# PAME Working Group

Northern Dimension Future Forum on Environment
19 November 2018
Brussels, Belgium

## Emission reductions in shipping

*Gudmundsdottir, PAME Executive Secretary*

ARCTIC COUNCIL

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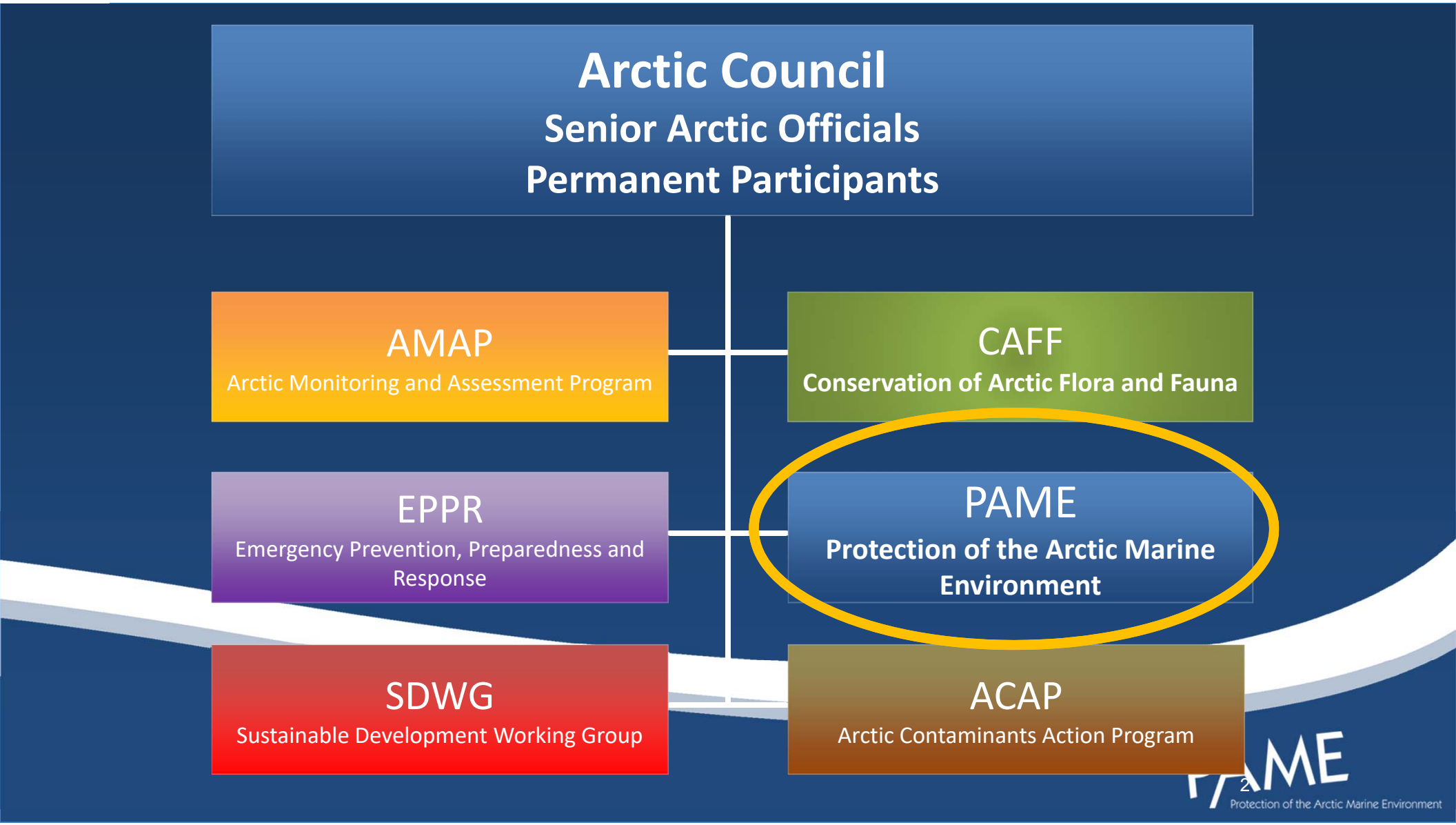
Arctic Council
Senior Arctic Officials
Permanent Participants
AMAP
Arctic Monitoring and Assessment Program
CAFF
