CONFEDERATION OF EUROPEAN SHIPMASTERS' ASSOCIATIONS

CESMA NEWS

MARCH 2026

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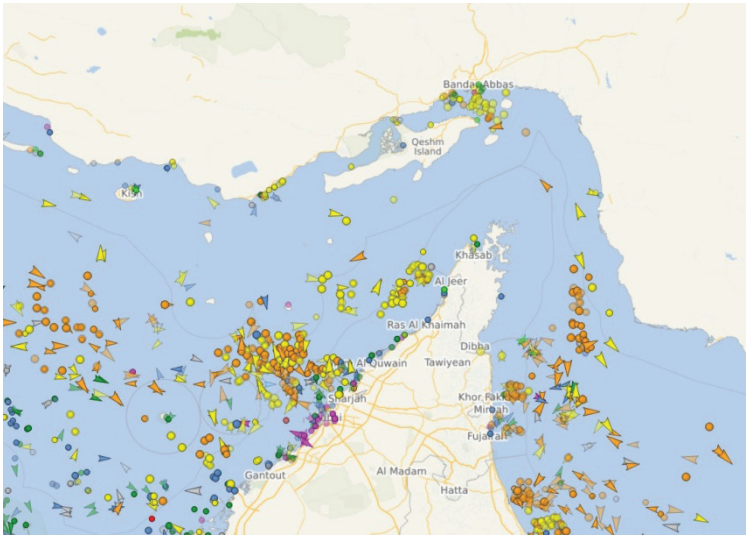
A LOOK ON A CONFLICT IMPACTING THE MERCHANT NAVY



Strait of Hormuz

War in Iran, the impact on oil prices is significant. Small reminder: the 2nd oil crisis at the end of the 1970s was a consequence of the Iranian revolution. Will it be the same this time? No one knows yet. However, there is an essential difference between these two events: this time the merchant ships are heavily impacted; the Strait of Hormuz, when these lines are written, is not borrowed for fear of ats of war.

1st consequence: an impressive number of commercial ships, and therefore crews, are blocked, and therefore, de facto, prevented from heading towards a free and safe space for navigation. Every day, merchant ships are attacked by missiles or drones. And the Arab-Persian Gulf being mainly known for its production and export of petroleum products (crude, refined, gas or chemicals), attacking one of these ships, loaded of course, even and perhaps especially at anchor, is synonymous with danger firstly for this ship but also for all those around it.

Sailing on a ship carrying dangerous cargo is not, as you can imagine, the most peaceful job, cool as they say now, that you can do. Usually, so in the middle of a conflict, as a possible collateral victim of sorts, it's easy to imagine it being an even more stressful job.

The captain of such a ship is, as he knows, always responsible. But what can he do about it?

Navigation: To a French radio journalist who asked me how a merchant ship could hide in the Arabian Gulf, how to escape a possible bombardment, I replied that there was no place to hide. Staying adrift or going to anchor near the United Arab Emirates is a safety lure. On the other hand, it is necessary to ensure permanent and more than attentive visual and auditory monitoring. In the mid-1980s, I remember sailing on a gas tanker (butane and propane on board) in this area then in the grip of a conflict between Iran and Iraq. We were not supposed to sail during the day, and at night it was all (navigation) lights turned off and ports hidden. Once, we had anchored for the day, and the captain decided to leave in the middle of the afternoon. Shortly after we left the anchorage, a column of smoke rose behind us, most likely coming from where we were anchored with another ship. So where to go? The answer is simple: nowhere. The only solution is to leave the gulf, but the strait not being practicable and under very high armed surveillance, attempting a passage by force, or even on the sly on a moonless night, is a challenge, madness. The ships blocked in the Gulf will be blocked as long as it is not possible to transit the Strait of Hormuz in complete safety, why not in a small convoy under the surveillance and escort of military ships, those which are armed.

Cargo: A ship stuck in the gulf, drifting or at anchor, what happens to its cargo? Of course she is always on board, as long as there is no leak due to the tearing of the hull/double hull following an attack. But what happens to its quality? A quick reminder for non-experts who read this text: at the end of loading a liquid bulk cargo, in addition to the bill of lading, a certificate of quantity and a certificate of quality of the cargo is issued. Is there a risk of damage to the cargo in the long term? Probably not or very few for crude oil, refined products or gas but what about other cargoes such as chemicals. Of course we can reasonably think, hope, that the captain will not be held responsible for damage to the product, after all it is not his fault if his ship is blocked in the gulf and cannot transit through the Strait of Hormuz, the only access point to this gulf. But the worst is never certain, you never know, a desire to blame a captain can very well cross the mind of a ship-owner or charterer.

Technique: A ship wears out and even more so when it is not sailing. The hull becomes dirty, thus affecting the energy performance of the ship. As for the rotating parts, main engine and other various devices of the machine, if stopping is often synonymous with the best time to carry out maintenance, in this case this cannot really apply. In view of the surrounding safety and security circumstances, it is unthinkable to dismantle even one injector on the main engine, in order to remain permanently in an emergency equipment situation. So very few or no maintenance or work that can be carried out is not ideal for the ship; and same for the crew (see below).

Strait of Hormuz: Little Quoin (Didamar) & Great Quoin (Mumar)

Crew: But the most important thing, also for the captain, remains the management of the crew: the people on board of course, but also the food, the water or rather the water (drinking and waste). Drinking water is produced on board, most of the time ship en route. Vessel stopped this can sometimes be done in very small quantities, at best, or not at all. Hence a lack of potable water which will inevitably be felt if the situation drags on for a while. Sewage is another problem. The recovery boxes continue to fill up. But the discharge of wastewater into the sea is highly regulated – see MARPOL Annex IV – among other things under conditions of distance from the coast and minimum speed of the vessel. What is more or less short term will represent serious problems for ships and captains.

Food: for the moment, but we are only at the start of the conflict, there is always the possibility of resupplying. But for how much longer, and at what cost?

The men and women on board: First there is stress, fear. The commercial sailor is not military; he has neither been educated nor trained for conflict. He's a civilian. There is a fear, there has already been, that some will become what we call "collateral victims". Above all, it is a profound and significant test to remain inactive and waiting. It is also not absurd to think that many of these stranded sailors are in the process of making their last embarkation, which we have already experienced during the Covid period. The sailor knows stress; he lives with it almost daily. But it's a work stress. This is something else: inaction which reinforces the feeling of powerlessness in the face of the immediate environment. The action is beneficial; it allows us to "forget" the environmental circumstances during this period of time that is work. We can talk about the well-being of sailors, but today for sailors stuck on the wrong side of the Strait of Hormuz, it is less about well-being and more about survival.

And we come to the role of the captain. He probably hasn't learned how to handle this kind of situation, and the procedures to help him don't exist. The captain must manage his own stress as well as that of his crew. So of course there is the magic word: "the next generation". Technically speaking, it is still possible, as long as planes can land in the United Arab Emirates. But succession is subject to one essential condition: finding a replacement. Yes, it is possible and it has been done to disembark without replacing the excess sailors – excess compared to the safe manning certificate. With a big downside, this certificate gives the list of crew members essential to the smooth running of the ship in complete safety to connect point A to point B. In complete safety, that means without anything abnormal happening. Can we really speak of "complete security, and even safety" in such an environment? And for the others, the essentials, who wish to be relieved, a replacement must be found. And whatever some journalists say, sailors who would volunteer to join a ship stuck in the Gulf are not as numerous as they think.

And always above, and at the same time with, there is the captain. The captain is responsible, among other things, for the physical and moral health of his crew. So I ask the question: how could such a responsible captain be relieved, leaving the other members of his crew on board?

So yes, one might think that it is easy for me, I am no longer active, to answer this question. But I honestly think I will stay with my crew. And that wouldn't make me a volunteer...

Capt. Hubert ARDILLON
CESMA Secretary General

CESMA COUNCIL MEETING 27 JANUARY 2026

The first on line CESMA Council meeting was done on 27th January 2026 from 15:00 to 16:00 CET. As decided during last CESMA AGA the Board orginized the on line meeting via Google meet platform after release of CESMA News December 2025. The agenda of the meeting was:

- CESMA News December 2025 - information from the President and SG and discussion;
- CESMA AGA information 2026 and 2027;
- Others

The meeting was moderated by CESMA President Capt. Dimitrov. The participants' microphones should be muted except the one who's given the floor from the organizer / moderator. There were 14 participants from 11 associations, of course not included the 3 members who had send just before the meeting an apology.

Capt. Dimitrov announced the agreed agenda and then said few words about Capt. Thierry Rossignol, CESMA vice president 2004-2006 and CESMA president 2006-2009, who passed away on December 9th, 2025. CESMA Secretary General Capt. Hubert Ardillon also explained the role of Capt. Rossignol in AFCAN and CESMA and his input in both organizations.

SG and the President gave detailed information about EMSA Conference and EMSA safety report which could be downloaded from EMSA web site (https://www.emsa.europa.eu/publications/item/5598-emsafe-report-2025.html). It was also said that such report can be downloaded in the 27 different European national languages.

There was no participant from AVCCMM but SG and the President informed the participants about developments of the preparation and organization of next CESMA AGA in Bilbao. The AGA will be at Bilbao Maritime Museum, there are already a number of proposed hotels but the place for the gala dinner is not yet confirmed which delayed the final message for registration. It'll be done soon upon confirmation of the gala dinner.

Capt. Ivica Fazo presented himself as the new President of the Shipmasters Association of Montenegro and the new Board.

There was general discussion in which almost all participants took part. Capt. Damir Lakos, Croatian representative and web master informed about instalation on board the ships of new AI equipment giving advises about ship's route and actions depending upon the information collected from ship's systems. Capt. Trevor Crowley from IIMM raised the matter of responsibility about using such equipment if not class and flag approved. Capt. Antonio Raggi from USCLAC shared USCLAC member experience that the responsibility of the use of AI equipment should be for the owner of the ship, P+I would not take part of the charges.

Then the problems of the dark fleet and impair of the safety of navigation were discussed. SG informed about the arrest of the captain of the sanctioned ship in France.

