



Global Maritime Forum reveals winners of Future Maritime Leaders essay competition

Young talents from Nigeria, China and Denmark writing about digital seafarers, an emissions trading scheme and circular economy, named winners of the Future Maritime Leaders essay competition. 140 global essay contributions identify the issues on top of the agenda for the next wave of maritime leaders.

Copenhagen, 14 October 2019; Digitalization, environmental sustainability, geopolitics, the maritime workforce and their interlinkage are top issues, capturing the attention among the next generation of maritime leaders. This is clear from the 140 essays from 46 different countries around the world, submitted in connection with the Future Maritime Leaders essay competition, organized by the Global Maritime Forum. The competition aims to give students and young professionals aged 18-30 a voice in the debate about how the maritime industry can sustainably address maritime challenges and opportunities – and the industry a chance to listen.

Members of the Future Maritime Leaders essay competition selection committee reflect on the essay contributions:

"It is heartening to see the wide variety of issues and creativity contained in the many essays. It makes me believe that the future is bright for the long-term sustainability of the global seaborne trade," says **Christine Loh, Chief Development Strategist of the Institute for the Environment, Hong Kong University of Science and Technology,** and Chair of the Future Maritime Leaders essay competition selection committee. She looks forward to learning more about the next generations views at the Global Maritime Forum's 2019 Annual Summit in Singapore, where the three essay winners will represent the voice of future generations.

According to **Graham Westgarth, CEO of V.Group,** young talents may very well be the source of the solutions to many of the challenges our industry is facing. *"A majority of essays see digitalization as a great opportunity and enabler, while at the same time issuing warnings about potential downsides such as increased cyber security threats,"* he comments.

"The next generation sees decarbonization and environmental protection as a serious responsibility of the maritime industry, which on the other hand provides unique opportunities for development and innovation," says **Amy Jadesimi, Managing Director of LADOL.** She believes that leaders need to understand what is on top of the agenda among young talents in order to be an attractive employer.

Oivind Lorentzen III, Director of SEACOR Holdings notes the youth's interest in international affairs and geopolitics. *"Many essays take an interest in shifting geopolitical trends such as changes in trade dynamics, changes in national and international politics and governance over the maritime industry. The general consensus is that the maritime industry needs to be flexible and resilient in the face of these challenges,"* he says.

"Several essays point to how the maritime industry loses out on potential talent due to unattractive career opportunities. They propose more investment in training of the current workforce and a larger acceptance of nationality and gender differences to change this perception," comments **Stephen Cotton, General Secretary, International Transport Workers' Federation.** He finds it encouraging to see how young people engage in this issue and come up with tangible solutions.

Essay winners address automation, environmental challenges and the broader sustainability agenda

The three winners of the Future Maritime Leaders essay competition reflect the large diversity amongst the competition participants and essay topics, observes **Kasper Søgaard, Head of Research at the Global Maritime Forum,** and selection committee member. *"The three winners come from different continents, represent various professions and write about diverse issues that are all highly relevant for the future of the maritime industry,"* he says.

Competition winner, **Iorliam Simon Tersoo,** a 30-year-old Maritime Safety Officer from Nigeria, addresses the need for preparing the next generation of seafarers to a more digitalized future due to the automation of the maritime



industry. In his opinion, the future calls for digital seafarers, who will sit ashore and take ships to sea and back safely, observing the relevant regulations, whilst carrying out the conventional functions of seafarers automatically and conducting them safely even in the face of perils.

An emissions trading scheme supported by spatial-temporal emission profiles is the focus of **Yiqi Zhang**'s winning essay. In the light of the forthcoming environmental and climate related regulations, the 30-year-old Chinese PhD student argues how a trading scheme will offer flexibility for regulation compliance during a policy transition period and provide financial incentives for the industry to upgrade to a greener business.

Circular economy is a keyword for **Line Fryd Hofmansen**, a 26-year-old Management Consultant from Denmark. In her winning essay, she envisions how the maritime industry can have a long-term impact on the broader sustainability agenda. By finding new ways to leverage its role and impact in the ecosystem of trade, the maritime industry can become an enabler of the circular economy in global supply chains.

