PAME

Protection of the Arctic Marine Environment

THE INCREASE IN ARCTIC SHIPPING 2013-2023

ARCTIC SHIPPING STATUS REPORT (ASSR) #1

March 2020

Updated in January 2024

PAME

Protection of the Arctic Marine Environment

ARCTIC COUNCIL

This report compares shipping in the Arctic in 2013 and 2019, but was updated in January 2024 to represent a 10 year trend in Arctic shipping.

But, where is the Arctic?

Neither PAME nor the Arctic Council have established a single use definition of the Arctic.

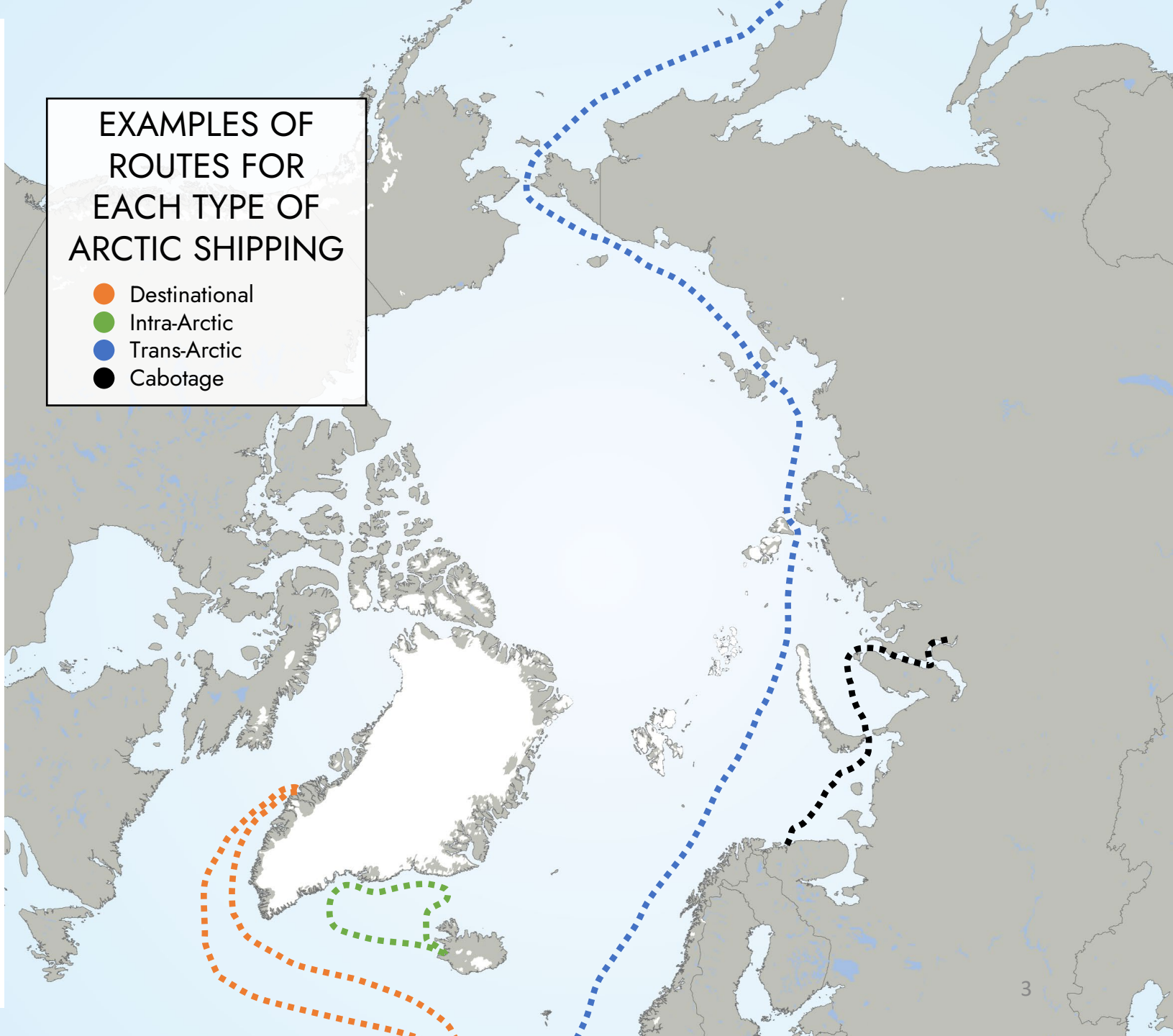
ARCTIC SHIPPING

PAME's 2009 Arctic Marine Shipping Assessment (AMSA) Report identified four types of Arctic Shipping:

- Destinational transport, where a ship sails to the Arctic, performs some activity in the Arctic, and sails south.
- Intra-Arctic transport, a voyage or marine activity that stays within the general Arctic region and links two or more Arctic States.
- Trans-Arctic transport or navigation, voyages which are taken across the Arctic Ocean from Pacific to Atlantic Oceans or vice versa.
- Cabotage, to conduct trade or engage in marine transport in coastal waters between ports within an Arctic State.

PAME: AMSA 2009 Report. Page 12.

Arctic shipping refers to all shipping activities within the area in question, unless otherwise stated.



This report uses the geographic definition of the Arctic contained in the International Code for Ships Operating in Polar Waters (Polar Code) – The Polar Code area.

The Polar Code defines Arctic waters as the area in the figure.

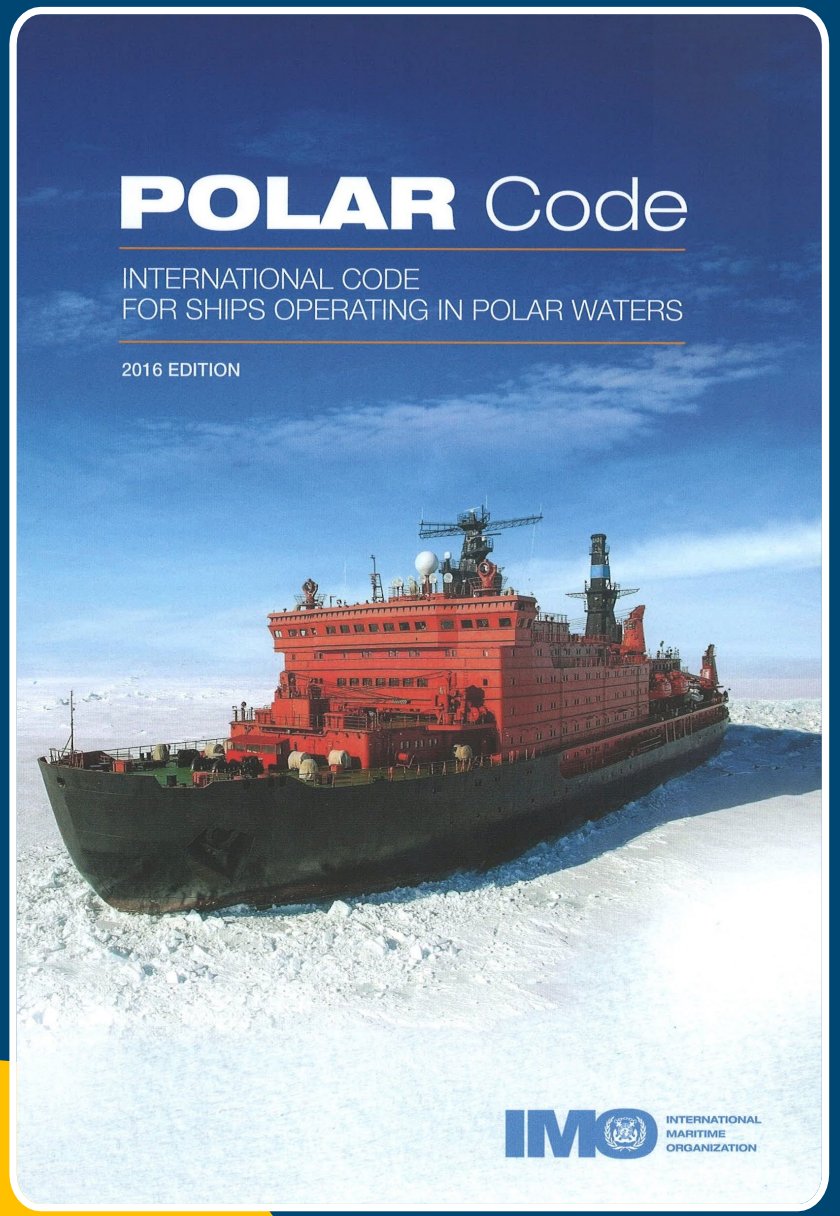
Most larger ships that operate in this area must comply with the Polar Code.

