



CHAMBER OF SHIPPING
OF AMERICA

The Path to a Carbon-Free Maritime Industry: Investments and Innovation

**HEARING BEFORE THE
HOUSE TRANSPORTATION AND INFRASTRUCTURE'S
SUBCOMMITTEE ON COAST GUARD AND MARITIME
TRANSPORTATION**

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AT 1000

IN ROOM 2167 RAYBURN HOUSE OFFICE BUILDING

TESTIMONY OF

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Good morning, Chairman Maloney, Ranking Member Gibbs and Members of the Subcommittee. We appreciate the opportunity to provide testimony at this hearing to discuss paths to a carbon-free maritime industry as well as the more general concepts of green and sustainable shipping.

Mister Chairman, we respectfully request that our testimony be entered into the record for this hearing.

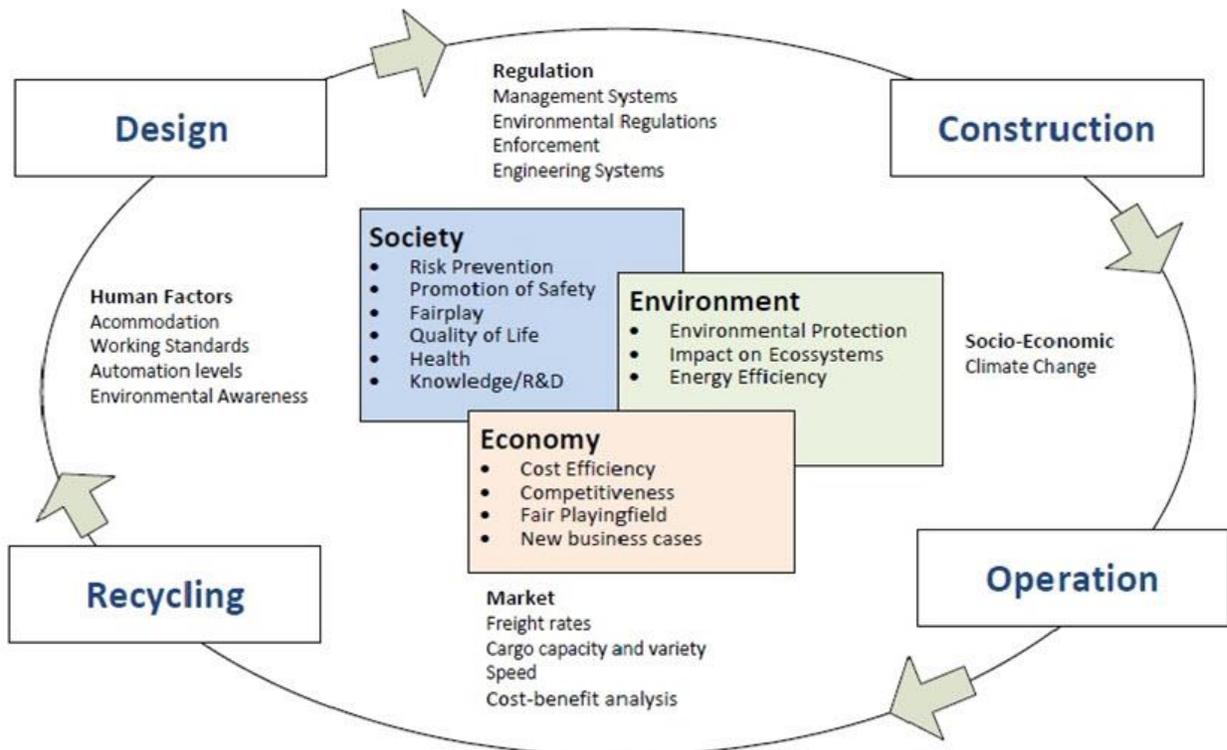
I am Kathy Metcalf, President and CEO of the Chamber of Shipping of America (CSA). CSA represents member companies which are U.S. based that own, operate or charter both US and non-US flag oceangoing tankers, container ships, and other merchant vessels engaged in both the domestic and international trades. Through CSA's long time participation in various national and international organizations, including the International Maritime Organization (IMO), our members are actively supporting a number of initiatives which will advance the concepts of green shipping and sustainable shipping in the global maritime industry including those leading toward a carbon-free maritime industry.

What is Green Shipping/Sustainable Shipping?

