Waiting is not an option

by Adi Aggarwal, *General Manager, SEA-LNG*

Our organisation has recently released an analysis that looks at retrofitting costs of a very large crude carrier (VLCC) to use liquefied natural gas (LNG) as a marine fuel within the context of the upcoming International Maritime Organization's (IMO) Carbon Intensity Indicator (CII). Let us go step-by-step why, in light of our research, LNG retrofits now have a robust and long-term business case.

CII is a gauge of how efficiently a ship transports cargo and is measured in grams of CO_2 emitted per deadweight tonne capacity and nautical mile. Once the regulatory measure goes into effect on 1 January 2023, CII thresholds will tighten annually, requiring owners to document vessel performance and demonstrate that the ship has achieved the required level for the year. On an A-E scale, a ship's carbon intensity rating will be recorded in its Ship Energy Efficiency Management Plan (SEEMP). Tonnage with the lowest scores will have to 'clean up their act,' so to say.

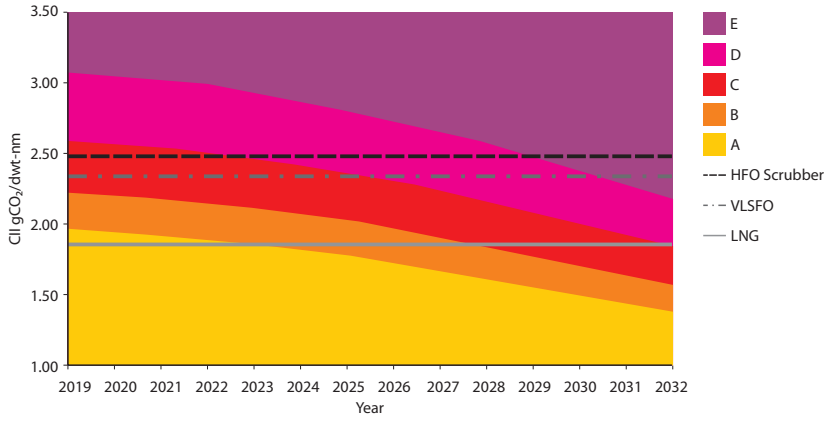
The financial viability of vessels just a few years old could be severely threatened if significant action to reduce emissions, such as alternative fuel adoption, is not taken. Increasingly stringent environmental regulations (among others, the IMO's CII) will drive down the value of assets that are not in compliance and reduce competitiveness for their owners. Ships powered using heavy fuel oil (HFO) will rank poorly within the CII grades for existing vessels, which will, in turn, have a detrimental effect on their charter rates.

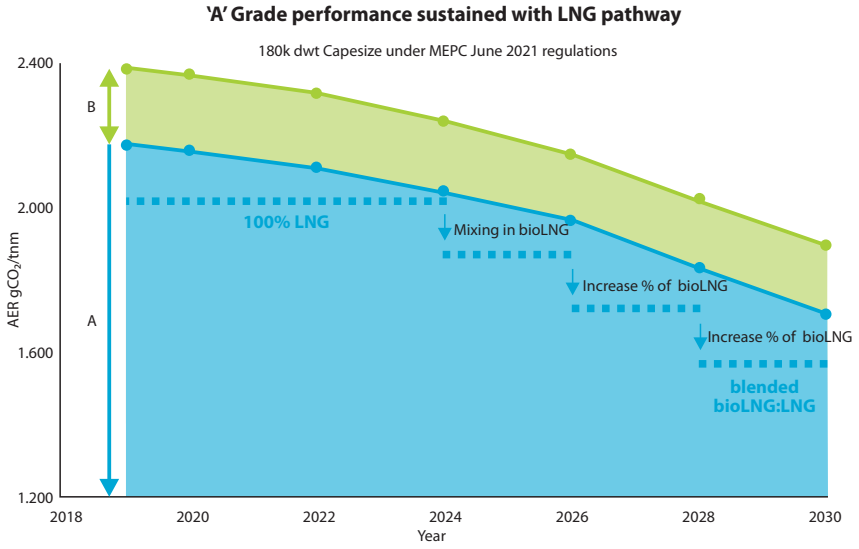
Due to pressure from some major charterers and cargo owners – such as IKEA, Unilever, and Amazon – a strong CII rating of 'major superior' A or 'superior' B will be more desirable. The IMO also encourages port authorities, governments, and other stakeholders to offer incentives for ships with superior CII ratings.

