundamental knowledge of all the seafarers. As automation, digitalization and remote operation is the future of shipping, all seafarers must be properly trained, knowledgeable and competent in every way, for the safe operation and handling of the ship.



Christodoulos Chalaris
2nd Officer
M/T Aegean Myth

MY OPINION: A BALANCE OF BOTH

Seamanship shouldn't be interpreted only within the literal sense of the word, which involves the practical art of operating a ship. It should be attributed to a wider meaning, which is a combination of experience, knowledge, professionalism, safety culture and performance ability onboard. It's worth also to mention that seamanship involves a knowledge on a variety of fields and development of specialized skills including but not limited to management, navigation, watchkeeping, ship's handling and more.

The degree of knowledge needed within these areas is dependent upon the nature of the work, rank and the type of vessel on which a mariner is employed. Seamanship is a compilation of the skills and knowledge entailed in navigation, maintenance and the law of the sea, so it is important not to forget from where the traditional seamanship starts.

Humans have a tenuous relationship with automation. On balance, we love it. It has made our lives easier. Along the way, automation equipped with artificial intelligence allowed us to eliminate human efforts all around. It is good to have automation in shipping industry, but we should not forget the traditional seamanship.



Jay L. Santacera
2nd Officer
M/T Aegean Power

MY OPINION: FOCUS ON SEAMANSHIP

The human factor is acknowledged as a crucial component of the safety of life on board ships and as one of the main causes of accidents in the shipping industry. By putting more emphasis on the human element, maritime safety and navigational safety can be improved.

At the moment, we seamen are mostly dealing with paper work, but we are nonetheless concentrating on seamanship. As we all know, seamanship is the art of operating a vessel. Specifically, it is the compilation of the skills and knowledge entailed in navigation, boat handling, maintenance and the law of the sea.

As we are living in a modern world, seamanship is evolving. The use of advanced, automated, digital technologies and remote operation have emerged. But remember: In the event that technology may fails, we will switch-back to traditional seamanship. We have ourselves and our colleagues to count on!



Georgios Gerasimos Kalomoiris
2nd Officer
M/T Aegean Power

MY OPINION: FOCUS ON SEAMANSHIP

It has repeatedly been observed that nowadays, seamanship on board tends to be extinct. If it is indeed so, one cannot help but wonder in what degree this has already taken place, which factor contributed and how severe are the related consequences for the shipping industry.

Seamanship is the art of operating a vessel. Specifically, is a compilation of skills and knowledge entailed in navigation, ship's handling, maintenance and the law of the sea. It involves every aspect of a ship, from being moored to the berth, to the navigation in open waters.

But how important is the term seamanship? In order to comprehend the gravity of the term, an attempt for an analysis can be performed. Seamanship shouldn't be interpreted only within the literal sense of the word, which involves the practical art of operating a ship. It should be attributed to a wider meaning which is a combination of experience, knowledge, professionalism, safety culture and performance ability onboard a vessel.



Georgios Katsaris
Apprentice Officer
M/T Aegean Power

MY OPINION: FORGET THE TRADITIONAL SEAMANSHIP

Seamanship is evolving and with it come new technologies, such as digitalization, automation and remote operation. These advancements can help to reduce the day-to-day administrative burden on the crew, ensuring they get enough rest, stay safe and healthy. Furthermore, autonomous navigation and collision avoidance systems can assist Officers during navigation, providing an added layer of safety.

At this point, it's important to note that although there are many projects underway for crewless vessels, I don't believe that we will see in the near future unmanned ships. As a profession, seafaring is undergoing profound changes, seafarers will need to be not just practical but also quite technical in terms of computing skill. Having an understanding of how software works, will become increasingly important for seafarers, as a lot of what is done manually now, will go digital in the near future. With regards to challenges, crews are going to get smaller on board as more automation happens, but I strongly believe new professions ashore will arise for seamen.



Nikolaos Karoutsos
Master
M/V Alfios

MY OPINION: A BALANCE OF BOTH

As an old-timer I should support seamanship, for the way ahead of the human element in shipping, as it is necessary, in order to work safely and efficiently.

On the other hand, we as Seamen, but also our profession and occupation onboard and ashore, should evolve along with the various challenges of automation, digitalization and remote operation, of our era.

But in fact, neither of them, alone, can bring us forward.

It's the correct combination of both, that will bring us forward in the challenging conditions of being a Seaman. Because, as we all know, autonomous ships may be already here, but without the human element, nothing can be done, yet.



Felipe Cabuhay
2nd Officer
M/V Agonistis

As of now, the shipping industry has undergone a tremendous change in recent years and the main topic that has a big impact to debate specifically in this industry is the future of the human element. Other people believe that we should focus on traditional seamanship while the other people argued that the future of this industry lies in automation, digitalization and remote operation.

The traditional approach to seamanship has been losing its prominence in recent years. Seamen spending more time to paperwork than on practical tasks. This has led to a decrease in the quality of seamanship, which is why some people believe that we must do something about it. They argue that we should focus on bringing back the traditional seamanship and providing more practical training to seamen.

On the other hand, some people believe that the future of seamanship lies in automation, digitalization and remote operation. They said that new technologies can help improve safety, efficiency, and environmental performance in the shipping industry. It can reduce the workload of seaman and improve the accuracy of operations, while digitalization can improve communication and reduce administrative work. Remote operation can help reduce the risks of human error and improve safety.

In conclusion, it is essential to strike a balance between traditional seamanship and the latest technological advancements, embracing technological innovations, while also valuing and preserving traditional seamanship.



Stavros Iosifidis
Master
M/V Intuition

MY OPINION: FORGET THE TRADITIONAL SEAMANSHIP

With the increasing digitalization and automation of shipping industry, the future seafarer must master new technology as well as good seamanship. The ships of the future are based on advanced technology at all levels and require different and more technically advanced knowledge and expertise than traditional shipping, be it on board and ashore.

Thanks to evolving global business landscapes, the shipping industry has become highly competitive. With international interests, changing international diplomacies and an increased demand, the production industry is no longer what it used to be a few years ago.

One of aforementioned modifications that has often been highlighted, is the reduction of paperwork in ship management and it is believed to 'be a need of the hour' and a want amongst those in the industry. IMO recognized the importance of reducing paperwork. This would involve the complete elimination of obsolete paperwork and a review on what paperwork is absolutely essential.

As a result, seafarers will focus on innovation and evolution of adoption in new systems, software, technologies that will all contribute to the most troubling issue nowadays, saving of energy.



Christopher F. Perez
Chief Officer
M/V Inception

MY OPINION: A BALANCE OF BOTH

Since Seamanship is truly revolving, we should really focus on the future but not entirely remove the traditional Seamanship. Seamanship is evolving with the application of Automation, Digitalization and Remote Operation, but in my opinion Seamanship is the art of operating a Vessel. Specifically it is a compilation of the skills and knowledge entailed in navigation, boat handling, maintenance and the law of the sea. It involves working as part of a crew and when the occasion arises, leading a crew in the role of skipper.

Seamanship involves every aspect of a boat, from being tied up to the dock to the operation into open waters. A Proficient Seaman creates a culture of awareness, safety and confidence in the crew and the operation of a vessel at all times. Seamanship involves Leading, Teaching, Managing, Navigating and Maintaining all aspects of the operation and activity aboard the vessel.



Christian Jay Ycot
2nd Engineer
M/V Inception

MY OPINION: A BALANCE OF BOTH

As being a part of the fast-evolving maritime industry, we must take into consideration about focusing on maintaining traditional seamanship. The safest strategy of coping with the task is through basic seamanship. It takes several steps of traditional seamanship to grasp and enhance your capability and that's why this should not be disregarded. Forgetting the traditional seamanship and focusing on the advancement of technology is one big factor for the shipowner's cost. It is very practical though costly, but it can lessen human error which is the biggest contributor of the accident. The timeframe of performing tasks will be shortened. In the other side of the seaman's professional life, it can disregard their skills and for sure in the future it will lead to minimize the number of manpower onboard. In either way, advantages and disadvantages are present in this issue. After all, it is still at shipowners' hand who makes the final call.



Pantelis Chrysanthis
Chief Engineer
M/V Anemos

MY OPINION: A BALANCE OF BOTH

Seamanship is a highly technical field that requires the mastery of various skills, including navigation, safety management and ship handling. One of the essential aspects of seamanship is paperwork, which involves the completion of various forms and documents necessary for compliance with regulations and the smooth operation of the ship. However, the handling of paperwork can be a challenging and time-consuming task and it is not uncommon for seafarers to feel overwhelmed by the sheer volume of documentation required. Fortunately, several solutions can ease the burden of paperwork in seamanship.

One option is to use digital tools such as software applications, designed to automate the paperwork process. These tools allow seafarers to complete forms and documents electronically, reducing the risk of errors and streamlining the paperwork process.

Another solution is to provide comprehensive training to seafarers on the proper handling of paperwork. Training can include instruction on the use of digital tools, as well as tips on how to organize paperwork, to make it more manageable.

Ultimately, effective seamanship requires a balance between technical skills and administrative duties. By implementing digital tools and providing proper training, seafarers can optimize their paperwork processes and devote more time and attention to the core aspects of seamanship.



Vasileios Tsakiris
Chief Officer
M/V Anemos

MY OPINION: FORGET THE TRADITIONAL SEAMANSHIP

As technology advances and the world becomes more interconnected, traditional seamanship practices are being challenged and transformed. While some aspects of seamanship will always be essential, such as navigation and safety, other aspects are evolving in exciting and innovative ways. One area where traditional seamanship is being replaced is in the use of technology. Advanced computer systems, satellite communication and automation, are transforming the way ships are operated and maintained. This is allowing for greater efficiency, improved safety and reduced environmental impact. Another area where traditional seamanship is being challenged is in the increasing emphasis on sustainability and environmental stewardship. New technologies are being developed that allow ships to operate with lower emissions and reduce the impact of human activities on the marine environment.

Finally, the changing nature of the global economy and trade is also impacting seamanship practices. New shipping routes are being developed and ports are being redesigned to accommodate larger vessels and changing cargo types. In conclusion, while traditional seamanship will always be an important foundation for maritime operations, the evolution of technology, sustainability and global trade is changing the way ships are operated and maintained. By embracing these changes and adapting to new practices, seafarers can continue to navigate the complex and challenging world of the open sea.



Stephen V. Cortes
2nd Officer
M/V Inception

MY OPINION: A BALANCE OF BOTH

It is true that automation, digitalization and remote operation are becoming increasingly prevalent in the maritime industry. However, traditional seamanship skills remain an essential component of safe and efficient operations at sea. While technology can provide valuable assistance and enhance the capabilities of crew members, it cannot replace the experience and expertise of skilled seafarers. Incorporating advance technology and automation into seamanship practices can certainly improve efficiency and safety, but it is important to recognize the limitations and potential risks associated with relying too heavily on these tools.

Furthermore, a solid foundation in traditional seamanship skills will enable crew members to adapt to changing technologies and navigate unexpected situations that may arise. Ultimately, the future of seamanship will involve a balance between traditional skills and emerging technologies, with a continued emphasis on safety and efficiency at sea.



Embracing ESG: The Path to Sustainable Shipping



Capt. Dimitrios Mattheou
Chief Executive Officer,
Arcadia Shipmanagement Co Ltd.



Introduction

In recent years, Environmental, Social, and Governance (ESG) factors have become increasingly important across industries worldwide. One sector that has faced significant scrutiny is shipping, given its substantial environmental impact and involvement in global trade. However, the shipping industry is now recognizing the need to adopt sustainable practices and integrate ESG principles into its operations. This article explores the significance of ESG in shipping and highlights the transformative potential it holds for the industry.

What is the regulation framework of ESG

ESG, which stands for Environmental, Social, and Governance, refers to a set of criteria used to assess the sustainability and ethical impact of an investment or business. While there is no singular regulatory framework specifically dedicated to ESG, several regulations and guidelines exist that touch upon various aspects of ESG considerations. These regulations are implemented at national, regional, and international levels. Here are some key elements of the regulatory framework related to ESG:

National Regulations: Many countries have introduced or are in the process of implementing regulations related to ESG. These regulations can vary significantly from one country to another. Some countries may require mandatory

reporting of ESG-related information by companies, while others may have voluntary frameworks or industry-specific guidelines. For example, the European Union has introduced the Sustainable Finance Disclosure Regulation (SFDR) and the Non-Financial Reporting Directive (NFRD), which aim to standardize ESG disclosure and reporting requirements.

Stock Exchange Requirements: Stock exchanges in various countries have implemented listing requirements related to ESG. These requirements may include disclosing ESG-related information, adhering to specific ESG reporting standards, or complying with sustainability-related guidelines. Examples include the Sustainability Reporting Guidelines issued by the London Stock Exchange and the Nasdaq Sustainable Bond Network.

International Guidelines: Several international organizations have issued guidelines and frameworks that promote ESG considerations. The United Nations Global Compact, for instance, provides principles for businesses to align their strategies and operations with universal principles on human rights, labor, environment, and anti-corruption. The Task Force on Climate-related Financial Disclosures (TCFD), established by the Financial Stability Board (FSB), has developed recommendations for consistent climate-related financial disclosures.

Stewardship Codes: Some countries have introduced stewardship codes that outline the responsibilities of

institutional investors in considering ESG factors. These codes encourage investors to engage with companies on ESG issues and exercise their voting rights. Examples include the UK Stewardship Code and the Japan Stewardship Code.

Fiduciary Duties: Regulatory bodies in various jurisdictions have emphasized the integration of ESG factors into fiduciary duties. This means that institutional investors, asset managers, and pension funds should consider material ESG risks and opportunities in their investment decision-making processes. These expectations help promote the long-term sustainability of investments.

It's important to note that the regulatory landscape for ESG is evolving rapidly, and new regulations and guidelines are being introduced regularly. Therefore, it's essential for businesses, investors, and other stakeholders to stay informed about the specific requirements and obligations in their respective jurisdictions.

What's the difference between ESG and sustainability?

ESG and sustainability are sometimes used inter-changeably, but there are some notable differences.

- Generally speaking, sustainability refers to a company's relationship to the environment, where ESG extends that relationship to social responsibility and corruption.
- ESG is an external investment framework, or a form of metrics, that helps companies communicate their initiatives and investors assess the company's performance and risk. On the other hand, sustainability is seen as an internal framework that guides the organization's capital investments. In other words, sustainability is the motivation, ESG is the reported outcome.
- Since ESG is a reporting framework, it is more relevant to publicly traded companies looking to attract and inform investors or any other business looking to attract financing.

What's the difference between ESG and CSR?

ESG aspires to be a set of disclosure standards that companies complete to communicate sustainability initiatives. Stakeholders, like investors, use ESG reports to screen their investments. Corporate social responsibility (CSR) is a business model where a company's activities enhance the world around them.

(E) Environmental Impact

The shipping industry has long been associated with high

levels of pollution and greenhouse gas emissions. It is responsible for approximately 2-3% of global CO2 emissions, contributing significantly to climate change. Additionally, maritime activities generate other forms of pollution, such as sulfur oxide (SOx) and nitrogen oxide (NOx) emissions, as well as the discharge of ballast water, which can harm marine ecosystems. However, the industry is now making strides to reduce its environmental impact through various initiatives. One of the key drivers of change is the International Maritime Organization's (IMO) strategy to reduce greenhouse gas emissions by at least 50% by 2050 compared to 2008 levels.

