

# CANADA'S ARCTIC EMISSION CONTROL AREA (ECA) AND BLACK CARBON EMISSIONS

PRESENTATION TO 2025 POLAR MARITIME SEMINAR

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Environment and  
Climate Change Canada

Environnement et  
Changement climatique Canada

Canada 

# Canada's Arctic Emission Control Area (ECA)

A photograph of an Arctic coastal scene. In the foreground, there are several large, white icebergs floating in the water. In the middle ground, a large blue and red cargo ship is visible on the left side of the frame. The background features snow-covered mountains and a hazy sky. The text "Canada's Arctic Emission Control Area (ECA)" is overlaid in the center of the image.

# CONTEXT & RATIONALE

In October 2024, the Canadian Arctic ECA proposal was adopted by the Marine Environment Protection Committee (MEPC 82).

## 1. The Canadian Arctic was less protected than the rest of North America:

- Marine areas and populations in Canada and the U.S. have benefited from the North American (NA) ECA since it was implemented in 2013.
- The Arctic was not included in the NA ECA due to a lack of modelling capacity in the Arctic and less shipping activity in the region at the time.

## 2. Shipping activity and resulting air pollution and climate impacts are increasing in the Canadian Arctic:

- Significant increases in ship traffic have already been observed.
  - Increased air pollution greatly impacts health and the environment, the use of cleaner fuels can reduce the warming effects of black carbon.
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PACIFIC OCEAN  
Océan Pacifique

ARCTIC OCEAN  
Océan Arctique

UNITED STATES OF AMERICA  
ÉTATS-UNIS D'AMÉRIQUE

GREENLAND  
Groenland

Beaufort Sea  
Mer de Beaufort

Yukon

Northwest  
Territories

Nunavut

British  
Columbia

Alberta

CANADA

Saskatchewan

Manitoba

Ungava Bay  
Baie d'Ungava

Hudson Bay  
Baie d'Hudson

Newfoundland  
& Labrador

James Bay  
Baie James

Québec

Ontario

New  
Brunswick

Prince  
Edward  
Island

Nova  
Scotia

ATLANTIC OCEAN  
Océan Atlantique

UNITED STATES OF AMERICA  
ÉTATS-UNIS D'AMÉRIQUE

MEXICO  
MEXIQUE

**Legend / Légende**

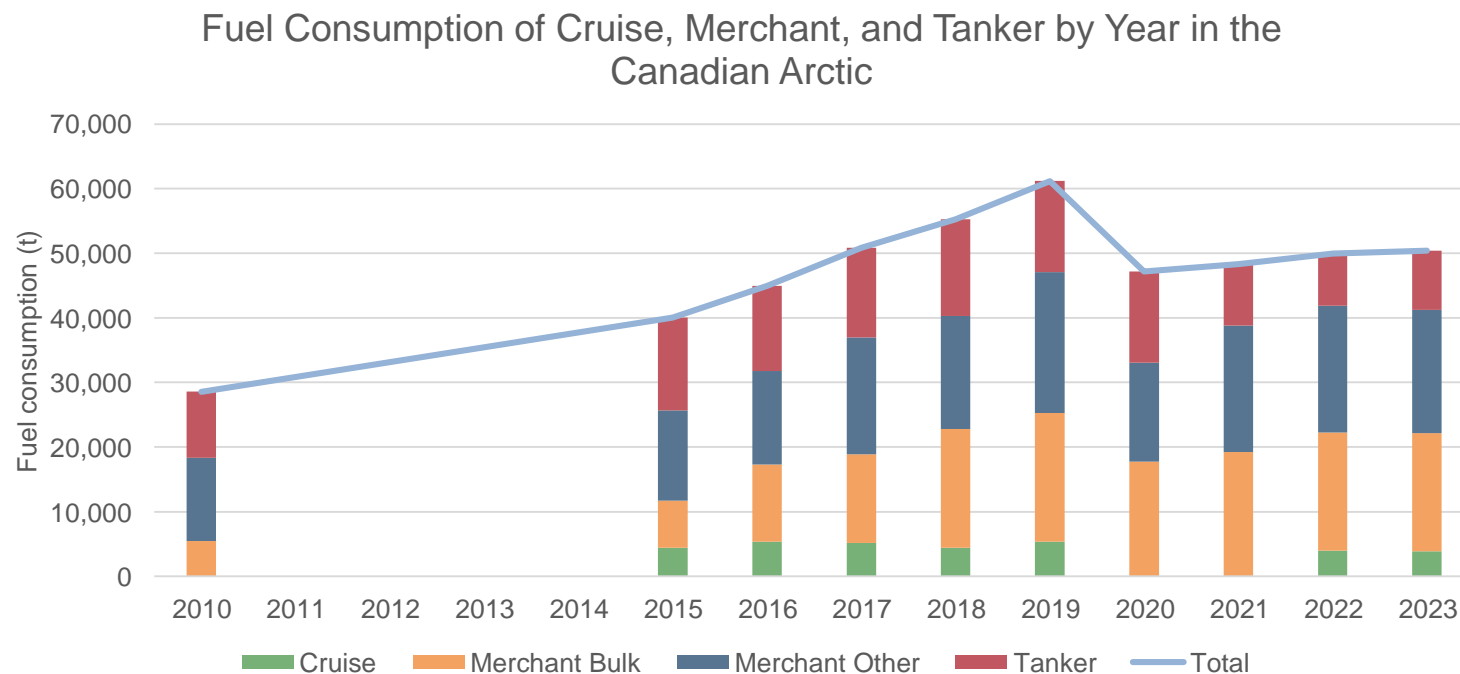
- Proposed Canadian Arctic ECA  
Proposition de la ZCE de l'Arctique canadien
- North American ECA  
ZCE de l'Amérique du Nord

