



GLOBAL
MARITIME
FORUM

Taking the lead



Global Maritime Forum
Annual Summit

Singapore | 30-31 October 2019





Foreword	3
Executive summary	5
Our shared journey	7
Taking the lead	9
The power of collaboration	11
Think tanks	16
The Future is Asian	41
What kept me awake last night	45
Working group outcomes	48
Leading the way	71
Acknowledgements	73



At the Global Maritime Forum's second Annual Summit, held in Singapore on 30-31 October 2019, more than 220 decision makers from the global maritime spectrum came together to take the lead in shaping the future of global seaborne trade.

At the Summit, we discussed how we can address the challenges and opportunities created by digitalization, geopolitical changes, new societal demands, and the urgent need to address climate change. Not only for the benefit of our individual organizations or the maritime sector, but also for the benefit of society more broadly.

Reflecting on the discussions at the Annual Summit, three elements stand out to me that in combination make me optimistic about the future of global seaborne trade – despite the many and complex challenges we are facing.

The first element is a shared sense of pride in the maritime sector and its positive role in the world, as well as in the collective steps we are taking together to improve our impact on global economic development.

The second element is a sense of responsibility to address the challenges that governments, investors, the media and even our children are calling on us to tackle. As one participant shared with us, the challenge to decarbonize shipping becomes personal when your children at the dinner table start asking you: "What are you doing to combat climate change?"

The third element is a growing desire to engage with outside stakeholders. This is not about asking for their help in overcoming our challenges. This is about working together as partners and putting cross-sector capabilities to use in finding the effective solutions that no entity can develop in isolation.

While these observations make me optimistic, it will not amount to much unless we transform this optimism into concrete action. As a platform for facilitating and driving multi-stakeholder collaboration, the Global Maritime Forum stands ready to assist those who are prepared to unleash the potential of global seaborne trade, and turn the optimism generated at the Annual Summit into tangible solutions.

Peter Stokes
Chairman

[Global Maritime Forum](#)

Executive summary

At the Global Maritime Forum's 2019 Annual Summit in Singapore, decision makers from across the global maritime spectrum discussed the important challenges and opportunities facing global seaborne trade. They identified ways in which collaboration and industry leadership can improve the sector's performance and its contribution to sustainable long-term economic development and human wellbeing.

"Taking the lead" had been chosen as the title for the 2019 Summit – and two different interpretations of the term emerged from the discussions.

On the one hand, it could be seen as a tribute to the maritime decision makers and other stakeholders who through **collective leadership** and hard work throughout the past year had made initiatives such as the Poseidon Principles, the Getting to Zero Coalition and Together in Safety possible.

On the other hand, 'taking the lead' could be interpreted as a warning sign. If maritime stakeholders do not take the lead in finding solutions that match the complex challenges facing global seaborne trade, the sector will be leaving its fate to regulators, outside stakeholders and the increasing demands from society. This could lead to suboptimal outcomes both for the industry, but also for society, as it could impede the maritime sector's role as the facilitator of global trade and driver of economic development.

This dichotomy between opportunities and challenges was especially visible in the Summit discussions around the **urgent need to decarbonize shipping**.

These discussions showed that achieving the 'at least 50% by 2050' reduction targets set by the IMO is seen as a shared ambition and even a shared obligation. Reaching it will require an **unprecedented level of collaboration** across the entire global maritime value chain, together with the energy sector and governments, as well as a range of other stakeholders.

Answers must be found to the pressing questions around zero emission fuels and technology, the de-risking of first movers, and around ensuring commercial viability. At the Annual Summit all of these issues were discussed, and as one working group's proposal of introducing a **global carbon levy** of \$75 per ton of CO₂ from 2030 shows, there were no elephants in the room.

Improving maritime safety was another important topic at the Annual Summit. Providing a safe work environment is both a moral imperative and a key factor in attracting the talented seafarers of the future. The discussions focused on how the shared desire to improve safety could be translated into actions that would have a real impact. Among the recommendations were visible leadership, an improved understanding of seafarer well-being and its relationship to safety, and improving data collection and sharing to deepen knowledge and drive change.

Attracting the right talent is a necessity for the long-term success of global seaborne trade. Participants agreed that the maritime sector can offer a compelling career path to the young generation, especially as the industry is looking to improve safety, well-being and its environmental performance, but that the sector could be more visible and adapt the work environment and culture to better suit the desires of young people. In addition, it is important to ensure that the skills of the maritime work force are continuously updated to **match technological developments**, not least the rise of digital technologies.

Digital technologies and how they can drive **improvements in efficiency** across the maritime logistics chain was the fourth issue in focus at the Summit. While participants agreed that there is a large potential for improving efficiency and reducing waste through digitalization and data sharing, it was also clear that there are significant barriers that must be overcome if these benefits are to be reaped. Among the barriers identified were a lack of trust, a lack of standards to underpin data collaboration, as well as an often uneven incentive structure, where the stakeholders who benefit the most from the sharing of data, are different from the stakeholders who bear most of the costs.

Looking across the topics discussed a few **overarching themes** stand out.

Firstly, there was a great **sense of pride** in the role the maritime sector plays in providing efficient economic services that are key to enabling the growth of global



trade and global economic development around the world. There was a sense of optimism that the ongoing and collaborative efforts of industry leaders and other important stakeholders could help create a positive future for the industry and the world, by addressing the common challenges facing global seaborne trade and the wider society.

Secondly, the imperative to **collaborate and engage with stakeholders outside the maritime industry** to effectively address the challenges facing global seaborne trade was repeatedly stressed. For example, to engage with the energy sector to deal with decarbonization, to learn from other industries to improve safety and efficiency, and to engage directly with young people and the education system to attract the talent of the future.

And finally, there was a **strong call for increasing diversity** – in terms of gender, age and geography – both at future Global Maritime Forum Annual Summits and in the leadership of the sector as a whole, so that it better reflects the changing economic, demographic and political dynamics of the world.

The Annual Summit concluded with the announcement that the Global Maritime Forum's Annual Summit in 2020 will take place on 13 and 14 October in **London**. This will be an important opportunity for presenting the tangible developments of the ideas generated at the Singapore Summit, and to further expand and diversify the community of decision makers that are taking the lead.

Our shared journey

“The purpose of the Global Maritime Forum’s Annual Summit is to stimulate active debate. The expression of strongly held opinions and the exchange of ideas. Because of the broad range of perspectives represented here today we have a unique opportunity to see problems in the round and to develop solutions which take account of the complex interactions along the maritime value chain.”

Peter Stokes, Senior Adviser and Head of Shipping, Lazard; Chairman, Global Maritime Forum

Taking the lead

More than 220 leaders from industry, government and civil society from 37 countries participated in the Global Maritime Forum’s Annual Summit in Singapore in October 2019. From the Summit’s opening, the focus was on four main themes:

- Decarbonizing shipping
- Together in Safety
- Attracting the right talent
- Improving efficiency through collaboration

As part of his welcome address, Chairman of the Global Maritime Forum, **Peter Stokes**, highlighted the work that had been undertaken over the past twelve months on those themes: improving the safety performance of the industry, at least halving the sector’s greenhouse gas emissions by 2050, and including the voices of the next generation of maritime leaders.

Following the welcome address, Singapore’s Deputy Prime Minister and Minister for Finance, **Heng Swee Keat**, took the stage. He explained how the maritime industry has put Singapore prominently on the global map and how the industry remains critical to its economy. As such, hosting the Global Maritime Forum’s 2019 Annual Summit was a natural fit for Singapore.

“The maritime industry needs to think about staying relevant and ahead. How? By upholding multilateralism, by stepping up its efforts on sustainability, and by harnessing the advancement of technology.”

The power of collaboration

The opening plenary was followed by a presentation of the tangible results forged from the ideas generated at the Global Maritime Forum’s 2018 Annual Summit:

- Members of the **Together in Safety** group presented three core areas for achieving a zero-accident industry and five key behaviors that maritime leaders can adopt to improve the safety culture of their organizations.
- Public and private sector leaders discussed the **Getting to Zero Coalition’s** moonshot-ambition of having commercially viable zero emission vessels operating along deep-sea trade routes by 2030.
- The architects behind the **Poseidon Principles** discussed the world’s first sector-specific, self-governing climate alignment agreement amongst financial institutions.

To lend space to the voices of the future, the Global Maritime Forum has established the **Future Maritime Leaders essay competition**. The three winners for 2019 and the Chair of the selection committee, **Christine Loh**, Chief Development Strategist, Institute for the Environment at Hong Kong University of Science and Technology, provided their perspective on global seaborne trade.

Think tanks

What are the major opportunities and challenges facing global seaborne trade? In two parallel rounds, twelve informed conversations with experts and thought leaders provided participants with new insights and perspectives on topics ranging from a carbon levy for shipping, data collaboration, increased societal demands for sustainability to seafarers’ mental health.

The future is Asian

Rounding off the first day, **Parag Khanna**, best-selling author and founder and Chief Executive Officer of Future Map spoke about the growing prominence of Asia. He explained to Summit participants how trade agreements, key transshipment points, and the Belt and Road Initiative are reshaping global trade networks and supply chains.

Work in groups

Group work was at the core of the second day. Building on the discussions of the first day of the Summit, the task was to develop actionable ideas to address key challenges and opportunities for global seaborne trade and achieve a safe, clean, inclusive and efficient maritime industry. Different action opportunities developed by 11 working groups. These were presented and discussed in three rounds of group work, and input from other participants was incorporated.

Framing the possibilities

Each of the Summit’s four main themes came under scrutiny by the participants in this working group session. No stone left unturned, the associated challenges and opportunities facing global seaborne trade and potential ways to address them through collaborative action and leadership, made up the components of every debate.

What kept me awake last night

What will the next revolution in global seaborne trade look like? How can we take in and take on the increased focus on environmental and social factors and make it a part of a good business? A wide-ranging conversation among leaders from across the sector on what they find most exciting about the future of global seaborne trade, kicked off the second day of the Annual Summit.

Leading the way

The Annual Summit concluded with all 11 working groups sharing the outcomes, reflections and ways forward of their group work, followed by a discussion about the role of individual and collective leadership in shaping the future of global seaborne trade to increase sustainable long-term economic development and human wellbeing. Peter Stokes closed the meeting by inviting **Roger Hargreaves**, Director of Maritime, UK Department for Transport to the stage to pass on the baton to London, the international maritime hub chosen to host the Global Maritime Forum’s Annual Summit in 2020.



Taking the lead



GLOBAL MARITIME FORUM



GLOBAL MARITIME FORUM



GLOBAL MARITIME FORUM



GLOBAL MARITIME FORUM



GLOBAL MARITIME FORUM



The maritime sector can ride the winds of change and waves of disruption – by upholding multilateralism, by stepping up our efforts on sustainability, and by harnessing the advancement of technology. This will require the collective effort of industry players, multilateral institutions and governments.

Heng Swee Keat, Deputy Prime Minister and Minister for Finance, Singapore

The power of collaboration

The key challenges facing the maritime sector cannot be solved by any individual organization or part of the sector. They require cross-industry and multi-stakeholder collaboration. Four presentations showed the progress being made in this regard.

Together in Safety

The maritime industry has one of the worst safety performances of any industry. Approximately 1,500 lives are lost every year and 15% of the incidents may be related to suicide. Most importantly, the impact of a loss of life on the loved ones is devastating, personal and forever, and for that reason alone, ways to change this number are critical for the industry. **Grahaeme Henderson**, Vice President Shipping and Maritime at Shell, emphasized in his presentation.

Moreover, a significant amount of time and resources are taken to manage incidents, as well as their impact on reputation.

For these reasons exactly, the **Together in Safety** initiative was born at the Global Maritime Forum's Annual Summit 2018 in Hong Kong, explained **Sarah Waite**, Strategy and Performance Excellence Manager at Shell.

Together in Safety aims to achieve a zero-accident industry, and works across industry bodies to learn from one another and to commit on best safety practices.

In its first year, Together in Safety has identified three core areas where actions are necessary to achieve its vision: Leadership, Accountability and Collaboration.

How do you improve a safety culture? **Graham Westgarth**, Chief Executive Officer of V.Group, brought to the table five key behaviours that maritime leaders can adopt in their organizations: setting a clear vision; painting a picture of success; addressing unsafe conditions; responding to challenges; and inspiring others.

In addition, sharing of best practices and safety data among organizations, and learning from other industries was recommended.



Voice of the Future

The second discussion introduced the results and winners of the Global Maritime Forum's **Future Maritime Leaders essay competition**. The Chair of the competition's selection committee, **Christine Loh**, Chief Development Strategist at HKUST's Institute for the Environment, stated that her key takeaway from the competition is that it reflected the enthusiasm of younger generations to tackle the industry's greatest challenges and exemplified the diversity of nationalities, gender and ideas of the next generation of maritime leaders. She encouraged the industry to welcome and work with these future leaders and think about how to bring them into their organizations.

The three competition winners presented the main points from their winning essays:

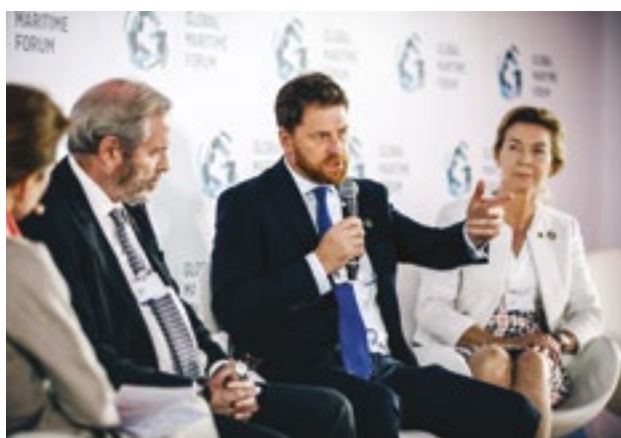
Simon Tersoo Iorliam, a Maritime Safety Officer at the Nigerian Maritime Administration and Safety Agency, touched on the need to train seafarers for a digital future. He suggested that disruptive technologies will allow the industry to overcome challenges at sea with digital tools, and will also change the jobs of seafarers. This implies a need to reflect on the skill requirements for the future in order to train a new breed of seafarers.

Line Fryd Hofmansen, a Management Consultant at PA Consulting Group, highlighted that the maritime industry has the size and capabilities required to lead the way in new sustainable trade practices, and suggested the industry leverage and adopt a circular economy approach. The key is to look at the potential advantages instead of the

disadvantages, and to build the necessary infrastructures.

Yiqi Zhang, a Ph.D. candidate at Hong Kong University of Science and Technology, proposed a shipping emissions trading scheme as a solution to the industry's challenge to reduce air emissions. To set up such a scheme, AIS tracking could be used to quantify emissions by port and territorial waters. Port authorities could then issue allowances tradable on the market, thereby creating financial incentives for the industry to reduce air emissions.





Getting to Zero Coalition

The fourth presentation explained the motivation for the **Getting to Zero Coalition** and its collaborative approach.

Søren Toft, Chief Operating Officer of A.P. Moller-Maersk, emphasized that the Coalition is a great vehicle to accelerate the innovation and scaling of future technologies. Maersk's energy efficiency improvements of 45% have only managed to offset increased emissions from the company's growth. Therefore, simple energy efficiency will not be enough to achieve the IMO climate targets. Instead, energy sources different from the ones used today will be needed.