The three winners of the essay competition will participate in Global Maritime Forum's upcoming Annual Summit in Singapore, where they will represent the next generation of maritime talent. The high-level meeting will convene more than 200 leaders from across the maritime spectrum who have the will to address the burning issues facing the maritime industry. Working together, they will develop solutions for a safe, clean, inclusive and efficient maritime industry.

The three winning essays are available at the Global Maritime Forum's [website](#).

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More information on the competition and the three winning essays available below.



Competition topic

The competition participants were asked to address the following topic(s):

The world is undergoing profound transformation. We are seeing trade wars and geopolitical tensions disrupting current patterns of international relations and trade, while at the same time witnessing how emerging markets, for instance in Africa and Asia, are lifting millions of people out of poverty; we are seeing digital technologies bringing profound changes to societies and companies, offering new challenges and new opportunities; and finally, we are observing how rising societal demands for environmental sustainability and inclusive growth are putting pressure on businesses and decision-makers to change their behaviour.

How will these trends affect, shape and transform the maritime industry? How can the maritime industry best prepare for these changes? What is your innovative idea on how the maritime industry can use these challenges and opportunities to contribute to sustainable long-term economic development and human well-being?

Selection Committee members

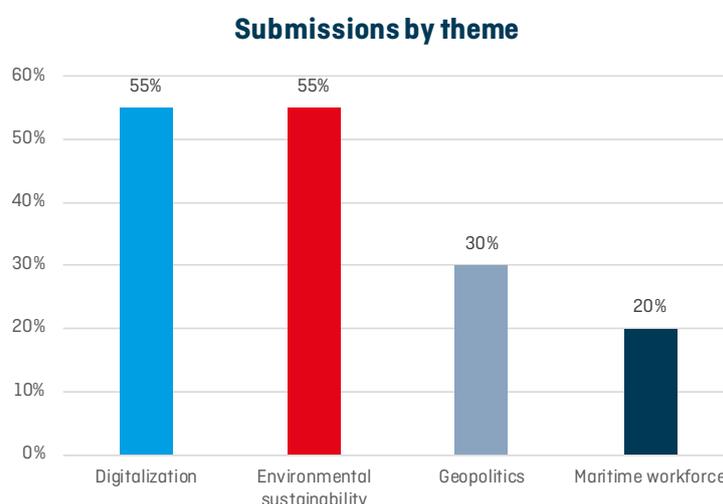
- **Christine Loh**, Chief Development Strategist, Institute for the Environment, Hong Kong University of Science and Technology, Hong Kong (Head of Committee)
- **Graham Westgarth**, Chief Executive Officer, V.Group, UK
- **Amy Jadesimi**, Managing Director, LADOL, Nigeria
- **Oivind Lorentzen III**, Director, SEACOR Holdings, USA
- **Stephen Cotton**, General Secretary, International Transport Workers' Federation, UK
- **Kasper Sogaard**, Head of Research, Global Maritime Forum, Denmark

Submissions by theme

The range of ideas presented in the submissions was extensive, but four large themes emerged:

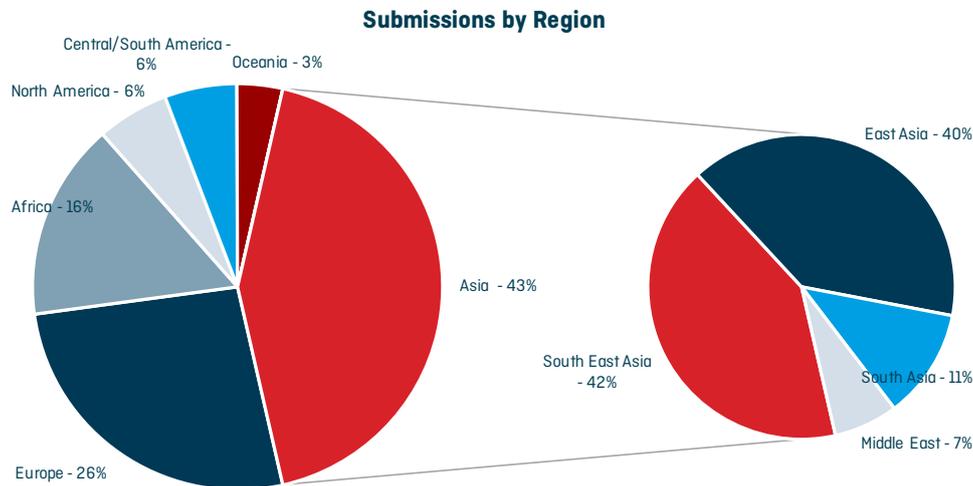
- **Digitalization**
- **Environmental sustainability**
- **Geopolitics**
- **Maritime workforce**

Note: many essays addressed more than one single topic.