Henry David Thoreau once stated "It's not what you look at that matters, it's what you see." Taking into account this simple statement on perspective as it applies to defining green and/or sustainable shipping provides the reason that a detailed internet search results in a myriad of definitions for these terms. Some view green and sustainable shipping as interchangeable terms. CSA and others, view green shipping as a subset of sustainable shipping.

In the simplest of terms, green shipping is a process by which the environmental footprint of the marine industry is reduced subject to the principle of continuous improvement. It is not about one specific environmental impact but rather all the environmental impacts associated with vessel and port operations. A good case in point is the current focus on greenhouse gases (GHGs). Many speak of green shipping within the context of climate change and the reductions of GHGs, but in fact green shipping is much broader than that and represents an overarching concept that relates to all types of environmental impacts including air emissions, discharges to the water, impacts on living marine resources to name a few.

Sustainable shipping is an even broader and arguably more important concept defined most often as a holistic management concept for sustainable development incorporating environmental and social responsibility and includes the three co-equal pillars of environment, society and economy. Sustainable shipping incorporates these three in a continuous loop of design, construction, operation and recycling principles with supporting principles of regulation, socio-economic, market related and human factor issues. Reproduced below from the European Maritime Safety Agency website is an informative graphic describing the multiple interfaces which comprise sustainable shipping.



Because of the many different stakeholders which are involved in the process, one of the most critical factors in the advancement of sustainable shipping principles, is the need for constructive dialogues, partnerships and the development of synergies to fully take into account the wide range of perspectives of all parties including their concerns, needs and expectations. Although a daunting challenge, it is only with consideration of these many stakeholders and their perspectives that sustainable shipping can be successfully implemented to the benefit of all. Sustainable shipping is not a project with a clearly defined time line, but rather is a continuous voyage with goals changing over time in an ever evolving world.

The Global Maritime Industry and Its Regulatory Framework

Approximately 90% of world trade is transported by ships, including raw materials, energy, food, as well as manufactured goods and products. Global shipping is the main facilitator of international trade and is obviously of vital importance to the global economy. Global shipping is also the most environmentally friendly mode of transportation. As an example, according to the IMO GHG Study (2009), oceangoing vessels produce on average 5.6 grams of CO₂ per ton-kilometer compared to 80 for trucks and 435 for aircraft. Similar benefits of global shipping are also observed in the areas of safety (fatalities per million ton-miles) and fuel efficiency (ton-miles per gallon). The relevance of these facts is key to the conclusion that global shipping is critical to both economic and environmental sustainability when compared to other transportation modes. This also leads to a further conclusion that any regulatory changes to the current environmental regulations at both the international and national levels should not impair the critical role

global shipping plays in the global economy and should not result in the transfer of cargo to other less environmentally friendly modes of transportation. This is not a justification for lack of action as regards green shipping initiatives, but rather is a call for acknowledgment of these sensitivities as future regulatory requirements are considered and adopted at all levels of governance and ensures any actions taken relative to shipping do not result in cross media transfers or cross modal transfers to less friendly modes of transportation.

The regulatory framework which governs the global shipping industry is complex. The IMO creates new environmental requirements which are agreed to by IMO member states and then implemented at the national level. In some cases, national and sub-national requirements are imposed which are different than or more stringent than those adopted by the IMO. In these cases, vessels calling in a particular port are faced with a patchwork quilt of requirements making compliance a challenge at best. In our view, because shipping is global, so also should be the environmental regulations which apply to global shipping. Fuel sulfur requirements are a relevant case study. At one point in time, vessels trading to California were subject to CARB fuel sulfur requirements, the US Emission Control Area requirements and the IMO fuel sulfur requirements. Fortunately as time has passed, these three sets of requirements have moved closer together in content. Illustrative in this example is the fact that many IMO treaties contain provisions for national programs where more stringency is deemed necessary such being the case with the US request for an IMO approved emission control area for North America and the Caribbean. The point of this conversation is that global shipping, the marine environment and society benefit from a robust set of international requirements that apply to vessels regardless of the areas to which they trade. It is within this context that the concepts of green shipping and sustainable shipping should be discussed and agreed so that one set of requirements are applicable to all vessels regardless of flag or location.

