

MARITIME DECARBONIZATION IN THE EASTERN MEDITERRANEAN

PORTS - SUPPLIERS - CIVIL SOCIETY SURVEY REPORT

1st WAVE SURVEY PERIOD: JUNE - NOVEMBER 2024

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This report presents the results of the first wave of the METAVASEA survey, conducted between June and November 2024, prior to the adoption of the IMO Net-Zero Framework at MEPC 83. Developed within the framework of the METAVASEA project, the survey follows a sound methodological process that includes structured questionnaires shaped by stakeholder focus groups and broad sectoral consultation. As a first snapshot, it reflects the perspectives of participating ports, suppliers and civil society in the Eastern Mediterranean and will be enriched in subsequent waves through 2027 to capture evolving trends, challenges, and capacity-building needs.

Methodological Reasoning and Limitations

This report presents findings from a multi-stakeholder perception survey within the East Mediterranean region, conducted as part of the METAVASEA project. The survey has two main goals: (i) to identify current and emerging skill needs for training, retraining, reskilling, and upskilling in line with evolving industry demands; and (ii) to understand stakeholder perspectives on climate change, decarbonization and the use of alternative fuels, including perceived challenges, risks, and technology availability.

Insights are based on responses from port administrators, service providers and suppliers within the maritime sector, and members of civil society and port cities, aiming to inform regional capacity-building, especially where formal data on workforce readiness and fuel transition feasibility is limited or inconsistent.

Due to the exploratory nature of the study, lack of centralized contact databases, and logistical barriers in reaching a mobile and diverse population, a convenience sampling approach was used. This method prioritized accessibility and inclusiveness over statistical representativeness, reflecting the survey's diagnostic and agenda-setting intent.

Survey design was informed by a targeted (non-systematic) literature review, focus groups with industry professionals, and input from METAVASEA partners. Key themes included skill gaps and barriers/enablers to adopting low- and zero-emission fuels.

Key methodological limitations include:

- **Geographic and Sampling Scope:** The East Mediterranean focus provides localized insights but limits broader applicability. The use of self-selected, nonrandom respondents introduces selection bias and lowers representativeness.
- **Bias and Lack of Weighting:** No demographic or occupational quotas were applied, and no weighting adjustments were possible due to the absence of a population baseline and limited analytical capacity. Findings may overrepresent more reachable groups.
- **Analytical Constraints:** No multivariate analysis or representativeness testing was conducted; results are descriptive and exploratory.
- **Scope of Interpretation:** As the survey reflects perceptions rather than objective measures, findings are not statistically generalizable but offer directional insights into stakeholder views on skills development and decarbonization.

In light of these considerations, **the findings presented in this report should be viewed as indicative rather than definitive**. They offer a useful snapshot of stakeholder views to support policy dialogue, program design, and further research, including more representative or mixed method approaches in the future. They form the first wave of ongoing research under METAVASEA (2023–2027) and will be complemented by future survey cycles to capture evolving trends over time.

Executive Summary

The shift towards maritime decarbonization signifies a major transformation for ports, port communities, shipping companies and seafarers, and the wider maritime cluster globally. As regulatory momentum, technological innovations, and market expectations intensify, especially in regions like the Eastern Mediterranean, where high shipping traffic converges with intricate operational and environmental challenges, ports are key players in this transition. The adopted climate policies by the International Maritime Organization (IMO) and the European Union are accelerating this change, compelling ports and their communities to adapt swiftly to support greener, more sustainable maritime operations.

This report presents the consolidated findings of the initial phase of the METAVASEA survey, conducted between June and November 2024. **It targets port administrators, service providers & suppliers, and civil society & port cities in the Eastern Mediterranean region and offers a snapshot of the current status, plans, and readiness for decarbonization, focusing on infrastructure, environmental practices, workforce skills, policy challenges, economic feasibility, and public perceptions.** As such, the findings serve as a valuable baseline for understanding how these stakeholder groups perceive maritime decarbonization and the relating challenges and opportunities.

Data was collected through structured digital questionnaires, whose final structure was shaped by input from METAVASEA partners and associate partners, drawing on prior focus groups and literature review to refine themes and priorities. Questionnaires were circulated across HELMEPA's member network, through the professional and academic networks of METAVASEA partners, associate partners, and supporting stakeholders, and public channels such as conferences, fora, and social media. The results were jointly analyzed by HELMEPA and Premium Consulting. The draft report was then shared with METAVASEA's partners and associate partners to validate findings and incorporate additional input. This collaborative, multi-stage process was designed to ensure the report is as methodologically sound and representative as possible.

This report focuses specifically on responses from **10 representatives of port administrations, 36 representatives of service providers and suppliers, and 244 representatives of civil society and port cities**, offering insights into their readiness, workforce skills, public perceptions, challenges and capacity-building needs in relation to decarbonization. Key focus areas include the current and planned infrastructure interventions, decarbonization priorities, workforce skills requirements, fuel preferences, public awareness, perceptions, and concerns regarding maritime decarbonization.

