

Tender Specifications

Attached to the Invitation to tender

Invitation to tender No. EMSA/NEG/10/2023. Study on the identification of specific competences and training requirements for seafarers on ships using alternative fuels and energy systems for safe ship operations (TRAINALTER)

1. Introduction

The European Maritime Safety Agency (EMSA) was established under Regulation (EC) No 1406/2002 of the European Parliament and of the Council¹ for the purpose of ensuring a high, uniform and effective level of maritime safety. Among its tasks, the Agency provides technical and scientific assistance to the European Commission and European Union Member States and acts as a facilitator.

EMSA is applying the environmental management systems ISO 14001:2015 and EMAS (Environmental Management and Audit Scheme of the EU), aiming to continuously improve its environmental performance. EMSA complies with all applicable legal requirements relating to the environment and endeavours to ensure that suppliers comply with its environmental policy within the remit of the activities carried out for the contract. EMSA invites tenderers to consult the document and consider it when preparing tenders.

2. Objective, scope and description of the contract

2.1 Background

The maritime industry is currently facing significant challenges stemming from stricter air emission limits and legislation to offset climate change effects. The need of a progressive technology transition towards decarbonized shipping has been recently (July 2023) made more evident and urgent by the adoption of stricter strategies and new regulations. At the IMO, the agreement reached to revise its 2018 strategy on reducing greenhouse gas (GHG) emissions from ships has set a goal of net zero emissions from ships by or around, i.e. close to 2050, with partial goals of GHG emission reduction by at least 20% - striving for 30% - in 2030 and at least 70% - striving for 80% - in 2040, in comparison to 2008 levels. At the EU level, shipping has been included as from 2024 in the EU Emission Trading Scheme (EU ETS), which is the emission trade and allowance system associated with the EU's 2030 target for a 55% emissions reduction relative to 1990 and climate-neutrality by 2050. In addition, the adoption in July 2023 of a new EU Regulation on the use of renewable and low-carbon fuels in maritime transport, the so-called 'FuelEU maritime' initiative (as part of the EU's 'Fit for 55' package), establishes a combination of provisions aimed at increasing the demand for and consistent use of renewable and low-carbon fuels and reducing the GHG emissions from the shipping sector,

¹ Regulation (EC) No 1406/2002 of the European Parliament and of the Council of 27 June 2002 establishing a European Maritime Safety Agency (OJ L 208, 5.8.2002, p. 1.).

including measures to decrease the greenhouse gas intensity of fuels used by the shipping sector and several incentive mechanisms.

Among the choice of technologies and fuel solutions for ships, several potential alternative fuels (i.e. low carbon, carbon neutral and zero carbon fuels) have been identified to contribute reducing emissions from shipping to the levels of ambition. Currently, the use of several alternative fuels on ships, as a substitute for conventional fossil fuels or in combination with those, to achieve environmental goals and support the decarbonisation of shipping, has already started to be introduced in shipping. This is demanding a technology transition, which also requires a change in ship operations.

Nevertheless, the increasing use of alternative fuels and energy systems in ships and the related technology transition will bring several challenges that need to be addressed with varied intensity depending on the decarbonisation path that the industry will take. One of those challenges is the additional training that seafarers on board ships using alternative fuels and energy systems will be required to undergo in order to achieve a competency level ensuring the said ships' safe operation. As regards the scale of the training needed to support a decarbonised shipping, which was stressed in a report² commissioned by the Maritime Just Transition initiative, the secretariat of the Maritime Just Transition Task Force³ suggests that in a 'zero carbon by 2050' scenario, 450,000 seafarers would require some kind of additional training by 2030, and 800,000 seafarers would require some kind of additional training by the mid-2030s, with the scenario assuming an immediate ramp-up of alternative fuels in the 2030s.

Currently, the technology, knowledge and experience on the use of alternative fuels is dissimilar depending on the specific alternative fuel and system concerned. At present, according to the trends in the ship newbuilding order book, the use of LNG as a fuel is the main choice from the technological options available to shipowners for car carriers and container ships, and is also becoming significant for tankers and bulk carriers. The decades of experience in the use of LNG from the cargo boil-off in LNG tankers through the application of the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code) was an important input for developing the provisions for the use of gases and other low flash-point fuels on ships in the IMO International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code). It also set the framework for establishing, in the STCW Convention and Code, the training requirements and minimum standards of competence for seafarers on ships subject to the IGF Code. Although LNG, the liquid form of natural gas, which is composed mostly of methane, is a hydrocarbon-based source of energy, it may still offer reduced GHG emissions when compared to diesel as a marine fuel in terms of CO₂. However, this reduction appears to be dependent on limiting its methane emissions that offset the CO₂ emissions. In addition, methane emissions from leakage during extraction, processing, and transport phases, as well as from unburned methane, raise questions about the effective contribution of using LNG in shipping to achieving the GHG emission reduction targets.

Although the use of biofuels in marine engine applications is currently limited, there is a significant potential for biofuels to command a larger portion of total marine fuel consumption, in support of the EU and IMO's GHG reduction ambitions. In fact, the use of biofuels is expected to increase since it is an immediately available option for the industry to begin its decarbonisation. Some biofuels can significantly reduce full lifecycle GHG emissions (or the well-to-wake, 'WTW', equivalent in shipping). Advanced biofuels from woody biomass can reduce GHG emissions by more than 90% compared to traditional marine fuel oils and can even achieve a 100% reduction when used in combination with carbon capture storage and sequestration technologies. Biofuels are normally sulphur free and, therefore, do not emit Sulphur Oxides (SO_x). Resulting Nitrogen Oxide (NO_x) emissions from biofuels are generally slightly higher or at the same level compared to

² Insights into Seafarer Training and Skills Needed to Support a Decarbonized Shipping Industry, DNV report 2022-0814, November 2022.