Capt. Mertens from VDKS confirmed that in 2027 VDKS will host CESMA AGA in Hamburg. He shared the opinion of members of VDKS that during AGA the situation with autonomous ships and their legal status and responsibilities have to be discussed. Also he raised the problem of the possibility of ships' crew to go ashore. There is less time in ports, there is less crew on board the ships and there are complications with some nationalities to obtain permission to go ashore in some countries especially in Europe. The matter will be included in the agenda of next CESMA AGA. That was supported by Capt. Raggi and Capt. Crowley. Capt. Raggi informed the participants about the problems with the decreased crew on board ships and the possibility to be compliant with hours of work and rest on board ships for the masters. Same was confirmed by Capt. Crawley that during calls there more and more works and demands. And even, with high communications, if all is organized before the call, all can be changed at the last moment. But in case the records of working and rest hours are not compliant with the regulation, the master is the one to be responsible.

Capt. Lakos informed on the venue of an international conference to be held in Split, Croatia, on 8-9 October 2026, with the possibility for CESMA Board members to assist, and/or to speak, during this IAMU Annual Conference.

It is already reminded to participants that CESMA Board should be renewed in 2027, and that all Associations are required to already check internally for an application.

Next CESMA on line council meeting will be in April 2026.

Capt. Dimitar DIMITROV, PHD, FNI
CESMA President

WHEN GEOPOLITICS ENTERS GLOBAL MARITIME TRADE
NOVEMBER 20, 2025 – LE HAVRE, FR

The day was opened by **Mr. François LAMBERT**, Director General of ENSM. Geopolitics and global trade are two consubstantial entities. As world trade is largely maritime? this study day will talk about maritime routes, their challenges, the risks they represent, including cyber risk.

Axis 1: Strategic maritime routes and geopolitical issues

In a recorded video, **Vice Admiral Christophe CLUZEL**, commander of the Naval Action Force (NAF), begins his speech with "The sea is a new field of conflict". Previously, the sea was a space of freedom, war was waged at sea, and it was decided from land. Today, the sea is a space where anything goes. It is not uncommon for the sea to attack land positions far from the coast. And fortunately for the commercial navy, the state navy protects commercial ships. Operation ASPIDES, in the Red Sea, involves more than 150 ship escorts.

The strategic fleet is the precious elements (the eyes of the crews, the radar images on the bridge) which transmit all the observations. And we can consider installing sensors in the masts or on the upper gangways of commercial ships.

Another key idea: the NAF is ready to receive and "educate/train" the reserve which has been doubled for this.

For the **Vice Admiral Pascal AUSSEUR**, general director of the Mediterranean Foundation for Strategic Studies (FMES), currently the danger at sea is everywhere, and this is likely to last at least 50 years. There are tensions everywhere: Red Sea, China Sea, Indian Ocean, Gulf of Guinea, Caribbean Sea, Arctic zone. It is not a crisis but a breaking point. The difference compared to the crisis, where we end up returning to the initial state, is that we do not know the final state, except that it will be different from the initial state, and that this final state will not correspond to the European (or Western) model.

The model is trade, and the sea is the system that irrigates this model. But the model is exploding, in 70 years, we have gone from 3 to 8 billion human beings. And at the same time, resources are becoming scarcer. So there won't be something for everyone. This inevitably leads to tensions.

This has several impacts on the merchant navy.

First the rules of the game disappear, including the regulations. Every day, international law is not respected, and it is the same for the maritime sector. When an EEZ is decreed as a territorial zone by a country (Russia, China, Turkey), it is illegal. The rising powers are continental, not maritime, and there are increasingly strong ways to take ownership of the sea.

Then the return of geography (identity, nation, particularities, personal interests), and distances shortened. Everyone has their own identity, their own interest, their logic, their habits, and this is felt more and more in the merchant navy where the crews are multi-national.

Before the economy guided the world, now States make decisions guided by geopolitics, or geo-economics.

But it can be good for the merchant navy because the flag, the strategic fleet, becomes important again.

Round table: The geopolitical challenges of maritime routes

Moderator: **Mr. Gil MIHAELY**, publishing director of the "Conflicts" magazine.

First of all, the point of view of maritime insurers with Mr. Pascal DUBOIS, general director of the Committee of Studies and Services of Maritime Insurers (CESAM). In 2025, CESAM, an

Economic Interest Group bringing together 23 maritime insurer companies representing 1.1 billion Euros, does not represent a single entity, but rather all of the ecosystems linked to the merchant marine.

CESAM's action is based on four pillars:

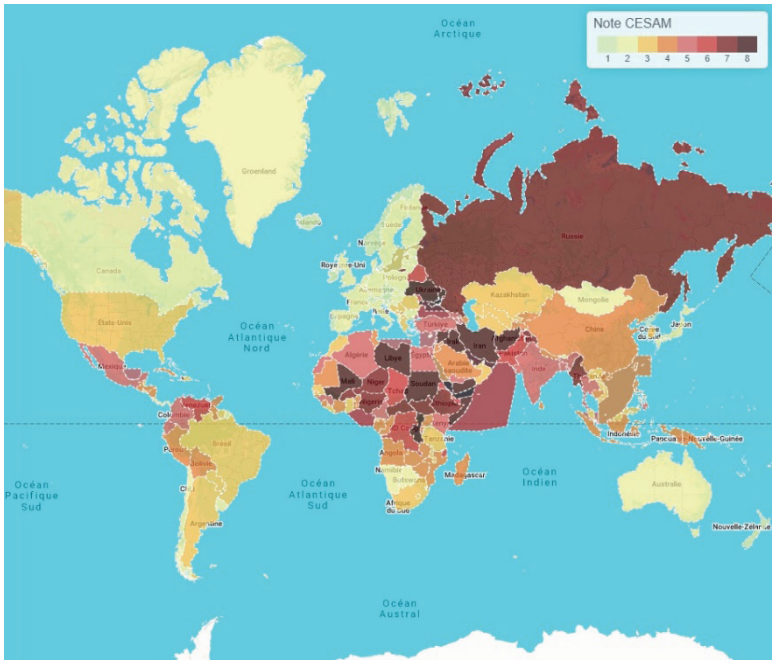
1. The network: 181 Damage Police stations spread across 111 countries and 117 experts for the transport of goods, fishing, rivers and pleasure craft.

2. A system for exchanging technical-accounting flows of co-insurance to make exchanges of flows more reliable and reduce management costs. Coinsurance is essential: a PC of 24,000 containers at a cost of $200,000 on average per container is a huge sum.

3. Management of general average and major disaster files on behalf of the French market, managed by companies internally, consolidation and reinsurance.

4. A rating of countries/zones to enable the continued delivery of "War Risks" guarantees, "extended" coverage specific to the French market, in collaboration through exchanges with the MICA Center, and contacts with the UK Navy.

With regard to conflict risks, 8 degrees of risk zones have been defined, the degree of insurance then depends on the zone, the type of goods, the flag of the ship, etc.



Map of risk areas in 2025

For 10 years, the risk due to cybercrime has been taken into account, taking control of a ship or a port.

Frigate Captain Thomas SCALABRE, MICA Center, gives the findings in 2024 and the trend in 2025 by zone of recorded events.

Drug trafficking reached record levels in 2024 with a 35% increase in cocaine production. In 2025 there were 20 boats destroyed, mainly in Latin America. Semi-submersible boats now go everywhere, as far as Portugal, even off the coast of Brest. This type of boat costs 1 billion Euros, however smugglers are ready to sacrifice a boat, which proves, if necessary, the "profitability" of smuggling.

Piracy and robbery: 340 events in 2024 and +15% for 2025.

The crisis in the Red Sea: 124 Houthi attacks in 2024 decrease in 2025 especially since the peace process in Palestine was established. But in 2025, there have been several ships attacked or

even sunk, such as the Magic Sea, the Eternity C and the Minervagracht. Traffic is still paralyzed, and there is therefore still a residual risk in the Red Sea. This risk will exist as long as the Houthis consider themselves on a religious mission, since "this is a war of existence, not of borders". Since the start of the crisis in the Red Sea, ASPIDES has provided 624 ship escorts, as well as around twenty openings of fire, on boats, drones or missiles.

Regarding the Gulf of Guinea, the security situation is slowly deteriorating. A group of pirates is located off the Cameroonian and Nigerian coasts, but it operates more near the equator. There were 39 incidents of robbery in "traditional" areas (Ghana, Nigeria, Angola) and 7 events of piracy.

The Gulf of Guinea is also a place to combat illegal, undeclared and unregulated fishing. Attacks on commercial ships are mainly carried out with a view to kidnapping, especially at night, and no mother ship has been identified.

In addition, the Gulf of Guinea is an important location for drug trafficking, as well as illegal bunkering.

In the Indian Ocean, there has been an awakening of piracy since the beginning of 2024 (42 events in 2024 and already 52 in 2025), with a return of offshore piracy using mother ships capable of extending piracy up to 600 miles from the coast.

Finally, a "new thing" in 2025 with the "shadow" fleet which creates security and safety issues in European waters.

Capt. Pierre BLANCHARD, president of AFCAN, explains the precautions taken before entering a risk zone, information received from the MICA Center, and daily positions. Captains are not trained to assess the degree of risk. Entering a zone, or not, is not an easy decision to make. The captain can be "pushed", influenced by the owner and charterer of the ship: commerce above all (a trip by the Red Sea or South Africa means an extra week at sea, therefore more consumption, air pollution, food, etc.). In addition, each crew member has their own life, their own experience. Of course there is the right of withdrawal, which is very good, but only in theory. In practice, this can be very difficult, depending also on the contract linking the seafarer to the ship, and the practical feasibility of organizing a relief. So who can say no, apart from the captain (SOLAS V, 34-1)?

Capt. BLANCHARD - AFCAN President

Of course there is the preparation of the ship, the BMPs, the SSP, and the Hardening Plan. Barbed wire, fire guns, locked doors, the citadel (especially the citadel), all of this is useful against piracy. But in the event of a missile or drone attack, what can we do?

And pirates adapt to the context. For example in Nigeria, pirates have left the EEZ because commercial ships entering it are escorted by a Nigerian navy ship.

The problem is that international law is no longer really respected, not even by States. Examples: a Libyan military ship fires on the Ocean Viking; the USA sinks boats off the coast of Venezuela.

In addition, conflicts can arise on board with multinational crews. Can we count on the loyalty of the people on board when out of a crew of 23 people there are 10 nationalities? This also raises the problem of the strategic fleet that we are talking about: should we reduce the number of nationalities, or even regions on a ship, or even make a selection of the crews to man the ships of the strategic fleet?

