

Introduction

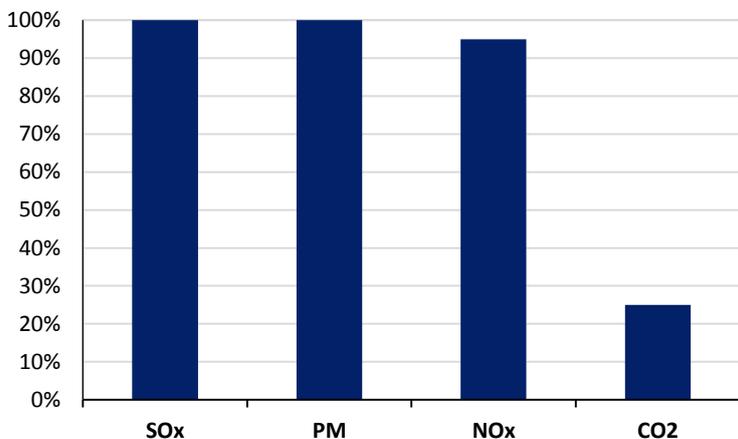
LNG has seen a significant shift over the past few decades. Firstly it was seen only as a competitor to oil and pipeline gas in the power-supply markets. Then during the 1990's it was touted as the cleanest fossil fuel followed by significant investment in both liquefaction and regasification infrastructure, which built a global network for supply and demand. Then from about 2010, LNG was seen as a significant and potentially environmentally friendly option for fuelling vessels. Slowly infrastructure for LNG bunkering started to enter the market. As outlined last month, when we looked at the LNG fuelled fleet, there is a growing number of owner/operators switching to LNG as a fuel.

However, recently there has been increased discussion about the environmental suitability of LNG as a bunker fuel. It would seem that this issue is now more than just discussion, with the World Bank taking the stance that governments should stop supporting the development of LNG infrastructure.

That's enough now

The World Bank understands the inherent benefits of utilising LNG as a bunker fuel. Compared to heavy fuel oil (HFO), LNG emits virtually no sulphur oxides (SO_x), virtually no particulate matter (PM), offers a reduction in nitrogen oxides (NO_x) of around 95%, and up to a 30% reduction in carbon dioxide (CO₂). The general discussion has moved on from stack emissions of a vessel to the more inclusive overall theme of lifecycle green house gas (GHG) emissions. The Bank highlights that LNG is liquid methane, which is itself a highly potent GHG. Any unburnt methane emissions from engine combustion via methane slip can offset the theoretical GHG benefits of using LNG.

Emission Reduction LNG v HFO



They also point out that the initial IMO GHG strategy is also unlikely to be compatible with a significant uptake of LNG in the short term. Therefore to view LNG as a 'transitional' fuel would mean that there would be the need for double investment in zero-carbon fuel supply infrastructure for shipping.

The Bank sees environmental and financial risks involved with LNG as a bunker fuel as contrary to a transitional role - meaning investment in LNG-supply infrastructure and LNG fuelled ships are not taking advantage of a second stage where zero-carbon bunker fuels enter the global fleet. However, the Bank does suggest that there might be circumstances outside of the main arguments where LNG could have a 'limited' or 'niche' role as a bunker fuel.

The need for strong policy action to regulate methane emission both in the supply chain of LNG and its use on board existing ships and any newbuilds, is also highlighted.

The Bank suggests that an alternative to LNG could be zero-carbon bunker fuels using zero-carbon electricity (for example, electricity produced from renewable energy or from natural gas combined with carbon capture and storage (CCS)), thereby avoiding GHG emissions altogether. Within this context, hydrogen (H₂) and ammonia (NH₃), could be utilised as future bunker fuels.

One of the reasoning behind the World Bank's suggestion to stop financing LNG bunkering is the future prospect of stranded assets. They point out that infrastructure built in the coming decade could be redundant during the next decade as demand for LNG declines as alternative fuel usage increases.

CO₂ v methane – not as straight forward as you think

The World Bank report got us thinking about the LNG sector. We understand that as a global community, we are in the middle of some significant decisions that will impact future generations. The CO₂ debate is a compelling one for us to make long-lasting and far reaching changes. With regards to emissions, CO₂ lasts between 300-1000 years in the atmosphere, whereas methane lasts around 20-40 years. But the comparative impact of methane is around 25 times greater than CO₂. So, we need to consider the pros and cons of increased methane emissions on a longer timescale and whether there are current mitigations that could be taken in the near-term.

Rebuff – short and too the point

The industry coalition SEA-LNG has hit back at the World Bank's recommendations. It stated that, 'Waiting for future fuels and not fully utilising LNG, which is safe, proven, competitive and available today is a mistake. We need to take advantage today of the confirmed reduction in GHG of up to 23% (Well-to-Wake) and the obvious air quality benefits of LNG as a maritime fuel. To continue to wait for unproven alternatives only makes the current GHG and local emission problems worse. ' They say that the Report, 'attempts to prescribe solutions and predict the timing of future technology development. It is far too early to decide what the real potential of various alternative fuels will be for a highly complex, hard-to-abate, global industry. '

SEA-LNG further outlines that bio- and synthetic LNG offer an incremental pathway for the decarbonisation of the global shipping industry – one that is already being implemented by a growing number of shipowners. The existing LNG infrastructure that is being used today is interchangeable with bio and synthetic alternative, providing a low risk, long-term decarbonisation alternative. SEA LNG suggest that by focusing on theoretical, unproven solutions, the World Bank stifles innovation in technologies that can also provide answers in the decades to come. To suggest that investment not be made in the LNG sector is unwise, and will prolong the use of higher emission fuels and slow down shipping's decarbonisation.

Where do we go now?

LNG has been used as a fuel on LNGCs for well over 50 years, via boil off gas (BOG). There is considerable industry knowledge of how to handle, use and contain it. In the past decade (or so) LNG has been used as a fuel for a growing number of non-LNG carriers. While we are keen advocates of innovation and progress within the shipping sector, it has taken nearly 20 years to get to where we are now with LNG as a fuel. The inclusion of alternative fuels, such ammonia and hydrogen, will require new solutions to ensure safety issues have been addressed before even small-scale vessel tests can be ascertained.

In the short-term the least polluting fuelling option should be considered for those ordering vessels. Whether they turn to LNG as a fuel source will be their decision, but not an easy one.