³ The Maritime Just Transition Task Force is 'Maritime Just Transition Task Force' is an initiative, set up during COP 26 in Glasgow, by the International Chamber of Shipping (ICS), the International Transport Workers' Federation (ITF), the United Nations Global Compact (UNGC), the International Labour Organization (ILO) and the International Maritime Organization (IMO).

those produced when using petroleum-distillate fuels. In diesel-cycle engines, the use of biomethane may result in a 20-30% NO_x emission reduction compared to using distillate fuels, although for this to be achieved, recalibration of engines for low NO_x modes is required. According to a study commissioned by EMSA, which explored the potential of biofuels⁴ as marine fuels, the most promising biofuels for marine use in terms of sustainability, availability, technological readiness for production, suitability and cost are bio-methanol, Fisher Tropsch (FT) diesel, biomethane from digestion of waste and residues, and dimethyl ether (DME). These are followed by the fatty acid methyl esters (FAME) from fat, oil, or grease feedstocks (FOGs), as well as from vegetable oils, biomethane from gasification, and hydrotreated vegetable oil (HVO) from FOGs and from vegetable oils. These biofuels can be directly used in existing engine systems with very minor or no modification. In the case of bio-methanol and biomethane, these can be considered as a direct replacement of their respective fossil fuel equivalents. As far as the relevant regulatory framework is concerned, many of the existing regulations are transferable to the case of biofuels due to the drop-in characteristic of biofuels, which facilitates their adoption, although some adaptations would be needed, for example, in the IGF Code and the MARPOL Convention. In addition, unified interpretations, unified requirements, and recommendations by classification societies via IACS can contribute to a faster adoption. As regards the risks and safety aspects stemming from the use of biofuels as marine fuel, the same risk implications as their fossil equivalents apply to biomethane and the bio-methanol as considered to be drop-in fuels. As for HVO, FT diesel, FAME, and DME, the hazard identification analysis conducted within the above mentioned study revealed that they can be adapted relatively easily to marine applications. Nevertheless, their applicability and associated risks depend strongly on their individual properties, as determined by the production process, which may, therefore, cause a resultant biofuel to present a higher toxicity or impact on the overall reliability of the equipment. Consequently, the use of biofuels on ships may also require more frequent surveys, cleaning and additional maintenance activities than conventional fuel oils, as well as improved and more frequent crew training requirements, which should be identified and defined.

Battery powered hybrid-electric systems, based on, for example, electrically driven propulsion and machinery in combination with batteries for energy storage, are an available technology choice with some years of experience in its use already recorded. This may bring a potential yield of significant savings in terms of fuel and emissions to shipowners in the case of small ships or of specific traffics. The number of orders for new buildings equipped with battery-hybrid propulsion and machinery systems is growing. Nevertheless, competence standards that may be required for a safe and reliable operation and maintenance of battery-hybrid systems are not specifically referred to in the minimum standards of competence defined in the STCW Code. In order to ensure safe shipping operations, relevant competences and training requirements should be identified and described.

Another promising option available is the use of methanol (methyl/ethyl alcohols) as fuel. This is already a reality which is taking a steadily increasing pace. The numbers of new shipbuilding orders for ships technically equipped to use methanol as fuel is 20 times those for ships with conventional technology in terms of gross tonnage (with 142 ships ordered in 2023). Methanol may provide CO₂ reductions compared with conventional bunker fuels, but it is still a fossil fuel with a carbon in its molecule: CH₃OH. Nevertheless, green methanol produced from renewable natural gas or green hydrogen, in addition to captured carbon, may achieve zero emissions.

As regards ammonia, there is considerable industry experience and some safety procedures for handling ammonia are already available, stemming mainly from transporting it as cargo in gas carriers. Recent studies of the required storage and distribution, onboard storage, and conversion to energy – in either an internal combustion engine or in a fuel cell – have revealed no insurmountable barriers to the use of ammonia as a marine fuel. The health, safety and environmental challenges that ammonia presents appear manageable and it is reasonable to expect that it can be considered as a suitable marine fuel offering zero, or near-zero, carbon emissions. However, using ammonia as a fuel by ships will entail an increase in the human interaction

⁴ "Update on Potential of Biofuels for Shipping", 2022.

with it, which requires careful definition and implementation of operational onboard procedures and specific training requirements.

Depending on the method used in its production, hydrogen can have a carbon footprint ranging from one similar to that of natural gas (grey hydrogen), to just over half that footprint if produced together with a carbon capture technology (blue hydrogen) and to a close-to-zero one (green hydrogen) if produced, for instance, through electrolysis using electricity from renewable energy, which makes it an almost carbon-free production process. Blue and green hydrogen are potentially offering shipping a very promising solution for a significant reduction in its GHG emissions. The use of liquid hydrogen in fuel cells on ships has been tested already in a few real case scenarios for smaller ships and is being subject to research for deep-sea shipping. Its implementation and use on ships, nevertheless, have important challenges: it is extremely flammable with a large ignition rate, has a high-speed flame and invisible combustion, as well as a very low energy density, which requires it to be significantly compressed and cooled, similarly to the compression of methane to produce LNG.