The conclusion of this morning went to **Vice Admiral Jean HAUSERMANN**, IHEDN (Institute of Advanced National Defense Studies):

Outside of DST and straits, the crew has the capacity to avoid geopolitical danger. Should we, from a virtual operations room including MICA Center, insurers, shipowners and charterers, carry out geopolitical routing, as well as meteorological routing? This would require sharing of information and closer collaboration between the merchant navy and the national navy.

With regard to cyber, we must maintain the resilience of ships and be able to navigate in degraded mode. This de facto includes the presence of crew members on board.

Axis 2: Trade policies and international tensions

In video, **Mr. Jean-Marie PAUGAM**, Deputy Director General WTO (World Trade Organization) recalls that maritime routes are the vectors of communications. But the current framework is blocked, which reinforces international tensions.

Introduction by **Mr. Yusuke MORI**, Master Mariner, PhD, AFNI, Deputy Executive Director IAMU (International Association of Maritime Universities).

The IAMU, founded in 1999 and bringing together 83 members from 45 different countries, participates in the work of the IMO as a Non-Governmental Organization (NGO) in several working groups: on the assisted assessment system for capacity building, on research and academic publication, on simulator training, and on the review of the STCW Convention.

In 1980, we were talking about a crew of 10 members only, multipurpose seafarers, capable of working on deck and on the engine on the same day, but without taking into account the fatigue that such situations could generate on seafarers on board. Today, we are talking about autonomous ships, without crew but with “shore” operators.

In 2000, there was a discussion on the use and role in learning of simulators, mainly the equivalence of simulator hours for obtaining the certificate, and in 2022 there was the same discussion in the United Kingdom, Finland, and elsewhere.

Today, shipping in the future means cleaner ships (propelled by methane, ammonia, or nuclear), and autonomous or remote-controlled ships. Related to the lack of seafarers, it becomes necessary to change skills, education and training, as well as to create regulations surrounding autonomous ships.

The GMP (Global Maritime Professional) initiative, aimed at meeting the needs of the industry in an evolving educational and professional context, while responding to the professional development aspirations of seafarers, brings together professors and educators, maritime administrations, ship owners, brokers, naval architects, and officers on board, i.e. the skills sought currently, but also in the medium term (5 to 10 years) and long term (20 years), and to know how to teach these skills. The “Book of Knowledge” can be downloaded from on https://iamu-edu.org/gmp.

Then **Mr. François LAMBERT**, ENSM, returned to 3 points:

1. Human capital: 100% digitalization of maritime transport is a fantasy, even science fiction. It must be an aid to navigation, and schools must provide training in digitalization, as well as decarbonization.

2. Customs duties: we are still protected by the European Union.

3. France where there is no real maritime strategy, whereas with Overseas, we hold an important place from this point of view. The RIF (second register) flag is one of the most prominent flags in Europe with a tonnage doubled in ten years. But we see too much in the short term. We see in 5 years, whereas we should see in 30 years. This is important for training centers. We must train today according to current needs of course, but also future needs.

Roundtable: Navigating a World of Trade Tensions

Moderator: **Mr. Yann ALIX**, General Delegate of the SEFACIL foundation (Laboratory of prospective ideas on maritime, port and logistics strategies).

According to **Mr. Denis TERSEN**, IRIS (Institute of International and Strategic Relations), in the maritime sector, there are regular crises such as during Brexit, and for certain countries, it is necessary to control the ports, example of China for the Silk Road, and even imports, example of the taxes put in place by the USA. All that leads to a fragmentation of the world.

Ms. Charlotte EMLINGER, economist, CEPII (French Center for Study and Research in International Economics) confirms that trade has become a balance of power with unprecedented levels of customs duties, leading to strong uncertainty. The statistics for Chinese exports to the EU, which until the end of 2024 were at the same level as exports to the USA, show a strong increase to the EU, offsetting a sharp decline to the USA. And same, China replaced the EU on the Russian market following the sanctions.

The second roundtable: Laurent LARTENS – Denis TERSEN – Charlotte EMLINGER – Fulvio CARLINI

For **Mr. Laurent MARTENS**, General Delegate, Armateurs de France, there are three problems:

1. Safety

In 15 years we have gone from a peaceful sea to red zones almost everywhere, hence an additional cost of insurance, but also of fuel (longer route equals more consumption). Security is the first determining choice for the maritime routes to be taken, hence the need for rapprochement with the national navy, and of course with schools so that security is well understood by all those involved in maritime transport.

2. Sovereignty

Sovereignty decides the level of security that will be applied on ships. Ships under the French flag are escorted, even defended, by the French navy. Sovereignty becomes again a factor of power and representation, therefore of national ships, seafarers and shipyards.

3. Customs duties

The current instability does not create a brake on maritime transport. It is a threat because it generates fear among certain national operators such as China and India.

Mr. Fulvio CARLINI, Institute of Chartered Shipbrokers, President of FONASBA (Federation of National Associations of Ship Brokers and Agents), recalls that the profession of shipbroker is a profession of relationships and exchange of information, that it is the permanent dialogue between maritime stakeholders which is the only one capable not of resolving maritime security problems, but of making maritime transport more serene.

At the conclusion of the day, **Mr. Justin Hayden MILLER**, FIDAL (Business law firm), makes the link between the current maritime situation and the space race towards the Moon during the 1960s. Geopolitics has entered the maritime world, and therefore maritime trade. And as was said at the start of the day, we will not go back because unlike what happened with space; it is not just two States that are in competition, but many more.

Capt. Pierre BLANCHARD
AFCAN President
Capt. Hubert ARDILLON
CESMA Secretary General
AFCAN Vice president

ENSM – 1ST SUMMER SCHOOL
1-4 JULY 2025, LE HAVRE

The ENSM, center of Le Havre, organized its first summer school from Tuesday July 1 to Friday July 4. Focused on the energy transition, These 4 days were divided into two parts, conferences in the morning and visits in the afternoon, in a way “theory” in the morning and “practice” in the afternoon.

Among the thirty participants, AFCAN was represented, even if sometimes partially, by its president Capt. Pierre BLANCHARD and its vice-president Capt. Hubert ARDILLON.

<u>Welcome by the Director General of ENSM, Mr. François LAMBERT</u>

After a few words of welcome and thanks, he informed that these universities have been in development for two years, and are intended to renew themselves, probably by being organized in the different ENSM sites.

The students ask to be put into the concrete; these universities are also a bit of an attempt to mix conferences and visits, in order to see the interest through feedback to integrate this type of teaching into the student curriculum.

Day 1 – Tuesday July 1: The eco-energy transition in the maritime sector

Theme 1: Introduction "Efficient energy transition, where are we? », by Mr. Luc GILLET, engineer, former deputy director of maritime transport at TotalEnergies

Maritime transport plays a strategic role in the global economy. This is more than 80% of the goods transported for a global fleet of more than 100,000 ships. And even if maritime transport must reduce its emissions – 1 billion tonnes of greenhouse gases (GHG) per year, or 2.9% of total global emissions – it is also the means with the lowest emissions per tonne transported: 12 times less than road and 70 times less than air transport. But it is also a means very affected by the war and commercial crises of our time.

Emissions vary depending on the type and size of ships. Bulk carriers are therefore responsible for 23% of CO2 emissions even though they represent 42% of the world fleet. Conversely, container ships, 13% of the global fleet, are responsible for 27% of emissions.

The European Union (EU) adopted the "Fit for 55" package in July 2021 to reduce GHG emissions. Four main measures came from this:

– The ETS (Emissions Trading Scheme) directive, in force on January 1, 2024 for ships over 5,000 UMS, must be applied progressively (40% in 2024, 70% in 2025, and 100% in 2026).

100% of intra-EU port journeys as well as 50% of journeys to or from an EU port are included.

CH4 and N2O will be included from January 2026.

The technical operator of the vessel is responsible for payment, with a sanction in the event of non-compliance (i.e. €100/tonne CO2 as well as possibility of banishment from European ports)

Planned emission quotas: 78 Mtonnes of CO2 or 8% of emissions from 2024 for international maritime transport, with a gradual reduction to 57 Mtonnes in 2030. Maritime transport represents around 5% of the total EU ETS quotas. The implementation of these quotas represents a market of 4 to 8 billion €/year (at 50 or 100 €/tonne CO2)

– The Fuel EU Maritime regulation, in force on January 1, 2025, aims to reduce the intensity of greenhouse gas emissions from ships

As for the ETS, there is a progressive reduction in GHG intensity (reference 2020, - 2% in 2025, - 6% in 2030, -14.5% in 2035, - 31% in 2040, - 62% in 2045, and - 80% in 2050, but with a calculation based on the production of fuel at its consumption (Well to Wake).

This is the same coverage as for ETS qupotas, i.e. 100% of intra-EU travel and 50% of in/out EU travel.

This regulation favors the use of synthetic fuels.

It includes a possible pooling mechanism to ensure compliance; the technical operator is responsible for this. Financial sanctions are planned based on the cost of the low-carbon fuel that will be used, knowing that 1st generation biofuels are excluded.

Shore power in major ports for container ships and passenger ships will be mandatory from 2030.

– The AFIR regulation (Alternative Fuels Infrastructure Regulation) - Deployment of infrastructure for alternative fuels, in force in April 2024

The main European ports must be equipped before January 1, 2030 with shore power to meet the demand of around 90% of container ships and passenger ships calling, shore power which must also serve the main river ports.

– The directive on energy taxation: end of the tax exemption for marine fuels, directive still under discussion.

This is the proposal for a minimum level of taxes to encourage the use of sustainable fuels, with a 10-year exemption regime for sustainable fuels.

Note: As a tax, this directive requires unanimous approval of Member States to be adopted.

The IMO revised its decarbonization strategy in July 2023. From a 40% reduction in CO2 emissions in 2030 (compared to 2008 emissions), reductions should now be 20% in 2030 and 70% in 2040, still compared to 2008 emissions, but for overall GHG emissions rather than CO2 only.

New regulatory provisions were approved at MEPC83 in April 2025, for ships over 5,000 UMS.

GHG fuel intensity limits for energy used on board are set at two levels: a "baseline target" level and a "direct compliance" level. A reduction in GHG fuel intensity is planned over time and penalties feed an international fund.

Compared to a reference level of 93.3 gCO2eq/MJ (fleet average in 2008), there will be a financial reward for ships using fuel with zero or near-zero GHG emissions below 19 gCO2eq/MJ, a threshold which will be lowered to 14 gCO2eq/MJ on January 1, 2035.

