

**Moving Forward
Network** →



INTERNATIONAL SHIPPING & OCEAN-GOING VESSELS COUNTRY PROFILE



CANADA



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Moving Forward Network

The **Moving Forward Network (MFN)** is a national network of over 50 member organizations that centers grassroots, frontline-community knowledge, expertise and engagement from communities across the US that bear the negative impacts of the global freight transportation system. MFN builds partnerships between these community leaders, academia, labor, big green organizations and others to protect communities from the impacts of freight. Its diverse membership facilitates an integrated and geographically dispersed advocacy strategy that incorporates organizing, communications, research, legal and technical assistance, leadership development and movement building. This strategy respects multiple forms of expertise and builds collective power.

MFN advocates for effective rulemaking on global and local levels as necessary to maximize zero-emission requirements for marine engines. Regulation and technological development that center zero emissions while prioritizing environmental justice are not just feasible; it is deadly to continue to delay action.



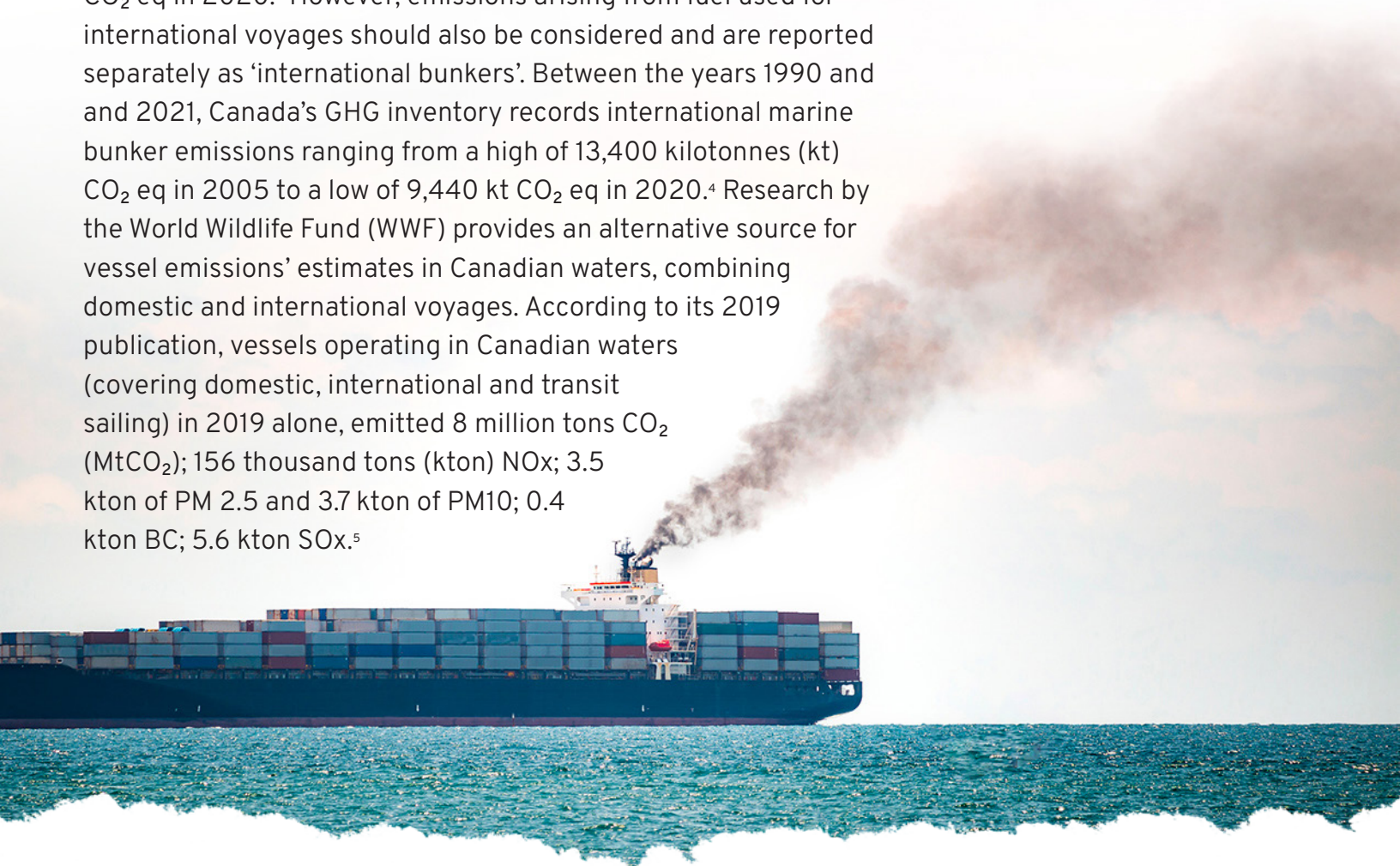
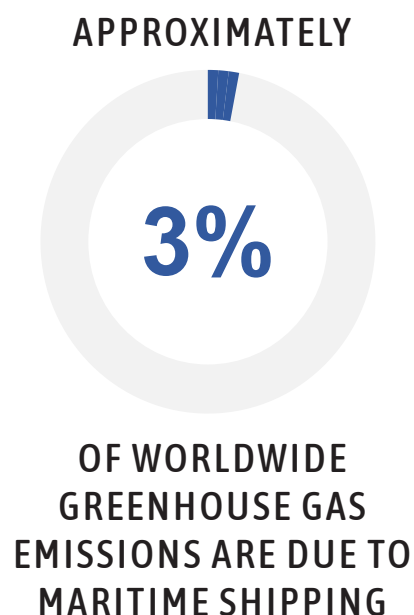
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IMPACTS OF MARITIME SHIPPING IN CANADA