Arctic Ship Traffic Data

All data in this report is from PAME's Arctic Ship Traffic Data (ASTD) System (*www.astd.is*).

Only AIS signals from ships carrying AIS Class A transponders are included in the ASTD System. Many ships not required to carry AIS still opt to use it and are therefore captured in this report (e.g., fishing vessels, pleasure craft).

The type of information contained in the ASTD System and its sources are described in the ASTD Data Document, available online *here*.



The Polar Code covers the full range of design, construction, equipment, operational, training, search and rescue and environmental protection matters relevant to ships operating in the inhospitable waters of the Arctic.

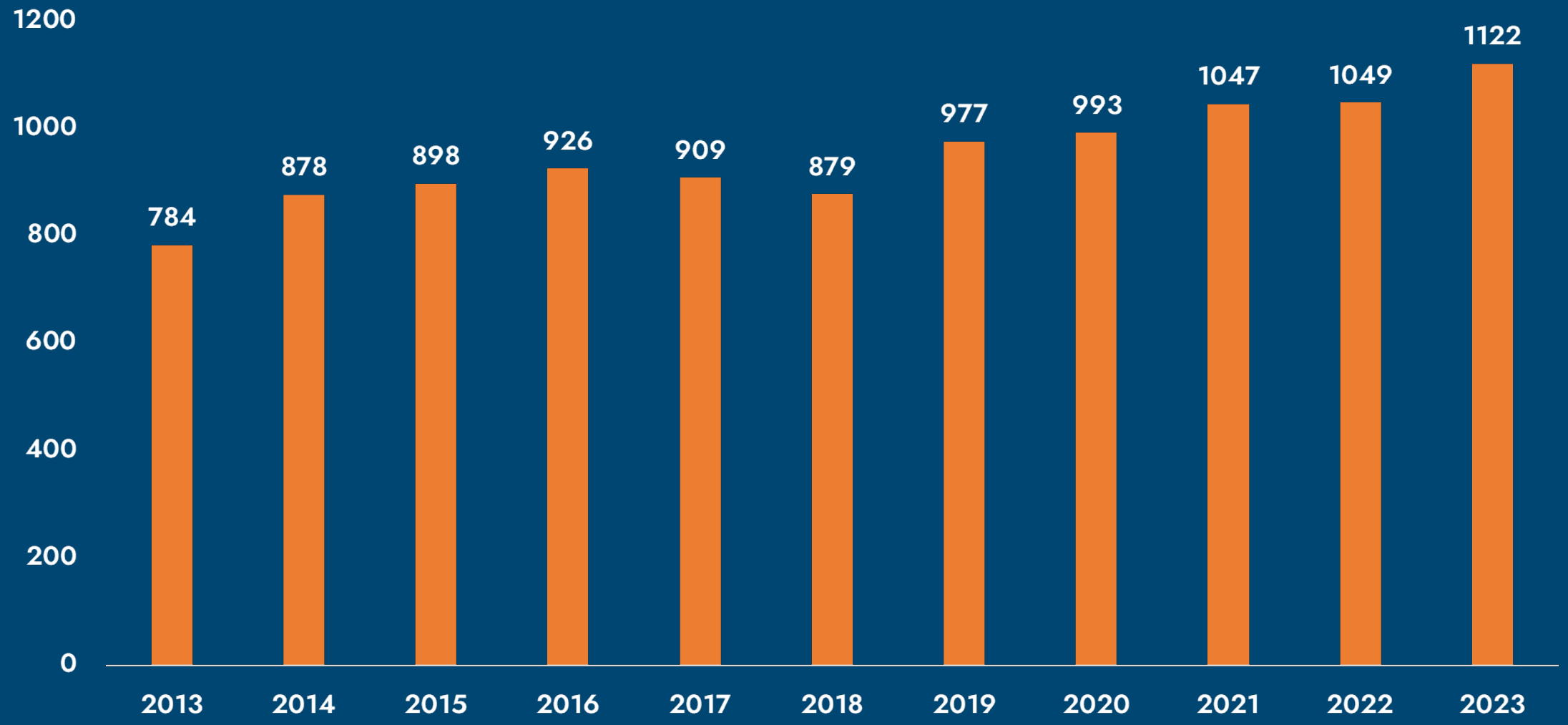
The Polar Code on the IMO website

There are many ways to measure the volume of shipping in a given geographic area.

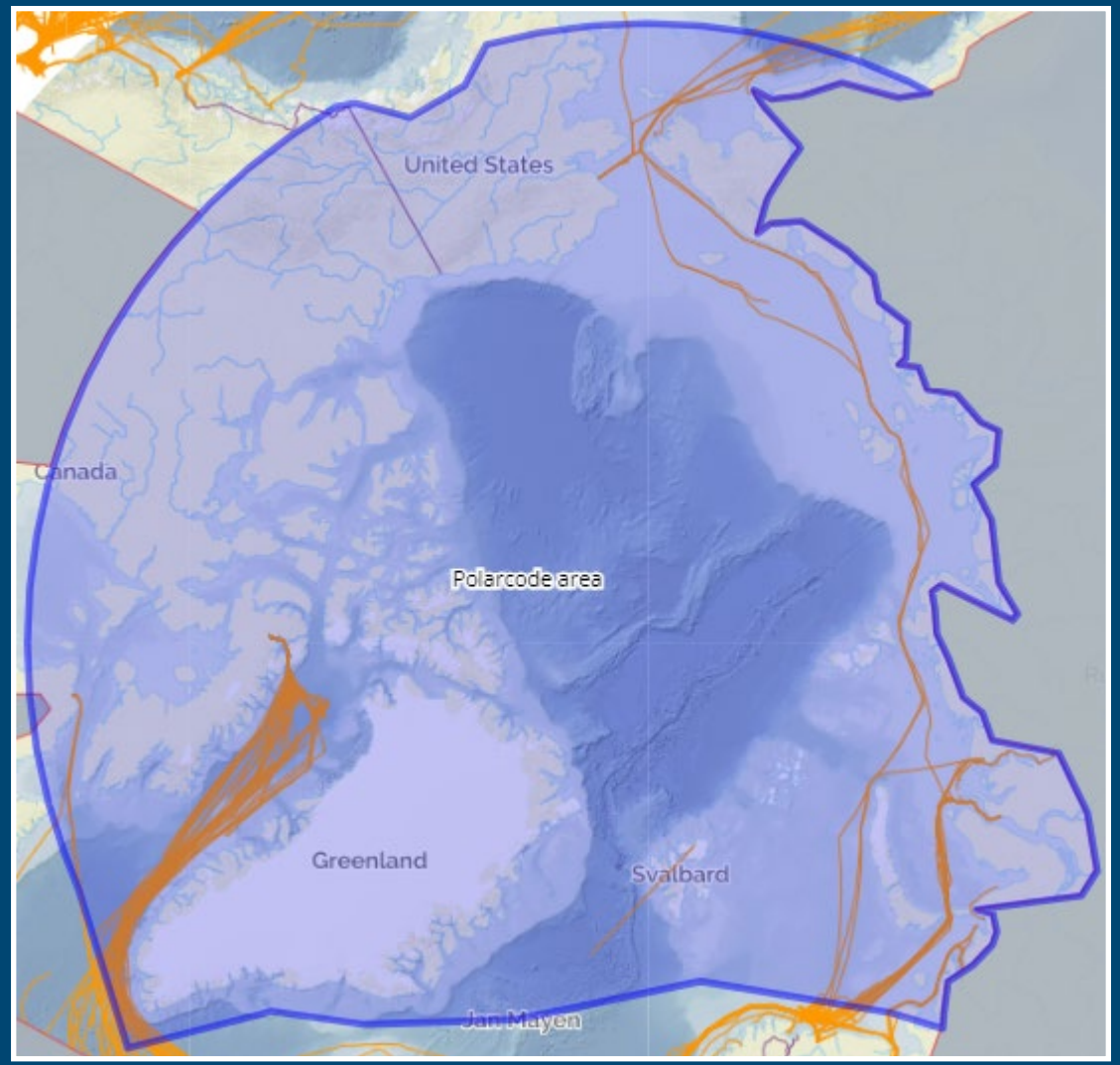
One way is to count the number of unique ships in a specific area.

This method counts each ship only once even if it enters the geographic area multiple times.