Note: gCO2eq/MJ: gram of CO2 equivalent per megajoule of energy

However, to come into force, these new provisions will have to be adopted during the next MSC in October 2025 for application in 2028 at the earliest, and many points require clarification.

The industry is not short of initiatives. In 2025, a study by the Global Center for Maritime Decarbonization shows that 70% of shipping companies have decarbonization policies. Numerous R&D centers have been set up for this purpose, including "coalitions" of industrial partners whose aim is to work together and exchange information.

Among the technical improvements in energy efficiency we can note:

● Hydrodynamics: optimization of hull shapes (such as wind deflectors) through the use of digital twins as well as hull appendages such as new bulb designs, propeller nozzles, pre-swirl stators, fins on propeller nuts, rudder bulbs.

● The injection of air bubbles under the keel for a performance gain greater than 5%.

● The use of new antifouling paints

● Improved engine consumption, electronic injection control, and new exhaust gas heat recovery systems.

● Wind assistance in different forms

Other improvements:

● Optimization of the crossing, analysis of meteorological data and online ship-to-shore digital exchanges by a

– Optimization of consumption on a given route by continuous speed adjustment

– Optimization of weather routing with multi criteria wind, swell, currents, to minimize consumption, secure arrival dates, limit risks (loss of containers, movement of goods, etc.), thanks to digital twins currently being developed Weather routing is widely used for ships with sail propulsion assistance

– Reduction of waiting times at the port (Just in time Arrival), ideal solution but difficult to implement

● Installation in ports and terminals of the possibility of shoreside electrical connection

● Installed carbon recovery systems being installed on board and stacked in ports

● The development of biofuels, even if the quantities remain limited and marginal, especially for the navy in competition on this subject with other means of transport (road and air). The main alternative low-carbon fuels subject to R&D and development projects are ammonia (NH3), hydrogen (H2) and methanol (CH3OH), but with volume ratios for the same energy that are largely deficits and increased safety and toxicity risks.

● Electric, hybrid or 100% battery propulsion, a solution mainly designed for short distances

● Fuel cells with 2 types of cells:

– PEM (Proton Exchange Membrane Cell): “low temperature” 80°C, running on hydrogen with a high degree of purity, more compact, less heavy, and resistant to transient cycles

– SOFC (Solid Oxide Fuel Cell): “high temperature” 800°C and producing usable heat on board, operating with numerous fuels: LNG, LPG, and Hydrogen.

● Nuclear propulsion: mainly in military navies and icebreakers, but many projects are in development for merchant navy.

Where are we?

In January 2025, ships in service using conventional fuel oil represent 92% of the global fleet and 47% of the fleet on order. Ships using alternative fuels (53%) are therefore becoming more important for the first time, with orders of course, mainly LNG (38%), methanol (12%), LPG (2%), ammonia (0.9%) and hydrogen (0.2%) being still anecdotal.

Theme 2: Public policies for a sustainable merchant marine, by Mr. Hervé THOMAS, Directorate General of Maritime Affairs, Fisheries and Aquaculture (DGAMPA)

There are several elements of support for the French fleet:

● Fiscal support: the tonnage tax, even if currently under attack in the National Assembly, is the main support system for boat owners with a significant benefit for the flag; tax deductibility (art. 39c of the tax code); and state credits.

● Budgetary support: exemption from employer contributions, which erases the differences in cost of French ships compared to other flags.

● “Security” support: French ships benefit from the protection of the national (or European) navy.

● “Training” support: French sailors are still in high demand (benefit of versatility), which also leads to an increase in ships under the French flag. From 2013 to 2023 there are 43% more ships under the French flag.

● “Human” support: the fight against social dumping.

Activity 1: Hydrogen barge project management, by Mr. Louis-Marie ROUXEL, Technical Director SOGESTRAN Group

SOGESTRAN is the leading French river shipowner, also one of the leaders in maritime with international influence. SOGESTRAN has more than 170 river units and 20 owned vessels.

To reduce the environmental footprint of activities, it is necessary to optimize energy efficiency in order to limit its impact, choose energy sources with low carbon intensity, and operate with greater sobriety.

For the river, this means using bio-fuels, e-fuels, hydrogen, batteries, and of course electricity at the dock. It is also an optimization of the filling and speed of barges and river boats, and consequently of the training of crews.

Regarding maritime, in addition to river elements, there is the use of sail propulsion and weather routing.

SOGESTRAN is involved in several projects:

● The ZULU 6 H2 project: hydrogen-powered barge

Hydrogen, the smallest of the chemical elements, is very abundant (in water, hydrocarbons, and sugar, etc.), but in dihydrogen form (H2), it is only present in trace amounts.

It must therefore be produced, and there are two means of production: by steam reforming, more than 90% of world production, but a significant CO2 emitter; by electrolysis of water, still an anecdotal solution, but making it possible to make hydrogen a zero-emission fuel when the electricity used for production is from a renewable source.

Then there is storage, the main difficulty with hydrogen. The energy density of H2 is approximately 2.5 times greater in mass than other conventional fuels, but in terms of volume, H2 requires 4.5 times more space for liquid and almost 7 times more space for tablets at 7 bars.

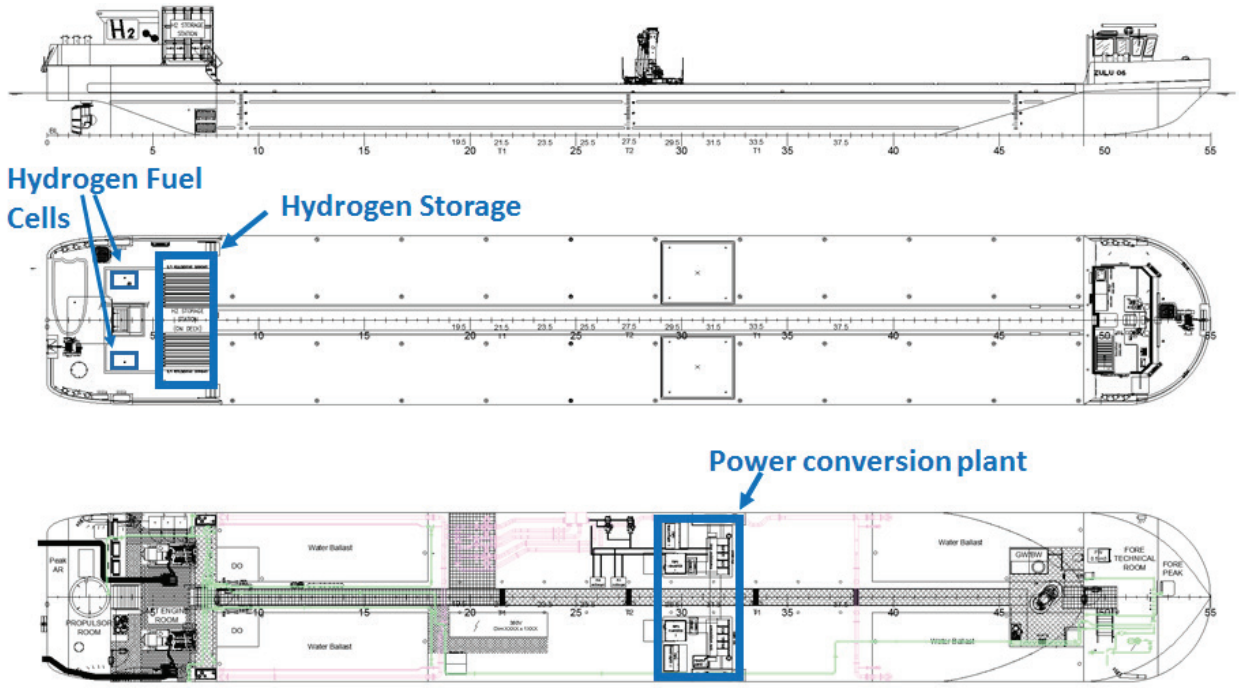
● ENERGY STOCKHOLM: largest LNG tanker in Europe (8 x 1,000 m3)

● POINTE DE CAUX: hybrid diesel/battery propulsion, 4,700 MT deadweight with azimuth thruster, shore connection, 15kW solar panels, 312kWH battery pack

Partnership with WISAMO (Michelin) on the development of the sailing industry

Activity 2: Visit to the hydrogen barge, by Mr. Louis-Marie ROUXEL, Technical Director SOGESTRAN Group

Then we went to the SOGESTRAN site to visit the ZULU hydrogen barge



This is a barge intended to supply the Parisian terminals with the goods requested from the port of Gennevilliers, which is supplied by barges from Le Havre or Rouen.

This barge can only be loaded on its deck, by pallets. It is equipped with a crane for self-unloading, and runs on fuel cells.

The fuel cell is an electrochemical system in which an electric current is formed due to the oxidation on one electrode of a reducing fuel, associated with the reduction on the other electrode of an oxidant. On the ZULU, hydrogen acts as a “reducer” and oxygen as an “oxidizer”.



<u>Day 2 – Wednesday July 2: The eco-energy transition in the maritime sector: the value chain</u>

Theme: Setting up and financing low-carbon projects, by Mr. Alan SYMONEAUX, Deputy Director of Ship Safety and Energy Transition, DGAMPA

What are the decarbonization levers identified:

Regulatory, for safety reasons (batteries, ammonia, new materials etc.);

● Energy, because resources are limited given the significant needs for the production of alternative fuels;

● Technological, due to the complexity of the solutions remaining to be developed or made reliable

● Financial, because decarbonized solutions will generally be more expensive in investment (CAPEX) and sometimes in operation (OPEX);

A fair composition of these levers must therefore be decided, based on the characteristics of the ships (size, power and operational needs), but also based on the associated technological, regulatory, financial and energy constraints.

The renewal of 90% of the existing commercial fleet under the French flag in the next 10 years is estimated between 14 and 18 billion euros depending on the technologies used (1.5-2 billion/year), and between 75 and 110 billion euros for French shipowners for the period 2023-2050, not including operational costs.

The financing supporting the decarbonization of the maritime sector is French public, co-piloted by the DGAMPA, European public followed, disseminated, and sometimes influenced by the DGAMPA, and French private followed by the DGAMPA.

