

Three ways to improve commercial shipping's environmental footprint

By [Martina Doblin](#)

16 Aug 2017

Do you wear runners, drink coffee or own a mobile phone? The chances are that these products cruised to you on a ship. In 2015, the global merchant fleet carried a record [10 billion tonnes of cargo](#), a 2.1% increase from the previous year.



©polymu via [123RF](#)

However, while it's an essential part of international trade, shipping also poses serious risks to the environment. Apart from damage caused by dredging shipping channels and the [spread of marine pests around the world](#), there is also growing concern about pollution. According to a report from the European Union, international shipping contributes [2.5% of global greenhouse gas emissions](#) annually. This is predicted to rise by between 50% and 250% by 2050.

As well as contributing to global warming, ship pollution includes toxic compounds and particles that cause a host of other health hazards. A 2016 Chinese-led study found the shipping boom in east Asia has caused [tens of thousands of premature deaths a year](#), largely from heart and lung disease and cancer.

Commercial ships are designed to be used for a long time. As a result, their engines are typically older and less efficient than those used in many other industries, and replacing them is prohibitively expensive. But there are some immediate solutions to this problem that use existing technology: increasing fuel quality, treating engine emissions, and adopting other energy-conservation measures so that ships burn less fuel.

Improve fuel quality

When diesel ship engines burn poor-quality fuel, their smoke stacks release oxides of nitrogen and sulphur as well as carbon. These pollutants, as well as contributing to greenhouse warming, are highly toxic. Sulphur dioxide readily dissolves in water, creating acid rain that [causes harm](#) to both people and the environment.

Refinement of crude oil removes sulphur, which reduces the amount of sulphur dioxide produced when the fuel is burned. Higher-grade diesel also reduces the volume of heat-trapping nitrous oxide but is more expensive to produce because it requires more purification at the refinery.

The International Maritime Organization, the UN body that regulates the safety and security of shipping, is planning to reduce the [amount of sulphur allowed in fuel](#). However, it is currently considering whether the change will take place in 2020 or will be deferred to 2025.

Install exhaust scrubbers

Clean fuel is an important part of reducing emissions, but the higher cost of low-sulphur fuel will deter many companies. Another way for ships to meet clean-air requirements is by capturing engine exhaust and passing it through scrubbers. These scrubbers convert nitrous oxide gases into harmless nitrogen and water.

This process requires retrofitting older ships and updating the design of new ship exhaust systems. One advantage of this approach is that it allows ships to meet the different pollution regulations around the world without having to swap fuels.

Another way to reduce production of nitrous oxide is by reducing the temperature at which diesel fuel burns, but this leads to decreased fuel efficiency and increased fuel consumption. Scrubbers are potentially a cheaper and more accessible option.

Reduce energy use overall

Ships don't just burn diesel fuel to propel themselves through the water. Fuel also generates electricity so that people on board can do things like use computers and read at night.

To increase fuel efficiency, other energy conservation measures can be adopted so that ships burn less fuel and decrease their emissions. The US Navy's Green Fleet has, for example, [replaced their old light fixtures with energy-saving LEDs](#).

They have also undertaken a temperature control initiative, where thermostats have been checked to ensure they are in proper working order and faulty parts in their water cooling systems replaced. Some ships have gone further and installed stern flaps that modify the flow of water under the ship's hull to reduce drag, thus increasing fuel efficiency.

All of this means the shipping industry can lower its fuel bill through conserving energy, and at the same time reduce its negative impacts on the health of humans and the planet. With more than 20,000 ships in the global fleet, these immediate solutions to reducing greenhouse gas emissions and other types of pollution will make a real difference.

This article was originally published on [The Conversation](#). Read the [original article](#).

ABOUT THE AUTHOR

Martina Doblin, Senior Research Fellow, Plant Functional Biology & Climate Change, *University of Technology Sydney*

For more, visit: <https://www.bizcommunity.com>