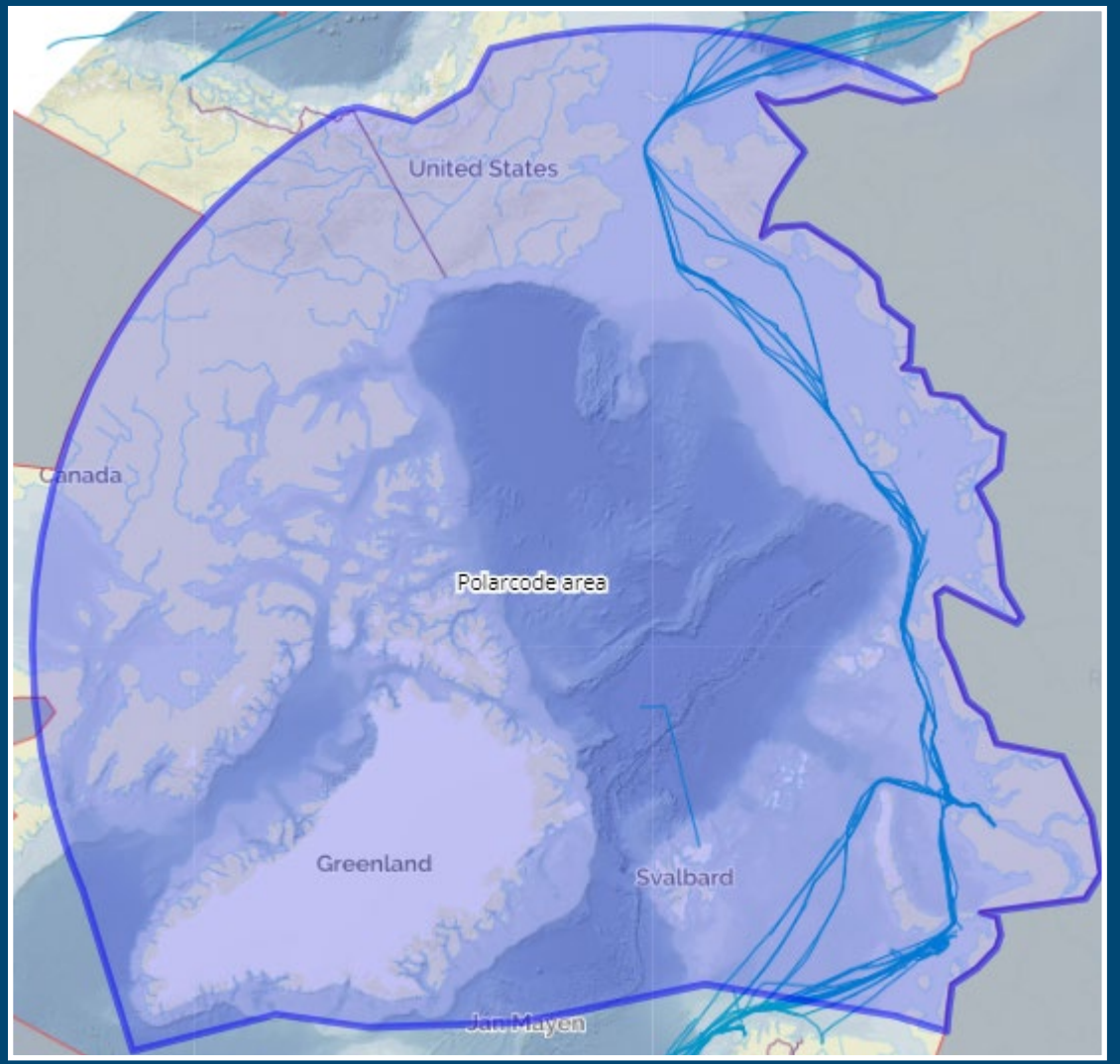
NUMBER OF UNIQUE SHIPS ENTERING THE POLAR CODE AREA IN SEPTEMBER 2013-2023



SHIP TRACKS IN SEPTEMBER 2023

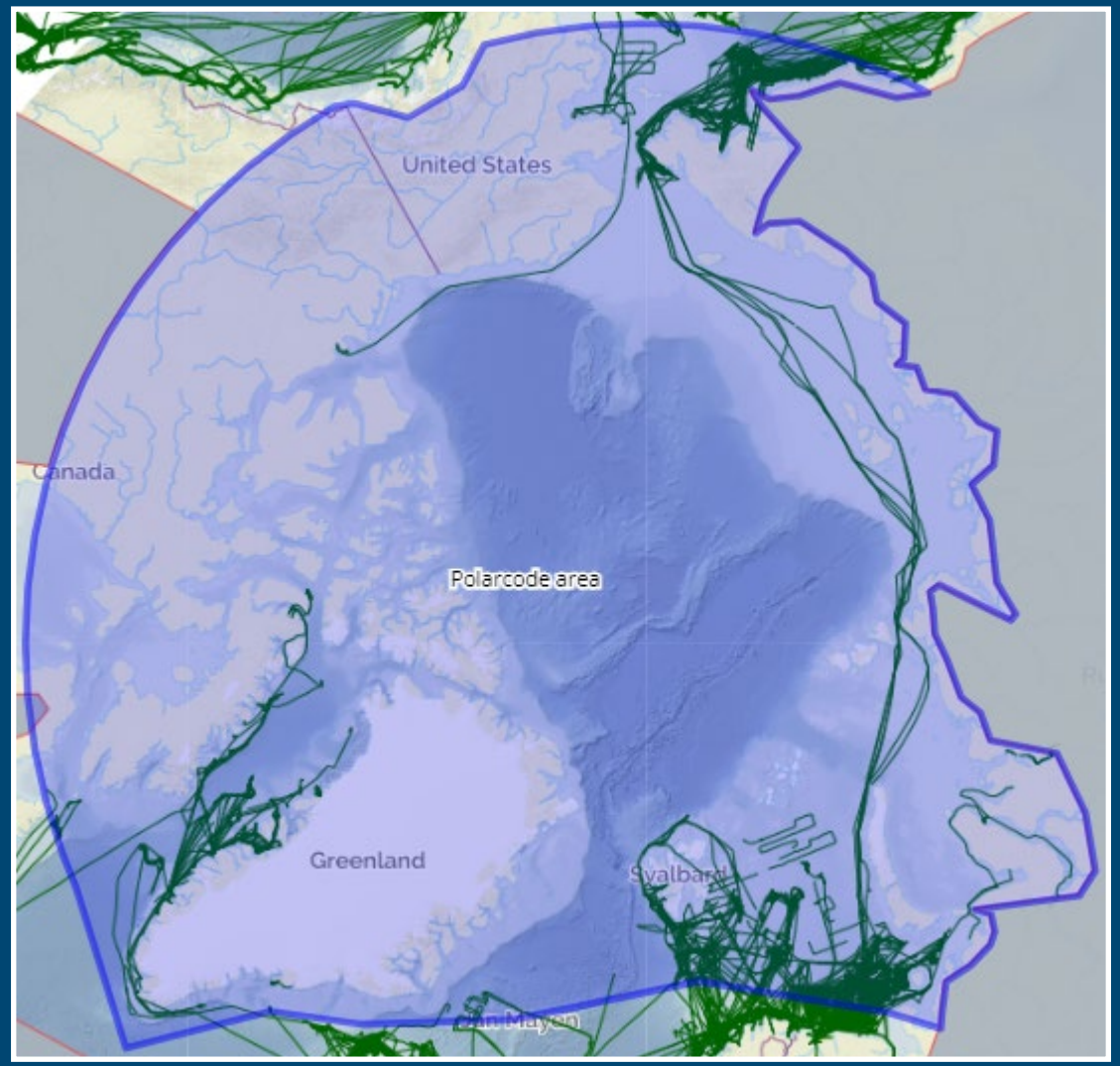


BULK CARRIERS

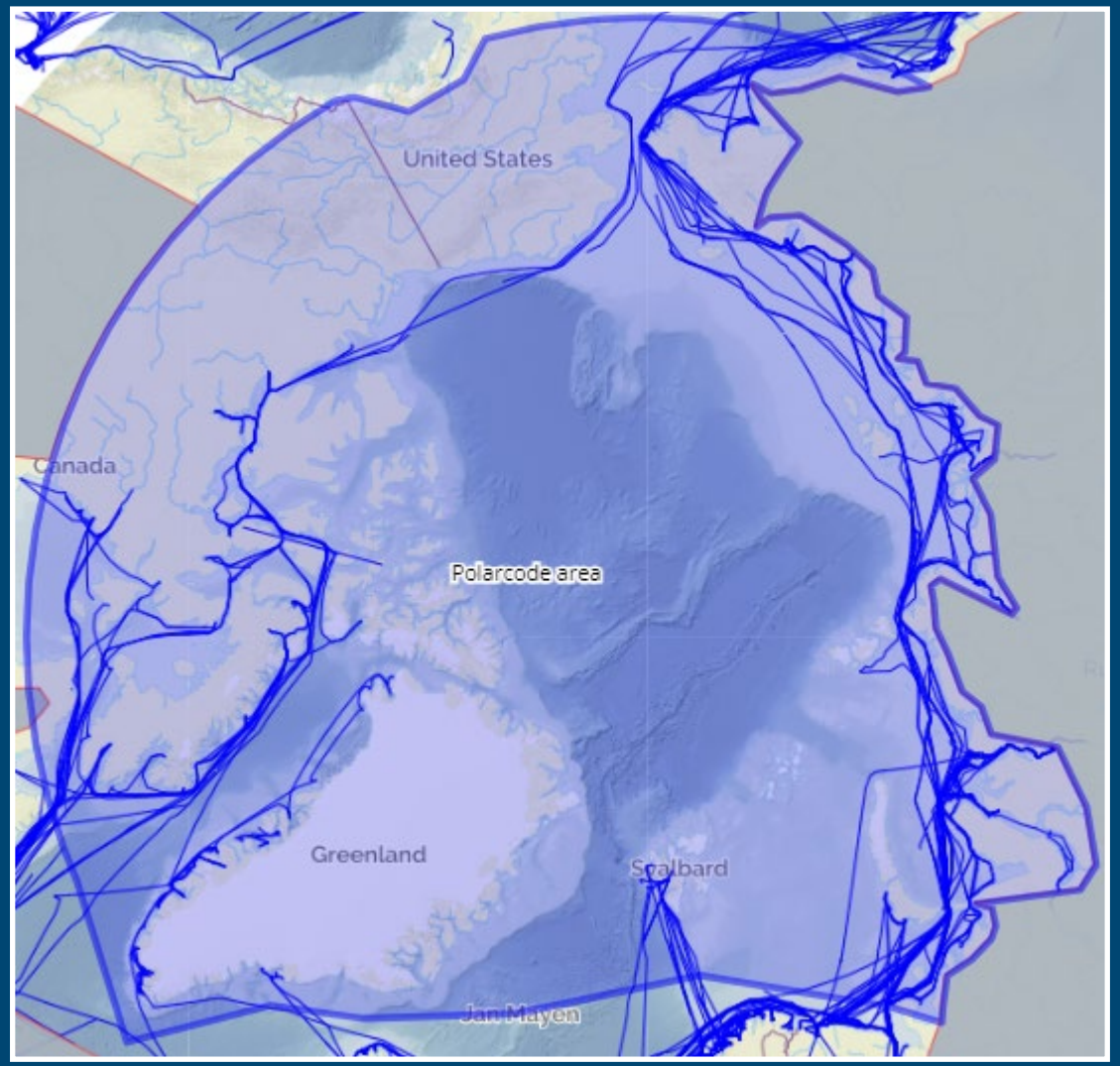


GAS TANKERS

SHIP TRACKS IN SEPTEMBER 2023



FISHING VESSELS



GENERAL CARGO SHIPS