To address these environmental challenges, shipping companies are now embracing sustainable solutions. Adoption of cleaner fuels like liquefied natural gas (LNG) and biofuels, along with the implementation of energy-efficient technologies and practices, are reducing the industry's carbon footprint. The development of hybrid and electric vessels, as well as investments in renewable energy sources like wind propulsion, are promising steps toward decarbonizing the shipping industry. Furthermore, the adoption of cleaner technologies such as exhaust gas cleaning systems (scrubbers) and the use of shore power when berthed help reduce air pollution in port areas. Additionally, ballast water management systems are being implemented to prevent the introduction of invasive species into marine ecosystems. These environmental initiatives not only contribute to mitigating climate change but also align with regulatory requirements and enhance a company's ESG performance.

(S) Social Responsibility

ESG in shipping goes beyond environmental concerns and encompasses social factors as well.

The shipping industry heavily relies on seafarers, who face numerous challenges related to working conditions, mental health, and labor rights. Recognizing the importance of seafarers' welfare, shipping companies are increasingly taking steps to improve their social responsibility practices. Efforts are being made to ensure fair and decent working conditions, including proper training, competitive wages, and access to essential amenities on board. Companies are also addressing mental health concerns by implementing support programs and offering counseling services to seafarers.

Inclusivity and diversity are gaining prominence as well, with shipping companies actively promoting gender equality and providing equal opportunities for all individuals regardless of their background. Encouraging a diverse and inclusive workforce not only enhances the overall well-



being of seafarers but also fosters innovation, creativity, and resilience within the industry.

(G) Governance and Transparency

The "G" in ESG emphasizes the importance of good governance and transparency.

Sound governance practices are crucial in ensuring the responsible and sustainable operation of shipping companies. Transparent reporting and adherence to ethical standards are central to building trust among investors and stakeholders.

Companies are increasingly disclosing their environmental impact, sustainability goals, and progress towards meeting them. This allows stakeholders to evaluate the company's commitment to sustainable practices and hold them accountable for their actions.

Furthermore, robust governance frameworks within shipping companies promote ethical behavior and prevent corruption and bribery. Implementing comprehensive codes of conduct, whistleblower policies, and anti-corruption measures are essential steps towards improving governance practices and mitigating reputational risks.

In recent years, various frameworks and guidelines, such as the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB), have emerged to provide standardized ESG reporting. Adhering to these frameworks enables shipping companies to better assess and communicate their sustainability efforts, facilitating comparisons and benchmarking within the industry.

Benefits and Future Outlook

Embracing ESG in shipping brings numerous benefits. Firstly, it helps shipping companies mitigate risks associated with stricter regulations and potential reputational damage. As governments and international bodies increasingly focus on sustainability, businesses that proactively adopt ESG practices are better positioned to adapt and thrive.

Secondly, integrating ESG principles can drive innovation and efficiency in the shipping sector. Investments in cleaner technologies and alternative fuels not only reduce environmental impact but also enhance operational efficiency, potentially lowering costs in the long run.

Lastly, embracing sustainable practices improves the industry's public perception and attractiveness to investors. With the growing emphasis on responsible investment,

companies that demonstrate a commitment to ESG principles are more likely to access capital and secure partnerships with sustainability-focused stakeholders.

What is ESG reporting in the shipping industry?

In the maritime world, similar to other industries, ESG reporting covers topics such as recycling, greenhouse gas emissions, other pollutants to air, ecological impacts, business ethics, employee health and safety, as well as accident and safety management.

ESG reports and sustainability reports aim to disclose performance on parameters within all three areas that are important for the company's operation. The reporting serves to satisfy stakeholders' demands for transparency on corporate responsibility issues. It also conveys that the company has policies, initiatives and strategies in place to manage the ESG risks and opportunities.

How to successfully bring ESG reporting to life in shipping companies

Reporting relevant ESG data to stakeholders is a time-consuming and challenging task for many shipping companies these days. How do you show your stakeholders that you have control of your ESG risks, and how do you find the right KPIs and provide trustworthy data? Learn about effective ESG reporting in our interview.

ESG is not only about compliance. It is very much about creating trust in your stakeholders, particularly for cargo owners and charterers. The shipping companies need to control and report on their ESG performance. Regulators, banks, insurers and investors are focusing more and more on managing ESG risks, forcing the maritime industry to show that they have control of their ESG risk exposure.

Dialogues with stakeholders and an ESG materiality assessment help to fully develop that understanding. The focus questions to be elaborated are: What is important for the company and why? Once you know this, you can identify what is already managed in your existing processes and corporate culture and what adjustments or additional measures you need to establish. Then existing processes need to be mapped into the ESG context and determine what KPIs are relevant to show to the important ESG stakeholders.

Shipping is a heavily regulated industry. We have DCS and MRV reporting, we have SEEMP III plans, we have BWMC, MLC, safety management procedures and many more. This is an advantage when it comes to managing ESG risks. The

challenge is to link existing processes, performance and KPIs into an ESG context that shows how the processes help to manage identified ESG risk exposures. In many cases, this may require some adjustments to existing processes and procedures, but you do not need to start from scratch. IMO compliance regulations like BWMC, DCS/MRV, SEEMP III and CII contribute to the E, but also think of what actions already contribute to the social aspect (S) and how to best monitor them (G).

ESG performance data is becoming part of the financial and commercial processes in shipping. This puts additional requirements on the accuracy and trust in the data. Going forward, errors in the reported data can have negative financial and commercial implications. Data trust is important and verification of the most important ESG KPIs is becoming increasingly important. To avoid overburdening crew and shore personnel, data should be collected once and used multiple times for various stakeholders. The most obvious example is greenhouse gas emissions from vessels. Collecting and verifying vessel emission data on a daily basis creates the foundation for multiple stakeholder reporting including: Cargo owners: Sea Cargo Charter; contract performance (ref new BIMCO ETS and CII clause) - IMO DCS/CII performance - EU ETS and MRV plus other MRV reporting schemes (e.g. UK MRV) - Poseidon for insurance and bank stakeholders. However, in the coming years, sustainability reporting regulations like the EU's Corporate Sustainability Reporting Directive (CSRD) will require more structured sustainability reporting. The upcoming SEEMP III requirements also show how you are managing decarbonization risks. By putting a little extra effort into elaborating the energy efficiency management plan, preferably also looking beyond the required three years ahead, you will build trust in stakeholders such as cargo owners, shareholders, investors and banks. They want to understand how the company is prepared for the future. This can be a competitive advantage going forward.

What do ESG reports of a shipping company include

ESG (Environmental, Social, and Governance) reports of a shipping company typically include detailed information about the company's environmental impact, social initiatives, and corporate governance practices. Here are some common components you might find in an ESG report for a shipping company:

Environmental Performance:

Emissions: Details on greenhouse gas emissions, including carbon dioxide (CO₂), sulfur dioxide (SO₂), nitrogen oxides (NO_x), and particulate matter.

Energy Efficiency: Information on energy consumption and efficiency measures implemented to reduce fuel usage and emissions.

Alternative Fuels: If applicable, the company may highlight efforts to transition to cleaner fuels such as liquefied natural gas (LNG), biofuels, or hydrogen.

Waste Management: Discussion of waste reduction strategies, recycling efforts, and proper disposal of hazardous materials.

Biodiversity: If relevant, information on steps taken to protect marine ecosystems and minimize the impact on marine life.

Social Responsibility:

Employee Welfare: Details on initiatives related to employee health and safety, training and development programs, diversity and inclusion efforts, and labor rights.

Community Engagement: Information on the company's involvement in local communities, including partnerships with non-profit organizations, social projects, and philanthropic activities.

Supply Chain: Discussion of responsible sourcing practices, efforts to ensure fair labor standards and ethical conduct across the supply chain, and human rights considerations.

Governance and Ethics:

Board Structure: Information about the composition and independence of the company's board of directors, including diversity, expertise, and board committees.

Ethics and Compliance: Details on the company's code of conduct, anti-corruption policies, and measures to ensure compliance with relevant laws and regulations.

Risk Management: Discussion of the company's approach to identifying and managing risks, including environmental and social risks.

Transparency and Reporting: Information on the company's reporting practices, disclosure standards, and engagement with stakeholders.

It's important to note that the specific content and level of detail in an ESG report can vary between companies. Some companies may follow established reporting frameworks, such as the Global Reporting Initiative (GRI) or the Sustainability Accounting Standards Board (SASB), to provide standardized and comparable information.



DNV: Celebrating 30 years of ERS™ with a new service



Olga Karali
Regional Container Segment Director,
DNV Maritime



Rossen Panev
Principal Engineer ERS™,
DNV Maritime

Emergencies at sea strike unexpectedly and may involve risk to life, property, and the environment. In the initial hours of the incident, the timely and correct actions by the crew to control the ship could make the difference.

In June 2022, DNV's Emergency Response Service (ERS™) launched a new service for prediction of drift of disabled vessels and drifting assets. The new feature is an addition to the powerful toolbox of data-enhanced services within ERS™ supporting a fast and effective emergency response demonstrated across 741 maritime incidents over the past three decades.

The drift prediction feature of the ERS™ makes it possible to predict the trajectory of a disabled ship that may be drifting in the water, an oil spill migrating with the wind and waves or a floating object such as a person, life raft or container.

The ERS™ Duty Team can generate a predicted drift path using state-of-the-art digital tools to simulate global ocean conditions affecting wind, waves and currents. Depending on the local weather parameters, the predictions can be repeated or re-performed multiple times with adjusted frequency.

This gives shipping companies fast access to sufficiently accurate tracking data that enables them to identify possible hazards on the drift paths, to plan and act quickly for an effective response to control the risks, recover the drifting assets or conduct search-and-rescue operations within a short timeframe alone or together with local authorities.

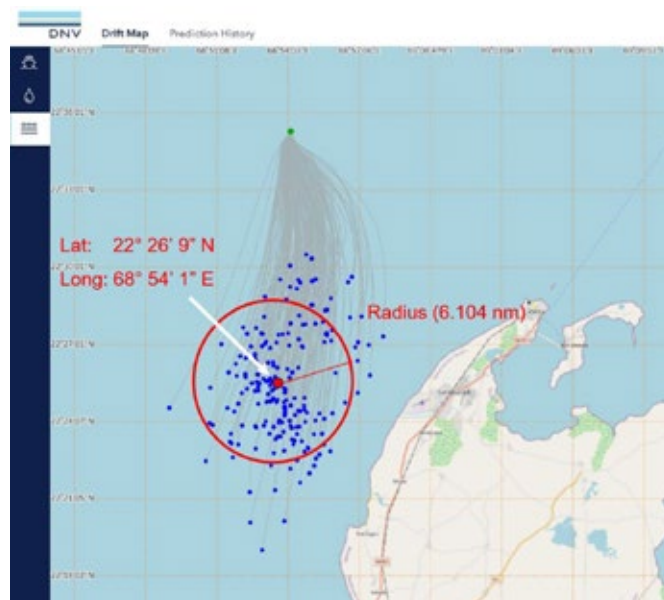
To-date, 1431 vessels from 220 companies have been subscribed to the service, with 30 companies of them being based in Greece. Non-DNV ERS™

vessels are also subscribed for drift prediction. Since the launch of the drift prediction service in June 2022, 4 real-time activations have taken place – 3 ship drifts and 1 man overboard, whereas 14 drills exclusively on drift prediction.

All vessels enrolled in DNV ERS™ after 01.06.2022 have drift prediction included in the scope. Those enrolled earlier can also have the service included in the scope on a request by the shipping company. Vessels not enrolled in DNV ERS™ can also be subscribed for drift prediction upon contracting, with only General Arrangement plan provided upfront.

How it works

Trajectory modelling is made as accurate as possible by combining global and local sources for forecasted wind, waves and currents.



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dnv.com/maritime





The ERST[™] drift prediction service employs state-of-the-art computer modelling based on the open-source software package OpenDrift.

This enables the ERST[™] Duty Team to perform the necessary simulations and generate a predicted drift path considering local environmental conditions.

Drift simulations are executed through a web-based service developed and hosted by MET Norway (the Norwegian Meteorological Institute) that combines forecasts for current, wind and wave conditions from local and global sources to provide accurate trajectory modelling.

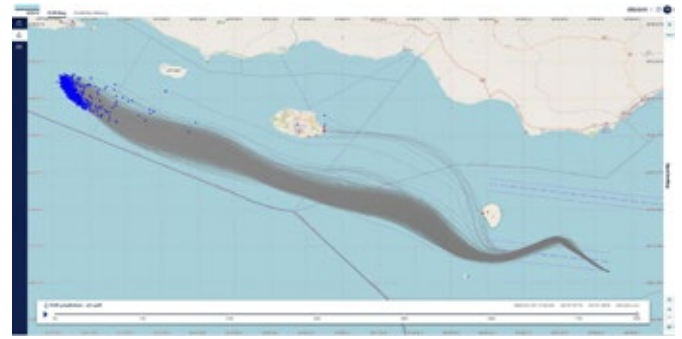
This allows fast generation of predicted drift trajectory data over a long period, giving stakeholders sufficient time to plan, react and mitigate, in contrast to slower and less accurate manual prediction methods that can delay decision-making.

ERST[™] already uses advanced 3D digital modelling for residual buoyancy, damage stability and strength calculations after an incident, generating more than 15,500 such computer ship models.

As part of the development of the drift prediction service, DNV has developed a numerical model to calculate drift velocities for disabled vessels in different sea conditions and generate an approximate drift trajectory to evaluate navigational hazards along the predicted path.

Similarly, the service provides oil spill drift simulation and an 'oil budget report' that estimates the volume of oil dispersed, evaporated or still on the surface over the simulated period.

The software can also generate drift path predictions for objects in the water, such as life rafts and persons in the water, to define the area for search-and-rescue operations, lost containers, smaller vessels and EPIRBs.



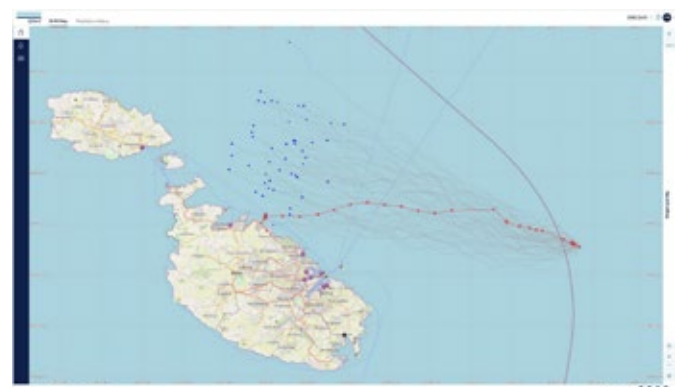
DNV ERST[™]: 30 years enhancing the safety of the most valuable assets

Driven by our purpose, to safeguard life, property, and the environment, DNV ERST[™] experts have been here since 1992 to help evaluate complex parameters and advise when safety margins are beyond the rules and requirements or when the crew may not have the necessary tools or needs to dedicate time to immediate incident handling.

Furthermore, after the initial emergency phase has been resolved, DNV experts support the crew and company shore-based staff with evaluation and proposal of favourable loading voyage conditions for obtaining class and flag state permission to transit in damaged condition to the repair facility and for appropriate docking.

The service is immediately available for pre-enrolled vessels of all types without class, flag, size, operational designation, and area restrictions.

ERST[™] started supporting 23 tankers and now counts more than 4,100 vessels of 30+ types enrolled in the service.





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ABS analyses potential of biofuel blending on improvement to CII ratings



Dionysis Antonopoulos
Director Business Development | ABS

With reporting of data in compliance with the IMO's Carbon Intensity Indicator (CII) regulation well underway, shipowners and operators are focussed on how to optimise their operations and gain improvement in CII ratings. The options include optimisation of vessel efficiency using energy efficiency technologies and the use of alternative and low carbon fuels. Full adoption of cleaner fuels is some years away but options exist for the transition period.