National levers:

- France 2030

  The entry point for the maritime sector to the France 2030 funds is through the Orientation and Research Council for Marine Industrialists (CORIMER), dependent on the Strategic Committee for the Maritime Industrial Sector.

  During the CORIMER 2021/2022 call for expressions of interest (AMI), 21 projects (including 18 linked to the theme of ship and EMR decarbonization) were submitted for a total aid amount of approximately €53.2 million. AMI CORIMER 2023 saw 13 winning projects (including 8 projects linked to the decarbonization of ships), for an amount of aid of €46M. In 2024, no AMI CORIMER has been published.

  In 2025, for the first time, a call for projects (AAP) dedicated to the decarbonization of the maritime sector was published: the Low Carbon Ship AAP.

  France 2030 mobilizes 54 billion euros, this plan should make it possible to catch up with French industrial delays, invest massively in innovative technologies and even support the ecological transition.

- Green over-depreciation

Tax deduction mechanism to encourage green investments, including low-carbon investments, in maritime transport. This system benefits shipowners, who invest in ecological modes of propulsion: it allows such equipment to be depreciated at a rate higher than that of common law, a rate modulated according to the environmental performance of the green equipment(s) installed on the ship, and their use (main propulsion or ancillary equipment).

This mechanism concerns new constructions but also retrofit operations. It was put in place in 2019 then revised in 2024 to comply with new European rules, it makes it possible to support the ecological transition of the maritime sector thanks to a tax advantage. The 2024 reform has significantly reduced the base of eligible investments by de facto reserving them for entirely decarbonized propulsion. Scheduled to end at the end of 2024, it was extended until the end of 2027 by the finance law for 2025

- ETS revenues

  Since January 1, 2024, maritime transport has been integrated into the European carbon market (ETS), requiring companies to return carbon quotas each year corresponding to their greenhouse gas emissions from the previous year.

  The Interministerial Committee for the Sea (CIMer) has decided that part of the revenue generated by the product of the maritime ETS and returned to the State will be mobilized for the decarbonization of the maritime sector, up to the amounts collected for the past year. Thus, for 2026, 90 million euros could be recovered.

  Governance involving stakeholders in the sector will be put in place to identify the decarbonization actions to be prioritized, based on the maritime decarbonization roadmap, as well as to define the most appropriate priorities and financing methods.

  The decarbonization roadmap meets the obligation of Article 301 of the Climate and Resilience Law (2021), it is co-led by DGAMPA & French Maritme Cluster (CMF), and relies on a "group of recognized experts from the sector and the administration.

  <u>European levers:</u>

Funding by call for projects exists directly at the European level, it is the Innovation Fund which can represent a volume of 1,050 million quotas, or 94.5 billion euros over the period 2021-2030, as well as funding from Horizon Europe, FEAMPA (European fund for maritime affairs, fisheries and aquaculture), and FEDER (European regional development fund).

<u>International levers:</u>

At the international level, there is the IMO agreement on carbon pricing.

On April 11, 2025, the 175 member countries of the IMO agreed on a carbon pricing mechanism, to encourage shipowners to reduce greenhouse gas emissions from their ships. This measure aims to achieve the objective of carbon neutrality in the maritime sector "around" 2050.

From 2028, large ships will have to use cleaner fuels or pay penalties. According to an IMO estimate, the system will bring in between $11 and $13 billion per year.

The money thus collected will be reinvested in zero or near-zero emission technologies or fuels and will also be used to financially support developing countries as part of the energy transition in maritime transport in order to offset the increase in the price of food due to rising transport costs.

Ships using low-carbon fuels (e-fuels or biofuels) receive a reward in the form of compliance units and financial payment, amount remaining to be determined.

Ships using alternative fuels (the majority of cases) must pay a fixed contribution, set at $100/ton of GHG.

Finally, ships using the most emitting fuels (fossils) must pay a dissuasive penalty set at

$380/ton of GHG. But they can do this by purchasing compliance units from over-compliant vessels to at least partially compensate for their deficit units.

Private levers:

Finally there are private levers, example “the CMA CGM funds”

In November 2022, CMA-CGM announced the creation of a €200M fund dedicated to the decarbonization of merchant ships and fishing vessels, a fund officially launched on April 25, 2024 with 20 million grants for the Endowment Fund for the decarbonization of fishing

Day 3 – Thursday July 3: Maritime energy efficiency planning

Theme 1: Presentation of Maritime Renewable Energy (MRE) and conflicts of use, by Mr. Lucas LEPERLIER, Head of the maritime policy coordination mission, Inter-regional Directorate East Channel – North Sea

Elements of a wind turbine:

- The foundation to attach the entire structure to the seabed
- The mast which supports the nacelle and the blades as well as the important electrical elements
- The nacelle which contains the electricity production generator
- The rotor, including the hub and the blades. It is the rotating part of the wind turbine which allows the transformation of the kinetic energy of the wind into mechanical energy, then transmitted to the generator.
- All for a total height of almost 270m high (Vestas V236-15.0 MW type wind turbine) for a rotation diameter of 240 meters.
- Plus electrical cables used to connect the wind turbines to each other as well as to the electrical connection station at sea.
- Two different techniques between installed and floating wind turbines, we will use installed wind turbines for depths of less than 50 meters and the floating wind turbine technique connected by cables and anchors for depths greater than 50 meters.

The Multi-year Energy Planning Project is based on:

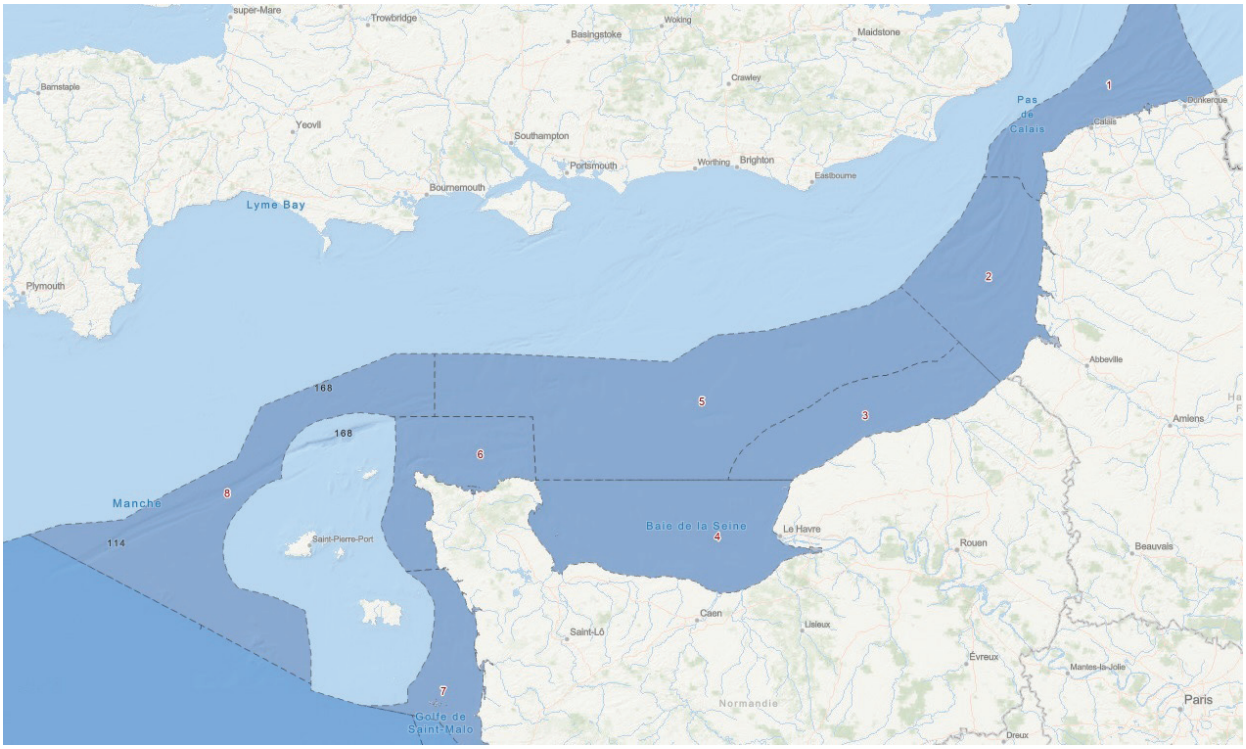
- Nuclear: EPR 2 construction program for a minimum production level of 300TWh/year
- Biofuels: 40% increase in their use by 2030 (v/s 2019)
- Hydroelectricity: 2.8 GW increase in current capacity
- Photovoltaics: multiplication by 5 by 2035 (v/s 2023)
- Hydrogen: reach 8 GW in 2035
- Renewable and recovered heat: multiply consumption by 2 between 2022 and 2035
- Onshore wind power: reach 1.5 GW of additional capacity per year
- Biogas: multiply its production by 5 by 2035
- Offshore wind power: reach 18 GW of production in 2035, or 10% of carbon-free electricity production.

Offshore wind power is therefore an essential component of the energy transition, and destined to become the primary source of electricity in 2050.

Among the 18 objectives of the National Strategy for the Sea and the Coast (SNML) – (decree of June 10, 2024), objective no. 13 is written as follows: Develop renewable marine energies to contribute to carbon neutrality 2050 with a target of 18GW allocated by 2033

Likewise, Directive 2008/56/EC of the European Parliament and of the European Council of June 17, 2008 establishes a framework for community action in the field of policy for the marine environment.

Map of vocations of the Channel-Eastern North Sea coastline (from NE to SW):



1: Capes and Strait of Pas de Calais (Dover Strait)

Predominance of maritime navigation, maritime security issues and port and MRE infrastructure. Need to maintain maritime fishing activity, the aquaculture potential of the area as well as marine aggregates, while allowing the reception of growing tourist activities. Preservation of migratory corridors and remarkable habitats.

2: Picardy estuaries and Opal Sea

Predominance of maritime navigation and maritime security issues.

Zone for developing knowledge of marine heritage, protection and sustainable development of the marine environment (fishing) and sustainable marine aquaculture and associated port activities, coastal tourism, preservation of functional fishing and aggregate zones).

3: Côte d'Albâtre and its open spaces

Zone of reinforcement of the potential of renewable marine energies, sustainable fishing activities and extraction of marine aggregates while respecting fishing functional zones.

