



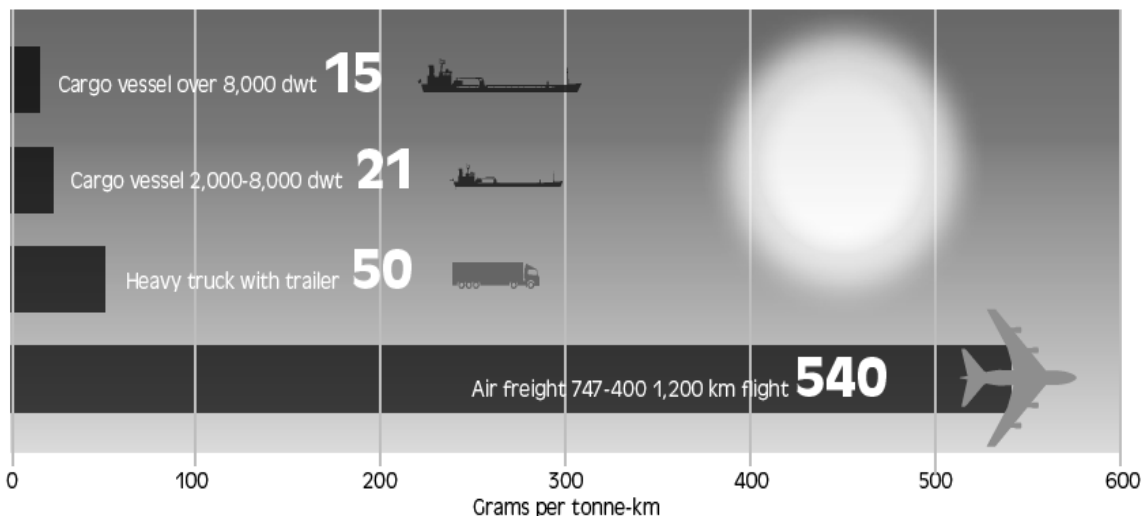
KISH P & I LOSS PREVENTION CIRCULAR KPI-LP-20-2012
(CO2 Emissions & Shipping)

The world shipping industry is firmly committed to playing its part in reducing emissions of CO2 and other Green House Gases.

International shipping is already, by far, the most carbon efficient mode of commercial transport. But it is duly recognised that CO2 emissions from the industry as a whole (some 2.7% of global emissions) are comparable to those of a major national economy.

The shipping industry therefore accepts that the CO2 emission reduction which ships must aim to achieve should be at least as ambitious as the CO2 emissions reduction agreed under any new United Nations Climate Change Convention.

Comparison of CO2 emissions between various modes of transport:



► IMO Agreement on CO2 Technical Rules:

In July 2011, governments at IMO agreed a comprehensive package of technical regulations for reducing shipping CO2 emissions which will enter into force in January 2013. The amendments to the MARPOL Convention (Annex VI) include:

- A system of energy efficiency design indexing for new ships (similar in concept to the ratings applied to cars and electrical appliances). The IMO EEDI will lead to approximately 25-30% emission reductions by 2030 compared to ‘business as usual’.
- A template for a Ship Energy Efficiency Management Plan (SEEMP) for use by all ships. The SEEMP allows companies and ships to monitor and improve performance with regard to various factors that may contribute to CO2 emissions. *These include, inter alia: improved voyage planning; speed management; weather routing; optimising engine power, use of rudders and propellers; hull maintenance and use of different fuel types.*



► **Taking Account of CBDR:**

The UNFCCC (United Nations Framework Convention on Climate Change) principle of ‘Common But Differentiated Responsibility’ (CBDR) cannot be practically applied directly to individual ships without the danger of significant ‘carbon leakage’. The ‘flag state’ with which a ship is registered, or indeed the ‘nationality’ of the entity operating the ship, can change frequently, especially when ships are bought and sold. The direct application of the CBDR concept would also cause gross distortion of shipping markets, reducing the efficiency of maritime transport and thus the smooth flow of world trade.

However, the IMO principle of ‘no more favourable treatment’ ensures that standards adopted for shipping are applied equally throughout the world, delivering maximum environmental protection and improvement.

The international shipping industry therefore believes that the achievement of meaningful reductions in CO₂ emissions will be best achieved if nations agree that the development of detailed measures for the international merchant fleet should be directed by governments at IMO - while fully respecting the UNFCCC CBDR principle. CBDR can be reconciled with the need for uniform rules through a Market Based Measure, such as an IMO compensation fund, whereby the majority of funds collected would be used for climate change mitigation and adaptation projects in developing nations.

Failure to deliver a global and uniform CO₂ reduction regime for international shipping will greatly reduce the ability of the shipping sector as a whole to reduce its emissions.

