

IMO 2023 REGULATIONS: A PATH TOWARDS GREENER AND MORE SUSTAINABLE FUTURE

The shipping industry has long played a significant role in globalisation and international trade, linking businesses and consumers globally. However, as the demand for shipping grows, so have the environmental concerns associated with it. According to the Third IMO GHG Study (2014)[1], the shipping industry is estimated to be responsible for 3.1% of annual global CO₂ and 2.8% of GHGs on a CO₂e basis. These large quantities of pollutants are expected to triple by 2050 [2], raising concerns about their impact on climate change and global health[3].

To address these environmental challenges, following the amendments of MARPOL Annex VI in June 2021, the International Maritime Organization (IMO) had implemented a new global shipping regulation that imposed mandatory measures to reduce carbon emissions and promote greater energy efficiency in the shipping industry. The goal of the IMO 2023 regulation is to reduce CO₂ emissions from the world's shipping sector by 40% by 2030 and 70% by 2050 as compared to the 2008 levels.[4]

Energy Efficiency Existing Ship Index (EEXI) One of the key measures of the IMO 2023 is to require ships of 400 gross tonnages (GT) and above to calculate their Energy Efficiency Existing Ship Index (EEXI) in accordance with the requirements of the revised MARPOL Annex VI[5]. The EEXI is a rating system that evaluates the energy efficiency of existing ships based on energy usage as well as other crucial parameters like speed, power, and engine size which would vary according to the types and sizes of ships.

For example, gas carrier ships of 10,000 deadweight tonnes (DWT) or over must increase their technical energy efficiency by 30% compared to a 2013 reference line in order to obtain their one-off International Energy Efficiency Certificate. [6] Vessels failing to comply with the EEXI, and the amended MARPOL Annex VI requirements may be penalised and restricted from international trade.

Carbon Intensity Indicator (CII)

In addition, the IMO 2023 regulations also include a mandatory requirement for ships to determine their annual operational carbon intensity indicator (CII) and develop an optimized Ship Energy Efficiency Management Plan (SEEMP)[7] accordingly.

Under the CII scheme, individual ships will be rated from Level A to E, based on the ship's cargo carrying capacity and travelled distance over the amount of carbon emission, with Level A representing the major superior performance level and Level E representing the inferior performance level. Ships assessed as Level D under the CII for three consecutive years or Level E for one year must have a corrective action plan in place to achieve the necessary Level C rate.[8]

The initial CII rating will be provided to each individual ship in 2024 based on the CII rate recorded in 2023, with a 5% of improvement over the baseline value of 2019. After 2023, the CII rating threshold will become stricter over time and ship owners will be required to continuously look for ways to enhance the CII of their ships, as a 2% incremental improvement is needed annually through 2026 to achieve the carbon intensity reduction goal.[9]

Alternative Fuels

In the past, heavy fuel oil (HFO), which produces large amounts of carbon dioxide and other pollutants, was the main fuel used by ships[10]. However, following the implementation of these more stringent rules by the IMO, there has been a clear growth in the use of alternative fuels, which is one of the most fundamental steps towards greener shipping[11]. Liquefied natural gas (LNG) is one of the leading alternative fuel options because it is the cheapest; is highly efficient; has zero sulphur content in compliance with IMO 2020 sulphur limits; and has an estimated 20% lower carbon footprint than traditional distillate fuels[12]. As a result, more than 40% of marine fuel is expected to be replaced by LNG by 2050.[13]

Besides the LNG, there are also other alternative fuels that have the potential of achieving zero emission in the maritime shipping industry, such as Fuel Cells and Hydrogen, which produce no carbon dioxide or other greenhouse gases when they burn, are non-toxic, colourless, and odourless, Biofuels and Biodiesel which are renewable resources with low carbon emission, Ammonia which is another zero-carbon alternative fuel produced from natural gas and Methanol and Biomethane which could bring up to a 50% reduction in carbon emission.[14]

