



Global pollution concerns caused many industries to develop standards and regulations in effort to create a cleaner environment. The shipping industry responded through International Maritime Organization (IMO) by creating an international convention that deals with Pollution from Ships (MARPOL). Ever since 1983 the efforts of MARPOL were directed towards regulating pollution of the seas through multiple Annexes that represent regulations for various pollutants such as oil residues, chemicals and sewage. Annex VI represents 'Regulation for the Prevention of Air Pollution from Ships' and has attracted the most attention after the 57th session of the IMO Marine Environment Protection Committee (MEPC) meeting that took place between March, 31 2008 and April, 4 2008 and set a new milestone in the shipping industry.

During the latest Annex VI meeting, at the beginning of April 2008, a plan for reducing emissions from ships was agreed on. The new plan, ratified by 49 countries representing 75% of gross tonnage of the world's merchant fleet, set regulations for reducing air pollution from ships by mandating the use of engine fuel with lower sulphur content. The plan will be adopted in October 2008 and its ultimate goal will be to reach a global sulphur cap of 0.5% by 2020. The steps set to reach this goal are shown in Table 1.

Table1: Annex VI planed cut-off dates

	2008	2010	2012	2015	2020*
Open Ocean Sulphur Content (%)	3 ~ 5	3 ~ 5	3.5	3.5	0.5
Open Ocean Fuel Type	IFO	IFO	IFO	IFO	MDO
Current Price (\$/ton)	530	530	530	530	1,050
Emission Control Area Sulphur Content (%)	3 ~ 5	1	1	0.1	0.1
Emission Control Area Fuel Type	IFO	MDO	MDO	MGO	MGO
Current Price (\$/ton)	530	1,050	1,050	1,080	1,080

**2018 review study will determine if this is achievable, if not the final cut-off year will be postponed to 2025.*

Historically marine diesel engines used relatively inexpensive residual fuel oil with sulphur content of between 3 and 5%. The new Annex VI regulation will mandate the vessels to burn Marine Diesel Oil (MDO) on open oceans and Marine Gas Oil (MGO) oil in Emission Control Areas (ECA) by 2020. Both fuel types are significantly more expensive than the presently used IFO. Therefore, the new regulation will change current industry practice by changing the type of bunkers from residual to distillate fuel in the course of 12 years.

The change is beneficial to the environment as distillate fuels cause less pollution due to lower sulphur content. However, if the presently high cost of bunkers continues (table 1), the transition to environmentally friendly vessels will be quite costly.

To put this into perspective, a standard Aframax size tanker consumes around 45 metric tons of fuel per day. In the present environment the daily fuel consumption cost is around US \$24,000 /day at US \$530/ton bunkers. On a standard 16 day round trip voyage (including port time) from the Caribbean to the USG this vessel consumes around US \$350,000 in fuel. The voyage freight revenue in the current market for this trade is around US \$750,000. Therefore, if that same vessel used MDO or MGO type fuel, whose price is double the price of current IFO 380cst fuel (see table 1), the total revenues of the voyage would be almost equivalent to the cost of "environmentally friendly" fuel in the present marketplace.

However, some may argue that analyzing the 2020 fuel requirements in today's marketplace may be somewhat unrealistic. Therefore, we ran a rough calculation on the change in fuel use requirement expected to take place in March, 2010 (see table 1) using current price of bunkers. According to the new Annex VI agreement, all vessels will be mandated to burn MDO fuel in the Emission Control Areas by March, 2010. The ECAs presently include the Baltic Sea and the North Sea (the US and Canada's coastal waters are expected to join in the near future). Thus, the fuel cost of an Aframax size vessel transporting cargo from the Baltic to UKC on a round trip basis will increase by about US \$185,000 or by 100% per voyage in 2010.



TANKERS

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Who will pay for the cost of increased fuel remains to be seen. As ECAs evolve it has increasingly been the owner's burden. However, it is important to note that the increase in cost is not the only aspect of the new Annex VI regulation. The ship owners will also benefit in technical terms. For instance, apart from causing less pollution to the environment, distillate fuels also have higher thermal value which reduces engine wear (requiring less frequent maintenance) and lowers fuel consumption. Also, distillate fuel is of higher quality which results in less sludge on board and thereby benefits the operators who are finding it increasingly difficult to dispose sludge on shore. However, while analyzing the technical benefit of burning IFO versus MDO is beyond the scope of this brief, it is evident

that improvement in the vessel's engine maintenance is expected to help mitigate the impact of increased cost of fuel.

Whether the global refining industry is willing and able to produce the required volume of distillates implied by the regulation is another issue entirely.

Overall, we believe that the effect of the new Annex VI agreement may be quiet costly for the participants in the shipping industry. Doubtless, we will all benefit from the cleaner environment and take pride in our contribution to it. It is also clear that from now forward there will be a great deal of dialogue on the subject in our industry.