GHG Emissions, Air Pollution and Public Health

Maritime shipping is responsible for about 3% of all greenhouse gas (GHGs) emissions worldwide every year.¹ GHGs are the atmospheric gasses responsible for causing global warming and climatic change. The main emissions from shipping are CO₂, nitrogen oxide (NOx), sulfur oxide (SOx), methane (CH₄), black carbon (BC) and particulate matter or particles (PM), all known to be harmful to human health.²

According to Canada's most recent national inventory reporting on GHG emissions to the United Nations Framework Convention on Climate Change (UNFCCC), domestic marine transport emissions (including domestic navigation, fishing and military water-borne navigation) between the years 1990 and 2021, varied from a low of 3.1 megatonnes (Mt) CO₂ eq in 2005 to a high of 4.4 Mt CO₂ eq in 2020.³ However, emissions arising from fuel used for international voyages should also be considered and are reported separately as 'international bunkers'. Between the years 1990 and 2021, Canada's GHG inventory records international marine bunker emissions ranging from a high of 13,400 kilotonnes (kt) CO₂ eq in 2005 to a low of 9,440 kt CO₂ eq in 2020.⁴ Research by the World Wildlife Fund (WWF) provides an alternative source for vessel emissions' estimates in Canadian waters, combining domestic and international voyages. According to its 2019 publication, vessels operating in Canadian waters (covering domestic, international and transit sailing) in 2019 alone, emitted 8 million tons CO₂ (MtCO₂); 156 thousand tons (kton) NOx; 3.5 kton of PM 2.5 and 3.7 kton of PM10; 0.4 kton BC; 5.6 kton SOx.⁵



The impacts of shipping's GHG emissions are wide-ranging. There is a substantial amount of evidence on the health effects of air pollution from GHG emissions, including respiratory, cardiovascular, and metabolic diseases, stroke, lung cancer, impaired fertility outcomes, preterm birth, reduced birth weight and premature mortality. Health effects attributable to PM specifically, include heart attacks, strokes, asthma, cancer, exacerbation of obesity and diabetes, and it contributes to cognitive challenges, including Alzheimer's, dementia, and mental health disorders.⁶ Globally, 'shipping-sourced emissions' were projected to account for around 265,000 premature deaths in 2020 (accounting for ~0.5% of global mortality).⁷ Populations closest to ports and high traffic shipping routes are burdened with highest air pollution concentrations and thus the most significant health burdens.⁸

Canada has taken steps to reduce the impact of air pollution from the maritime sector. Canada and the United States designated a North American Emissions Control Area (ECA), restricting the use of high-sulfur fuel and controls on nitrous oxides.⁹ This means low-sulfur fuels must be used in the designated waters, reducing the maximum acceptable amount of sulfur from 3.5% to 1% in 2012, and to 0.1% in 2015,¹⁰ and, as of 2016, newbuild ships must operate in accordance with the IMO's most stringent 'Tier III Standards' for NOx emissions.¹¹ Research in the Canadian port cities of Halifax, Vancouver, Victoria, Montreal, and Quebec City, identified lower levels of air pollution in all studied ports since the ECA's implementation, with reductions in ambient SO₂ concentrations, NOx and PM 2.5.¹²





Marine pollution spills in Canada reached an all time high in 2021 of 17,651 liters.

