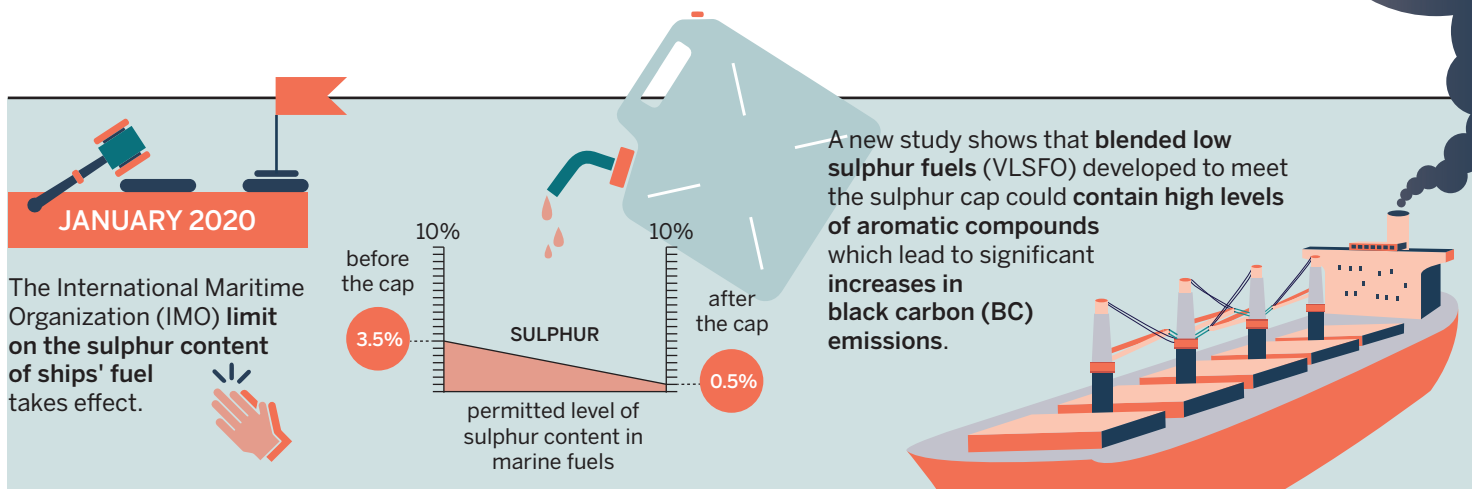
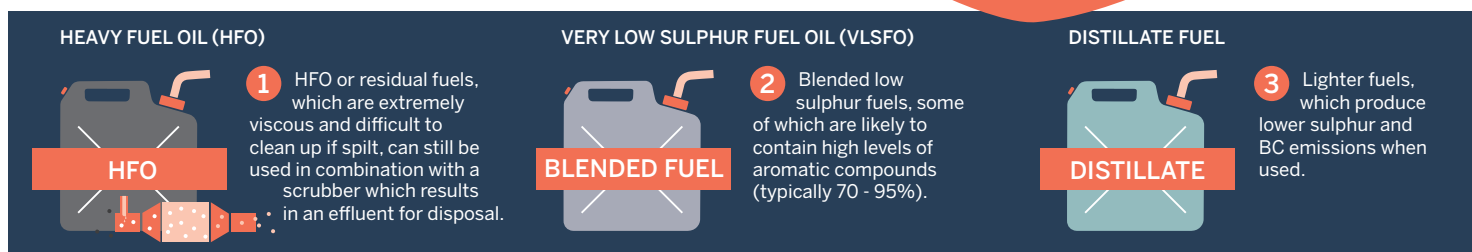


Urgent and immediate action needed to cut black carbon emissions from ships



Three oil-based fuels that would comply with the sulphur limit:*

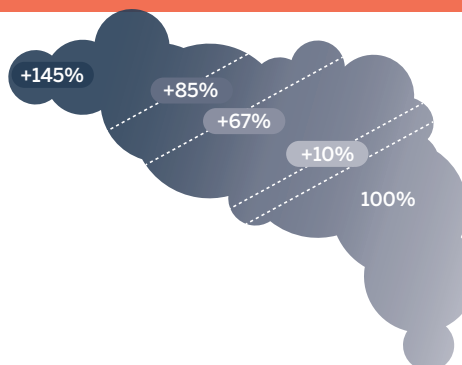


RECENT TESTING INDICATES THAT USING BLENDED LOW SULPHUR MARINE FUELS WITH A HIGH AROMATIC CONTENT WOULD LEAD TO A DRAMATIC INCREASE IN SHIP BC EMISSIONS IN 2020.....