The Path to a Carbon-Free Maritime Industry

The path to a carbon-free maritime industry is related to the reduction of GHG emissions from vessels. IMO has adopted its GHG reduction strategy with current discussions focusing on the identification of short, medium and long term measures which will allow the global shipping industry to gradually reduce or eliminate its CO₂ emissions. The IMO Strategy establishes ambitious targets including the phase-out of GHG emissions “as soon as possible this century” and reducing annual GHG emissions from international shipping by at least 50% by 2050 compared to the 2008 baseline. This is quite likely the most important and impacting initiative ever applied to the global shipping industry and will require the development of new vessel design and propulsion technologies as well as zero carbon or carbon neutral fuels.

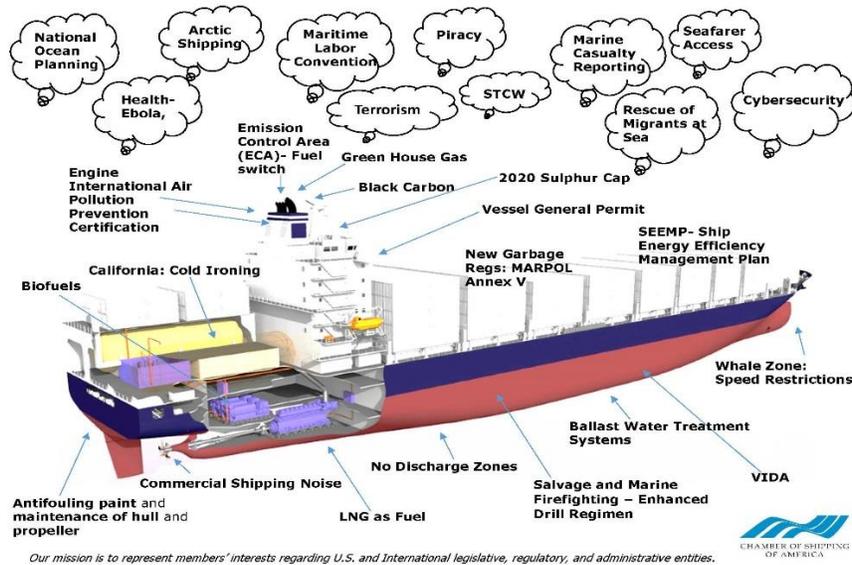
So what is the path to a carbon-free, or at least carbon neutral, maritime industry? In our view, the most critical first step to making progress on this initiative is the development of a robust global research and development program, a program which is, in fact, being proposed by the global maritime industry at the next meeting of the IMO Marine Environment Protection Committee in the spring of 2020. Key elements of this proposal

include the establishment of a new research and development organization to pave the way for the decarbonization of shipping, core funding from shipping companies across the world of about USD 5 billion over a 10 year period and the acceleration of the design and construction of commercially viable zero carbon-emission ships by the early 2030's. Reaching these reduction goals will require the deployment of new zero-carbon technologies and propulsion systems such as green hydrogen and ammonia, fuel cells, batteries and synthetic fuels produced from renewable energy sources. These fuels do not yet exist in a form or scale that can be applied to large commercial ships, especially those engaged in transoceanic voyages and which are currently dependent on fossil fuels. Some have questioned why the global maritime industry cannot conduct these R&D efforts in a private setting. It is important to understand that the global shipping industry is comprised of tens of thousands of companies located in over a hundred countries. Creation of this mandatory R&D contribution mechanism is critical to ensure a level playing field exists as well as ensuring that the necessary funding to support these initiatives is shared across the global industry, is maintained at sufficient levels and the results of the R&D efforts are shared across the global maritime industry.

As indicated above, the creation of this global R&D initiative is only the first step in the long and likely never ending path to a carbon free maritime industry. The MEPC through its GHG working group is addressing a number of other issues the resolution of which are critical to a successful outcome. In broad terms, these issues include discussions around how and to what degree existing technical and operational programs can be improved, developing procedures for assessing the impacts of mandatory measures on IMO member states, and development of cooperative efforts with ports and other land-based stakeholders throughout the entire logistics chain.

Specific short term measures being discussed include improvements to the existing energy efficiency requirements (Energy Efficiency Design Index (EEDI), Ship's Energy Efficiency Management Plan (SEEMP)), development of technical and operational energy efficiency measures for both new and existing ships, analysis of the use of speed optimization, consideration of methane emissions, development of national action plans, enhancement of technical cooperation and capacity building, encouragement of logistics chain wide collaborative efforts and others. Mid-term and long-term measures include further refinement of the short term measures noted above, the development, implementation and provision of zero-carbon or fossil-free fuels including land-based manufacturing and distribution systems, and the identification and development of new/innovative emission reduction mechanisms.

