

IOGP input to the inception impact assessment on the FuelEU Maritime

Introduction

The International Association of Oil & Gas Producers' (IOGP) shares the global ambition to tackle climate change in the framework of the Paris Agreement and supports the EU's objective of climate neutrality by 2050. There are many challenges on the road to meet this objective as the energy transition will require significant investments, new technologies, effective policies and behavioural changes. We, therefore, welcome the EU's initiative to accelerate the achievement of lower-emission, climate-neutral shipping and ports by promoting the uptake of sustainable alternative fuels.

Furthermore, we appreciate the European Commission's recognition of the critical challenges to decrease greenhouse gas (GHG) emissions from the shipping industry, such as the current lack of regulatory predictability and high risk of investment choices, technological aspects, price factors, interdependency issues and avoidance of carbon leakage. In its upcoming assessment, the European Commission should, therefore, consider a wide range of existing and emerging solutions that could assist with decreasing carbon in the sector and help reduce overall emissions. Our industry is looking forward to working closely with all relevant stakeholders in the future to offer sustainable and cost-effective solutions. We further elaborate on this below as a response to the inception impact assessment of the FuelEU Maritime initiative with a focus on liquefied natural gas (LNG) and hydrogen, as these technologies could contribute to a reduction of emissions in the maritime sector.

LNG as a mid and long-term decarbonization option

Many elements need to be considered when choosing the right mix of alternative fuels, such as return on investment, compatibility with the existing assets and infrastructure, short vs. long-distance, emissions reduction potential, technology maturity, and many others. Taking all these factors into consideration, we believe that LNG is a well-developed and market-ready alternative fuel of choice that can reduce carbon emissions and significantly improve air quality in ports and coastal areas.

The Sea-LNG CE Delft Study report¹ from 2020 shows that LNG can future-proof ship-owners' investments against increasingly stringent GHG emission reduction regulations on local and GHG emissions. LNG, through blending with liquefied biomethane (LBM), offers a clear potential pathway to net-zero carbon emissions from shipping. By investing in LNG-fuelled vessels now, ship-owners can realize immediate GHG benefits – up to 21% on a Well-to-Wake basis, and 28% Tank-to-Wake according to the CE Delft Study. These LNG based assets, with little or no modifications, can use non-fossil fuel methane such as LBM and liquefied synthetic methane (LSM), initially as drop-in fuels. **As LBM and LSM become available at scale, they can contribute to reducing GHG emissions and reaching the ambitions of the EU.**

IOGP has been a member of the European Sustainable Shipping Forum (ESSF) since early 2019. The ESSF has a clear understanding that natural gas, in general, and LNG in particular, can play an essential and positive role in improving air quality and lowering emissions overall in the marine sector emissions.

¹ <https://sea-lng.org/ce-delft-study-confirms-bio-and-synthetic-lng-provide-a-viable-pathway-towards-decarbonisation/>

Moreover, LNG offers a solution for short and long-distance large vessels. This quality has to be recognized when LNG is compared with other technologies, such as batteries, which constitute a supplement to traditional ship engines rather than an alternative. Based on current technology, large vessels cannot sail across oceans running on electric engines² alone. It is also evident that, due to the ambitious IMO strategy aiming to decrease, by at least 50% GHG by 2050, in comparison to 2008, the shipping industry will need to be ready to build lower-carbon vessels in the next 10-15 years. The use of LNG offers an immediate answer to the IMO ambition, whereas in the long-term the use of LBM, LSM, hydrogen, ammonia, methanol and other options can achieve net-zero and contribute to further lowering emissions.

The role of LNG: Contribution to Climate Change Mitigation and Environment

The European Maritime Safety Agency (EMSA) identified LNG as the cleanest option for maritime transport to significantly reduce its emissions³. LNG, as a transportation fuel, offers substantial benefits to the environment, improves air quality and reduces GHG emissions. Its combustion emits less CO₂ than currently used conventional liquid fuels and has very low pollutant emissions (NO_x & SO_x and particulate matter (PMs)) both well-to-tank and tank-to-propeller⁴.

Name	Carbon Dioxide	Nitrogen Oxide	Sulphur Oxide	Particulate Matters
Acronyms	CO ₂	NO _x	SO _x	PM
Negative effect	GHG – world T°Global Warming (Greenhouse Gas)	Human Health, Eutrophication	Respiratory problems Eutrophication, Human Health	Urban Air Pollution (Human Health) Lungs and heart problems
LNG Benefit	-20% to -30%	- 58% to -80%	-100%	-100%

Source: IOGP based on EEA figures. See EEA Report 22/2017, p. 42

The Commission agreed in its Communication (COM2016/49) that the use of LNG in shipping can reduce emissions of various pollutants and can allow the sector to meet the requirements for decreasing NO_x and SO_x emissions from ships operating in the Emission Control Areas. Since then the Commission has worked to establish a harmonised regulatory and standardisation framework that encourages the development of LNG in shipping, in cooperation with stakeholders, inter alia, through the European Sustainable Shipping Forum.

A well-developed EU LNG capacity will also be beneficial for countries outside of Europe. China's plan, for instance, for a modern sea-based "silk road" of ports linking Asia with Europe could help reduce CO₂ emissions, if both ports of arrival and departure offer LNG hubs. The EU would hence create a global "Blue Corridor" by securing LNG infrastructures to support LNG-fuelled ships.

The European Commission's proposal to extend the scope of the EU ETS to cover maritime transport needs to be carefully assessed (e.g. the impact on the number of EUAs available on the market).