Analysis by ABS has concluded that drop-in biofuels have the potential to make a substantial improvement to a vessel's Carbon Intensity Indicator (CII) rating. The research concludes that blending with biofuels could improve a vessel's CII performance regardless of whether the vessel is powered by diesel, methanol or LNG, though diesel vessels see the most significant gains.

The CII establishes a downward trajectory measurement of a ship's carbon intensity, which is the amount of carbon emissions generated by a unit of transport work, equivalent to one nominal tonne of cargo carried over a nautical mile. The CII assigns an 'energy efficiency' rating to all ships (from A to E), based on the calculated carbon intensity.

Vessels in the D and E categories will have to demonstrate continuous improvement, moving progressively towards category C. Ships that spend three consecutive years in category D, or one year in category E will be subject to a mandatory review of the Ship Energy Efficiency Management Plan (SEEMP) and a plan of corrective actions must be made to achieve the Required Annual Operational CII.

The data produced by ABS is the result of an internal analysis conducted in advance of any potential change to the basis on which the IMO assesses emissions from merchant shipping. The current regime measures carbon emissions well-to-tank but there are discussions underway to change this to well-to-wake, accounting for the full lifecycle of emissions.

If the July meeting of the Marine Environment Protection Committee (MEPC) moves forward towards a lifecycle assessment (LCA) approach to emissions, the impact on demand for biofuels could be significant.

ABS worked with a group of Flag States to seek their views on biofuels as a sustainable marine fuel, when not subject to conflicts with food production. Based on the assumed use of biofuel from biogenic sources, the Flags agreed that the fuel could be categorised as 'sustainable'. Blending the biofuel with diesel and other fuels up to 30% would thus improve the overall carbon intensity and thus a ship's CII rating.

This improved rating was made on the basis of an exemption for the purposes of the research but should the IMO adopt a lifecycle approach to emissions accounting it could become a standard for fuel that is produced either from biogenic sources, renewable energy or includes a form of carbon recycling.

The ABS analysis suggests that a vessel propelled by heavy fuel oil could see its rating improved from D to A in 2023 with the addition of a 30% blend of biodiesel. Bio-methanol added at 30% would move a C-rated methanol-fueled vessel to an A rating today, and bio-methane at 30% would push an LNG-fueled vessel from a B rating to an A rating.

The advantage of biofuels to decarbonization extends to the supply chain and the bunkering infrastructure required for fuelling. Since biofuels are simple fuels of the same molecular structure, their cost is confined to the fuel itself rather than in any additional treatment, meaning they represent a compelling option once supply and regulatory questions are addressed.

The next issue for owners – common to all alternative fuels - is availability in sufficient quality to support CII compliance and ultimately a net zero carbon shipping industry. ABS expects there to be sufficient biofuel supply to meet current demand since the majority of energy majors have invested in producing sustainable biofuels.

Availability is increasing at the world's big bunkering hubs and is expected to increase further over time as demand signals from shipowners grow. However, the shipping industry must be in no doubt that it will experience competition, principally from the aviation industry, which is also eyeing the use of sustainable biofuels to lower its carbon emissions.

Nevertheless, drop-in biofuels are a powerful tool for shipowners and operators to accelerate fleet decarbonization and improve their CII trajectory today. ABS is involved in pilot projects on the application of biofuels that have shown us the significant potential of these fuels to contribute to reducing a vessel's tank-to-wake carbon intensity and transform its rating.

ABS has published a series of sustainability whitepapers focused on alternative fuels, breaking down the available options including their challenges and advantages, as well as other factors to take into consideration during the decision-making process.

The whitepaper 'Biofuels as Marine Fuel' focuses specifically on drop-in biofuels and can be downloaded from the ABS website.



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ENGINE DAMAGES and the CONSEQUENCES

by THE SWEDISH CLUB “Loss Prevention” Publications

Statistically a vessel will suffer between one and two incidences of main engine damage during its lifetime.

Sloppy maintenance, failing to follow manufacturers' instructions, poor fuel and lube oil management, lack of process or not following Company's and industry safety procedures, have resulted to the below presented real-life case studies. Often, a number of seemingly minor omissions will combine, to escalate an easily handled routine problem into an onboard crisis. Prevention of damage is, of course, preferable to cure. Almost all of the incidents would have been prevented, by a well implemented and properly applied management system. This can be easily achieved through proper training and education of the crew, providing them with the essential knowledge and experience required for ordinary daily work and maintenance according to Company procedures.

Quick facts

- Lubrication oil related failure is the most common cause of main engine damage and, a major contributing factor to auxiliary engine breakdowns.
- Vessels propelled by medium/high speed engines, have a claims frequency 2.5 times higher than slow speed engines.
- In comparison with other vessels insured by the Swedish Club, bulkers and tankers are the best performers with regard to main engine claims cost. The majority of these vessels have slow speed engines.
- Passenger vessels/ferries have the highest frequency of main engine claims – often these vessels have multiple medium speed engine installations.
- Approximately 50% of all auxiliary engine damage occurs immediately after maintenance work.
- Incorrect maintenance and wrongful repair are the most common causes of damage to auxiliary engines. In most cases, this is due to the incorrect assembly of vital engine parts, in connection with regular overhaul, in particular, the assembly of connecting rods, bearings and pistons.
- The most expensive type of main engine damage is on crank shaft and associated bearings, as spare parts are expensive and the repairs' labour intensive.

Case study 1

Poor fuel management and sloppy maintenance routines leads to salvage operation

Vessel: 22,400 GT bulk carrier
 Engine type: MAN B&W 5S42MC
 Repair cost: USD 1,450,000

The facts

A few days after bunkering, Engine crew noticed that vibration was coming from the #1 purifier. The purifier was shut down straight away as there were worries that there was an imbalance in the bowl and vessel changed to #2 purifier. Two months prior to this incident, during maintenance job at the purifier, it was noticed sludge and deposits inside, as well as a damaged seal ring. The Chief Engineer decided it didn't need replacing – he had a lot of experience, so it was left as it was.



A few days later, after isolating purifier #1, engine crew noticed vibration on #2 purifier. Supposing that this must also have been due to excess sludge, purifier #2 was shut down and opened for inspection. The seal ring was found damaged, but the spare available on board proved faulty and could not be used.

A day later, there were high exhaust temperatures on all the cylinders of the #2 diesel generator. Chief Engineer ordered the main engine load to be reduced and the diesel generator shut down. #1 diesel generator was started and put on the switchboard. A few hours later, a knocking noise was heard and a leak was coming from the #2 cylinder cover on the #1 diesel generator. As there were worries that the valves were misaligned, the diesel generator was shut down and the main engine stopped. The vessel remained drifting and only after 3 days the engineers managed to get one of the two diesel generators working again. #2 diesel generator started on marine gas oil by manually pushing in the fuel rack, however it couldn't get to run on the main switchboard, as it was shutting down. Finally, engineers managed to get the main engine running on HFO, by again forcing in the fuel rack manually and the vessel continued the voyage. Unfortunately, the main engine stopped after a while. The diesel generator was showing high exhaust gas temperatures, leading to total blackout. A salvage tug arrived and towed the vessel to the nearest port.

Technicians who arrived on board, requested to restart the purifiers. As expected, purifiers kept going into shut down. It was found that the seal rings were damaged and when the drain was opened, both water and oil came out. The inspected components from the main engine and the diesel generators showed wear, pitting and deposits on the valves and linings, proving that there was water and impurities in the fuel.

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The verdict

This damage is about poor fuel management, in combination with sloppy maintenance routines. The vessel, after bunkering, started burning the bunker as soon as the bunker test results were received. Although the fuel was within the ISO specification, it was challenging and needed careful onboard treatment before delivery to the engines.

The primary cause of the breakdown was failure of the purifiers. With both purifiers having damaged seals, it is highly probable that the impurities and water contained within the fuel oil were not removed, before being burnt by the main engine and diesel generators. Finally, the purifiers were stopped and the vessel continued to consume the fuel without any purification. As a result, the engines were not able fully to burn the fuel being fed and so, suffered overheating and internal damage.

Lessons learned

To consume untreated heavy fuel is never a good idea. With the fuel treatment system out of order, the engine crew should have immediately switched-over to marine gas oil, whilst the problem with the purifiers was rectified.

Another important aspect is the lack of spare parts on board and consumables, which hindered the engine crew in carrying out relatively simple repairs to the purifiers.

The effectiveness of the fuel oil treatment system, should be periodically verified, by analyzing fuel oil samples taken before and after treatment.

Case study 2

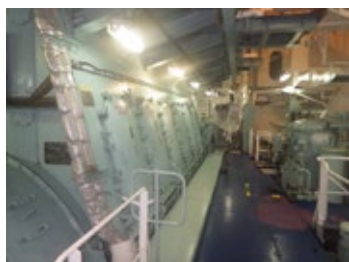
Forgotten rubber membrane seals caused lube oil contamination

Vessel: 30,000 GT chemical/oil tanker
 Engine type: MAN B&W 6S50MC-C
 Repair cost: USD 250,000

The facts

During overhaul work at anchor, a large amount of sea water entered the engine room bilge from the inert gas system overboard drain line. It was estimated this to be around 25 cubic meters.

After investigating the incident, it was found out that the inert gas system abnormality alarm had been disabled by a member of the engine room team, 10 days earlier, during Annual Survey. 3 bilge high level alarms had gone off, but because of all the confusion, with all of the alarms being tested, the duty Engineer simply didn't



notice them which further delayed our action to mitigate the consequence of the flooding.

There was so much water that it spilled over from the aft bilge well in the engine room compartment and filled the tank top area, which was under the main engine crankcase oil pan. The water had got into the main engine crankcase lubricating oil sump tank, as one of the seals in the crankcase oil outlet had been defective. This should never have happened – the crankcase oil outlet should be tight and only allow crankcase lubricating oil to drain from the main engine oil pan into the sump tank.

The contaminated lubricating oil was pumped out into a storage tank. The main engine crankcase was cleaned, as well as the lubricating oil sump tank, to remove the contaminated lubricating oil and any sea water and a fresh charge of crankcase lubricating oil was added. As the main engine was not running at the time of the incident, it was believed that contaminating the whole engine with sea water had been avoided. Later was found out that the oil lubrication pump had been in operation and, sea water had contaminated the engine lube oil system.

A few days later, an oil sample by the onboard test-kit indicated some water in the lube oil. After checking of bearings and journals, light corrosion was found, which led to renewal of the #1 and #2 lower cross head bearing shells, which they were damaged due to corrosion.

The verdict

The flooding of the engine room did not cause any direct damage. Typically, there will be water on the tank top in the engine room when a major sea water pipe starts leaking, a valve is mistakenly operated or when a vessel is under repair at a shipyard and bilge cannot be disposed of. What really caused the problem, was the defective rubber membrane seals between the engine crank case and the lubrication sump oil tank below the engine. In most occurrences the water ingress into the lube oil sump tank is not noticed and the engine is operated with contaminated lubrication oil. Usually, cross head and main bearings are damaged by means of wear and corrosion and need replacement.

Lessons learned

- It is important to ensure that engine room alarm system is working 100%.
- The rubber membrane seals should be checked and replaced every five years in connection with the vessel's special survey.
- Manufacturer's instructions must be strictly adhered to and service instructions should be incorporated into the PMS.
- Engine cleanliness is of key importance, preventing costly engine damage, maximizing time between overhaul and contributing to improved engine performance by sealing of combustion space.



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ESG Award - Arcadia Shipmanagement Co Ltd

Arcadia Shipmanagement Co Ltd was awarded with the ESG Award in the category of Health & Safety on Tuesday, May 30th at the prestigious award ceremony of the ESG Shipping Awards that took place at Megaron Concert Hall.

Capt Dimitrios Mattheou, CEO of Arcadia Shipmanagement Co Ltd stated that:

"On behalf of Arcadia Shipmanagement, I am delighted to extend my heartfelt congratulations to each and every member of our remarkable team in Arcadia Shipmanagement on receiving the prestigious ESG (Environmental, Social, and Governance) Shipping Award for our outstanding commitment to the health and safety of our shipping operations. This incredible accomplishment is a testament to our unwavering dedication and the remarkable strides we have taken in creating a safer and healthier workplace for our employees and the environment. This award belongs to all of us in Arcadia Shipmanagement, as it is the collective result of our joint efforts, collaboration, and shared vision. Our commitment to excellence and our passion for creating a safe and sustainable future are the driving forces behind this remarkable achievement.

Let us celebrate this milestone together as we continue to strive for excellence in all aspects of our operations. This award serves as a powerful reminder of our responsibility to safeguard the health and safety of our employees, uphold the highest ethical standards, and protect our planet for future generations.

From the comprehensive training programs designed to empower our crew members with the knowledge and skills to mitigate risks, to the meticulous implementation of safety protocols and the continuous improvement initiatives we have undertaken, we have left no stone unturned in ensuring a safe and secure working environment for everyone involved.

Furthermore, our commitment to environmental sustainability has played a vital role in this achievement. By employing innovative technologies, optimizing our shipping practices, and adopting eco-friendly measures, we have made significant strides in reducing our ecological footprint while safeguarding the delicate ecosystems we operate in. Our conscious efforts have not only protected the environment but have also set new benchmarks for sustainable shipping practices in the industry."







Embracing Our Seafarers: The Unsung Heroes of Global Trade



Capt. Dimitrios Mattheou
Chief Executive Officer,
Arcadia Shipmanagement Co Ltd.

In our fast-paced, globalized world, the economic system spins continuously on the axis of supply and demand. The goods we consume, the materials used in manufacturing, and countless products essential to our daily lives travel thousands of miles before they reach us. In this vast network of trade, seafarers stand as the invisible link that holds it all together.

On this Day of the Seafarer, celebrated on June 25th, 2023, we honor and appreciate the critical role they play in maintaining the world's economy. The International Maritime Organization (IMO) set aside this special day to spotlight the often overlooked yet crucial contributions of seafarers to our world.

This year's theme, «Seafarers at the heart of sustainability,» aptly encapsulates their pivotal role in steering the shipping industry towards a sustainable future. Seafarers are the lifeblood of our company and the shipping industry at large.

The challenges they face are unique and oftentimes daunting – from battling treacherous seas and enduring prolonged isolation, to operating complex machinery and ensuring the secure transportation of vital cargo.

Despite these hurdles, they soldier on, proving their mettle time and again. In an era where sustainability takes center stage, the maritime industry has made substantial strides in reducing its environmental footprint.

This effort is spearheaded by our seafarers, who are at the forefront of implementing green technologies, ensuring energy-efficient operations, and adhering to stringent pollution prevention measures. Their commitment is unwavering, their service priceless.

The COVID-19 pandemic further underscored their importance.

Amid border closures and stringent regulations, seafarers ensured that

vital goods – food, medical supplies, and other essentials – reached their destinations. They stood as the global economy's backbone during one of the most challenging periods in recent history. To our seafarers, we express our deepest gratitude.

As we mark the 2023 Day of the Seafarer, we must not only appreciate but also ensure the welfare of these brave men and women. As an industry, we need to address their mental health concerns, improve their working conditions, and provide opportunities for growth and development. Our commitment to sustainability extends not just to the environment but to the very individuals who keep the wheels of global commerce turning. As the CEO of Arcadia Shipmanagement, I pledge our continued support for seafarers' welfare and our determination to create an industry that recognizes and rewards their tireless efforts.