Other (equally important) Environmental Issues Related to the Advancement of Green and Sustainable Shipping Concepts



As some of my fellow witnesses have likely experienced, we are often asked to identify and discuss the top 5 or top 10 environmental issues facing our industry. As illustrated above, this is a near impossibility as at any given point in time, we are working on at least 20 environmental issues, each with different priorities over time and at various stages of analysis. The illustration above provides an example of the number of issues with which we deal on an everyday basis. It is also important to appreciate that initiatives that address one of these issues, may result in positive or negative impacts of others. Short summaries of the key issues are found below.

Air Emissions

There are two distinct sub-topics relative to air emissions. The first relates to the reduction of GHG emissions from vessels which is discussed above. The second relates to the reduction of traditional pollutants from vessels including SO_x, NO_x and particulate matter at both the international and US domestic levels. IMO and the US are addressing these issues by further tightening requirements for engine design, the imposition of fuel sulfur requirements within ECAs as well as the imposition of the recent global sulfur cap of 0.5% for vessels operating in areas outside of ECAs. Related to this issue is the topic of alternative control strategies which includes the installation and use of exhaust gas scrubbers in lieu of low sulfur fuel. IMO regulates this issue under Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL).

Discharges to the Water

Issues within this subject matter being addressed at both international and US domestic levels include ballast water discharges, bilgewater/oily water separator effluent, exhaust gas scrubber washwater discharge, graywater and anti-fouling coatings/leachate, sewage and garbage as well as discharges/releases associated with a marine casualty. At the international level, these issues are discussed under separate initiatives within the Marine Environment Protection Committee under the provisions of the 6 annexes of MARPOL and separate stand-alone conventions addressing ballast water management, anti-fouling systems, and oil pollution preparedness, response and cooperation (conventional oils as well as hazardous and noxious substances).

In the US, 27 discharges to the water, including those noted above, are currently covered by the Vessel General Permit issued by EPA and the Oil Pollution Act (marine spill prevention, readiness and response). As you are aware, in December 2018, the President signed the Frank LoBiondo Coast Guard Authorization Act of 2018," which included the Vessel Incidental Discharge Act (VIDA). After literally decades of collaborative efforts among Members of Congress, the industry and environmental groups, the enactment of these provisions were welcomed by the industry and will provide for a clear and comprehensive set of regulations governing discharges incidental to the normal operation of vessels. We have been informed that EPA is close to finalizing its proposed regulations as mandated by VIDA and we expect them to publish a proposed rule in the January/February 2020 timeframe. These regulations are required to be finalized by December 2020 at which time the USCG will develop their companion regulations which are required to be finalized by December 2022. Most importantly to this discussion of sustainable shipping is the recognition that both the international requirements and the US domestic requirements are under continuous review and as technology and best practices develop over time, are subject to change with due regard to the need for continuous improvement.

Biofouling/Hull Husbandry

Hull biofouling/husbandry is an issue critical to the improvement of vessel energy efficiency as well as the prevention of the transfer of aquatic nuisance species. As regards the energy efficiency aspect, accumulation of marine species on the hull and in niche areas, creates additional drag which reduces fuel efficiency and negatively impacts air emissions issues identified above. As regards aquatic nuisance species, studies suggest that, at least in some areas, hull fouling contributes to the transfers of aquatic nuisance species more than ballast water discharges. Given the cross media scope (air and water) of positive impacts associated with good hull husbandry practices, the global marine industry embraces best management practices so that these environmental benefits can be maximized. An issue directly related to biofouling is the proper selection and use of anti-foulant hull coatings. While there are a number of coating types, current discussions are focused on the leachate which naturally occurs from metal based components of the coating. Tributyltin was phased out a number of years ago with the adoption of the IMO Antifouling Convention and US regulations banning its use. The

current discussion focuses on copper based coatings and what impact their use may have on the marine environment in large part due to initiatives within the European Union. The industry is in constant discussions with coating manufacturers to assess what new coatings are being development with due regard for the reduction of their environmental impacts.

