

MARINE ENVIRONMENT PROTECTION
COMMITTEE
70th session
Agenda item 5

MEPC 70/INF.40
19 August 2016
ENGLISH ONLY

AIR POLLUTION AND ENERGY EFFICIENCY

Study on the completion of an EU framework on LNG-fuelled ships and its relevant fuel provision infrastructure

Submitted by the European Commission (EC)

SUMMARY

Executive summary: This document reports the final results of a study commissioned by the European Commission on the completion of an EU framework on LNG-fuelled ships and its relevant fuel provision infrastructure. The study is divided in three parts (lots), addressing different aspects of LNG as marine fuel: a gap analysis of the current framework for marine LNG distribution, bunkering and use (Lot 1); identification and analysis of risks and opportunities, along with a strategy for enhancement of awareness and informed public perception (Lot 2); and a study, with the identification of marine LNG fuel market overview, with estimations and different forecast scenarios (Lot 3).

Strategic direction: 13.0

High-level action: 13.0.2, 13.0.3

Output: 13.0.3.1

Action to be taken: Paragraph 19

Related documents: None

Introduction

1 This document reports the final results of a study commissioned by the European Commission on the completion of an EU framework for LNG-fuelled ships and related fuel provision infrastructure. It brings to the attention of the Committee the wide scope of the study, which addresses the various aspects of the development and implementation of LNG as an alternative fuel for shipping. All the elements of the marine LNG fuel chain are addressed, with a particular focus being given to the shore side and ship-shore interface, highlighting the relevance of bunkering operations and their regulatory context, for the safety of operation and confidence in the adoption of LNG as fuel for shipping.

2 The *International Code of Safety for Ships using Gases or other Low-flashpoint Fuels* (IGF Code), along with amendments to make the Code mandatory under SOLAS, were adopted at MSC95, on 11 June 2015, respectively by resolutions MSC.391(95) and MSC.392(95), due to enter into force on 1 January 2017. Whereas the IGF Code includes provisions for LNG fuelled ships' construction and operation, other aspects of the marine LNG fuel chain also needed to be addressed. From distribution to use, including bunkering, LNG risks and safety can only be fully analysed within a broader context.

3 Lot 1 of the study addresses remaining regulatory gaps and provides recommendations on how to further proceed. It, amongst others, takes into account several ongoing processes in the International Organization for Standardization (ISO) on the development of different standards supporting the use of LNG by ships (e.g. ISO 20519 on LNG bunkering, new standard for specification of LNG as marine fuel, new standard for LNG bunker connectors), as well as industry's guidelines (e.g. IACS, SGMF, IAPH) addressing LNG bunkering operations.

4 The study has also been debated in the European Sustainable Shipping Forum (ESSF) where all aspects of sustainable shipping relevant to a cost-efficient and coherent implementation of the new rules on sulphur emissions from ships are discussed. The ESSF brings together 29 States and 30 maritime organisations to enable a structured dialogue, exchange of best practices and coordination of current issues with, among others, a dedicated sub-group on LNG. The sub-group on LNG was acting as a steering committee for the study, providing guidance to its authors.

5 The study has primarily a European dimension, but its results may be considered useful for other regions, and especially the analysis and recommendations of Lot 1.

Overview of the objectives and results of the EU LNG Study

6 The use of gas as fuel, particularly liquefied natural gas (LNG), has increased in recent years owing, notably, to stricter regulation requirements on sulphur oxides, nitrogen oxides and particulate matter emissions, as introduced by the Revised MARPOL Annex VI. With the exception of Norway, the take-up of LNG as ship fuel in Europe is still in an early stage; key stakeholders typically identify three main barriers: 1) lack of adequate bunker facilities for LNG; 2) gaps in the legislative or regulatory framework; and 3) lack of harmonized standards.

Lot 1: Analysis and evaluation of identified gaps and of the remaining aspects for completing an EU-wide framework for marine LNG distribution, bunkering and use

7 The aim of Lot 1 of the study was to propose solutions for the second and third aspect. A previous study commissioned by the European Maritime Safety Agency (EMSA) and published in February 2013¹, provided a detailed description of the existing regulatory framework related to LNG bunkering and identified missing rules for bunkering LNG and related aspects through a gap analysis. The overall objective of the current study is to analyse, further evaluate and propose solutions to the identified gaps and barriers based on the findings of the EMSA study and on the developments that have taken place since.

¹ Final report of the EMSA commissioned study on standards and rules for bunkering of gas-fuelled ships: <http://www.emsa.europa.eu/emsa-documents/latest/item/1714-study-on-standards-and-rules-for-bunkering-of-gas-fuelled-ships.html>

- 8 The study covers the following key elements:
- .1 an overview of currently applicable standards, rules and regulations governing the maritime LNG supply chain;
 - .2 a gap analysis identifying the gaps in the current regulatory framework in order to make LNG bunkering and LNG fuelled vessels feasible in the EU;
 - .3 a set of recommendations addressing the gaps identified; and
 - .4 an impact assessment of the prioritised recommendations and actions.