In line with this, Søren Toft presented the findings of the modelling exercise which Maersk has done with Lloyd's Register and UMAS, resulting in the identification of three possible future fuels: alcohols (methanol and ethanol), biomethane and ammonia.

Jan Dieleman, President of Cargill Ocean Transportation, stated that the main barriers to getting to zero are technology, economic viability and the legal framework for a level playing field. The industry

as a whole has a responsibility to decarbonize and the entire supply chain needs to work together to achieve this goal.

Preparing for decarbonization, there is a need to consider how to put a price on carbon, and to address some of the safety aspects of new fuel types. These are tasks the IMO must carry out, or else there is a risk of nation states creating patchworks of regional regulation.

Why does shipping need to act? **Isabelle Durant**, Deputy Secretary-General of the United Nations Conference on Trade and Development (UNCTAD), highlighted three reasons. First, trade volume is set to double by 2050. Second, we must change how the business model generates economic profitability for the sector. Third, oceans are a common public good, and young generations will hold us accountable for what we have done and are doing to the oceans. A further point from Isabelle Durant was, that in taking on the challenge of transitioning to decarbonized shipping, steps need to be taken to ensure sustainable development in small island developing states and land-locked states.

Bryony Worthington, Executive Director for Europe at the Environmental Defense Fund, asked participants to imagine a world where hydrogen made from sunlight and water is used as a fuel. She suggested that shipping is positioned to take the lead and deliver a vision where this fuel can be produced everywhere around the world. She also highlighted that this energy transition represents a trillion-dollar market opportunity. To take on the challenge of new fuels, more diverse voices are needed at the IMO, and the Coalition is the first step in the right direction.

[Visit our YouTube channel to learn more about the power of collaboration.](#)

Poseidon Principles

In June 2019, 11 leading banks, jointly representing approximately USD 100 billion in shipping finance, signed on to the Poseidon Principles – a new global framework for responsible ship finance which will help incentivize shipping's decarbonization in line with the IMO's climate goals.

The Summit introduced and discussed these Principles and the effect they will have on the maritime industry.

According to **Michael Parker**, Chairman of Global Shipping Logistics & Offshore at Citi, the Poseidon Principles are about responsible banks supporting

responsible owners to align the financial community with the IMO targets. He was confident that Asian banks would sign up to the Principles soon and that 80-90% of serious shipping lenders would sign up during the next year.

The creation of the Principles embodies leadership, responsibility, accountability and transparency and has garnered huge positive media attention, showcasing the power of sustainable business practices, **Paul Taylor**, Global Head of Shipping at Société Générale CIB, said. Moreover, the Principles will create greater due diligence and improve communication between financiers and the maritime

sector about the challenges and opportunities related to shipping's fuel transition.

Kristin Holth, Executive Vice President and Global Head of Ocean Industries at DNB explained that close industry collaboration and expert assistance made the development of the Poseidon Principles possible. The Principles move the industry in the right direction by aligning with the IMO and supporting the industry, while still leaving room for development. The next step for the banks is to report the carbon alignment of their portfolios, after which further adjustments can be made.

“My kids demand answers ... among others from their father.”

Søren Toft, Chief Operating Officer, A.P. Moller-Maersk

Think tanks



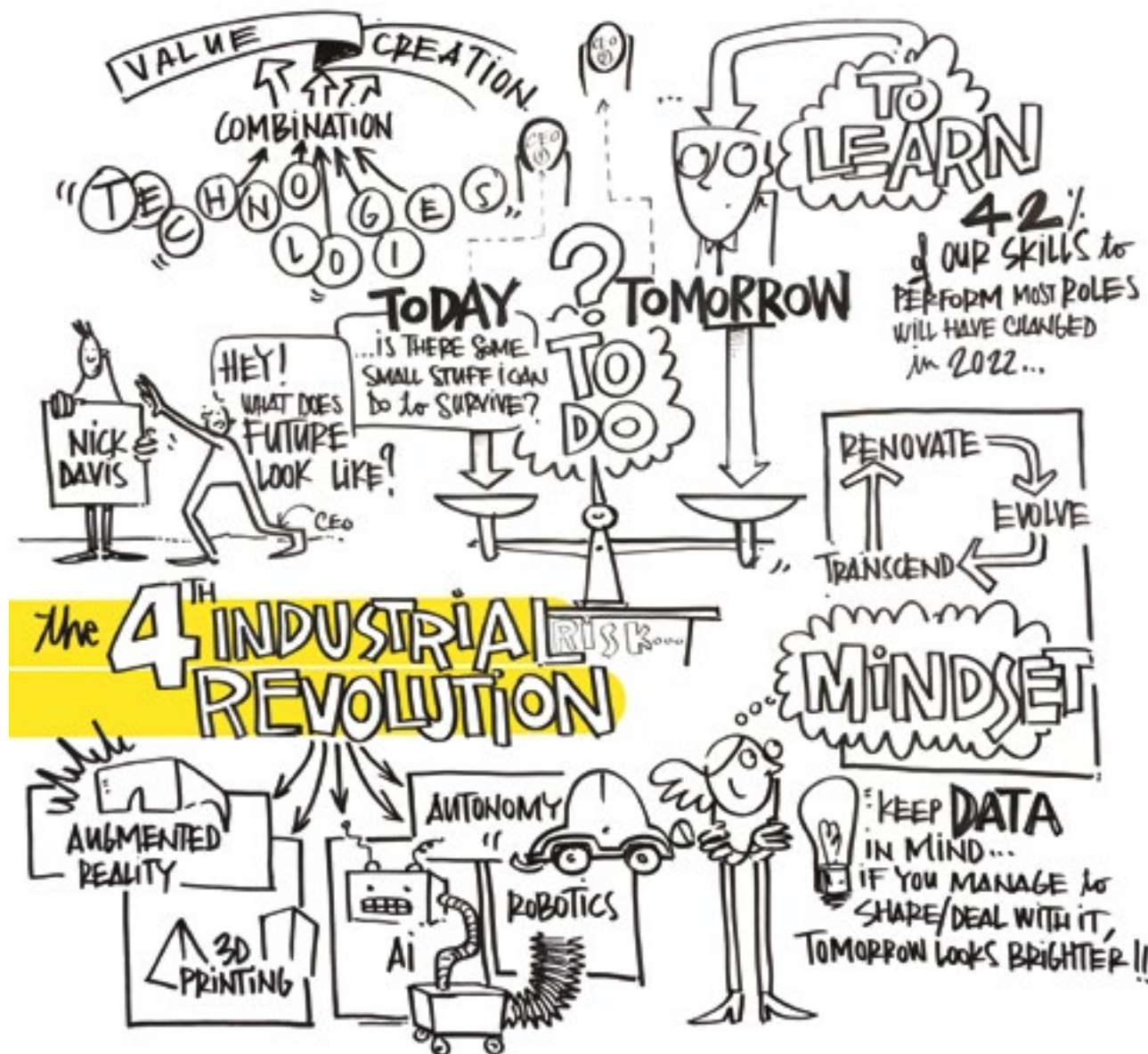
Presentations on subjects such as safety, talent, efficiency, digitalization, and sustainability provided insights and new perspectives on the global forces as well as key opportunities and challenges that will drive change across global seaborne trade. They also highlighted concrete examples of action in other sectors to inspire change in the maritime sector.

These expert sessions and the insights they offered helped drive the discussions and solutions of the subsequent working groups by providing participants with background knowledge, impetus for change, and possible ways forwards.

Expert presentations The Fourth Industrial Revolution

New cyber-physical systems are driving digital connectivity and creating new systems of value and efficiency. How will businesses transform and what skills are needed to succeed in this environment?

Nicholas Davis, Professor of Practice, Thunderbird School of Management; Co-Author of Shaping the Fourth Industrial Revolution



The world is on the verge of the so-called Fourth Industrial Revolution. The first three industrial revolutions were characterized by mechanics and steam, electricity and mass production, and electronics and automation. The Fourth Industrial Revolution is defined by cyber-physical systems and interconnectivity.

Nicholas Davis showcased some of the key technologies driving the Fourth Industrial Revolution: improved robotics, 3D printing, autonomous vehicles, artificial intelligence, augmented/virtual reality and digital advancements such as fintech and blockchain. He went on to conclude that the Fourth Industrial Revolution is not about a singular technology, but rather how various new technologies can serve as platforms for delivering value.

Along with many benefits such as connectivity and efficiency, the Fourth Industrial Revolution also brings a lot of uncertainty and anxiety. Studies done by the World Economic Forum estimate that by 2022, 42% of the core skills required to perform most roles will change. At the same time, demand is growing for critical, analytical and creative thinking along with technology design, programming, leadership, systems analysis, emotional intelligence and complex problem solving.

The future of business in the Fourth Industrial Revolution is top of mind for most leaders contending with this transformation. According to Nicholas Davis, the most common question related to the Fourth Industrial Revolution is "what will my sector look like and how will the boundaries, business models and relationships change?" His answer: "It's up to you." In his view, CEOs and maritime leaders hold the key to shaping the future of their industry, to determine what

and how much digital transformation the industry will undergo.

Citing the example of General Motors, Nicholas Davis explained that some organizations split the CEO role to maximize efficiency and while undergoing the necessary transformations, where one of the CEOs focuses on revenue/business and the other focuses on transformation. Another option is to take up corporate venturing and develop partnerships with start-ups. This can help drive innovation by leveraging technology and bringing in new, younger perspectives and mindsets.

According to Nicholas Davis, mindset is exceedingly important and there are three types of mindsets that bring about change in the Fourth Industrial Revolution:

- Renovate: leveraging technology to optimize existing business practices
- Evolve: shifting business models to consumer demand
- Transcend: reinventing your company to create new forms of value

Netflix is a good example of real-life transformation. It started as a video rental company, then it transformed into a streaming provider and now is leveraging the data it collects to create original content.

Nicholas Davis concluded that leveraging data is a huge missed opportunity within shipping. Currently, there are major operational inefficiencies within the maritime industry and data remains fragmented among different stakeholders. Data sharing (in combination with publicly available data, such as satellite data, which can be pooled and fed back to the industry in order to incentivize further data sharing) can help solve these operational inefficiencies and drive industry change.



Expert presentations

Unlocking value through digital collaboration



How digitalization and blockchain can unlock new ecosystems of value through pre-competitive collaboration across sectors.

Sanjaya Mohottala, Managing Director and Partner, Boston Consulting Group

In an increasingly digital and interconnected world, there is ever more demand for mechanisms to communicate and share information reliably. This is particularly relevant for the maritime industry, as it is exposed to inefficient data and document management, complex regulatory requirements, trade-based money laundering and fraud and limited traceability.

Sanjaya Mohottala believes that blockchain is the solution to these and other challenges due to its efficiency and unique design that fosters both trust and integrity. This is especially relevant in maritime, where information is considered commercially sensitive and transparency is seen as a competitive disadvantage.

According to Sanjaya Mohottala, there are many applications for blockchain in the maritime industry, including: Goods origination, status tracking, asset and supply certification, capacity monitoring and planning, invoices and payment management, trade and credit financing, insurance and claims handling, and employee certification. Moreover, investment and development of blockchain technology is increasing in the trade and logistics sector. There is currently \$303 million invested across 115 companies in this sector.

Sanjaya Mohottala pointed to encouraging signs in the industry that the mindset around blockchain is changing. For example, a Boston Consulting Group survey suggested that 92% of trade and logistics executives believe that blockchain has relevant applications in their sector, 77% believe that blockchain

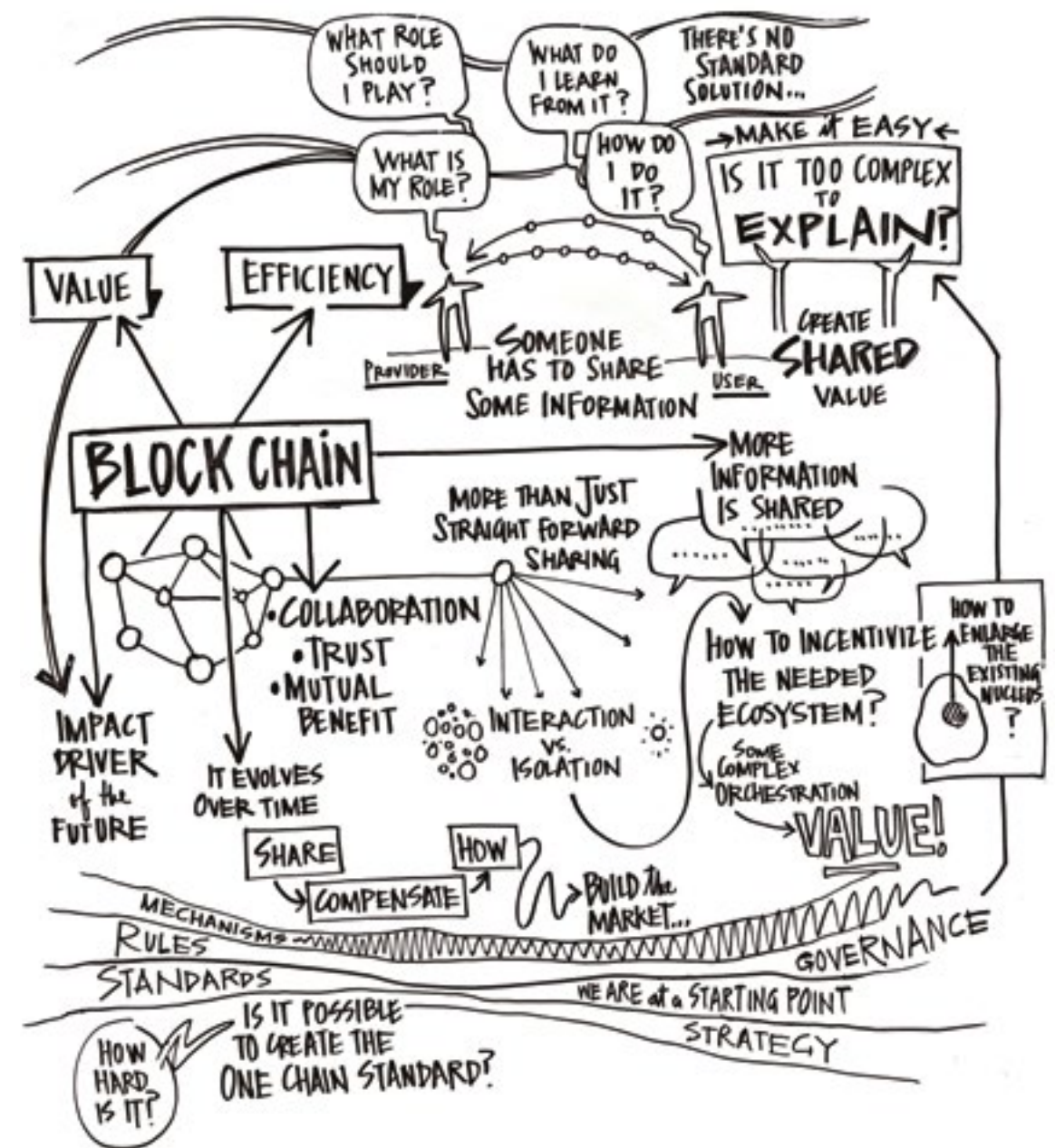
will be a disruptive force, and 55% believe that this disruption will take place in the next 2-5 years.