Key Findings

- **Port infrastructure for low-carbon fuels is still limited.** Only 20% of the ports provide Very Low Sulfur Fuel Oil (VLSFO) bunkering, even though the Mediterranean Sea has become a SOx Emission Control Area as of May 2025.
- **Onshore power systems (OPS) are the most common planned initiative**, by 40% of the ports. On the other hand, another 40% of ports reported no planned interventions.
- **Renewable energy installations (70%), cold ironing (40%) and alternative fuels bunkering stations (30%) are top decarbonization priorities for ports.** Renewable energy sources (47%) were identified also by service providers and suppliers as the most effective investment for port decarbonization.
- **Regulatory compliance regarding emissions monitoring remains a challenge for ports**, since 60% have no emissions monitoring systems in place.
- **Environmental Management System (EMS) adoption remains limited across many ports** with ISO14001 (70%) and ISO9001 (60%) being the most common framework adopted. On the other hand, 56% of service providers and suppliers implement an EMS, primarily ISO14001.
- **Transitional fuels show varied familiarity and preferences. LNG is the most familiar alternative fuel (59%) among civil society and port cities**, with reduced CO₂ emissions cited as its main benefit (76%); it is also the most preferred by service providers and suppliers (41%). However, uncertainty remains about the best fuel pathway, with 39% of civil society participants unsure which alternative fuel is most promising for reducing carbon emissions.
- **Misconception in civil society and port cities about the maritime sector's GHG emissions.** 41% rate this contribution as *high* (over 70% of total emissions) or *average* (around 50% of total emissions), compared to the actual approximately 3% of total GHG emissions.
- **MARPOL regulations and marine environmental awareness are the top training priorities for port workers**, with key skills requirements including Understanding Decarbonization Technologies (technical), Risk Assessment and Hazardous Material Handling (safety), Understanding Decarbonization Strategies and Marine Environmental Awareness (sustainability), Effective Planning and Prioritization for Decarbonization (organizational), Teamwork and Critical Thinking (soft skills).
- **According to service providers and suppliers, skills required by seafarers** for decarbonization include Understanding Decarbonization Technologies (technical), Alternative Fuel Handling (safety), Decarbonization Strategies and Marine

Environmental Awareness (sustainability), Effective Planning for Decarbonization (organizational), Teamwork and Collaboration (soft skills).

- **Training for decarbonization is already taking place in the group of service providers and suppliers.** 78% of companies provide relevant training, with the focus areas being sustainability in shipping (50%), ESG (39%), alternative fuels (36%) and EU ETS compliance (36%).
- **Climate awareness is high in civil society and port cities.** 67% consider themselves to be very familiar or extremely familiar with the causes and impacts of global warming, and 97% are concerned about its effects on the local environment. The vast majority (86%) of respondents agree or strongly agree that emissions are the primary cause of global warming.
- **Main climate change impact concerns of civil society** include increased frequency of extreme weather events (81%), unbearable living conditions (80%), and loss of biodiversity (75%).
- **78% of representatives of civil society consider as very high the importance of maritime decarbonization** for the sustainability of the East Mediterranean marine environment.
- **39% of civil society respondents are uncertain which alternative fuel holds the most promise for the future.** Hydrogen (24%) and biofuels (20%) are identified by representatives of civil society and port cities as the most promising future fuels.
- **Lack of trained personnel in LNG handling was identified as a key barrier** (58%) for alternative fuel adoption by representatives of civil society.

By consolidating diverse stakeholder input, this report offers a snapshot of how port administrations, service providers, and civil society in the Eastern Mediterranean perceive and engage with maritime decarbonization. The findings highlight both progress and persistent gaps, particularly in infrastructure readiness, emissions monitoring, and workforce skills, while also underscoring high levels of public awareness and concern.

Looking ahead, the survey confirms that significant challenges remain in adopting alternative fuels, addressing knowledge and training gaps, and ensuring clarity around regulatory and infrastructure developments.

The survey will continue throughout the METAVASEA project until September 2027, enabling ongoing analysis and updates that reflect evolving trends, challenges, and capacity-building needs in the region.

Conducted within the framework of the METAVASEA project, which adopts a people-centered approach to maritime decarbonization in the Eastern Mediterranean — a

region of strategic importance due to its dense shipping traffic and dynamic port systems — this study forms part of a broader effort to map the infrastructure and skills required for the green transition. Launched in 2023, METAVASEA (Greek for “transition”) is a five-year initiative running through 2027, coordinated by the Hellenic Marine Environment Protection Association (HELMEPA) and supported by Lloyd’s Register Foundation. The project brings together six partners, twelve associate partners, and more than sixty contributing stakeholders across the region — a network that continues to grow.

Part I: Insights from Port Administrators

1.1 Port Profiles and Characteristics

A total of **10 port administration** representatives participated in the survey conducted between June and November 2024. Of these, 80% are publicly-owned (Elefsis, Heraklion, Rafina, Volos, Thira (Santorini), Mykonos, Antikyra and La Goulette (Tunis), while the two major ports are privately owned (Thessaloniki and Igoumenitsa). The predominance of public ownership, still common in the East Mediterranean, **highlights the role of government-led initiatives in driving decarbonization efforts.**

PORTS



The responses received regarding the number of port calls (for the period 2015-2023), the average number of ships per month in 2023, and the type of ships (e.g., containers, cruise ships, ro-pax) were inconsistent. Thus, the research team classified the ports according to scale of **operations to large scale (80%) and small scale (20%)**.