The use of certain fuel cell technologies in shipping has been already demonstrated as one of the power technologies that can support starting the reduction of GHG in shipping and its decarbonization, mainly due to their relatively advanced technical maturity and, specifically, those that use LNG, ethyl-methyl alcohols, hydrogen, low flashpoint diesel and bio diesel as fuels. As concluded from the “Study on the Use of Fuel Cells in Shipping” commissioned by EMSA back in 2017, three specific fuel cell technologies are the most promising for marine use: Solid Oxide Fuel Cell (SOFC), the Proton Exchange Membrane Fuel Cell (PEMFC) and the High Temperature Proton Exchange Membrane Fuel Cell (HT-PEMFC). Several Classification Societies have already issued ‘rule notes’ applicable to fuel cell installation in ships, while the IMO MSC issued already in 2022, its MSC.1/Circ.1647, interim guidelines for the safety of ships using fuel cell power installations. Still, relevant minimum competence standards and training requirements are not yet specified.

Several classification societies have prepared and issued rules for the classification of ships using gases or other low-flashpoint fuels. The aim of these rules is focused on ensuring that ships using these fuels are built with a view to classification and comply with the requirements of the IGF Code. In the absence of either a specific international regulatory framework or adaptations of the existing one for the use of some alternative fuels as marine fuels, classification societies have also developed and established risk-based ‘alternative design’ approval methodologies, following the provisions of the IGF Code, which have been used for alternative fuels to support shipowners in the use of those fuels in their ships. In addition, with the aim of temporarily filling the regulatory gap, the IMO, through MSC circulars, has recently issued some guidelines concerning the safety of ships using some alternative fuels, i.e. MSC.1/Circ.1621, Dec 2020, interim guidelines for the safety of ships using methyl/ethyl alcohol as fuel, MSC.1/Circ.1647, June 2022, interim guidelines for the safety of ships using fuel cell power installations. The IMO Carriage of Cargoes and Containers (CCC) sub-committee is currently developing, as part of the IGF Code, amendments and guidelines for low-flashpoint fuels to include interim guidelines for the use of oil fuels with a flashpoint between 52°C and 60°C, covering oil-based fossil fuels, synthetic fuels, biofuels and any mixture thereof. In addition, the development of mandatory instruments regarding methyl/ethyl alcohols is envisaged to start in 2023 and foreseen to be finalised in 2025, based on the interim guidelines in MSC.1/Circ.1621 that include principles for the safety and suitability of bunkering stations, bunker hoses, manifold and bunkering systems onboard. The outcomes from the discussion on the mandatory instruments regarding methyl/ethyl alcohols at CCC 9 and the consequent work of the established correspondence group in 2024, should be taken into consideration, if available. As regards ammonia, methanol and hydrogen as fuels, several research and development projects are ongoing, developing standards for their use as fuels. When fully developed, such standards should provide clearer conditions under which these alternative fuels can be used. Meanwhile, interim guidance is currently being developed, which makes it possible to envisage, identify and describe the specific knowledge and skills understanding and proficiency that the seafarers concerned should be able to achieve.

The above guidelines and those being developed provide a temporary basic reference for the safe use of the alternative fuels and systems concerned and, in addition, are an essential foundation of the training that would need to be developed for and delivered to seafarers on board ships using these fuels.

The structure of the minimum training defined for the training of masters, officers and ratings on ships subject to the IGF Code required already by the STCW Code, as well as the experience gained in the implementation of training designed to provide the competence required of those seafarers, can certainly contribute to structuring specific training on alternative fuels and systems and support the identification of the relevant specific knowledge, understanding and proficiency. Such specific knowledge, understanding and proficiency items, which should be required for those ships using alternative fuels and energy systems to ensure a degree of safety at least equivalent to conventional fuels, may be either in addition to, or complementary to those already specified in the standards for seafarers on ships subject to the IGF Code in Chapter V of the STCW Code, or both. Nevertheless, the shipping industry is currently calling for the adoption of interim guidelines on training of seafarers on ships using alternative fuels to ensure a harmonised and coherent approach before the minimum training and competence standards are established in the STCW Convention and Code.

In addition to the challenges stemming inherently from the alternative fuels and technologies themselves, the development of relevant training for seafarers using alternative fuels and energy systems, its introduction and implementation have its own specific challenges. The first challenge is the shortage of experienced seafarers who can provide the necessary onboard familiarisation to their colleagues and who could also become potential instructors at maritime education and training (MET) institutions ashore. The second is the initial scarcity of ships using alternative fuels and systems which might create a training bottleneck for the number of seafarers seeking to gain experience which would otherwise be difficult to acquire.

The industry producing alternative fuels, which shares with shipping some of the challenges in the handling of alternative fuels, may be able to help in providing elements of the experience needed by seafarers under training, namely in areas such as fuel storage, personal protection, emergencies, and transport of those fuels. In exploring ways of participation by this industry, specific technical areas or activities that could assist seafarers under training in gaining relevant experience should be identified and specified. In addition, simulators have a huge potential in facilitating the training and experience required by seafarers on ships using alternative fuels and systems. The use of the existing simulators – i.e. engine-room and LNG cargo handling simulators – for parts of the training in the use of alternative fuels and energy systems should be identified, as well as the areas in which new simulation might be needed.

2.2 Objectives and tasks

The **overall objective** of the study is to identify and describe specific competences and training areas in terms of knowledge, understanding, skills and proficiency for seafarers to ensure safe operations of ships using the following alternative fuels and energy systems for propulsion and auxiliary power generation, including fuel cell power systems for delivery of electrical and/or thermal energy: biofuels; battery powered hybrid-electric systems; methyl/ethyl alcohols; ammonia; hydrogen; fuel cells using previous alternative fuels.