Submissions by region

The 140 participants come from 46 different countries in Asia, Europe, Africa, North and South America, and Oceania. The three largest contributors by number are: **China** (22 submissions), **Philippines** (18 submissions), and **Nigeria** (17 submissions).



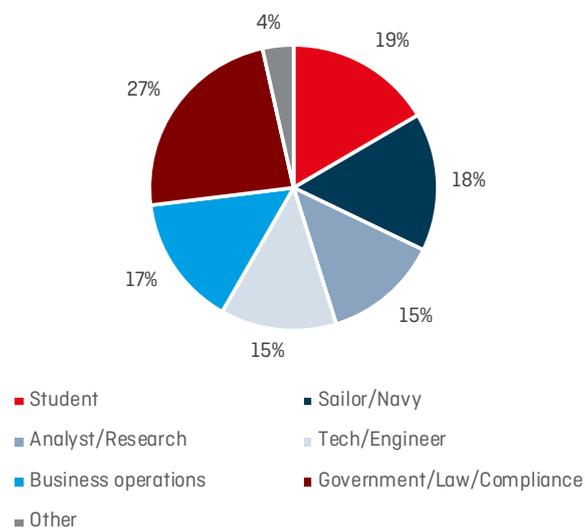
Educational and professional background

The majority of participants are or were enrolled in higher education:

- 59 have or are pursuing an undergraduate degree
- 54 have or are pursuing an advanced degree
- 14 have or are pursuing a law degree of some sort

Some are full time students, but most already have professional experience (breakdown below).

Submissions by profession





Emerging Technologies: Autonomous Shipping and Seafarers' Continuous Professional (Ir)Relevance

Winning essay by Iorliam Simon Tersoo, 30, Maritime Safety Officer, Nigerian Maritime Administration and Safety Agency (NIMASA), Nigeria

The maritime industry is experiencing technological innovations of an unbelievable magnitude. Today, one of the most amazing modern maritime technological inventions in history – the autonomous ship – is no longer a concept but a reality. The International Maritime Organization (IMO) defines a Maritime Autonomous Surface Ship (MASS) as a ship which “can operate independently of human interaction”. The technology, despite its enormous benefits, has among other challenges the issue of the continuous relevance, or irrelevance, of seafarers.

The idea of MASS was born as far back as in the 1970s, when Rolf Schonknecht in his book entitled “Ships and Shipping of Tomorrow” posited that in the future, Captains and Engineers will operate ships onshore using computers. After that, several researchers have made significant strides in that direction. The most recent is the Rolls-Royce/Kongsberg project. Rolls-Royce Marine (now acquired by Kongsberg) successfully tested the world’s first fully autonomous ferry on 3 December 2018 and said, “we strongly believe that the future of the industry is remote and autonomous, and all vessels will benefit in one form or the other depending on type and operations.” Kongsberg is looking forward to delivering the world’s first autonomous container ship “YARA Birkeland” by 2020. All indications are pointing towards the actualization of the autonomous shipping technology, at the latest by 2030.

Consequently, the Maritime Safety Committee (MSC) of the IMO in its 98th and 99th sessions opened discussions and commenced deliberations to develop scopes for certain conventions to provide an international regulatory framework for the arrival of MASS. At MSC 101, the trend shifted to MASS trials. One of the most critical aspects of this technology is its operation, especially the human-machine interface. In my opinion, MASS ships should have shipboard operating capabilities and arrangements, not necessarily for seafarers to be onboard, but in case they are to be introduced as a result of any eventuality. It is also very important to note that the United Nation’s Sustainable Development Goals have also fully opened the window to embrace technological improvements and environmentally friendly inventions and innovations.