We will continue our endeavors to make the shipping industry more resilient, sustainable, and, most importantly, humane. On this Day of the Seafarer, let's renew our collective commitment to these individuals who form the bedrock of our industry. Let's extend our gratitude to our seafarers, the unsung heroes of global trade, for their relentless service and dedication. As we forge ahead in uncertain times, their contribution remains our guiding light, reminding us that even the longest of journeys begin with a single step and a committed soul at the helm.

Let's join hands and work towards a future where their service is not taken for granted, but celebrated and respected, for it is their dedication that keeps the world moving.

Happy Day of the Seafarer, 2023!



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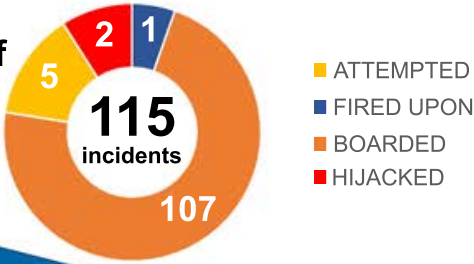
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IMB PIRACY REPORT JANUARY - DECEMBER 2022

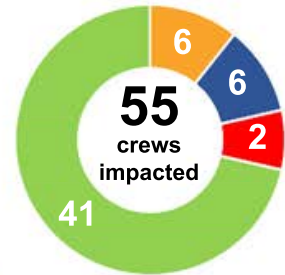


Number of incidents reported:



Impact on crew:

- ASSAULTED
- THREATENED
- HOSTAGE
- KIDNAPPED



Gulf of Guinea

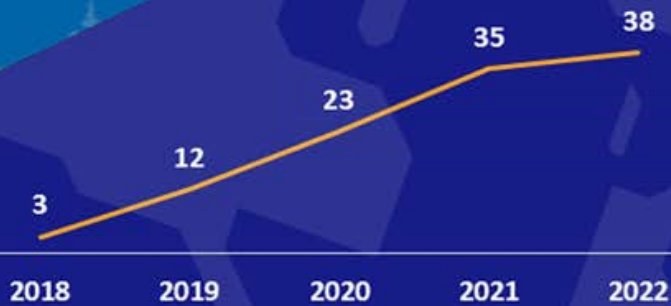
Total number of reported incidents comparison:



95%
OF VESSELS ATTACKED
WERE BOARDED

The **IMB Piracy Reporting Centre** commends the efforts of the coastal authorities of the Gulf of Guinea and encourages the **regional cooperations** to continue their engagement with all best efforts to sustain maritime security in the region.

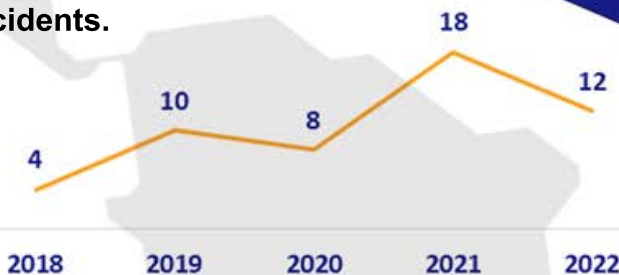
Singapore Straits Reported incidents



Perpetrators successfully boarded **all 38 vessels**.
Four crew taken **hostage** and two **threatened**.
Weapons reported in **19 incidents**.

Callao Anchorage

Welcomed decline in reported incidents.



Weapons reported in five incidents.

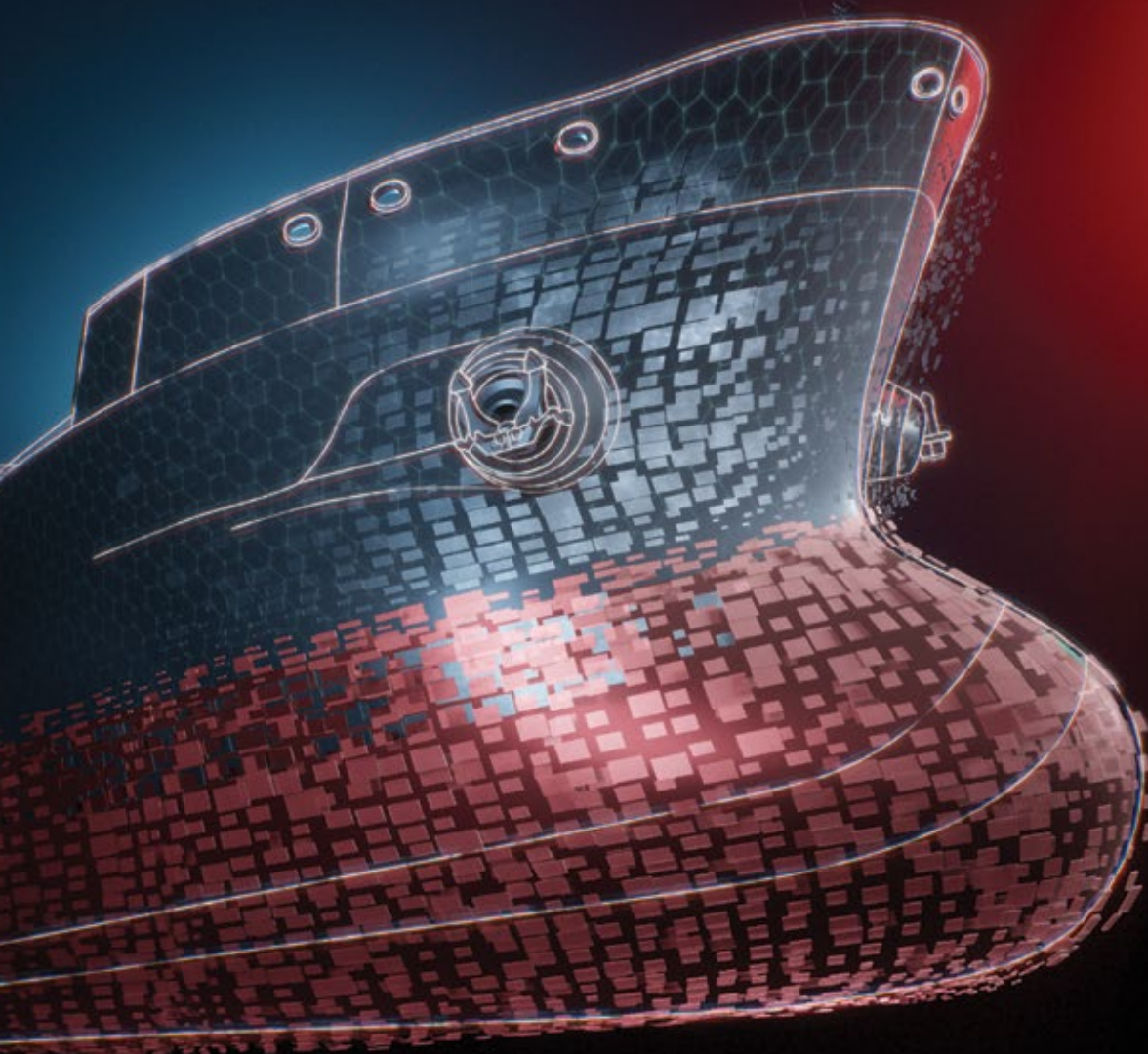
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Planes, Shipping Lanes, and Automobiles: Surprising Ways Climate Change Can Affect Transportation

The effects of global climate change are broad and impact everyone, as well as Earth's natural systems.

Much has been written about the major impacts of climate change. Effects such as rising global surface temperatures, higher sea levels, longer and more intense heat waves, melting glaciers and ice sheets, polar sea ice loss, extreme weather and climate events, and impacts on animal habitats are well-documented and in the news regularly. In this new NASA Climate feature series, we're examining some of the lesser-known, and often surprising, ways Earth's changing climate is affecting our world.



*Shadow image of a plane flying at sunset. Climate change may make future airline flights bumpier.
Credit: Photo by Pixabay from Pexels (CC0 1.0)*

Before the Industrial Revolution, human travels had little impact on Earth's climate. That changed once we began burning fossil fuels to power trains, boats, cars, trucks, and planes.





Today, transportation generates about a fourth of global carbon dioxide emissions, second only to the electric power sector.

Climate change is affecting transportation in major ways, such as the ongoing shift to zero-emissions automobiles. But some of the impacts of climate on transportation are less obvious. Here are a few.

Bumpier Skies

Climate change may strengthen vertical wind shear in jet streams, increasing aircraft turbulence. Jet streams are fast-moving belts of wind that travel around the planet in wavy, meandering paths.

In this animation depicting a global view of polar and subtropical jet streams, faster winds are colored red; slower winds are colored blue. Running from June 10 to July 8 of 1988, the visualization below uses weather and climate observations from NASA's Modern Era Retrospective-Analysis

Intensity	Symbol	Aircraft Reaction	Reaction Inside Aircraft
Light		Momentarily causes slight, erratic changes in altitude and/or attitude (pitch, roll, yaw).	Occupants may feel a slight strain against seat belts or shoulder straps. Unsecured objects may be displaced slightly. Food service may be conducted and little or no difficulty is encountered in walking.
Moderate		Changes in altitude and/or attitude occur but the aircraft remains in positive control at all times. It usually causes variations in indicated airspeed.	Occupants feel definite strains against seat belts or shoulder straps. Unsecured objects are dislodged. Food service and walking are difficult.
Severe		Causes large, abrupt changes in altitude and/or attitude. It usually causes large variations in indicated airspeed. Aircraft may be momentarily out of control.	Occupants are forced violently against seat belts or shoulder straps. Unsecured objects are tossed about. Food Service and walking are impossible.
Extreme		Aircraft is violently tossed about and is practically impossible to control. It may cause structural damage.	

Chop is a category of turbulence which causes rapid and somewhat rhythmic bumpiness without appreciable changes in altitude or attitude. May be reported as light chop or moderate chop.

*Aircraft turbulence intensifies range from light to extreme.
Credit: National Oceanic and Atmospheric Administration/National Weather Service*

for Research and Applications (MERRA) dataset to model nearly a month of the jet stream’s whirling journey over North America.

Our changing atmosphere may make future airline flights bumpier by strengthening vertical wind shear in jet streams. Jet streams are fast-moving belts of wind that travel around the planet in wavy, meandering paths in the upper parts of the atmosphere. Aviators often use or avoid them to increase the efficiency of their flights.

Vertical wind shear creates irregular air motions called turbulence, which is a significant and costly issue for airlines, resulting in injuries, damaged aircraft, delayed flights, and inspections and investigations.

Sometimes bumpy flights happen without significant cloudiness or thunderstorms. This phenomenon is known as “clear-air turbulence.” British atmospheric scientist Paul Williams of the Uni-

versity of Reading studies clear-air turbulence. Among his findings:

- By 2050, the frequency of reported clear-air turbulence is expected to double, and the average strength of turbulence is expected to increase by 10 to 40%.
- Severe turbulence at typical airplane cruising altitudes could become two to three times more common. This will impact airspace over large regions of the Northern Hemisphere.

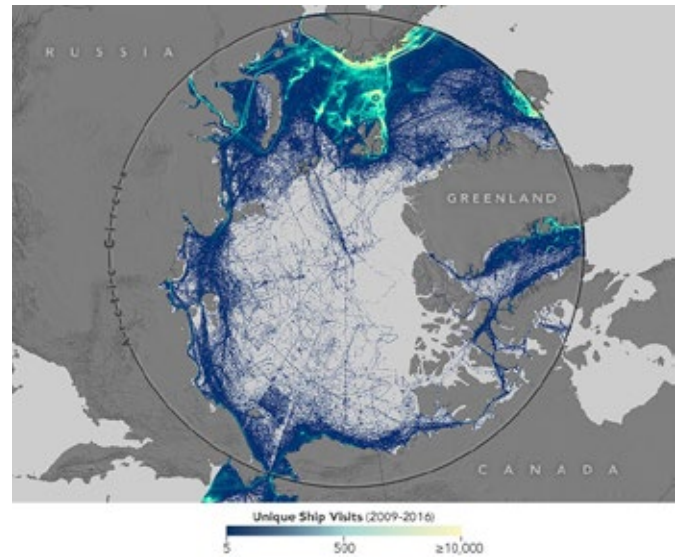
NASA develops technologies to improve aviation efficiency and maintain safety. Researchers at NASA’s Langley Research Center recently designed a special infrasound microphone that can “hear” ultralow frequencies generated by turbulence. This technology was tested on an uncrewed stratospheric glider called HiDRON. Climate change can also make it harder for aircraft to take off. As temperatures rise, air becomes less dense, so planes have a harder



Researchers at NASA's Langley Research Center designed a special infrasound microphone that could pick up the ultralow frequencies generated by turbulence in the skies. This technology is being tested on the Stratodynamics HiDRON glider for both turbulence detection and aeronautical research. Credit: NASA

time generating the lift they need to become airborne. Because of this, some aircraft runways may not be long enough for certain planes to take off. It also might force aircraft operators to reduce the takeoff weight of planes and helicopters.

Arctic Travel Gets Both Safer and More Dangerous

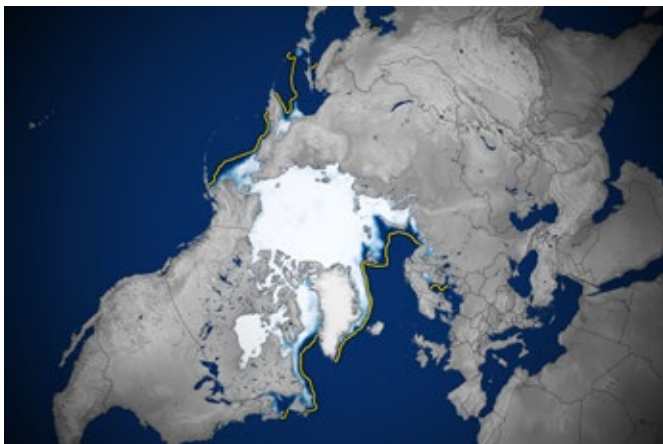


This map shows unique ship visits to Arctic waters between September 1, 2009, and December 31, 2016. Dots and lines represent the locations of ships as transmitted by shipboard beacons to satellite receivers.

The denser and brighter the coloring of the dots, the greater the number of distinct ship transits reported in that region, with bright yellow and green representing areas with the highest traffic. Over the seven-year span, the mean center of shipping activity moved 300 kilometers north and east—closer to the North Pole. Credit: Greg Fiske, Woods Hole Research Center.

One of its most significant changes to the planet is the continuing decline of Arctic sea ice. Over the past 40 years, the amount of ice cover

Map showing the extent of Arctic sea ice on March 6, 2023, the day of its annual maximum. This year's end-of-winter extent was the fifth lowest in the satellite record maintained by the National Snow and Ice Data Center. Arctic sea ice extent peaked at 14.62 million square kilometers (5.64 million square miles), a total area that is roughly 1.03 million square kilometers (398,000 square miles) below the 1981–2010 average maximum. Compared to the average maximum, the Arctic Ocean in winter 2023 was missing an area of ice equivalent to the states of Texas and Arizona combined. The yellow outline shows the median sea ice extent for February from 1981–2010. A median is the middle value; that is, half of the extents were larger than the yellow line and half were smaller. Credit: NASA Earth Observatory, using data from the National Snow and Ice Data Center





at both the annual maximum and minimum has shrunk, and the percentage of thick ice that survives from year to year has also dropped.

As reported in 2018, this has opened the Arctic to new commerce opportunities, but also to serious environmental concerns. At the center of both lies the shipping industry.