► **Recognition of CBDR:**

The July 2011 agreement demonstrates that IMO is eminently capable of delivering a global solution for shipping which can be reconciled with the principle of CBDR - without prejudice to what UNFCCC might decide with respect to other industries. To address CBDR, the IMO agreement includes a regulation for the promotion of technical co-operation and the transfer of technology relating to the improvement of energy efficiency of ships, and requires maritime administrations - in co-operation with IMO - to provide support directly to developing states that request technical assistance.

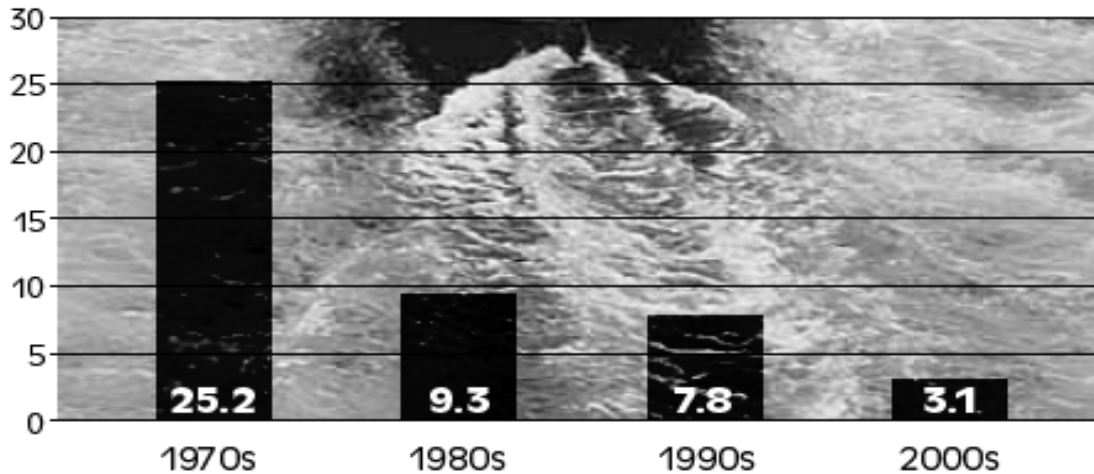
► **IMO’s Track Record on Environmental Protection Regulations:**

The level of ratification and enforcement of IMO Conventions is very high in comparison to international regulations governing many land based industries.

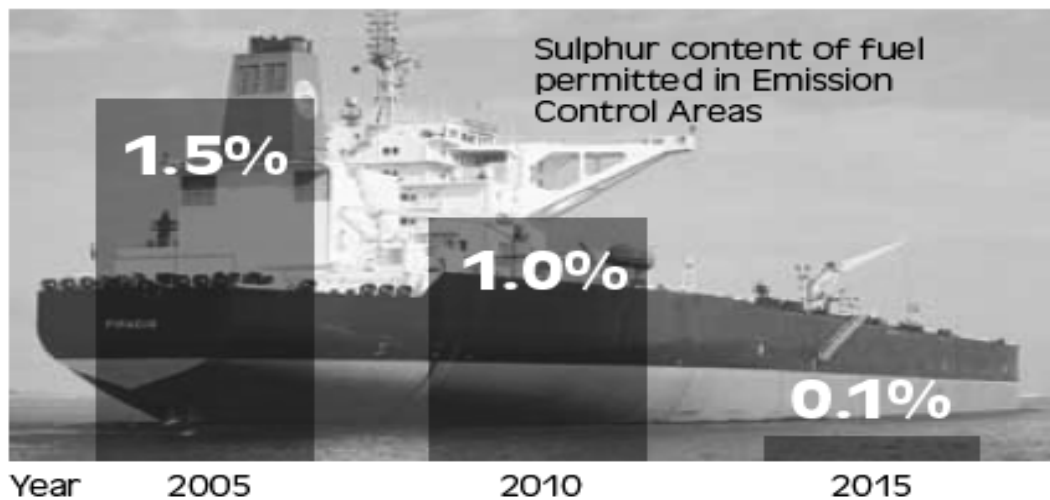
The impressive track record of IMO is demonstrated by the success of the MARPOL Convention (which also now includes regulations to reduce ships’ CO₂) in contributing to the substantial reduction of oil pollution since it entered into force.

MARPOL 73/78 has helped ensure a dramatic reduction in oil spilled by shipping. In addition to the ground breaking agreement to reduce CO₂, the ability of governments at IMO to respond to political pressure and to deliver global environmental regulations involving complex issues has also been demonstrated by the agreement to reduce pollutant atmospheric emissions (such as sulphur) from ships dramatically.

Average number of major oil spills per year (over 700 tonnes) :



Permitted Sulphur content in Fuels:



► Reduction of CO2 Emissions in Shipping:

The consensus of opinion within the global industry is that it will be possible for shipping to reduce CO2 emitted per tonne of cargo transported one kilometre (tonne/km) by 20% between 2005 and 2020, through a combination of technological and operational developments, as well as the introduction of new and bigger ships, designed to the new IMO Energy Efficiency Design Index.

