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# THE INTERNATIONAL PILOT

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PILOT'S COMMUNITY

INTERNATIONAL MARITIME ORGANIZATION



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CAMPAIGN  
2023

WORKING TOGETHER  
FOR AN INCLUSIVE  
AND SUSTAINABLE  
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# Message from the President

*Dear Colleagues,*

I want to take this opportunity to recall and commend to you the support for maritime pilots and pilotage shown by Mr Kitack Lim, IMO Secretary General Emeritus, during his tenure as IMO Secretary General, 2016 – 2023. In his own words, pilots have always been vital to ensuring the safety of navigation in key ports and shipping lanes globally using their specialized knowledge and expertise. While we look forward to continuing to contribute the expertise of pilots to the work of the IMO under Mr Arsenio Dominguez, we extend our appreciation to Mr Lim for his leadership of the IMO in the face of unprecedented global challenges, his support for IMPA, and his understanding of why your work matters.

Looking ahead to 2024, I see an opportunity for us to contribute our technical expertise and experience to discussions at the International Maritime Organization (IMO) about the impact of environmental regulations on the handling and manoeuvrability of ships. In collaboration with the International Chamber of Shipping and the International Harbour Masters ' Association, we will raise the issue of shaft and engine power limitation systems affecting many pilots worldwide. Moreover, we will be providing our membership with the most up-to-date information possible on the latest IMO environmental regulations and their potential impact on the performance and operation of ships.

We will participate in finalising amendments to SOLAS regulation V/23 and a new mandatory performance standard for pilot transfer arrangements. I am in no doubt that a coherent, mandatory regime for pilot transfer arrangements represents the most significant opportunity for the safety of pilots on duty in decades. The outlook



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for the conclusion of this work looks bright. We will also see the finalisation of the revised poster on transfer arrangements. Our colleague Captain John Pearn, MNM, led work on this. His steadfast commitment to the safety of pilots remains a lesson to us all.

We will finalise pilot transfer operations guidance, including training, personal protective equipment, embarkation/disembarkation, incident response and reporting. This work will complement the work on SOLAS regulation V/23 and equip our community with everything needed to continue advancing our safety culture. 2023 was a year marked by tragedy in our community, and we owe it to our colleagues who have lost their lives and their families to continuously evolve our approach to safety.

The IMPA XXVI Congress will take place in Rotterdam on April 21 – 26, 2024. There will be elections of three Vice Presidents and a conference programme covering safety, operational challenges, human capital, environmental sustainability and stakeholder influence and engagement. But most importantly, our community will come together and share our knowledge, experience, and expertise at a personal level. There is nothing I look forward to more as President, and I hope to see familiar and new faces from across our cadre represented as we look to the future of our profession.

We will also continue to engage when we see threats to the purpose of pilotage and the safety of pilots on duty. We see a need, now more than ever, to challenge the opinions, motivations and intent of some narratives about pilots and pilotage. Our performance in delivering more than 1.5 million acts of pilotage each year and in reducing accident risks by a factor of at least 528 (TEMS, 2022) is an achievement we must and will defend. We will continue to strengthen the narrative about why pilotage matters to our stakeholders and society in general.

In my previous message, I informed you that we would enhance women's representation at the highest levels within IMPA. I am therefore pleased to welcome Captain Nildeniz Sutcu Sen to the IMPA Advisory Committee and thank our colleagues in Turkey for nominating a Pilot of such high calibre. IMPA is committed to enhancing diversity in its work and ensuring that when our Association speaks with one voice, every pilot under our umbrella hears their own.

**Simon Pelletier**  
*IMPA President*





# Message from the Secretary General

*Dear Members,*

The President has outlined the opportunities for IMPA in 2024. The Secretariat is laying the foundations so that we can make the most of those opportunities by preparing submissions to the IMO, collaborating with Member States and other international organizations, and planning the delivery of the XXVI IMPA Congress and General Assembly in Rotterdam in April 2024. The calling notice for the General Assembly was issued on the 28 November 2023 in IMPA Notice 987.

On a personal note, I have now served as Secretary General for just over one year. It has been a great privilege to meet many of you, including at the European Maritime Pilots' Association AGM, Asia Pacific Maritime Pilots' Forum and the Latin American Pilots' Forum. But I look forward to meeting more Members in 2024.

Since joining, there have been significant changes at IMPA which have been outside our control. My priority has always been to ensure that our Members did not notice any impact on our support to them as we dealt with operational disruption and change. I thank the Executive Committee for their leadership and support, and the Secretariat Team for their unwavering commitment to serving our Members.

Finally, I would like to take this opportunity to recognise the appointment of Eliane Blanch as our Director, Sustainability and Relationships. Eliane will support the membership in matters relating to sustainable industry practices, focusing on social responsibility. This new role within IMPA complements our technical and operational work and reflects the breadth and depth of transitions affecting the maritime industry.

Onwards and upwards in 2024.

**Matthew Williams**  
*IMPA Secretary-General*



# Safety

## Safety Survey Results



Captain Adam Roberts, IMPA Vice President and Chairman of the Safety Sub-Committee

2023 has been an important year for the safety of pilot transfer arrangements. The International Maritime Organization (IMO) is working now to amend SOLAS regulation V/23 and its associated recommendations.

This work is anticipated to result in an enhanced and more robust safety regime for pilot transfer arrangements for the benefit of pilots and other users. Critical aspects of the proposed amendments speak directly to the results presented here and in previous years. Those aspects are highlighted in Figure 1.

But, that change is not expected to enter into force until 2028. In the meantime, the focus must be on raising awareness of the need for pilot transfer arrangements to be procured, inspected, maintained and rigged in compliance with SOLAS regulation V/23, taking complete account of the ISO 799 standards.

The results of the 2023 Safety Campaign show that historical trends in non-compliance continue. The headline non-compliance rate remains over sixteen percent, and the main determinant of non-compliance remains pilot ladders. Pilot ladder observations are



Figure 1



included in more than fifty percent of reports of non-compliant arrangements. These trends are highlighted in Figures 2 and 3.

In this respect, it is appropriate to re-iterate the following. We consider SOLAS regulation V/23, its associated IMO Assembly resolutions, and the ISO 799 series standards the minimum requirement, not an aspirational target. IMPA advocates for pilots not to use and to report arrangements that do not conform to these standards.

Trapdoor arrangements remain a perennial challenge, and we would encourage more shipowners and operators using them to take proactive steps to provide compliant and safe arrangements based on ISO 799-3:2022.

Similarly, procurement and maintenance policies focused on quality and a finite service life are critical to ensuring that safe equipment is always available. We recommend that those responsible for procuring pilot ladders and associated equipment rely on the services of reputable manufacturers and do not accept equipment that does not have valid third-party certification against the requirements of SOLAS regulation V/23 and ISO 799-1:2019. If in doubt, do not accept the equipment – the lives of pilots, seafarers, inspectors, and surveyors may depend on it.

Company procedures in approved safety management systems should be clear and effective, at least reflect the latest ISO 799-2:2021, and emphasise timely pilot ladders and man-ropes replacement. Where the safety of life is concerned, it is better to replace before failure than maintain to the point of failure.

IMPA is optimistic about the prospects for safe pilot transfer arrangements that enable pilots to focus on providing a public service for the safety of navigation, prevention of pollution and efficiency of maritime trade. In the meantime, we urge industry and equipment suppliers to act now so we can realise the expectation of safer pilot transfer arrangements tomorrow, today.