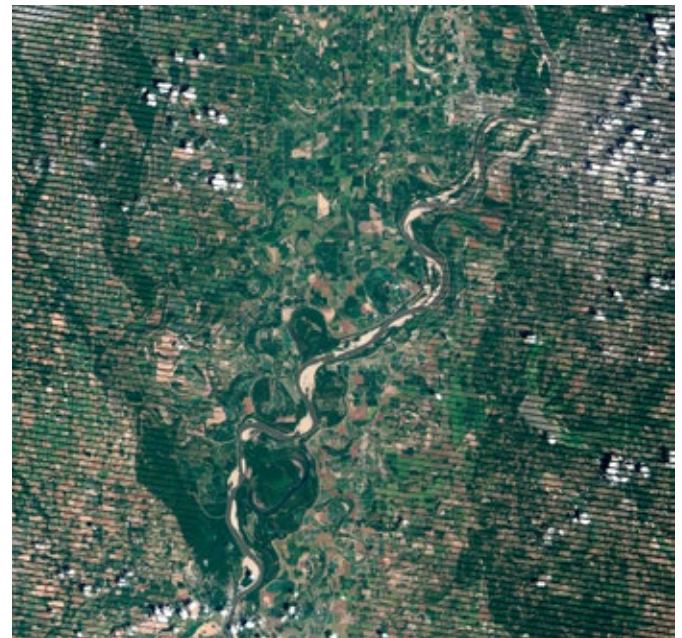
On the positive side, reduced sea ice cover is increasingly allowing ships to sail across the Arctic Ocean without support from icebreaker ships. This can significantly shorten travel times between Asia, Europe, and North America. As a result, many nations are preparing for more Arctic shipping.

There are also negatives. Scientists and environmentalists worry more shipping activity will increase pollution and oil spills and disturb marine life. And ships are still encountering plenty of ice as they sail closer to the North Pole and in waters that are not well charted. Increased exploration and tourism also mean search-and-rescue operations become more challenging for the U.S. and Canadian coast guards. Finally, some traditional travel routes over the sea ice (used by snowmobiles, trucks, and other vehicles) could become unsafe as the ice thins.

*Inuit and other indigenous peoples of the Arctic travel the sea ice by snow machine and by dog team.
Credit: Shari Fox, National Snow and Ice Data Center*



(Not) Rollin' on the River



Landsat 7 captured this image of the Mississippi River just south of Memphis, Tennessee, on August 8, 2012. In August 2012, water was several feet below the historic normal stage for Memphis, and many sandbars were newly exposed or greatly expanded.

As of August 17, 2012, river gauges in the Memphis region recorded levels at -2.4 to -8.3 feet (below historic normal stage).

Credit: NASA Earth Observatory, using Landsat data provided by the United States Geological Survey.

Climate change is expected to increase the frequency and/or intensity of droughts and floods, so the impacts on water levels in rivers and reservoirs may become more severe and erratic.

The impacts on shipping cargo by boat could be significant. Water levels can drop such that rivers can become too shallow to navigate, and some ships may have to carry less cargo to safely navigate a river. In the United States, cargo transport along the Mississippi River has been impacted in recent years.

For example, low water in 2012 closed an 11-mile stretch of the Mississippi River near Memphis. Such closures have a big economic impact along the river.



Shipping Safety Guidelines

Safe navigation and efficient merchant vessel management depend on many factors that should function as a whole.

This can only be achieved if we ensure that ships are properly designed, constructed and operated, recognizing the value of human factor on all stages.



The human factor is applied throughout the chain of activities undertaken by the crew on board, land-based staff of the managing company, the shipyard where the ship is built, the legislators and others. All of the above must work together harmoniously, so that the best result can be achieved.

The Hellenic Marine Environment Protection Association, known as HELMEPA, founded in 1982 in Piraeus by Greek seafarers and shipowners who signed the Declaration of Voluntary Commitment titled "To Save the Seas", has since highlighted the need for continuous education regarding the human factor, placing it at the heart of the effort to prevent pollution and promote safety at sea. This initiative took place at a time when emphasis was given only to the construction and equipment of the ships as well as to policing and enforcement.

International regulations on the safety of maritime operations and human life at sea are issued by the International Maritime Organization (IMO). SOLAS (International Convention for the Safety of Life at Sea) is the cornerstone of international legislation on maritime safety and in its current form was adopted by IMO in 1974.

Since then, it has been subject to regular amendments and additions that constantly update and enrich, enhance and tighten the constructional, technological and operational safety standards for ships and the regulations for the protection of people on board. IMO has also developed and adopted International Conventions and Codes for the prevention of collisions, training, certification and labor conditions of seafarers, search and rescue at sea, facilitation of marine traffic, load lines, transport of dangerous goods, etc.

Maritime accidents are usually the result of a combination of several factors that can range from purely technical causes and failures (e.g. mechanical failures) to more

complex issues related to the environment or people. In almost all cases, the human factor contributes to a greater or lesser degree, entering into the full range of activities related to the management and operation of the ship. The majority of accidents could have been avoided if the understanding, perception, actions and behaviors of the people involved in the incident were different and this

has to do not only with seafarers but with people from all positions and hierarchy levels in the wider maritime transportation system, whose decisions and actions can have a serious impact on the operation of the vessel.

Recognizing this fact, IMO described in 1997 in Resolution A.850(20) its vision, principles and objectives in relation to the human element, while having already adopted in 1993 the International Safety Management Code (ISM Code), which in combination with its implementation guidelines, establishes a mandatory international standard for the safe management and operation of ships by means of the composition and implementation of a Safety Management System (SMS) for the shipping company. The effective implementation of the above, with all the revisions and changes that have been made along the way, has since been a fundamental requirement and demand in the shipping industry, aiming to minimize accidents and their impact on human life and the environment, as well as financial loss.

Modern approaches in safety, accident investigation and Safety Management Systems do not target individuals and their mistakes, shortcomings or weaknesses but focus primarily on identifying and addressing those systemic weaknesses and shortcomings that give room to human error in a way that can lead to painful consequences. At an individual level, a constant goal remains the high-quality education and training, along with a balanced development of the technical as well as the equally essential non-technical skills (the so-called soft skills) and a move away from the traditional culture of "unthinking" compliance with external rules towards a culture of "thinking" self-regulation and compliance. It is about fostering and adopting a genuine safety culture, according to which every person, from the top to the bottom of the hierarchy, is "self-regulated", feeling responsible for the actions she/he takes, aiming to protect and improve both her/his own and her/his colleague's safety. This is essentially the

“commitment from the top” that HELMEPA’s Founding Declaration of 1982 refers to as the “voluntary commitment of all, from shipowner to the last seafarer”.

Safety instructions to prevent accidents on board

This section summarizes some basic tips to avoid accidents on board, which mainly refer to the following two sources:

a) The British Coast Guard MGN 520 (M) document (Maritime and Coastguard Agency – MCA) titled “The Deadly Dozen – 12 Significant People Factors in Maritime Safety”, which, by utilizing knowledge and experience from the aviation field, highlights, describes and explains the main factors related to human condition or behavior, which can be the cause of errors and maritime accidents. The effective management of these factors in accordance with the instructions and advice provided in the document can make a decisive contribution to the prevention of serious accidents and to a drastic improvement of maritime safety.

b) The document Golden Safety Rules to ensure zero accidents and healthy work, a recent result of the Together in Safety initiative, launched in 2018 by leading shipping bodies and organizations, which includes some basic rules and practices concerning hazardous work or situations at sea. Compliance with these rules has shown to lead to a dramatic reduction in deaths and injuries from accidents at work in shipping and related industries.

A) Human behavior

We take care at all times to have a perception and correct understanding of the situation we are in (situational awareness), in other words to understand what is really happening and evaluate how this can affect our voyage at the moment and in the near future! Incomplete or incorrect understanding of the circumstances has often led to accidents and is commonly due to lack of correct information, situations changing too quickly to be understood, lack of experience, distraction, fatigue and complacency.

ALWAYS:

- Plan carefully and know what and how you do something before doing it, making sure procedures and checklists are up to date and suitable for current conditions.
- Be vigilant, check for potential problems and ALERT IN

TIME the appropriate member of the team if you notice something that has escaped the attention of others.

- Advise and help your team members and do not hesitate to ask for advice, information and help, making sure you communicate with them effectively.

NEVER:

- Assume that everything is going well or the way someone else will act
- Ignore a problem or skip something you do not understand, carrying on regardless without checking further.
- Put someone in a position/situation that they cannot cope with.

Be Aware!

It is essential that we do not hesitate to speak out or express our concerns to the team, even to our superiors, about an unnoticed problem, actions or behaviors that we consider to put safety at risk. Objections or remarks should be communicated in an assertive and constructive manner and be accompanied, whenever possible, by counter-suggestions or possible solutions.

Companies and Masters should create a cooperation atmosphere, where people are encouraged to speak out and intervene when they believe it is necessary and are at the same time receptive to remarks and warnings made by others!

During our communication we ensure that the messages and information exchanged are fully, clearly and correctly understood and that all people involved share the same understanding!

Problematic communication is often among the factors contributing to marine accidents and can be caused by many factors, such as: a) different mother tongues or idioms, b) different language skill levels, c) cultural differences (e.g. different meaning of non-verbal communication elements such as gestures or other body movements, different sense of humor, etc.), d) stressful situations (e.g. people tend to speak faster, louder and less clearly or even return to their mother tongue in emergencies) etc.

ALWAYS:

- Try to use simple words and phrases and repeat the most important parts of a message.



- Pay attention to your pronunciation and ask for confirmation if in doubt that you have not been understood.
- Talk with your colleagues and try to understand the different cultures, taboos, etc. to prevent possible unintentional misunderstandings and insults.

NEVER:

- Assume a message is always properly understood – CHECK!
- Use slang or colloquialisms that you are not sure are understood by everyone.
- Assume something that is acceptable in your culture will automatically be acceptable in another.

Be Aware!

It is beneficial for companies to evaluate the communication skills of their prospective crews and incorporate communication and culture issues into their familiarization programs for new staff as well as ensure, in collaboration with the Master, that they continually cultivate the skills of all crew members in the use of the commonly agreed working language on board.

Complacency, i.e. the belief without a second thought (and control) that everything is okay because it looks okay, is an easy and at the same time very dangerous trap that we must all take care to avoid when performing our duties!

There are many possible reasons why everyone is more or less prone to complacency, such as: a) repetition of tasks, or otherwise work routine, b) insufficient monitoring / control of the conditions, c) inability to perceive a change or problem in time due to lack of experience or knowledge, d) poor teamwork (e.g. lack of information during the shift change, problematic communication, etc.), e) fatigue, etc.

ALWAYS:

- Make sure to be alert, have an understanding of the current situation and keep your eyes open for possible problems!
- Use checklists carefully and not mechanically.
- Share with your team all important information (e.g. at the beginning and end of a shift) and ask for help when you feel you need it or have insufficient understanding of a situation.

NEVER:

- Ignore the procedures, even if you have repeated them many times. There is a reason they exist!
- Assume and expect that everything is okay and under control just because it always has been in the past or it has been a long time since it went wrong!

Formal procedures and practices (i.e. the ones recorded in the Safety Management System) have been developed to ensure that work is performed correctly, in accordance with regulations and safety. Deviation from these procedures for reasons of "convenience", "brevity", etc. is very likely to lead to a significant reduction in safety and quality standards and may turn out particularly dangerous! Violations or short cuts in formal practices can occur for a number of reasons, such as: a) the procedures themselves are unclear or difficult and non-practical in their implementation, b) the required equipment is not available or operational, c) insufficient training and supervision, d) poor mentality and indifference to safety issues or lack of awareness of the risk involved in some choices, e) lack of time or human resources, etc.

ALWAYS:

- Follow the appropriate procedures and practices.
- Check the effectiveness of the procedures in a critical manner, report difficulties and problems that arise during their implementation and seek improvement.

NEVER:

- Cut down procedures or take risks for reasons of convenience or speed.
- Overlook problematic areas and difficulties in documented practices – REPORT THEM!
- Start or attempt something if you are not sufficiently trained and supervised, especially if you do not have the necessary experience.
- Accept / tolerate the violation of procedures by your colleagues.

Be Aware!

It is beneficial for companies and Masters to involve crews in the development of working procedures and practices and review them regularly and effectively, drawing on the experience of the people who apply them and ensuring proper training and supervision of the latter. It is

IMPOSSIBLE to develop written procedures that cover all eventualities!

Seafarers are very likely to face unprecedented and unpredictable situations at some point, therefore their adequate training and experience, effective teamwork and support from shore-based experts is of the utmost importance!

Fatigue has clearly negative effects on performance and health and contributes significantly to many marine accidents. It must be prevented and, if it does appear in the end, carefully treated, together with excessive feelings of "pressure" and resulting stress.

How much tired we feel is related to many factors, such as the natural biological rhythms (it is normal to need sleep at night and early in the afternoon), the duration and quality of sleep (the most important resting factor!), the continuous period we are awake, the length of time we spend working, the difficulty (physical and mental) of the work as well as whether we really rest during the periods in between etc. Excessive stress and anxiety also contribute to the feeling of fatigue, often having similar causes (e.g. excessive workload and insufficient human resources) as well as consequences (poor performance due to reduced physical and mental abilities and health problems).

ALWAYS:

- Be aware of the causes, symptoms and effects/risks of fatigue for your health, performance and safety.
- Look out for symptoms of fatigue, both in yourself and in others. Fatigue can take you by surprise, and when you are tired it is often harder to recognize its effect!
- Speak up when you feel down or too tired.
- Ensure that you have the necessary human resources to properly implement a task before starting it.
- Ask for help when needed!

NEVER:

- Accept fatigue as a way of life, it is extremely dangerous!
- Try to cope with excessive workload by taking dangerous short cuts in the procedures in order to "catch up", or by keep up working no matter what, ignoring your limits and stamina.

Be Aware!

Companies must ensure the effective allocation of resources to the various tasks, develop and implement effective policies and plans for the prevention and management of fatigue at sea, encourage and respond promptly to fatigue reports from crews and enable the Master to suspend operations when this is absolutely necessary for the rest and recovery of the crew. Distraction from what we do is something that can easily and commonly happen to anyone, but it can have fatal consequences if it happens while performing a particularly risky task on board.

ALWAYS:

- Stay focused on the main work you are doing and avoid multi-tasking with many minor and less essential things, asking for help or leaving their arrangement for later, unless it is urgent.
- Go back two steps in the process before starting again if you realize that you have lost situational awareness at some point in a task.
- Have your eyes open and alert your colleagues if you notice them being distracted.
- Declare "red zones" in difficult or very demanding situations (e.g. in times of difficult navigation, whilst under pilotage etc.) in which only the necessary and essential communications are allowed.

NEVER:

- Allow unnecessary interruptions when performing your duties.
- Distract someone while performing a critically safety task!
- Be afraid to point out any distractions or let minor issues distract you from your main task.

Be Aware!

Companies must implement practices to minimize outside distractions to ship crews, especially those coming from the companies themselves! (e.g. always respect and abide by the "red zones"). We do not undertake our duties unless our physical and mental condition is suitable to perform them properly and safely, we must be fit for duty! Our physical and mental condition can deteriorate in many cases, such as illness, injury, fatigue, poor or disturbed psychology due to stress, anxiety, personal problems, etc. as well as the use of alcohol, drugs or other substances.



The results vary (inability to concentrate and distracted attention, confusion, lack of coordination, drowsiness, inability to communicate) and put in danger not only yours but also the overall safety of the team!

ALWAYS:

- Seek medical help if you are injured or feeling unwell!
- Report your bad condition / illness / weakness in time before you start your work.
- Seek help and support if you have personal problems affecting your fitness for duty.
- Help your colleagues who are experiencing problems.