Shipping in the Arctic has increased in recent years:

2013

1298

UNIQUE SHIPS IN THE ARCTIC POLAR CODE AREA

2023

1782

UNIQUE SHIPS IN THE ARCTIC POLAR CODE AREA

INCREASE OF

37%

OVER 10 YEARS

More of these were fishing vessels than any other type.

In 2023

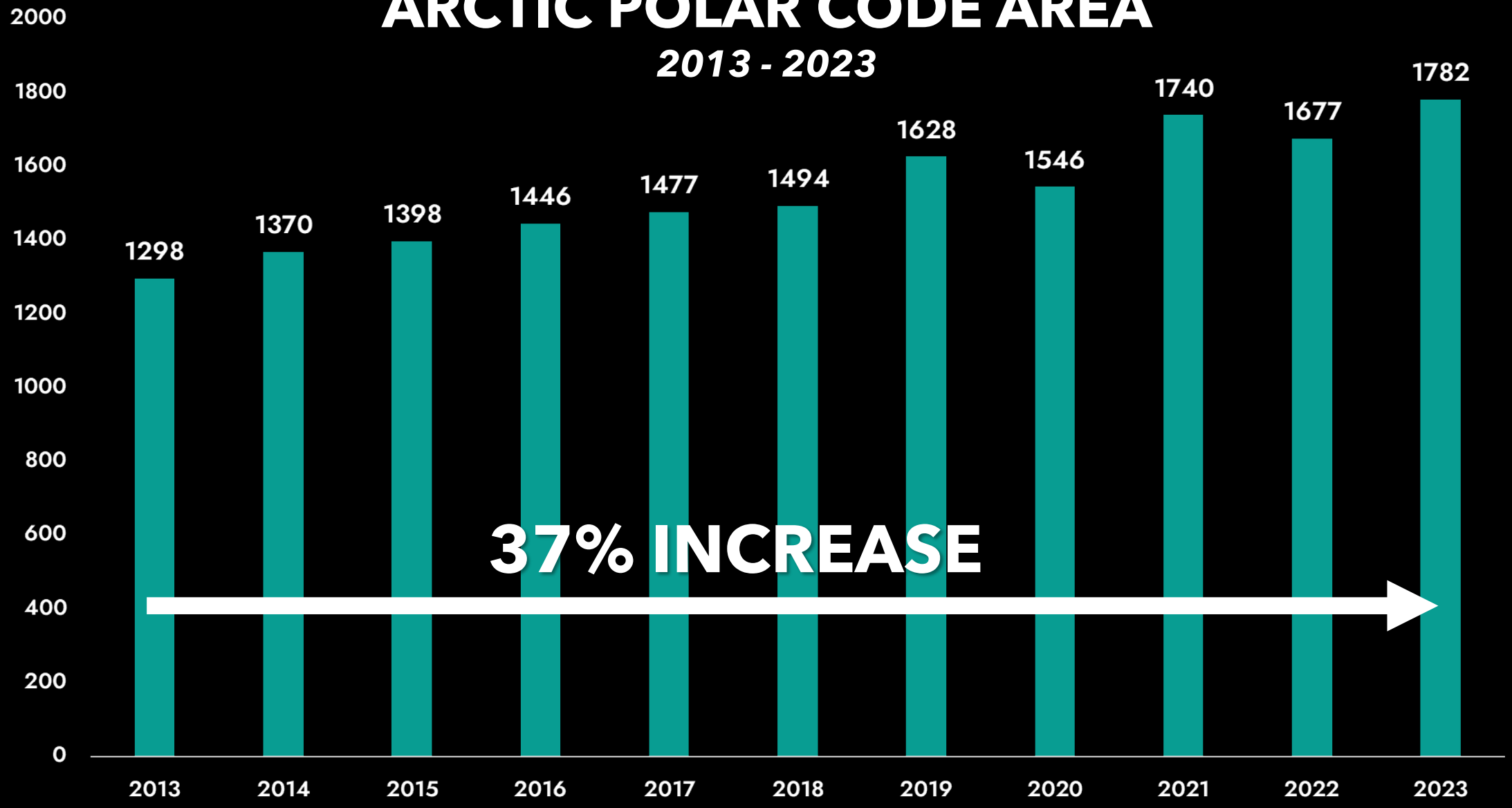
41%

of all ships
that entered the
Arctic Polar Code area
were fishing vessels.