MASS technology has unimaginable benefits, ranging from reduction of cost by removing or reducing the crew which constitute more than 50% of the vessel’s total daily operating cost, improved turnaround time, elimination of human errors (which represent 80% of accidents globally), just to mention a few. Interestingly, the technology has come at a time when drones, satellite communications systems, and other amazing technologies are in place to help reduce the risk of piracy attacks on vessels through proper surveillance and proactive measures.

Contrastingly, there are possible security challenges expected to accompany the emergence of this technology which the international maritime community must consider seriously and address. These include cyber-attacks, piracy and sea robbery, as well as terrorism, especially with the recent attacks on two tankers (MT Kokuka Courageous and MT Front Altair) off the coast of Fujairah.

Aside from these, there is a major challenge of threat to seafarers’ jobs and employment. Presently, seafarers represent an indispensable population in the global trade workforce. According to the International Chamber of Shipping and the International Labour Organization, there are over 1.5 million employed seafarers onboard different types of vessels in different parts of the world. What is more, by estimate, over six million people may be depending directly on these seafarers, if we keep it on the ratio of one seafarer to four dependants, and over 20 million people benefiting indirectly from their jobs globally. What would be the fate of this population, in the long run, if these teeming seafarers were to become jobless?

To address the challenges highlighted above, the committee on Human Element Training and Watch-keeping (HTW) of MSC will have to re-organize the curriculum of Maritime Training Institutions (MTIs) globally to embrace this new trend, tilting seafarers training more towards maritime information communications technology (ICT) and regulations that can enable them to participate effectively in the technological revolution. But, another question are the seafarers who are presently employed in the industry and those who are presently undergoing training in their respective MTIs worldwide. How do we phase these engaged people off or provide alternatives for them when the demand for their services declines and the inevitable challenges of life dawn on them and their respective dependants?



J. F. Richard once said that, “desperate times call for innovative measures”, and I think this is what the Global Maritime Forum is doing: harnessing innovative ideas to improve the maritime industry. Fortunately, not all kinds of ships will operate under this category for now. The transition will be gradual and seafarers will soon begin to realize the trend. Nevertheless, the MSC and HTW must recognize that there is substantial need and expectations for a new crop of seafarers in view of the automation of the industry and subsequent technologies. In my opinion, what we must do is to produce the seafarers of the future – digital seafarers, who will sit ashore and take ships to sea and back safely, observing the relevant regulations, whilst carrying out the conventional functions of seafarers automatically and conducting them safely even in the face of perils. But, even more than that, they have to envisage themselves in the ships to accomplish these tasks effectively.

However, before we eventually transit to that stage, we have to look at seafarers who can fit into both the traditional and digital functions, so that the majority of seafarers on the sea can return ashore to work in the MASS industry conveniently. Thus, the industry can look at alternatives like designing ICT courses for seafarers and ship operators.

In view of the foregoing, the international maritime community is invited to take cognizance of the wide gap that exists between this expected future shipping technology and the present maritime training in Africa, as it will have measurable effects on the overall success of the MASS industry.

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Achieving sustainable means of doing business through circular economic thinking in the maritime industry

Winning essay by Line Fryd Hofmansen, 26, Management Consultant, PA Consulting Group, Denmark

Traditionally, business systems of production, trade and consumption have followed a linear model of resource flow where resources are extracted, manufactured, distributed, consumed, and disposed of. Development in emerging markets and growing wealth in the West have boosted the growth in global consumer markets and contributed to steady growth in global trade and consumption of consumer goods, putting pressure on the world’s resources. Emerging markets comprise more than 40% of the world’s population, and their leapfrogging in economic development has caused exponential growth in consumption, which implies a need for new consumption patterns and a circular flow of resources.

As a vital integrator of global trade, the maritime industry enables countries to produce and sell goods based on comparative advantages, which is an important contributor to global economic and societal development. This role suggests a unique opportunity for the industry to become the enabler of circular economy in global supply chains. So far, the sustainability agenda in the maritime industry has focused on finding solutions that will enable the industry to reduce its carbon footprint and move towards the IMO goal of reducing carbon emissions by at least 50% in 2050. However, the negative environmental impact of trade and modern consumption patterns is not resolved by reducing the carbon footprint of the ship alone. Hence, this essay concentrates on how the maritime industry can achieve long-term impact on the sustainability agenda by finding ways to leverage its role and impact in the ecosystem of trade to become an enabler of circular economy in global supply chains.