4: Bay of Seine

Zone of strengthening the cohabitation of uses in a context of present or future multi-activities (marine aggregates, fishing, aquaculture, marine renewable energies, tourist attractions, port infrastructures, major industrial and defense) and strong estuarine ecological issues (nursery grounds, spawning grounds, nesting sites, etc.).

5: Wide bay of the Seine

Predominance of maritime navigation and maritime security issues.

Development zone for MRE and marine aggregates, in coexistence with existing maritime activities, including fishing and defense, and the specific need for protection of marine mammals.

6: North Cotentin

Area with high potential for sustainable development of current or emerging maritime activities (sustainable fishing and marine aquaculture, energy production by tidal turbines,

shipbuilding, military activities, coastal tourism, etc.).

7: West Cotentin – Bay of Mont Saint-Michel

Zone reconciling its vocation for shellfish farming and maritime fishing on the one hand with its tourist attractiveness, the richness of its natural heritage and its marine ecosystems on the other hand.

8: West Channel off the Channel Islands

Predominance of maritime navigation and maritime security issues in coexistence primarily with sustainable professional fishing activities aimed at developing renewable marine energies.

Conservation area for mammals and seabirds.

State of the art of offshore wind power:

First calls for tenders in 2011 and 2013 for commissioning from 2022: 3GW

Third call for tenders awarded in 2019

Since the end of 2020, 6 call for tender procedures launched for 3.25 GW including 750 MW of floating projects

That is, 10.4 GW installed, allocated or in the process of being allocated, there remains 15.5 GW to be identified and allocated in the next 10 years, and 19.1 GW to be identified and put into service by 2050.

Four simultaneous public debates were held from November 2023 to April 2024, i.e. 5 months of debates on the country's 4 maritime facades with more than 21,000 participants.

These debates raised key issues:

- Access to information and knowledge needs
- Mitigation and adaptation to climate change with regard to the objective of achieving good ecological status of marine waters
- Human activities in the face of these changes
- Conditions for developing offshore wind power with regard to environmental protection
- Development of strong protection zones
- Governance of my time planning

Example: taking into account the traffic of the Seine ports:

Lessons from the debate: maritime security is a major issue, need to maintain easy access to the port of Fécamp

Taken into account: continuation of traffic organization work in the North Bay of Seine, conservation of an access corridor to the port of Fécamp

Focus on access to the port of Fécamp:

Defined with regard to traffic issues (sustained fishing activity, Dieppe/Newhaven Ferry line), landscape (visibility cone from Étretat) and aggregate (possible access and extensions).

Theme 2: Economics of MRE challenges: Presentation of the activity of the Siemens Gamesa factory, by Mr. Ivain BRIAND, Deputy Director of port operations at the Siemens Gamesa factory in Le Havre

Gamesa has more than 5,000 offshore wind turbines installed in various European countries, USA and Asia. In Europe, this represents 28GW installed and 20GW in the future, or 31 million European households.

Gamesa has been in partnership with Haropa since 2020 for a production site for turbines and wind turbine blades. An expansion of the site is underway for the production of 115 meter blades intended for the European market. The current B81 blades, 81 meters long, 6 meters high

and 4 meters in diameter, weigh 34 tonnes per blade. Blade production uses “Integral Blade” technology. A gondola, measuring 20 meters long, 10 meters high and 8 meters wide, weighs 430 tonnes. As for the tower sections, for 36 meters long and 6 meters in diameter, the weight of each section is 130 tonnes.

To make a blade, the lower mold is lined with lengths of fiberglass then filled with male molds to form it, then the same for the upper part. Then sealing, vacuum drawing and injection of epoxy resin into the mold. Then cooling the assembly for 5 to 6 hours, inspection and geometric repair to obtain the best profile and painting and fixing of aerodynamic appendages which reduce noise and improve air flow.

To manufacture a blade, it takes 10 days and 15 days for a nacelle.

The storage of blades, 140 blades in the main area and 200 on the Bougainville quay, and nacelles represent a very large surface area in the port. This storage must also have quay access for ships loading in LoLo (lift-on, lift-off) and RoRo (roll-on, roll-off).

There is therefore pre-assembly (towers, pulling of HV cables, electrical tests) before loading onto a jack-up ship. Assembly at the electricity production site is done in less than 24 hours. Gamesa also ensures commissioning activities before delivery.

Activity: Visit to the Fécamp wind farm

The Fécamp wind farm, 71 wind turbines for around 500 MW, is located between 13 and 24 km from the coast. It covers an area of 60 km2. The wind turbines are 1 km apart from each other, or about 5 times the total height of a wind turbine (with one blade at the top)

There has been authorization for navigation in the park since June 3, 2024, with some navigation safety rules: speed in the area limited to 12 knots, vessels must have an overall length of less than 25 meters, ban on anchoring, it is prohibited to approach less than 50 meters from a wind turbine and less than 200 meters from the electrical substation. Underwater navigation is also prohibited as are towed (water skiing) or aero-towed (kitesurfing) activities. An AIS beacon is mandatory.

On the other hand, professional fishing and recreational fishing are authorized, under certain conditions.

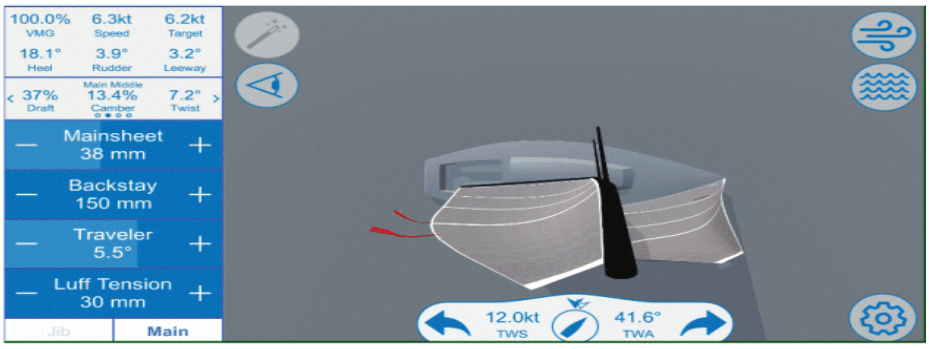
<u>Day 4 – Friday July 4: Sailing propulsion</u>

Theme 1: Sailing propulsion: French technical expertise, by Mr. Pierre CHIFFOLLEAU, teacher at ENSM

Currently there are some 120 WASP (Wind Assisted Ship Propulsion) at sea, and around 200 on order.

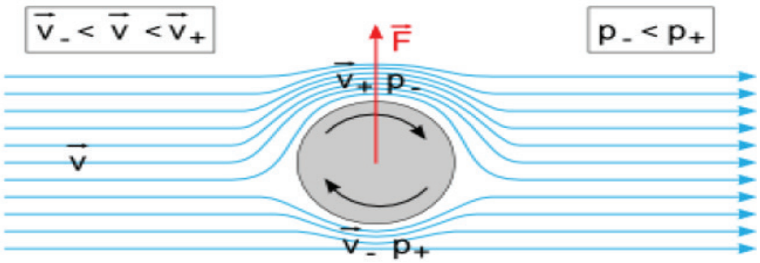
There are two families of wind profiles: passive profiles which generate an aerodynamic force by the sole movement of air on their surface, and active profiles which require the use of auxiliary energy (rotors and aspirated profiles).

Thin passive profile: the gain will be on the sail curvature adjustment (different from shock/ tuck the sail), for a gain of 1.5 knots on average.



Thick passive profile: rigid wing mast type, the main fault of which is to give drift (15 to 18 degrees on the Canopée).

The rotor masts are equipped with a permanently rotating fan, which allows them to move up to 20 degrees from the wind. The rotors rotate in both directions, with the direction of rotation changing depending on where the wind is coming from. On the Pelican, this gave an 8% gain in fuel consumption. This profile is well suited to vessels with open decks, such as oil tankers and bulk carriers. On the other hand, this generates a very large drift, and therefore requires navigation officers to determine the useful drift based on the weather maps studied.



The kites, complicated to implement, and especially to return, on the City of Bordeaux 4 people were needed for these maneuvers, therefore a problem of profitability. On the other hand, the advantage of the kite is that it does not create a zone of no visibility.

On the Neoliner Origin, it is a balestran rig: a large boom that pivots. But the sails are rigid, and there is therefore no possibility of reefing.

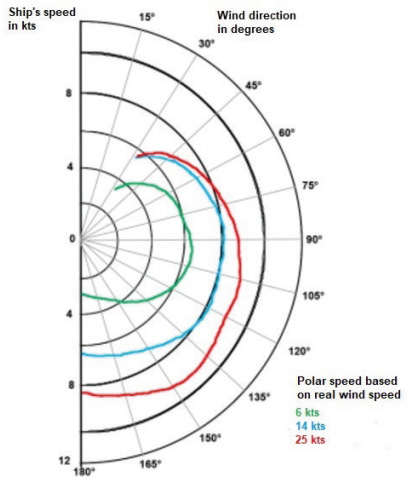
On the Canopée, the masts are foldable, and the fabric sails fold like an accordion.

Inflatable sails – Wisamo Michelin type

Weather routing:

Very important and impactful point for WASPs. The objectives are:

- Maintain sufficient clear underkeel
- Limit the forces caused by the state of the sea on the ship and the cargo
- Transit through a specific point (DST for example)
- Avoid certain areas (piracy for example)
- Complete a journey as quickly as possible (for offshore racing)
- Reduce consumption
- Agree with terrestrial logistics



Polar speed of an exclusively wind-powered ship

Regulatory developments to be expected?

- Integrate a hybrid ship class?
- Colreg: new rules?
- Navigation in TSS: specific standards?

Training at ENSM:

ENSM participates jointly with ENSTA and the Defense Innovation Agency and in partnership with the Naval Academy in the SOMOS project: Modular solver and 3-D simulator for wind-powered ships.

Creation of a free and modern online training module (Digi4mer) including:

- Wind propulsion
- Fluid mechanics
- Tall ships
- Aerodynamics
- Masts and rigging
- Control of aerial profiles
- Hydrodynamics
- Currentology
- Meteorology

This module is intended for seagoing personnel involved in operating vessels with auxiliary or main sail propulsion. For duration of 35 hours, it allows you to be trained in:

- Mastery of the different technologies developed (driving, adjustment and maintenance)
- Apprehension of new risks linked to the use of very large rigging and sails
- Route planning, optimization of the performance provided by the sail propulsion system

Theme 2: Economic challenges of sailboat construction, by Mr. Guillaume LE GRAND, president and co-founder of TOWT

For Mr. LE GRAND, shipping will not be able to decarbonize, the holds are very inexpensive, and so are the sailors. TOWT offers completely carbon-free freight transport, which has an impact on the cost of chartering because it is not dependent on the price of oil, therefore contracts can be concluded with long-term visibility.