BC EMISSIONS FROM BLENDED FUELS vs HFO



New low sulphur high aromatic fuel blends result in a **10 - 85%** increase in BC emissions compared to HFO.



BC EMISSIONS FROM BLENDED FUELS vs DISTILLATES



New low sulphur high aromatic fuel blends result in a **67 - 145%** increase in BC emissions compared to the highest quality distillate marine fuels.



ANTICIPATED INCREASES IN BC EMISSIONS HEIGHTEN THE URGENT NEED TO SIGNIFICANTLY CUT BC EMISSIONS FROM SHIPPING



The **IMO** has been considering action to reduce the impact of BC emissions from shipping on the Arctic since 2008, and agreed a workplan in 2011. In May 2019, the IMO identified over 40 possible BC control measures.



In 2017, the **Arctic Council** agreed to an ambitious target to reduce BC emissions by 25 - 33% below 2013 levels by 2025, and has urgently called on Arctic operators to develop and report on measures and best practices to reduce particulate matter and BC emissions from shipping.



ABATEMENT MEASURES TO REDUCE BC EMISSIONS HAVE YET TO BE AGREED UPON

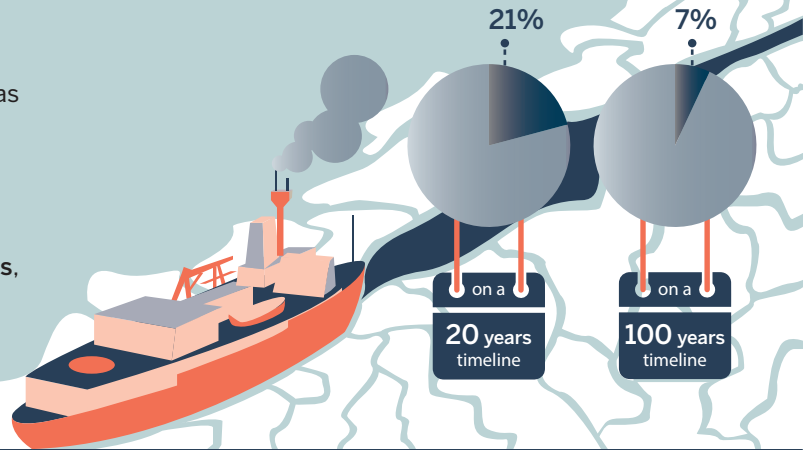
* This infographic doesn't include alternative fuels or other forms of propulsion e.g. LNG, fuel cells, batteries and wind-power.

BLACK CARBON THREAT TO THE ARCTIC

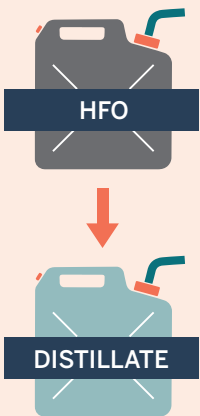
- 1 BC is a short-lived climate forcer, and a **critical contributor to human-induced climate warming**, especially in the Arctic.
- 2 BC has a much **greater warming impact when shipping occurs near reflective snow and ice**, such as in the Arctic.
- 3 It also has a **negative impact on human health**.
- 4 Introduction of the IMO 2020 sulphur cap is likely to lead to the widespread use of **low sulphur fuel blends**, which if they have a **higher aromatic content** than HFO would generate immediate and significant **increases in ship BC emissions**.