NEVER:

- Consume alcohol before or during work periods.
- Try to hide your potential inability to work.
- Consume illegal drugs.
- Allow crew members who do not feel well or are under the influence of alcohol or other substances to work!

Companies need to implement practices and programs that promote the well-being of their employees in general and their crews in particular.

Be Aware!

Management of hazardous operations / situations on board

We only enter an enclosed space if it has been adequately ventilated and the atmosphere is confirmed to be safe!

ALWAYS:

- Obtain the required permit and comply with the prescribed procedures, prior to any work.
- Verify that the atmosphere has been checked and made safe, ask for details regarding the test that was performed (when, by whom and in what way) and confirm if and when a re-check is needed.
- Confirm that energy sources, machinery and chemicals (liquids and gases) have been isolated and locked-out.
- Verify that the atmosphere of the space will not be affected by any adjacent activities.
- Agree with your colleagues on an appropriate rescue plan before entering.

NEVER:

- Work in an enclosed space if you can complete the same task in a safer way.
- Enter an enclosed space if you do not fully understand the hazards present and you are not sufficiently sure that it is safe.
- Enter an enclosed space alone.
- Deviate from the agreed safety and emergency procedures.

We take all necessary precautions for “invisible hazards” (e.g. electricity, pressure) in our workplace, as well as to prevent a possible fall when working at a height, above water or during boarding/disembarking/transferring between vessels.

ALWAYS:

- Check if you need a permit and comply with the procedures, before starting any work.
- Plan your work in advance and agree on safety measures with your colleagues.
- Identify all energy sources (such as electrical, mechanical, gravitational and kinetic) in the space you are going to work.
- Treat all energy sources with care until you are sure that they are properly isolated, locked-out or tagged.
- Maintain situational awareness of other work being conducted around you.
- Maintain three points of contact when climbing or working on a ladder and always hold onto the handrail on stairs.
- Check the condition of the lines and other fall arrestors.
- Wear a personal flotation device (life jacket) and check the state of the sea, the movement of the ship, the swell as well as the on-site availability of emergency equipment (e.g. radio, flares) before starting to work over water or transferring between vessels.

NEVER:

- Start work without a detailed pre-job risk assessment to identify risks and control measures if you feel that the conditions are not safe or if you have not completely clarified safety and emergency procedures.
- Rely on your personal protective equipment, it is only the last available line of defense.
- Work within a risk of falling overboard if the task can be achieved by a safer method.

- Carry your equipment when transferring over water.
- Transfer to another vessel without first establishing visual and radio communications.

Ensure yourself and others are positioned away from dangerous zones, such as suspended loads, stored pressure, moving machinery and snap-back areas.

ALWAYS:

- Keep a safe distance from dangerous areas and “lines of fire”, being aware of the consequences in case of damage or failure of mechanical equipment.
- Stay away from suspended loads, unprotected equipment and moving vehicles and do not approach places where objects may fall or dangerous work is carried out (e.g. blasting, welding, grinding, electrical works).
- Maintain a safe distance from lines under tension such as lifting/mooring lines, towing cables or suspended loads, considering snap-back areas.
- Make use of pedestrian walkways and safe zones where they are provided.

NEVER:

- Enter unauthorized areas.
- Bypass safety barriers or enter exclusion zones.
- Attempt a task for which you are not properly trained.

During navigation, we obey the collision regulations, supplement navigational aids with visual/manual checks and avoid distractions and fatigue!

ALWAYS:

- Look out of the window!
- Comply with rest and work hours.
- Maintain a safe distance from grounding lines.
- Execute passage as per plan.
- Calculate enough Under Keel Clearance including dynamic factors such as Squat.

NEVER:

- Accept ECDIS / AIS tracking information without independent checking.
- Proceed at unsafe speed in heavy traffic or restricted visibility.
- Allow yourself to be distracted or use a cell-phone while on Navigational watch.

We always have in mind our own and our co-workers' safety during maintenance and testing of lifeboats.

According to 2017 data from the UK P&I Club, lifeboat tests are responsible for 60 deaths in the last ten years, or 16% of human losses at sea.

ALWAYS:

- Ensure that the boat is fully secured with all available means (gripes, harbor pins, lashings) before entering for maintenance.
- Discuss in detail and on a practical level the risks, the functioning of the release mechanisms, the roles and the operational procedures.
- Have fully trained staff conducting maintenance of boats, winches and brakes.
- Ensure proper supervision and means of communication.
- Avoid the unintended operation of on-load release mechanisms.

NEVER:

- Have people on board during test launching / recovery.
- Put crew in danger areas when boats/davits are moving (crushing, etc.).
- Leave hanging off pennants or securing devices in place after maintenance/testing.

We are very cautious during hot work! We make sure spaces are free of flammable materials and gases before doing anything that requires the use of a flame or may produce sparks.

ALWAYS:

- Ensure that flammable materials have been removed from the workplace and adjacent spaces.
- Have fire-fighting equipment available and ready for use.
- Test for presence of flammable gases.
- Conduct risk assessment for hot work.
- Keep watch over adjacent spaces.
- Consider alternative work methods or equipment.

NEVER:

- Perform hot work without relevant permit.
- Deviate from the safety measures provided in the risk assessment/permit.



The Role of Ports in the Energy Transition

Introduction

A port is a transport, digital and energy node. On average 40% of goods going through ports are energy related. Ports are central nodes for sector coupling and energy system integration as they host and serve multiple industries including energy, shipping, trucking, railways, cruise-tourism, and manufacturing.

Decarbonization of transport requires collaboration across cargo owners, freight forwarders, ports, carriers, vehicle and engine manufacturers, energy producers, policy makers etc. Ports can capture the opportunity and play an important model role at the intersection of marine fuel, shipbuilding (including ship supplies), and operational value chains providing enablers of transport decarbonization.

This contribution, based on a larger Swedish study provides a framework (Figure 1) for guiding ports on building energy node capabilities.

This framework's foundation is a port's energy strategy (Level 1) factoring in, a port's own energy needs (Level 2), green energy to port visitors (Level 3), and its role as part of the transport and energy ecosystem (Level 4).



Rotterdam is one of the ports that combines energy along with its cargo operations

The role of ports in decarbonization

The ports of Antwerp-Bruges, Hamburg, Rotterdam, and Singapore aim to position themselves as multi-fuel bunkering hubs. The signing of the Memorandum of Understanding (MOU) for the Singapore – Rotterdam Green Corridor in Singapore on 2 August 2022 is indicative of the trend.

As landlord and investor, ports can optimize spatial planning (as e.g. in Hamburg and Antwerp-Bruges) to ensure that land and infrastructure are available to facilitate low/no carbon energy projects, while (co-)investing in sustainable energy solutions. As “regulators”, port authorities can leverage tariffs and incentives to support low/no carbon measures, and upgrade environmental and safety standards to support the alternative fuels value chain. Ports can create (digitally supported) processes that help other stakeholders to become more (energy) efficient while not necessarily changing to low/zero carbon energy sources. Ports as “enablers” can initiate collaboration, partnerships, and consortia to align climate goals, predict energy demand, and co-run low/no carbon fuels projects. Energy-empowered ports can expand the port community by inviting “energy” actors and tracking/tracing energy flows through big data intelligence and blockchain technologies etc.

Ports can drive new revenue streams through climbing up the four-step maturity framework. The frame-

Figure 1: Maturity framework for the port as energy node
(Illustration: Sandra Haraldson)



work is not to be seen as a one-directional framework but as a self-improving circular system, where ports take actions that move back and forth between the levels.

Level 1: The need for an energy strategy

Port authorities should start by devising an energy strategy for their own energy needs and for their energy supply capacity. Such an energy strategy should encompass all port operations, guiding the entire port community in driving investment decisions. This implies that this strategy is not only a compass for port authorities, but also influences actors in ports or visiting ports. Ports need to animate levels 2-4 of the framework, through stakeholder dialogues, collaborations etc.

Level 2: Sustainable operations within the port

One focus area for ports is to improve energy efficiency and ensure that their own needs for operations within the port area are met sustainably. This can be achieved through electricity from low/no carbon sources powering e.g., cranes, reach-stackers, prime-movers, tugboats, forklifts, and the port's vehicle fleet and the use of LED and smart lighting at port premises. Some ports produce energy themselves e.g., through solar and wind. Port authorities need to create collaborative platforms, regulative incentives, and partnerships to achieve effective emissions reductions, e.g., through multi-stakeholder roadmaps, investments in grid capacity, and shared port processes for efficient traffic management between terminals.

Level 3: Provision of sustainable energy to port visitors

Increasingly, ports are expected to supply and facilitate sustainable energy consumption by carriers serving different modes of transport. Ports can facilitate bunkering of low/no carbon fuels (e.g., e-ammonia and e-methanol) and offer shore-side electricity to vessels while berthed and charging and alternative fuels stations for heavy vehicles and trains. Just-in-

time arrivals and slot management programs in Rotterdam and Singapore resulted in bunker and emissions saving in the range of 4% to 7%.

Level 4: Broader industry role in the energy transition

The EU Green Deal, EU energy efficiency improvement target of at least 32.5% for 2030 and the REPowerEU plan open opportunities for ports. Ports can support the development of production facilities by providing land and (co-)investing in newbuilds.

Ports can also influence the type of cargo handled by entering partnerships and strategically plan terminals that support regional transitions to net zero; ports can also be testbeds for new technologies such as Carbon Capture and Storage (CCS).

Concluding remarks

Ports can be a catalyst of the energy transition while generating new lease earnings or incomes through the sale of energy. There are several complementary decarbonization enablers that come with a myriad of opportunities. This article brings forward four key messages:

- Ports can play an essential role in the energy transition
- Ports will benefit from anticipating decarbonization pressures and green fuels/energy demand
- Transforming into an energy model node requires the engagement of new stakeholders
- Cross-value-chain collaboration is critical.

The port can play a model role in aligning supply and demand of low/no carbon energy sources by engaging actors along the energy value chain.

With this comes the need for different behaviors supporting collaboration but also broader knowledge and new skills and, most importantly, a mindset that goes beyond their own turf.



The world's worst oil tanker disaster in decades

The incident

On the afternoon hours of 6 January 2018, the Panama-registered oil tanker Sanchi, 164,160 tonnes DWT, was en route from Assaluyeh, Iran to Daesan, Republic of Korea, loaded with a cargo of condensate oil. Meanwhile, the Chinese bulk carrier 'CF Crystal', 75,725 tonnes DWT, was bound from Kalama, US to Dongguan, China, loaded with sorghum in bulk. At about 19:50LT (11:50 UTC), in position 30°51.1'N/124°57.6'E in the East China Sea, the Sanchi collided with the CF Crystal. The Sanchi was the give-way vessel, while the 'CF Crystal' was the stand-on vessel.

The collision breached the cargo tanks of Sanchi, resulting in the leakage of condensate oil and subsequent fire and explosions. After burning for over a week, the ship eventually sank on 14 January 2018, causing one of the worst oil spills in over 30 years.



Fatalities

All the 32-crew, including 30 Iranian and 2 Bangladeshi, are considered perished in the disaster, with only three bodies found and 29 crew members remaining unaccounted for. The 23 Chinese crew members on Crystal were rescued.

Environmental consequences

The Sanchi was carrying 111,000 tonnes (810,000 barrels) of condensate – an ultra-light, highly flammable crude oil, most of which evaporated after the fire. An estimated 1,941 tons of HFO was also in Sanchi's fuel storage tanks.

As a result, the accident created four separate slicks covering a total area of 100 square km, damaging beaches and the local fishing industry. Oil reached even islands in southern Japan, most likely from the tanker, the Japanese Coast Guard announced in late February. The following primary and secondary factors that contributed to the incident have been identified (as per OCIMF Safety Bulletin):

Primary factors

1. Navigation

- Both vessels failed to comply with Rule 5 (lookout), Rule 7 (risk of collision) and Rule 8 (action to avoid collision) of the COLREGs.



The CF Crystal suffered extensive structural damage to her bow area and fire damage to other areas on the ship.

- The Sanchi failed to comply with Rule 15 (crossing situation) and Rule 16 (action by give-way vessel) of the COLREGs.

- The CF Crystal failed to comply with Rule 17 (action by stand-on vessel) of the COLREGs.

- Improper use of Automatic Identification System (AIS) as a navigational/collision avoidance aid. Both vessels relied excessively on AIS to identify, monitor and assess the risk of collision. The CF Crystal used AIS as the only means of information for collision avoidance.

- Ineffective use of Automatic Radar Plotting Aids (ARPA), radar or other appropriate means to evaluate the developing situation and risk of collision.

- Alteration of course to starboard taken by the CF Crystal (the stand-on vessel) 16 minutes before the collision. The Chief Officer stated that he made minor alterations of course from 217 to 225 over 9 minutes, with the intention to bring the ship back on-track.



Because of this, the CF Crystal did not "keep her course and speed" as required by COLREGs Rule 17 (action by stand-on vessel).

- It was not clear from evidence gathered whether the Officer of the Watch (OOW) on the Sanchi was following any minimum closest point of approach CPA

requirements when dealing with developing crossing situations.

requirements when dealing with developing crossing situations.

2. Bridge Resource Management (BRM)

- Evidence that BRM principles such as speak-up and response, ensuring situational awareness, common understanding of collision avoidance options available were not practiced onboard.

- Handover procedures and bridge watch-keeping practices on board the CF Crystal were not robust as the Chief Officer handed over to the watch with a statement that "the traffic was clear".

3. Human factors

- The bridge team manning levels may have been inadequate for the developing situation.

- The decision to call the Master was made too late by the OOW on the Sanchi.

- The advice given/intervention made by the lookout was ignored by the OOW on the Sanchi.

Secondary factors

- Discrepancies between AIS information on Course Over Ground (COG) and Speed Over Ground (SOG) data as received by other vessels compared with what was transmitted from the Sanchi - up to 25 deg in COG and 3 kts in SOG.

- Distractions (OOW staying in the chart room and discussing non-navigational matters for a length of time) on the bridge of the Sanchi drove the focus of the bridge team away from their navigational duties.

- Reluctance by the OOW on the Sanchi to positively identify and take action for a fishing vessel on the starboard side. The OOW on the Sanchi expected expect smaller vessels to take action even when the Sanchi was the give way vessel.

Maritime Compliance Update: Maritime Single Window (MSW) Maritime Autonomous Surface Ships (MASS)



FAL noted the decisions taken by MSC 106, and NCSR 9 in relation to the following agenda items specific to the content of this document:

- Agenda item 6 – Application of single window concept
- Agenda item 8 – Consideration of descriptions of Maritime Services in the context of e-navigation
- Agenda item 13 – Measures to address Maritime Autonomous Surface Ships (MASS) in the instruments under the purview of the Facilitation Committee

Maritime Single Window (MSW):

MSW aims to cut the current approach of multiple reporting by a ship to the port to just a single report

that is then available to everyone (port security, customs, immigration, bunkering etc.) who needs the information. Several examples of single-window reporting already exist, but each operates differently. Single window reporting is considered to be important to the progress of Maritime Autonomous Ship Systems (MASS).

Implementation of MSW will become mandatory for Contracting Governments to the FAL Convention on 1 January 2024, under resolution FAL.14(46).

The ongoing programme of work under FAL is complementary with other IMO initiatives in this area including:

1. the approval of the Guidelines for setting up a maritime single window (FAL.5/Circ.42/Rev.2);

2. the implementation of the GISIS (Global Integrated Shipping Information System) module to provide detailed information on the implementation of single window concepts by Member States;

3. the development of the IMO Compendium on Facilitation and Electronic Business (FAL.5/Circ.45) to support harmonization and standardization of ship reporting and MSWs across ports;

4. the development of the Guidelines on authentication, integrity, and confidentiality of information exchanges via maritime single windows and related services and associated circular (FAL.5/Circ.46).