UNIQUE SHIPS

ARCTIC POLAR CODE AREA

2013 - 2023

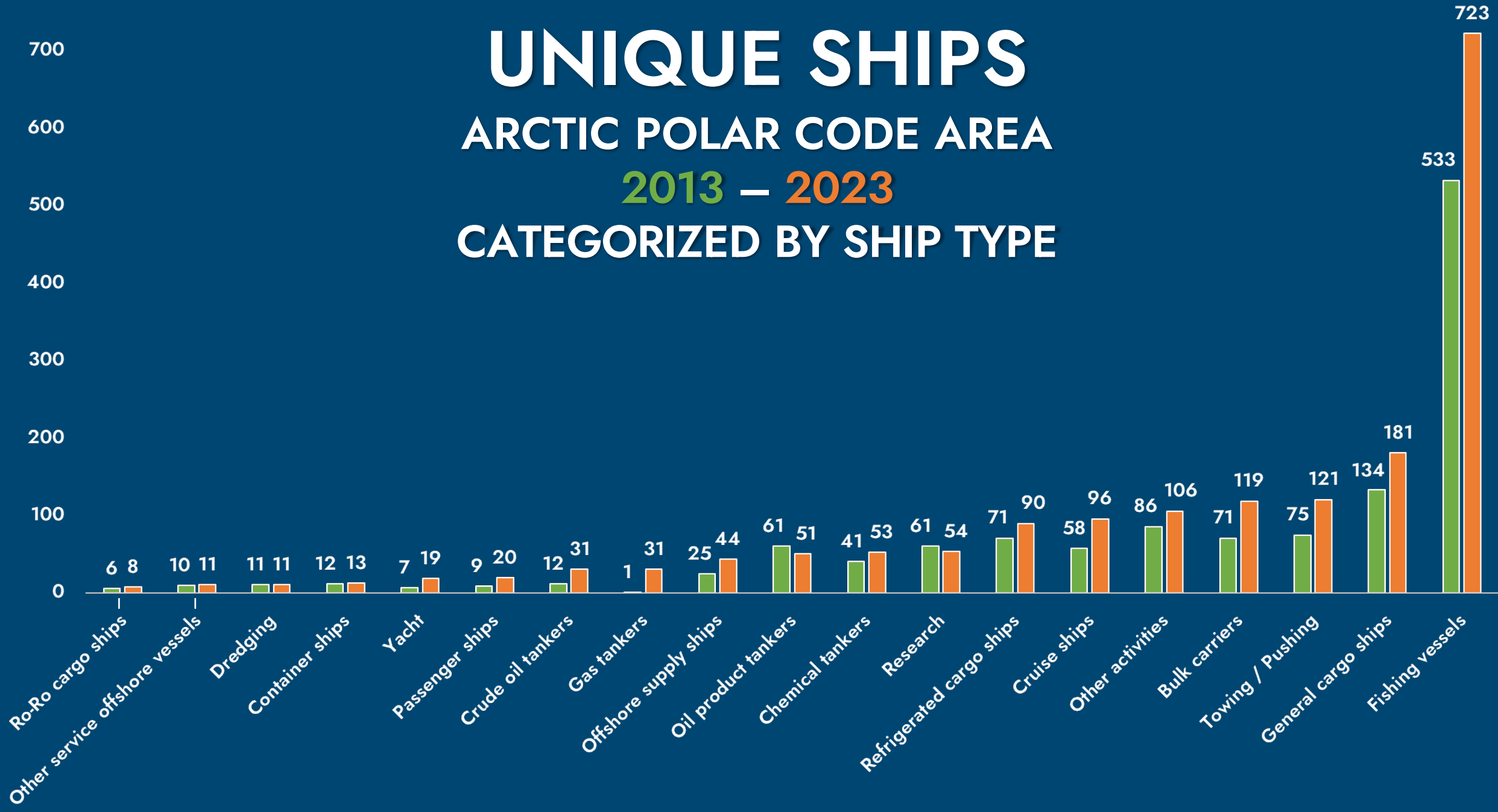


UNIQUE SHIPS

ARCTIC POLAR CODE AREA

2013 – 2023

CATEGORIZED BY SHIP TYPE



UNIQUE SHIPS BY TYPE

ARCTIC POLAR CODE AREA

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Ro-Ro cargo ships	6	8	12	6	7	6	6	6	9	9	8
Dredging vessels	11	14	12	12	4	3	7	19	16	6	9
Other service offshore vessels	10	16	12	8	13	10	10	12	13	8	11
Container ships	12	6	8	8	12	9	6	11	7	8	13
Yachts	7	9	9	12	8	9	14	5	10	21	19
Passenger ships	10	14	12	17	14	17	17	9	13	15	20
Crude oil tankers	12	10	9	14	17	19	26	24	18	16	31
Gas tankers	1	0	1	0	4	13	24	26	26	26	31
Offshore supply ships	25	52	41	25	36	45	45	51	52	31	44
Chemical tankers	42	45	54	50	50	60	60	53	47	55	53
Oil product tankers	62	70	58	47	58	53	55	55	58	54	53
Research vessels	62	70	59	58	60	53	48	47	50	51	54
Refrigerated cargo ships	71	68	77	76	92	81	81	89	83	81	90
Cruise ships	58	58	55	63	63	65	73	7	12	78	96
Other activities	55	65	60	72	67	67	67	69	85	81	104
Bulk carriers	71	66	78	78	75	86	106	98	96	114	119
Towing / Pushing vessels	76	71	87	79	79	80	93	97	119	104	121
General cargo ships	141	160	164	199	182	155	174	187	219	183	181
Fishing vessels	566	568	590	622	636	663	716	681	807	736	725
Total	1298	1370	1398	1446	1477	1494	1628	1546	1740	1677	1782

Another way to measure the increase in Arctic shipping is "distance sailed"

Distance sailed is the aggregated nautical miles vessels traveled in a certain period of time in a certain area.

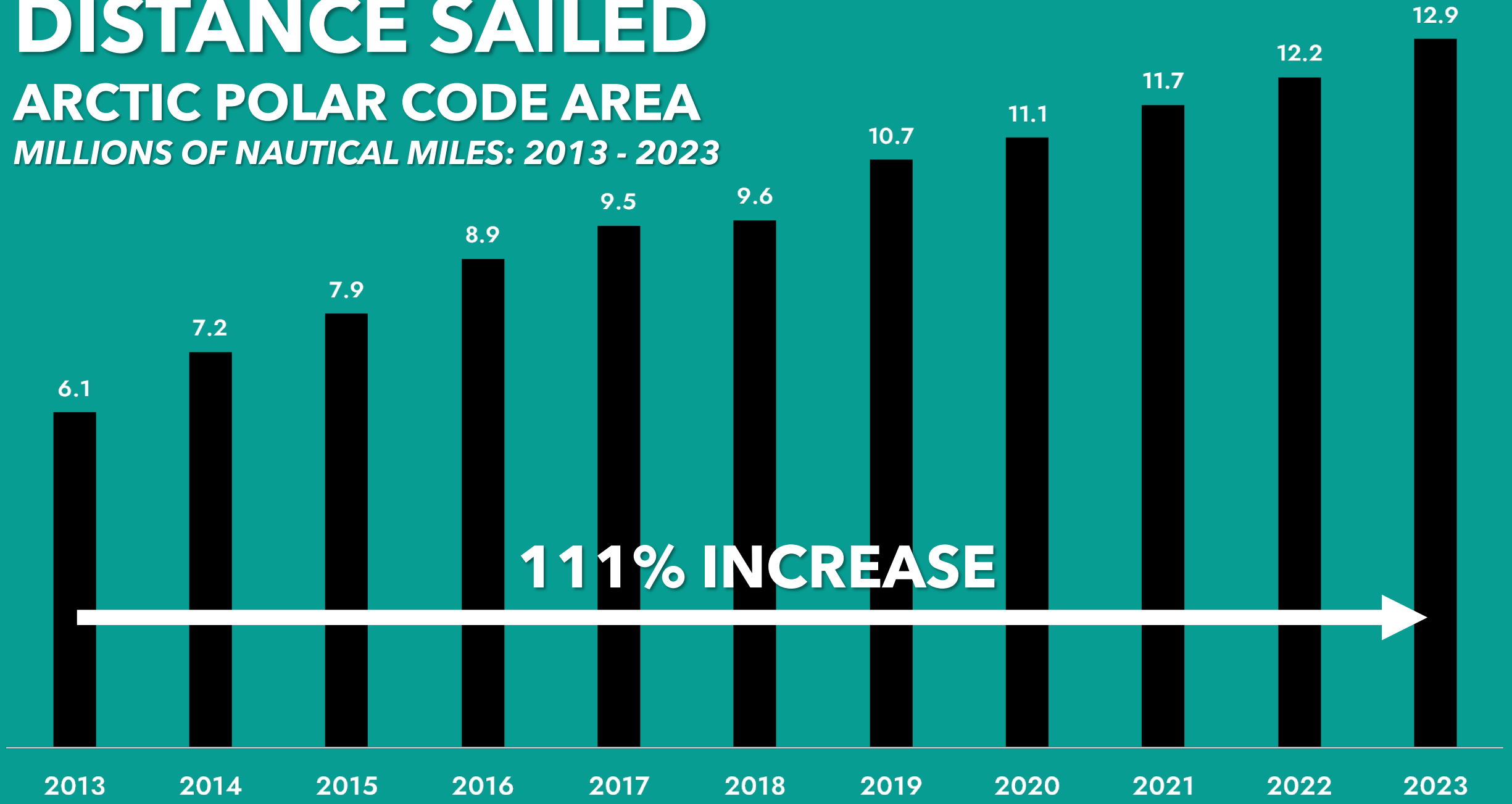
111%

The total distance sailed by all vessels increased by 111% in the Arctic Polar Code area from 2013 to 2023.