This is a significant challenge given that there have already been substantial improvements in the efficiency of ships' engines.



In the longer term, depending on technological developments which at the moment cannot be fully anticipated, the industry believes it should be possible to deliver even more dramatic emission reductions (although for the foreseeable future shipping will remain dependent on fossil fuels).

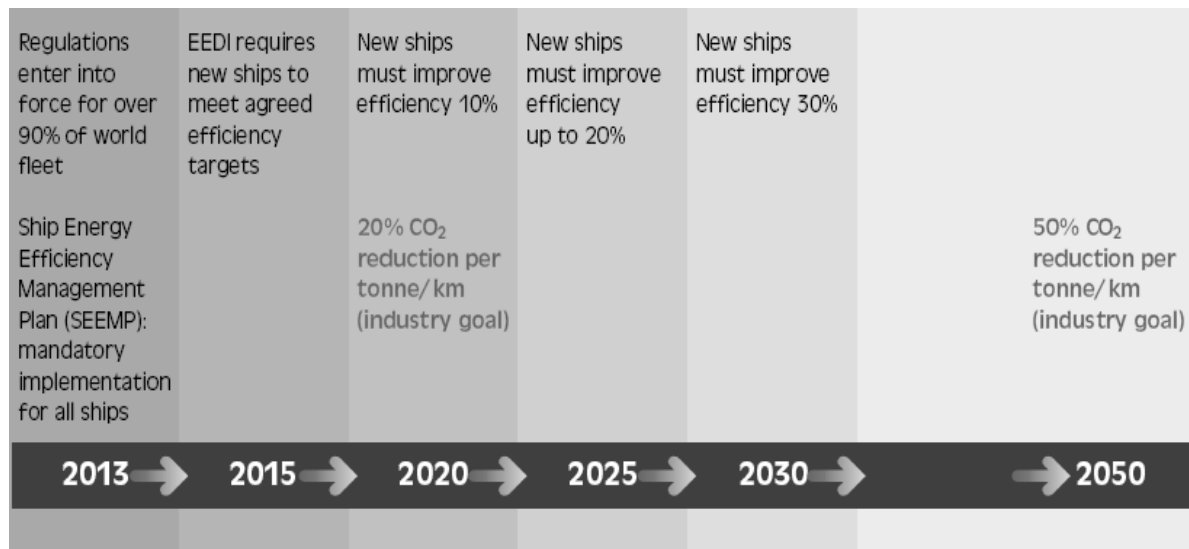
Although the shipping industry is already very energy efficient, additional improvements to hull, engine and propeller design are expected to produce further reductions in fuel consumption. There may also be possibilities for the better utilisation of waste heat.

The increasing size of many ships is also expected to improve fuel efficiency. In addition, operational measures (e.g. better speed management throughout the course of a voyage) are also expected to reduce fuel consumption and are addressed in detail by the new Ship Energy Efficiency Management Plan that has been made mandatory by IMO.

Shipping companies must have a very strong incentive to reduce their fuel consumption and thus reduce their CO₂ emissions: bunker costs represent an increasingly significant proportion of ships' operational expenses, having increased by about 300% in the last 5 years.

There is every expectation that marine bunker prices will remain high. Furthermore, the cost of ships' fuel is expected to increase by a further 50% as a result of the increased use of (low sulphur) distillate fuel that will follow the implementation of the new IMO rules (MARPOL Annex VI) that will apply globally in Emission Control Areas by 2015.

***IMO agreement on technical regulations will reduce ships' CO₂:
(MARPOL Annex VI, Chapter 4 adopted July 2011)***





► **Alternative Fuel Sources :**

The various parts of the shipping industry - shipowners, shipbuilders and classification societies (the depositories of technical expertise in the industry) - are actively examining a number of ways to reduce CO₂ emissions, both for new and existing ships, which are primarily linked to reducing fuel consumption. In the longer term, however, the shipping industry is also exploring a number of alternative fuel sources to help reduce CO₂ emissions.

Renewable energy sources, such as wind and solar power, may have a place in helping to meet some ancillary requirements, such as lighting on board ships.

However, they are not practical for providing sufficient power to operate ships' main engines (the huge physical size of ships should not be underestimated).

Fuel cells may be a possibility for new ships in the very long term, although they are currently too limited in range to offer a viable solution.

Nuclear propulsion for merchant ships is technically possible, although safety and security implications and support infrastructure costs would require serious consideration.

The current assumption, therefore, remains that ships will continue to burn fossil fuels for the foreseeable future, and that the most significant means of reducing CO₂ emissions will be achieved by further improvements in efficiency across the entire transport chain.

Liquid Natural Gas (LNG) produces lower emissions, and could be a solution for some short sea trades if supply infrastructure can be developed. Third generation bio-fuels might conceivably provide a possible alternative although there is, of course, considerable public debate about the net environmental costs (and social effects) of the wider use of such fuels.