On the other hand, only 25% of these executives have started to think about how blockchain can be used in their own business. This discrepancy indicates that the industry is going through a phase of "technology realization". Sanjaya Mohottala identified three barriers that are currently limiting the uptake and proliferation of blockchain as a solution to many issues:

- Limited understanding and trust in blockchain
- Fragmentation and lack of coordination across the value chain
- Inconsistency and complexity of regulatory requirements, as well as the lack of sufficient regulation

As a result initiatives are created and run separately, even though greater value might be created if these different groups and initiatives could come together, as there are multiple points in shipping where collaboration and communication are critical, for example, with freight forwarders, charterers, and operators.

Sanjaya Mohottala pointed to collaboration as the key to overcome this fragmentation. Only through multi-stakeholder engagement and cooperation – including with regulators who can develop supporting legal and policy frameworks – can there be mutually beneficial standard setting and adoption.



Expert presentations

Merging the physical and the digital

Digital solutions on their own do not provide value to the maritime sector. Only when they are linked to physical processes, assets and people are they able to truly transform value chains and build solutions for the real world.

Deanna MacDonald, Chief Executive Officer, BLOC

When it comes to digitalization and new technologies, the maritime sector is facing unprecedented changes and challenges that will be felt by the entire industry. According to Deanna MacDonald, collaboration across the industry and with technology providers, academic institutions and other relevant sectors is key to transformative innovation. Only through experimentation, collaboration and open, critical discussions do new business models, revenue streams and value propositions emerge.

To illustrate her point, Deanna MacDonald showcased the example of a new solution called BunkerTrace. It all started with a problem, bunker contamination. It was unclear where and when along the value chain bunker fuel gets contaminated and how bunker fuel could be tracked along the supply chain to answer this question. What was clear, however, was that no one company had the solution to these questions.

The first steps included developing a consortium, inviting relevant players in the supply chain and possible solution providers to give their input and knowledge. In the end, BLOC provided the digital solution, while another solution provider, Forecast, contributed the tracking solution, and project partners offered the support and input necessary to ensure successful development and implementation across the supply chain.

For Deanna MacDonald, the bunker contamination project is a prime example of how different stakeholders each have one or more pieces of the puzzle. Only by coming together in a problem driven consortium can the puzzle be put together and solutions found.

Collaboration is the only way the maritime industry can tackle other complex challenges such as developing a standardized data sharing platform or creating commercially viable zero carbon fuels and vessels.

BunkerTrace showcases that this type of collaboration is feasible, and that industry stakeholders are willing and able to engage in mutually beneficial pre-competitive collaboration. All it takes is for businesses to be willing to take the lead in setting up these projects.





Expert presentations

Attracting the right talent

Think tanks

The maritime industry is finding it harder to attract the talent required to operate in a digital and modern environment. This jeopardizes the future of the industry.

Annie Koh, V3 Group Professor of Family Entrepreneurship; Finance Professor; Vice President, Business Development; Academic Director, Business Families Institute and International Trading Institute, Singapore Management University

Kenneth Lim, Senior Director, Innovation, Technology and Talent Development; Chief Technology Officer, Maritime and Port Authority of Singapore

The generations that will make up the majority of the maritime industry's workforce in the coming decades are more technologically savvy, and they value environmentally and socially responsible companies. In this context, it is proving hard for the maritime industry both to attract and retain younger talent.

- Improving retention by offering re-skilling so that the current employees can do future work and by defining jobs with higher value to provide pathways for advancement
- Finding new ways to attract new talent into the workforce
- Building up ecosystems with start-ups, partners and universities to enhance the presence of the maritime industry and create multiple channels for talent identification and acquisition

To improve the maritime industry's talent acquisition, development and retention will require more than just rebranding. Better defined maritime jobs, career pathways, and training and development opportunities for employees will be key. The first step in this process is developing partnerships between local universities, maritime businesses and relevant government authorities, so that the maritime industry's visibility is improved, relevant talents are being developed and trusted networks for employment created.

The partnership between the Singapore government and Singapore Management University shows these action fields at work. First, the university established maritime economics as a major to develop more maritime talent – in close collaboration with the government. Then, the university moved on to the second phase of collaboration by working with industry to better understand the skills needed for the future of the maritime industry. As a result, in 2018, the university established a new specialization, maritime operations, under the operation management major.

Using Singapore as an example, Annie Koh and Kenneth Lim provided their perspective on how maritime organizations can both attract and retain talent.

Partnerships of this type also provide young talents with hands on experience through local site visits, internships and networking opportunities. In total, students become more familiar with the maritime industry and the maritime businesses can better identify and hire emerging talent.

The maritime industry in Singapore generates 7% of the country's GDP and has the potential to employ as many as 170,000 within their borders, and the Singaporean government is continuing to develop the country as an international maritime hub. This endeavor does not only entail improving maritime infrastructure, but also the development of Singapore's younger generations as future workers and leaders of the maritime industry. To that end, the Singaporean government, spearheaded by the Maritime and Port Authority of Singapore, has developed three fields of action:



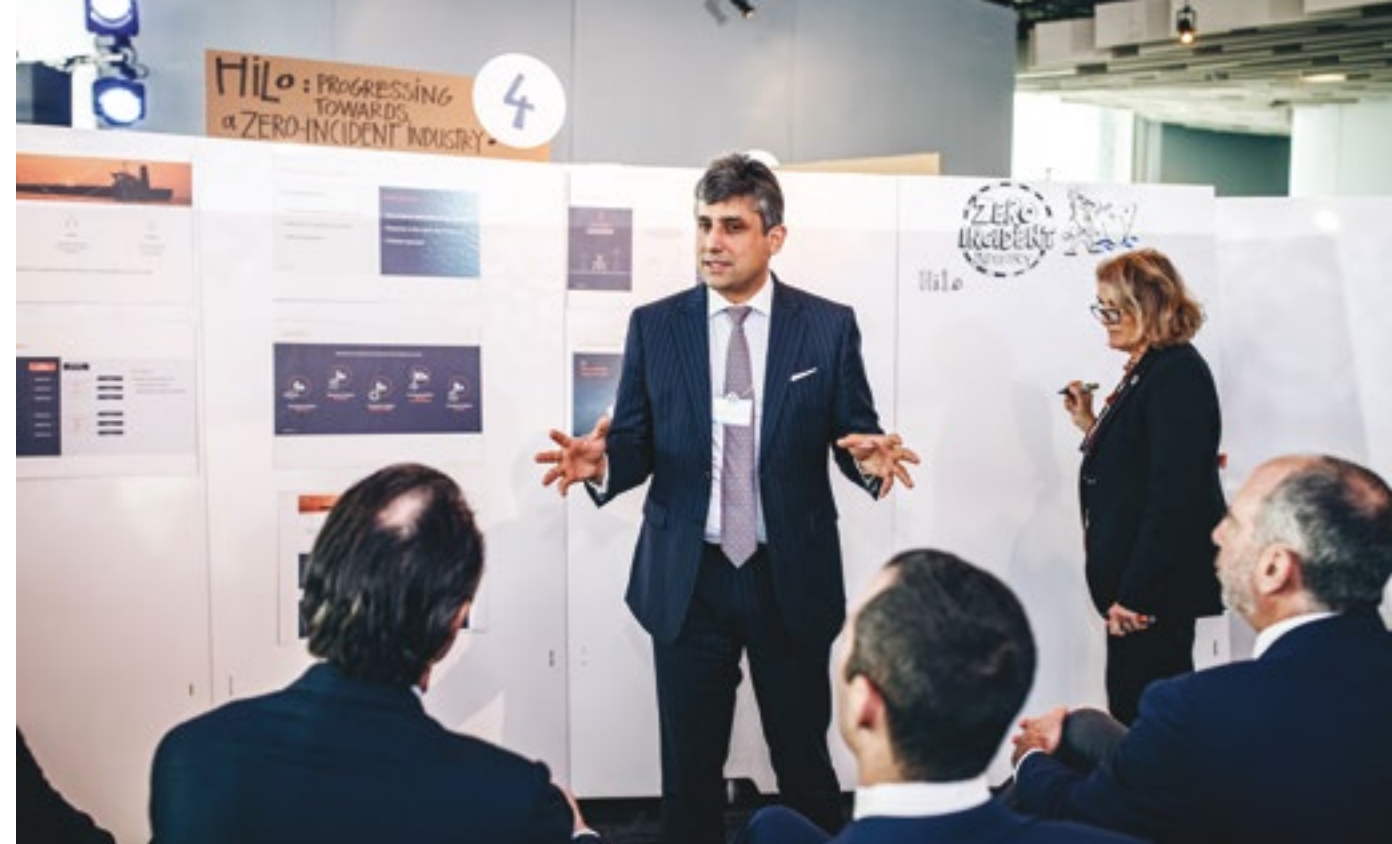
Think tanks

Expert presentations

Harnessing data to make progress towards a zero-incident industry

How data collection and analytics can prevent fatalities and serious injuries by improving the predictability and response to major incidents.

Manit Chander, Chief Executive Officer, HiLo (High Impact Low Frequency) Maritime Risk Management



High impact shipping incidents happen far too often, resulting in the loss of hundreds of lives and ships every year, as well as environmental damage. An estimated 75% of casualties from these maritime incidents are a result of human error.

REDUCING RELIANCE ON HUMANS

According to Mani Chander, it follows that the best way to improve safety at sea is to reduce the reliance on human judgment by leveraging available incident data and adapting a more proactive approach to safety.

With over two decades of seafaring experience and as victim of a safety incident himself, Mani Chander highlighted that the current approach to analyzing safety is both limited and reactive. Companies analyze only their own internal data and respond only after a major incident has occurred.

MORE DATA, BETTER RESULTS

HiLo Maritime Risk Management, an independent and not-for-profit organization, has a data driven approach to safety. The first step is to collect the already available data from its subscriber fleet of 3,500 ships (2,200 tankers, 800 bulk carriers and 500 container ships) from 50 leading ship operators.

The second step is to analyze data from around 10,000 incidents and near misses every month to identify the primary undesirable and leading events. HiLo does this by modelling and prioritizing risk (which factors

in frequency, probability and impact) rather than just frequency, as is currently done by most companies. This allows HiLo to identify and prioritize the high impact undesirable events, as well as what led up to these incidents.

Finally, HiLo provides warning signals and good practices that allow seafarers and shipping companies to proactively identify and address the problems on board their vessels to decrease the risk of undesirable events.

According to Mani Chander, HiLo has significantly more data than the maritime industry's top casualty and incident database. Leveraging this data, subscribing companies have reduced their risk of bunker spills by 25%, engine room fires by 65% and lifeboat accidents by 72%.

To address concerns around data sharing, Mani Chander stressed that all data shared is anonymized and thoroughly protected. He also emphasized that while the current data appears impressive, further industry collaboration and sharing can lead to even better predictive modelling, thereby improving the accuracy and effectiveness of HiLo and of the safety of the entire maritime industry.



Expert presentations

Seafarer wellbeing and mental health

Think tanks

Mental health is the most serious and under-addressed safety concern on board seagoing vessels.

Sarah Waite, Strategy and Performance Excellence Manager, Shell

Mental health is a real and legitimate factor that affects the health and productivity of employees. Every year, 400 million workdays are lost due to mental health problems with only 41% of people receiving professional health care for mental illnesses.

In the shipping industry, 6% of deaths, not counting suspicious cases of missing seafarers, are attributed to suicide. Drawing on Shell's Wellbeing and Mental Health Programme, Sarah Waite provided guidance on how to create an environment that encourages and supports seafarers to seek help and provides the necessary tools to do so.

FIVE FACTORS FOR MENTAL HEALTH AT SEA

The Shell programme is based on a review of over 700 academic papers, 60 industry publications and 30 hours of interviews with health professionals, academics, industry experts and seafarers. Citing the findings from this study, Sarah Waite presented five primary factors that influence mental health at sea:

- Fatigue (quantity and quality of down time)
- Nature of working environment (workload and stress due to their working environment)
- Nature of role (workload and stress due to their vocation)
- Socialization (how well are seafarers integrated with each other)
- Leadership (support from both on and offshore management)

Shell is now turning this research into action. The aim is to empower the individual to seek help, foster understanding and ensure that leaders have the necessary skills to recognize mental health risks and act on them. Action areas include creating a beneficial culture and tone, and improving environmental factors such as living conditions and separation from family; improving job satisfaction and security, workload and fulfilment; improving on board team cohesion to prevent feelings of isolation; and creating an open and interactive culture.

HOW TO TACKLE SEAFARER WELLBEING

Shell has developed eight specific programmes, divided into modules for seafarers and guides for ship managers. Seafarer modules consist of trainings on individual awareness, understanding mental health and fatigue management. For ship managers, the trainings focus on mental health championing, chain of command and peer to peer support.

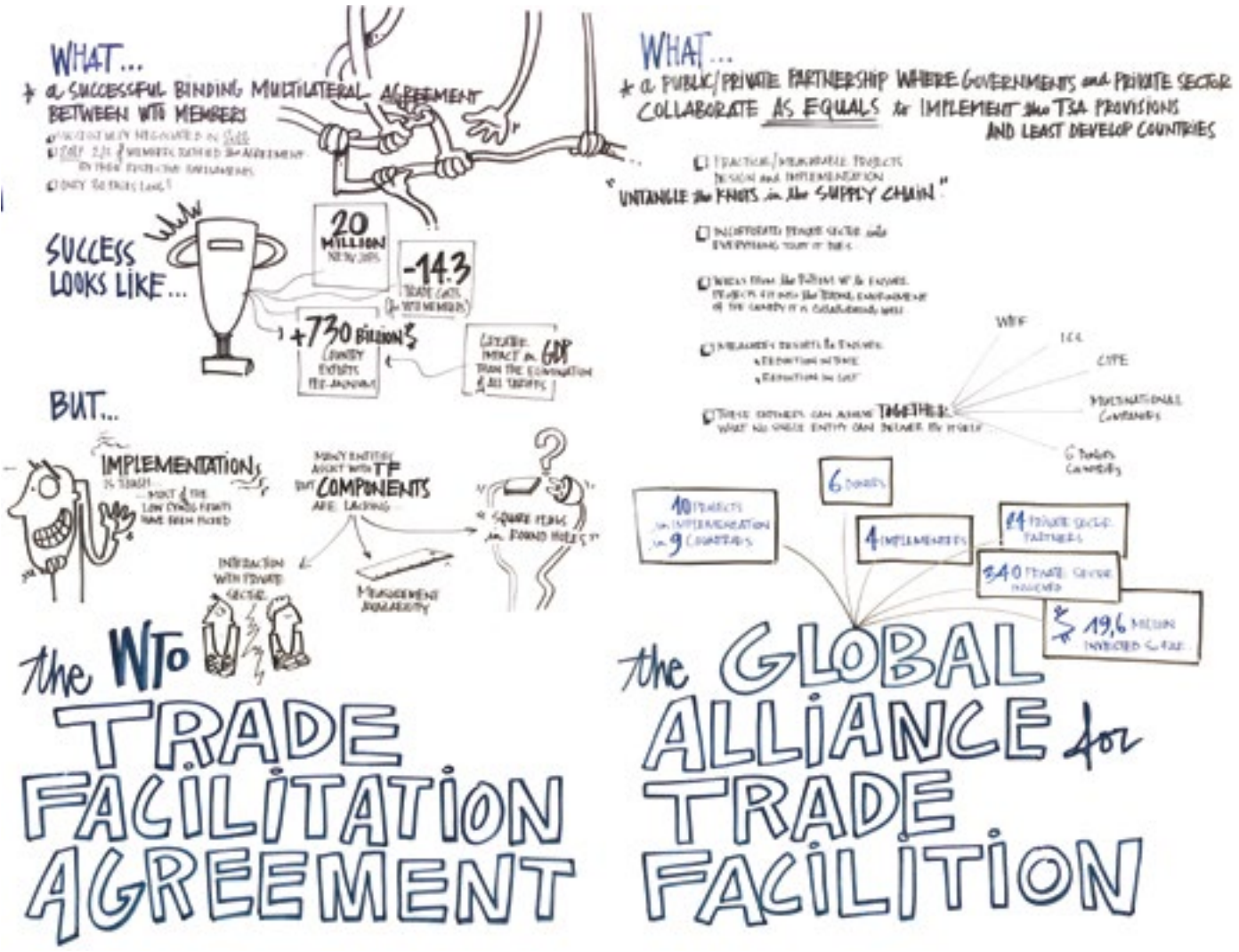
There is also a push to improve employee assistance by giving 24/7 support and assistance to those seeking it, and furthermore, Shell is developing partnerships with NGOs and other industry leaders to collaborate on seafarer wellbeing.

