

MARINE ENVIRONMENT PROTECTION
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AIR POLLUTION PREVENTION

Amending MARPOL Annex VI to Reduce the Impact on the Arctic of Emissions of Black Carbon

Submitted by FOEI, WWF, CSC, Pacific Environment, and Inuit Circumpolar Council

SUMMARY

Executive summary: This document recalls MEPC's commitment over eleven years ago at MEPC 62 to address the impact of Black Carbon emissions on the Arctic and outlines an approach to amend MARPOL Annex VI to incorporate a requirement for ships to only use marine distillate fuel or other cleaner alternative fuels or methods of propulsion that are safe for ships when operating in or near to the Arctic

Strategic direction, if applicable: 3

Output: 3.3

Action to be taken: Paragraph 14

Related documents: Resolution MEPC.342/77; PPR 7/8/2, PPR 7/22; PPR 8/5, PPR 8/INF.3; MEPC 75/7/15; MEPC 75/10/6; MEPC 77/16, MEPC 77/16/Add.1; MEPC 78/7/18, MEPC 78/7/27

Introduction

1 At MEPC 77, the Committee adopted a resolution urging "Member States and ship operators to voluntarily use distillate or other cleaner alternative fuels or methods of propulsion that are safe for ships and could contribute to the reduction of Black Carbon emissions from ships when operating in or near the Arctic." (resolution MEPC.342/77, MEPC 77/16/Add.1). At this same session, the Committee also provided updated terms of reference to PPR Sub-Committee to undertake further work to reduce the impact of Black Carbon emissions on the Arctic.

2 Resolution MEPC.342(77) on *Protecting the Arctic from shipping black carbon emissions* emphasized the following facts:

- .1 that MEPC 62 agreed to a work plan including an investigation of appropriate control measures to reduce the impact on the Arctic of Black Carbon emissions from international shipping;

- .2 that Black Carbon is a potent short-lived contributor to climate warming, and its contribution to shipping CO₂e was incorporated in the *Fourth IMO GHG Study 2020*; and
- .3 that emission factors used in the *Fourth IMO GHG Study 2020* show that, when used in the same engine, a switch to distillate significantly reduces Black Carbon emissions per kilogram of fuel consumption.

3 In addition, one of the Terms of Reference for the current PPR Sub-Committee's Correspondence Group on Prevention of Air Pollution from Ships directs the group to "consider regulating or otherwise directly control Black Carbon emissions from marine diesel engines (exhaust gas) to reduce the impact on the Arctic of Black Carbon emissions from international shipping...". The provisional agenda for PPR 9, set out in annex 16 to document MEPC 76/15/Add.2, was approved by MEPC 76 and confirmed by MEPC 77.

Urgent action is needed

4 A recent report published in *Science*¹ found that there is a "significant likelihood" of "multiple tipping points being crossed if global heating crosses the 1.5 degrees C threshold." Global temperatures have reached record highs² and the United Nations Environment Programme (UNEP), the Intergovernmental Panel on Climate Change (IPCC), the World Meteorological Organization (WMO), the United Nations Office for Disaster Risk Reduction (UNDRR), and the Global Carbon Project (GCP) predict that "there is a 48% chance that, during at least one year in the next five years, annual mean temperatures will temporarily be 1.5 degrees C higher than in 1850 -1990." See MEPC 79/7/20 addressing the risks of triggering cascading tipping points which is also relevant to this agenda item.

5 The melting of Arctic sea ice, as well as the Greenland and Antarctic ice sheets, are among the most concerning tipping points mentioned in these recent reports³. The loss of this volume of ice would result in irreversible changes to the global climate and would trigger further extreme weather events. Of particular concern is the potential loss of the Greenland ice sheet, for which the start of a non-reversible process is imminent unless climate warming emissions are immediately reduced⁴. A recent scientific paper published in *Nature Climate Change* reported that the planet is already tied into at least 27cm sea level rise but this could be as much as 78cm⁵. This alone would have devastating consequences for low-lying island nations or coastal states and does not include the ice melt and associated sea level rise should the Greenland ice sheet tipping point be reached.

¹ Armstrong McKay et. al., Exceeding 1.5°C Global Warming Could Trigger Multiple Climate Tipping Points, 377 *Science* 6611 (2022).

² World Meteorological Organization (WMO), United in Science 2022: A Multi-Organization High-Level Compilation of the Most Recent Science Related to Climate Change, Impacts and Responses (2022).

³ Armstrong McKay et. al., 377 *Science* 6611 (2022).

⁴ World Meteorological Organization (WMO), United in Science 2022.

⁵ <https://www.nature.com/articles/s41558-022-01441-2>

6 Indigenous Knowledge⁶ from the Arctic region has also documented major changes to weather, wildlife migration, snow and sea ice, as well as the introduction of new species. These changes have unprecedented and significant impacts on people in the Arctic, especially Indigenous communities who are on the frontlines and experience impacts of severe weather changes, and whose cultural foundation and livelihoods thrive on the very nature of the Arctic environment of cold, snow and ice. Every day, Arctic communities are witnessing a climate in crisis⁷.

