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REDUCTION OF GHG EMISSIONS FROM SHIPS

Climate Change 2022: Impacts, Adaptation and Vulnerability

Submitted by WWF, Pacific Environment and CSC

SUMMARY

Executive summary:	This document draws attention to the UN Intergovernmental Panel on Climate Change's (IPCC) publication of the second part of three working group reports published as part of the Sixth Assessment Cycle. The Working Group II report entitled *Climate Change 2022: Impacts, Adaptation and Vulnerability* focuses on the physical science basis of climate change. The Committee is invited to note the findings from the report, together with the views of the co-sponsors, and is urged to support the urgent action outlined.
Strategic direction, if applicable:	3
Output:	3.2, 3.3
Action to be taken:	Paragraph 17
Related documents:	MEPC 77/7/18 and MEPC 77/7/3

1 The UN body responsible for assessing the science related to climate change - the Intergovernmental Panel on Climate Change (IPCC) - has released the second part of its Sixth Assessment Report.[1][2][3] At the time of submission, the IPCC was also set to release its third report *Mitigation of Climate Change* on 4 April 2022. This document draws attention to the results of this second report, *Climate Change 2022: Impacts, Adaptation and Vulnerability,* and urges further action to reduce the impacts of catastrophic climate change.

[1] *Climate Change 2022 Impacts, Adaptation and Vulnerability, Summary for Policymakers* (https://report.ipcc.ch/ar6wg2/pdf/IPCC_AR6_WGII_SummaryForPolicymakers.pdf)

[2] Technical Summary (https://report.ipcc.ch/ar6wg2/pdf/IPCC_AR6_WGII_FinalDraft_TechnicalSummary.pdf)

[3] Full Report (https://report.ipcc.ch/ar6wg2/pdf/IPCC_AR6_WGII_FinalDraft_FullReport.pdf)

2 The report highlights the key need for dramatic action in the near term from 2021 to 2040. The introduction sustains the message outlined in the first working group report. "Global warming, reaching 1.5°C in the near-term, would cause unavoidable increases in multiple climate hazards and present multiple risks to ecosystems and humans (*very high confidence*). The level of risk will depend on concurrent near-term trends in vulnerability, exposure, level of socioeconomic development and adaptation (*high confidence*). Near-term actions that limit global warming to close to 1.5°C would substantially reduce projected losses and damages related to climate change in human systems and ecosystems, compared to higher warming levels, but cannot eliminate them all (*very high confidence*)".

3 Here we highlight areas identified by the report that are particularly pertinent to the Organization: impact on the Arctic and Arctic communities from climate change as well as increased industrial activity like shipping, as well as potential threats to maritime and coastal infrastructure.

The Arctic continues to warm at nearly three times the global average

4 The report confirms that the Arctic is warming at nearly three times the global average. This pace of warming is creating a cascading web of local, regional and global impacts within and beyond polar regions. Changes in the Arctic not only affect global ocean circulation and climate regulation, but also facilitate new Arctic transportation routes and support transboundary resources with geopolitical, environmental and cultural implications as conditions change. The report goes on to note that rapid warming and extreme temperatures in the Arctic are leading to unprecedented seasonal sea ice loss, permafrost thaw and increasing ocean temperatures. Amplified warming in the Arctic has caused September sea ice extent to decline at a rate of -13% per decade (Serreze and Meier, 2019) and reduced sea ice thickness by 66% (2 m) between 1958-1976 and 2011-2018 (Kwok, 2018).

5 These changes in sea ice create safety hazards for Indigenous Peoples who rely on frozen seas and rivers for transportation and subsistence hunting. There is high confidence that increased weather and climate extreme events are exposing Arctic communities to acute food insecurity and that the Arctic is a global hotspot of high human vulnerability. There is also high confidence that there are high to very high near-term risks for biodiversity loss within Arctic sea ice ecosystems. Permafrost thaw, sea-level rise, and reduced sea ice protection is projected to damage or cause loss to many cultural heritage sites, settlements and livelihoods across the Arctic, while Indigenous Peoples and local communities will continue to experience changes in cultural opportunities.