1.2 Environmental Management Systems

Adoption of Environmental Management Systems (EMS) is uneven among participating ports. The most common frameworks are:

- ISO140001 – 70%
- ISO9001 – 60%
- EMAS – 10%
- Other Green Port Certifications – 30%

Other certifications cited include Green Award Incentive Provider, Greenhouse Gases Verification Statement (ISO14064-1:2018), and the Port Environmental Review System (PERS).

1.3 Decarbonization Infrastructure and Relating Activities

Most ports (80%) **currently lack bunkering infrastructure to support low-carbon fuels** such as VLSFO (Very Low Sulphur Fuel Oil), HSFO (High Sulphur Fuel Oil), and LNG (Liquefied Natural Gas). Only 20% of ports provide VLSFO bunkering. These ports are classified as public and evenly separated as to the scale of operations with one being small scale and one large scale. The results show a significant infrastructure gap, especially for the smaller scale ports highlighting the need for investments in low-carbon fuel activities.

On the issue of **planned infrastructure**, the large-scale private ports that participated in the survey appear to plan in investing in OPS or cold ironing, and the same applies to two more large scale public ports. In another case of a public large-scale port the investment will focus on other types of fuel, while 20% of ports mentioned that there is no plan for this type of investment. In cases of small-scale ports, methanol bunkering and production and disposal of hydrogen were mentioned as planned infrastructure interventions/upgrades.

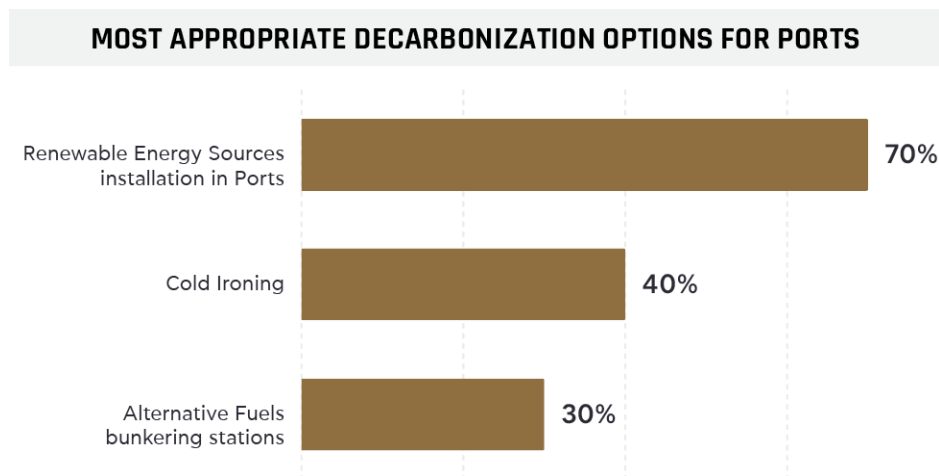
The results on planned infrastructure upgrades in participating ports include:

- 40% Onshore Power Systems (OPS)
- 10% Methanol Bunkering
- 10% Production/Disposal of Hydrogen
- 10% Other Fuel Types

- 40% No planned interventions/Upgrades

Ports readiness for emissions monitoring is mixed. A majority (60%) have not yet implemented monitoring systems, while 40% have systems in place. Broader implementation is necessary to ensure compliance and support decarbonization. Among ports not yet monitoring their emissions, two of them cited specific reasons: one is in an adaptation phase, and another is procuring a suitable system.

With respect to the **most appropriate decarbonization options for ports**, prioritized options for decarbonization include renewable energy installation (70%), cold ironing (40%), and alternative fuels bunkering stations (30%).



Renewable energy sources were the most common reply for large ports, regardless of public or private status. In the case of smaller ports, all options received an equal number of replies, and no clear preference was identified in the survey.

1.4 Decarbonization Skillsets and Training Needs

Regarding the most important topics for training, reskilling, or upskilling port administrators and port workers, MARPOL-related legislative requirements & onboard operations, and marine environmental awareness were each cited by 50% of respondents. These are followed by operational & technological solutions to improve energy efficiency, alternative fuels, digital transition of shipping/basic digital awareness and new short-term GHG reduction measures: EEXI, CII (each appearing in 30%).

Participants were also asked to record the most important skillsets for port workers in various categories. According to the survey results, main priorities are **understanding decarbonization technologies (technical skill)** and **decarbonization strategies (sustainability skill)**, both cited by 90% of respondents. **Marine environmental awareness** (80%) following suit, emphasizing the need for deep knowledge of strategies to reduce carbon emissions, and highlighting the importance of understanding marine ecosystems and the environmental impact of port activities.

With regards to **safety skills, risk management** (60%) and **hazardous material handling** (40%) are the most emphasized, followed by health and safety regulation compliance (30%) and equipment safety and maintenance (20%) and alternative fuel handling (20%).