Sarah Waite emphasized that while there is still much work to be done, these programmes serve as an example of what can and should be done to begin improving the existing workplace culture, which allows mental health to remain a dangerous taboo among seafarers.



How the maritime industry can boost trade and support the Sustainable Development Goals.

Philippe Isler, Director, Global Alliance for Trade Facilitation



Even in a globalized world many trade inefficiencies remain that hamper global trade and hinder economic development. Improving the ease and efficiency of cross border trade offers significant benefits for the maritime industry, as fewer barriers allow for more trade and economic growth.

In action, the Alliance works by using a bottom up method to create a public-private dialogue to identify the challenges and solutions collaboratively. This collaboration ensures that projects fit into the trading environment of the country in which a project is being carried out.

Philippe Isler explained the role of the WTO's Global Alliance for Trade Facilitation as enhancing trade by implementing simple, fast and cost-effective measures through public-private partnerships. According to Philippe Isler, obstacles in the trade supply chain are rampant. Every signature, inspection and paper document can generate exponential delays and costs. Therefore, simplification through public-private partnerships can greatly reduce the time and cost of trade, especially in emerging economies.

SHARED RESPONSIBILITY DRIVES RESULTS

Philippe Isler pointed out that both the public and private sector have a shared responsibility for trade facilitation reforms and that the best, most commercially meaningful reforms are designed in collaboration between the public and private sectors. The private sector brings expertise, resources and connections while the public sector is vital for implementation and legal support.

COLLABORATION IN ACTION

The Global Alliance for Trade Facilitation focuses on three work streams:

- Creating sustainable public-private partnerships and multi-stakeholder dialogues on trade facilitation reforms
- Delivering commercially measurable trade facilitation reforms
- Measuring results and building trade facilitation knowledge and best practices

The Alliance works both with governments and private companies to identify obstacles to efficiency and to design and implement practical simplification measures. Cooperation between public and private sectors is vital to bringing about not just meaningful dialogue, but also actionable solutions that are mutually beneficial.

The Alliance is currently working on 10 projects in 9 countries (Colombia, Brazil, Morocco, Ghana, Kenya, Malawi, Zambia, Sri Lanka and Vietnam). While many of these projects are still in the development phases, one example from Columbia shows promising results.

Columbia was inspecting 100% of all foods and drugs arriving at the borders. This put a lot of strain on the inspection agency, drove up costs and made trade unpredictable. The collaboration brought by the Alliance helped to reduce inspections by 27% and decreased processing time for low risk food products from 16-24 hours to 1-2 hours. This project, costing around US\$50,000, has resulted in US\$2.5m in improved efficiency, without reducing the safety or efficiency of the import of foods and drugs.



Expert presentations

A carbon levy for shipping



Exploring the evidence, benefits and economic concerns of a global carbon levy for the maritime sector.

Ian Parry, Principal Environmental Fiscal Policy Expert, International Monetary Fund

The maritime industry is responsible for 2-3% of all greenhouse gas emissions in the world, and the decarbonization of the maritime industry plays a vital role in curbing global emissions and limiting global warming to well below 2°C.

To achieve shipping's 2050 GHG reduction goals, the maritime industry needs to pair improved efficiency with new zero emission fuels. According to Ian Parry, the two biggest obstacles to the implementation of zero emission fuels are the need for further research and development, and the current price gap between new and conventional fuels.

THE MOST EFFICIENT SOLUTION

Ian Parry pointed to a global carbon levy, i.e. a carbon price per ton of CO₂ emitted, as the most efficient solution to overcoming both obstacles and incentivize shipping's decarbonization. Revenue from a carbon levy could be placed in an international fund, with the funds generated to be managed by an independent international organization, which could then finance zero emission R&D efforts in the short and medium term. Another longer term benefit would be that a carbon levy would close the price gap between current fuels and zero emission fuels. This would create incentives for the adoption of zero emission fuels by making them more competitive.

Ian Parry presented two design options for a carbon levy:

- A pure levy charged to operators for a ton of CO₂. The revenue from this levy could then be

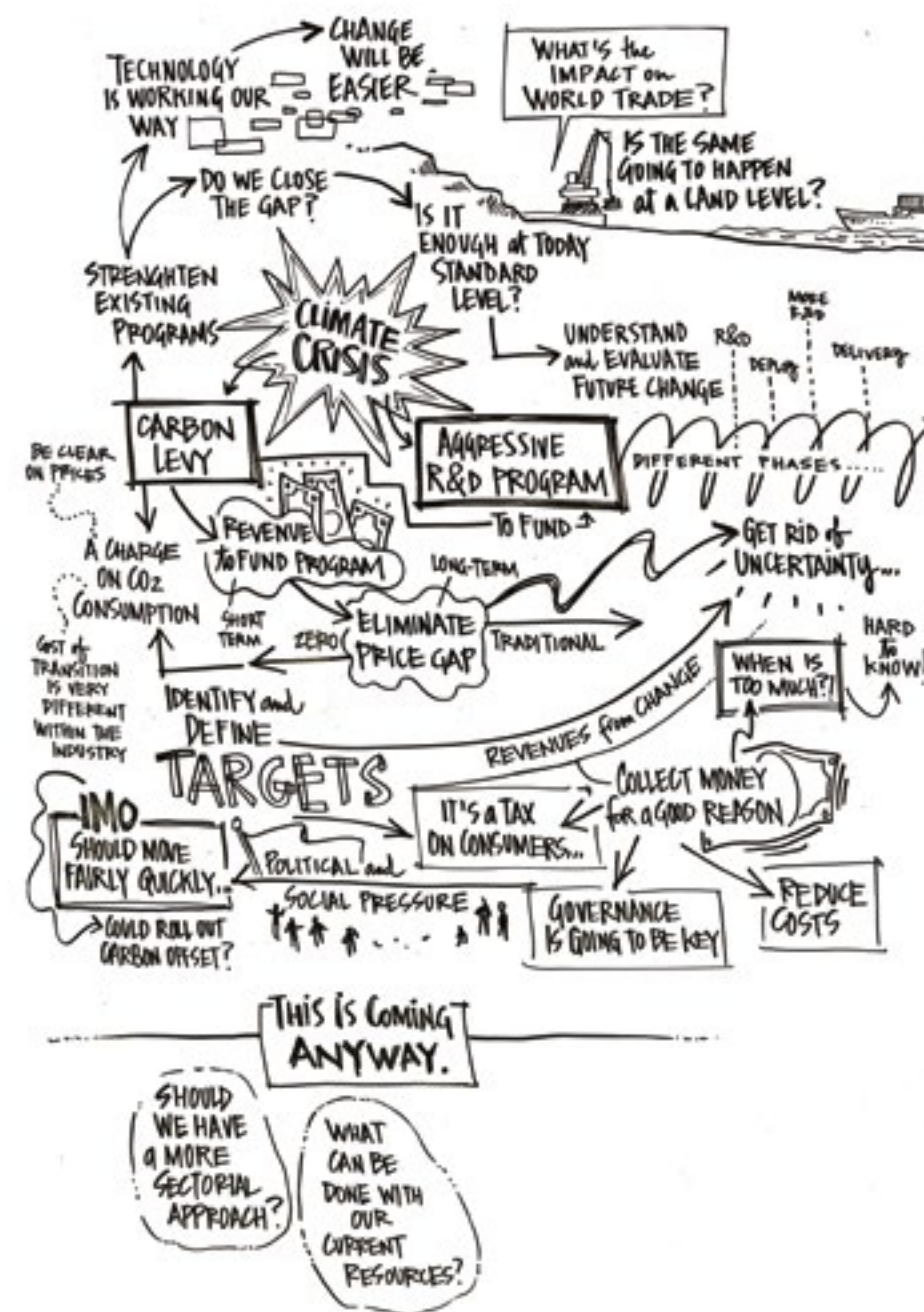
used by the maritime industry for R&D efforts, subsidizing zero emission fuels, financing climate mitigation programmes or compensating countries such as small island nations which experience disproportionately negative impacts.

- A "feebate" scheme where an efficiency benchmark for CO₂ emissions per ton-mile is set up. If over the benchmark, operators pay a tax relative to how far from the benchmark their CO₂ emissions per ton-mile are. If below the benchmark, operators receive subsidies relative to how far from the benchmark their CO₂ emissions per ton-mile are. While the cost to the shipping industry is lower with this approach, in its purest form it does not create any revenues to help incentivize further decarbonization efforts.

CARBON PRICING BECOMING MAINSTREAM

Ian Parry explained that there are currently 57 carbon pricing schemes around the world with prices mostly around 5-35 USD/tCO₂. Prices are expected to increase over time. In order to stay within the Paris Agreement's 20C global temperature increase, carbon will need to be priced at \$75/tCO₂. At this price point, a fund established for carbon levy revenues from shipping would total \$76 billion per year.

The proliferation of carbon levy schemes shows that this instrument is becoming increasingly popular with states. According to Ian Parry, the maritime industry has a unique opportunity to shape policy which will effect global change to the benefit of the industry at large.



Expert presentations Zero emission fuels for shipping

A transition to new net zero emission fuels will be required to achieve the goals set out in the IMO Initial GHG Strategy and to put shipping on the pathway to decarbonization.

John Kornerup Bang, Head of Sustainability Strategy and Chief Advisor, Climate Change, A.P. Moller-Maersk
Nick Brown, Director, Marine & Offshore, Lloyd's Register



One of the challenges in the transition to zero emission fuels is identifying which of the many potential fuels are the most promising candidates for shipping. This would help reduce the complexity and the uncertainty around the future fuel mix and help make the needed introduction of zero emission vessels by 2030 happen. John Kornerup Bang and Nick Brown presented a recent study – commissioned by A.P. Moller-Maersk and Lloyd's Register, and conducted by UMAS – which identified alcohol, bio-methane and ammonia as the most promising net zero carbon fuels for shipping.

The study evaluated all possible fuels and production pathways except nuclear (which was deselected on a political acceptance basis) on four main criteria:

- Which of the fuels look promising from a commercial perspective?
- What are the safety implications?
- How technology-ready are these fuels and how scalable are they?
- Which of the fuels meet the goal and objective of net zero?

ALL OPTIONS RESULT IN SUBSTANTIALLY HIGHER FUEL COSTS

The study identified alcohols (methanol and ethanol), bio-methane and ammonia as the most promising fuels based on the four criteria.

For the bio-based fuels (some alcohol pathways and bio-methane) the main advantage is the relatively simple transition from existing ship designs and infrastructure, whereas the main drawback is uncertainty about the availability of biomass feedstock as demand increases.

For ammonia the main advantage is its scalability and the flexibility of production pathways as it can be produced from natural gas, combined with CCS, as well as from renewable electricity. The main drawback is related to safety due to ammonia's toxicity. It also presents itself as the more disruptive transition in terms of replacing or retrofitting existing vessels and infrastructure.

Compared to conventionally powered vessels, fuel costs increase significantly for all the alternative fuels examined. Higher CAPEX and lost revenue due to loss of cargo capacity also contributed to the increase in costs. For a 11,500 TEU containership, the additional cost could be in the order of US\$20m or more annually. This makes it unlikely that market forces alone can drive the transition without a supporting policy framework.



Think tanks

Expert presentations

Navigating the way to a renewable future: solutions to decarbonize shipping

Shipping’s decarbonization will require the introduction of zero emission fuels. A promising option is to use renewable energy to generate the marine fuels of the future, such as hydrogen-based fuels. Higher cost of alternative fuels and the need to develop infrastructure to supply these fuels to ships are important barriers that must be overcome to make the transition possible.

Roland Roesch, Deputy Director, Innovation and Technology Center, International Renewable Energy Agency (IRENA)

One of the most promising pathways to producing zero emission fuels is by converting renewable electricity into hydrogen-based synthetic fuels derived from electrolysis. A recent study by IRENA shows that the renewable potential by far outstrips the energy needs of shipping.

BARRIERS TO RAPID UPTAKE

Roland Roesch pointed to significant barriers that must be overcome before ships can start running on these new clean fuels. One of the key barriers is the price gap between traditional fuels and hydrogen-based fuels, such as ammonia.

Currently ammonia produced using renewable electricity is more than four times as expensive as traditional fossil fuels. IRENA estimates that the price

of ammonia could be cut in half by 2030 and further reduced in the decades to come as technological developments and economies of scale kick in. This would help reduce the competitiveness gap, but a supporting policy framework is necessary to bridge it completely.

New zero emission fuels would also require investments in building a new supporting infrastructure, including in ports and along important transport corridors.

Another key point is the importance of looking at emissions from the full value chain and not just emissions discharged by vessels. For hydrogen for instance, H2 produced from fossil sources can have higher emissions than heavy fuel oil, whereas H2 produced from renewables would be significantly lower.



Expert presentations

Increasing societal demands for sustainability

Sustainable maritime transport entails the ability to strike the right balance between the varied economic, social, and environmental sustainability goals.

Isabelle Durant, Deputy Secretary-General, United Nations Conference on Trade and Development (UNCTAD)
Frida Youssef, Chief, Transport Section of Trade and Logistics Branch, United Nations Conference on Trade and Development (UNCTAD)

The 2030 Agenda for Sustainable Development, including the 17 Sustainable Development Goals (SDGs), and the 2015 Paris Agreement on Climate Change, provide the global framework for advancing the sustainability agenda across all economic sectors including maritime transport.