N

0 500 1,000 2,000  
Kilometers / kilomètres

# INCREASED SHIPPING ACTIVITY

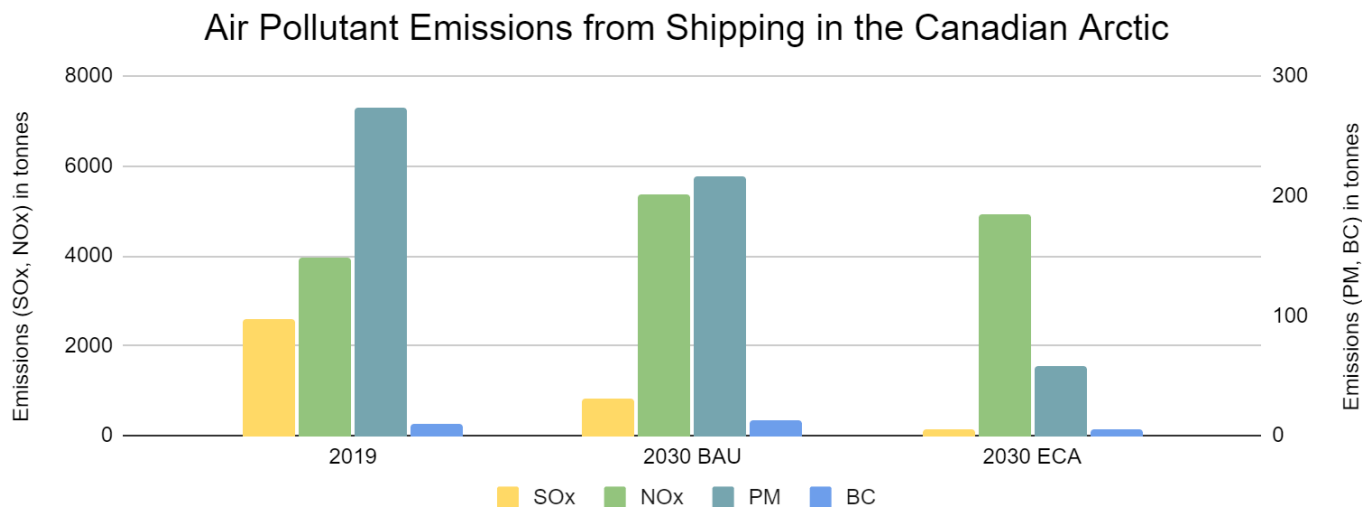
- Between 2010 and 2019, fuel consumption by cruise, merchant, and tanker ships in the Canadian Arctic more than doubled
- COVID-19 caused a decrease in vessel traffic that is still recovering