DISTANCE SAILED

ARCTIC POLAR CODE AREA

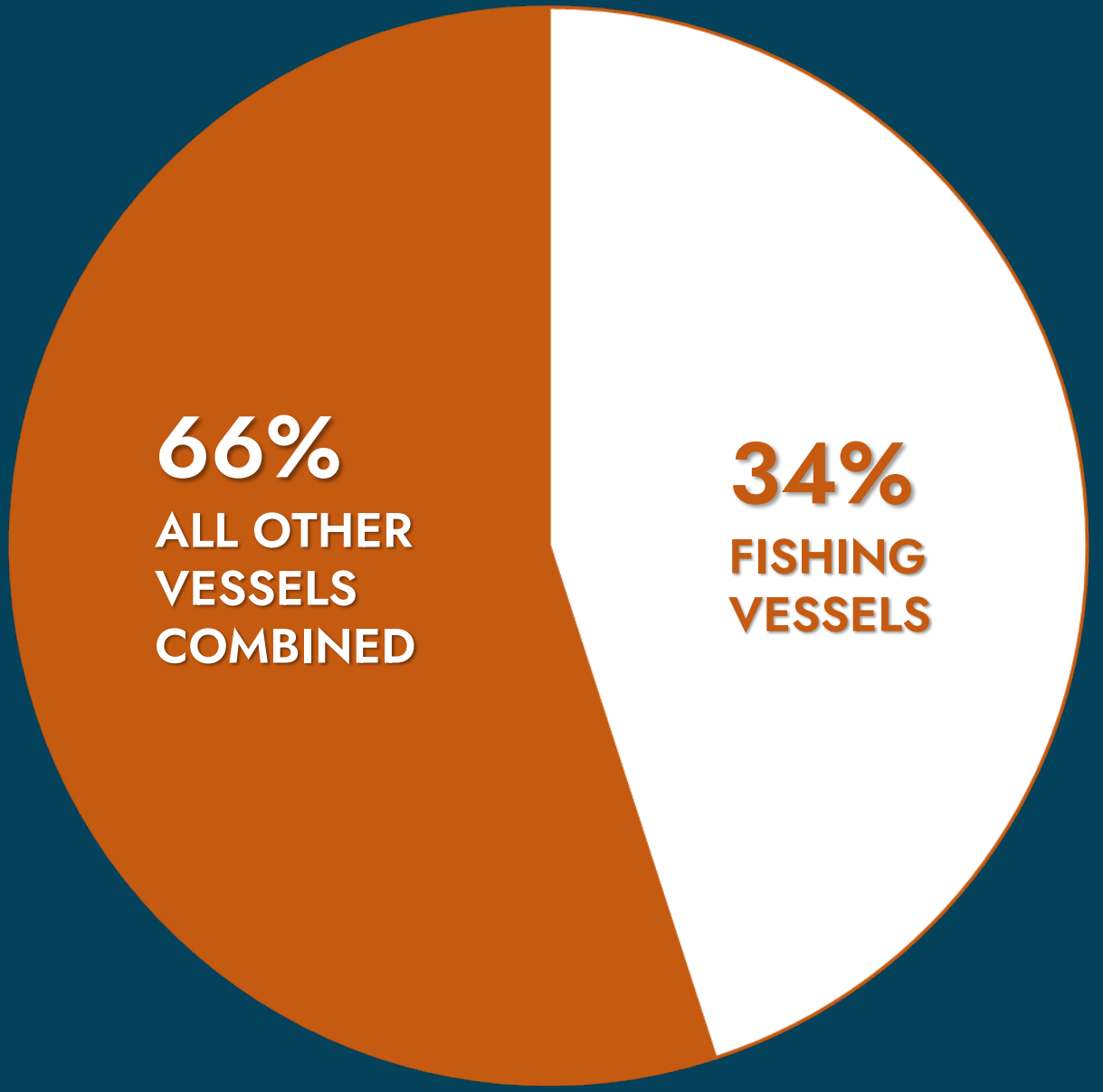
MILLIONS OF NAUTICAL MILES: 2013 - 2023



The total 2013 distance sailed by all vessels was approximately 6.1 million nautical miles.

In 2023, the total aggregated distance sailed had risen to over 12.9 million nautical miles.

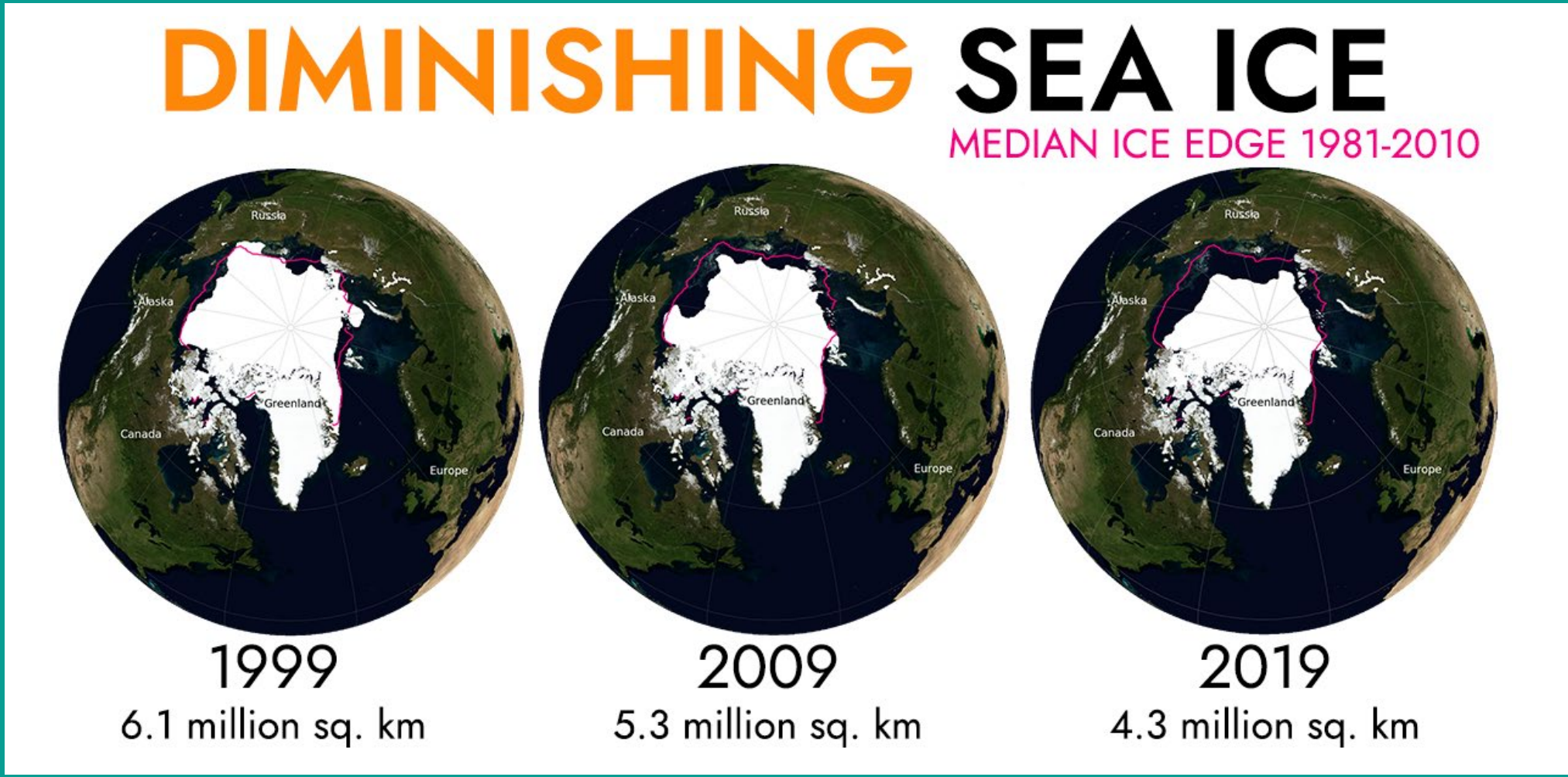
As with unique ships, fishing vessels are dominant.



