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Agenda item 8

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REDUCTION OF THE IMPACT ON THE ARCTIC OF BLACK CARBON EMISSIONS FROM INTERNATIONAL SHIPPING

Prioritizing control measures to reduce Black Carbon emissions impacting the Arctic

Submitted by WWF, Pacific Environment and CSC

SUMMARY

Executive summary: This document stresses the urgent need for action to reduce Black Carbon emissions from international shipping and proposes priority measures for rapid implementation

Strategic direction, if applicable: 3

Output: 3.3

Action to be taken: Paragraph 18

Related document: PPR 6/20/Add.1

Introduction

1 Action to reduce Black Carbon (BC) emissions this decade is critical both for the Arctic and for the planet as a whole. Arctic Ministers announced last year that the Arctic is already warming three times faster than the planet as a whole. It now seems likely that there will be summer days with no Arctic sea ice before the Organization makes any progress in implementing long-term measures to reduce GHG emissions from shipping. The Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report (AR6), *Climate Change 2021: The Physical Science Basis*¹ stressed the need to act urgently to cut short-lived climate-forcers, including BC, which on a 20-year time scale is a far more powerful short-lived climate-forcer than methane. It is therefore urgent that all sectors, including shipping, stop emitting BC as quickly as possible, especially in and near the Arctic, but also globally. We no longer have several years to take action. Immediate action means that it might still be possible to retain some Arctic ice, particularly the Greenland ice sheet and glaciers.

¹ AR6 Climate Change 2021: The Physical Science Basis – IPCC (<https://www.ipcc.ch/report/sixth-assessment-report-working-group-i/>).

2 Despite over a decade of discussion and negotiation at IMO, global shipping emissions increased in 2021, with analysts estimating that emissions from the international shipping sector increased by anywhere between 4.9% (according to Simpson Spence & Young²) and 15% (according to METIS³).

3 In addition to considering BC measurement methods and developing a standardized sampling, conditioning and measurement protocol, PPR 9 has been tasked with:

- .1 developing guidelines on recommendatory goal-based control measures; and
- .2 considering regulating or otherwise directly controlling Black Carbon emissions from marine diesel engines (exhaust gas)

in order to reduce the impact on the Arctic of BC emissions from international shipping, taking into account the identified candidate control measures set out in document PPR 6/20/Add.1, annex 9.

4 Assessment of previous experience with IMO guidance and recommendatory measures has identified several barriers to implementation, not least the fact that guidance and recommendatory measures will never be prioritized by the shipping industry ahead of implementation of mandatory measures. For this reason, the co-sponsors call on IMO Member States to support the development of regulations and controls which will lead to rapid and significant reductions in shipping BC emissions this decade.

Potential control measures

5 Document PPR 6/20/Add.1, annex 9, identifies a long list of potential control measures divided into eight categories – fuel types, fuel treatment, exhaust gas treatment, engine and propulsion system design, ship design, operational measures, regulatory measures, and other measures. This document identifies measures which should be prioritized for immediate mandatory action, in order to reduce BC emissions from ships impacting the Arctic.

6 Resolution MEPC.342(77) on *Protecting the Arctic from shipping Black Carbon emissions*, adopted in November 2021, encourages Member States to commence addressing the threat to the Arctic from BC emissions, and to report on measures and best practices to reduce BC emissions from ships. It further urged Member States and ship operators to voluntarily use distillate or other cleaner alternative fuels or methods of propulsion that could contribute to the reduction of BC emissions from ships when operating in or near the Arctic. The development of a mandatory regulation requiring a switch to less polluting fuels for ships operating in or near to the Arctic should now be a priority, particularly in light of the urgent need for rapid action and the possibility of using additional technologies alongside distillate fuels, e.g. diesel particulate filters, to effect much larger reductions in BC emissions. Alternatively domestic or regional implementation of the MEPC resolution will allow the measures to be given the necessary regulatory strength to create meaningful change. For example, the European Union's proposed FuelEU Maritime regulation (part of the "Fit for 55" package of proposals for reducing ship greenhouse gas emissions) should be amended to regulate BC and include mitigation measures.

² Emissions from global shipping continued to grow in 2021 (shippingwatch.com) (<https://shippingwatch.com/regulation/article13672904.ece>).

³ Supply chain chaos is causing ship emissions to jump — Quartz (qz.com) (<https://qz.com/2090157/supply-chain-chaos-is-causing-ship-emissions-to-jump/>).

7 With respect to cleaner alternative fuels, the co-sponsors support a switch to distillates, which can be implemented immediately (ships already switch between VLSFOs and distillates when sailing between emission control areas (ECAs) and areas not designated). As previously mentioned, this would also allow the installation of diesel particulate filters and spur further technical development, including the use of other technologies to reduce BC emissions. The superior energy density of distillates compared to VLSFO/HFO will help mitigate the extra cost of distillates and also reduce overall fuel burn and CO₂ emissions as well as engine wear and NO_x. Use of new alternative fuels such as biodiesel, methanol, and hydrogen based renewable fuels will also be possible in the future.