9 The assessment of the existing rules, standards and guidelines shows that, from a legal point of view, there are no remaining major barriers for the use of LNG as fuel or for the deployment of LNG bunker facilities. The remaining standardization challenges, particularly with regards to the development of an international standard on LNG bunker connectors, are currently the object of current and relevant work at ISO.

10 Further to the above, one of the specific aims of this study was also to identify harmonization opportunities with respect to the aspects of permitting, quantitative risk assessment and incident reporting. Since the finalization of the study, this has been a continuous area of work in the ESSF, in particular with support to the development of specific guidance on these subjects, in the wider context of LNG bunkering.

11 The gap analysis has resulted in a long list of recommendations that could stimulate harmonization across the EU and serve as input into the analysis of the social, economic and environmental and climate change impact of the use of LNG as a bunker fuel, with a view to help achieving the overall objective of reduction of emissions by shipping and of technically addressing the GHGs emissions.

12 Different scenarios were designed for the impact assessment, accounting for different ambition levels in the implementation of the different recommendations resulting from the gap analysis. The recommendations and impact assessment are currently being used by the European Commission to support and stimulate use of LNG as alternative fuel for ships.

Lot 2: Creating awareness on LNG risks and opportunities

13 The purpose of Lot 2 was to develop an understanding of the current stakeholder perception of opportunities and barriers regarding LNG as a shipping fuel by main stakeholder groups and to develop awareness on this matter. The specific objectives of this study were, in particular, to provide a general overview of risks and opportunities regarding the storage, provision and use of LNG as a marine fuel for shipping, to identify the reasons behind the negative public perception of the dangers of using LNG as a fuel for ships, and to develop informative materials on LNG in close cooperation with all stakeholders concerned.

14 The study focuses on the results of the stakeholders' interviews, conducted from November 2014 to January 2015, and on the information campaign, conducted from March to June 2015.

15 One of the most important conclusions of the study was that the lack of a complete harmonized set of standards and regulations is perceived as an issue, but the overall conviction was that the industry is making good progress in solving this issue and that this should not be a major problem in the future. Also, the lack of knowledge amongst the responsible authorities, which are not always familiar with LNG and its benefits, has been

identified as an obstacle to the uptake of LNG in the maritime sector. To address the last issue, an awareness raising campaign has been launched, providing balanced information on the risks and opportunities of the use of LNG as a fuel for the shipping industry. As part of the campaign, a dedicated website was developed (www.lngforshipping.eu), five stakeholder events were organised in different parts of Europe (including one organised back to back with MEPC 68), and information material was published (videos, brochure and flyer – available on the project's website).

Lot 3: Analysis of the LNG market development in the EU

16 Lot 3 of the Study analyses the development of the LNG market in the EU by:

- .1 providing a qualitative analysis of the most important drivers and barriers with respect to the use of LNG as a ship fuel;
- .2 quantitatively analysing the economic feasibility of the use of LNG in 10 EU ports; and
- .3 developing scenarios for the uptake of LNG from 2020 to 2030.

17 The qualitative analysis shows that amongst the main drivers of demand for LNG are environmental, both international and local (EU), regulations and the price difference between LNG and other fuels. The main barriers are uncertainty about the availability of LNG in ports, about technical standards, and about the second-hand-price of LNG ships.

18 The case studies show that in most cases LNG is an attractive option from the shipowner's perspective if the fuel price difference is larger than today, as is the case in many projections for 2020 to 2030. Scenarios with smaller price differences between LNG and oil fuels are also addressed, together with corresponding cost-benefit analyses.

Action requested of the Committee

19 The Committee is invited to note the information contained in the final reports of the study on the on the completion of an EU framework on LNG-fuelled ships and its relevant fuel provision infrastructure. Results of the three lots of the study are publicly available through the European Commission's website:

Lot 1 – Analysis and evaluation of identified gaps and of the remaining aspects for completing an EU-wide framework for marine LNG distribution, bunkering and use:
<http://ec.europa.eu/transport/modes/maritime/studies/doc/2015-12-lng-lot1.pdf> ;

Lot 2 – Creating awareness on LNG risks and opportunities:
<http://ec.europa.eu/transport/modes/maritime/studies/doc/2015-12-lng-lot2.pdf> ; and

Lot 3 – Analysis of the LNG market development in the EU:
<http://ec.europa.eu/transport/modes/maritime/studies/doc/2015-12-lng-lot3.pdf> .