PAME Working Group

Northern Dimension Future Forum on Environment
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Emission reductions in shipping

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PAME’s Mandate

Address marine policy measures related to the **conservation and sustainable use** of the Arctic marine and coastal environment in response to environmental change from both land and sea-based activities, including non-emergency pollution prevention control measures. Products include:

- Coordinated strategic plans,
- Best practices and voluntary guidelines,
- Trend analysis and recommendations.
PAME Working Group
PAME Work Plan 2017-2019

- Arctic Marine Shipping (12 projects/activities)
- Marine Protected Areas (2 projects/activities)
- Ecosystem Approach to Management (3 projects)
- Arctic Offshore Resource Exploration and Development (4 projects)
- Arctic Marine Pollution (2 projects/activities)
  - Desktop Study on Marine Litter
  - Outreach and communication
- Arctic Marine Strategic Plan Implementation
2009 Arctic Marine Shipping Assessment (AMSA) Report

• First comprehensive circumpolar assessment of shipping activity in the Arctic
• Approved at 2009 Tromsø Ministerial Meeting
• Contains 17 Priority Recommendations
• PAME has a lead role in advancing AMSA implementation
Other Key Arctic Council Reports with Shipping Recommendations

- 2015 Arctic Marine Strategic Plan (AMSP)
- 2013 Arctic Ocean Review (AOR) Final Report
Heavy Fuel Oil Projects: Phases I & II
1st Four Phases (2010-2019)

**Phase I:** Identify risks and compile information on actual use and carriage of HFO in the Arctic.

**Finding:** 20% of AIS-registered vessels most likely running on HFO (4 month period 2010).

**Phase II(a):** Extended the study to include the whole year 2012 of available AIS information and include risk analysis of frequencies of incidents leading to HFO spills.

**Findings:**
- 28% of AIS-registered vessels most likely running on HFO (one year period).
- An incident resulting in a spill of oil could on average be expected once every 1.6 years, with grounding of a tanker representing the greatest spill potential.

**Phase II(b):** Relied on Phases I and II(a) reports. Bering Sea south
Heavy Fuel Oil Projects: Phases III(a) & (b)

**Phase III(a):** Examined shipping incidents involving releases of HFO and other fuels in the Arctic and near-Arctic marine environment.

**Findings:** 13 incidents of HFO release between 1970-2014

**Phase III(b):** Investigated possible Hazards for Engines and Fuel Systems Using HFO in Cold Climates.

**Findings:** 3 factors identified for engine failure or engine stop for ships that use HFO as fuel i.e. risks related to i) fuel quality, ii) disruption of fuel supply, and iii) fuel switchover.
Heavy Fuel Oil Projects: Phase IV

a) Collect and report information on use of HFO in the Arctic (Update to previous reports (cont. through ASTD))

b) Collect, report and/or review information about on-shore use by indigenous peoples and local communities of HFO (Will be continued in 2019-2021 Work Plan)

c) Prepare an information paper summarizing PAME’s work on HFO.

d) Explore the environmental, economic, technical and practical aspects of the use by ships in the Arctic of alternative fuels.
Arctic Ship Traffic Database (ASTD)

First comprehensive Arctic shipping activity database

- Detailed statistics on multiple aspects, such as:
  - Emission by ships
  - Number of ships in the Arctic
  - Types of vessels in the Arctic
  - Fuel use and consumption
  - Traffic in specific areas in the Arctic
    - Exclusive economic zones, Polar Code area, Large marine ecosystems etc.
  - Number of ships in Arctic Ports

User-friendly maritime traffic analyses of Arctic shipping data that benefits the Arctic Council, its working groups, and subsidiary bodies.
Analyze fuel use in the Arctic by using ASTD

- Numbers and percentages of vessels using different grades of fuel in the Polar Code area in 2016
- Fuel consumption of different grades of fuel oil
- Sailed distance with different grade of fuel oil
- Ship routes for each fuel type
- Comparisons to a high traffic Area (The North Sea area)

Analyze change
Methodology

• The calculations are done at the individual ship level
• Correct engine and KW and speed over ground is used in the calculations
• Correct fuel type is used, but where fuel type was unknown, it was filled in by looking at a sister ship or similar ships (RPM engine)
• Unique ships is aggregated to 13 ship types
Distribution of shiotypes using residual marine fuel (ISO-F-180-380 or above) heavy fuel oil in 2016

- Oil tanker
- Chemical tanker & Product Tanker
- General cargo vessel
- Ro-Ro Cargo
- Dry bulk vessel
- Refrigerated cargo vessel
- Passenger
- Offshore Supply
- Research
- Other Activities
- Fishing vessel
- Polar Code area

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2014 and 2016 dry bulk shipping from Baffinland’s Marry river mine
Year-round shipments of Yamal oil from the Arctic Gate (Vorota Arktiki), an Arctic oil loading terminal, (Yamal Peninsula, Yamal-Nenets Autonomous Area).
Fuel consumption (ton) in the Arctic

% change in fuel consumption in the Arctic - 2014-2017

-100% -50% 0% 50% 100% 150% 200% 250%

01-Oil tanker: 208%
02-Chemical/Prod tanker: 55%
03-Gas tanker: 0%
04-Bulk carrier: 75%
05-General cargo: 52%
06-Container vessel: 19%
07-RoRo: -3%
08-Reefer: 85%
09-Passenger: 19%
10-Offshore supply vessel: -40%
11-Other offshore service vessel: -25%
12-Other activities: -7%
13-Fishing vessel: 37%

Total increase 2014-2017: 46%
THANK YOU

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