Slow Steaming

Next, the slow steaming practice is also one of the measures recommended by the IMO which can help ships in achieving higher CII ratings. Slow steaming is a process in which a

ship gradually reduces its speed during the voyage so that the ship's engine will not run at full capacity in order to reduce fuel consumption.[15]

The practice of slow steaming was first introduced to the shipping industry to overcome the excess capacity resulting from the financial crisis and the subsequent decline in international trade. However, it was later found that while saving fuel, this practice also had a positive impact on reducing carbon and air pollutant emissions. [16]

According to the research carried out by a clean transport campaign group Transport & Environment, if the vessel were to slow steam by reducing its speed by 10%, it will result in a 27% reduction in the ship's carbon and greenhouse gas emissions.

Furthermore, the studies carried out by DE Delft also found that by lowering the global ship's average operational speed, the shipping carbon emission is likely to be drastically reduced. Also, slow steaming is claimed to be the most cost-effective way to reduce CO₂ and GHG emissions because it could be easily enforceable with no major administrative burdens and at no cost to the shipping sector.[17]

Green Shipping Technologies

The IMO also encourages shipping companies and shipowners to invest in green shipping technologies to improve ship energy efficiency and ensure compliance with the IMO 2023 regulations. One of the examples is the innovative design of the hull, where air cushion technology is used to help reduce friction between the ships and the water, allowing for greater propulsion with less fuel consumption. With this, it brings a potential reduction of 10-15% in CO₂ emissions.[18]

In addition, shipowners are also encouraged to invest in technologies that help to optimise their voyages such as the Marine Digital Fuel Optimise System. Marine Digital FOS is a system that helps operators to sketch the most energy-efficient routes based on data collected from 5 main categories out of 40 parameters and each of these categories will affect 3%- 7% of fuel consumption which in sum brings the potential of saving fuel and reducing shipping emissions by 12%.[19]

Greening in Malaysia's Maritime Industry

Malaysia as a member of the IMO is committed in adopting these measures. Shipowners and shipping companies in Malaysia have already started to adopt some of these green shipping practices recommended the IMO, despite there being no specific policies in place to incorporate them into actual shipping practices in Malaysia.[20]

However, to encourage more Malaysia shipowners and shipping companies to comply with the IMO 2023 Regulations, setting out clear policy instruments remain important.

Nonetheless, this is likely to be a challenging process because it would result in a change to the existing regulatory framework and as the shipping industry is an important contributor to the Malaysian economy, these changes are likely to have a significant impact on the industry and its workforce.

Therefore, the Malaysian government must conduct a careful review to ensure that a balance is met between the decarbonization goal and the economic and social impacts before drafting a policy to incorporate these IMO 2023 regulations. [21]

In addition, there are also other major challenges that need to be overcome before incorporating the IMO 2023 Regulations such as the lack of financial support for ship owners and companies to invest in new technologies and infrastructure which is often very costly.[22]

To address this, Malaysia must forge strong partnerships with regional and global partners that encourage local capacity building, initiate long-term investment, and facilitate knowledge and technology transfer.[23]

Conclusion

The implementation of the IMO 2023 regulations marks a significant step towards a greener and more sustainable future for the shipping industry. The adoption of these initiatives will invariably result in increase in price and costs for the industry.

However, the adoption of green technologies and practices, such as alternative fuels, innovative design of hulls, marine digital fuel optimize system, and slow steaming will result in saving of fuel over time, lowering operational expenses in the long run.[24]

In addition, it is important to note that the benefits of reducing carbon emissions cannot be overstated. By reducing the shipping industry's carbon emissions, we can help protect our environment and ensure the protection of our planet for future generations.

Therefore, it is essential for all stakeholders, including ship owners, operators, and governments, to work together to ensure the successful implementation of the IMO 2023 Regulations and contribute to a more sustainable future for the shipping industry.

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