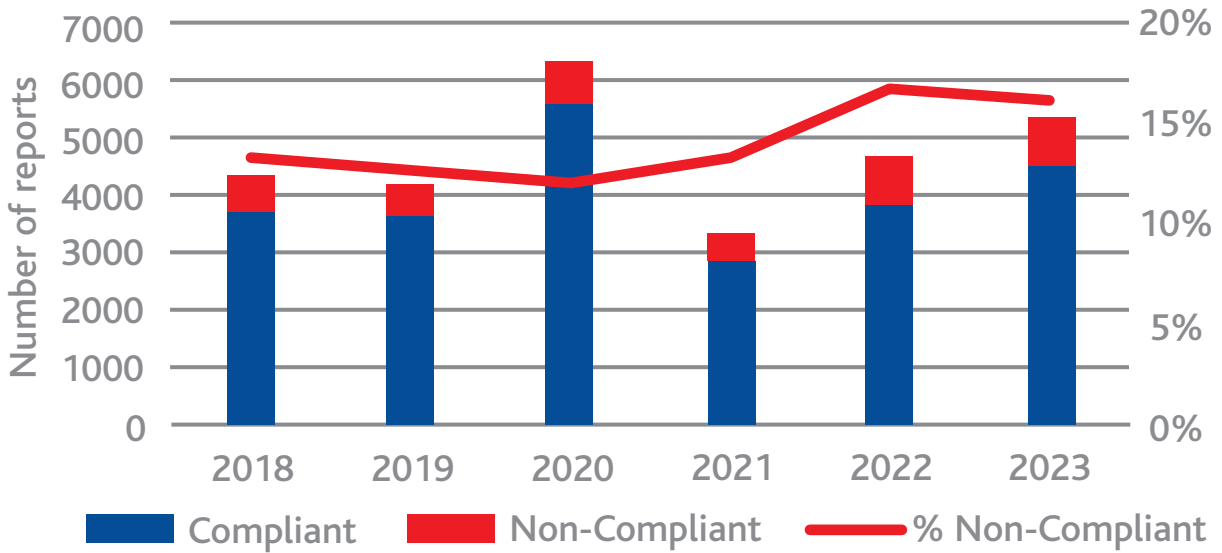


Figure 2: Compliance Trends 2018 - 2023

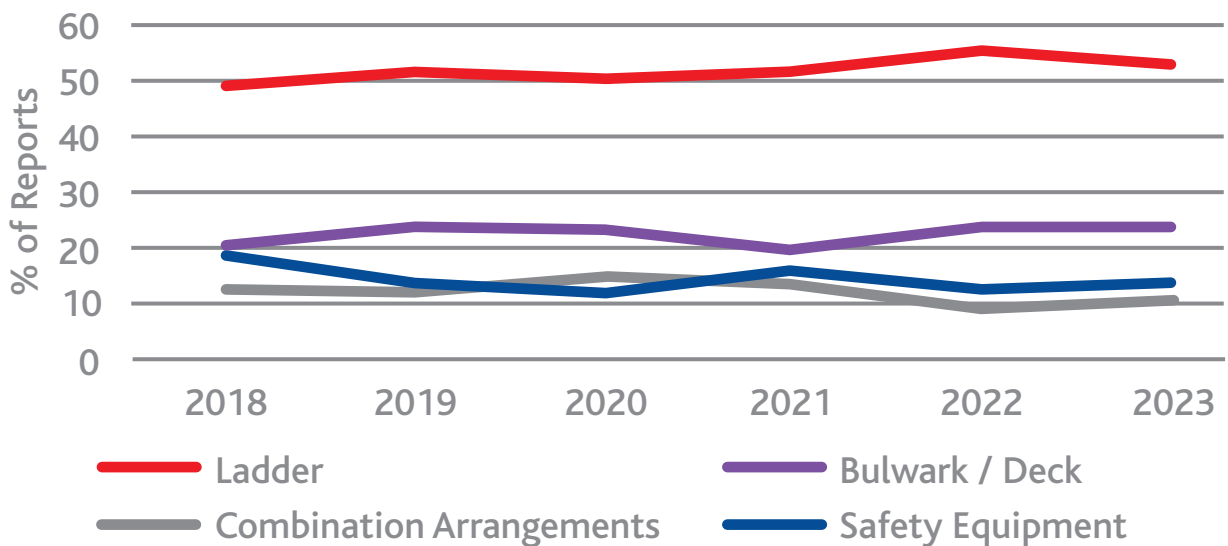


Figure 3: Drivers of Non-Compliance 2018 - 2023



# Sustainability

## Pilotage: ESG beyond rhetoric



Rodrigo March is a journalist, MBA ESG Management from PUC-Rio university, MBA Marketing from FGV and Public Policies specialist from Rio De Janeiro University Research Institute (luperj).

**ESG discussions on environment, society and governance have increased in size in the maritime and port sector. While sustainability is a broader agenda in society, ESG is still restricted to bubbles as the private sector. It is a concept focused on business risks, external pressure and market access, and involves practises and metrics aimed at the impacts of corporate operations. This is why it has come to stay. Unlike when sustainability echoed in the media, when many practised greenwashing - this time it no longer seems sustainable. The market and public are aware and will demand.**

Glaucia Terreo, who was at the head of Global Reporting Initiative (GRI Brazil) activities for 15 years, disseminating GRI standards in ESG reports, recalls that one of the embryos of this story was the disaster with the tanker *Exxon Valdez* in Alaska in 1989. With no pilot onboard, the vessel ran aground, ripped the bottom out to cause a 38,000-cubic meter oil spill. The environmental damage

still remains until this day. Three months before the disaster, pilotage had become optional in that region due to economic pressure. Exxon traded a maneuver worth USD 5,000 for losses of USD 7 billion.

US investors who lost money at the time were jointly responsible and concluded that it was necessary to scrutinize not only financial figures but also corporate socioenvironmental policies when taking investment decisions. That was the year when a group of them, together with environmentalists, founded the Ceres NGO in order to incorporate ESG to business.

Pilotage is also a private activity and closely connected to the three pillars of ESG, starting with the environment. After all, the pilots go aboard to steer the ship safely and protect society from such accidents as that of the *Exxon Valdez*.

Each vessel carries tons of fuel for its own consumption and very often pollutant freight, including oil. As we can see, a major accident has terrible consequences, with offshore and river pollution, and the resulting social impact. In many cases affected by port operations, not only can such actions have consequences on leisure, tourism and economy, but the population also eats, drinks and guarantees their livelihood from these waters.

We had a sample of this in 2019, when an offshore oil spill reached the beaches in Northeast Brazil. The pilot

therefore represents the State and goes onboard to protect us. It is no coincidence that the service is essential under federal law.

Another environmental aspect relates to the efficiency that the service adds to the system. See the example of the São Paulo Pilot Station that undertakes simultaneous tasks and two-way traffic in previously restricted stretches. This was possible after a detailed study of the timing of each maneuver. Without this integration that has reduced the terminals' idle time, imagine if a large ship were to wait offshore emitting tons of carbon every hour.

The investments made by the pilotage activity also contribute to the environment. This is the case of the dynamic bottom system implemented in five ports and the Amazon Basin. Based on the processing of data such as tide height and water density, technology permits a higher volume of freight carried by a ship, reducing the number of voyages and emissions.

Brazil Pilotage, however, transcends its mission. In each zone where it operates, its companies or pilots individually support impactful social causes. During the pandemic, the profession did not shy away and donated ten million Brazilian Reais nationwide to procure food baskets and inputs, and hospital equipment. In February, with the devastating rainstorm across the Northern São Paulo coast, São Paulo Pilotage and business sectors from the Santos Plain donated six tons of food, water, toiletries and cleaning products to the victims.

It is also worth mentioning that the pilot boats, their crew and the entire structure involved in the service are constantly available, helping the Brazilian Navy to provide relief and humanitarian aid. Another action is the partnership in distributing life jackets to riverside dwellers, as well as providing motor shaft protectors against scalp avulsion of Amazon women (long-hair entrapment in motors).

All this is normally performed by the pilots - however, as part of society, the profession has offered an extra quota, developing a pilot project of sustainability in Bahia Pilotage, described below. The deliveries of this project include a socioenvironmental map of the area protected by the pilots' work, a climate risk forecast for the next 30 years and the installation of a solar energy system in an institution for underprivileged children.

A worthwhile project for pilotage companies to adopt is the inventory of the greenhouse gas emissions. The main method used in the corporate world for their calculations

is The Greenhouse Gas Protocol (GHG Protocol), which facilitates reporting the data from other platforms.