The results of the study may be used by the European Commission and EU Member States to prepare proposals for guidelines for the development of training and assessment programmes on the use of alternative fuels and energy systems, as well as proposals for regulatory purposes. The **specific objectives** of the study are listed below:

1. Identification of new competences for seafarers and their description in terms of knowledge, understanding and proficiency (KUP) elements, as well as description of additional KUPs in competences already existing in the STCW Code, relevant to the safe operation of ships using the following alternative fuels and energy systems:
 - a. Biofuels used in internal combustion engines: bio-methanol, Fisher Tropsch (FT) diesel, biomethane from digestion of waste and residues, dimethyl ether (DME), fatty acid methyl esters (FAME) from fat, oil, or grease feedstocks (FOGs) and from vegetable oils, biomethane from gasification, and hydrotreated vegetable oil (HVO) from FOGs;
 - b. Battery powered hybrid-electric systems, including the safe operation, maintenance and emergency management of ships equipped with Battery Energy Storage Systems (BESS);

- c. Methyl/ethyl alcohols used in internal combustion engines;
 - d. Fuel cell power systems based on Solid Oxide Fuel Cell (SOFC), the Proton Exchange Membrane Fuel Cell (PEMFC) and the High Temperature Proton Exchange Membrane Fuel Cell (HT-PEMFC) for delivery of electrical and/or thermal energy of using LNG, bio-fuels, methyl/ethyl alcohols, ammonia and hydrogen.
2. Identification of competence areas and their description in terms of KUP elements relevant to the safe operation of ships using ammonia and hydrogen as fuel in internal combustion engines as far as this is possible having regard to the available scientific and technical knowledge and experience, as well as to the incomplete technical regulatory framework.
 3. Identification of competences and KUP items required for engineer officers and other personnel of the engine department, as specified in the minimum standards of competence specified in the STCW Code, that may need to be updated, upgraded and/or amended, as well as those that can be considered obsolete or not relevant to the safe operation of ships using alternative fuels and energy systems.
 4. Identification of methods for demonstrating the identified competences related to alternative fuel and energy systems, to ensure that those competences can be achieved by trainees as efficiently and effectively as possible, with particular attention to in-service experience other than on-board training, and the use of simulators, with the aim of contributing to offsetting the possible effect of the scarcity of positions available on ships using alternative fuels and energy systems as a means to gain experience.
 5. Identification of technical areas, processes and/or systems of the alternative fuels' production, storage, transfer and transport industry ashore, which may be relevant to shipping using alternative fuels and energy systems, and specification of relevant knowledge, proficiency, skill or training topics, with the aim of identifying the potential contribution of that industry to the training and experience gain of seafarers, who will serve on board ships using alternative fuels and energy systems and that may be considered equivalent to in-service training.
 6. Description of proposals of structured training of seafarers in the safe operation of ships using alternative fuels and energy systems.
 7. Description of proposals of training of instructors' programmes or courses for ships using alternative fuels and energy systems.

The study shall be divided in part a) and part b) as follows and shall carry out the **tasks** referred to below.

Part a):

State-of-the-art:

The contractor shall provide a description of the state-of-the-art concerning current training of seafarers on the use of alternative fuels and energy systems within the scope of the study as well as of information, guidance, recommendations and standards, which may provide input to the identification of the relevant competences and development of training for seafarers. In such description, the contractor shall take into account IMO guidance, industrial guidelines, in particular, those issued by classification societies, recommendations, training courses already existing and being delivered, studies (including those commissioned by EMSA, in particular, but not limited to, "Study on the use of Fuel Cells in Shipping", 2017 ; "Guidance on LNG Bunkering to Port Authorities and Administrations ", 2018; "Study on Electrical Energy Storage for Ships", 2020; "Potential of Ammonia as Fuel in Shipping", updated version of 2023; "Update on Potential of Biofuels for Shipping", 2022; "Guidance on Shore-Side Electricity", 2022; "Potential of Hydrogen as Fuel in Shipping", 2023; "Study on the safe bunkering with biofuels (bio-methanol, FT-diesel, DME, HVO and FAME)", as long

as the output of those studies are available), “EMSA Guidance on the Safety of Battery Energy Storage Systems (BESS) on board ships”, 2023, and research projects. The description of the state-of-the-art shall be appropriately used for the tasks involved in achieving the study’s specific objectives nos. 1 to 4.

Tasks relevant to specific objectives nos. 1 and 3:

The contractor shall describe the methodology used to achieve these specific objectives.

For the specific objective 1, the contractor shall substantiate and justify the identification of competences, shall describe these and the relevant KUPs structured similarly as for other competences specified in the STCW Code, or, alternatively, by using other method that can provide, at least, an equivalent description and specification, and shall substantiate and justify the identification of competences and description of the identified KUPs.

For the specific objective 3, the contractor shall substantiate and justify the identification of the relevant competences and KUPs that that may need to be updated, upgraded and/or amended, as well as those that can be considered obsolete or not relevant to the safe operation of ships using alternative fuels and energy systems, and shall propose and describe the updates, upgrading and/or amendments that should be required.

Tasks relevant to specific objective no. 2:

The contractor shall describe the methodology used to achieve this objective; it shall substantiate and justify the identification of the competence areas and KUP elements, in a similar format as that used in the STCW Code to specify the minimum standards of competence or, alternatively, through the description of goals and associated functional requirements, or by proposing training guidelines addressing identified training topics and relevant training outcomes. The contractor shall describe the above with sufficient detail having regard to the relevant available technical knowledge, experience, and regulatory gaps.

Task subsequent to those relevant to specific objectives 1, 2 and 3:

The contractor shall propose and describe a consolidated competence catalogue or competence list for masters, engineer officers and other persons on board with immediate responsibility for care and use of alternative fuels within the scope of this study on ships using these fuels and associated technologies and energy systems, which shall include the competences identified pursuant to specific objectives nos. 1 and 2, the updated, upgraded and /or to-be amended competences proposed under the task relevant to specific objective no. 3, and the existing competences and KUP items for seafarers on ships subject to the IGF Code that may be relevant to the alternative fuels concerned.