Marine Plastics

Currently the issue of marine plastics use and disposal is regulated under MARPOL Annex V (Garbage), national and, in some cases, subnational regulations. As is the case with all MARPOL annexes, Annex V is under continuous review by the Marine Environment Protection Committee (MEPC) and has recently been amended to update the criteria for determining whether cargo residues are harmful to the marine environment and a new Garbage Record Book format which includes a new garbage category for e-waste. MARPOL Annex V explicitly prohibits the discharge of plastics at sea and requires disposal to shore reception facilities. A new topic which has recently arisen is the subject of single-use plastics. It is expected that MEPC will take up this issue due to at least two national laws (India, Kuwait) that seek to ban the use and disposal of single-use plastics in their waters and ports. The imposition of this ban is in violation of these countries obligations under MARPOL Annex V which requires that adequate reception facilities be available in their ports. Further complicating this issue is the fact that vessels can only purchase ship stores from ship chandlers based on the inventory of those chandlers and few, if any, provide the ability to purchase multi-use plastics or acceptable alternatives to single-use plastics for use onboard vessels. While the industry supports waste minimization concepts, including the use of multi-use plastics, any prohibitions on the use of single-use plastics must necessarily take into account the availability of alternatives (including multi-use plastics), a discussion best left to resolution at the IMO MEPC.

It should be noted that a substantial fraction of marine plastic debris in the ocean originates from land-based sources and rivers and are related to the mismanaged plastic waste generated from land-based sources along these rivers. The 10 top-ranked rivers transport 88-95% of the global load in the ocean (Export of Plastic Debris by Rivers into the Sea, Environ. Sci. Technol. 2017, October 11, 2017).

Ship Recycling

International requirements for environmentally responsible ship recycling is a decades long discussion which resulted in the IMO Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (2009). The Convention was agreed in 2009 but has yet to enter into force due to low ratification rates by IMO member states. The Convention is aimed at ensuring that ships, when being recycled after reaching the end of their operational lives, do not pose any unnecessary risks to human health, safety and to the environment. The Convention intends to address all the issues around ship recycling, including the fact that ships sold for scrapping may contain environmentally hazardous substances such as asbestos, heavy metals, hydrocarbons, ozone-depleting substances and others. It also addresses concerns raised about the working and

environmental conditions at many of the world's ship recycling locations. Ship recycling is also addressed in the European Union Ship Recycling Directive as well as under national laws. It is hoped that regional and national requirements for ship recycling will become aligned with the provisions of the Convention when it receives sufficient ratifications to enter into force.

Protection of Living Marine Resources including Noise from Commercial Shipping

The impacts of all ocean users, including shipping, is an active point of discussion in a number of organizations with current activities focused on determining the impacts of these activities on living marine resources. Two specific issues related to global shipping have received much attention at international and national levels. The first issue relates to ship strikes of large marine mammals and discussions are ongoing as to how governments and the industry can minimize the likelihood of vessels striking marine mammals. This issue is challenging when taking into account that large marine mammal populations are subject to annual migration patterns and the fact that most large marine mammals are not usually visible to the eye of the navigation officer that is controlling the movements of a vessel. IMO efforts thus far have resulted in the creation of guidelines for minimizing the risk of ship strikes with cetaceans (2009). US efforts thus far include programs focusing on the reduction of ship strikes of the North Atlantic Right Whale (East Coast of the US) and multiple whale species off the coast of California.

The second issue relates to the underwater noise generated by the movement of vessels through the water. Over 85% of the underwater radiated noise from a given vessel is a result of propeller cavitation and much work is being done to identify solutions related to the design and construction of vessels as well possible operational changes which could reduce the underwater radiated noise. While IMO has produced guidelines on the reduction of underwater noise (2014), it is expected that at least one IMO member state will propose the addition of this issue to the MEPC work plan for future discussion and potentially the development of mandatory provisions.

Conclusion

Global marine transportation is vital to the world's economy, moving a vast majority of goods and bulk materials to the world's population in the most environmentally responsible manner of all transportation modes. Notwithstanding, the importance of to the global economy, it is recognized that the environmental footprint of shipping should, and is being continuously reduced, by the initiatives described above. The global industry, through its work at IMO, supports these and future initiatives which will reflect our continuous improvement on environmental issues. CSA is also proud to continue to work with executive branch agencies in the US to address these issues at the national level.

Ralph Waldo Emerson once said "Life is a journey, not a destination". A Chinese philosopher once said "A journey of a thousand miles begins with a single step". Nothing could be truer for the global maritime industry and its march toward sustainable shipping.

Thank you for the opportunity to testify at this hearing. We would be happy to answer any questions.