According to consultant Ricardo Dinato, who worked on the 2012-2020 GHG Protocol Brazilian program, this diagnosis is the first step to be taken by an organization toward a low-carbon economy. The second step, he said, is to set an emission reduction target and then a decarbonization plan in order to achieve the target. Included in the scope of emission sources are, for example, motorboats and outsourced transportation, generators, canteen ovens, air-conditioning equipment, electricity consumption, waste generation, business air and land travel, and commuting.

The future of our planet and the next generations depends on us. We must all give our share of contributing to reducing global warming and its effects, which above all impact the less fortunate.

Shipping is responsible for 2.2% of carbon emissions. It seems little but is equal to the pollution of countries such as France and Canada. The shipping industry has been busy adapting its fleet, as we see in our ports. However, there is still a lot to do to adapt vessels, port infrastructures and to leverage the green fuel supply chain. The International Maritime Organization (IMO) set the target to reduce greenhouse gas emissions at 20%-30% by 2030, and 70%-80% by 2040; achieving decarbonization by around 2050.

Fora in which pilots have participated contribute to achieving the UN Sustainable Development Goals (SDG), internalizing the ESG culture in the maritime and port sector.

In March, at an event of the Ports and Coasts Directorate, Ilques Barbosa, former Commander of the Navy, Admiral of the Fleet, reminded us of another key issue. We cannot forget people. In a rapidly advancing technological scenario, we must include and build the capacity of the population for the new job market. The Admiral clearly warned that we need to leave behind the rhetoric and use ESG as a motor for sustainable and inclusive economic growth. It is there in SDG 8 of the 2030 Agenda.





## Pilotage Service: Beyond Environmental Protection. A Spanish Approach

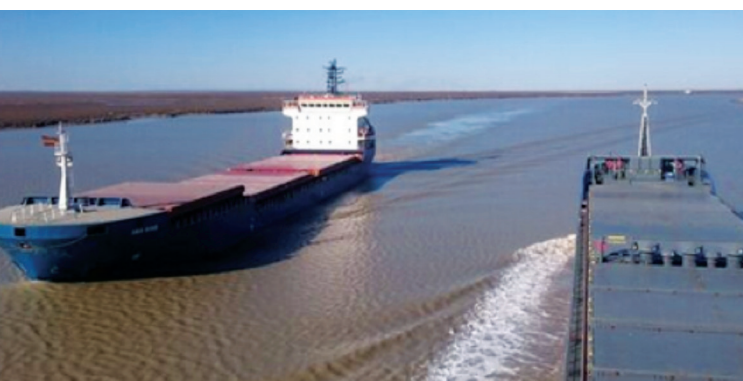
José Antonio Pérez Lorente, Secretary General,  
Spanish Pilots' Association / EMPA Vice-President

When we talk about the pilotage service, we think about those captains of the merchant navy who climb up a rope ladder and wooden steps from a fast boat approaching the ship that is entering or leaving port. Once on board, they have the direction of the navigation and guide the ship through narrow ports, canals or rivers, as good experts of the geographical area where they move.

In addition to safely navigating the ship through unique pathways, pilots serve a fundamental role in the public interest: environmental protection. With their extensive knowledge of both the areas in which they operate and the means available on board, pilots guide ships to prevent potential risks that could damage the environment during navigation and manoeuvring in ports. Their service is, in itself, a risk prevention measure against the environment in which they operate.

Applying their knowledge and expertise in identifying the safest waterways, speed over shallow water, authorised anchorages in areas close to areas of special interest and the efficient use of tugs during berthing manoeuvres are some of the examples with which

Below: *Practicaaje en el Guadalquivir. Fuente: Marcos Pacheco Morales-Padrón*



this service contributes directly to the protection of the environment. On this last aspect, in March 2023, the European Tugowners Association (E.T.A.) and the European Maritime Pilots' Association (EMPA) promoted the document "Recommendations for energy efficient harbour towage", which establishes basic premises for the responsible use of tugboats in port.

In addition, and according to the national and international regulations in force, the Pilot is required to report any event or occurrence that takes place during the provision of the pilotage service and that affects, or could affect, maritime safety, the safety of human life at sea or the marine environment, including the deficiencies observed and the anomalies detected in the vessels during the manoeuvres to and from the port or in the nautical manoeuvres within the port that could be relevant to those effects. Consequently, the Pilot becomes a protective barrier against possible damage that could occur in port waters. For example, in recent months there have been several reports of ships using the open cycle scrubbing system to remove Sulphur oxides from engine emissions. This system, generally used to comply with current emissions regulations, deposits the waste generated directly into the sea, creating a layer on the surface which after some time is deposited on the seabed. The Pilots of several ports, having observed this waste, have brought it to the attention of the maritime and port authorities. As a curiosity, several ports around the world have already banned the use of this open-cycle system while the ship is in port or at anchorage.

If up to now we have talked about the influence of the Pilot in the exercise of his functions, now we have to talk about the corporations/organizations that encompass these professionals in each of the ports of Spain. It is here where the concept of Sustainability takes on a broader scope, given that as the independent private professional societies that they are, they develop their involvement with this aspect in a more complete way.

The Pilotage corporations/organizations are aware that sustainable development requires an integrated approach. This is achieved through the different management systems that each one of them develops, in accordance



with the service conditions specified in the different port authority specifications contracts.

One example is compliance with the standard ISO 14001 Environmental Management Systems. The measures taken by each of the Corporations/Organizations are aimed at carrying out the activity, giving priority consideration to the protection of our environment. Some of the most common are:

- Monitoring of energy consumption (electricity, water, fuel, etc.)
- Carbon footprint measurement
- Use of low-energy lighting and appliances
- Recycling of waste in offices and pilot boats
- Electronic waste management
- Waste management plan on board pilot boats
- Removal of single-use plastics from offices
- Purchasing of sustainable products
- Environmental sustainability training
- Environmental assessment of external suppliers
- Awareness raising to reduce energy consumption
- Use of renewable energy at pilot stations

On the logistic side of the service, progress on this aspect is very speedy with many projects underway. In pilot transport by land, the organizations are changing their vehicles to electric or hybrid engines, in view of the investments and the impetus provided by the port authorities. As for boats, several corporations are involved in the engine refit of their pilot boats with more efficient and eco-sustainable engines, as well as in the study of more advanced hulls and stabilization systems to reduce vessel consumption.

On the operational side, the corporations work with procedures in which pilot boats have a specific weight, given their influence on environmental aspects. For this reason, work is being done on the efficiency of pilot boat services for embarking and disembarking, in order to optimise the use of pilot boats, and thus their consumption.

On the other hand, the active participation in several projects together with other stakeholders of the port community, including the corresponding authorities themselves, keeps pilotage at the forefront of actions to minimise the environmental impact of this type of boats. The study of the use of alternative fuels, such as