LNG: Available Product and Infrastructure

LNG is one of the few products that contribute to the decarbonization of the industry while ensuring the security of supply. LNG is a global commodity and is already available, in large volumes, at about 150 locations worldwide through existing liquefaction plants and regasification terminals. This bulk infrastructure continues to grow with some 50 more plants currently under construction. Of the top 25 global ports ranked by volume of trade, LNG is already available in 24 of them⁵. At the same time, the global LNG production is expected to increase from 250 Mio T/year in 2016 to around 630 Mio T/year by 2050⁶.

The EU LNG market is growing as well. The Commission's market report states that for the first time, in Q4 2019 LNG became the second source of gas to in the EU increasing by 42% year-on-year⁷. The average EU LNG regasification terminal utilization rate in the EU was 51% on average in 2019⁸. It is also expected that global LNG markets are set to expand with new volumes entering the European market from the US, Qatar, Russia, Africa, and Australia.

² Some ships do cross with electric engines but using a diesel-electric configuration.

³ EMSA, Guidance on LNG Bunkering to Port Authorities, 31.01.2018

⁴ DNV GL, Assessment of the Selected Alt Fuels and Technologies, June 2019, p. 9

⁵ IEA, Energy Outlook, 2017

⁶ Energy Transition Outlook 2018, DNV GL

⁷ Quarterly Report Energy on European Gas Markets, DG Energy, 2019, https://ec.europa.eu/energy/sites/ener/files/quarterly_report_on_european_gas_markets_q4_2019_final.pdf

⁸ Quarterly Report Energy on European Gas Markets, DG Energy, 2019, https://ec.europa.eu/energy/sites/ener/files/quarterly_report_on_european_gas_markets_q4_2019_final.pdf

The market attractiveness is closely linked with the existing infrastructure. The infrastructure to support LNG as a marine fuel has grown significantly. It can now be delivered to vessels in some 93 ports (globally) with a further 54 ports in the process of facilitating LNG bunkering investments and operations. This begins to answer the “chicken or egg” dilemma as both new LNG-powered vessels are being ordered and major ports around the world are developing infrastructure to service this growing fleet. Bunkering infrastructure in Europe followed the trend with 131 installations offering bunkering services in 2019 compared to 113 in 2018⁹. EU’s small-scale LNG infrastructure provides sustainable and flexible logistic services in ports. Given these benefits, EU authorities should boost the LNG bunkering infrastructure through appropriate policy framework like the Alternative Fuels Infrastructure Directive and via EU funding.

Hydrogen as a long-term decarbonization option

Hydrogen (H₂) is another attractive and viable alternative fuel since it emits zero CO₂, zero SO_x and only negligible amounts of NO_x. Hydrogen can be used as fuel in several different ways, i.e. in fuel cells; in a dual fuel mixture with conventional diesel heavy fuel oils (HFO); and lastly as a replacement for HFO for use in combustion machinery. So far, there is no standardized design and fuelling procedure for hydrogen-powered ships and its bunkering infrastructure. Furthermore, remaining safety design issues with regards to the volatility of the fuel need to be resolved.

We encourage the Commission to consider hydrogen as an option to reduce carbon emissions in the shipping industry. In this context, it is essential to:

- Conduct analysis on H₂ and fuel cells maritime applications.
- Impact potential (emissions reductions, etc.).
- Identify barriers and opportunities for RD&D (e.g. on tank volume for storage) and addressing regulations, codes and standards.
- Focus on global collaborations to accelerate progress.

Final Remarks

The European oil and gas producers are ready to help the shipping industry in its efforts to decrease CO₂ emissions. Overall, we support a holistic approach to the decarbonization of shipping through the deployment of a wide range of low-carbon and low-emission fuels (like LNG/bio-LNG, synthetic LNG, ammonia¹⁰, methanol, liquids such as bio- and e-fuels or hybrid options). Any approach to reduce shipping emissions should consider societal costs of GHG abatement along the full value chain (from ship design to port infrastructure and fuel R&D) and the carbon leakage potential.

As the CO₂/GHG released during the production of fuels/energy carriers can differ significantly, regardless of whether they are fossil, bio, synthetic or non-carbon, the lifecycle assessment of all considered fuels needs to be appropriately performed to reflect the holistic GHG emission reduction potential correctly. In this context, the oil & gas industry is rapidly mastering its methane emissions, with best performers spreading their good practices in the entire sector (through initiatives like OGCI, IPIECA, Methane Guiding Principles), while the methane slip in new generation motors is divided by two.

Finally, we believe that global solutions to lowering CO₂ emissions from the shipping industry should be sought. We, therefore, encourage any measures introduced by the EU to be compatible with and complementary to IMO measures. This approach should not in any way be taken as a reason to slow down the EU’s ambition, but rather a design consideration to ensure transparency and future integration of any European measure back into a global system (i.e. by using IMO based definitions and using the same baselines and accounting methodologies).

⁹ https://sea-lng.org/wp-content/uploads/2020/02/200214_SEALNG2019reviewDIGITAL_compressed.pdf

¹⁰ The European Union allocated €10m funding to a maritime innovation project looking to install the world’s first ammonia-powered fuel cell on a vessel. The ShipFC project is being run by a consortium of 14 European companies and institutions, coordinated by the Norwegian cluster organisation NCE Maritime CleanTech, and has been awarded backing from the EU’s Research and Innovation programme Horizon 2020 under its Fuel Cells and Hydrogen Joint Undertaking (FCH JU).