The contractor shall prepare a report of part a) addressing the tasks above, which shall be subject to approval by EMSA and shall be included in the study’s final report.

Part b):

Tasks relevant to specific objective nos. 4 and 5:

The contractor shall provide a description and justification of the identified methods for demonstrating the identified competences related to alternative fuel and energy systems, referred to in specific objective no. 4, as well as of the relevant knowledge, proficiency, skill or training topics in relation to the identified technical areas, processes and/or systems referred to in specific objective no. 5. The required descriptions and justification shall be sufficiently detailed for supporting its technical argumentation. When referring to ‘in-service experience’ other than on-board training, this shall be understood as experience in relevant tasks or work activities under a scheme of guided on-the-job training, including, for example, coaching, apprenticeship, practical training or job instruction, which may be suitable to provide knowledge, skills and experience gains to the candidate relevant to the use of alternative fuels and energy systems, and conducted at workplaces, other

than ships, where activities involving alternative fuels and energy systems take place, i.e., production, storage, transfer or transport. When referring to simulators, these shall be understood as those compliant with the relevant requirements for simulators specified in the STCW Code, as well as other type training facilities which may be used for the purpose of training personnel working in industrial activities relevant to alternative fuels and energy systems, and which may meet some of those requirements or be subject to other standards aimed at providing realism to training tasks.

Tasks relevant to specific objective no. 6:

The contractor shall provide descriptions of proposals of structured training of seafarers in the safe operation of ships using alternative fuels and energy systems, taking into account the outcome of the tasks relevant to the specific objectives nos. 1 to 5 and shall be sufficiently detailed to facilitate the development of training courses. The proposals of structured training shall be addressing one or more alternative fuels and energy systems and each shall include an outline of the intended training stating the training areas and/or topics, a schedule, a detailed syllabus incorporating suitable training outcomes and required performance, and training methods, i.e. lectures, demonstrations and practical work, as well as simulator sessions, where appropriate. In this regard, the proposals shall identify specific equipment or facilities needed to deliver the intended training, as well as the areas, subjects, or topics in which the existing simulators, i.e. engine-room and LNG cargo handling simulators, can be used for training seafarers in the use of alternative fuels and energy systems, and the areas, subjects, or topics suitable for new simulation to be developed.

Task relevant to specific objective no. 7:

The contractor shall provide justified descriptions of proposals training courses for instructors, which shall include, at least, course entry requirements, including identification of qualification and experience on board and/or ashore, an outline of the training courses proposed, schedule and examples of detailed teaching syllabi.

3. Contract management responsible body

EMSA Unit 1.2 in charge of Visits & Inspections, Human Element - will be responsible for managing the contract.

4. Project Planning: milestones, meetings and deliverables

The study shall meet the following milestones and shall produce the deliverables specified below:

Study workplan and methodology, which shall be presented and delivered to EMSA at the study kick-off meeting, which shall be held on a date to be agreed between EMSA and the contractor, not later than 30 days after the date of signature of the contract. EMSA may provide comments and suggest improvements to the workplan and the methodology, which shall be considered by the contractor. Both the study workplan and methodology, including its revisions, if any, shall be approved by EMSA within one month after the kick-off meeting.

Report of part a) of the study containing, at least, the description of the state-of-the-art and the content concerning the tasks relevant to the specific objectives nos. 1, 2 and 3 referred to in section 2.2 above. The report of part a) shall be delivered within the 30 days counted immediately after 4 months have elapsed from the date of signature of the contract. The contractor shall present the report of part a) to EMSA in an interim meeting to be held on a date to be agreed with the contractor between 4 and 5 months after the date of signature of the contract.

Following the delivery of the report of part a) and the interim meeting referred to above, EMSA shall approve the report if it considers that the report meets the requirements specified in section 2.2 for part a) of the study or, otherwise, may produce comments with regard to the report's contents and possibly also provide

contributions by expert parties. The contractor shall duly consider these comments, provide EMSA with a response thereto and, if deemed necessary, revise this report to reflect additional elements arising from such comments and within the deadlines agreed between the contractor and EMSA. EMSA may then approve the report of part a) of the study within one month after the contractor delivered the last revision of the report or repeat the comment/revision stage until approval for a maximum of three revisions; however, this process shall not extend more than two months.

Final report of the study, containing part a) and part b) of the study. This final report shall incorporate the content of the approved report of part a). In addition, it shall include part b) of the study, which shall contain the substantiation and results concerning the specific objectives nos. 4, 5, 6 and 7. The final report shall be delivered within the 15 days counted immediately after 7 months have elapsed since the date of signature of the contract. The contractor shall present the final report of the study to EMSA in a final meeting to be held on a date to be agreed with the contractor between 7,5 months and 8 months after the date of signature of the contract.

Following the delivery of the final report and the final meeting referred to above, EMSA may produce comments with regard to the report's contents and possibly also provide contributions by expert parties. The contractor shall duly consider these comments, provide EMSA with a response thereto and, if deemed necessary, revise the final report to reflect additional elements arising from such comments and within the deadlines agreed between the contractor and EMSA. The contractor shall deliver the revised final report within 15 days after the date of the final meeting. EMSA shall approve the final report of the study and its revision, if any, if it meets the requirements specified in section 2.2 above and includes the content of the approved report of part a), within one month after its delivery by the contractor, but not later than 9 months after the date of signature of the contract. The contractor shall use mandatorily the EMSA template for the final report of the study (Annex A.29 "Report EMSA format contractors"), which includes a standard disclaimer and shall be part of the procurement documents.