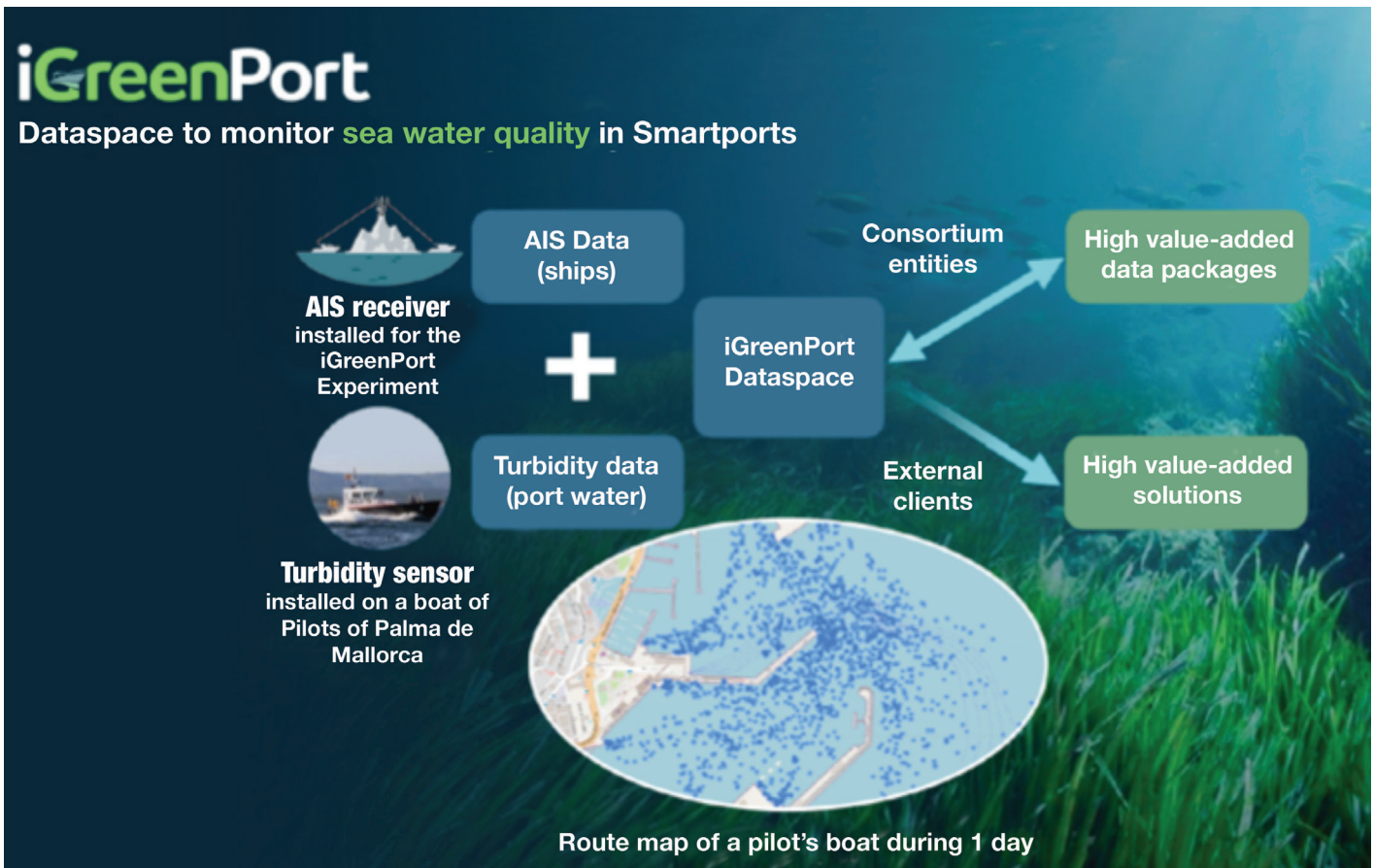


Above: *Estación de prácticos de Algeciras. Fuente: Corporación de Prácticos de Algeciras*

hydrogen, or the electrification of them, are frequent in the service panorama, participating in national and international projects for the development of effective and real solutions (avoiding falling into "Greenwashing") in the propulsion of these particular boats.

In line with the broad concept of sustainability, joint projects have been developed with port authorities in which pilot boats are equipped with specific sensors for real-time monitoring of the turbidity of port waters, sending systematic information for the detection of possible acts of pollution.

In terms of social aspects, it should be noted that the Corporations have their own code of conduct (deontological) in which they must ensure the protection of the environment and people. Furthermore, gender equality is a reality in our activity, as the presence of female personnel in our profession is becoming normalised on a daily basis at a national level, highlighting the five port pilots that are authorised throughout Spain and which receive the continuous support of the collective. The Corporations are also making progress in the area of diffusion, as they are increasingly involved in the associations or initiatives of the port community to



Above: Proyecto igreenport Fuente: Corporación de Prácticos de Palma

promote actions that are committed to social progress, environmental balance and economic growth.

The Spanish Pilots' Association is promoting and supporting those projects, activities or events that have a strong focus on sustainability. Those projects of the members who have requested its support, for example, in the Ports 4.0 Innovation Model of Puertos del Estado, have received the support of the Association for what they have needed in line with the policy of the collective.

In addition, it is worth highlighting the international event held in March at the Faculty of Nautical Studies in Barcelona with other European pilots whose main theme revolved around the EU Green Deal and the impact of European measures. They were attended by senior officials from Puertos del Estado, the Directorate General of the Merchant Navy (DGMM), the European Maritime Safety Agency (EMSA), PhD from the University of the Balearic Islands (UIB) and the ValenciaPort Foundation. Among the subjects discussed were the repercussions of climate change on our service, international measures on ship emissions, the "EU Fit for 55" package, the measures planned by Puertos del Estado in the Strategic Plan and the studies carried out by the port community to mitigate the effect of climate change on port facilities.

Thus, the Pilots' community is firmly committed to sustainability in all its activities, in cooperation with the rest of the port community and administrations, both nationally and internationally.



Left: Southern European Pilots' Meeting. Barcelona Fuente: Colegio de Prácticos





## Fostering a Sustainable Profession

Captain Erik Dalege, Bundeslotsenkammer President

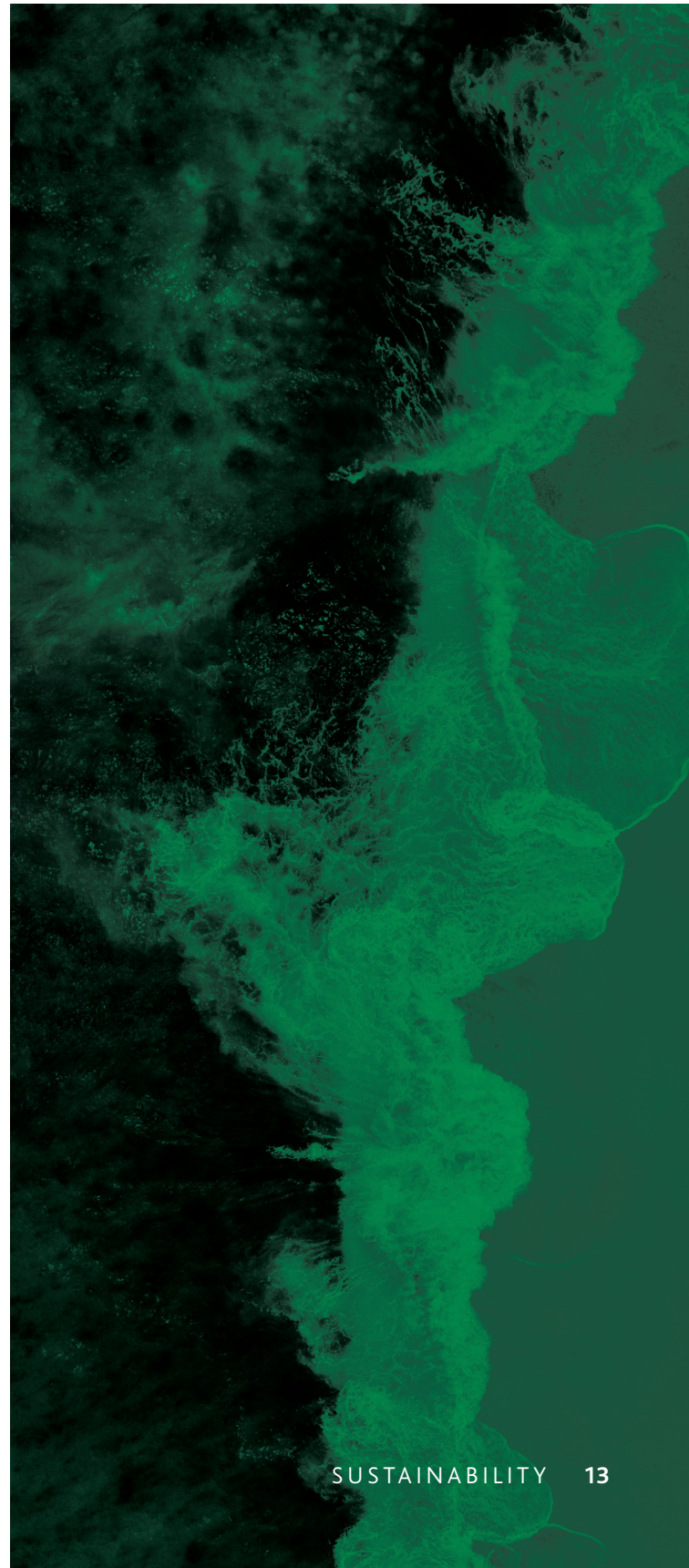
In the ever-evolving maritime landscape, the need for a fresh approach to maritime pilot training has become imperative. The German Maritime Pilots' Association, in collaboration with the University of Wismar, is spearheading a ground-breaking initiative - the Master's Program in Maritime Pilotage - to address the challenges faced by the profession and attract a new generation of talent.