FAL 47 carried out the following actions in relation to the submitted documents:

- Considered the update on initiatives to implement maritime single window systems reported by the Secretariat. Items to note were:

- IMO, IAPH (International Association of Ports and Harbours) and BIMCO organized a series of events, entitled “Maritime Single Window 2024 – Window of opportunities for shipping and ports”, to raise awareness among Member States, ports and the global shipping community of the mandatory requirement of implementation of MSW. These events took place in October 2022 and January 2023.

- An open-access e-learning course on the implementation of the maritime single window is currently under development (expected completion date late June 2023) and will be made available on the IMO e-learning platform.

- Considered the draft FAL resolution intended to assist Contracting Governments to the FAL Convention in fulfilling their obligations to implement mandatory single window systems by 1 January 2024. It was agreed that the draft FAL resolution should be

sent to the working group on Electronic Business for finalization and adoption.

- Noted the information provided regarding the application of MSW in Chile.

- Considered the proposed amendments to Guidelines for setting up a maritime single window (FAL.5/Circ.42/Rev.2). It was agreed that the proposed amendments should be sent to the working group on Electronic Business for review.

- Considered the recommendations from a workshop on international maritime single window implementation.

- Noted the information regarding the outcome of the IMO Symposium MSW 2024 – A window of opportunities.

FAL 47 carried out the following actions in relation to the work done by the working group on Electronic Business:

- Adopted the draft FAL resolution on Recommended actions to accelerate the implementation of the Maritime Single Window;

- Approved the revised Guidelines for setting up a maritime single window (FAL.5/Circ.42/Rev.3).

Review and revision of the IMO Compendium on Facilitation and Electronic Business, including additional e-business solutions:

The IMO Compendium is a tool for software developers that design the systems needed to support transmission, receipt, and response via electronic data exchange of information required for the arrival, stay, and departure of the ship, persons, and cargo to a port. By harmonizing the data elements required during a port call and by standardizing



electronic messages, the IMO Compendium facilitates the exchange of information between ship to shore and the interoperability of a single window system, reducing the administrative burden for ships linked to formalities in ports.

The Committee previously approved FAL.5/Circ.45 on IMO Compendium on Facilitation and Electronic Business. The Committee also approved the revised priority list of datasets, including the electronic bill of lading, Advanced Passenger Information (API) and Passenger Name Record (PNR) datasets.

FAL 47 carried out the following actions in relation to the submitted documents:

- Approved the report of the sixth and seventh meetings of the IMO Expert Group on Data Harmonization (EGDH). The report is intended to ensure the maintenance of the IMO Compendium on Facilitation and Electronic Business and to examine new datasets for inclusion. Included in the report was reference to a proposal to extend the IMO ship number beyond seven digits, including implications on IT systems and the need for an impact study to be carried out.
- Considered the information provided in reports on IMO datasets related to “Ballast water arrival reporting”, “Waste delivery receipt”, “Verified Gross Mass (VGM)” and “Advance Passenger Information (API)”. It was agreed that the reports should be sent to the working group on Electronic Business for consideration.
- Considered the information provided on the Just-In-Time arrival sub-model. It was agreed that the information should be sent to the working group on Electronic Business for consideration.
- Considered the information provided on Amendments to the IMO dataset and IMO reference mod-

el. It was agreed that the information should be sent to the working group on Electronic Business for consideration.

FAL 47 carried out the following actions in relation to the work done by the working group on Electronic Business:

- Approved the new version of the IMO Compendium on Facilitation and Electronic Business with the new IMO datasets and IMO code lists;
- Agreed to inform MEPC about the two IMO datasets on Waste delivery receipt and Ballast Water arrival reporting relevant to the Committee;
- Approved the simplified priority list of datasets including the addition of “noon data reporting”;
- Approved the terms of reference for the EGDH for the next two meetings.

Consideration of descriptions of Maritime Services in the context of e-navigation:

FAL 47 considered this agenda item and the agenda item on ‘Development of guidelines for harmonized communication and electronic exchange of operational data for port calls’ at the same time since the correspondence group on the Development of Guidelines on Operational Port Data established at FAL 46 was instructed to work on both items together.

Development of guidelines for harmonized communication and electronic exchange of operational data for port calls:

A report was submitted to FAL 46 providing the Guidelines for harmonized communication and electronic exchange of operational data for port calls. Having considered the guidelines, and taking

into account further work carried out during FAL 46, it was agreed that a correspondence group would work intersessionally to finalize the guidelines by FAL 47.

FAL 47 carried out the following actions in relation to the report submitted by the correspondence group:

- noted the discussion and comments provided by the members of the correspondence group;
- approved the Guidelines for harmonized communication and electronic exchange of operational data for port calls; and
- proposed to add the description of Maritime Service 4 to the post-biennial agenda of the FAL committee as it is a strong possibility that this will need to be revised in the future.

FAL 47 carried out the following actions in relation to the work done by the working group on Electronic Business:

- approved the revised description of Maritime Service 4;
- approved the Guidelines for harmonized communication and electronic exchange of operational data for port calls and adopted the associated circular.

Development of guidelines on Port Community Systems (PCS):

Considering a need to support Member States with the guidance on benefits of Port Community Systems (PCS) within the trade facilitation framework, as well as a compelling need to optimize the maritime supply chains through the creation of a holistic approach to trade facilitation, FAL 46 decided to include the new output "Guidelines on Port Community Systems" in the 2022-2023 biennial agenda of the FAL Committee and the agenda for FAL 47, with a target completion year of 2024.

The development of PCS guidelines is intended to help Member States to overcome the challenges on the effective application of Revised guidelines for setting up a maritime single window. The development of PCS is not intended to duplicate the IMO work on MSW in accordance with the Guidelines for setting up a maritime single window (FAL.5/Circ.42/Rev.2).

FAL 47 carried out the following actions in relation to the work done by the working group on Electronic Business:

- Considered the draft structure of the PCS guidelines and established a correspondence group to work intersessionally between FAL 47 and FAL 48 to finalise the PCS guidelines for approval by FAL 48.
- Endorsed the working groups view that the PCS guidelines should complement the MSW guidelines and should not stipulate any preference on the scope of the MSW since this may vary depending on the country's implementation.

Maritime Autonomous Surface Ships (MASS):

IMO completed the Regulatory Scoping Exercise (RSE) in relation to the use of Maritime Autonomous Surface Ships (MASS) including a review of all the instruments within the remit of relevant committees (MSC, FAL and LEG). Details of the RSE can be found in MSC.1/Circ.1638 Outcome of the Regulatory Scoping Exercise for the use of Maritime Autonomous Surface Ships (MASS) along with the list of the instruments considered under Appendix 1. FAL 47 provided concurrent approval (in unison with MSC 106 and Council 128) for a MASS joint working group to meet twice annually as part of IMO's developmental strategy.

In the current phase of discussions on this subject, IMO is working to develop a goal-based non-mandatory MASS Code (expected entry into force:



1 July 2024) as an interim measure prior to the adoption of a mandatory MASS Code (expected entry into force: 1 January 2028). Application is expected to initially be limited to cargo vessels only, excluding passenger ships, which will be reviewed at a later stage.

While IMO continues work on the development of the MASS Code structure and method for developing the goals and functional requirements (via correspondence group discussions after MSC 106 and MASS joint working group sessions), FAL 47 considered the impact of the development of the mandatory Code, which is intended to be a new instrument. Various chapters of SOLAS and associated instruments are expected to need amending to ensure coherent and unambiguous implementation.

FAL 47 carried out the following actions in relation to the submitted documents:

- Considered the report by the Secretariat of the MSC-LEG-FAL Joint Working Group on MASS on its first session. Items to note were:

- the group agreed to organise a seminar on legal issues, including United Nations Convention on the Law of the Sea (UNCLOS), to be considered in the development of a MASS Code and MASS-related measures;

- the group agreed to use a table to identify and collect information of options for interpretations for the common issues in the instruments under the purview of the three Committees;

- the table's content was not discussed or agreed by the group and Member States and international organizations are invited to submit documents to the next MASS-JWG meeting scheduled for April 2023;

- a work plan was proposed for the Joint MSC-LEG-FAL Working Group on MASS including a five-day hybrid meeting from 17 to 21 April 2023, subject to

concurrent approval by LEG 110 (March 2023);

- an IMO Seminar on the Development of a Regulatory Framework for Maritime Autonomous Surface Ships (MASS Seminar) was held on 5 and 6 September 2022 which is available to view from the IMO website.

- Noted the information provided in the report on "Further consideration of MASS operations related to the FAL Convention" and agreed to the proposal to conduct a seminar on the implications, challenges and opportunities of MASS and its operation for ports and public authorities. The date for the seminar will be organized by the Secretariat in consultation with the MSC-LEG-FAL joint working group.

FAL 47 carried out the following actions of note in relation to the work done by the FAL MASS working group:

- Endorsed the road map (FAL 47 to FAL 50) on addressing MASS issues related to the FAL Convention.

- Noted that, in principle, only one amendment to the Annex to the FAL Convention would be required to address the issues related to MASS operations throughout the FAL Convention. The proposed amendment will be discussed at FAL 48.

- Noted the following potential gaps and themes that the MASS-JWG could consider:

- The roles and responsibilities of the master and crew;

- The roles and responsibilities of the remote operator;

- Definitions/terminology of MASS;

- Certificates and other documents; and

- Sharing of information.

- Noted that the MASS-JWG should also take into account issues related to connectivity, cybersecurity and remotely controlled operations.

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<p>1</p>	<p>ESP Code MSC.483(103)</p>	<p>New and existing double hull oil tankers 01/01/2023</p>	<p>Amendments to the 2011 ESP Code, 2011, as amended by resolution MSC.461(101) To evaluate the actual wastage while undertaking thickness measurements of the areas identified in annex B, part A, annex 2 of the 2011 ESP Code, as amended by resolution MSC.461(101) at the first renewal survey; extensive data collection from oil tankers was undertaken by the industry and presented to the IMO for consideration. Deliberations over the analysis of this data resulted in a consensus that the normal range of reported wastage was minimal and, as such, amending the first renewal survey requirements to include only "suspect areas" was proposed. The amendment deems it sufficient to consider only suspect areas for thickness measurements of the areas identified, at the first renewal survey of double hull oil tankers.</p>
<p>2</p>	<p>STCW MSC.486(103)</p>	<p>All Seafarers 01/01/2023</p>	<p>Amendments to the STCW Convention 1978, as amended The draft resolution proposes a new definition for "high-voltage": "High-voltage means an alternating current (AC) or direct current (DC) voltage in excess of 1,000 volts." In each instance in the STCW Convention where there is a minimum standard of competence using the terminology "high voltage", the new definition will apply.</p>
<p>3</p>	<p>STCW MSC.487(103)</p>	<p>All ships carrying electro-technical officers 01/01/2023</p>	<p>Amendments to Part A of the STCW Code The functions in the standards of competence for electro-technical officers are provided at operational level, but the definition of the term operational level does not include electro-technical officers. This amendment would include electro-technical officers in the definition of "operational level" and clarifies their responsibilities. Electro-technical officers will be considered as being responsible at the operational level.</p>
<p>4</p>	<p>AFS Convention MEPC.331(76)</p>	<p>All Ships >400gt engaged in international voyages 01/01/23</p>	<p>Amendment to the AFS Convention – Control of AFS containing Cybutryne MEPC 76 adopted draft amendments to Annexes 1 and 4 to the AFS Convention and the form of the International Anti-fouling System Certificate (IAFSC) to include controls on cybutryne. The amendments mean that anti-fouling systems (AFS) containing cybutryne shall not be applied or reapplied to ships on or after 1 January 2023. Ships bearing an AFS that contains cybutryne in the external coating layer of their hulls or external parts or surfaces on 1 January 2023 shall either: Remove the anti-fouling system; or Apply a coating that forms a barrier to this substance leaching from the underlying non-compliant AFS; no later than either the next scheduled renewal of the anti-fouling system after 1 January 2023, but no later than 60 months following the last application to the ship of an anti-fouling system containing cybutryne.</p>
<p>5</p>	<p>SOLAS II MSC.474(102)</p>	<p>All ships 01/01/2024</p>	<p>Amendments to SOLAS regulation II-1/3-8 to cover mooring arrangements Four new paragraphs will be added to the current regulation II-1/3-8n to address: - Design requirements: New ships will have to be designed, and their mooring equipment (including ropes/wires) selected to ensure occupational safety and safe mooring of ships. Ship specific information will need to be included in the Towing and Mooring Arrangement Plan. Approval of the plan by the flag Administration is not required. - Inspection and maintenance: For all ships, regardless of size and date of construction, mooring equipment including lines will be subject to inspection and maintenance requirements. Three sets of supporting guidance covering design, maintenance and the strength of mooring equipment have also been produced.</p>

6	SOLAS II MSC.474(102)	All ships 01/01/2024	<p>Amendments to SOLAS chapter II-1 concerning doors, hatches and valves which pierce watertight boundaries</p> <p>Amendments to the following regulations are agreed:</p> <ul style="list-style-type: none"> - 7-2.5 to remove the inconsistency with regulation 17 regarding the treatment of doors in watertight bulkheads. - 12.6.1 to simplify the requirements for any valve which is installed at the collision bulkhead. The type of valve is not specified but instead, a number of functional requirements is provided. - 13 to restructure and clarify the requirements particularly with regard to the safety centre and location of the central operating console of passenger ships. - Various regulations regarding doors and hatches above the bulkhead deck that might be allowed to be open during navigation have been changed to standardize requirements.
7	SOLAS II MSC.474(102)	All ships with more than one cargo hold constructed on or after 1 January 2024, 01/01/2024	<p>Amendments to SOLAS chapter II-1, requirements for water level detectors on multiple hold cargo ships other than bulk carriers and tankers</p> <p>New regulation II-1/25-1 with the intent to capture all ships – except for bulk carriers – which are currently not required to have a water level detection alarm. The requirement applies to the ships irrespective of length, presence of wing tanks or applied damage stability standard. Bilge alarms, which are commonly installed on cargo ships that do not carry bulk cargoes, will no longer exclusively fulfil the requirements of the proposed new regulation, and additional detectors will be required to do so. As this is not retrospectively applied, this gives owners and builders time to gain awareness and understand the commercial ramifications of this regulation. New SOLAS regulation II-1/25-1 deviates from SOLAS II-1/25, in that, the latter is dependent on the ship's length which is not the case for the newly proposed regulation.</p>
8	SOLAS III MSC.482(103) (SOLAS Chapt III) MSC.485(103) (LSA Code) MSC.488(103) (Amends MSC.81(70)	All Ships equipped with free fall lifeboat 01/01/2024	<p>Amendments to SOLAS Chapter III, the LSA Code and MSC 81(70) as amended, and MSC Circular on voluntary early implementation of the amendments</p> <p>SOLAS regulation III/33.2 and paragraph 4.4.1.3.2 of the LSA Code currently refers to 'lifeboats' which could be read as 'all lifeboats including free-fall lifeboats (FFLB)'. The IMO agreed that the text should be clarified so that this regulation should only be applicable to davit-launched lifeboats. These amendments to SOLAS regulation III/33.2 and para 4.4.1.3.2 of the LSA Code remove the requirement to launch free-fall lifeboats with the ship making headway at speeds up to 5 knots in calm water.</p>
9	SOLAS V MSC.456(101)	All ships ≥500gt 01/01/2024	<p>Amendments to SOLAS V – Appendix Details of navigational systems and equipment</p> <p>Minor Amendments to the Record of Equipment which supplements the Form E, Form C and Form P certificates relates to the section concerning "Details of navigational systems and equipment", where Item 8.1 "Rudder, propeller, thrust, pitch and operational mode indicator" will have an added footnote to permit deletion of items which are not applicable in this line.</p>
10	SOLAS II-2 MSC.457(101)	All ships which have inert gas systems 01/01/2024	<p>Amendments to FSS Code Chapter 15</p> <p>These Amendments clarify the location of the valve that isolates the inert gas main from the external supply of inert gas, and associated instrumentation requirements.</p>



What are the latest maritime safety trends and how are safety regulations evolving?