7 The maritime industry is also not immune to these drastic changes. In fact, the IPCC Sixth Assessment Report⁸ (see documents MEPC 78/7/18 and MEPC 78/7/27) found that the maritime industry, global supply chains, and the infrastructure upon which they depend are particularly vulnerable to climate shocks, extreme weather, sea level rise and environmental disruption brought on by climate heating.

8 Given how quickly the world is approaching these catastrophic tipping points, the maritime industry must take immediate action to comply with the Paris's Agreement's 1.5°C goal. Due to the short life span of the short-lived climate pollutants, widespread and fast action to reduce short-lived climate pollutant emissions, including Black Carbon, has the potential to significantly limit the amount of warming that would occur over the next few decades⁹.

9 Over recent years, this Committee has discussed several different mechanisms to reduce the impact of Black Carbon emissions on the Arctic, including improved engine and propulsion system design and better engine maintenance, various exhaust gas treatments, improved energy efficiency of new and existing ships, the expansion or establishment of additional emission control areas, and a switch to cleaner fuels (document PPR 6/20/Add.1 Annex 9). A switch to cleaner distillate fuels is a regulatory mechanism that could be implemented quickly and would contribute to the significant reduction of Black Carbon emissions from ships operating in or near the Arctic and constitute a step forward for IMO Members to deliver the commitment to reduce black carbon emissions agreed at MEPC 62.

Regulating ship black carbon emissions that impact the Arctic

10 The co-sponsors recommend as a first step the amendment of MARPOL Annex VI so as to require ships to use marine distillate fuel or other cleaner, alternative fuels or methods of propulsion as soon as possible. The language of a mandatory measure should include:

- .1 definitions of "Arctic," "Black Carbon," "and Marine Distillate Fuel," in MARPOL Annex VI, Chapter 1 (General), Regulation 2 (Definitions);

⁶ Indigenous Knowledge is a systematic way of thinking applied to phenomena across biological, physical, cultural and spiritual systems. It includes insights based on evidence acquired through direct and long-term experiences and extensive and multigenerational observations, lessons and skills. It has developed over millennia and is still developing in a living process, including knowledge acquired today and in the future, and it is passed on from generation to generation.

⁷ <https://www.inuitcircumpolar.com/project/inuit-call-for-the-tools-needed-to-protect-the-arctic/>

⁸ Intergovernmental Panel on Climate Change (IPCC), Climate Change 2022: Impacts, Adaptation and Vulnerability (2022).

⁹ Szopa, S., V. Naik, B. Adhikary, P. Artaxo, T. Berntsen, W.D. Collins, S. Fuzzi, L. Gallardo, A. Kiendler-Scharr, Z. Klimont, H. Liao, N. Unger, and P. Zanis, Short-Lived Climate Forcers. In Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (2021).

- .2 a new paragraph in MARPOL Annex VI, Chapter 3 (Requirements for Control of Emissions from Ships) addressing Special Requirements for Ships Operating in the Arctic to contain the substance of the requirement for ships to use marine distillate fuel or other cleaner alternative fuels or methods of propulsion that are safe for ships and contribute to the reduction of Black Carbon emissions when operating in or near the Arctic; and
- .3 renumeration of the regulations in MARPOL Annex VI, to account for the amendments outlined above.

11 While "Black Carbon" has already been defined by this Committee, and "Marine Distillate Fuel" is described in ISO 8217:2017, the development of an appropriate definition of "Arctic" for MARPOL Annex VI will be essential to the effective delivery of the IMO's output to address the impact of Black Carbon emissions from ships on the Arctic.

12 The delineation of "Arctic waters" used in the Polar Code may be suitable for regulations related to the safe operation of ships in hazardous waters, however it excludes the busy Arctic waters of the north Atlantic which fall within the most widely used geographic scope definitions of the Arctic, including those of the Arctic Council. This limited delineation also fails to account for the fact that air pollution does not respect boundaries. Black Carbon that is emitted from beyond the Arctic can have dangerous impacts on both the Arctic environment and Arctic communities. It is for this very reason that the PPR Sub-Committee has been directed to reduce the impact of Black Carbon emissions on the Arctic, as opposed to simply reducing Black Carbon emissions in the Arctic.

13 Accordingly, the co-sponsors recommend the development of a definition of "Arctic" for MARPOL Annex VI that is consistent with widely used geographic definitions of Arctic scope and broad enough to encompass the area in which Black Carbon emissions from ships have an appreciably negative impact *on* the Arctic. A number of possibilities could be considered including the maritime waters of the Arctic Human Development Report area; the Arctic Council's Arctic Monitoring and Assessment Programme (AMAP) area; or simply "all maritime waters north of 60°N".

Action requested of the Committee

14 The Committee is invited to note paragraphs 4 to 13, to forward this document to PPR 10 in order to inform further consideration of measures to effectively reduce the impact of Black Carbon emissions from international shipping on the Arctic, and to take action as appropriate.