A recent analysis of the maritime education landscape reveals a disheartening statistic: only 20% of aspiring students reach the level required to become a maritime pilot. The profession has faced challenges due to limited job opportunities for German officers on ships and a decreasing interest in seafaring among the younger generation. It's evident that the maritime industry must adapt to contemporary expectations and encourage diversity within its ranks.

Moreover, it is crucial to emphasize that in Germany, the mandatory retirement age for pilots is firmly established at 65. This is particularly significant considering a recent study, graphically represented below, which accentuates the demand for an annual intake of approximately 40 to 45 pilots. This calculation is made under the assumption of a consistent level of ship traffic, shedding light on the imperative to address these issues for the long-term sustainability of the profession (Figure 1: *Demand for Maritime Pilots due to retirement.*)

### A Vision for Change: Master's Program in Maritime Pilotage

In response to these challenges, the German Maritime Pilots' Association initiated discussions for a Master's Degree in Maritime Pilotage. The program aims to expand the pool of applicants by reaching out to various demographics, including regional expansion, attracting female and younger applicants, and focusing on their education.





Developed in collaboration with the University of Wismar, the Master's Program is designed to be a comprehensive educational experience. Pilots themselves lead the practical training, and a significant portion of the theoretical curriculum is delivered by experienced pilots serving as lecturers. The partnership involves joint efforts in developing module and course plans, ensuring a curriculum that aligns with industry needs.

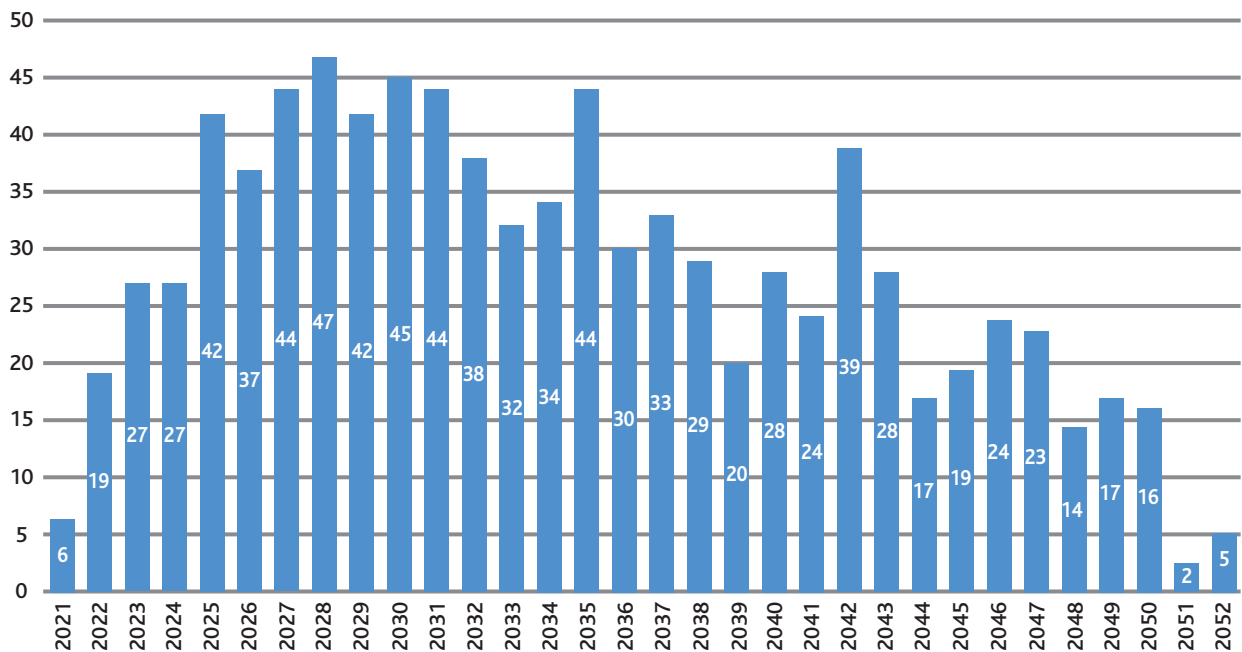
The Master's Program for Maritime Pilotage is more than an aspiration; it is a reality set to launch on September 1, 2024, at the University's Wismar/Warnemünde location. The legal groundwork was established in 2022, and with contracts and agreements now finalized, the inaugural cohort of master's students is eagerly anticipated.

The University of Wismar, Warnemünde Campus, plays a crucial role in the program's success. The curriculum seamlessly blends theoretical knowledge with practical experience, allowing students to engage in hands-on learning across all seven German maritime pilotage fraternities.

Prospective students interested in the program must hold a navigation-related bachelor's degree comprising at least 240 ECTS points and possess a valid Certificate of Competency as a Nautical Watch Officer (NWO). Additionally, applicants must be admitted as maritime pilot candidates by the General Directorate for Waterways and Shipping for one of the seven maritime pilot fraternities in Germany.

The application process involves the submission of documents, a health examination, and a psychological suitability assessment. The General Directorate for Waterways and Shipping plays a crucial role in reviewing and assessing applicants' suitability for the course.

The Master's Program in Maritime Pilotage is not merely a new chapter; it signifies a transformative wave in the maritime profession, paving the way for a more inclusive and dynamic future. As the first students set sail on this educational journey, the program promises to redefine the role of maritime pilots and secure the industry's sustainability for generations to come.



Source: BLK

Figure 1: Demand for Maritime Pilots due to retirement



# Potential Future Fuels in Maritime Energy Transitions

Martin Young, OCIMF

Shipping is coming under increasing political and societal pressure to decarbonise and reduce its greenhouse gas (GHG) emissions. There are numerous approaches to this issue, including improvements to operational efficiency and deployment of new technologies. This article outlines the potential low-carbon or carbon-free fuels that might be considered.

## COP28 and the revised IMO GHG Strategy

The latest Conference of the Parties to the UN Framework Convention on Climate Change, or COP28, will have again raised questions about the energy transition and the shape of shipping's own energy transition. However, the real debate for shipping had already occurred prior to COP28 with the International Maritime Organization (IMO) decision in July 2023 to adopt a revised strategy to reduce global GHG emissions from international shipping to net-zero around 2050. The revised IMO GHG Strategy is the culmination of a discussion about future potential marine fuel options that has been evolving since the 2015 Paris Agreement.

While the IMO GHG Strategy defines the ambition, it is not prescriptive on how shipping could become net-zero around 2050 and instead sets out a programme to explore various options connecting with the IMO's existing decarbonisation work. The high level of diversity within shipping suggests that there could be multiple distinct decarbonisation pathways, differing by vessel-types and regions dependent upon local context.

## OCIMF perspective on the revised IMO GHG Strategy

The Oil Companies International Marine Forum (OCIMF) was granted consultative status at the IMO in 1971

and continues to present industry views to promote its mission of safe and environmentally responsible transportation of crude oil, oil products, petrochemicals and gas. Given its perpetual quest to improve safety, security, health and environmental performance, OCIMF fully supports the revised IMO GHG strategy. OCIMF is technology neutral with no preferred solution and instead supports flexibility of choice to reduce GHG emissions, focusing on risk management and practical implementation.