8 Document PPR 6/20/Add.1, annex 9, also identifies several exhaust gas treatment systems that could reduce BC emissions, including diesel particulate filters and electrostatic precipitators. Given the significant emission reductions that can be achieved with this technology alongside a switch to distillate fuels (over 90%), the co-sponsors propose that the PPR Sub-Committee prioritize the use of these technologies to reduce BC emissions.

9 With respect to engine and propulsion system designs, the co-sponsors call for the acknowledgement and wider recognition of the value of full battery electric systems in reducing BC emissions, especially for short-sea shipping.

10 Improving the energy efficiency of new and existing ships will also help to reduce BC emissions. However, the current EEDI and EEXI requirements are not stringent enough to drive significant immediate reduction in emissions, and need to be strengthened. Operational measures such as reduced engine load and ship speeds should be used to reduce BC emissions and these could be implemented rapidly.

11 In terms of regulatory measures, expanding or establishing additional Emission Control Areas (ECAs) should be a priority, and must be accompanied by controls on the use of Exhaust Gas Cleaning Systems (EGCS or scrubbers) to prevent the continued use of residual fuel oils in these areas. This will also curtail water pollution from EGCS wastewater discharges. Establishing ECAs in the Arctic will deliver health benefits to people living there, as has been proven by the designation of ECAs in other regions. The health of northern and Indigenous communities deserves to be safeguarded from the detrimental impacts of particulate matter and other air pollutants.

12 The restriction of the sulphur content of marine fuel oils to a maximum 0.50% has now come into effect, with many ships opting to use low sulphur fuel oils. Many of these still appear to qualify as heavy fuel oils due to their viscosity. At the same time, the burning of heavy fuel remains permitted if ships install an Exhaust Gas Cleaning System. In addition, the new Arctic HFO regulation, which was designed to address the spill risk of heavy fuel oils, will not apply to a sufficiently wide area to address BC emissions impacting the Arctic. Importantly, these regulations will not become fully effective until the end of the current decade (July 2029). Neither measure sufficiently addresses the need to urgently reduce BC emissions impacting the Arctic. To improve the efficacy of the Arctic HFO regulation, States should close the loopholes and Arctic coastal States should not permit the use of waivers in their waters and should limit wherever possible any exemptions which would be a barrier to fully implementing the ban by 2024.

13 Other measures, identified in document PPR 6/20/Add.1, annex 9, such as promoting the use of onshore power and the inclusion of BC in GHG reduction strategies, including the IMO GHG Strategy, remain important, and there will be co-benefits as measures to reduce CO₂ emissions are likely to also reduce BC emissions. It will be important too to ensure that efforts to reduce BC emissions deliver against targets adopted by Arctic Ministers, and Arctic States should move quickly to establish a new BC reduction target as agreed in the 2021 Reykjavik Arctic Ministerial Declaration.

14 A related issue, which remains outstanding on PPR's agenda, is the need to resolve ongoing questions surrounding the aromatic content of marine fuels and the extent to which some of the new low sulphur compliant fuels in use today may lead to an increase in BC emissions.

Regulating or directly controlling BC emissions from marine diesel engines

15 While recognizing that responsibility for further development of some of the measures listed in document PPR 6/20/Add.1, annex 9, lies with other IMO Committees, the co-sponsors propose that the PPR Sub-Committee, in considering the regulation or direct control of BC emissions from marine diesel engines to address the impact on the Arctic, focus its work initially on measures that can be introduced immediately, including:

- .1 implementation of resolution MEPC.342(77);
- .2 development of a mandatory regulation requiring a switch to cleaner alternative fuels or methods of propulsion for vessels operating in or near to the Arctic; and
- .3 reducing overall emissions through reduced engine loads and ship speeds.

16 Mandatory measures, which can be introduced in the next two to three years, should be the next priority and should include:

- .1 further development and use of diesel particulate filters or electrostatic precipitators;
- .2 the expansion and/or establishment of additional ECAs;
- .3 strengthened EEXI and EEDI requirements to significantly reduce GHG and BC emissions in line with a 1.5°C warming trajectory; and
- .4 the promotion and use of onshore power while in port.

17 Beyond these actions, further measures to reduce BC emissions from ships this decade should be prioritized including battery electric systems where feasible, particularly in coastal waters and on shorter voyages, along with greater efforts to decarbonize shipping.

Action requested of the Sub-Committee

18 The Sub-Committee is invited to consider the information contained in paragraphs 1 to 4, consider prioritizing action on the measures to reduce BC emissions identified in paragraphs 5 to 17 in order to rapidly and urgently reduce BC emissions for ships this decade, and take action as appropriate.