TOWT, currently there are 2 ships under the French flag and 6 on order which will join the fleet by 2028, as such TOWT (DoC) and the ships (SMC) are ISM certified. The company employs 32 sailors, 8 per crew, so 16 including those on leave, note that women represent 45% of the crew.

Large ships are not compatible with decarbonization, which is why TOWT has limited itself to ships of 81.6 m in length (92 m overall) for a capacity of 1,200 tonnes, a draft of 5.5 m and an air draft of 64 m, and an average speed of 10 knots.

The structure of the ships favors sailing on all points of sail, with automated sail adjustment. The masts are carbon. And there is also an intelligent ballast system to adjust trim and heel.

The cargo is loaded, by the two cranes on board, in pallets and distributed in 6 holds on 3 decks, with the possibility of segregating the different goods transported, maintaining them at a stable temperature and humidity level thanks to IoT sensors installed in all the holds (the IoT sensor is an electronic device capable of detecting and measuring physical and environmental variables such as temperature, humidity, gas, etc.).

Sailing ships represent an intelligent solution for decarbonizing maritime transport: less than 2g of CO2 per ton.km, it takes around 1/3 of the life of a ship to amortize construction emissions. During its operation, a sailing ship has a limited noise impact and an absence of toxic discharges.

Activity : Tall Ship Race

In July, Le Havre was the starting point for “The Tall Ship Races 2025”, an international sailboat race. The city organized a festive event entitled “Les Grandes Voiles du Havre” from July 4 to 7. Participants in the ENSM Summer Universities could board a sailboat and sail in the afternoon in the port of Le Havre.

Capt. Pierre BLANCHARD
AFCAN President
Capt. Hubert ARDILLON
CESMA Secretary General – AFCAN Vice-president

FROM UPKCG
NEW BOARD ELECTED

The Shipmaster's Association of Montenegro (UPKCG) has renewed its Board in the election of 5 Captains under the presidency of Capt. Ivica FAZO. UPKCG is hoping to host a CESMA AGA in near future.

Photo of the Assembly

Capt. Ivica Fazo
President UPKCG

FROM ZHUPK
AGA AT TISNO, MURTER ON 6TH MARCH 2026

Assembly Proceedings

Before the start of the Assembly, the President of the Šibenik Association, Capt. Branko Skorić, addressed the gathering and briefly introduced his activities and associates. He apologized that he had to leave the Assembly because he needed to carry out pilotage for a ship entering the port, and that he would return.He was replaced by Secretary Capt. Jurat.



Due to the illness of the President of the Kostrena Association, he was replaced by his deputy, Capt. Vičević, who proposed that the working bodies of the Assembly be elected as follows:

- Capt. Vrdoljak, Secretary of the ZHUPK Association
- Capt. Vičević, Deputy President of the Kostrena Association
- Capt. Jurat, Secretary of the Šibenik Association

The proposed agenda was put to a vote; there were no proposals for amendments.

Based on the signed attendance list, it was established that out of 20 delegates, 16 were present.It was confirmed that the Assembly had a valid quorum.

Verification of the minutes from the previous Assembly — it was decided that they did not need to be read, as all participants had received the minutes after the session in Kraljevica.

The proposal was unanimously adopted.

The report on activities between sessions was presented by Capt. Vičević on behalf of the ill President of the Kostrena Association.

It was proposed that discussions be postponed to “Miscellaneous.”

The proposal was unanimously adopted.

The financial report was presented by Secretary Capt. Vrdoljak. Since the report had already been sent to the Associations by email, there were no comments.

The financial report was put to a vote and unanimously adopted.

Proposal to dismiss three members of the ZHUPK Presidency of the Kostrena Association, as their one-year mandate had expired, and to elect new members from the Šibenik Captains Association.The proposal was unanimously adopted.

As there was a majority quorum for Statute changes, it was proposed to include a new address for ZHUPK in the Statute:

Grgura Mrganića Street 9, 23000 Zadar

The proposal was unanimously adopted.

Based on Article 29 of the Statute Secretary Captain Vrdoljak opened the constitutive session of the Presidency of ZHUPK, according to the proposed agenda.

The agenda was put to a vote and unanimously adopted.

The Association of Captains Šibenik proposed the following members:

1. For President of the Presidency: Capt. Branko Skorić, for the term from 06 March 2026 to 06 March 2027.

2. For Vice President: Capt. Gović Ante, for the term from 06 March 2026 to 03 June 2027.
3. For Secretary of the Presidency: Capt. Jurat Saša, for the term from 06 March 2026 to 06 March 2027.
4. For Liquidator: Capt. Branko Skorić, for the term from 06 March 2026 to 06 March 2027.

The proposal was unanimously adopted.

Miscellaneous:

During meeting speaking was given to Capt. Sandalić Marko, from the Association of Captains Rab, regarding a project for the revitalization of the Trstenik lighthouse, built during the Austro-Hungarian monarchy period, and included in the register of major Adriatic lighthouses.A video presentation and description of all activities lasted about twenty minutes. After brief comments and questions, it was concluded that at next year's Assembly in Rab, the host will organize a trip to Trstenik. The proposal was accepted.

Regarding the current situation in the Middle East, we invited the President of the Seafarers' Union of Croatia, Mr. Nevena Melvan, to present the latest information on the number of seafarers who are trapped in the Persian Gulf.

Mr. Melvan stated that a few days ago a meeting was held at MPPI with unions, Mare Nostrum (shipowners), and representatives of the ministries of Foreign Affairs, Interior, and others.

The conclusion is that there is confirmed information about around 225 seafarers, but it is assumed that there are more who have not reported via CIMIS - Croatia Integrated Maritime Information System.

Media reporters were present during meeting, and several interviews were given to TV reporters regarding situation in Gulf region as many Croatian seaman are there at present.

We urge our collegues to get in contact with our consulates in the area and register there presents. Local association will be posting contact details of consulates in the area where they can register them self.

Capt. Vičević informed the assembly that the Association Rijeka still does not wish to return to the Community.

Capt. Damir Lakoš informed us that CESMA has nominated us to organize the CESMA AGA 2028. There are preliminary discussions that the host could be the Association of Captains Split. The President has taken on the obligation to explore possibilities with relevant stakeholders on how to secure financing for the organization and will soon inform the Presidency.

There was also discussion about rejuvenating the membership, but no conclusion has yet been reached. There is still on-going problem in most of ZHUPK members to attract younger generation of captains to become memeber or to take more active roll in their local association.

ZHUPK, CROATIA

FROM AFCAN
AGA AT LE HAVRE 25TH & 26TH MARCH

The AGA of the French Association of Ship Captains (AFCAN) took place on March 25 and 26, 2026 in Le Havre. The results of last year are very positive, with AFCAN counting more and more members.

Beyond interventions on multiple subjects such as maritime safety, legal, ISM or ISPS, the association was in great demand during the year 2025 to preserve the interests of its members, who did not hesitate to ask for the support and advice of experienced captains.

In addition to questions relating to internal functioning, world news has led to abundant constructive debates against a backdrop of geopolitics. Attacks on ships and maritime security, the worrying growth of the dark fleet, transgressions of international regulations, the spread of conflicts and the difficulties encountered at the IMO are at the heart of the concerns of many Captains. AFCAN remains in contact and supports sailors impacted by the situation in the Persian Gulf.

The general assembly was also an opportunity for AFCAN members to meet students from the ENSM (Ecole Nationale Supérieure Maritime – French Maritime School). We thank the students for their presence and their curiosity through the many questions asked, as well as the management of the ENSM for their welcome.

After eight years as President of AFCAN, Capt. Pierre Blanchard handed over the helm to Capt. Mathieu LE BRIS. Through his various assignments, Capt. Mathieu LE BRIS was able to take part in numerous military, industrial and specialized maritime logistics missions. He participated in the transport of Ariane, Soyuz and Vega rockets for the European Space Agency, but also worked with NASA, notably for the maritime transport of the James Webb telescope.

The new AFCAN Board

Capt. Hubert ARDILLON
CESMA Secretary General – AFCAN Vice-president

STORY ABOUT TRSTENIK ISLET IN CROATIA
An interview of Mr. MARKO SANDALIĆ, Entrepreneur, Manager, and Maritime Safety Inspector on a Lifelong Mission

Mr.Marko SANDALIĆ's story of love for the sea, the profession, nature, and maritime heritage: "This is not a project for profit. This is a project to save souls, tradition, and common sense."

CESMA: How did your story with the islet of Trstenik begin?

Marko: It began with a fascination for this small but uniquely positioned islet in the Kvarner Gulf. As a child, I often fished near Trstenik with my father or picked wild asparagus among the rocks. Its beauty always captivated me. Located east of the island of Cres in the open sea, Trstenik has long been a vital landmark for mariners. If you ask about my motivation, it is a place that carries stories, memories (both beautiful and tragic), and the potential for something positive and sustainable.

The people of the island of Rab where I live, feel a deep connection to Trstenik, particularly due to the tragedy of 1962. By some twist of administrative fate, Trstenik belongs to Mali Lošinj territorially, yet it remains under the Rab Land Registry. This prompted us, the members of the **Association of Sea Captains of the Island of Rab**, to initiate a project for the reconstruction of the southwestern "Portić" (small harbor).

Trstenik represents a cultural and traditional treasure. For generations, its waters fed the families of sailors and fishermen from both Lošinj and Rab. It served as a sanctuary during storms—a refuge from the *Bura* and *Jugo* winds. Sadly, on April 27, 1962, a storm near the southeastern cape claimed 21 lives - a boatman and students from the maritime and economic schools in Mali Lošinj returning home to Rab. For decades, the "Portić" on the southwest was the place where weary bodies and souls found calm. Today, however, years of neglect and erosion have left the harbor in a dilapidated state, making it unsafe to enter. Soil erosion and the undermining of the waterfront have scattered rocks across the seabed, reducing depth and directly endangering maritime safety.


CESMA: What steps have been taken to address this?