The meetings shall be held at EMSA premises in Lisbon and with physical presence of a representative of the contractor. The contractor shall cover all expenses in relation to these meetings within the price of the provided service.

5. Timetable

The estimated date for signature of the contract is February 2024. The provision of services shall be completed in 8 months.

The study timetable shall be as follows, in accordance with the planning referred to above:

Kick-off meeting	It shall be held on a date to be agreed between EMSA and the contractor, not later than 30 days after the date of signature of the contract.
Report of part a) of the study	It shall be delivered within the 30 days counted immediately after 4 months have elapsed from the date of signature of the contract.
Interim meeting	To be held on a date to be agreed with the contractor between 4 and 5 months after the date of signature of the contract.
Approval process	In between months 5 and 7

Final report of the study, containing part a) and part b) of the study	It shall be delivered within the 15 days counted immediately after 7 months have elapsed since the date of signature of the contract.
Final meeting	To be held on a date to be agreed with the contractor between 7,5 months and 8 months after the date of signature of the contract.
Approval process	In between months 7.5 and 9

6. Estimated Value of the Contract

The maximum budget available for this contract is EUR 120,000.00 excluding VAT.

7. Terms of payment

Payments will be made in accordance with the provisions of the draft **Service Contract** available in the Procurement Section under the call to tender **EMSA/NEG/10/2023** on EMSA's website (www.emsa.europa.eu). The successful tenderer(s) shall take the appropriate measures to be compliant with the e-invoicing conditions as set out in the draft contract.

8. Terms of contract

When drawing up a tender, the tenderer shall bear in mind the terms of the draft Service Contract.

The Contractor may, during the implementation of the Contract, replace the team members in charge of delivering the services with other ones by informing EMSA in advance and provided that they comply with the set selection criteria and have same or equivalent education and experience as per the set standards. Replacements of the team members shall be assessed by the designated EMSA project officer and shall be subject to an amendment to the Contract.

EMSA may, before the contract is signed, cancel the award procedure without the tenderers being entitled to claim any compensation.

9. Financial guarantees

Not applicable.

10. Subcontracting

If the tenderer intends to either subcontract part of the work or realise the work in co-operation with other partners it shall indicate in its offer which part will be subcontracted, as well as the name and qualifications of the subcontractor or partner. It should be noted that the overall responsibility for the work remains with the tenderer.

The tenderer must provide required evidence for the exclusion and selection criteria on its own behalf and, when applicable, on behalf of its subcontractors. The evidence for the selection criteria on behalf of subcontractors must be provided where the tenderer relies on the capacities of subcontractors to fulfil

selection criteria⁵. The exclusion criteria will be assessed in relation to each economic operator individually. Concerning the selection criteria, the evidence provided will be checked to ensure that the tenderer and its subcontractors as a whole fulfil the criteria. However, the selection criteria may apply individually where it is relevant in view of their nature.

11. Requirements as to the tender

Tenders can be submitted in any of the official languages of the EU. However, as the main working language of the Agency is English, tenders should preferably be submitted in English and shall in particular include an English version of the documents requested under points 14.5 and 16 of the present Tender Specifications. The tenderer must comply with the minimum requirements provided for in these Tender Specifications. This includes compliance with applicable obligations under environmental, social and labour law established by Union law, national law and collective agreements or by the international environmental, social and labour law provisions listed in Annex X to Directive 2014/24/EU of the European Parliament and of the Council.⁶

The tenderer shall complete the Tenderer's checklist.

If the tenderer intends to either subcontract part of the work or realise the work in co-operation with other partners (Join Offers) it shall indicate it in its offer by completing the form "Statement of Subcontracting / Joint Offer". This document is available on the Procurement Section / Calls for Tenders (Documents for tenderer) of EMSA's website (www.emsa.europa.eu).

The tender must be presented as follows and must include:

- a) A signed **cover letter** indicating the name and position of the person authorised to sign the contract, including up-to-date proof of that authorisation, the bank account on which payments are to be made and the email address to be used for contacts during the procurement procedure. The cover letter shall be accompanied by the **Authorised Signatory Form** duly completed and signed. This document is available on the Procurement Section of EMSA's website (www.emsa.europa.eu)
- b) **The Financial Identification Form completed**, signed and stamped. This document is available on the Procurement Section of EMSA's website (www.emsa.europa.eu).
- c) **The Legal Entity Form** completed, signed by the person authorised to sign the contract and stamped along with the requested accompanying documentation, including up to date proof of that authorisation. This document is available on the Procurement Section of EMSA's website (www.emsa.europa.eu)

Tenderers are exempt from submitting the Legal Entity Form and Financial Identification Form requested if such a form has already previously been completed and sent to EMSA. In this case the tenderer shall simply indicate on the cover letter the bank account number to be used for any payment in case of award.

Part A: All the information and documents required by the contracting authority for the appraisal of tenderers on the basis of the points 10, 13 13 and 14.2 of these specifications (exclusion criteria).

⁵ To rely on the capacities of a subcontractor means that the subcontractor will perform the works or services for which these capacities are required.

⁶ Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC (OJ L 94, 28.3.2014, p. 65).

Part B: All the information and documents required by EMSA for the appraisal of tenderers on the basis of the Legal and Regulatory capacity (part of the selection criteria) set out under point 14.3 of these Tender Specifications.

Part C: All the information and documents required by the contracting authority for the appraisal of tenderers on the basis of the Economic and Financial Capacity (part of the selection criteria) set out under point 14.4 of these specifications.

Part D: All the information and documents required by the contracting authority for the appraisal of tenderers on the basis of the Technical and Professional capacity (part of the selection Criteria) set out under point 14.5 of these specifications.