The maritime industry has a crucial role in effectively decarbonizing maritime transport while at the same time leveraging co-benefits such as sustainable growth in trade, development and social inclusiveness. According to Isabelle Durant, promoting initiatives that are open and inclusive as well as mindful of the varied

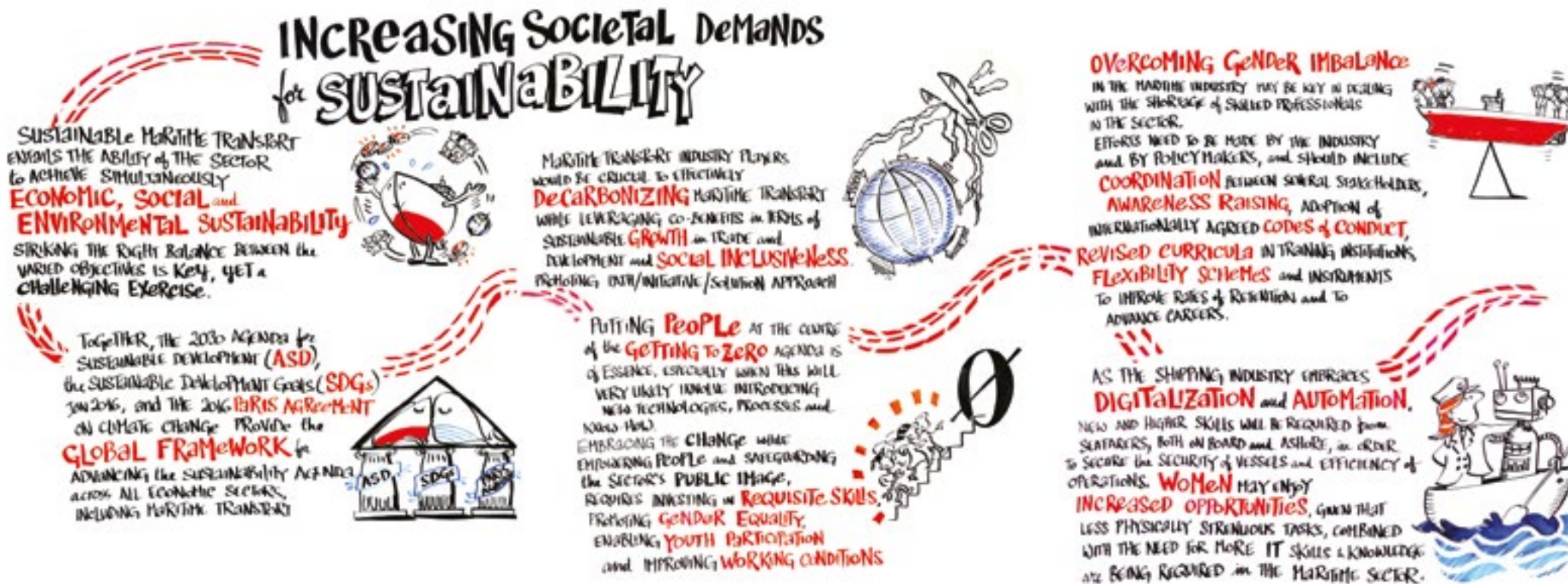
needs and capacities of countries and people is key in achieving the Sustainable Development Goals.

GETTING TO ZERO WITH PEOPLE AT THE CENTER

Putting people at the center of the “Getting to Zero” agenda is a priority, especially considering that this initiative will very likely involve introducing new technologies and processes, which might eliminate current jobs or change the economic and social fabric of a community. It is UNCTAD’s experience that if people are to embrace change of this kind, you need to:



- **Invest in the required skills.** As the maritime industry embraces digitalization and automation, new and higher skills will be required from seafarers. Both on land and at sea, roles will be redefined to ensure the safety of vessels and efficiency of operations. These new skills will need to be developed among younger generations and the current workforce will require re-skilling in order to stay relevant.
- **Promote gender equality.** With increased automation and digitalization, women may enjoy new opportunities to pursue a maritime career, given the less physically strenuous tasks, combined with the need for more information technology skills and knowledge. However, a lack of gender equality – as regards levels of seniority, job functions and salaries – is still pervasive in the industry. This is an unappealing working environment for women. With women making up 50% of the available workforce, overcoming this gender imbalance in the maritime industry is key to dealing with the shortage of skilled professionals in the sector. This will require improving the conditions and support systems for women onboard vessels and having management and leadership trainings addressing the issue of gender.
- **Enable youth participation in the maritime industry.** Improve its visibility by approaching youths in school, will create benefits for the entire industry as it becomes better at attracting the future talent it needs.
- **Improve working conditions.** This includes raising awareness of the issues and solutions, promoting the adoption of internationally agreed codes of conduct, revising curricula in training institutions, creating flexibility schemes and instruments to improve rates of retention and to advance careers.





Think tanks

Expert presentations See you in court

How do the environmental risks of climate change translate into legal risks for business?

Stephanie Morton, Climate Finance Lawyer, Client Earth, United Kingdom

Society and governments are becoming increasingly aware of the impacts of a changing climate and are demanding greater accountability from businesses not adequately addressing climate change.

According to Stephanie Morton, lawsuits over climate-related risks are becoming increasingly common and successful. The lawsuits can come from activists trying to hold businesses accountable, governments trying to regulate industry or competitors trying to gain an edge. Activists, governments and businesses have already successfully sued and won lawsuits against businesses that are not effectively addressing climate change.

Stephanie Morton pointed to three types of lawsuits:

- **Mitigation lawsuits** link business practices to tangible harms to society. This type of lawsuit is well entrenched in legal practices, with the lawsuits against the tobacco industry being the most well-known case in point. Furthermore, companies should be aware that with improvements in science, it is becoming increasingly possible to link certain environmentally unfriendly practices to specific climate events. This improves the validity and the likelihood of success for these types of lawsuits.

- **Adaptation lawsuits** involve legal action against actors that fail to adapt to climate risks. A lawsuit against Exxon for their marine terminal not being prepared for the future rise of sea levels, which is defined as a potential future pollution risk, illustrates this type of legal action.
- **Disclosure lawsuits** look at the failure to disclose environmental impact data. This is increasingly a hot topic, leading to frameworks such as the Poseidon Principles, whereby businesses will voluntarily disclose certain environmental data. Moreover, governments, such as the UK, are increasingly demanding the release of this information, causing increased pressure to disclose and increased risk of litigation if there is no disclosure.

The best solution to mitigating these legal risks is to take steps to mitigate a business's environmental impact and to be transparent about its efforts by disclosing environmental information.



The Future is Asian



The rise of Asia goes beyond developments in China. Economic growth and infrastructure development across Asia are set to bring back former trading routes and unlock increased trade.

Parag Khanna, Founder and Managing Partner, FutureMap

Too often the rise of Asia is dominated by developments in China. While China undoubtedly is important, it currently represents only approximately 40% of Asian GDP and less than 40% of the population. Additionally, the fourth wave of Asian growth is taking place mostly in South and Southeast Asian countries, where the populations are younger and growing faster than in China.

Currently a multipolar system is taking hold in Asia. Other countries on the rise are consistently pushing back against Chinese influence. India's diplomacy in Sri Lanka over the past two years is just one example of this development. The world should not expect the rise of a Chinese-dominated system, but rather a rise of a multipolar Asia, focused on multilateralism and free trade.

Asian countries on the rise are seeking control of the supply chain through trade agreements and infrastructure development, as witnessed by China's Belt and Road Initiative and the Regional Comprehensive Economic Partnership. These initiatives are enabling the return of the Afro-Eurasian trading system that once dominated the globe.

MARITIME OPPORTUNITIES ABOUND

According to Parag Khanna, the maritime industry will benefit from Asian development and initiatives such as Belt and Road. Companies will have new countries entering into the global economy – countries that have not participated in the international trading system in a long time.

Economies on the rise are going to be importers and consumers of goods which will increase demand for maritime trade both regionally and globally. They will look to connect to trade lanes in order to meet demand at home and grow their economy. This requires maritime infrastructure.

China and other Asian nations are actively investing in trade infrastructure around the world – especially in ports – to improve efficiency and capabilities. Additionally, there are great investment opportunities to improve the connectivity and infrastructure of Asian nations. In Indonesia, for example, maritime businesses can take an active role in this development by providing expertise and advisory services to governments.

PROVIDING RESILIENCY TO THE GLOBAL ECONOMY

Parag Khanna stressed that the maritime industry's role in the economic system is to provide the resiliency necessary to keep the global economy moving.

Currently the world is witnessing a resurgence of trade wars and regional tensions, and the risk of a negative impact on trade volumes and global prices is high. However, by improving the connectivity of the world through trading agreements, new trade routes, financing upgrades on intermodal and inland infrastructure, and improving maritime infrastructure development and efficiency, the maritime industry can create what Parag Khanna calls an "anti-fragile system".

An anti-fragile system has multiple pathways and thus is highly resilient. Moreover, it continually gets stronger. Globalization, global infrastructure and connectivity are all aspects of maritime trade that are continually improving, thus strengthening the anti-fragile system and protecting the global economy from severe supply chain disruptions.

[Visit our YouTube channel to learn more about The Future is Asian.](#)



“Belt and Road is unlocking more commodities being moved and shipped around the world.”

Parag Khanna,
Founder and Managing Partner, FutureMap



What kept me awake last night



THAT WE ARE FINALLY
TAKING THE LEAD OURSELVES,
TAKING CHARGE, AND
NOT BEING LED BY



As the second day of the Annual Summit began, leaders shared their personal thoughts on what makes them excited and what makes them apprehensive about the future of global seaborne trade.



“Increased focus on environmental and social factors as part of a good business. Transparency to drive good business.”

“I am excited to see what the next revolution in our industry looks like. How it will impact future generations in the world.”

“Hydrogen, Methanol, Alcohol, Ammonia... We have options!”

“Potential for efficiency derives from digitalization and A.I.”

“Courage to face the important issues of our time, and the willingness to be part of the solutions.”



“Recruitment of talents is what keeps me up at night: how to define seafarers of the future. Although growth of global trade is challenged, I am quite confident of continuous growth in (Asian) regional trade, which is good for shipping.”

“We have fantastic diverse ideas on how to radically improve safety on board vessels, but we need clarity on a single remarkable consensus project to stop loss of lives in the next one year.”

Working group outcomes



The Global Maritime Forum's ambition for this year's Annual Summit was to engage participants in discussion and idea generation on four key issue areas: Decarbonization, safety, improving efficiency through collaboration, and talent. Participants provided input on the challenges and opportunities across all four subjects, and the working group topics were defined on this basis.

The outcomes of the work in groups varied across the various topics, with some groups focusing on getting a better understanding of the issue at hand and identifying ideas that could be further explored in future sessions, while other groups delved into creating concrete proposals for industry action.

Two overarching themes emerged. First, to solve today's complex challenges requires collaboration across – and indeed beyond – the entire maritime value chain. And it takes leadership from the sector to push these initiatives forwards.

The following pages summarize the outcomes of each of the working groups. They do not do justice to the dedication and engagement of participants, nor all the nuances, ideas and practical solutions they came up with.

[For a fuller appreciation of this work, videos of working group presentations during the final plenary session can be found at our YouTube channel.](#)

Working group outcomes

Seafaring looks to the future

Digitalization and meeting the future demands for shipping, such as operating technologies for zero carbon ships, will require new skills and younger talent for the maritime industry.

At present, the maritime industry is at risk of not having the talent required to meet future needs. To address this challenge, the working group identified two paths: to bring in new, young talent, and to reskill today's seafarers and provide clear career progression opportunities.

The group pointed to the industry's lack of visibility as a barrier to attracting future generations into the seafaring profession. Youths do not know much about shipping and the potential career prospects in the industry. Based on this, the working group developed several actionable ideas:

- Establish an international body that governs the industry's training requirements to ensure the same high standards for all stakeholders, and set up a global fund to subsidize and incentivize upskilling, especially for smaller businesses. These initiatives should of course not relieve maritime businesses of the responsibility to provide the training and reskilling required.
- Engage with the younger generations e.g. through school programmes. The learning could be done creatively, including by bringing students onto ships to experience life at sea, so they can go back to school and share their experience with others, creating excitement about the seafaring profession.
- Reimagine the strong hierarchal structure of life at sea (and to some extent on land). These structures and the culture that follows enhance the image of the maritime industry as traditional, which isn't particularly attractive for younger generations. Moreover, young people favor less hierarchical organizations where they are free to interact with all levels of management.
- Establish a clear pathway from seafaring to rewarding professions on land. The industry needs to show well-defined development programs for seafarers with clear career progressions, including taking on positions on land after life at sea. In addition to providing a variety of career options, such paths would constitute a shift towards integrating seafarers and their colleagues on land, improve communication and make staff feel like they are all part of the same endeavour.
- Improve safety and wellbeing of life at sea. This could include upgrading well-being centers and support mechanisms such as helplines.



Working group outcomes

Together in Safety

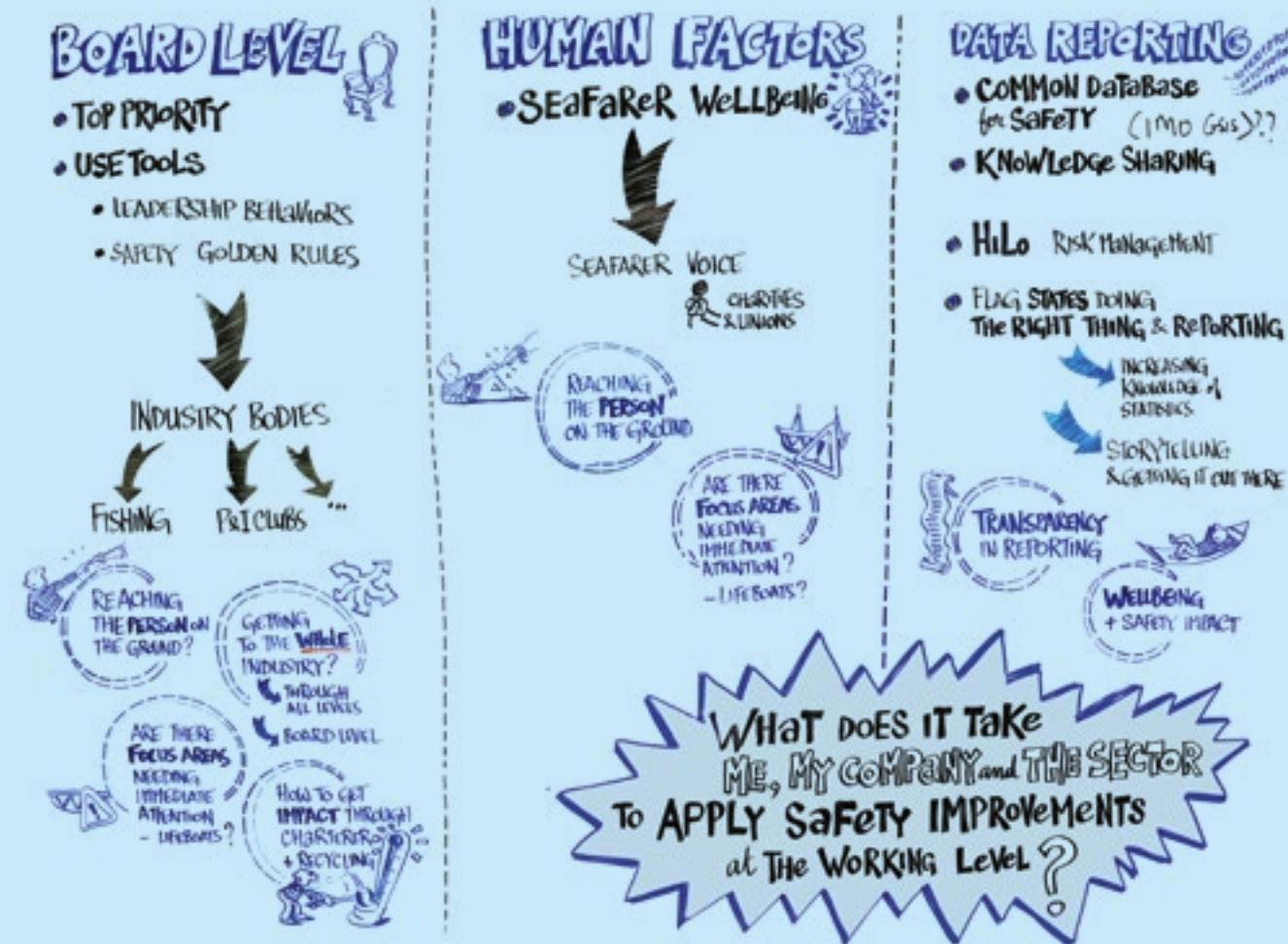
How to turn the broadly shared drive and desire to improve maritime safety into tangible action that can lead to the application of safety improvements at the working level, where the accidents happen.