Conservation of Arctic Flora and Fauna
EPPR
Emergency Prevention, Preparedness and Response
PAME
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SDWG
Sustainable Development Working Group
ACAP
Arctic Contaminants Action Program
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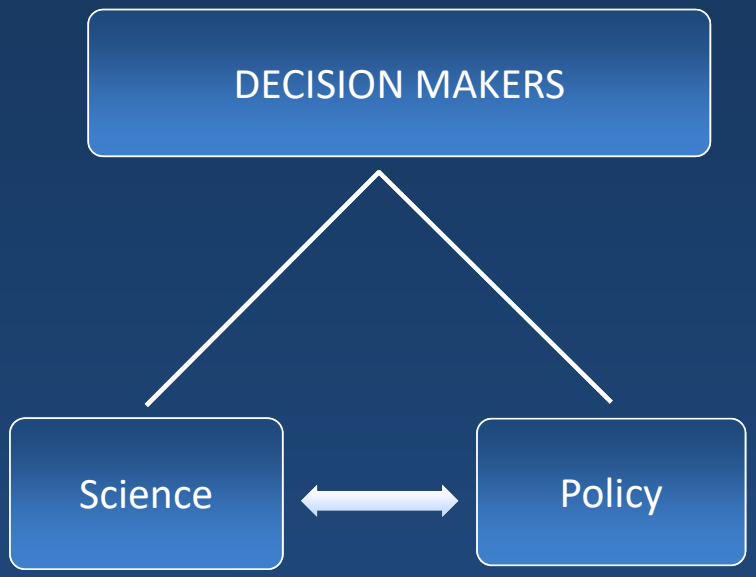
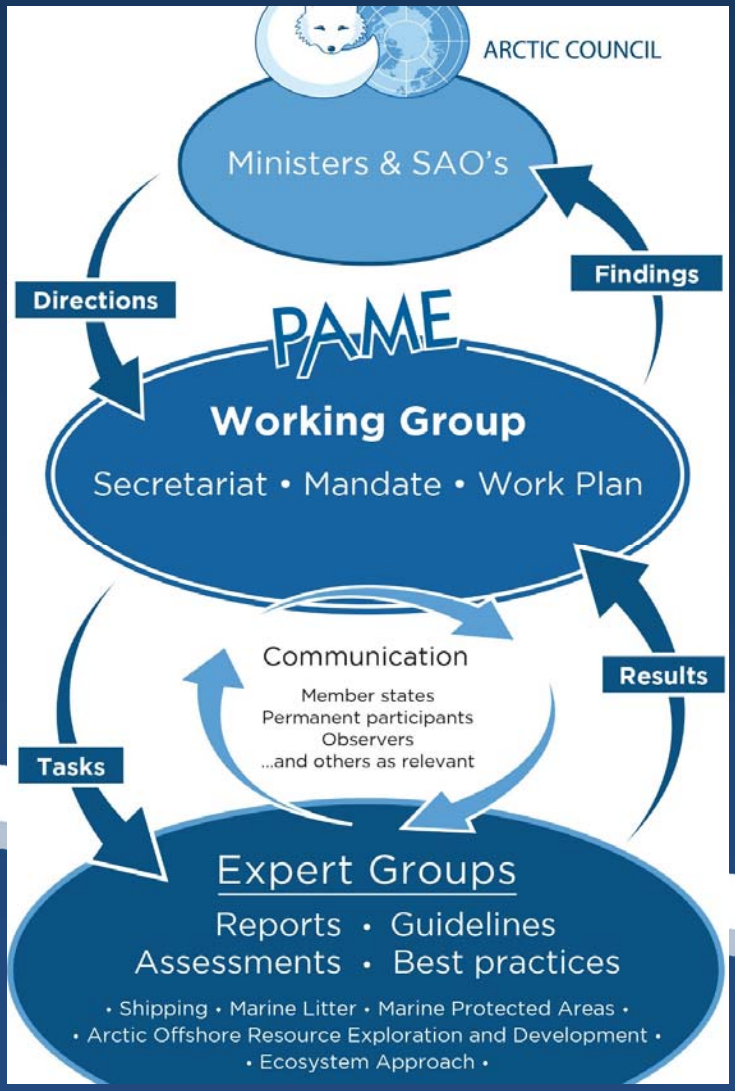
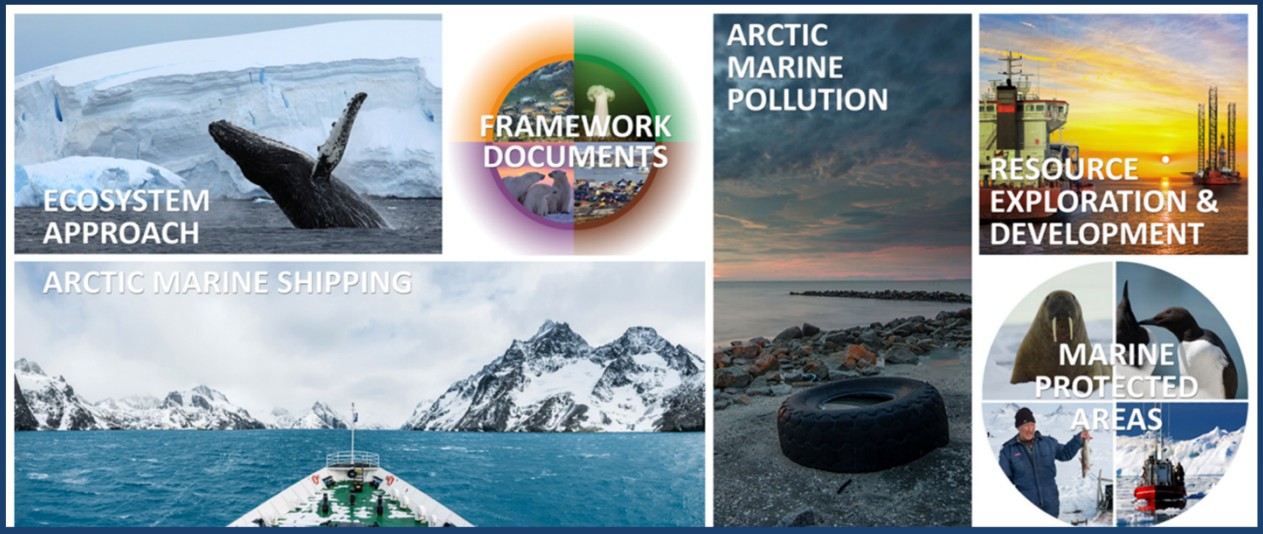
# PAME's Mandate