*\*An earlier version of the Marine Emissions Inventory Tool was produced for ECCC using 2010 data, ECCC then further developed the tool starting with 2015 data resulting in a gap of data for 4 years*

*Ships across this period used various marine fuels, such as HFO, MDO, and VLSFO. It should be noted that the fuel efficiencies of different fuels can differ slightly, which is not accounted for in the graph above*

# ENVIRONMENTAL BENEFITS



% change from 2030 BAU to ECA	SOx	NOx	Total PM	BC
	-80%	-8%	-74%	-59%

**2030 BAU (business-as-usual) scenario:** the scenario in 2030 if no additional emissions regulations have been implemented (includes global S cap)

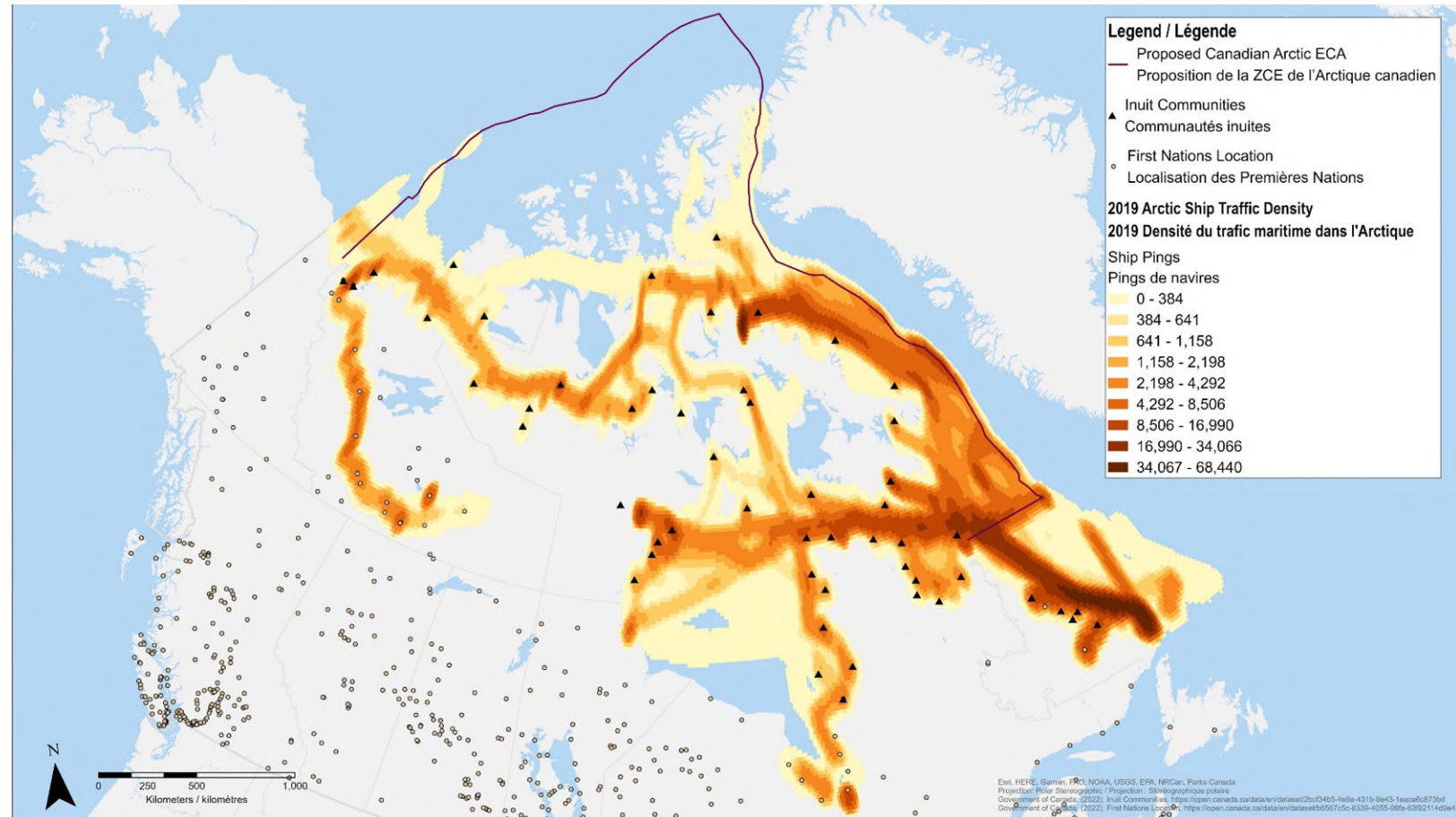
**2030 ECA scenario:** the scenario in 2030 if ECA and HFO ban regulations have been implemented