Launched at the Global Maritime Forum Annual Summit in Hong Kong in 2018, the Together in Safety initiative has been working over the past year to identify key areas where the industry can work together to improve its safety record. One of the key questions still to be answered is: What does it take for individual decision makers, for companies and for the sector to apply safety improvements at the working level?

Building on the work already done, this working group identified three key areas of action that need to be pursued. They can be summarized as top down, bottom up and keeping the score:

1. Improving safety must become a top priority at the board level, as top management drives priorities across the company. An important component in this is to ensure that the priority given to the subject by boards is made visible to the people and managers in operations, e.g. by senior leaders visiting ships and engaging with crew members.
2. The work needs to focus on the workers and seafarers on the ground and on developing a better understanding of the human element that plays a role in most incidents. One important aspect is seafarer wellbeing and how it can be improved. Studies indicate that stress, exhaustion and mental health issues can be important contributing factors when it comes to the risk of incidents. When addressing the human element, it is important to give a voice to seafarers and the organizations that represent them, such as charities and unions.
3. The industry needs better data and reporting. Having the right data will create more transparency, which will allow the industry to collectively address the issues that have the biggest impact on maritime safety. Regulators and flag states could play an important role in collecting and sharing data, as could P&I clubs. In addition, industry-driven collaborative initiatives such as HiLo could play a leading role in turning data into actionable insights.

All three action areas will require the active involvement of companies, industry bodies and other stakeholders such as charities, unions and regulators.



Working group outcomes

Attracting the next generation of seafarers

The maritime industry is failing to attract the next generation of seafarers. The image and message that worked for previous generations no longer works. To attract younger generations, the maritime industry needs to rebrand itself.

The maritime industry has an important role in society which makes for a compelling story to tell. As young people look more and more for purpose and meaning in selecting their chosen profession, the sector should use its place in the world to provide a clear and compelling narrative of what it is, what it does and why.

This working group set itself the objective of creating a more positive view of the industry to attract young people, and to make people already working in the industry feel proud of what they do, knowing that their jobs make a difference.

The group proposed that the industry should create a campaign to communicate the importance of the industry, and tap into the potential of social media to influence the views of young people. It was also suggested that the industry engage with schools and universities to showcase the exciting opportunities it offers to youths.

Key messages might include:

- Shipping responsibly connects and moves the world. It is the center of trade and pulse of the world. The industry moves everything the world needs; from energy, construction materials, chemicals, and food.
- Shipping is an integral part of the global supply chain. Products do not get to where they need to go without shipping.
- Shipping is the most global industry. Being part of the industry opens incredible opportunities to explore the world.
- Shipping moves 90% of global goods while generating less than 3% of the global CO₂ emissions, and we are committed to getting to ZERO!
- Shipping is the source and center of technology enhancement, including zero carbon fuels, block chain and artificial intelligence.
- Shipping is super-efficient – it makes up only 1% of the cost of your coffee!
- Shipping offers a diverse field of career opportunities in the industry: from sea crew, port operations, finance, trading, weather, cruise and hospitality.
- Shipping develops economies around the world.
- Shipping has a rich history – and rich future: it has evolved from Nile river boats to where we are now, and it is still transforming.



Working group outcomes

Building digital supply chains

The digitization of supply chains is inevitable, and could help break down the traditional ways of the industry, create new opportunities and help attract new talent to the industry. Important barriers to digitization are standardization and data governance.

The industry needs to examine its processes and update them to improve the customer experience. The maritime industry has become too inward looking and has forgotten that it is the customers that drive business. At the same time, customers are demanding a more modern and efficient system that is easy to use.

Today, moving goods through the supply chain is riddled with antiquated, labour intensive processes. The working group identified several important benefits from digitalization:

- Improve the customer experience by offering a more modern and efficient system that is easy to use.
- Unlock efficiencies in the supply chain by simplifying processes and improving the ability to share information. These efficiencies can help reduce waste and cost across the supply chain and make the process much simpler and faster for customers.
- Create new value through new business models.
- Promote the expansion and capabilities of global trade. By improving the ease and cost of trade more entities will be able to participate, thereby expanding business opportunities for the maritime industry.

STANDARDS AND GOVERNANCE KEY TO SUCCESS

The working group pointed to standardization and governance as barriers to unlocking the benefits of digitalization.

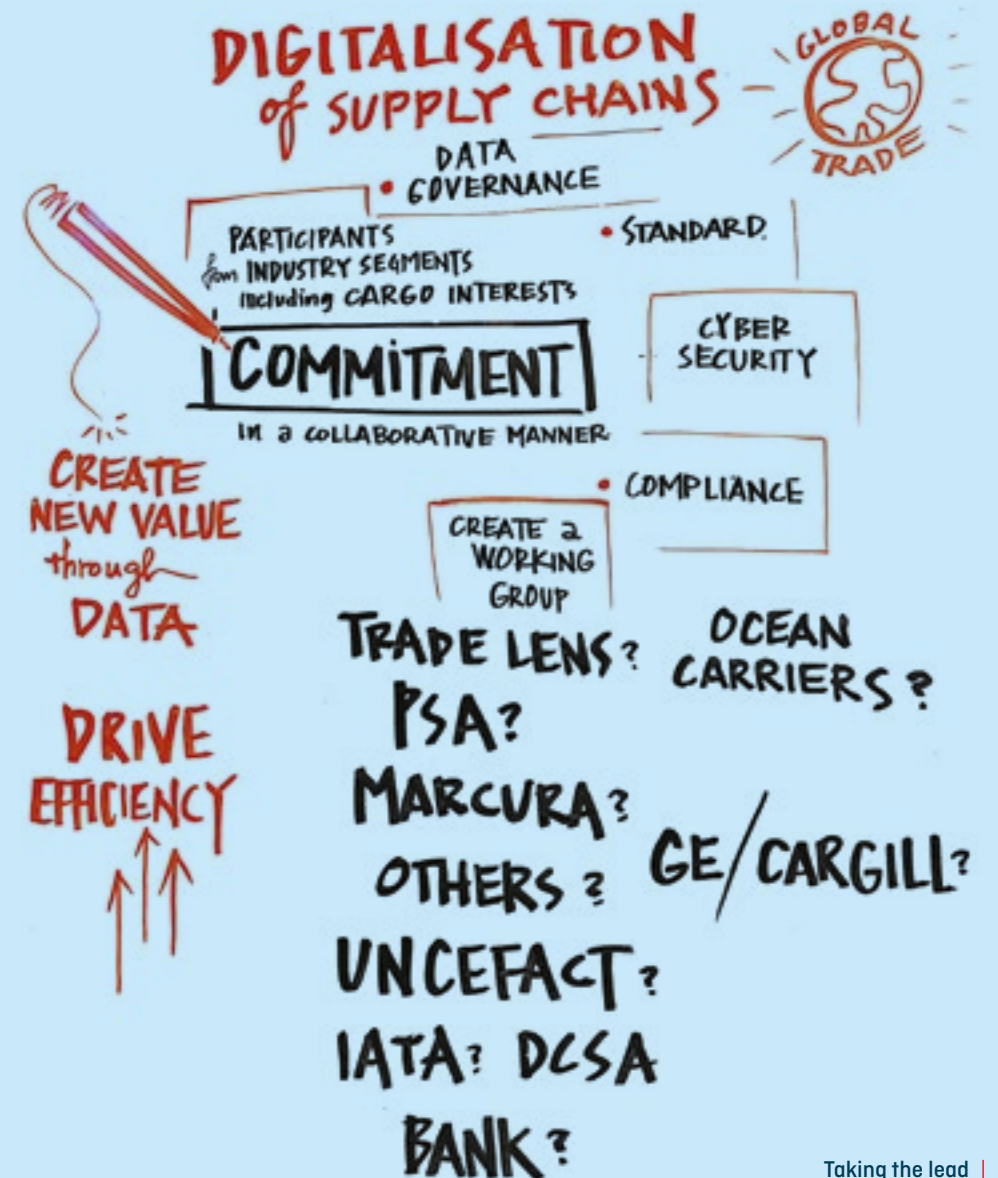
Digital communication and collaboration require a common language. Creating standards will greatly improve the efficiency of the system and facilitate the digital transition. Moreover, certain standards and protocols will be required as measures against new cyber threats.

When it comes to governance, there needs to be a clear understanding across the industry on how data should be treated and on relevant data regulation.

The group proposed the creation of a dedicated working group to collaborate with important stakeholders on standardization and data governance. Stakeholders to include are terminals, ocean carriers, port authorities, digital platform providers, financial institutions, standards organizations like the United Nations Centre for Trade Facilitation and Electronic Business (UNCEFACT) and the Digital Container Shipping Association (DCSA), and customers.

The group also suggested learning from other industries to create clear standardization and governance objectives – for example the International Air Transport Association (IATA). A dedicated working group could help push these objectives forward and lead the way to the maritime industry’s digitalization.

**INCENTIVISING COLLABORATION
in SUPPLY CHAINS at SEA & on LAND**



Working group outcomes

Pooling data for the common good

Sharing data holds the potential to create common benefits for all involved through more robust analysis and insights that can help drive improvements, for example in safety and efficiency. Establishing the proper motivation could help get data sharing efforts off the ground.

Maritime data remains segmented across the value chain and underutilized. In most cases there is simply too much unorganized data and companies don't know what to do with it or do not have the resources to translate it into something useful. To reap the benefits of data sharing will require standardizing reported data and cleaning protocols to make sharing easier and keep costs low.

However, many data owners remain reluctant; they fear that sharing of sensitive data could harm them commercially.

CONCERNS OVER OWNERSHIP

The working group pointed to concerns over data ownership as an important barrier to data sharing, highlighting that commercially sensitive information would have to be protected, making anonymity and security very important to any data sharing effort. They proposed several practical solutions to overcome this challenge:

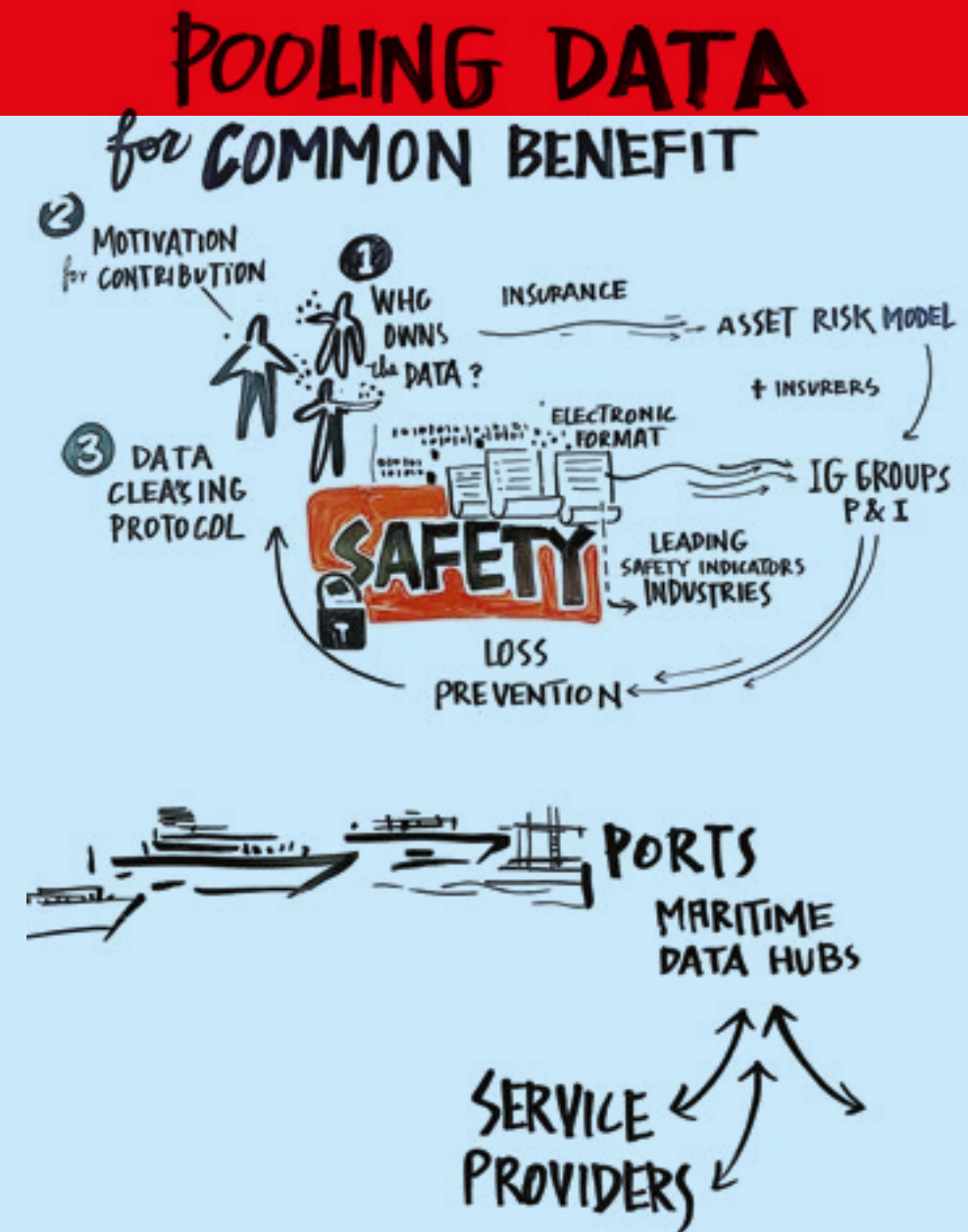
- Using blockchain to facilitate data sharing, thus taking advantage of the security and confidentiality inherent in this system.
- Using a trusted third party to collect and analyze data. Impartial stakeholders in the maritime ecosystem such as P&I clubs or IG groups already collect and analyze large quantities of data. Their existing infrastructure could be utilized and improved upon.
- Beginning with data that does not have any impact on core business.
- Starting out small and simple, discussing and defining just a few important variables and building models on this basis. Once beneficial insights start emerging from these models and interest increases, the scope of the projects can be expanded to new types of models and data.

START WHERE IT MATTERS MOST

The working group proposed to start the data sharing journey with safety and reducing the risk of accidents. This would mean sharing mostly data on near misses and unsafe acts. Once anonymized, these would have no commercial consequences.

Any data collected could be used to create models and analyses to provide insights that can improve safety. They can also be used to create market incentives to make safety a priority, e.g. more dynamic premiums, turning data sharing and insights gained from this into a commercial advantage for those participating.

Asset risk modelling is another candidate for early adoption of data sharing. This modelling could minimize cost and uncertainty from capital loss, and it would require only already available data which is being shared for the safety modelling.