Container ships on St Lawrence river in Quebec, Canada

Marine Pollution and Harm to the Marine Environment

MARINE POLLUTION SPILLS

According to reporting by the Government of Canada, from 2010 to 2020, the total volume of identified marine pollution spills (specifically hydrocarbon-based spills such as oil spills) per year ranged from 1014 liters to 9296 liters.¹³ Marine pollution spills in Canada reached an all time high in 2021 of 17,651 liters. The volume of marine pollution spills is typically greater in coastal areas¹⁴ because they have higher traffic and are at a greater risk of accidents. For example, in 2021, 95% of Canada's recorded spills were in coastal areas.¹⁵

A large marine pollution spill can lead to long-term environmental and economic consequences. Although, small marine pollution spills can also have a large impact on the marine environment over time. This includes impacts on beaches, fisheries and wildlife. For example, oil affects the insulation of mammal's fur and bird's feathers, increasing the risk of contracting hypothermia and, for birds, drowning. Oil spills can also lead to poisoning, reduced growth, deformities or reproduction impairment of wildlife.¹⁶

Increased shipping activity in the Arctic region is increasing the risk of oil spills there. The Arctic is particularly vulnerable to the impacts of marine pollution spills. The remoteness and harshness of the Arctic increases the difficulty of comprehensive clean up operations.¹⁷ Researchers noted that oil spills are more difficult to degrade and disperse under Arctic conditions and spills can move under and between the ice and can be absorbed by snow.¹⁸

VESSEL DUMPING

WWF-Canada's National Vessel Dumping Assessment (published in 2022, using 2019 pre-COVID data as a baseline) found that ships produce, and potentially dump, 147 billion liters of harmful waste each year while in Canadian waters.¹⁹ The largest waste stream identified during the study came from scrubber washwater - 97% of total yearly waste. Scrubbers are exhaust gas cleaning systems which remove sulfur from ship exhaust and produce washwater as a waste by-product that contains polycyclic aromatic hydrocarbons (PAHs), particulate matter, nitrates, nitrites, and heavy metals including nickel, lead, copper, and mercury.²⁰ According to the study, roughly 10% of scrubber washwater was produced and discharged in Marine Protected Areas and other effective area-based conservation measures (OECMs). Bilge water (the oily liquid that collects at the lowest part of a ship which often contains toxic and carcinogenic substances), sewage (including drainage from toilets, medical waste or waste from live animal areas), greywater (drainage from washing facilities) are also ship waste sources, although it is difficult to estimate how much waste from these sources does end up in the ocean. The WWF researchers noted that the actual volume of waste is likely greater than their estimates as the study only included ships with registered International Maritime Organization (IMO) numbers.

Canada has committed to protecting 25% of its marine and coastal areas by 2025 and 30% by 2030 through the creation of Marine Protected Areas (MPAs) and other effective area-based conservation measures (OECMs). There are currently 14 Oceans Act Marine Protected Areas (MPAs) across Canada, comprising over 350,000 km² or roughly 6% of Canada's marine and coastal areas in the Arctic, Pacific and Atlantic oceans.²¹ The Canadian Government published a set of "minimum standards" for new Federal MPAs (designated after 25 April 2019) to provide clarity and consistency.²² Under these standards, prohibited activities in these MPAs include dumping or waste disposal at sea, as well as oil and gas explorations, development or production, mining, and bottom trawling. Polluting activities in Federal MPAs established prior to 25 April 2019 are subject to slightly different standards, for example voluntary relinquishment of any existing oil and gas licenses,²³ and non-Federal MPAs do not have clearly defined standards.