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 & guidelines,
- Trend analysis and recommendations.



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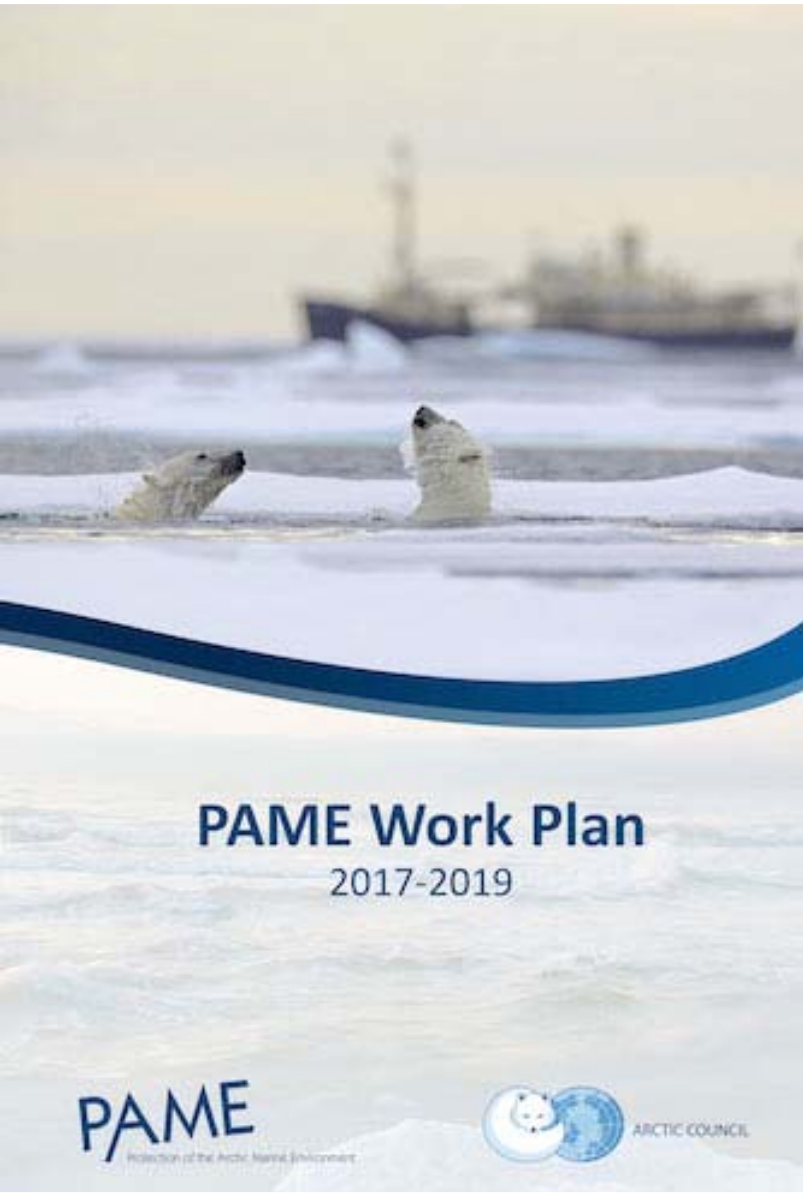