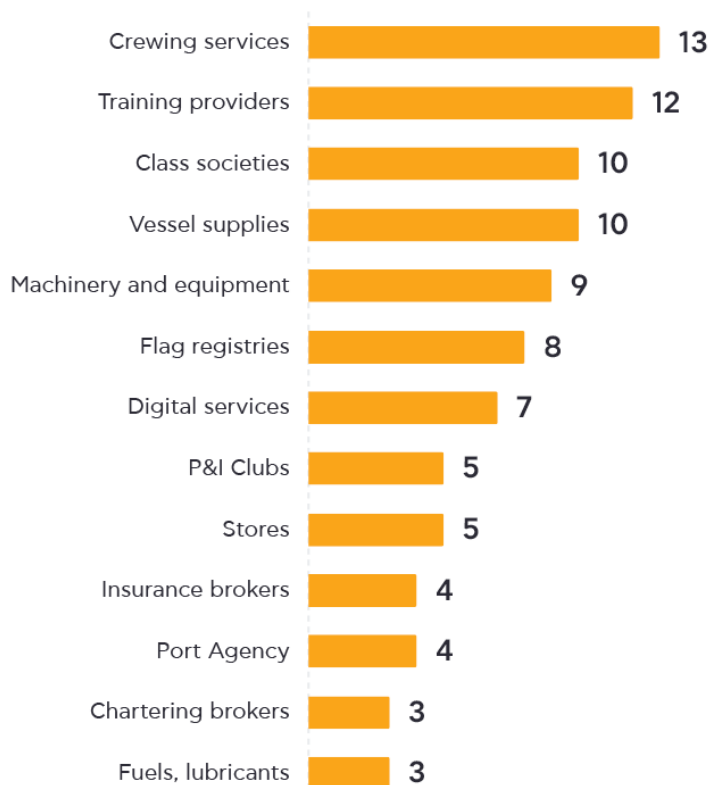
For organizational skills, **planning and prioritization** (50%) and **information management** (40%) are most emphasized. The leading soft skills are **teamwork/collaboration** (60%) and **critical thinking** (50%), followed by problem-solving (20%) and leadership (20%).

Part II: Service Providers and Suppliers

2.1 Profile of Participating Companies

Overall, 36 service providers and suppliers responded to the survey. The most common types of services provided by participating companies in the survey were crewing services (36%), training providers (33%), class societies (28%), and vessel suppliers (28%).

TYPES OF SERVICES OFFERED BY PARTICIPATING COMPANIES

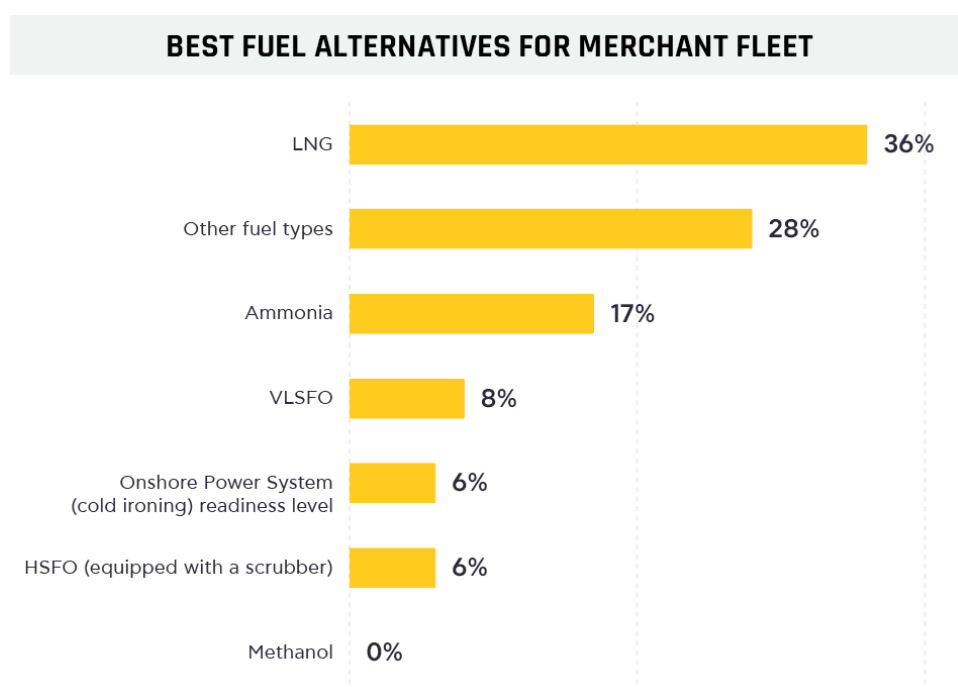


2.2 Environmental Management Systems

Regarding the implementation of Environmental Management Systems (EMS), **56% of respondents indicated they have an EMS in place**, with ISO 14001:2015 being the most widely used standard (35%).

2.3 Decarbonization Solutions

According to service providers and suppliers, the most effective fuel types for decarbonizing shipping are LNG (36%), followed by ammonia (17%). 8% of participants believed that VLSFO is the most effective fuel type, 6% answered HSFO (equipped with scrubber) and Onshore Power System, while 28% answer mentioned other fuel types as the most effective.



Regarding alternative infrastructure for ports, respondents identified renewable energy sources as the most effective infrastructure investments (47%), followed by alternative fuels bunkering stations (33%) and onshore power systems (19%).

2.4 Decarbonization Skillsets and Training Needs

Regarding training for transition to decarbonization, most companies replied positively (78%), with 22% declaring that they don't offer any relevant training yet. Training is focused on sustainability in shipping (50%), ESG (39%), alternative fuels (36%) and EU ETS (36%). Negative replies were due to the non-applicability of training in certain cases (i.e. in the case of training providers).