Shipping's overall green house gas equivalent impact on the climate

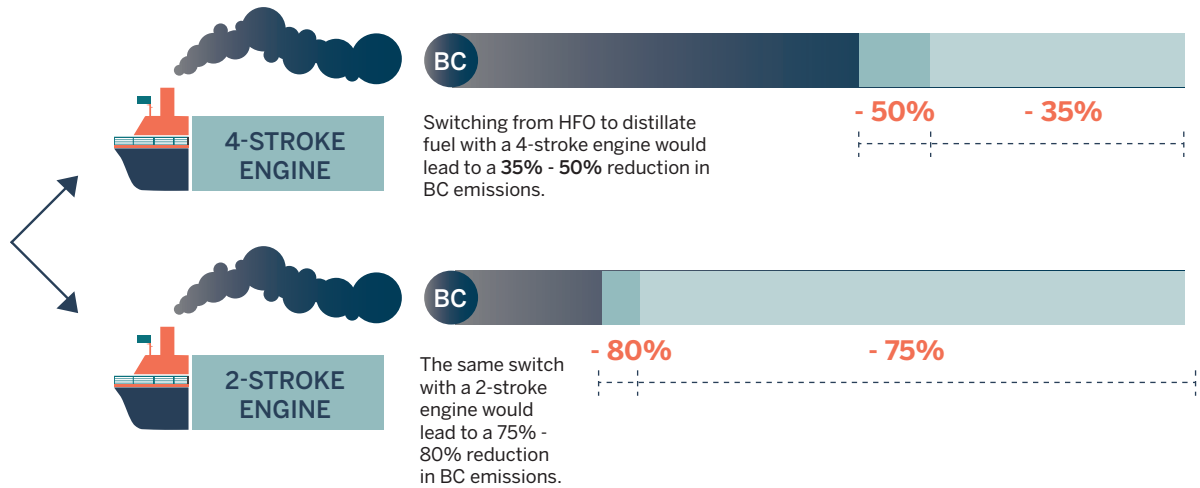
BC share



FUEL SWITCH



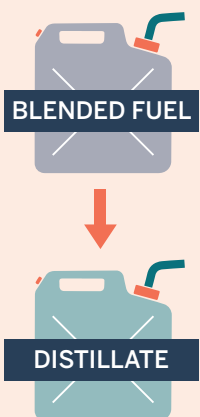
BC EMISSION REDUCTIONS RESULTING FROM A SWITCH FROM HFO TO DISTILLATE FUELS



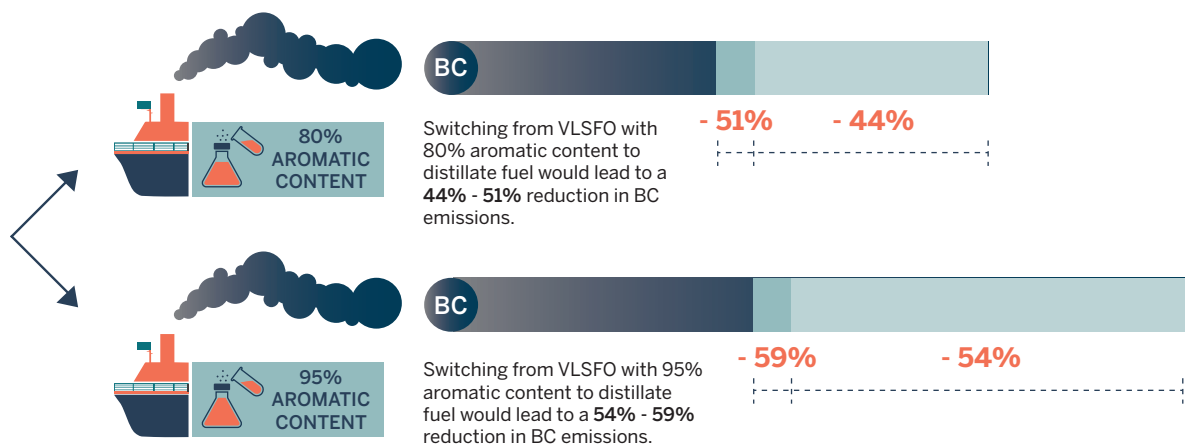
THERE IS A CLEAR LINEAR CORRELATION BETWEEN LOWER AROMATIC CONTENT AND LOWER BC EMISSIONS

A 2012 IMO study, updated in 2017, showed that oxygen rich biofuels and lower aromatic content fuels produced less black carbon. It also stated that blending of HFO and low sulphur residual fuels to produce a 0.5% sulphur compliant fuel is unlikely to reduce BC emissions.

FUEL SWITCH



BC EMISSION REDUCTIONS RESULTING FROM A SWITCH FROM BLENDED (HIGH AROMATIC CONTENT) FUELS TO LOW AROMATIC DISTILLATES



AN URGENT AND IMMEDIATE RESPONSE FROM THE IMO IS NECESSARY TO REDUCE BC EMISSIONS

- 1 Support an immediate switch to distillates for ships operating in the Arctic.
- 2 Agree to a global rule prohibiting fuels with high aromatic content and high BC emissions.
- 3 Pass a Resolution to introduce action on a voluntary basis until new regulations are developed and in force.