Throughout the asset's life

SEA-LNG's latest analysis looks at the investment performance of three available 2-stroke propulsion options. The most cost-effective solutions available for shipowners were chosen for the comparison: a current VLCC sailing on very low sulphur fuel oil (VLSFO), an HFO-run and scrubber-retrofitted VLCC, and a retrofitted VLCC powered by LNG.

The study found significant benefits to choosing an LNG retrofit over the analysed alternatives to achieve the same





investment outcome on a net present value basis over a ten-year period. As one of the infographics highlights, adopting LNG fuel on a VLCC improves CII ratings substantially, giving and maintaining a one-to-two-grade improvement over alternatives throughout the asset's remaining life. LNG came out as the best fuel option for owners considering how to restore financial viability by securing favourable CII ratings through retrofit. The LNG-retrofit vs HFO-scrubber vs VLSFO rating gap provides a clear commercial advantage to owners who choose the LNG pathway to decarbonisation.

Short to medium to long term

In a previous analysis conducted by SEA-LNG in February 2022, the team evaluated the performance of LNG for a Capesize bulk carrier. It compared emissions for two identical 180k dwt vessels, one using conventional, oil-based marine fuels and the other running on LNG as a marine fuel.

As shown in the other figure, the results highlighted that the LNG-fuelled vessel immediately rated two grades higher than the conventionally-powered vessel. Therefore, LNG can be the difference between having a 'moderate' C-rated ship and having a 'major superior' A-scoring vessel on the IMO's CII scale.

As outlined in our research sets, LNG-fuelled vessels can also gain improved carbon intensity ratings by incrementally adopting drop-in carbon-neutral bioLNG in the short to medium term or net-zero renewable synthetic eLNG in the longer term. February's bulk carrier research also showed that for every 10% increase in the content of the bioLNG variant in a blend with traditional LNG, the vessel gains two years of additional CII compliance. By following the LNG pathway to decarbonisation, using bioLNG and eLNG, a ship commissioned yesterday, today, and in the future can retain a favourable CII rating as 'major superior' A or 'superior' B throughout its lifetime.

A stock and flow problem

The LNG pathway doesn't only offer a route to net-zero emissions. It also allows shipowners to act now on their greenhouse gas emissions (GHG-E). The climate emergency we face is stock as well as a flow problem. By retrofitting their existing fleet to run on LNG, owners can start reducing GHG-E now and over the remaining lifetime of the vessel, keeping climate-warming emissions from entering the atmosphere. It is increasingly clear that waiting is not an option anymore.

As we see it, LNG is a safe, mature, commercially viable marine fuel offering high GHG-E reduction performance and a pragmatic pathway to a net-zero future. With drop-in bioLNG or eLNG options, the LNG-fuelled vessels are future-proofed, enabling compliance with GHG-E reduction targets as the shipping industry moves towards its 2050 emissions goal.

It is important that improving the environmental performance of the existing fleet is not overlooked. The current ocean-going fleet counts over 50,000 ships (worth around $1.8 trillion), transporting an estimated 11 billion tonnes of goods each year. If some of these can be retrofitted with alternative fuel capabilities – rather than being scrapped – the environmental benefits are significant.

Retrofitting vessels to use LNG and its lower emission drop-in variants helps future-proof vessels, reduce costs, and improve returns. For owners, modernising a ship through retrofit can be carried out more quickly than building a new vessel. Newbuilds typically take around two years to construct. Accessing and scheduling work with a retrofit yard is often easier, as they have more capacity than newbuilding yards. Retrofitting can also usually be arranged as part of a planned dry-docking, meaning out-of-service time and lost revenue are reduced across the entire project.

As alternative fuels and regulations progress, it is paramount that we re-evaluate previous investments. And LNG retrofits now have a strong business case. ■

SEA-LNG Founded in 2016, with numerous high-profile members including shipping companies, ports, LNG suppliers, bunkering companies, infrastructure providers, original equipment manufacturers, classification societies, banks, and brokers, SEA-LNG is a multi-sector industry coalition whose members work together to demonstrate the benefits of LNG and its variations as a marine fuel throughout the entire value chain. Head to **sea-lng.org** for more info.