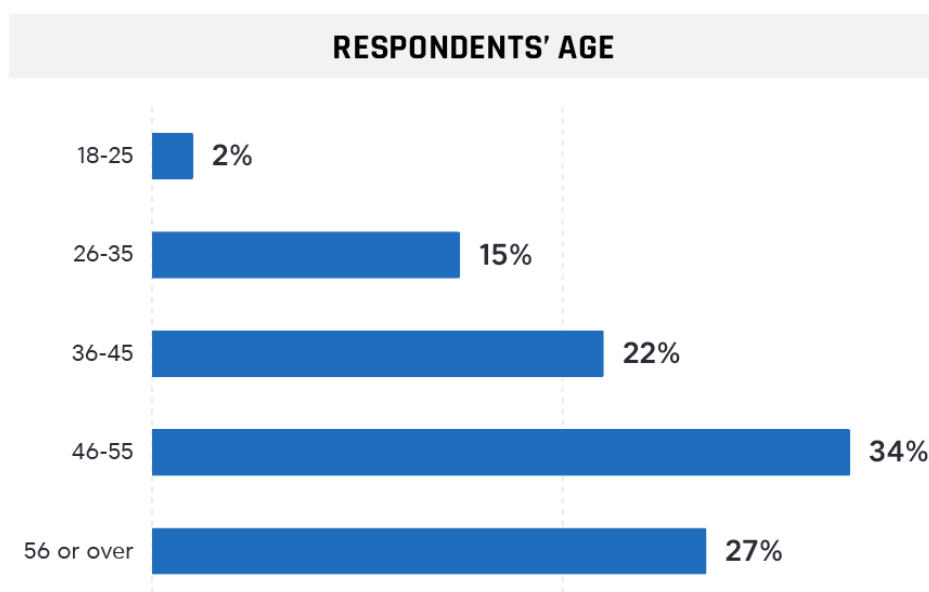
When asked about the most important skillsets required by seafarers to support decarbonization over the next decade, the following priorities emerged:

- **Technical skills:** Understanding decarbonization technologies (67%), energy management systems (31%), and familiarity with relevant policies and regulations (22%).
- **Safety skills:** Alternative fuel handling (56%), risk assessment (36%), and emergency preparedness (36%).
- **Sustainability skills:** Understanding decarbonization strategies and marine environmental awareness (both 61%).
- **Organizational skills:** Planning and prioritization (67%) and workflow optimization (42%).
- **Soft skills:** Teamwork and collaboration (39%), critical thinking (33%), and adaptability (28%).

Part III: Civil Society & Port Cities

3.1 Profile of Respondents

The questionnaire for Civil Society and Port Cities was completed **by 244 participants** (e.g., coastal residents, civil servants, members of NGOs, marina workers, pleasure craft owners/users in the Eastern Mediterranean region) and explores public awareness, perceptions, and concerns regarding maritime decarbonization and the broader impacts of global warming on marine environments.



The gender distribution of respondents was weighted towards female participants (68%), while age distribution showed a concentration in the 46–55 (34%) and 56+ (27%) categories. Most respondents held higher education qualifications, with 46% reporting a master's degree and 38% a bachelor's degree, suggesting that the sample represented a relatively well-informed segment of the population.

The most common occupation among respondents is “Other Civil Servant” (50%), followed by “Members of NGOs” (23%), and “Other” (6%) (e.g., teachers, students, private sector professionals). Other professions represented in the sample were “Merchant Sailor” (2%), “Pleasure Craft Owner/User” (1%), and “Marina Worker” (1%), while 6% declared that they are “Coastal Residents (non-worker)”.

78% of the participants resided in coastal cities/towns, while the remaining 22% lived on islands.

As the questionnaire was open to voluntary participation, self-selection bias is likely. Those who chose to respond may have had a higher baseline of environmental awareness or personal interest in maritime and climate-related issues, which should be considered when interpreting the results.

3.2 Public Familiarization with Global Warming

Regarding familiarization with global warming, most participants are moderately to very familiar with the topic. Specifically, 71% of participants stated that they are “very familiar” or “extremely familiar”, and 24% of participants stated that they are “moderately familiar” with global warming. 5% stated that they are “slightly familiar” with global warming.

Regarding participants' familiarity with the causes and impacts of global warming, 67% consider themselves to be very familiar or extremely familiar, while 87% are very concerned or extremely concerned about the effects of global warming on their local environment.

With respect to the most significant impacts of global warming on the coastal and marine ecosystems in the Eastern Mediterranean region, the majority of respondents identified increased frequency of extreme weather events (81%), unbearable living conditions (80%) and loss of biodiversity (75%) as the most significant impacts of global warming on the coastal and marine ecosystems of the region. Other significant impacts identified were wildfires, economic impact on agriculture, rising sea levels and disruption of fish migration patterns.

3.3 Perceptions on Greenhouse Gas Emissions

Regarding the issue of greenhouse gas emissions and their role as the primary cause of rising temperatures and global warming, the vast majority (86%) either agree or

strongly agree with the statement that **greenhouse gas emissions from human activity are the main cause of rising temperatures and global warming**. 10% were undecided, and an additional 3% disagreed (either strongly or mildly).

Regarding the relative contribution of different sectors to greenhouse gas emissions, the majority of respondents acknowledged that nearly all sectors evaluated in the survey play a substantial role. Most responses fell within the categories of “moderately significant” to “extremely significant”.