## Exploring uncertainty using scenarios

There is a high degree of uncertainty about what future fuels could be required by the maritime sector. This uncertainty is illustrated by the range of different fuels and mixes present in the energy scenarios exploring alternative energy futures. Many governments refer to the annual World Energy Outlook (WEO) produced by the International Energy Agency (IEA). The WEO includes three scenarios for potential energy futures, but its Stated Energy Policies (STEPS) and Net-Zero (NZE) scenarios together provide the effective range of energy demand and variety of anticipated future fuel options.

In its STEPS scenario, the IEA projects oil to remain the dominant fuel (~85%) for maritime energy demand in 2050 with smaller shares for gas (~10%), bioenergy (<5%) and hydrogen (1%). Under the NZE scenario, the IEA envisages a very different maritime fuel mix with much reduced hydrocarbons (oil and gas together being 15%) offset by the widespread adoption of alternative fuels such as ammonia (44%), hydrogen (19%), biofuels (19%) and methanol (3%).

The diversity in the projected future fuel mixes results from how the scenarios are constructed and their underlying assumptions. The STEPS scenario is an extrapolation of current trends and energy policies. In contrast, the NZE scenario assumes that the net-zero goal for 2050 will be met and then works backwards with various assumptions on how this might be achieved.

## Future fuel challenges

While the future fuel mix may be uncertain, it will be

some combination of the existing fuels, low-emission drop-in versions of these fuels and alternative low-emission fuels. For some sectors or regions, there may be a role for other fossil fuels with lower GHG emissions not previously used as maritime fuels, such as ethane, butane and propane. However, for fossil fuels to be viable options in a net-zero world, some form of carbon abatement or emissions trading would be necessary.

The drop-in fuels can be sourced via biofuels or as synthetic fuels. These could be biofuel or synthetic versions of gas oil or methane but could also include methanol. First-generation biofuels are well known and produced from feedstocks derived from potential food stuffs or waste, limiting their availability. Second-generation biofuels are being developed to address the potential conflict with food production by using non-food feedstocks. In the longer term, third-generation biofuels derived from algae are under development and could potentially offer a greater role for biofuels.

Synthetic fuels, also known as e-fuels, offer another option for drop-in replacements for existing fossil fuels or to produce alternative fuels. These fuels are produced by using renewable or decarbonised electricity to electrolyse water to produce hydrogen and combining that under pressure with a reliable supply of concentrated carbon-dioxide. Synthetic fuels require substantial quantities of carbon-free electricity but could be viable with surplus renewable generation in conjunction with carbon capture. The most prominent potential alternative low-emission and carbon-free fuels are ammonia and hydrogen. Ammonia is currently mostly used in fertilizers but can be combusted with a starter fuel. While there is significant experience in safely shipping ammonia, it is toxic and can cause caustic burns so has safety challenges as a potential fuel source.

Various countries have developed national hydrogen strategies to help decarbonise hard-to-abate sectors and use hydrogen as an energy vector to move clean energy from remote sources. Hydrogen can be combusted or used in a fuel cell but has handling and shipping challenges. In comparison to fossil fuels, hydrogen has very low volumetric energy density and is more difficult to store, needing to be compressed at high pressure or liquefied at lower temperatures than LNG or liquefied air. These challenges have led other sectors to explore transporting hydrogen long-distance in the form of ammonia.

Using ammonia and hydrogen as alternative marine fuels requires developing safe practices, safety parameters and regulations for their bunkering, handling, and use on vessel and at shore-side facilities. This must include training and upskilling seafarers as a function of safe management.

## Enabling alternative fuels

Significant work is underway at the IMO looking at differing aspects of potential alternative fuels to help reduce the regulatory uncertainty that could discourage investment. Different IMO groups have been looking at revisions to the International Code of Safety for Ships Using Gases or Other Low-flashpoint Fuels (IGF code), development of guidelines for ammonia and hydrogen, at the regulatory framework for using new technologies and alternative fuels, and at the Life Cycle GHG Intensity of marine fuels. OCIMF is active in all relevant IMO correspondence and working groups, sharing its members' expertise and best practice experience to help shape practical and deliverable regulations.

## A safe transition for decarbonising shipping

For OCIMF, safety and sustainability are two sides of the same coin. The need to decarbonise marine fuels introduces new safety challenges that require new safety practices, regulations, and training to maintain OCIMF's vision of a global marine industry that causes no harm to people or the environment. It suggests the need for a broader framing of an inclusive and just energy transition to explicitly include the safe use of marine fuel and focus on a **safe transition** to sustainably reducing GHG emissions. OCIMF seeks to build a more proactive decarbonisation consensus through greater involvement and collaboration with likeminded organisations to deliver solutions to support the safe reduction of GHG emissions and enable a **safe transition**.





# Community

## XI Latin American Pilots' Forum



**Captain Alvaro Moreno, IMPA Senior Vice President and Treasurer**

**The XI Latin American Pilots' Forum was held in Panama City from September 25 through 29, 2023. It was the first Forum since the previous one, held in Montevideo, Uruguay, in 2019.**

The Forum was attended by 90 pilots, from Argentina, Brazil, Chile, Canada, Colombia, Ecuador, Mexico, Panama, Peru, Spain, Trinidad & Tobago, Uruguay, and USA. Capt. Simon Pelletier, IMPA president, and Mr. Matthew Williams, IMPA secretary general, attended the Forum.

The main subjects of discussion during the 2023 Forum were the role of IMPA at IMO, the use of technology by pilots, training available for pilots in the region, safe boarding, and the use of personal protective equipment. There was also a very detailed presentation by Mr. Boris Moreno, vice-president of Operations of the Panama Canal Authority, on the current water situation and what the Canal is doing to prevent this from occurring in the future. The participants went on a field trip to the Panama Canal manned model training facilities (SIDMAR), which has been in operation since 2016, and visited the new Neopanamax locks on the Atlantic side of the Canal (Agua Clara locks).

There was a whole session dedicated to explaining the role of IMPA at IMO, with special emphasis on the ongoing SOLAS revision at the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) and the Maritime Safety Committee (MSC). We had the participation of the Permanent Representative of Panama to the IMO, Mr. Luis Bernal, who made a very interesting presentation on the work of member states at IMO and the importance of working in coordination with IMPA on matters that relate to pilots. Mr. Bernal encouraged pilots to get involved and reach out to their respective country representatives at IMO to work together on issues that affect pilots' safety.

The Latin American Pilots' Forum is held every 2 years, on odd years. The first Forum took place during the IMPA Congress in Istanbul, in 2004. The next Forum is planned to be held in Peru in 2025. It is a unique opportunity for pilots in the region, and from other continents who are always welcome to join us, to get acquainted with the latest information on issues that affect piloting and the maritime sector in general, but most important, the Forum also gives us the opportunity to share our experiences with colleagues and help each other in reaching common goals. We are looking forward to meet again in Peru in 2025, and invite pilots from all over the world to join us there.







# Working Together for an Inclusive and Sustainable Maritime Future

Captain Josephine Clark – AMPI President, Senior Marine Pilot Port Kembla,

Captain Kate Delisky – AMPI Executive, Senior Marine Pilot Townsville

Captain Jeanine Drummond – Principal Maritime Advisor, Integral Maritime, and ex Harbour Master, Newcastle, Australia

**The Australasian Marine Pilots Institute (AMPI) 2023 conference was held in Perth, Western Australia in early October. It was evident in the wide ranging diversity of the delegates, presenters and sponsors that not only in their content, or thinking, but in their background, experiences, nationality, religion, and age that there is a direct correlation between an inclusive workplace and industry culture and maximising situational awareness so as to enhance operational safety in marine pilotage. It is evident that human factors, soft skills, and integration of an inclusive and just culture, are as important as the technical aspects as we continue to evolve marine pilotage with modern technology and best practice application.**

The AMPI conference planning team have had for many years strategic objectives to deliver inclusive conference content and initiatives that align with the needs of future maritime sustainability. Right from the early planning stages for this most recent conference, the objective was to collaborate and deliver a conference program that was diverse in perspective, background, technical and non-technical content that would achieve the goal in maximising situational awareness in pilotage. It was agreed to focus energies on inviting key international pilotage partners to integrate content with that of the Australasian region so as to present emerging best practices, policies and initiatives, alongside shared challenges and objectives for continual improvement of maritime pilotage around the globe.