Particular Impacts of Maritime Shipping on the Arctic Region

Notably, global warming has led to rapid melting of ice and snow in the Arctic region. Arctic shipping routes are becoming more accessible leading to a number of challenges, including the rapid increase of shipping's key air polluting emissions, including CO₂, SOx, NOx, PM_{2.5} and BC. The Arctic region faces particular challenges from increased shipping emissions - gasses emitted by ships will trigger a series of reactions, such as reducing air oxygen content and ocean acidification. It will also cause harm to Arctic animal life and health.²⁴

Much of the global shipping fleet remains reliant on heavy fuel oil (HFO). HFO risks are especially high in the Arctic. As mentioned above, navigational hazards like sea ice increase the likelihood of an oil spill. In addition, particulate matter emissions from HFO include black carbon which has a fivefold climate-warming impact in the Arctic compared to when it is emitted at lower latitudes.²⁵

Other risks posed by maritime shipping in the Arctic region include enhanced occurrence of non-indigenous and invasive species spread by ship ballast water, risking indigenous biodiversity loss; an increase in the pollutants produced by anti-fouling paints; noise pollution and light pollution from ships which may alter animal behavior; and, the chances of collision (or ship strikes) between ships and marine animals will increase.²⁶





Industrial area along the Lake Ontario in Hamilton Ontario, Canada

Particular Impacts of Maritime Shipping on Indigenous Peoples

Maritime shipping distinctively impacts Indigenous Peoples. Ships may sail through traditional waters of Indigenous Peoples and take on and offload cargo on their lands. Increased shipping traffic and the associated GHG emissions and marine pollution described above can also disrupt traditional activities such as fishing and hunting, interfere with community vessel movement and transportation, and threaten pre-existing Indigenous coastal governance systems.²⁷

Inclusion of Indigenous Knowledge and leadership in decision making related to maritime transport and the environment is key to addressing the particular impacts of maritime shipping on Indigenous Peoples and protecting the marine environment in Canada as a whole. Indigenous Peoples in Canada are leaders in marine environmental protection, for example launching self-declared MPAs and Indigenous Protected and Conserved Areas (IPCAs) under Indigenous law, such as Gitdisdzu Lugyek (Kitasu Bay) Marine Protected Area and Gwaxdlala/Nalaxdlala marine refuge.²⁸



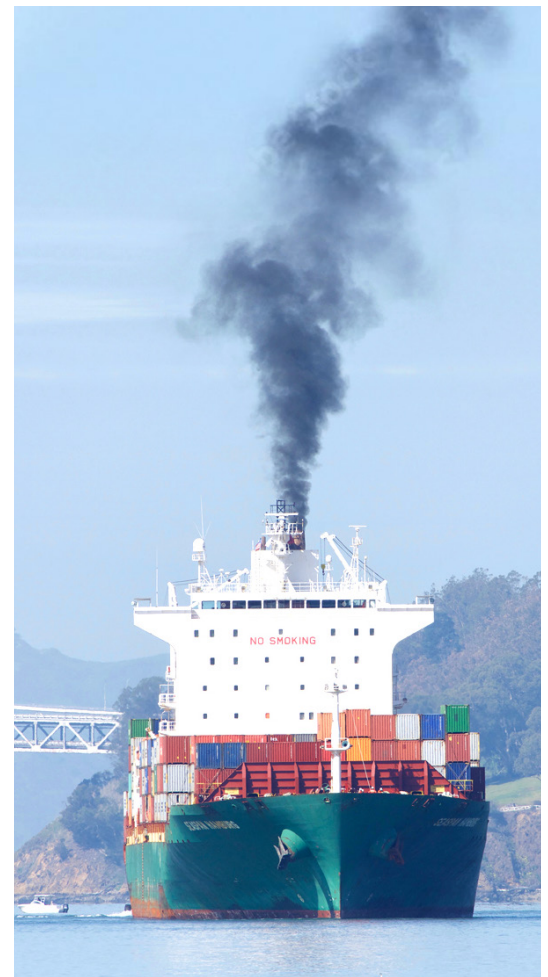
WHAT IS THE INTERNATIONAL MARITIME ORGANIZATION AND WHY DOES IT MATTER?

The International Maritime Organization (IMO) is the United Nations specialized agency with responsibility for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships.²⁹ The IMO sets global standards for international shipping through the creation of universally applicable laws, regulations and policy programmes.



**NAVIGATING
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Representatives from member countries come together in various committees, subcommittees and working groups in order to make decisions at the IMO.³⁰ There are currently 175 countries that are members of the IMO.³¹ This makes the IMO a key forum through which countries can ensure that the shipping industry takes meaningful action on climate change and other matters that have serious consequences for environmental justice communities worldwide.