Kathrine Ilje Nerland
Principal Consultant

A new safety report from DNV and Lloyd's List Intelligence highlights the need to cultivate improved safety standards in the maritime industry against the backdrop of fundamental industrial shifts such as decarbonization and digitalization.

The latest safety report by DNV and Lloyd's List Intelligence – “Maritime safety trends 2012–2022: Advancing a culture of safety in a changing industry landscape” – provides a comprehensive overview of the latest safety trends in the maritime industry. With the industry changing rapidly as it strives to reach ambitious decarbonization goals new technologies need to be safely implemented.

Overall negative safety trend in 2021 and 2022 in maritime

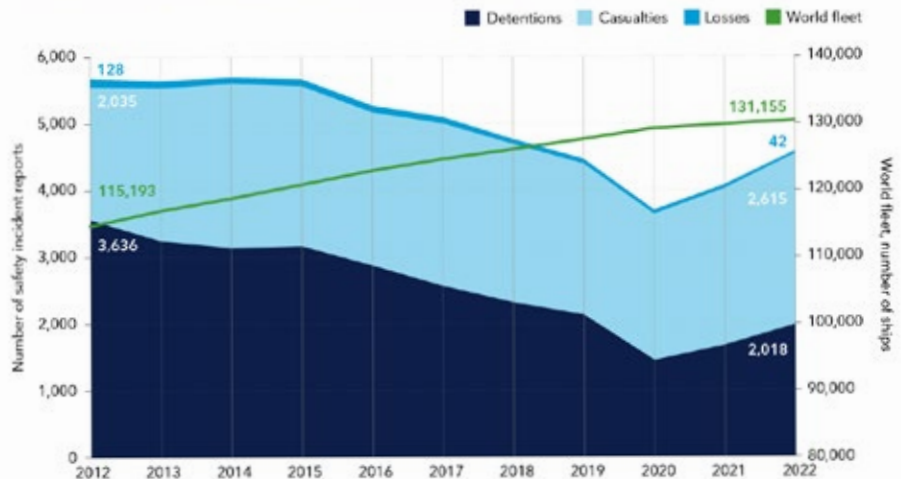
Safety statistics for the report were provided by Lloyd's List Intelligence, revealing some negative trends. The total number of safety incidents involving vessels larger than 100 gross tons reached 2,615 in 2022, representing an annual increase of 9%. Safety incidents also grew by 7% in 2021, following mainly negative growth in the preceding decade.

A large part of these increases can be attributable to a post-pandemic increase in seaborne trade. However, this does not tell the full story and the data suggest some more fundamental issues at play.

In general, analysis of the number of incidents for the period 2012–2022 shows a mixed picture. Incidents involving vessels in collision showed a positive trend until economies reopened after lockdown. The number of fires appear to be rising, but the



Number of safety incident reports / World fleet, number of ships



Source: Lloyd's List Intelligence Maritime Safety Trends 2012-2022



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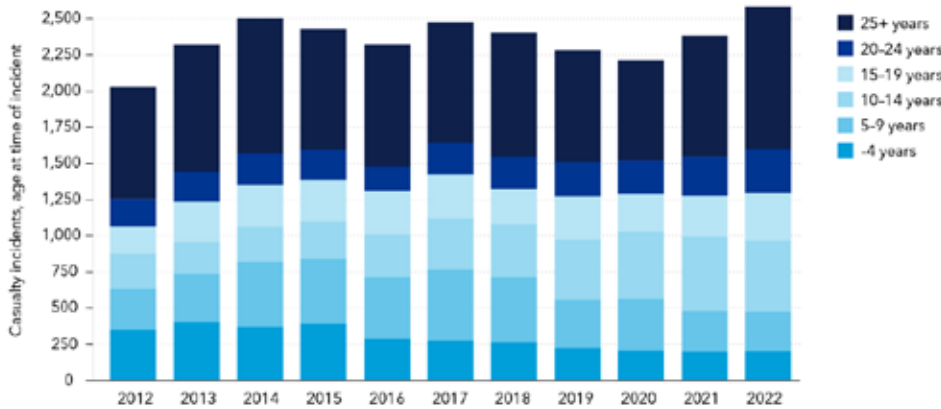
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Casualty incidents, age at time of incident



Source: Lloyd's List Intelligence - Maritime Safety Trends 2012-2022

Machine damage or failure is expected to continue to be the biggest driver of safety incidents in the future, with technological change a decisive factor in this. As discussed in depth throughout the safety report, the maritime industry's transition to new fuels and engine types – which is crucial to decarbonization efforts over the coming decades – will present new safety challenges to ship operators and crew members.

number of piracy incidents is falling.

Reports of wrecks and strandings has also fallen, as did the number of vessels damaged by conflict, until 2022. Shipping has suffered in the battle for Ukraine, with more ships lost last year than in the rest of the decade combined.

Machine damage or failure has been the main driver of this surge in safety incidents, growing by 24% in 2021 and 13% in 2022. A number of different types of machine deficiencies, such as lost rudder or fouled propellor, fall under this category, which accounted for 55% of safety incidents in 2021 and 57% of incidents in 2022.

Data leads to more questions than answers

Digging into these numbers leads to more questions than answers. It is not known what proportion of these machinery damage or failure incidents occurred at port or in open waters. Questions also need to be asked about whether incidents were fixed by crew members or whether they progressed to collision, grounding or sinking incidents.

It is also possible that an improved attitude of incident reporting drove these numbers up. If true, this would be a positive development, pointing to improvements in the safety culture of ship organizations, something that the DNV report strongly advocates.

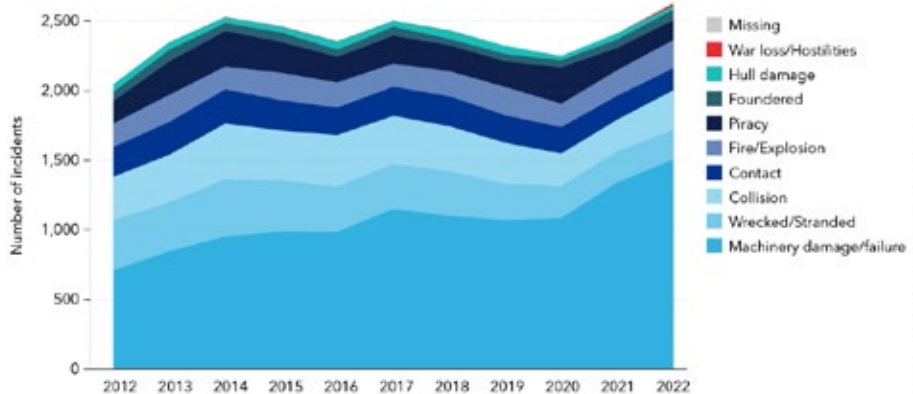
Machinery damage or failure likely to continue to drive numbers in the future

Fuels like ammonia and methanol are unfamiliar to maritime workers and contain their own particular safety hazards, while the engines that they will run on will require additional skills that many of these workers don't currently possess. It is therefore crucial that safety considerations lie at the heart of the transition to these new technologies, as well as to digital technologies that are rapidly replacing traditional operating systems. This will require new training programmes that are smart and driven by the realistic considerations of human beings who will be interacting most with new technologies.

IMO guidelines evolving in line with new technologies

Against the backdrop of rapid change in the maritime industry, safety guidelines and regulations from the International Maritime Organization (IMO) have needed to evolve to remain in step with new fuels and technologies. However, this is no easy task. Regulations traditionally designed for ships and systems of today can become outdated and less relevant as new machinery, fuels and operating systems become more prevalent.

Incidents by casualty type



Source: Lloyd's List Intelligence - Maritime Safety Trends 2012-2022

Older regulations can even hinder the application of new technologies, slowing down further development that, in turn, can slow down decarbonization efforts.

“Although the current international regulatory safety framework is always evolving, it is largely based on a set of standards that were written at a time when technologies were quite fixed and that assumed large levels of human intervention,” says Kathrine Ilje Nerland, Senior Principal Engineer and safety regulation expert at DNV. “However, with the industry shifting towards increased automation, alternative fuels and more advanced navigation and communication equipment, there is a need to design new regulations that are modern and more in step with these technological shifts.”

Shift to a goal-based approach

These fundamental concerns have prompted the IMO to shift the ways in which they approach safety regulations. Most significantly, this has seen the organization moving from prescriptive regulations towards goal-based requirements. Goal-based safety requirements are fundamentally broader and more flexible than prescriptive regulations and allow the IMO to define fundamental aspects of safety criteria that need to be met to ensure safe shipping.

“A key benefit of goal-based requirements is that IMO regulations are given the flexibility to accept new technologies and novel designs by meeting broad safety requirements instead of specific design criteria,” Nerland explains. “In practice, this means that technological innovators or ship designers adopting new fuels or new operating systems can already be aware of fundamental safety expectations when developing new technologies, thus paving the way for smoother and more aligned development.”

The roll of class

With the IMO placing a premium on high-quality but less specifically designed safety requirements as it deals with rapidly evolving technologies and digital systems, the need for classification societies will be greater than ever. Classification societies like DNV have a comprehensive overview of the latest technological changes and are already keenly aware of safety issues related to new fuels and technologies. “This familiarity, as well as wide experience related to new maritime technologies means that DNV is in an excellent position to add value to safety

regulations by providing assurance that new systems and technologies are safe and compliant with the goal-based requirements of the IMO,” Nerland says.

Several safety initiatives launched

Although, on a broader level, the IMO is shifting towards a goal-based approach when dealing with safety regulations, efforts are still being made by the organization to tailor its existing suite of regulations. The International Convention for the Safety of Life at Sea (SOLAS) and associated Codes is a comprehensive document that covers all areas of maritime safety and several amendments are set to enter into force in 2024. These include new requirements for ships carrying industrial personnel, modernization of the requirements for the worldwide system for communication of emergency information (GMDSS), new requirements for safe mooring operations and updates to the requirements for ships using LNG as fuel.

“Highlights of the work in progress towards 2026 and beyond include the development of provisions for autonomous ships and measures to improve the fire safety of ro-ro passenger ships,” Nerland comments. “A regulatory framework for ships using alternative fuels like methanol, LPG, hydrogen, low flashpoint oil fuels and ammonia, and for fuel cells being installed onboard is also being developed and will come into force at various stages over the next decade, helping to facilitate the advancement of these fuels and contribute towards the safe decarbonization of shipping.”

Broad-based advancements in safety culture required

With the IMO making strides to adapt its safety requirements to a rapidly changing maritime world, actors across the wider industry should review how they view safety and search for different ways in which they can contribute towards an overall reduction in safety incidents. In particular, DNV’s safety report emphasizes the need for maritime companies to develop a robust safety culture that places people at its core.

Achieving this cultural shift requires a change in attitude, both from those in positions of leadership, and workers involved in day-to-day operations, as well as cross-industry collaboration. Doing this well will enable the whole industry to learn about specific challenges related to new fuels and technologies thus paving the way for a smoother decarbonization journey in the future.



GREEK SHIPPING PERSONALITIES 2023 – HONORARY AWARD to Capt Mattheou Dimitrios, CEO of Arcadia Shipmanagement & Aegean Bulk

In a prestigious award ceremony held at the Armed Forces Officers Club – LAED, by Liberty Press on Sunday, June 18, 2023, Capt Mattheou received the Personality of the year award, in recognition to his significant contribution to shipping industry, including innovations in Ship Management, efforts to promote sustainable practices and exemplary leadership.

Capt Mattheou was included in the luxurious album "Personalities of Greek Shipping 2023" of the shipping newspaper "Maritime Economies."

In his interview at the album "Personalities of Greek Shipping 2023" to the question "How do you see the future of Greek shipping in this global geopolitical unstable environment?", Mr. Mattheou replied that the war in our geographical and business neighborhood, as well as the recent, ongoing pandemic, demonstrate that decision-makers need to study multi-level threats and formulate long-term strategies based on sustainability and resilience of the environment and available energy resources. Global trade serves billions of people worldwide, with 90% of goods moving by sea. Shipping infrastructure and related services were under pressure and alternatives to products traded through the Black Sea were sought.

Over time, conflicts between important and powerful countries in various regions of the globe have created uncertainty and restructuring in the execution of maritime transport work, as well as opportunities for profit, the formation of new agreements and partnerships, as well as bold business decisions, a field in which Greek ship owners have always excelled.

In addition, in order to achieve the goal of low carbon emissions of the global fleet (in the context of reducing the carbon footprint of shipping by 40% by 2030 and an additional 50% by 2050), changes have begun and are being implemented in the way shipping operations are conducted, with ship owners turning to new types of ship design and equipment, but also their operational operation. The data of the recent survey on the Greek-owned fleet by the Greek Shipping Cooperation Committee in London give a very optimistic and strong picture, with 199 vessels on order (47 Oil Tankers, 3 Chemical Tankers, 63 LNG/LPG, 30 Bulk Carriers, 53 Container Carriers and 3 Ro/Ro).

Greek ship owners are constantly investing in new, energy-efficient ships and environmentally friendly equipment. The average age of the Greek-owned fleet is lower than the global average. Representing 21% of the world's tonnage and 60% of Europe's, the fleet is constantly being renewed, through pioneering decisions and bold investments by Greek ship owners. Our shipping industry, quantitative and qualitative, remains dominant and competitive in the midst of crises and international challenges, turning the occasional data into opportunities. Based on the Union of Greek Ship owners' Annual Report 2021-2022, Greek



ship owners are steadily investing in larger ships that also have greater efficiency and environmental benefits due to economies of scale.

Since 2014, the increase in capacity (in dwt) of the Greek-owned fleet is much greater than the increase in the number of ships. In 2014, the average tonnage of Greek-owned ships was 71,308 dwt, while today it is estimated at 86,247 dwt, a number almost double that of the world fleet. The above figures, combined with the fact that the vast majority of world trade is traded by sea, clearly demonstrate not only the strong but the leading position and dominant role played by Greek shipping in the international economic scene.

In addition, mention should be made of the strengthening of Greece's competitive position in the international shipbuilding market, with the domestic shipbuilding units of Syros, Elefsina and Skaramangas recovering, gaining the trust and support of ship owners. The shipyards of Skaramanga, Elefsina and Neorion in Syros are the nuclei of the shipbuilding and ship repair industry in Greece. They have significant advantages in relation to their geographical location, their basic infrastructure and the experience and know-how of their staff.

Moreover, it is a fact that the shipbuilding industry is a cornerstone and an integral part of the economy of national and international maritime transport, contributing to general maritime development and ensuring foreign exchange inflows, while at the same time it can prevent ship owners from cooperating with shipyards in other countries.

For all this, it is everyone's wish that Greek shipyards will operate complementary and cooperating with each other, so that Greece can position itself competitively in the international shipbuilding market, something that has already begun to become more and more visible, since many ship owners, Greek and foreign, trust our shipbuilding units by bringing their ships to Greece.



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