SAILED DISTANCE - ARCTIC POLAR CODE AREA 2023

THE INCREASE IN SHIPPING COINCIDES WITH DIMINISHING SEA ICE IN THE ARCTIC

THE IMAGES SHOW THE MONTH OF SEPTEMBER EACH YEAR. IMAGES FROM THE NATIONAL SNOW AND ICE DATA CENTER.

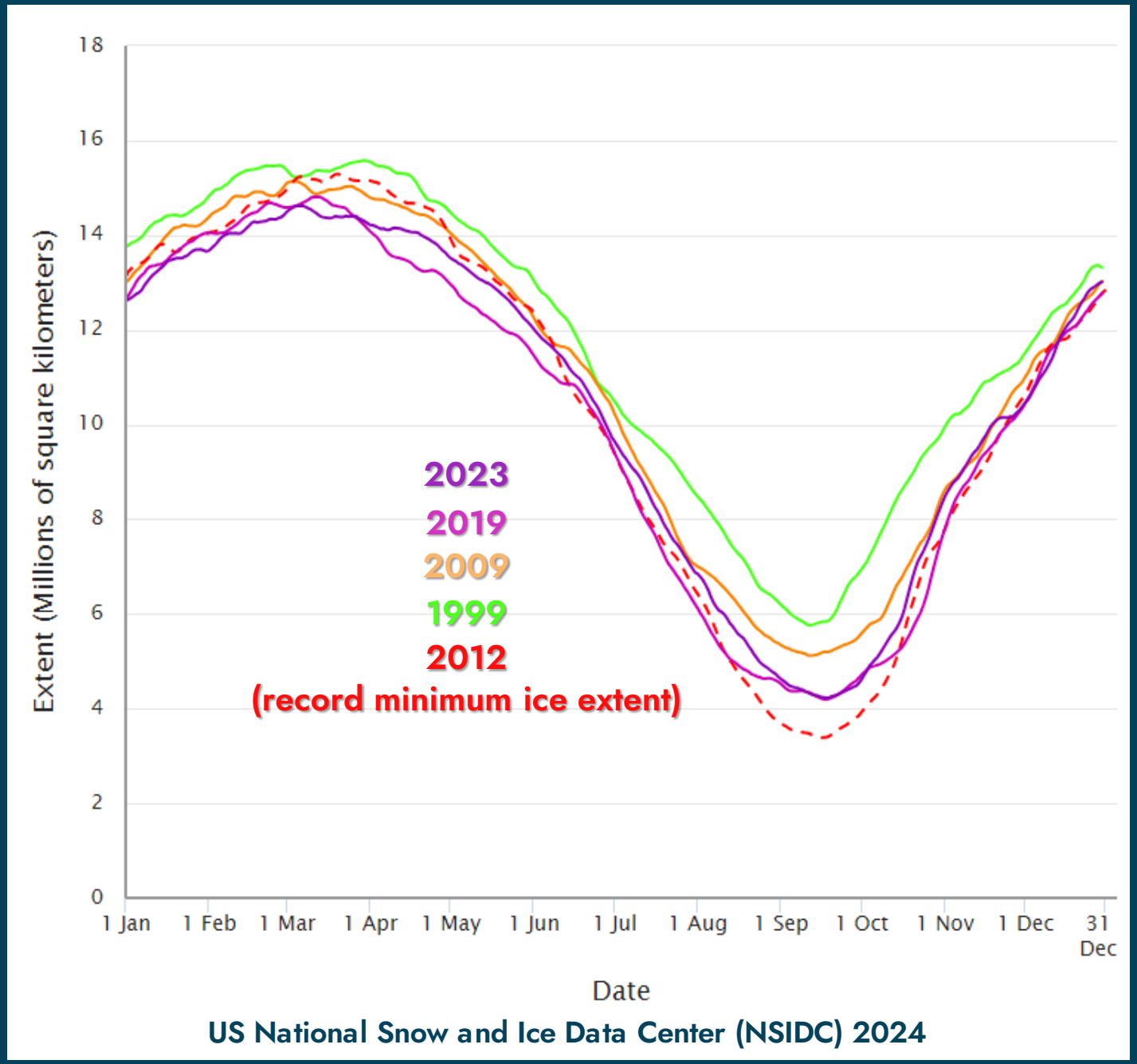


ARCTIC SEA ICE EXTENT

(Area of ocean with at least 15% sea ice)

This graph from the US National Snow and Ice Data Center (NSIDC) shows the Arctic sea ice extent.

The graph shows that over the last 25 years, average Arctic sea ice extent is decreasing.



Natural resource extraction is one activity contributing to an increase in Arctic shipping.

The following example shows an area within the Arctic Polar Code Area experiencing increased activity from iron ore extraction.

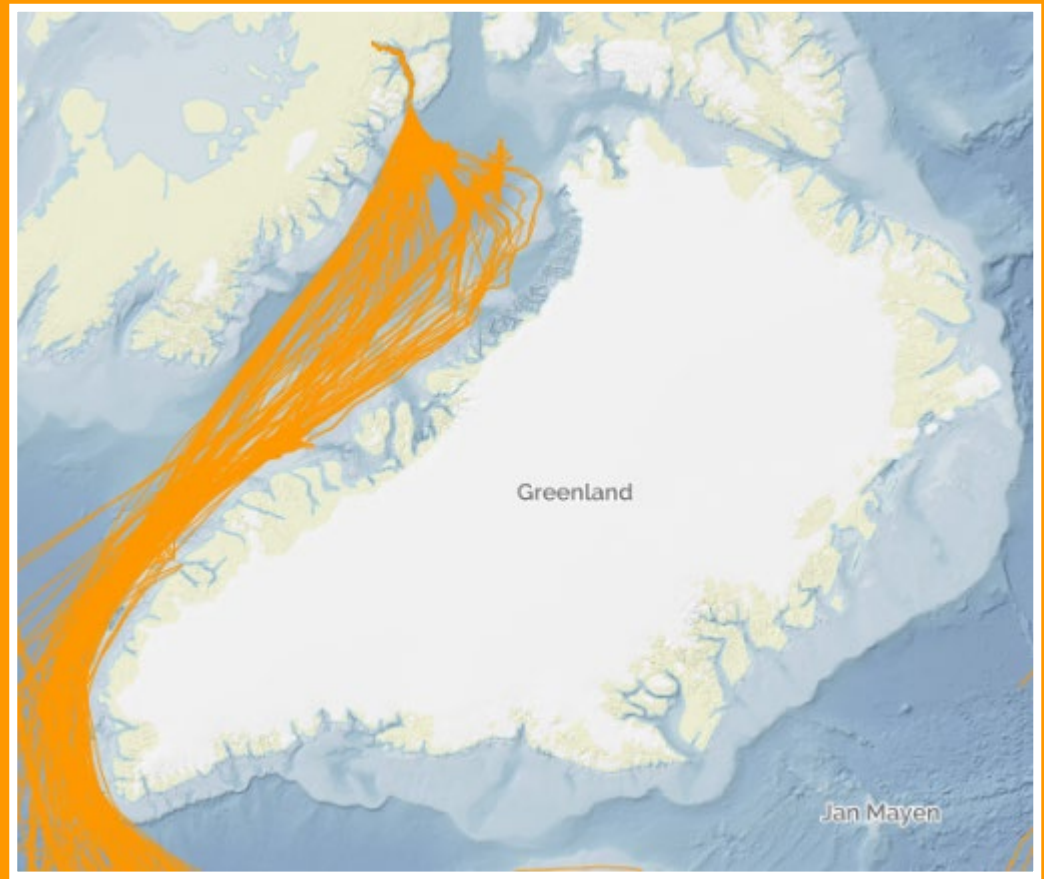
BULK CARRIER TRAFFIC

to and from the Mary River Mine

Bulk carriers transport cargoes in large quantities, like food grains, ores, coal, and cement.

