The Use of Heavy Fuel Oil in Arctic Shipping

In 2015 in the Arctic

889 HFO-fueled ships

travelled 3.6M nautical miles	carried 830K tonnes of fuel onboard	consumed 250K tonnes of HFO

Heavy Fuel Oil (HFO) is the residual waste of the petroleum refining process. It is extremely viscous and virtually impossible to clean up in the case of a spill.

Black Carbon (BC) is a critical contributor to human-induced climate warming, especially in the Arctic, and the combustion of HFO produces high levels of BC emissions.
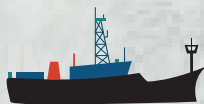
HFO-fueled Arctic ships include:

- cargo ships
- container ships
- bulk carriers
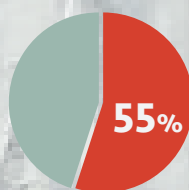- fishing vessels
- oil tankers
- cruise ships

In 2015
HFO consumption
Top 3 ship types

134,000 tonnes consumed

55%

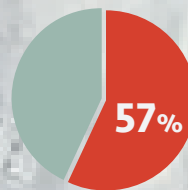Cargo ships, oil tankers, and cruise ships consumed 55% of the HFO used by ships in the Arctic in 2015

In 2015
HFO onboard
Top 3 ship types
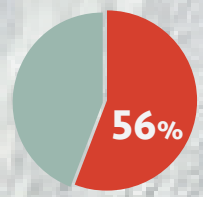
248,000 tonnes of HFO onboard

57%

Bulk carriers, container ships, and oil tankers carried 57% of the HFO used by ships in the Arctic in 2015

In 2015
Distance-weighted fuel carried*
Top 3 ship types

*product of HFO carriage and distance the ship sailed (tonne-nautical miles)

2074 million t-nm of HFO

56%

Cargo ships, oil tankers, and fishing vessels accounted for 56% of the distance-weighted fuel carriage by ships in the Arctic in 2015

Designer: Margherita Gagliardi

Predominant Flag States in the Arctic

In 2015 in the Arctic

Ships flew **65** flags

Top **3** flags by distance-weighted HFO carriage:

1 Russia

2 Canada

3 Denmark

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Ships operating on HFO in the Arctic in 2015 registered to:

● Arctic states   ● Non-Arctic states

HFO use

28%

HFO carriage *as fuel*

74%

Flag states carrying the most HFO in their bunker tanks (top 5):

Russia   **Panama**   **Marshall Islands**   **Liberia**   **Singapore**
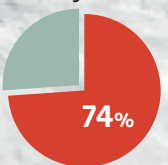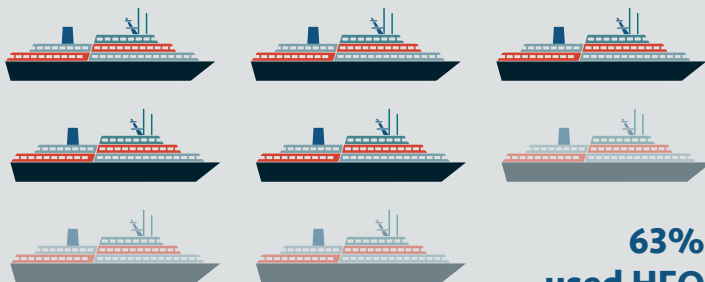
A focus on cruise ships

63 cruise ships operated in the Arctic in 2015.

○ Arctic states   ○ Non-Arctic states

63% used HFO

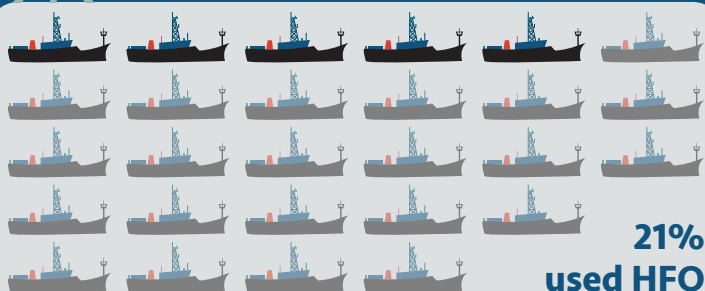**Most** of the HFO-fuelled cruise ships operating in the Arctic in 2015 were registered to **non-Arctic states**.

Bahamian-flagged cruise ships consumed nearly **10,000** tonnes of HFO and emitted **over 5** tonnes of **BC**.

○ Bahamas

○ France   ● Russia   ○ Italy   ○ Bermuda   ○ Panama

A focus on fishing vessels

755 fishing vessels operated in the Arctic in 2015.

○ Arctic states   ○ Non-Arctic states

21% used HFO

Of the 17 flag states fishing the Arctic, **only 6** were **Arctic states**

● Russia   ● Denmark   ● Canada   ● Norway   ● Iceland   ● United States

○ South Korea   ○ Latvia   ○ Faeroe Islands   ○ Spain   ○ China   ○ St Kitts and Nevis

○ Lithuania   ○ The Netherlands   ○ Japan   ○ Belize   ○ Chinese Taipei

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