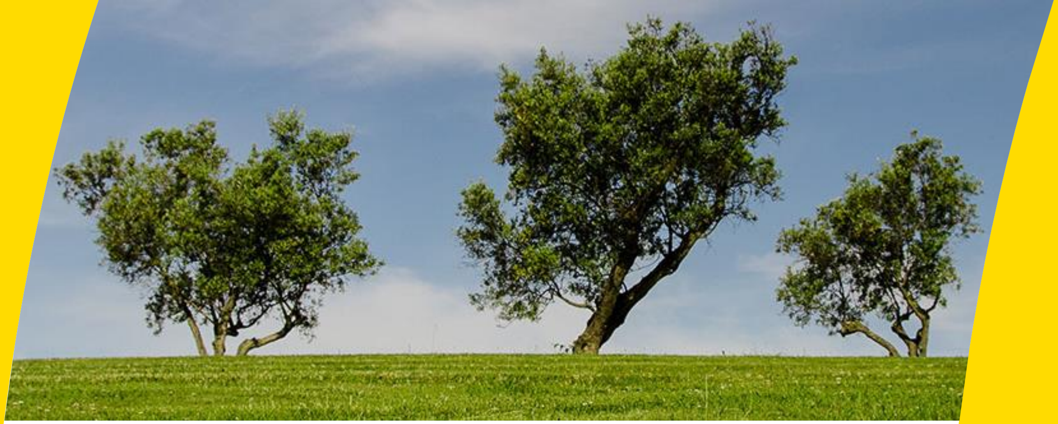

Residuals bunker fuel ban in IMO Arctic waters

Cost implications for Russian trade flows - a case study

CE Delft

Committed to the Environment

Costs of ban on HFO use and carriage for use by ships

Baseline: no Arctic HFO ban	Arctic HFO ban	
LNG or MGO →	No additional costs	
LSHFO or HFO & scrubber →	Additional costs due to required fuel switching →	Ship operator/owner carries extra costs
	→	Shipper carries extra costs
	→	Consumer/cosignee carries extra costs

CE Delft 2019 study commissioned by ECF and WWF Canada

Aim of study:

- Assessment of cost and price implications of Arctic HFO ban on Russian trade flows by means of a case study.
- No comprehensive assessment of cost implications for all Russian trade flows in IMO Arctic waters.

Link to study:

https://www.cedelft.eu/en/publications/2256/residuals-bunker-ban-in-the-imo-arctic-waters-cost-implications-for-russian-trade-flows-a-case-study

Study is complementary case study to CE Delft 2018 study

https://www.cedelft.eu/en/publications/2165/residuals-bunker-fuel-ban-in-the-imo-arctic-waters

Case study

Selected case:

Crude oil shipped from
Varandey offshore terminal in Pechora Sea to Kola Bay near Murmansk by means of three 71,000 dwt shuttle tankers.

Analysed:

- Impact of Arctic HFO ban on shipping costs;
- Potential price impact.

Scope: Assessment for year 2021.

Assumptions:

- Due to ban, tankers switch to distillate fuel if necessary;
- If fuel is switched, distillate fuel is used on entire round trip.

Case study - results

Additional 2021 shipping costs for three shuttle tankers in total:

[million USD]	Fuel Price Sensitivity Scenarios		
Baseline Scenarios	Low	Base	High
Scenario 1: LNG		0	
Scenario 2: LSHFO	0.3	1.3	2.4
Scenario 3: HFO & scrubber	4.6	7.3	10.0

Change of 2021 fuel expenditures in base price scenario: 0/6%/50%, depending on baseline scenario.

Note: ban-related additional costs would be lower if tankers used, outside IMO Arctic waters, (LS)HFO on first part of leg to Varandey.

Case study - results

Potential price impact:

- Additional costs represent 0 – 0.2% of value of crude oil transported.
- Costs of ban are probably not incurred by consignee of crude oil, but rather by ship owner or shipper.
- If so, ban may trigger investment in
  - alternative compliance options (e.g. LNG) or
  - alternative transport modes (e.g. pipelines).

Note: price impact of ban differs highly between different types of goods.