# PAME Work Plan 2017-2019

- 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

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# 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



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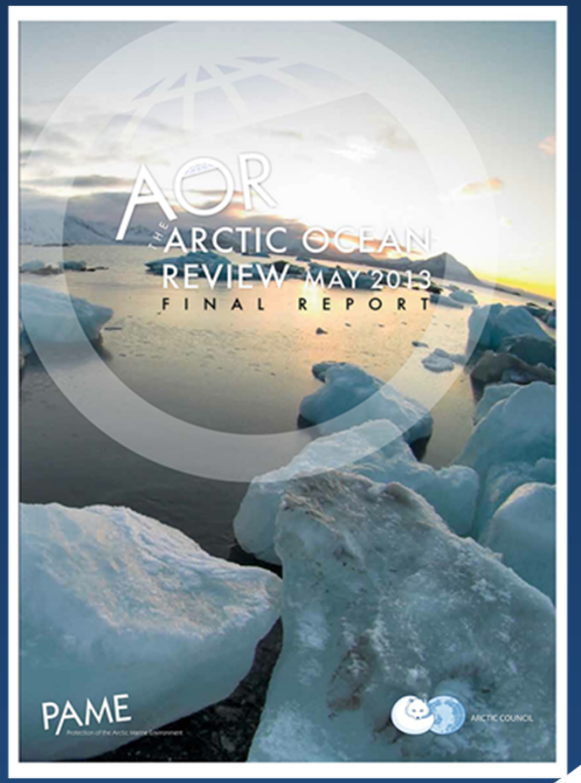
# Other Key Arctic Council Reports with Shipping Recommendations


*2015 Arctic Marine Strategic Plan (AMSP)*




*2013 Arctic Ocean Revie (AOR) Final R*

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# 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).
- Incidents resulting in a spill of oil could on average be expected once every [illegible] 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 [illegible] HFO as fuel i.e. risks related to i) fuel quality, ii) disruption of fuel supp[illegible] 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) [illegible] the environmental, economic, technical and practical asp[illegible] 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
    - [illegible] economic zones, Polar Code area, [illegible] ecosystems etc.
  - Number of ships in Arctic Ports


User-friendly maritime traffic analyses of Arctic shipping data that benefits the Arctic Council [illegible] its working [illegible] subsidiary bodies.

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# 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

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# 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)
- Ship[illegible]hips is aggregated to 13 ship types