- Reduced effects of air pollution, acidification, and eutrophication in the Arctic
  - Critical loads are already reaching exceedance or are exceeded
- Reduction in warming effects due to black carbon (BC) is anticipated to be a co-benefit of the ECA
  - Compliance with the use of scrubbers would not result in the BC benefits
  - Though many vessels have shifted away from HFO usage, 0.5% sulphur fuels (like VLSFO) can still result in higher BC and PM emissions than using ECA-compliant fuels.
  - Other actions besides the ECA are needed for BC reductions in the Arctic as the ECA is the first step and there are land-based sources as well



# HEALTH BENEFITS

- Canada has a duty to ensure a healthy environment for all its citizens as we journey towards reconciliation with Indigenous peoples.
- Lower ship emissions:
  - Will reduce impacts to culturally significant areas, upon which Indigenous communities depend for their food security, cultural identity, and way of life
  - Will help to protect vulnerable populations which can be more sensitive to the adverse health effects of pollution



# TIMELINE

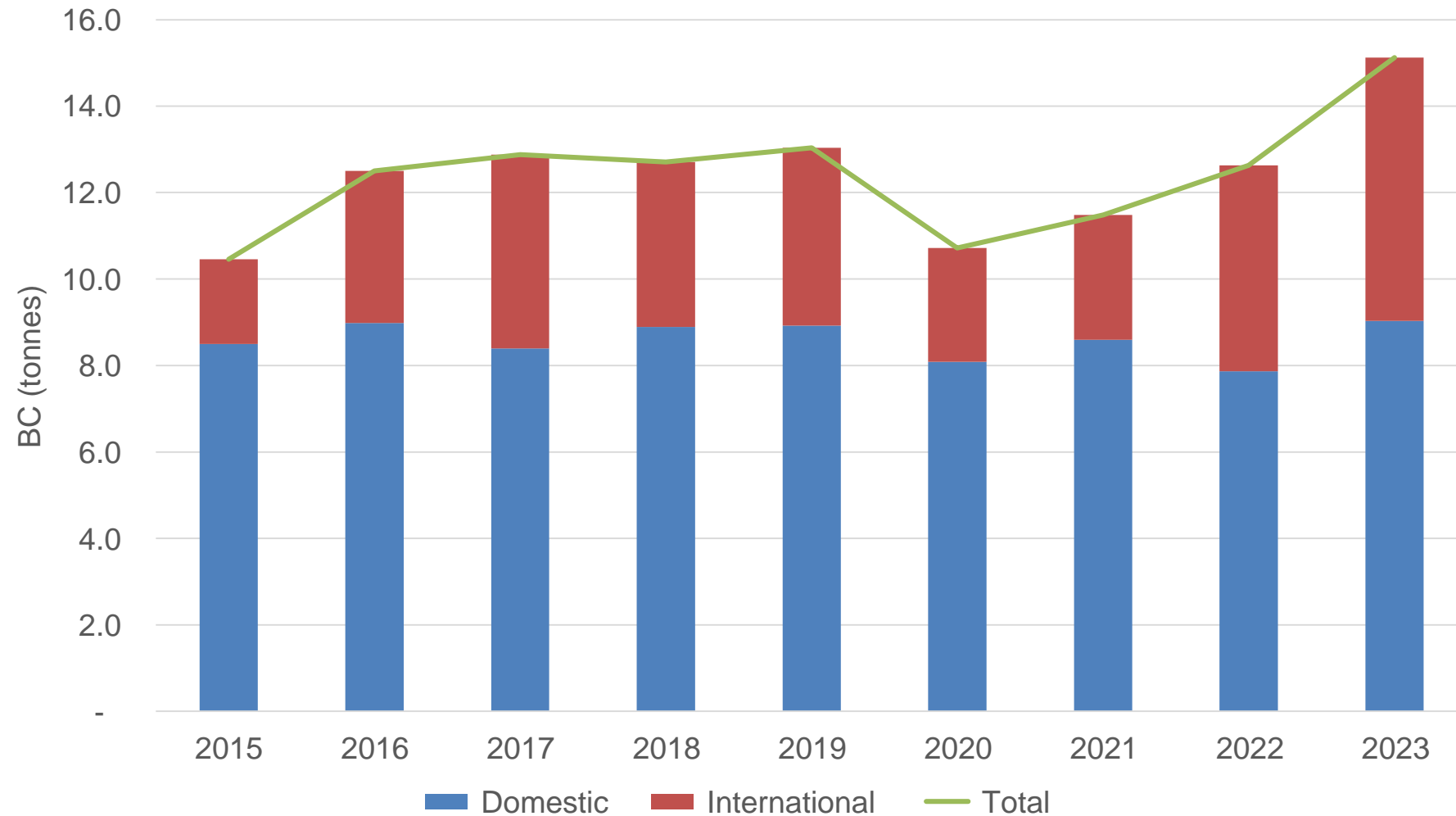
- **2016-2020:** Arctic research work
  - **2021-2023:** Development of Arctic ECA proposal
  - **April 2024:** Approval of Arctic ECA proposal at MEPC 81
  - **October 2024:** adoption of Arctic ECA proposal at MEPC 82
    - **January 1, 2025:** Ships constructed on or after 1 January 2025 will have to comply with the NOx Tier III standards in the ECA area
    - **September 1, 2025:** Acceptance into MARPOL
    - **March 1, 2026:** Entry into force under MARPOL
    - **March 1, 2027:** SOx regulations domestic entry into force (under MARPOL, all ECA SOx regulations have a one-year delay)
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An aerial photograph of a vast sea of ice floes, likely in the Arctic or Antarctic region. The ice floes are of various sizes and shapes, scattered across a dark, open ocean. The sky is overcast with soft, grey clouds, and a faint orange glow is visible on the horizon, suggesting a sunrise or sunset. The overall scene is desolate and emphasizes the scale of the ice field.