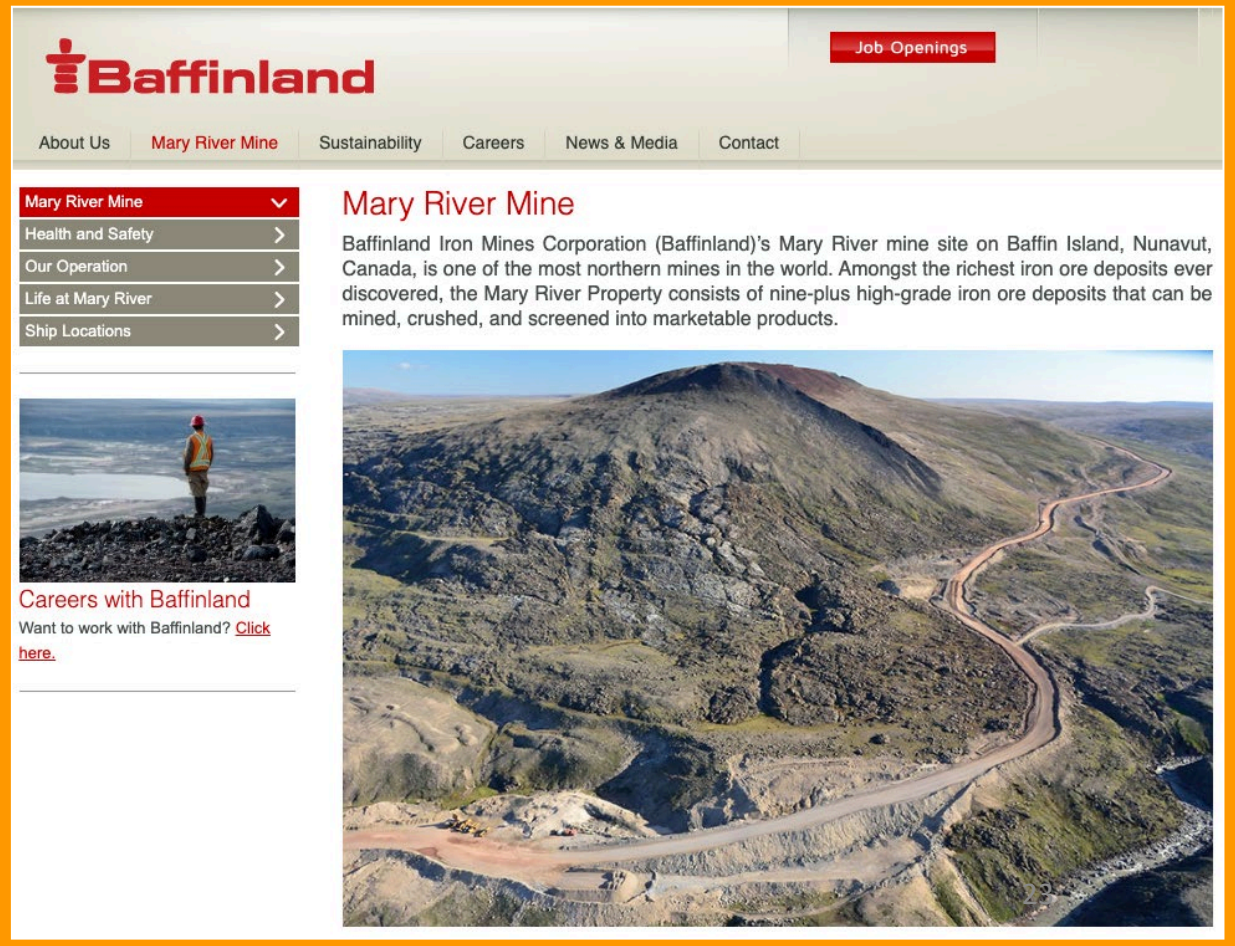
2013

2023



BULK CARRIER TRAFFIC IN 2013 IN THE POLAR CODE AREA WAS VERY LOW. BY 2023 IT HAD INCREASED SUBSTANTIALLY.

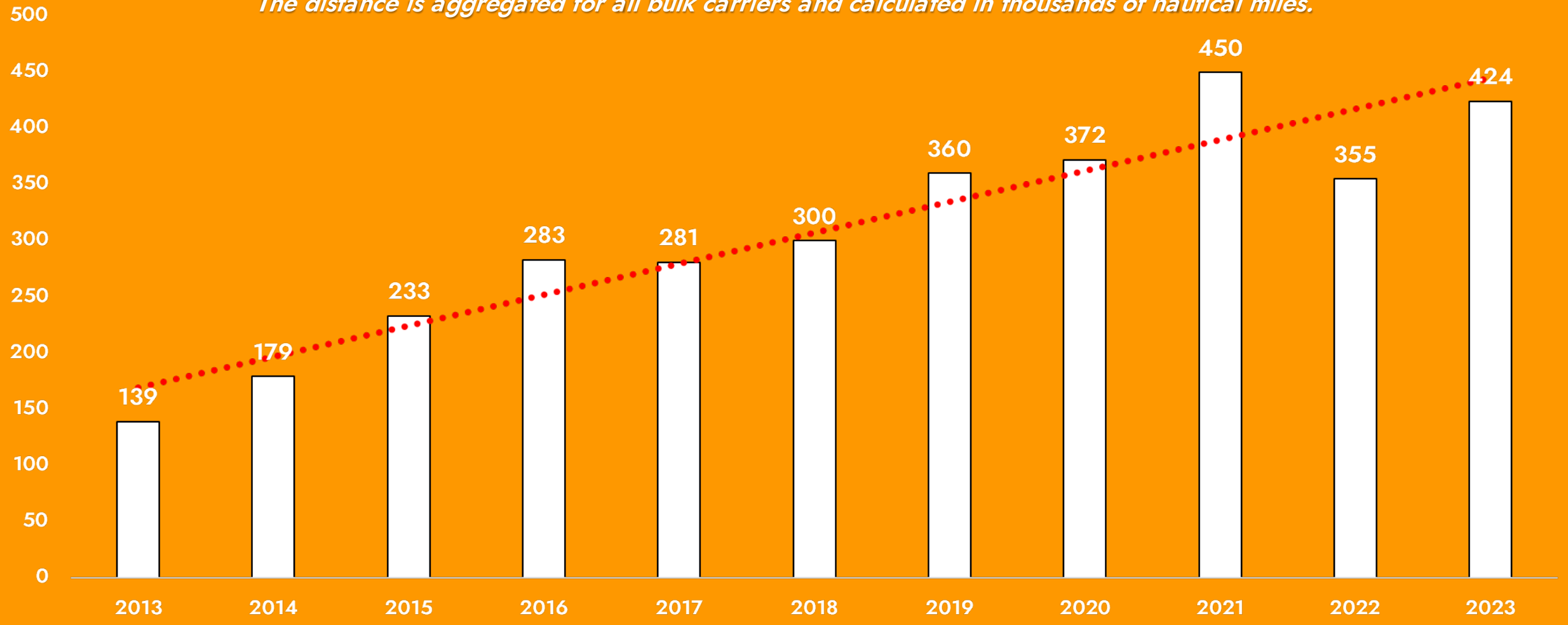
In 2014, one of the most northern mines in the world opened. It is among the richest iron ore deposits ever discovered. The Mary River Project involves the seasonal shipping of 3,5 million tonnes of iron ore during open water season.



BULK CARRIERS IN THE POLAR CODE AREA

The distance sailed by bulk carriers in the Arctic Polar Code Area has risen 205% between 2013 and 2019

The distance is aggregated for all bulk carriers and calculated in thousands of nautical miles.



ALL OTHER VESSEL TYPES SHOW A SIMILAR UPWARD TREND

PAME WILL CONTINUE TO MONITOR SHIP TRAFFIC TRENDS.

ASTD DATA CAN SUPPORT THE DEVELOPMENT OF RECOMMENDATIONS TO ENHANCE ARCTIC MARINE SAFETY AND SUPPORT PROTECTION OF PEOPLE AND THE ENVIRONMENT.

ABOUT THIS REPORT

This is the first report generated by PAME's Arctic Ship Status Report (ASSR) Project. The goal of the ASSR Project is to use PAME's Arctic Ship Traffic Data (ASTD) System to highlight topical issues related to shipping in the Arctic. Launched in 2019, the ASTD System is PAME's database for Arctic shipping activities.

More on www.astd.is.

All use of this report is allowed. Please cite as PAME – Arctic Shipping Status Report #1 *and provide a hyperlink to this report.*

Due to data updates and slight differences in analytical methodologies, the overall number of ships may differ slightly from ASSR to ASSR.

The project gratefully acknowledges funding from the Nordic Council of Ministers.

Nordic Co-operation

Substantive revisions made in January 2024.

Sources:

- ASTD: Arctic Ship Traffic Data
- IMO: Shipping in polar waters
- National Snow and Ice Data Center (NSIDC) – Sea Ice
- Baffinland: Mary River Mine