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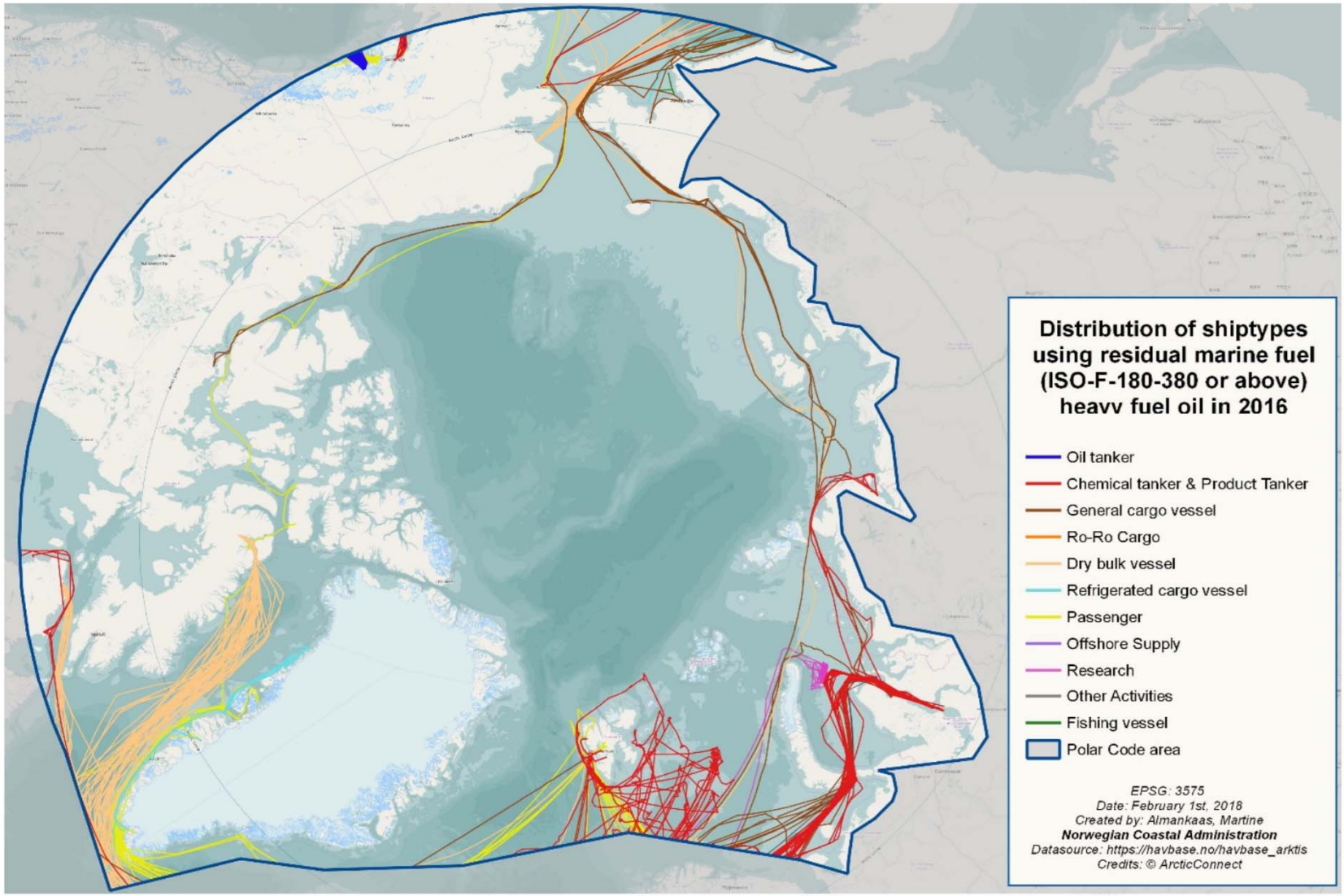
Distribution of shiptypes using residual marine fuel (ISO-F-180-380 or above) heavy fuel oil in 2016
Oil tanker
Chemical tanker & Product Tanker
General cargo vessel
Ro-Ro Cargo
Dry bulk vessel
Refrigerated cargo vessel
Passenger
Offshore Supply
Research
Other Activities
Fishing vessel
Polar Code area
EPSG: 3575
Date: February 1st, 2018
Created by: Almankaas, Martine
Norwegian Coastal Administration
Datasource: https://havbase.no/havbase_arktis
Credits: © ArcticConnect



# 2014 and 2016 dry bulk shipping from Baffinland's Marry river mine

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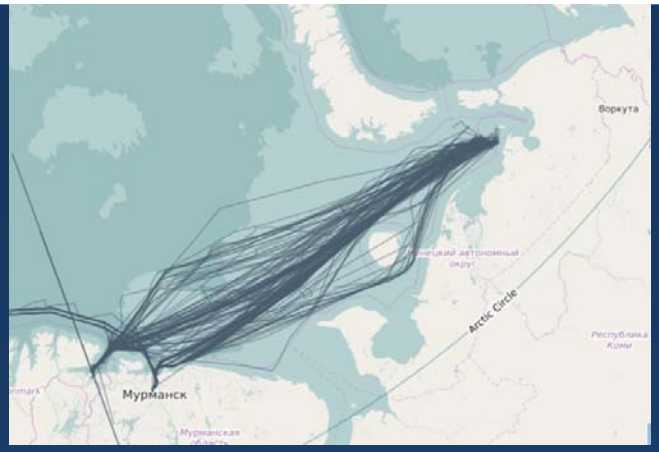


# Shipping in The Arctic and resent Changes – Shuttle tankers

**Year-round shipments of Yamal oil from the Arctic Gate (Vorota Arktiki), an Arctic oil loading terminal, (Yamal Peninsula, Yamal-Nenets Autonomous Area).**