Having a long-standing partnership of working together to support a diverse and inclusive maritime pilotage

workplace with the Nautical Institutes South East Australia Branch - Women in Maritime initiative, the conference organising committee sought input and advice on how to best include principles of maritime diversity, equity and inclusion into the conference program, theme and outcomes.

These discussions resulted in objectives that would achieve further local collaboration with the Western Australian Women in Shipping and Transport Association (WISTA) chapter in hosting a joint Women in Marine Pilotage panel discussion and side social event. The conference attracted sponsors and partners with an aligned purpose regarding sustainability and diversity, equity and inclusion in marine pilotage. These sponsorships provided opportunity for varying degrees of financial support to be offered to Australian and international women marine pilots, or aspiring women marine pilots.

This would build on the theme of AMPI's long standing commitment to a more sustainable and diverse maritime future. Previous initiatives included the 2022 Wollongong conference offering complimentary attendance to Deck Officer Trainees, to not only learn more about pilotage, but importantly meet and grow a network of senior mentors or guidance within the pilotage sector, effectively minimising perceived power distance separation between these two roles, inspiring these trainees that a career as a marine pilot is one that is in fact achievable, and there will be support for them along the way.

In 2019, at the Sydney conference, AMPI and Nautical Institute (NI) Women In Maritime (WiM) invited and financially supported the only woman marine pilot in India, Reshma Nilofer, to attend the conference in person, and undertake port tours and pilotage observations in Sydney and Newcastle. The conference program included a Women In Maritime breakfast panel that was hosted by Jillian Carson-Jackson and consisted of Henriette Hallberg Thygesen, Mike Gallacher, Reshma, and Craig Eastaugh discussing key themes of Empowering Women in the Maritime Community.

In 2019 AMPI and NI sea WiM, together with the Port Authority of NSW provided funding for Captain Josephine



Clark to attend the Women Offshore conference in Houston, Texas and participate on a Women in pilotage Panel alongside other women marine pilots from the US, Kenya, Sweden and India. The Australasian Marine Pilots Institute proudly appointed their first woman, Captain Josephine Clark to the role of President since its inception in 1988. Jo has had extensive experience at sea and 18 years experience as marine pilot. Jo came ashore in 2005 to the marine pilot and harbour master role in Eden, New South Wales before moving to the role of Marine Pilot at Port Kembla in 2012.

The NI - WiM have worked with AMPI and the Australian mentoring program to ensure that all cadets and entry level mariners have access to mentors, and have developed this further with providing women trainees with the opportunity to choose a women mentor only a few years further along in their careers to assist with those early days of settling in, any questions, guidance and support required when they may find themselves the only woman onboard.

The Perth AMPI and joint WISTA Women in pilotage panel discussion was an outstanding success with nearly 100 participants, and an over subscribed post dinner event. The panel discussion was facilitated by Captain Kate Delisky, with panel participants Captain Elspeth Diack (Western Australia), Captain Maryanne Lokoloko (PNG), Captain Sandy Bendixon (USA), Captain Dominique De Cruz (UK), and Captain Hanna Odengrund (Sweden). The topics covered ranged from how to get into the industry, training and mentoring, as well as challenges and barriers experienced differently around the globe.

The audience contained around 50 AMPI members and sponsors, around 40 members of the Western Australian WISTA chapter, along with women pilots attending from South Africa and Malaysia.

The event was also an opportunity to recognise the contribution of the Australian women who were the first women marine pilots and have paved the way a little smoother for another generation of women mariners embarking on their maritime pilotage careers. In attendance on the evening were retired marine pilots Captain Carol Dooley from Western Australia and Captain Sandy Risk from New South Wales. Captains Helen Cole and Elizabeth Datsun are also retired, and while they couldn't be with us on the evening, were also

recognised for their contributions to Australia's maritime pilotage sector.

A dinner with a waiting list followed, where a restaurant was overbooked to accommodate 67 attendee's of all genders, and different nationalities and backgrounds, coming together and networking and chatting over the important work of marine pilotage work. The atmosphere over dinner truly representing the community's we live in, where women's and men's participation is balanced, and one in which we continue to strive for in our maritime workplaces.

It is with these open discussions and sharing of experiences that provides the knowledge and understanding of what all maritime organisations should/need to learn about what else they can do every day that helps build a more inclusive workplace culture and maritime pilotage sector.

A rapidly growing WhatsApp group of some 75 women



marine pilots from around the world further supports and promotes diversity, equity and inclusion in the maritime workplace. These women come from very different backgrounds in pilotage, experiences at sea and in their current roles, different ages, religions and different family dynamics, but the key component is support and inclusive discussion on marine pilotage and our experiences on the water and supporting those new to

maritime pilotage. This group represents just a small sector of women now working in pilotage throughout the world.

These events can't happen without the generous support of all conference sponsors and in particular Fremantle

## Pilots and Integral Maritime.

Integral Maritime was grateful to the generosity of the AMPI conference committee in providing sponsor stall space to create further awareness of the available Maritime DEI support, education and tools provided by Integral Maritime, and the many industry organisations including NI, WiM and Wista Australia.

Diversity, Equity and Inclusion can't happen without equitable initiatives that provide for placing all people on a level playing field with disparate resources, tools and funding to ensure that all people have an opportunity to develop while maintaining important levels of professionalism and quality of training.

AMPI looks forward to their next conference in Papua New Guinea being held from 25th to 27th of June, 2024.







## Asian Pacific Maritime Pilots' Forum

Captain Jo Yong Hwa, KMPA President

In a gathering of maritime professionals from across the Asia-Pacific region, the 3rd Seoul Asia Pacific Maritime Pilots' Forum (APMPF) set sail on August 29th, 2023, at 'The Plaza Hotel' in Seoul, South Korea. Over the course of three days, from August 29th to August 31st, the forum brought together approximately 100 participants, including 58 delegates and 19 accompanying persons from various countries such as Australia, Brunei, Canada (IMPA), China Shanghai, Hong Kong, Indonesia, Malaysia, New Zealand (Maker), Papua New Guinea, Singapore, South Korea (host country), the UK (IMPA), Taiwan (Kaohsiung & Keelung), and Vietnam.

The event was inaugurated by Captain Jo, Yong Hwa, the president of the Korea Maritime Pilots' Association, who extended a warm welcome to all participants. Captain Simon Pelletier, the president of IMPA, delivered a congratulatory message for the forum, emphasizing the importance of collaboration and exchange of knowledge in the maritime pilotage community.

Throughout the forum, a total of 13 presentations, including those from IMPA, were discussed during various sessions covering Technical, Safety, Training & Industry aspects, as well as the General Meeting. The focus was on enhancing professionalism and sustainability among maritime pilots, advocating for safety, fostering cooperation among pilots, and improving communication with governments and international agencies.

One of the key aspects of the forum was the coverage of tour programs in Seoul for all participants, providing a unique blend of professional development and cultural exploration.



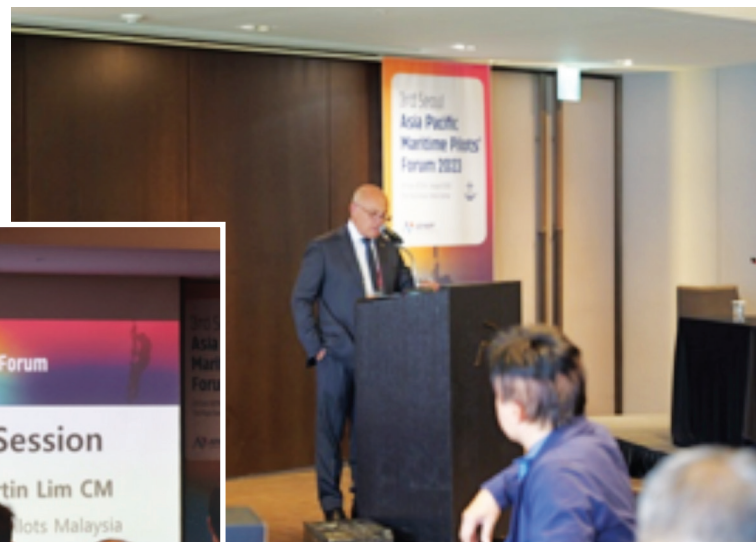


Looking ahead, it was announced that the 4th Asia Pacific Maritime Pilots' Forum will be hosted in Đà Nẵng, Vietnam, in October 2025. While the core objectives of the forum will stay consistent, there is an expectation that upcoming editions will address even more challenging issues for the participating pilots.