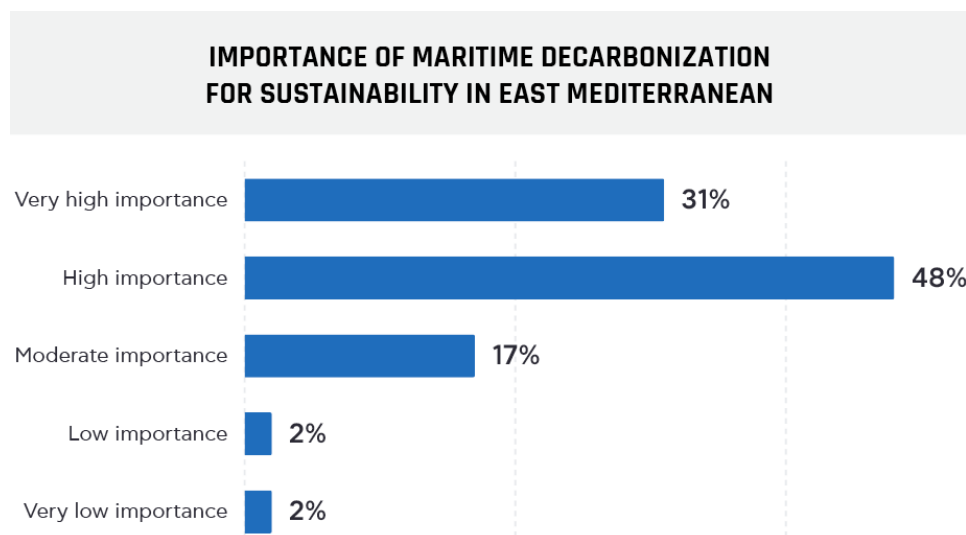
The aviation sector was perceived as the highest contributor, followed by land transportation, manufacturing, shipping, agriculture, and tourism.

Notably, 60% and 77% of participants consider shipping and aviation, which contribute an estimated 2.9% ([IMO Fourth GHG Study, 2020](#)) and 2.5% ([Our World in Data, 2024](#)) to global CO₂ emissions respectively, to be ‘very significant’ or ‘extremely significant’ contributors. Given the self-selection bias, which suggests that participants are likely to have heightened environmental awareness, this finding highlights a perception gap between public views and established emissions data. Regarding awareness of initiatives aimed at reducing greenhouse gas emissions in maritime transportation, the majority (64%) of respondents indicated that they are informed, while 36% reported a lack of awareness.

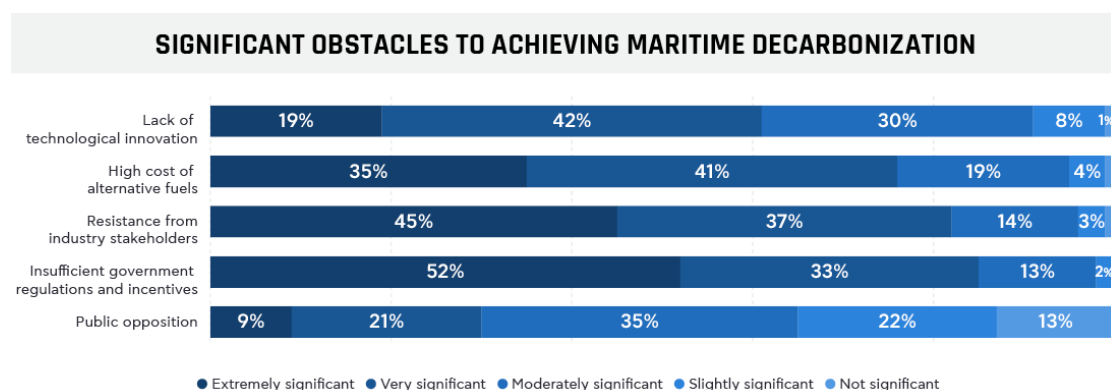
3.4 Maritime Sector and Decarbonization Options

When asked about the maritime sector’s contribution to greenhouse gas emissions, 41% of respondents rated it as either high (over 70% of total emissions) or average (around 50%). Meanwhile, 37% considered the sector’s contribution fairly low (under 20%) or very low (below 3%). The remaining 22% were uncertain about the maritime sector’s contribution to greenhouse gas emissions.

The majority of participants (78%) rated the importance of maritime decarbonization for the sustainability of the marine environment in the East Mediterranean as very high.



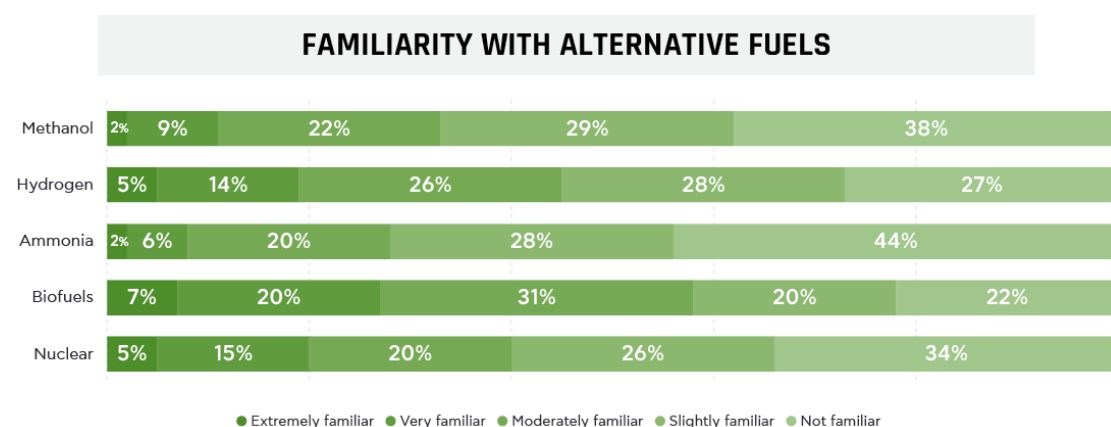
Participants were also asked to identify the most significant barriers to achieving maritime decarbonization. The highest-rated obstacles were insufficient government regulations and incentives, resistance from industry stakeholders, high cost of alternative fuels, lack of technological innovation, and public opposition.