The shipping industry is currently suffering from the structural challenge of overcapacity. This is both an economic and an environmental challenge for the industry, as large ships are operating below their full capacity. In addition, shipping mostly takes part in linear trade models, i.e. shipping goods from the producer to the consumer. This is a lost opportunity to create profit from alternative income streams such as waste streams. The demand for circulation and recapturing of waste in global supply chains is growing as a result of increasing consumer consciousness about sustainability and an increasing willingness to pay for sustainable products. The demand is particularly present in the apparel industry where falling production costs and growing consumer spending have led to an increase in garment production and purchasing. The consumption patterns are fuelled by a fast-fashion culture that launches new collections four times a year implying a short lifetime for clothing in general, which comes at a high cost for the environment. Each year, the greenhouse gas emissions from textile production amount to 1.2 billion tonnes. Hence, more circular thinking across the full supply chain from production to consumption is needed!



A premise for enabling circular thinking across an industry with multiple independent stakeholders such as the apparel industry requires strong economic incentive structures for all stakeholders. The first step towards creating such an incentive system is to ensure that the system is accessible and transparent to make it easy for all stakeholders to tap into circular means of production, retailing and consumption. By nature, the shipping industry functions as a link between the production and consumption sites in global supply chains. Moreover, consolidation in the shipping industry has meant that the industry to an increasing extent is controlled by large players with the capacity to own or partner with all links in the supply chain. Hence, the size and role of the shipping industry suggest that the industry has the potential to lead global supply chains towards more circular means of production and consumption by offering an integrated system that can turn waste into new resources. This way of thinking is not new to the shipping industry that has made ship breaking and scrapping an integral part of their business model. However, the industry now has a unique opportunity to become the driver of circular economy in global supply chains. More concretely, the shipping industry should use this opportunity to establish new business models for collecting and distributing waste for reuse in global supply chains.

This will require two things. First, partnerships with retail companies must be established to ensure that waste collected from consumers is recaptured and distributed for new purposes. I.e. when H&M offers a 10% discount on your next purchase if you return a bag of clothes, then partnerships between the logistic companies and the retailers must ensure that the shipping industry can buy the “waste” at a favourable price with the intention of reselling and distributing it for reuse. Second, once the waste returns to the supply chain, the shipping industry will need a platform from which they can sell and redistribute their newly acquired resources. The benefit of such a system is that the industry can use its trade pattern insights from knowing all the stakeholders in the ecosystem of global trade to create new income streams from selling and distributing waste as resources across the globe. This would be the case with shipping used clothes from the US to Africa or shipping plastic from the EU to manufacturing sites in China.

Examples of partnerships with the shipping industry as the facilitator of more sustainable trade have already been exhibited by A.P. Moller-Maersk and H&M’s partnership to invest in biofuel and reduce the carbon footprint of logistics. Hence, the building blocks for creating more sustainable global supply chains are already there and should be extended to include tracking and recycling of resources through integrated logistics systems, making it easy and transparent for the consumers to understand the impact of their actions throughout the supply chain. Only in this way can circular economy become relevant to the consumer, who ultimately holds the key to making it relevant for retailers, logistic providers and producers.

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A Trading Scheme Supported by Spatial-temporal Emission Profiles

Winning essay by Yiqi Zhang, 30, PhD Student, Hong Kong University of Science and Technology, China

With growing appreciation for public health and environmental benefits arising from controlling shipping emissions, the International Maritime Organization (IMO) and local governments have established new regulations to prevent shipping-related air pollutants and set up ambitious goals on decarbonization. The IMO 0.5% sulphur cap will come into effect next year, then followed by a NO_x limit, and finally the focus will shift toward CO₂ reduction. While stricter regulations on shipping emissions control are an inevitable trend on both global and regional levels, the regulations and policy agendas vary with regions and governance levels. For example, China has mandated the same requirement as the IMO 2020 sulphur cap for all vessels within China domestic emission control areas (DECA) since January 2019, one year earlier than the effective start of the cap globally. Similarly, the timelines of Tier III NO_x limits for new ships are different in the existing IMO-designated Emissions Control Areas (ECAs). With more new emissions control areas to be introduced in the future, the regional variety of control policy and the challenges for the shipping companies would be further intensified.