RELEVANCE OF INLAND & MARITIME SHIPPING IN CANADA

Economies, Trade and Transport

Canada has 243,000 km of coastline spanning three oceans (the Pacific, Arctic and Atlantic), as well as the Great Lakes. Unsurprisingly, maritime shipping is imperative to Canada's economy, culture and environment. According to Government reports, 'marine sectors' in Canada fuel provincial, regional and national economies. In 2018, these sectors represented 1.6% of Canada's total employment and gross domestic product (GDP) estimates, with higher contributions in Newfoundland and Labrador (employment: 16.8%, GDP: 30.0%), Nova Scotia (employment: 13.3% and GDP: 13.5%), and Prince Edward Island (employment: 9.3%, GDP: 10.3%).³² Canada's shipping sector is continuing to grow. According to the Canadian Government, the total tonnage of cargo handled by Canada's port system increased by 2.2% per year between 2010 and 2019.³³ The shipping sector is also key for the connection and development of communities, for example, water-based transport is one of the only means by which food and essential goods reach Canada's island, remote, and northern communities.³⁴



Montreal Port

Importance of Mitigating International Shipping's Contribution to Climate Change and Environmental Impact

In addition to the numerous environmental impacts of maritime shipping in Canada specifically, international shipping also contributes to the GHGs that cause climate change. Estimates indicate that if GHG emissions from ocean-going vessels are not more stringently regulated on a global scale,



Melting Iceberg Near Labrador, Canada

international shipping may be responsible for 10–13% of global emissions in the coming decades.³⁵ In the last 50 years, Canada has experienced increased temperatures, altered precipitation patterns, reduced sea-ice cover, shifting hydrological conditions and extreme weather events.³⁶ Using available international processes, including negotiations on GHG emissions reductions and pollution prevention at the IMO, to abate the industry's climate impact is thus very relevant to Canada.



CANADA'S PARTICIPATION AT THE IMO

Canada joined the IMO when it was founded in 1948. It has ratified many Conventions and Protocols which have been created under the auspices of the IMO - an overview of ratifications per country is available on the IMO's website.³⁷ It has also been a member of the IMO Council (the IMO's executive branch) since 1959, falling under the category of 'states with the largest interest in international seaborne trade'.

CANADA IDENTIFIES SOME OF ITS PRIORITIES AT THE IMO AS:⁴²

- **Reducing greenhouse gasses**
- **Polar water navigation and cooperating in the arctic**
- **Managing ballast water**
- **Underwater noise from shipping**
- **Hazardous and noxious substances**
- **Women in the maritime sector**
- **Managing seafarer wellbeing and fatigue**
- **Marine security**

Canada has led on or engaged in many relevant initiatives at the IMO, including by playing a key role in the development of the Polar Code to protect the environment and ecosystems of the polar regions,³⁸ sponsoring an international technical workshop on quiet ship design to promote action on underwater vessel noise,³⁹ and pushing a 'zero plastic waste agenda' by tackling ghost gear.⁴⁰

REPRESENTATION

Canada is represented by members of its Permanent Mission to the IMO.⁴¹

LOCAL GROUPS & OPPORTUNITIES FOR PUBLIC PARTICIPATION

The following groups or organizations do or may be interested in getting involved with the work of the IMO or MFN.

The Commission for Environmental Cooperation (CEC)

In the context of environmental, economic and social linkages between Canada, Mexico and the United States, the CEC facilitates effective cooperation and public participation to conserve, protect and enhance the North American environment in support of sustainable development for the benefit of present and future generations. The CEC works across a variety of relevant areas including the promotion of clean air, land and water, marine pollution prevention and marine litter reduction, with Traditional Ecological Knowledge and Indigenous perspectives as cross-cutting themes.

The Traditional Ecological Knowledge Expert Group (TEKEG)

The traditional ecological knowledge panel provides advice to intergovernmental organizations (including the CEC), utilizing and preserving the traditional knowledge and practices of local and Indigenous communities to help address climate change and contribute to the conservation and sustainable use of natural resources and to the protection of biodiversity.

The Inuit Circumpolar Council (ICC) - Canada

The ICC is a non-profit that represents Inuit from Alaska, Canada, Greenland, and Chukotka on matters of international importance, including marine governance and relevant matters at the IMO. The ICC in Canada is led by a board of directors comprising the elected leaders of the four land-claims settlement regions: Inuvialuit, Nunatsiavut, Nunavik, and Nunavut.

SeaChange Marine Conservation Society

SeaChange Marine Conservation Society's mission is marine education, conservation and restoration of nearshores within the Salish Sea in collaboration with coastal communities in British Columbia, Canada.



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