

SUB-COMMITTEE ON POLLUTION
PREVENTION AND RESPONSE
7th session
Agenda item 8

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

**Intergovernmental Panel on Climate Change Special Report
on the Ocean and Cryosphere in a Changing Climate**

Submitted by FOEI, Greenpeace International, WWF, Pacific Environment and CSC

SUMMARY

Executive summary: This document summarizes key findings of the Intergovernmental Panel on Climate Change Special Report on the Ocean and Cryosphere in a Changing Climate with respect to observed physical changes in the Arctic, observed impacts on people and ecosystem services, changes to Arctic transportation and tourism and the environmental consequences of increased Arctic transportation and tourism

Strategic direction, if applicable: 3

Output: 3.2 to 3.7

Action to be taken: Paragraph 5

Related documents: None

Introduction

1 In September of 2019, the Intergovernmental Panel on Climate Change (IPCC) issued the Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC)¹. For this report, more than 100 scientists from more than 30 countries assessed the latest scientific knowledge about the physical science basis and impacts of climate change on ocean, coastal, polar and mountain ecosystems, and the human communities that depend on them.

¹ The report is available on the IPCC website: <https://www.ipcc.ch/srocc/download-report/>

2 While the report covers a range of topics from the role of the ocean and cryosphere in the climate system to marginalized areas and people, it also provides substantial information regarding the state of the Arctic and increasing shipping traffic in Arctic waters. These findings not only highlight that urgent action is needed in order to protect the Arctic environment, but also that increased Arctic ship traffic poses a number of risks to Arctic communities and ecosystems. The report concludes that further action is needed to develop and adequately implement regulations to keep pace with increased shipping.

Key findings

3 Several of the relevant findings of the IPCC report for the PPR Sub-Committee are as follows:

- .1 Observed physical changes in the Arctic:
 - .1 Over the last several decades, climate change has resulted in mass loss of ice sheets and glaciers, reductions in snow cover and Arctic sea ice extent and thickness. Between 1979 and 2018, Arctic sea ice extent has very likely decreased for all months of the year. Arctic sea ice has thinned, concurrent with a transition to younger ice. Between 1979 and 2018, the areal proportion of multi-year ice at least five years old has declined by approximately 90%. The loss of summer sea ice and spring snow cover on land has contributed to amplified warming and surface air temperature likely increased by more than double the global average over the last two decades (IPCC, SROCC, Summary for Policymakers, page 5, September 2019).
 - .2 Arctic sea ice loss is projected to continue through mid-century, with differences thereafter depending on the magnitude of global warming. With a global warming of 1.5°C, the annual probability of a sea ice-free September by the end of century is approximately 1%. In a 2°C warming scenario, the annual probability of a sea ice-free September by the end of century rises to 10% to 35% (IPCC, SROCC, Summary for Policymakers, page 21, September 2019).
- .2 Observed impacts on people and ecosystem services:
 - .1 Significant changes in snow cover, loss of lake and river ice, and thawing of permafrost in many Arctic regions has negatively impacted food and water security for many Arctic communities. These changes have disrupted access to, and food availability within, herding, hunting, fishing, and gathering areas, harming the livelihoods and cultural identity of Arctic residents including Indigenous populations (IPCC, SROCC, Summary for Policymakers, page 16, September 2019).

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- .3 Changes to tourism and transportation in the Arctic:
- .1 While not all areas in the Arctic experience high levels of tourism, Alaska, Norway, Greenland, and Canada have all experienced significant levels of Arctic tourism in the past several years. Alaska attracts the highest number of cruise passengers annually at just over one million; Svalbard attracts 40,000 to 50,000 cruise passengers; and Greenland attracts 20,000 to 30,000 passengers. Canada's Northwest Passage, which only saw occasional cruise ship transits in the early 2000s is now reliably accessible during the summer cruising season, and as a result has experienced a doubling and quadrupling of cruise and pleasure craft activity over the past decade. Compared to a decade ago, there are more cruises on offer, ships travel further in a single season, larger vessels with more passenger berths are in operation, more purpose-built polar cruise vessels are being constructed, and private pleasure craft are appearing in the Arctic more frequently. These numbers are only anticipated to increase (IPCC, SROCC, Chapter 3, pages 41 and 42, September 2019).
- .2 The global appetite for maritime trade and commerce through the Arctic is increasing as the region becomes more accessible. While there are a number of factors that will affect the development of these shipping routes (e.g. unique geographies, sea ice dynamics, infrastructure and service availability, and regulatory regimes), there is high confidence that shipping activity during the Arctic summer increased over the past two decades. In fact, the distance travelled by ships in Arctic Canada nearly tripled between 1990 and 2015 (from ~365,000 km to ~920,000 km). The Northern Sea Route is also expected to be more viable than other routes because of infrastructure already in place, and favourable summer ice conditions (IPCC, SROCC, Chapter 3, page 42, September 2019).
- .4 Environmental consequences of increased transportation and tourism in the Arctic:
- .1 While increased levels of Arctic ship-based transportation and tourism have socio-economic and political implications for global trade and northern economies, it will also exacerbate environmental risks for marine ecosystems and coastal communities. This is especially true if further action to develop and adequately implement regulations does not keep pace with increased shipping (IPCC, SROCC, Chapter 3, page 4, September 2019).
- .2 Black carbon emissions from shipping activity within the Arctic are projected to increase in the coming years (IPCC, SROCC, Chapter 3, page 43, September 2019).
- .3 Commercial shipping mainly uses heavy fuel oil, with associated emissions of sulphur, nitrogen, metals, hydrocarbons, organic compounds, black carbon and fly ash to the atmosphere during combustion. Mitigation approaches include banning heavy fuel oil, as has been implemented in Antarctica and the waters around Svalbard (IPCC, SROCC, Chapter 3, page 43, September 2019).

- .4 Increases in Arctic marine transportation create impacts and risks for ecosystems and people, such as an increased likelihood of accidents, the introduction of invasive species, oil spills, waste discharges, detrimental impacts on animals, habitat, and subsistence activities (IPCC, SROCC, Chapter 3, page 75, September 2019).
- .5 Without further action leading to adequate implementation of well-developed management plans and region-specific regulations, anticipated future increases in Arctic shipping will pose a greater risk to people and ecosystems. For these reasons, the International Maritime Organization (IMO) has prohibited the use of heavy fuel oil in the Antarctic (IPCC, SROCC, Chapter 3, pages 83 and 84, September 2019).

4 Overall, the latest IPCC report highlights the urgency of prioritizing timely, ambitious, and coordinated action to address unprecedented and enduring changes in the ocean and cryosphere. The report recognizes that shipping activity in the Arctic has increased over the past two decades and highlights the need for urgent action to ensure that environmental regulation keeps pace with the increasing interest in Arctic shipping routes.

Action requested of the Sub-Committee

5 The Sub-Committee is invited to review the IPCC Special Report on the Ocean and Cryosphere in a Changing Climate and to note its findings.