# **Canada's Black Carbon Marine Emissions**

# Domestic and International Black Carbon Shipping Emissions in Canada's Arctic



# REDUCING BLACK CARBON EMISSIONS IN THE CANADIAN ARCTIC

- Canada has developed an Arctic and Northern Policy Framework and Strategy that includes emissions reductions commitments
  - Marine-based reductions from 0.5% Sulphur Cap, HFO ban, and future Canadian Arctic ECA
  - Land-based reductions from programs to invest in clean energy projects, lowering diesel usage and wood-burning:
    - Northern Responsible Energy Approach for Community Heat and Electricity (REACHE) program
    - Clean Energy for Rural and Remote Communities Program
    - Investing in Canada Infrastructure Program
    - Indigenous Off-Diesel Initiative
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# REDUCING BLACK CARBON EMISSIONS ACROSS CANADA

- Canada is on track to do its part to achieve the collective goal of Arctic States to reduce emissions of black carbon by 25-33% from 2013 levels by 2025
  - Canada's strategies and action plans
    - Strategy on Short-Lived Climate Pollutants
    - 2030 Emission Reduction Plan
    - Clean Fuel Regulations
    - Pan-Canadian Framework on Clean Growth and Climate Change
  - Land-based regulations
    - Off-road Compression-Ignition and Large Spark-Ignition Engine Emission Regulations
    - On-Road Vehicle and Engine Emission
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# THANK YOU

Contact for questions or to provide input:

## **Environment and Climate Change Canada**

Hui Peng: [hui.peng@ec.gc.ca](mailto:hui.peng@ec.gc.ca)

Katelyn Wells: [katelyn.wells@ec.gc.ca](mailto:katelyn.wells@ec.gc.ca)

## **Transport Canada**

Michelle Sanders: [michelle.sanders@international.gc.ca](mailto:michelle.sanders@international.gc.ca)

Stefan Wesche: [stefan.wesche@tc.gc.ca](mailto:stefan.wesche@tc.gc.ca)

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