The significance of the forum extends beyond borders, aiming to improve maritime pilots' cooperation on information, knowledge, experience, expertise, technology, and industry benchmarking. This collective effort seeks to build capacity and professionalism among maritime pilots in the Asia Pacific region, thereby contributing to the global and regional shipping industry's standards and efficiency.

Given the challenges faced by the maritime industry due to the prolonged impact of COVID-19, the successful hosting of the 3rd APMPF underscores the resilience and commitment of the maritime community. The forum, which originated in Bali, Indonesia, in 2017 and had its second iteration in Sydney, Australia, in 2019, has become a crucial platform for collaboration and exchange among maritime pilots in the Asia-Pacific region.

As the maritime industry charts a course towards recovery, the APMPF stands as a beacon, promoting unity, safety, and professionalism. The decision to hold the next forum in Vietnam reflects the commitment of the Vietnam Maritime Pilots' Association, and we look forward to seeing many IMPA members in Vietnam, in October 2025, as a testament to the enduring spirit of cooperation that defines the Asia Pacific Maritime Pilots' Forum.



Asia Pacific Maritime Pilots' Forum





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# ISWAN





# Technology

## Innovative Solutions for a Greener Future: Artemis Technologies Leads the Way



**John Cumming, Head of Workboats at Artemis Technologies, shares how the maritime company's state-of-the-art innovations will enable faster safer port operations and help decarbonise the pilot boat sector.**

**Driven by our mission to deliver a sustainable maritime future, Artemis has developed a range of high-speed, green vessels with applications across sectors such as pilotage, crew transfer and passenger ferry. Producing zero-emissions in operation, our vessels and systems are designed to have the lowest possible impact on the environment – delivering tomorrow's transport today.**

### The Need for Change

Over 80% of world trade is moved by ship, with every ship entering or leaving a port required under law to engage an Authorised Pilot. Over 3,200 pilot vessels are registered globally with annual emissions of 820,000 tonnes of CO<sub>2</sub> equivalent (CO<sub>2</sub>e). It is therefore critical that we take action to reduce harmful emissions and strive to work in harmony with our planet.

### Finding Solutions

When factors such as supply chain, infrastructure and efficiency losses are taken into consideration, electricity

is widely acknowledged as the best choice among various green fuel alternatives for its positive impact on the environment.

However, the electrification of maritime transport is not without its challenges, including the lack of speed and range to deliver typical commercial operations. Water is 850 times denser than air, so it requires a lot of energy to propel a boat through water. To address this challenge, we have developed a disruptive electric propulsion and active hydrofoil system, the Artemis eFoil<sup>®</sup>. The innovative system includes a high-power density electric drivetrain integrated into an autonomously controlled hydrofoil, combining technologies from automotive, yacht racing and aerospace sectors.

### Fly Above the Waves

Hydrofoil technology can reduce both drag and increase range for any given power source. It is this same technology that is used to power our Artemis EF-12 Pilot vessels, giving them an impressive foiling range of 55 nautical miles at 25 knots, and the ability to fully recharge within one hour. Hydrofoiling also offers some important secondary benefits to the pilot industry, such as a comfortable ride, and increased slow speed stability.

As our vessels fly above the water, they no longer slam into each wave, mitigating motion sickness and ensuring



crew experience is much more comfortable. The Artemis EF-12's flight control automatically starts above two knots, so even in displacement mode there is increased comfort for crew and pilots due to the dampening effect of the underwater foils reducing the roll and increasing stability.

We know that the act of transferring a pilot is one of the most challenging and dangerous operations carried out at sea, with highly complex interactions between the wind, waves, and hydrodynamic effects of the vessel. The Artemis EF-12 Pilot vessel, designed to the Lloyd's Register Special Service Craft classification rules, has six times fewer vertical accelerations in sea state four compared to a conventional displacement vessel, providing greater safety for pilots and crew onboard.

The foil can also generate 12-tonnes of lift, enough to maintain 0-2 degrees of roll in two metre seas at 25 knots and counteracting the waves and roll when alongside a ship.

## (Not) Making Waves

The Artemis EF-12 Pilot can avoid local speed restrictions thanks to the minimal wake produced by our patented technology. This makes it an ideal solution for traditionally busy waterways in ports and harbours. Operations usually need to slow right down to protect wildlife and other vessels as they approach ports and marinas, but with a foiling boat, where displacement is quite deep under the water, the wave never generates. This allows high-speed operations close to shore, without causing the usual wake damage to shorelines or moored vessels. Furthermore, there is an extremely low acoustic signature which means the pilot vessel can also operate quietly in ports and harbours reducing noise pollution.

## We Know it Works

The environmental benefits of our Artemis eFoiler® system were first demonstrated in 2022 when we launched to market the world's first commercially coded 100% electric foiling workboat, 'Pioneer of Belfast'. Sea trials have allowed us to demonstrate the incredible efficiency savings of the Artemis eFoiler® system. In comparison to a gasoline- powered sistership the electric foiling vessel uses up to 90% less energy. A typical pilot vessel can consume between 450-800 litres of diesel a day, emitting up to 1,200 tonnes CO2e per year. Adopting

this green technology will drop these operational emissions to zero and result in significant OPEX savings through fuel savings and reduced maintenance costs.

In the Department for Transport and Innovate UK's Clean Maritime Demonstration Competition (CMDC), we received funding for a feasibility study, alongside Belfast Harbour Commissioners. The study was to ascertain if a 100% electric foiling pilot vessel is a technical and economically viable solution to decarbonise pilot vessel operations. This proved successful, with the technology demonstrating considerable improvements to speed of operations, Total Cost of Operation (TCO), slow speed stability, and subsequently safety during pilot transfer.

## Unique Capability

During initial testing and validation of our flight control solutions for different vessels, our world leading



simulation tools are used extensively. Forming part of the overall Artemis eFoiler® solution, the flight control system was developed to make it easier for the master to operate our vessels. The system's advanced algorithm removes the more complex challenges, allowing them to focus on typical operations that they are accustomed to. It is imperative that our flight control system is easy to use, as the best solution is one that operates in tandem with the master. As part of our CMDC study, current skippers of pilot vessels and pilots conducted pilot transfers in our simulator in a range of conditions. The engineers then studied the hydrodynamics and improved the flight control system to maximise stability and ease of operation in a range of conditions.

“ The feasibility study allowed us to thoroughly examine the operation of our pilot boats, encompassing aspects such as fuel consumption, service and maintenance costs, and the environmental impact.

It also enabled me to spend time on Artemis' prototype vessel, Pioneer of Belfast. Whilst it was a great experience to be gliding through the port at 25 knots with virtually no wake, what was most important for us was the reduction in both noise and vibration, as well as improved stability at sea.

It's been great to have the opportunity to collaborate closely with the team at Artemis Technologies, they have grasped the essential elements of pilot boat operations, when working on the design of the Artemis EF-12 Pilot. ”

**Jamie Faulkner, Deputy Harbour Master  
at Belfast Harbour**

## Lead the Way

With pilot vessels forecast to grow at the same rate as the world merchant fleet by 6.4% over the next five years, it has never been more important for pilot vessel operations to decarbonise. At Artemis Technologies we can offer ports and harbours around the world an exciting, sustainable alternative solution while making the operational experience more comfortable, safer and efficient for masters, crews and pilots.



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