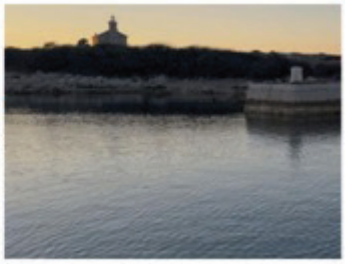
Marko: Using the Association's funds, we completed the full project documentation and geodetic studies. We reached an agreement with the landowner, the Diocese of Krk, to define the maritime domain boundaries. We intended to apply for Ministry of the Sea funds for the restoration of maritime domains outside port areas. Since Trstenik is spatially planned under Mali Lošinj, we delivered the ready-to-use documentation to the City of Mali Lošinj to apply for the tender.

However, for three consecutive years, we received no response. I believe politics played a role in this lack of funding. As a member of the Presidency of the **Association of Sea Captains of the Republic of Croatia** and an experienced maritime safety inspector, I openly criticize this lack of communication. Maritime safety is no place for improvisation. I humbly call upon the City of Mali Lošinj for cooperation; this isn't about ego—it's about human lives and heritage.

When I saw the project stalling, a sense of defiance kicked in, fueled by my love for that rock. My company, **Kompetencija L.L.C.**, now leases the islet from the Diocese of Krk (excluding the maritime domain and the lighthouse building). Shortly after, we established **OPG Trstenik** (Family Agricultural Farm).

CESMA: What is most significant about Trstenik from a historical or maritime perspective?

Marko: Very little is widely known about it. The most prominent structure is the lighthouse, built in 1873 during the Austro-Hungarian era. It remains functional and automated today, with a signal visible up to 11 nautical miles.

The problem is that the lighthouse keeper's house is deteriorating. I want to protect this "monument to seamanship," but we are stuck in administrative limbo awaiting the new *Plovput Act* so the house can be put out for concession. Our concept isn't a standard "lighthouse rental" for tourists. We don't have megalomaniacal ambitions for campsites; we want to restore the island to its original state. Trstenik is much more than just a tower; it's a series of "mini-oases" that visitors can experience through thematic tours.

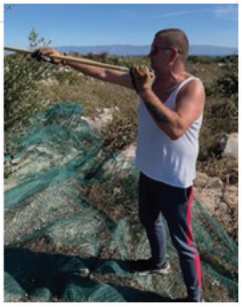
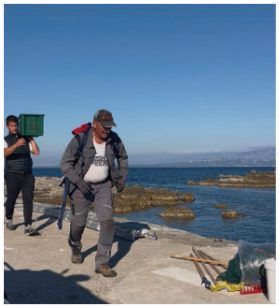
CESMA: You mentioned the 1962 tragedy. Are there other stories?

Marko: The tragedy of the students is part of our local maritime memory, which is why we owe that site great reverence. But there are other untold stories. Recently, three large millstones were discovered on the northeast coast, blending into the rocks. We intend to document these facts for future generations.


CESMA: What motivated the agricultural (OPG) and tourism development?

Marko: OPG Trstenik currently focuses on olive growing. In 2025, we harvested about 400kg of olives and produced 50 liters of premium, unique olive oil which we named **"Lantemika"**. The land hadn't been touched in 50 years, and the conditions were extreme, but my team carried everything by hand to Rab.

The natural olive grove is a treasure, but it is devastated by brambles and collapsed dry-stone walls. Due to environmental protection (Natura 2000) and logistics, we use only hand tools. We are also assessing other crops; while wild immortelle thrives, the island's famous wild asparagus has mysteriously vanished in recent years.


Trstenik is not for mass tourism. It is for those who respect nature and history. Before opening it to the public, we need at least two years of restoration work: clearing paths, repairing dry-stone walls, and restoring the lighthouse building.

CESMA: What legal or administrative hurdles have you faced?

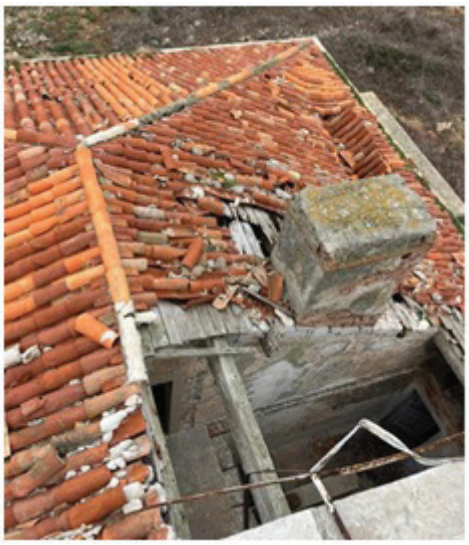
Marko: Administration is the biggest hurdle. Because Trstenik is registered in Rab but planned in Lošinj, I am stuck in a "no man's land." The City of Rab couldn't grant agricultural subsidies because of the spatial plan, and Mali Lošinj couldn't because my company is headquartered in Rab. Every door seems closed, but we won't be discouraged.

CESMA: What are the future priorities?

Marko: If we secure the lease for the lighthouse house, we will focus on eco-production and culture. We need to create conditions for multi-day stays to work properly. I am considering a memorial center in one of the rooms to honor the youth lost in these waters.

Logistics is our greatest risk. Maritime safety is my profession, so I will apply my management expertise to ensure transport is handled with the highest standards. We are not just looking at summer operations, but months when the sea is unforgiving.

Beyond that, we want to offer organized tours focused on spirituality, maritime education, and nature. I am a manager by profession—I know projects are realized through labor and sacrifice, not just ideas.



CESMA: You mentioned researching historical records?

Marko: Yes, searching for the Lighthouse Keeper's Logs is a priority. These logs aren't just technical data; they are a record of nights when the Bura sliced the sea like a knife, and the light was the only certainty in the Kvarner. They contain the true story of Trstenik—a story of responsibility and quiet devotion.

There is also a fascinating lead from Captain Lucijan Kapiteli, who grew up on the island. He mentioned a graveyard of three German soldiers from WWII. We haven't found it yet, but records suggest keepers saved 17 German soldiers from the sea before they were surrendered to Allied forces. We want to find and mark these graves out of respect.

From Ocean Tankers to Rab's Dry-Stone Walls

CESMA: Your resume reflects a demanding, global system. Can you share your professional background?

Marko: First of all I am a very proud member of Cratian Captain's association. My profession is not built on improvisation. I am a mariner by education and calling. I graduated from the Maritime School in Bakar, the Faculty of Maritime Studies in Dubrovnik, and later **Lloyd's Maritime Academy** in London.

I served as a deck officer on VLCC tankers and transitioned into a maritime safety inspector and manager. I've led safety operations for massive global projects: the Palm Islands in Dubai, and oil fields in the Persian Gulf and Gulf of Mexico. I proudly served as the HSE (Health, Safety, and Environment) Manager for both container terminals in Rijeka—Brajdica and the Rijeka Gateway project (part of the global **Maersk** group).

Today, through my company **Kompetencija LLC**, I work as an independent marine and offshore consultant. One of our major clients is the **Abu Dhabi National Oil Company (ADNOC)**. This work provides a very realistic view of the world.

CESMA: How does an international career fit with a desolate islet?

Marko: (Laughs) That's exactly why it fits. Trstenik is not a romantic whim; it is an "offshore" project in miniature. Exposure, weather, logistics, and safety—it's all there. The only difference is I don't have a corporate budget behind me. If you fail here, it's visible immediately, and you pay for it personally.

CESMA: Where do you see yourself in ten years?

Marko: If Trstenik is secure, dignified, and respected in ten years, I will be satisfied. If not, at least Trstenik will know someone didn't give up without a fight. This isn't a project of ego; it's a project of character. And the sea knows exactly who is who.

ZHUPK, CROATIA

CESMA LOGBOOK (2026-1)

We were represented at the following occasions:

27/JANUARY	**CESMA 1st VIDEO MEETING COUNCIL**
24/MARCH	**MARITIME TECH S.1.1 – AI AND INNOVATION FORUM, N. VAPTZAROV NAVAL ACADEMY, VARNA, BULGARIA**

On the front page:

20 YEARS OF MARITIME LABOUR CONVENTION (2006)

GAZ CARRIER ARCTIC-METAGAZ IN MEDITERRANEAN SEA AFTERE BURNING DIDAMAR (LITTLE QOIN) ISLAND IN HORMUZ STRAIT

VLCC ON APPROACH TO KHARG ISLAND TERMINAL (IRAN)

(abridged)

AIMS OF THE ORGANISATION

- **TO WORLDWIDE PROTECT THE PROFESSIONAL INTERESTS AND STATUS OF EUROPEAN SEAGOING SHIPMASTERS.**
- **TO PROMOTE MARITIME SAFETY AND PROTECT THE MARINE ENVIRONMENT.**
- **TO PROMOTE ESTABLISHMENT OF EFFECTIVE RULES WHICH PROVIDE HIGH PROFESSIONAL MARITIME STANDARDS AND PROPER MANNING SCALES FOR VESSELS UNDER AN EUROPEAN NATION FLAG.**
- **TO INFORM THE PUBLIC IN THE EU ABOUT DEVELOPMENTS IN THE EUROPEAN MARITIME INDUSTRY AND THOSE CONCERNING SHIPMASTERS IN PARTICULAR.**
- **TO CO-OPERATE WITH OTHER INTERNATIONAL MARITIME ORGANISATIONS.**
- **TO RETAIN AND DEVELOP THE HIGHEST MARITIME KNOWLEDGE AND EXPERIENCE IN EUROPE.**
- **TO BE INVOLVED IN RESEARCH CONCERNING MARITIME MATTERS IF APPLICABLE IN CO- OPERATION WITH OTHER EUROPEAN INSTITUTIONS AND/OR ORGANISATIONS.**
- **TO ASSIST MEMBER SHIPMASTERS WHO ENCOUNTER DIFFICULTIES IN PORTS WITHIN THE REACH OF NATIONS REPRESENTED BY CESMA MEMBER ASSOCIATIONS**
- **TO PROMOTE THE SEAFARING PROFESSION IN EU MEMBER STATES**

ANNUAL SUBSCRIPTION:

EURO 16.00 PER SEAGOING MASTER (WITH A MINIMUM OF 25)

EURO 8.00 PER SEAGOING MASTER FOR ASSOCIATED MEMBER ASSOCIATIONS (WITH A MINIMUM OF 25)

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