Part E: All the information and documents required by the contracting authority for the appraisal of tenders on the basis of the **Award Criteria** set out under point 1616 of these specifications;

Part F: Setting out prices in accordance with point 12 of these specifications.

12. Price

- a) Price must be quoted for Study on the identification of specific competences and training requirements for seafarers on ships using alternative fuels and energy systems for safe ship operations (TRAINALTER). Price shall be all inclusive, covering any costs related to the tasks and deliverables mentioned in Section 2 above and any other associated costs (e.g., costs for the required meetings and travel deemed necessary for the completion of the study). Price must be fixed amounts and non-revisable.
- b) Prices must be quoted in euro.
- c) Under Article 3 and 4 of the Protocol on the privileges and immunities of the European Union, the latter is exempt from all duties, taxes and other charges, including VAT. This applies to EMSA pursuant to the Regulation 1406/2002/EC. Therefore, price and the amount of VAT must be shown separately.

13. Joint Offer

Groupings, irrespective of their legal form, may submit tenders. Tenderers may, after forming a grouping, submit a joint tender on condition that it complies with the rules of competition. Such groupings must specify the company or person heading the project and must also submit a copy of the document authorising this company or person to submit a tender.

Each member of the group must provide the required evidence for the exclusion and selection criteria. The exclusion criteria will be assessed in relation to each economic operator individually. Concerning the selection criteria, the evidence provided by each member of the group will be checked to ensure that the group as a whole fulfils the criteria. However, the selection criteria may apply individually where it is relevant in view of their nature.

If awarded, the contract will be signed by the person authorised by all members of the group. Tenders from groups of service providers, contractors or suppliers must specify the role, qualifications and experience of each member or group.

14. Information concerning the personal situation of the tenderer and information and formalities necessary for the evaluation of the minimum economic, financial, technical and professional capacity required.

14.1 Legal position – means of proof required

When submitting their tender, tenderers are requested to complete and enclose the **Legal Entity Form** available on the Procurement Section of EMSA's website (www.emsa.europa.eu).

14.2 Grounds for exclusion – Exclusion criteria

To be eligible to participate in this contract award procedure, a tenderer must not be in any of the exclusion situations listed in the Declaration of Honour.

For this purpose, the Declaration of Honour available on the Procurement Section of EMSA's website (www.emsa.europa.eu) shall be completed and signed.

14.3 Legal and regulatory capacity – Selection criteria

14.3.1 Standards / Prerequisites

The tenderer must have the legal and regulatory capacity to pursue the professional activity needed for performing the contract.

14.3.2 Evidence

LEF

14.4 Economic and financial capacity – Selection criteria

14.4.1 Standards / Prerequisites

- a) The tenderer must be in stable financial position and must have the economic and financial capacity to perform the contract.
- b) The tenderer must not be subject to EU restrictive measures adopted under Article 29 of the Treaty on the European Union (TEU) or Article 215 of the Treaty on the Functioning of the EU (TFEU) substantially affecting the performance of the contract (e.g., asset freezes and/or a prohibition on making funds or economic resources available). The prohibition applies throughout the whole performance of the contract.

14.4.2 Evidence

- a) Financial statements or their extracts for the last three years for which accounts have been closed.
- b) Self-declaration that the tenderer is not subject to restrictive measures (e.g., asset freezes and/or a prohibition on making funds or economic resources available) substantially affecting the performance of the contract. Please note that, for this purpose, point B.I.7.b) of the Declaration of Honour is also deemed as sufficient evidence.

Tenderers are exempt from submitting the documentary evidence if such evidence has already been completed and sent to EMSA for the purpose of another procurement procedure and the provided documents are up to date. In this case the tenderer shall simply indicate on the cover letter the procurement procedure where the evidence has been provided.

If, for some exceptional reason which EMSA considers justified, a tenderer is unable to provide one or other of the above documents, it may prove its economic and financial capacity by any other document which EMSA considers appropriate. In any case, EMSA must at least be notified of the exceptional reason and its justification in the tender. EMSA reserves the right to request at any moment during the procedure any other document enabling it to verify the tenderer's economic and financial capacity.

14.5 Technical and professional capacity – Selection criteria

14.5.1 Standards / Prerequisites

The tenderer and its proposed team, which shall be composed of at least two persons, shall have the relevant experience and expertise to perform the contract, namely:

- a) The technical expertise of the team, gained by education and work experience of its members, shall cover the areas referred to below. The criteria on education and minimum experience in years listed below may be met cumulatively by the proposed team.
 - I. Alternative fuels and energy systems for shipping at least at a conceptual level: minimum work experience of 2 years related to alternative fuels and energy systems for shipping;
 - II. Production, storage, transfer or transport of substances that currently are or can be potential alternative fuels: specific education related to this subject justified by a degree and minimum specific work experience of 2 years;
 - III. Design and implementation of competence-based education and training as maritime education and training programmes, course design and implementation in line with the provisions of the STCW Convention⁷ and the STCW Code: minimum specific work experience of 2 years.

All team members shall be fluent in English verbal and writing (level B1 or higher).

- b) The tenderer: Experience in conducting research, including academic research, and drafting reports: minimum experience of 3 years.

14.5.2 Evidence

- a) Professional CV's of the team members proposed for the project in Europass format⁸ or equivalent. The details of educational and professional qualifications, the language's level (as per

⁷ International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended.

⁸ <https://europa.eu/europass/en/create-europass-cv>

EuroPass standards)⁹ of the persons providing the services, as listed in the previous sub-section, as well as the work experience, shall be mentioned.