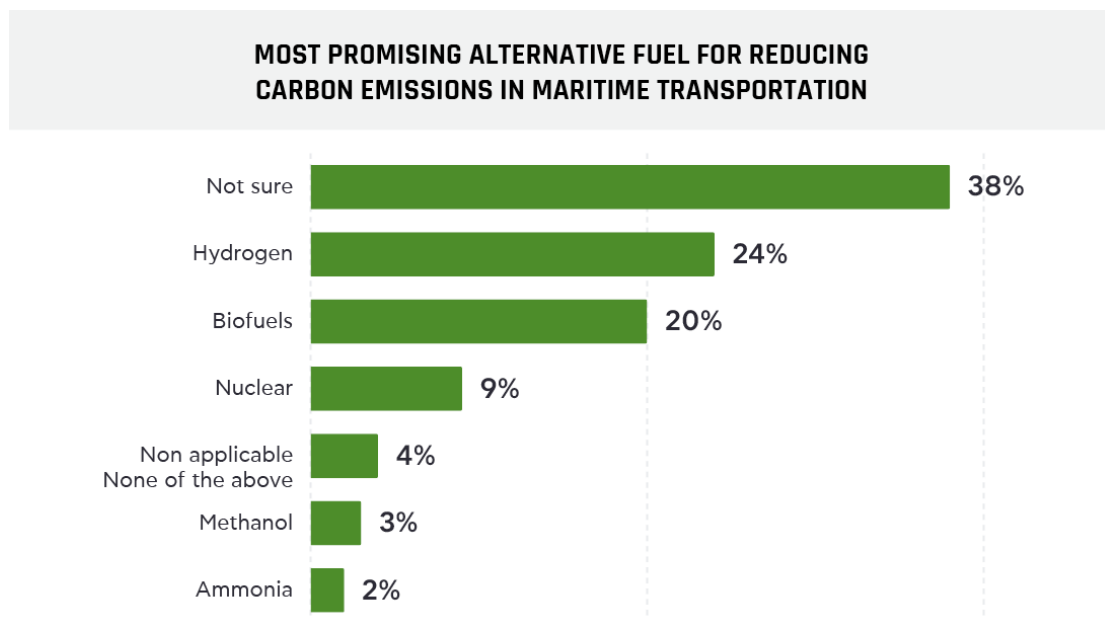
Regarding the respondents' familiarity with Liquefied Natural Gas (LNG) as a transitional fuel, most participants (59%) reported being from moderately to extremely familiar. The most significant benefits of LNG were identified to be the reduction of CO₂ emissions (76%), the transition from highly polluting fuels (65%), and the existence of technical experience and know-how (32%).

On the other hand, the most challenging factors in using LNG as fuel were the lack of trained seafarers and port workers in LNG (58%), the safety risks related to infrastructure near residential areas (52%), and potential safety hazards during transport and use (50%).

Overall, familiarity with alternative fuels varied significantly. Biofuels stand out as the most familiar alternative fuel (57% are moderately to extremely familiar), while on the other hand methanol (68% are not familiar or slightly familiar) and ammonia (72% are not familiar or slightly familiar) are the least familiar.



Uncertainty was evident regarding the most promising alternative fuel for the future: 39% of respondents were unsure. Among those who selected a fuel, 24% identified hydrogen and 20% biofuels as the most promising options.



When considering factors for deciding which alternative fuel to invest in, respondents prioritized environmental impact (47%), followed by safety (24%) and cost-effectiveness (22%).

Composition of Results – Key Findings

The METAVASEA survey delivers an insightful, data-driven analysis of the Eastern Mediterranean maritime sector's current landscape and its evolving trajectory in the context of decarbonization. The findings for the port communities and suppliers/service providers highlight key challenges and opportunities in maritime decarbonization across awareness, infrastructure, training, policy, economic feasibility, and stakeholder engagement. The synthesis below summarizes the main findings from the collected data.

Decarbonization Infrastructure, Activities and Solutions

- Most ports lack low-carbon fuel infrastructure, with onshore power systems prioritized. Infrastructure gaps and technological barriers remain significant, with limited focus on cold ironing and advanced decarbonization solutions.
- Significant infrastructure gap: 80% of ports lack low-carbon fuel bunkering facilities; only 20% provide VLSFO bunkering.