Working group outcomes

Standards for data and exchange

Data sharing across the maritime industry requires precompetitive collaboration among all relevant stakeholders to create data standards and foster trust between parties.

This working group pointed to the International Air Transport Association's (IATA) data sharing projects as an example of what could be done in the maritime industry. A voluntary, open global platform would require standardizing data, establishing a framework for data sharing and cleansing, increasing interoperability and prioritizing certain data.

BUILDING TRUST

The group discussed that when it comes to sharing data, commercial entities, government agencies and non-profits all possess pieces of the puzzle. Moreover, sharing of data is already happening in some instances. In their view, the primary obstacle to meaningful data sharing is lack of trust.

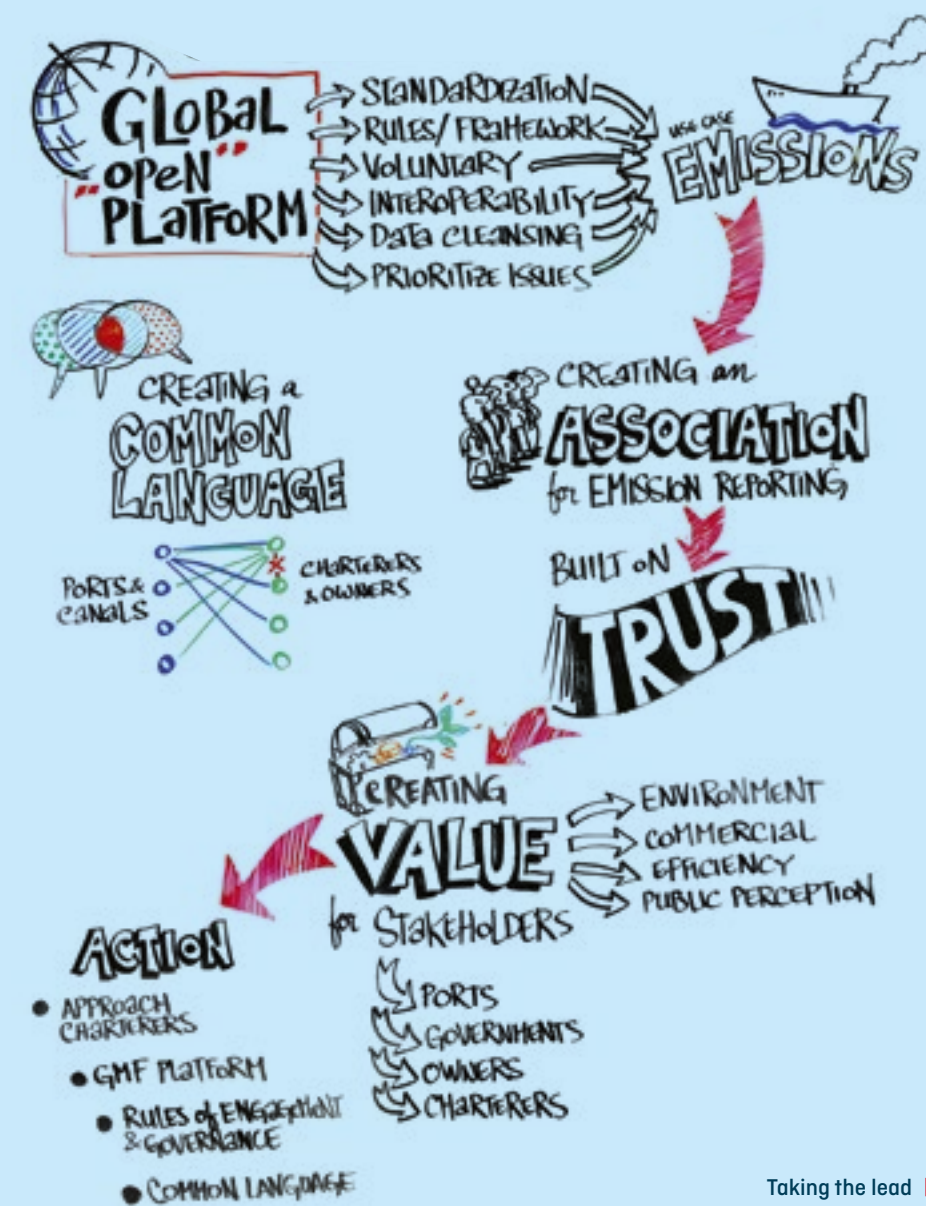
In addition, data sharing needs to have a clear value for those stakeholders involved. The group pointed to efficiency, environmental performance and accountability, and transparency as areas where data sharing could create value.

FOCUS ON PRECOMPETITIVE COLLABORATION

In order to make the discussions more practical, the group chose to focus on emissions data. Specifically, they proposed the creation of an association for emissions reporting, bringing together all relevant stakeholders such as port authorities, canals and other government entities with commercial stakeholders such as port operators, charterers and shipowners.

To build trust, the association would need to create rules of engagement and ensure that commercially sensitive data would not be shared between competitors. Instead, data sharing and reporting will be used to help ports and canals prioritize or give better rates to vessels based on their environmental performance. It would also allow ports and canals to demonstrate how they are helping achieve their country's emission standards and targets.

Once set up, the association's first task would be to develop a standardized language for emissions data reporting and sharing. This should be designed in a way that builds trust in the system, e.g. by limiting the use and sharing of commercially sensitive data, and focus on results that benefit the greater good of the industry and of society.



Working group outcomes

The pathway towards zero emission fuels

To meet the IMO's target to reduce shipping's CO₂ emissions by at least 50% by 2050 will require emissions to decrease by 85% to accommodate projected growth in world trade. Achieving this target will require the widespread adoption of zero emission fuels that are safe, sustainable, readily available and cost effective.

This will require both developing the vessels as well as the future fuel supply chain, which can only be done through close collaboration and deliberate collective action between the maritime industry, the energy sector, the financial sector and governments/IGOs.

The working group pointed to a number of concerns that need to be addressed in order to set shipping on the path towards zero emission fuels.

First, safety is a concern. Several potential fuel options under consideration (such as ammonia) are volatile and/or toxic. A greater understanding of potential safety issues associated with new fuels is needed in order to develop safety standards and common guidelines before these fuels become commercially available.

Second, there is a lack of reliable information on the lifecycle emissions and other sustainability issues related to new fuels. Even though a fuel might not generate any emissions while powering a vessel, the production of the fuel might generate significant emissions, in which case it would not be a viable option to truly decarbonize shipping. Moreover, other sustainability issues must be fully understood and incorporated in the evaluation of the fuel's viability.

Third, the availability of zero emission fuels must be considered, including a deeper understanding of how different fuel options rank in terms of scalability and economics as well as what infrastructure will be needed to support the supply of zero carbon fuels to ships. The working group proposed collaboration between the maritime industry and current and future fuel suppliers to create convergence around scalable future zero emission fuels, demonstrate demand and induce suppliers to begin scaling up their production and to work together on rolling them out throughout the maritime value chain.

The working group also emphasized cost as considerable concern. First, there is the price gap between traditional fuels and zero emission fuels, where the group pointed to global regulation as key to making alternative fuels less expensive and providing the impetus to align interest into a narrower range of options that can be effectively scaled up. Second, there are two types of capital investment required to implement zero emission fuels: ships and infrastructure. The working group suggested that capital investments at this scale be shared or reduced in order to make the adoption of zero emission fuels more viable. The group pointed to the many unknowns surrounding the fate of the existing fleet, raising the question whether all vessels might become obsolete or whether they could be retrofitted, and at what cost.

Finally, the group agreed that the transition to zero emission fuels will require bold, proactive leadership. More collaboration is needed, and it was suggested that further working groups should be created under the auspices of the Global Maritime Forum to tackle these issues. The Getting to Zero Coalition was proposed as an obvious platform to address the concerns raised and to build up knowledge that can be shared across the industry and with other relevant stakeholders.



Working group outcomes

Kickstarting shipping's zero emission future

Motivating first movers is a key challenge to kickstarting a zero emission future for shipping. Achieving the 2050 target requires immediate action, but companies remain hesitant to make the first move due to the higher risks associated with the development and deployment of new solutions.

In the maritime industry first movers are often punished by markets, while followers reap the benefits. This discourages innovation and change. Ways to reward first movers – and possibly penalize laggards – are needed to create the financial incentive to accelerate R&D and innovation into zero emission fuels and technologies for shipping.

The working group discussed a number of ways in which regulation and public investments in R&D, pilots, and new business models can help lower risk for first movers. To ensure a level playing field, they suggested that any regulation must come from the IMO, and proposed a dialogue between the IMO and the industry to avoid sub-optimal regulation.

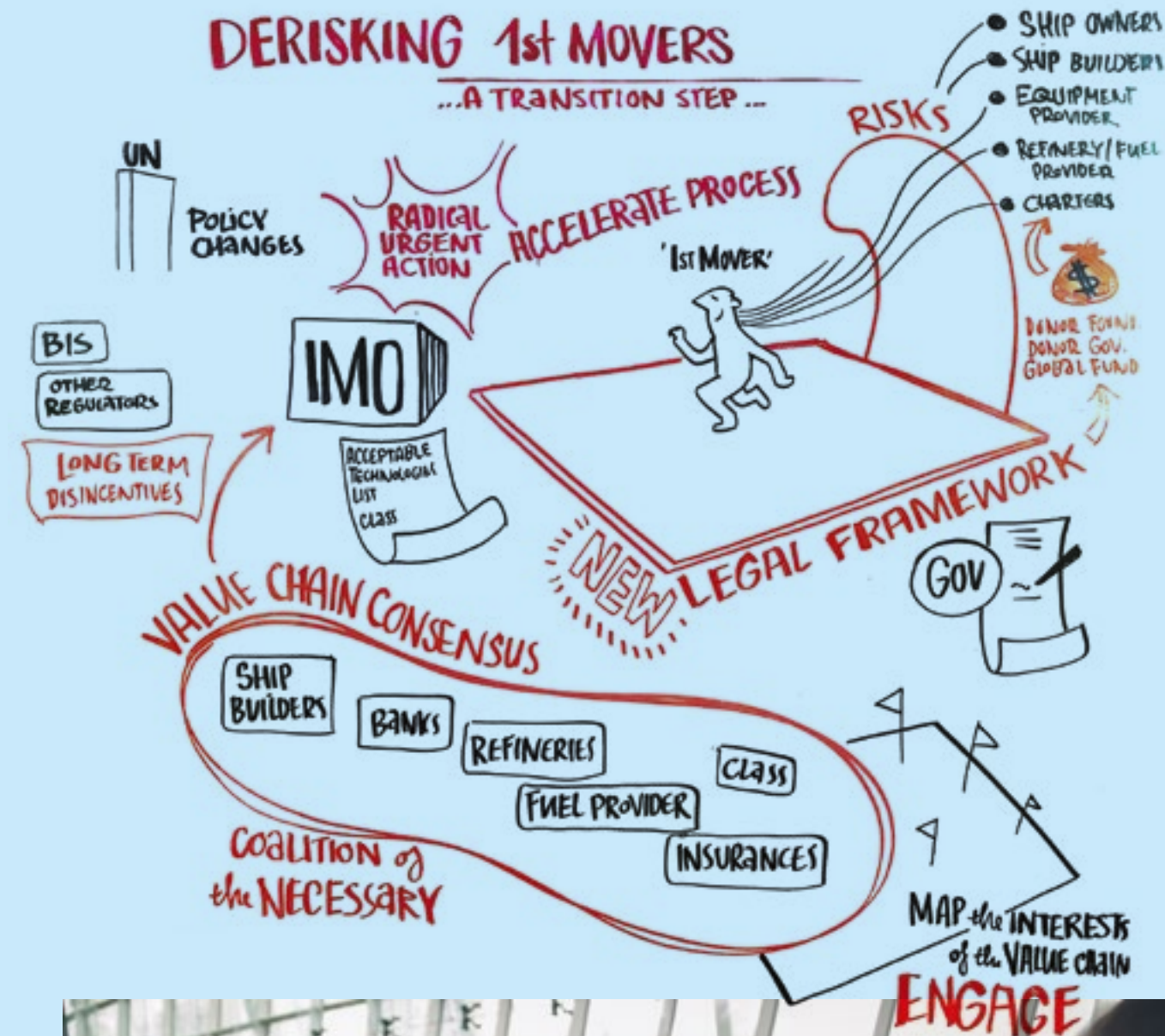
Subsidies were identified as a promising incentive to lower the cost of decarbonization for those who make the first move. These subsidies could be used as innovation support by assisting with R&D efforts or to help bridge price gaps between traditional technologies and new greener technologies. This type of incentive could come in the form of explicit subsidies from donor foundations and/or governments, or as guarantees from governments to underwrite the financial risk associated with new solutions.

A "COALITION OF THE NECESSARY"

Adequately de-risking first movers will require what the group called a "coalition of the necessary" – stakeholders from the financial sector, energy providers, shipyards, shipowners and operators, and cargo owners committed to a zero emission future for shipping.

This coalition should engage with the IMO to discuss the policies and legal framework required to facilitate subsidies or other funding mechanisms that will get things moving and give private sector stakeholders the confidence to make investments in the technologies and fuels of the future.

The working group recommended the use of existing platforms such as the Getting to Zero Coalition to advance this work and to leverage discussions to drive change.



Working group outcomes

A global carbon levy for shipping

While technological improvements and economies of scale hold the potential to significantly reduce the cost of zero emission fuels, it is highly unlikely this alone will be enough to make them competitive with traditional fuels in the medium to long term. This means that a supporting policy framework will be needed to make the transition possible.

According to this working group, there are three potential scenarios for shipping's decarbonization. First, the flat scenario where shipping continues business as usual, emissions remain high and climate change becomes totally unmanageable. Second, the cliff fall scenario where shipping continues business as usual with the risk that heavy fuel oil is banned at some point in time due to its detrimental impact on the environment. Third, shipping acts now and takes the necessary steps to gradually phase out heavy fuel oil, develop new fuels and stay in alignment with IMO targets.

The first two scenarios were seen as undesirable and the group thus proposed, that it is up to the industry to accept this challenge and lead the industry towards a gradual phasing out of heavy fuel oil and carbon emissions. They pointed to a carbon levy on shipping as the best way to do this.

The working group proposed that due to the global nature of the maritime industry, this carbon levy needs to be global and the best institution to legislate it is the IMO, but that its creation and implementation would require the support of a broad industry coalition. The group also concluded that the data needed to attribute the levy should be collected using the IMO Data Collection System and that P&I clubs should serve as levy collectors.

A carbon levy would serve two objectives. First, to incentivize behavioral change through market prices. Second, to help fund and develop viable fuel alternatives.