Regardless of regional variety, the consensus is that the shipping industry ultimately should transit to greener business operations with stricter emissions standards. But during the process of policy change ranging from global convention to local regulations, shipping companies need to make decisions despite policy uncertainty and contend with a heavier financial burden on business operations. To meet the IMO 2020 sulphur cap, ship owners have to make decisions about whether to switch to the more expensive fuel with a lower sulphur content, to invest in scrubbers, or to shift to LNG powered vessels. Concerning the policy uncertainty resulting from different policy



agendas in different areas, most ship owners stay conservative and choose to use more expensive compliant fuel, instead of installing scrubber systems or buying LNG vessels, both of which involve long-term investment. While SO_x reductions could be achieved through switching to lower sulphur fuel, NO_x and CO_2 abatement strategies require technology upgrades or a transformation of the industry. Therefore, in the long term, we need a solution to offer incentives for industry upgrades and meanwhile provide flexibility in this policy change process.

In this paper, I propose to develop an emissions trading scheme supported by spatial-temporal profiles. To be specific, the scheme has two major components: spatial-temporal emission profiles of individual companies or specific shipping routes, and location-specific emission allowance acknowledged by corresponding ports. Thanks to the widespread usage of Automatic Identification System (AIS), we have been able to identify and track the spatial and temporal information of shipping activities. With AIS data, we can estimate and predict the shipping emissions of a specific vessel with high-resolution spatial-temporal profiles. As a result, the spatial-temporal emissions profiles provide not only the total amount of emissions, but also the spatial distribution. With the spatial-temporal emissions profiles, the company could elucidate their emissions contributions to specific ports or areas. If the company applies new abatement strategies, the spatial-temporal profile will help the company present where the emissions reductions are located and who will be the beneficiary. Based on the spatial-temporal profiles, the port could issue an emission allowance to the 'cleaner' vessel associated with the fact that its shipping activities within the territory waters produce 'fewer emissions'.

I take SO_x control policy as an example to demonstrate how the trading scheme would work. In scenario I, ship A is fueled by LNG with zero SO_x emission and is therefore 'cleaner' than the emission standard in Port A waters mandating a 0.1% sulphur limit. It is estimated that 100kg of SO_x would be emitted from ship A within Port A waters if it was using compliant fuels with 0.1% sulphur limit. Thus, ship A is eligible to apply for an allowance of 100kg SO_x emissions that can be sold in the market. The allowance, however, has spatial restriction and is only applicable in Port A waters. In scenario II, ship B does not meet local emission standards. Port A waters require ships to use fuel with 0.1% sulphur limit while ship B uses global compliant fuel with a 0.5% sulphur limit that is estimated to emit 100 kg more of SO_x emissions. To comply to the local emission standard, ship B could either switch to use local compliant fuel with 0.1% sulphur content or buy an allowance of 100kg SO_x emissions applicable to Port A waters from the market. In addition to the spatial restriction, the allowance could be issued with a temporal restriction. For example, Port A issues the emission allowances that are not applicable in December when it is expected to have severe haze pollution episodes based on historical spatial-temporal profiles of air quality records. In this case, if ship B wishes to enter Port A during December, it will not be able to comply with the local emission standards through buying an allowance.

When it comes to emissions control, local authorities need to develop the policy agenda based on their local conditions, keeping the balance between local air quality, public health, energy system, port competitiveness, governance cost and resource allocation. But unlike other emission sources such as power plants or vehicles, shipping is a global nonpoint activity, and hence it is challenging for international vessels to travel among areas with different policy schedules and regulations. The proposed trading scheme supported by spatial-temporal emission profiles, therefore, offers flexibility for regulation compliance during the policy transition period and provides financial incentives for the industry to upgrade to a greener business model.

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