- Planned infrastructure investments for ports focus on Onshore Power Systems (OPS) (40%) with systems expected to be operational by 2026-2028, while 40% have no plans.
- Emissions monitoring is limited. 60% of ports have no such system yet, with some currently in adaptation or procurement phases.
- Preferred decarbonization options for ports include renewable energy installations (70%), cold ironing (40%) and alternative fuel bunkering (30%), reflecting a preference clean energy.
- Service providers and suppliers view renewable energy sources as the best infrastructure investment for ports (47%), followed by alternative fuel bunkering (33%) and cold ironing (19%).
- Service providers and suppliers believe that LNG is the most effective fuel for decarbonization (36%), followed by ammonia (17%).

Training and Skillsets

- Key training topics for port administrators and port workers: legislation & onboard operations and marine environmental awareness, energy efficiency solutions, alternative fuels, digital awareness, and short-term GHG reduction measures.
- Important Skills for port administrators and port workers
 - Technical skills: understanding decarbonization technologies (90%), data analysis (30%), renewable energy integration (30%).
 - Safety skills: risk assessment/management and health & safety compliance (60% each), hazardous material handling (40%).
 - Sustainability skills: decarbonization strategies (90%) and marine environmental awareness (80%).
 - Organizational skills: planning and prioritization (50%), information management (40%), workflow optimization (30%).
 - Soft skills: teamwork/collaboration (60%) and critical thinking (50%).
- 78% of service providers and suppliers provide training related to decarbonization, focusing on sustainability, ESG, alternative fuels, and the EU ETS.
- Service providers and suppliers believe that the most important skills for seafarers towards decarbonization are:

- Technical skills: understanding decarbonization technologies (67%), energy management (31%), policy and regulatory knowledge (22%).
- Safety skills: alternative fuel handling (56%), risk assessment (36%), emergency preparedness (36%).
- Sustainability skills: understanding of decarbonization strategies and marine environmental awareness (61% each).
- Organizational skills: planning/prioritization (67%) and workflow optimization (42%).
- Soft skills: teamwork/collaboration (39%), critical thinking (33%), and adaptability (28%).

Environmental and Social Priorities

- Civil society and port cities prioritize marine environmental awareness and the reduction of port related pollution, aligning with broader sustainability goals.
- Respondents strongly support ports adopting renewable energy solutions and cleaner fuels to reduce emissions impacting local air quality and public health. Community engagement and awareness-raising about decarbonization benefits and challenges are seen as essential for social acceptance and successful implementation.

Public (Civil Society and Port Cities) Familiarity with Global Warming and Perceptions on Greenhouse Gas Emissions

- 71% of respondents are very or extremely familiar with global warming.
- 67% consider themselves to be very familiar or extremely familiar with the causes and impacts of global warming, while 87% are very or extremely concerned about its effects on their local environment.
- The most significant impacts of global warming identified were increased frequency of extreme weather events, unbearable living conditions, and loss of biodiversity.
- 86% agree or strongly agree that greenhouse gas emissions from human activity are the primary cause of rising temperatures and global warming.
- Respondents recognize that nearly all sectors contribute significantly to GHG emissions. The aviation sector is perceived as the highest contributor, followed by land transportation, manufacturing, shipping, agriculture, and tourism.

- 64% are aware of initiatives aimed at reducing GHG emissions in maritime transportation. 36% lack awareness of such initiatives.

Perceived Significance of Maritime Sector Emissions & Maritime Decarbonization

- Civil society and port cities showed a wide range of perceptions regarding the maritime sector's contribution to global GHG emissions, with 41% rating the sector's contribution as high (over 70% of total emissions) or average (around 50%). 36% considered it fairly low (under 20%) or very low (below 3%), while 21% were uncertain about the sector's contribution. International sources estimate the maritime sector accounts for about 2.5-3% of global GHG emissions, with recent IMO and EU data confirming this range.
- 78% of participants rated the importance of maritime decarbonization for the sustainability of the marine environment in the East Mediterranean as very high.
- Key barriers identified included insufficient government regulations and incentives, resistance from industry stakeholders, high costs of alternative fuels, lack of technological innovation, and public opposition.

Familiarity of Civil Society and Port Cities with LNG and Alternative Fuels

- 59% of respondents were moderately to extremely familiar with LNG as a transitional fuel. LNG's main perceived benefits: reduction of CO₂ emissions (76%), transition from highly polluting fuels (65%), and existing technical know-how (32%).
- LNG's main perceived challenges: lack of trained personnel (58%), safety risks near residential areas (52%), and hazards during transport/use (48%).
- Biofuels are the most familiar (57% moderately to extremely familiar).
- Methanol (68% not/slightly familiar) and ammonia (72% not/slightly familiar) are the least familiar.
- 39% of respondents were unsure which alternative fuel holds the most promise for decarbonization; 24% chose hydrogen, and 20% chose biofuels.
- When deciding which alternative fuel to invest in for maritime use, respondents prioritized environmental impact (47% rated as most important), safety (24% rated as most important), and cost-effectiveness (22% rated as most important).

Overall, the METAVASEA survey confirms that the Eastern Mediterranean maritime sector is at a pivotal moment. Ambitious policies and emerging technologies play a key role but the success of the transition will ultimately depend on the ability of the workforce to adapt, acquire new skills, and operate safely and sustainably. Ongoing survey waves through 2027 will track evolving trends and challenges, providing timely insights to inform decisions across the maritime ecosystem.

metavasea

Maritime Decarbonization in the Eastern Mediterranean



PROACTIVE COLLECTIVE INITIATIVE



PORTS - SUPPLIERS - CIVIL SOCIETY SURVEY REPORT

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