- b) Name, value and short description of the subject matter of at least 2 examples of technical projects undertaken in the past 3 years (research, innovation, demonstration, development, work) by the tenderer, as project manager, in the fields of the following groups: 1) alternative fuels and energy systems for shipping, at least at a conceptual level; 2) production, storage or transport of substances that currently are or can be potential alternative fuels; 3) maritime education and training programmes and curricula design, and design and implementation and competence-based education and training. These technical projects must not necessarily have addressed all those fields in the same project but, at least, one of the fields of each group shall have been addressed by the technical projects that are presented as examples.

15. Declaration of Honour (DoH)

Please note that the tenderer shall provide information with regards its situation and on the natural or legal persons that are members of the administrative, management or supervisory body or that have powers of representation, decision or control and beneficial owners.

Upon request and within the time limit set by EMSA, the tenderer shall provide the following evidence concerning itself, the natural or legal persons as listed under the first paragraph, and concerning the natural or legal persons which assume unlimited liability for the debt of the tenderer:

For the exclusion situations described in points (a), (c), (d), (f), (g) and (h) of the Declaration of Honour, production of a recent extract from the judicial record is required or, failing that, an equivalent document recently issued by a judicial or administrative authority in the country of establishment of the tenderer showing that those requirements are satisfied.

For the exclusion situations described in (a) and (b) of the Declaration of Honour, production of recent certificates issued by the competent authorities of the country of establishment is required. These documents must provide evidence covering all taxes and social security contributions for which the tenderer is liable, including for example, VAT, income tax (natural persons only), company tax (legal persons only) and social security contributions. Where any document described above is not issued in the country concerned, it may be replaced by a sworn statement made before a judicial authority or notary or, failing that, a solemn statement made before an administrative authority or a qualified professional body in its country of establishment.

The successful tenderer must provide the documents mentioned as supporting evidence before signature of the contract and within the deadline given by EMSA. This requirement applies to each member of the group in case of joint tender.

If the tenderer already submitted such evidence for the purpose of another procedure, its issuing date does not exceed one year and it is still valid, the person shall declare on its honour that the documentary evidence has already been provided and confirm that no changes have occurred in its situation.

16. Award criteria

The contract will be awarded to the tenderer who submits the most economically advantageous tender (the one with highest score) based on the following quality criteria and their associated weightings:

⁹ Level of languages shall be demonstrated either by a certification from an accredited institution or by the participation in international projects whereas the main working language was the language being evaluated.

1. Quality criterion 1 ($W_1 = 35\%$): Proposed methodology for conducting the tasks and achieving the specific objectives 1 to 4, as referred to in part a) of the study and as described in section 2.2. This criterion shall be evaluated based on a draft list of contents of the deliverables and an outline of the methodology proposed for part a) of the study, in terms of completeness and quality with regard to the requested solution. The outline shall not exceed 5 pages.
2. Quality criterion 2 ($W_2 = 35\%$): Proposed methodology for conducting the relevant tasks for achieving the specific objectives 5 to 7, as referred to in part b) of the study and as described in section 2.2. This criterion shall be evaluated based on a draft list of contents of the deliverables and an outline of the methodology proposed for part b) of the study, in terms of completeness and quality with regard to the requested solution. The outline shall not exceed 5 pages.

and the price criterion and associated weighting:

3. Price of the tender ($W_{price} = 30\%$): The price shall be quoted according to Section 12 above.

For all tenders, evaluators will give marks between 0-10 (half points are possible) for each quality criterion.

The score is calculated as

$$S = SQ + SP$$

where:

The average quality for quality criterion i is

$$Q_i = \frac{1}{\text{number of evaluators}} * \sum_{\text{evaluator}} \text{mark of the evaluator for quality criterion } i$$

The overall weighted quality is

$$Q = \sum_i Q_i * W_i$$

The score for quality is

$$SQ = \frac{Q}{Q \text{ of the bid with highest } Q} * 100 * \sum_i W_i$$

The score for price is

$$PP = \sum_i \frac{\text{lowest Price}_i \text{ of all bids}}{\text{Price}_i} * 100 * W_{\text{Price}_i}$$

Only tenders that have reached a minimum of 60 % for Q_1 and a minimum of 60 % for Q_2 will be taken into consideration when calculating the score for quality SQ , score for price SP and score S .

Only tenders that have reached a minimum of 70% for the score S will be taken into consideration for awarding the contract.

17. Evaluation and award

The evaluation of the tenders that comply with the conditions as per Invitation to tender will consist of the following elements:

- Check if the tenderer is not subject to restrictive measures and has access to procurement;
- Verification of non-exclusion of tenderers on the basis of the exclusion criteria;
- Selection of tenderers on the basis of selection criteria;
- Verification of compliance with the minimum requirements specified in the procurement documents;
- Evaluation of tenders on the basis of the award criteria.
- EMSA will evaluate the above-mentioned elements in the order that it considers to be the most appropriate. The successful tenderer(s) must pass all the above-listed elements to be awarded the contract.

18. Rejection from the procedure

Contracts will not be awarded to tenderers who, during the procurement procedure, are in one of the following situations:

- A. are in an exclusion situation;
- B. have misrepresented the information required as a condition for participating in the procedure or have failed to supply that information;
- C. were previously involved in the preparation of procurement documents used in the award procedure where this entails a breach of the principle of equality of treatment, including distortion of competition that cannot be remedied otherwise.

19. Intellectual Property Right (IPR)

Please consult the contract for IPR related clauses.

If the results are not fully created for the purpose of the contract this shall be clearly pointed out by the tenderer in the tender. Information shall be provided about the scope of pre-existing rights, their source and when and how the rights to these rights have been or will be acquired.

In the tender all quotations or information originating from other sources and to which third parties may claim rights have to be clearly marked (source publication including date and place, creator, number, full title etc.) in a way allowing easy identification.