INCENTIVIZING BEHAVIOR

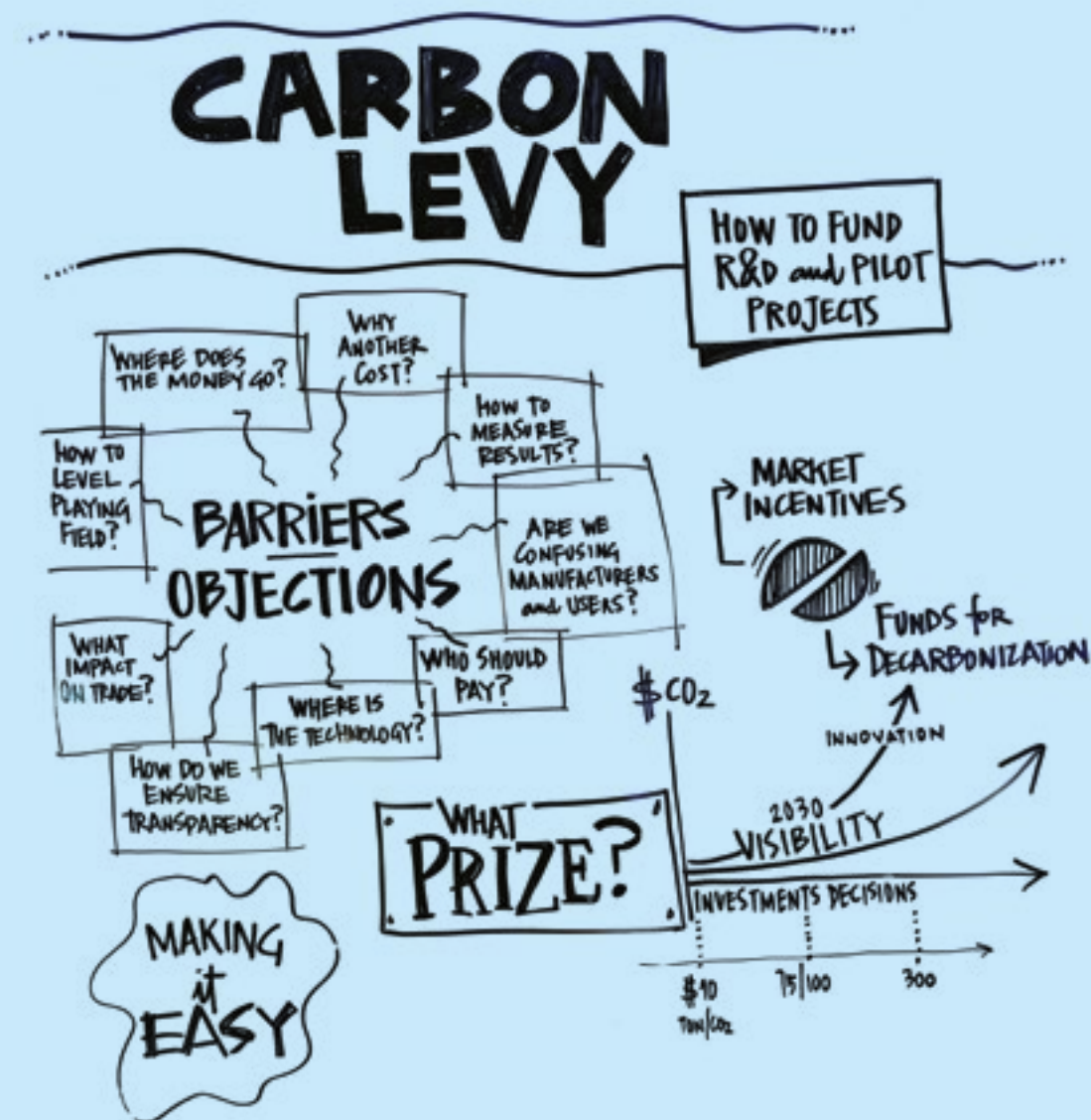
To incentivize behavioral change, the working group proposed a gradual price setting plan. This could be a carbon levy starting at \$10 per ton of emitted CO₂ and incrementally increasing to \$50-\$75 per ton of emitted CO₂ by 2030. This gradual approach would help ease the burden of price increases while still closing the price gap between heavy fuel oil and zero emission fuels. While setting a carbon levy at this price will not close the gap completely, over time, the price of zero emission fuels will naturally come down. The objective of a carbon levy is to decrease the time it takes these zero emission fuels to become competitive.

FINANCING INNOVATION

To assist in the transition to zero emission fuels, the group suggested placing revenues from a carbon levy into a "Maritime Green Fund" that can be used to support the development of new fuels. The preferred organization to administer such a fund is a supranational body, under the aegis of the IMO, with a board consisting of technical experts, industry representatives, governments, upstream fuel providers and other relevant stakeholders.

At a price of \$10 per ton of emitted CO₂, a Maritime Green Fund would generate approximately \$8 billion annually in revenues, while a price of \$75 per ton of emitted CO₂ will generate approximately \$60 billion annually. This revenue should be invested in technology and design of new propulsion systems, alternative fuels, and scaling the infrastructure required to deliver these fuels, while taking into consideration the impact on trade and developing states.

While a levy system is being developed, maritime businesses could benefit from using self-imposed internal carbon levies in order to generate internal revenue to fund decarbonization efforts and prepare themselves for when a global carbon levy is implemented.



Working group outcomes

Scaling up to close the competitiveness gap for zero emission fuels

Shipping's decarbonization will only be possible if zero emission fuels are cost competitive with traditional fuels in the medium to long term. Economies of scale could significantly reduce the cost of new fuels, but scaling up requires a systemic approach involving fuel suppliers, ship owners, ship builders, engine makers, charterers, banks, and governments.

The difficulty in decarbonizing at this stage is that various stakeholders face different problems and motivations:

- Fuel suppliers face the prospect of reduced profitability, business model change, loss of customers and market share.
- Shipowners face the challenge of identifying the fuels and technologies of the future, investment in R&D, shorter fleet lifecycles due to fast changing technology and difficulties in making a viable business case to shareholders and banks.
- Financial institutions likewise have to overcome the challenges created by a shorter cycle of return, due to fast changing technology which means that the best solution today may not be optimal in a decade from now.

TOP DOWN AND BOTTOM UP ACTIONS

The working group identified several steps that need to be taken in order to bring down the cost of future fuels. First, there needs to be sufficient innovation, supported by industry and government led R&D. Second, the energy infrastructure to produce and deliver mass quantities of different fuel types needs to be developed. Third, regulators should implement price instruments such as levy and trading schemes to help close the competitiveness gap between traditional and new fuels, and consider measures to incentivize the shift to zero emission fuels and phase out fossil fuels. Subsidies could also be used to motivate first movers.

The group also proposed sector specific actions, including:

- Building a roadmap for the industry's decarbonization in collaboration between policy makers and the industry, and developing a plan to implement a carbon levy and equitable subsidies based on revenues from the levy.
- Ensuring disclosure of climate impact data by shipowners to charterers to incentivize the chartering of the most energy efficient vessels.
- Creating transparency on emissions via data companies or platforms.

BRINGING EVERYONE ON BOARD

To tackle these barriers to scaling up new fuels, both top down and bottom up actions are required, and all stakeholders should work together on establishing a mission, commit to accomplishing it and issue a call to action to the entire industry behind this shared objective.

CLOSING the COMPETITIVENESS BY SCALING



Working group outcomes

How to create demand for zero emission shipping

Creating demand for zero emission shipping through collaboration across the value chain.

This working group focused on identifying ways that different stakeholders can leverage their influence to drive demand for zero emission shipping. They pointed to both carrots and sticks to increase demand and drive shipping's decarbonization.

First, the working group emphasized that all stakeholders need to be engaged in meaningful collaboration to advance shipping's green transition. This includes charterers, shipowners, technology companies, energy providers, banks and governments/IGOs. The group suggested that, rather than creating new networks, existing frameworks such as the Getting to Zero Coalition should be leveraged to facilitate this collaboration.

CREATING CARROTS

Both the end consumer and supply chain consumers such as retailers, commodity traders and logistics providers can create incentives to advance shipping's decarbonization.

The group pointed to green labelling as a way to create demand for more sustainable shipping. Consumers are becoming increasingly concerned about the climate impact of their purchased and willing to pay a premium for sustainable sourcing. For the same reason, the maritime industry's supply chain consumers are already offering services that are labelled green.

However, for labelling to be effective, a more reliable and transparent reporting system needs to be created.

CHOOSING A STICK

Regulation is an effective stick that can further incentivize decarbonization. The group expressed a clear preference for global regulation by the IMO over regional or national regulation to ensure a level playing field – of vital importance to a global industry.

The working group proposed putting pressure on the IMO, and more importantly, on national governments who have to agree on any new regulation at the IMO.

Lastly, a campaign was proposed to improve the public perception of the maritime industry and empower consumers and governments to demand green shipping.



DEMAND DRIVERS & STAKEHOLDER ENGAGEMENT



- NEXT STEPS**
- 1 EDUCATION
 - 2 REGULATORY CAMPAIGN
 - 3 SET UP FUND in TRANSPARENT WAY

CONCEPTUAL: ACHIEVE DECARBONISATION
REAL: the world works with CARROT & STICK
MECHANICAL: FIND the BALANCE

Leading

the way

The final session at the Global Maritime Forum's Annual Summit 2019 consisted of working groups sharing their outcomes, reflections and ways forward. Also up for discussion was the role of individual and collective industry leadership in shaping the future of global seaborne trade to increase sustainable long-term economic development and human wellbeing.



“We need to look from the perspective of the young.”

Caroline Yang, President, Singapore Shipping Association, on attracting young, competent and qualified seafarers.

“This is our industry, it’s our people, and it’s our responsibility.”

Grahaeme Henderson, Vice President Shipping and Maritime, Shell, on improving the safety performance of the shipping industry.

“We have a great story to tell. We move the world and we do it responsibly.”

Gary Vogel, CEO, Eagle Bulk Shipping, on attracting diversity and talent to the shipping industry.

“Working together collaboratively across this industry we can help digitize global trade to the benefit of everybody involved in end to end transport.”

Mike White, Head of TradeLens, Maersk GTD, on collaboration in supply chains at sea and on land.

“There must be a clear motivation for sharing data.”

Rajesh Unni, Chairman, Synergy Marine Group, on pooling data for common benefit.

“Sharing data comes with trust and return of value.”

Ronald Spithout, President Inmarsat Maritime, Inmarsat, on standards for data and exchange.

“Zero emissions fuels need to be safe, reliable, cost-effective and available by 2030.”

Bud Darr, Executive Vice President, Maritime Policy and Government Affairs, Mediterranean Shipping Company, on the requirements for zero emissions fuels.

“The members in the value chain cannot just be the coalition of the willing but must also be the coalition of the necessary if we are going to get to a decarbonized future.”

Randy Chen, Vice Chairman, Wan Hai Lines, on de-risking decarbonization first movers in the maritime industry.

“We have an opportunity to reshape the industry for the future, to create new commercial opportunities, and to prevent a human calamity. Let’s not be on the wrong side of history on this one.”

Andreas Sohmen-Pao, Chairman, BW Group, on shipping’s need for a carbon levy.

“The industry needs to make commitments it is willing to stick to. That commitment changes from stakeholder to stakeholder.”

Deanna MacDonald, CEO, BLOC, on closing the competitiveness gap between conventional and zero emission fuels.

“How do we make a business out of providing a greener alternative? A green labeling will be an excellent choice and it requires a reporting system you can trust.”

Claus V. Hemmingsen, Chairman, DFDS, on demand drivers for zero emission shipping.

Acknowledgments

Global Maritime Forum

The Global Maritime Forum is an international not-for-profit organization committed to shaping the future of global seaborne trade to increase sustainable long-term economic development and human wellbeing.

Team

Johannah Christensen, Managing Director, Head of Projects & Programmes
Michael Søsted, Managing Director, Head of Operations
Kasper Søgaard, Head of Research
Torben Vemmelund, Head of Communications
Randall Krantz, Senior Project Advisor
Bonjek Hertz Pedersen, Community Manager
Tina Maver, Project Manager
Louise Dobler, Project Manager
Elyse Lawson, Project Manager
Ian Wheeler, Project Assistant
Christian Breenfeldt Andersen, Project Assistant
Josephine Nathalie Wärme, Project Assistant

The planning and execution of the Global Maritime Forum's Annual Summit benefits from close collaboration between several organizations. We would like to thank:

Hilde Rydning, Svenja Rüger and their team from The Value Web for their dedication to our shared mission.

Anna Daudin, Dan Herscovici and their team from PublicisLive for their professional logistics support.

Meredith Sumpter, Head of Research Strategy and Operations, Eurasia Group, USA, for her guidance during the two-day journey.

Alira Ayob, Manager, Environment, MISC Berhad; Peter Björkberg, Manager, Sustainability and Transformation, Stena Bulk; Jean-Marc Bonello, Doctoral Researcher, UCL Energy Institute; Dominik Englert, Economist, Climate Change Advisory and Operations, World Bank Group; Victoria Ji, Freight Trader, Cargill; Lars Malmbratt, General Manager, Bunker Procurement, Stena Bulk; Vishnu Prakash, Principal Data Scientist, Stena Bulk; Adelle Sim, Operations, Trafigura for their summaries from the meeting and Maisara Binti Noor Ahmad, Manager, External Communications, MISC Berhad for her assistance in servicing the press.

All images in this report © Wilson Santinelli/Global Maritime Forum

All scribing in this report © The Value Web/Global Maritime Forum

Layout by Housatonic.eu

The Global Maritime Forum Annual Summit dinner was kindly hosted by The Baltic Exchange.

The Global Maritime Forum Welcome Reception was kindly hosted by the Singapore Shipping Association.



Partners

The Global Maritime Forum is supported by a visionary group of leading industry partners who share the Forum's ambition of creating a common platform to drive positive change that benefits not only their organizations and the industry but also society as a whole.

Strategic partners

A.P. Møller-Mærsk	GasLog
Heidrick & Struggles	Hempel
Lloyd's Register	MISC
Shell	Stena
World Fuel Services	

Partners

Angelicoussis Shipping Group	Anglo-Eastern
Caravel Group	Cargill
Dorian LPG	Euronav
Fleet Management	GAC
Gorissen Federspiel	KFW IPEX-Bank
Leif Hoegh Foundation	Maersk Tankers
Northern Navigation Group	North P&I Club
Onassis Foundation	Panama Canal Authority
Pleiades	Sovcomflot
Trafigura	V.Group
Wan Hai Lines	

Project partners

BHP	BW Group
Danish Maritime Fund	DNB
DNV GL	Friends of Ocean Action
World Economic Forum	

Summit partners

PSA International	Maritime and Port Authority of Singapore
-------------------	--

WE COMMIT TO LEADERSHIP and CHANGE

CLIMATE CHANGE

INCLUSIVE GLOBAL ECONOMY

EFFICIENT Agency

SOCIETAL DEMAND for

Sustainable City

TAKING the LEAD

100% GETTING it DONE

CLEAN SAFE

CHINA the Biggest Economy in 2030

DATA THEFT

BIG DATA and ARTIFICIAL INTELLIGENCE

INCREASED versus it

OUR RELATIONSHIPS UNITE ~ together WE MAKE the DIFFERENCE

DECARBONIZE SHIPPING

ZERO incidents

CYBERATTACK

75 MILLION IoT-DEVICES in USE WORLDWIDE

TALENT Youth ENERGY

IMPROVING EFFICIENCY through COLLABORATION

GETTING TO ZERO COALITION

TOGETHER in SAFETY

ACCOUNTABILITY

GLOBAL MARITIME FORUM

Attracting the right TALENT

RESPONSIBILITY

CHANGE

LEADERSHIP WE CARE INSPIRE ONE GLOBAL TEAM COLLABORATION

in SINGAPORE 2019





About the Global Maritime Forum

The Global Maritime Forum is an international not-for-profit organization dedicated to shaping the future of global seaborne trade to increase sustainable long-term economic development and human wellbeing.

Learn more at www.globalmaritimeforum.org