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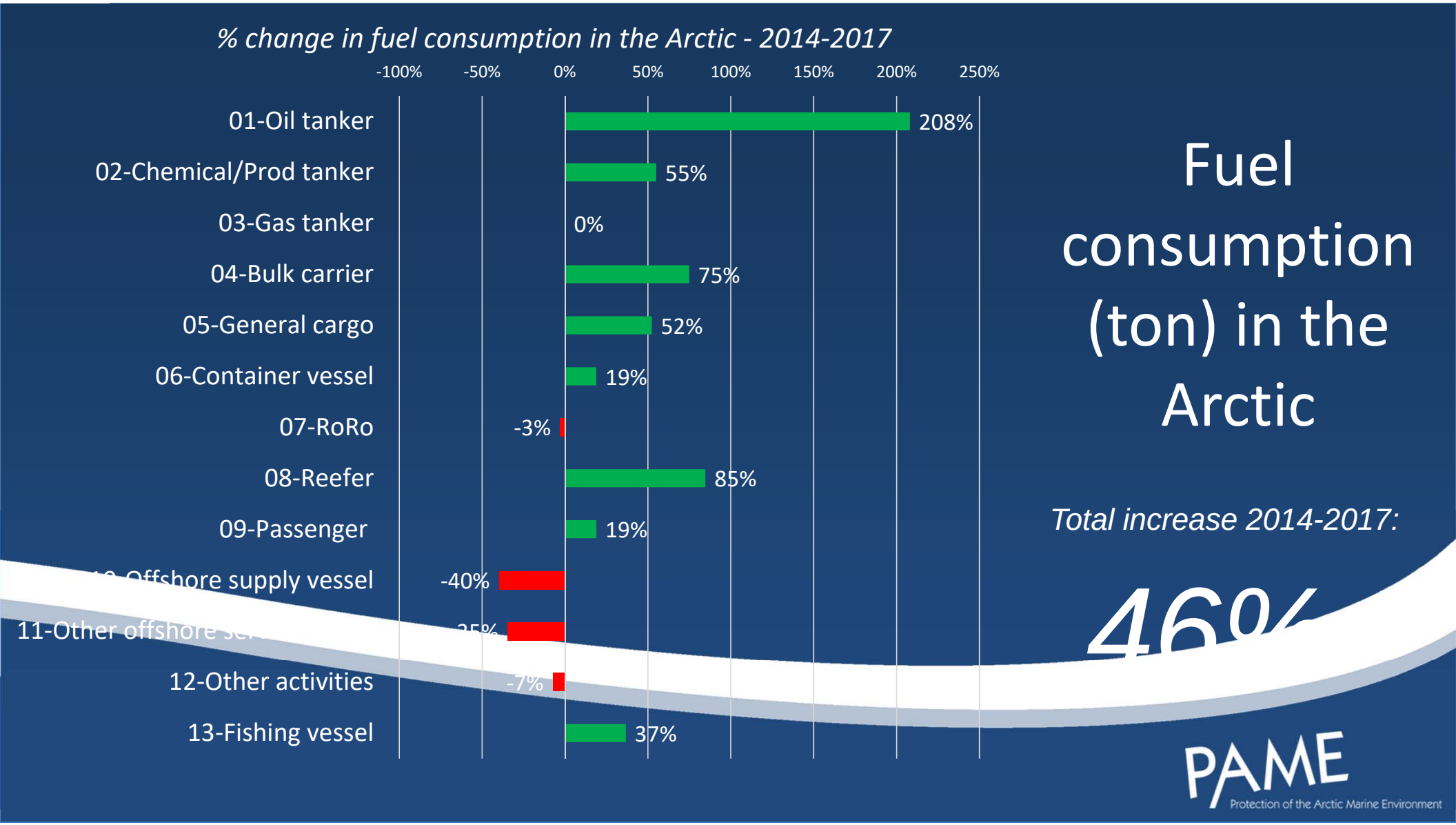
% change in fuel consumption in the Arctic - 2014-2017
-100%
-50%
0%
50%
100%
150%
200%
250%
01-Oil tanker
208%
02-Chemical/Prod tanker
55%
03-Gas tanker
0%
04-Bulk carrier
75%
05-General cargo
52%
06-Container vessel
19%
07-RoRo
-3%
08-Reefer
85%
09-Passenger
19%
Offshore supply vessel
-40%
11-Other offshore
12-Other activities
-7%
13-Fishing vessel
37%
Fuel consumption (ton) in the Arctic
Total increase 2014-2017:
46%
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# THANK YOU

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