6 Newly ice-free shipping routes are increasing regional and geopolitical tensions and may facilitate novel threats like the spread of invasive species and safety hazards to local hunters and fishers. In the absence of immediate regulatory action, growth in Arctic maritime trade will result in increased emissions for black carbon (Stephenson et al., 2018; Zhang et al., 2019; Wang et al., 2021) and increases in ship-source underwater noise impacts of marine mammals (Halliday et al., 2017). Furthermore, higher rates of accidents and incidents from increasingly mobile sea ice and newly accessible ice-free waters that have not been charted can be expected (Haas and Howell, 2015; Howell and Brady, 2019).

Beyond the Arctic

7 These changes also impact the rest of the world as the Arctic serves as a regulator of global climate and other ecological processes through large-scale patterns related to air and ocean circulation. There is high confidence that these processes are nearing points beyond which rapid and irreversible changes (on the scale of multiple human generations) are possible. The magnitude of cascading changes over the next two centuries includes regional warming and temperature extremes, permafrost thaw and sea ice loss beyond that experienced in human existence.

8 There is very high confidence that under all climate and socio-economic scenarios, low-lying cities and settlements, small islands, Arctic communities, remote indigenous communities, and deltaic communities will face severe disruption by 2100 - and as early as 2050 in many cases.

Impacts from climate change will disrupt supply chains and heavily impact ports and coastal communities

9 Ports, as well as cities and settlements by the sea are also particularly vulnerable to severe disruption by 2050. Projected climate risks will increase with, "exposure to climate and ocean driven hazards such as heat waves, droughts, pluvial floods, and impacts due to sea level rise, tropical cyclones, marine and land heatwaves, and ocean acidification."

10 By 2050, over a billion people will be at risk of coast-specific climate hazards, along with $7 trillion to $14 trillion of coastal infrastructure assets by 2100. These include maritime trade and its supporting infrastructure, which could in turn severely compromise global supply chains and maritime trade with its own cascading impacts. As one example, maritime ports are considered at the greatest risk from climate hazards within North America in terms of supply-chain infrastructure. Ports and supporting infrastructure are already affected by rising sea levels and the increasing frequency of storms, but hazards have not been systematically incorporated into planning.

11 However, the report also suggests that the timing is ripe for a transformational change in ports planning: "[…] a transformational adaptation approach to address climate impacts on maritime activities and increase security (Germond and Mazaris, 2019) [...] reduce shipping distances, or shorten supply chains (*medium agreement*) (Walsh et al., 2019; Monios and Wilmsmeier, 2020) as well as decrease marginalization of vulnerable groups, develop polycentric governance systems and eliminate maladaptive environmental policies and resource loss (Belhabib et al., 2020; O'Keeffe et al., 2020)."

12 Notably adaptational planning could be leveraged on the back of anticipated investment costs which, "to accommodate port growth and adapt to sea level rise amount to $223 billion to $768 billion before 2050, presenting opportunities […] to build climate resilience"

Co-sponsors commentary

13 The IPCC's newest report strongly reiterates the need for immediate and swift mitigation actions in order to keep even the possibility of viable adaptation strategies within reach. The timescales necessary to remain within a 1.5°C or 2°C warming scenario will require very substantial reductions in emissions from all sources this decade. Thus far these needed reductions have not been demonstrated by the maritime sector. More work is needed this decade in order to place shipping on a more viable 1.5°C aligned pathway.

14 It is also important to acknowledge the words of the IPCC Working Group II Co-Chair: "The scientific evidence is unequivocal: climate change is a threat to human well-being and the health of the planet. Any further delay in concerted global action will miss a brief and rapidly closing window to secure a liveable future".

15 With this in mind, the co-sponsors reiterate the need for the Organization to:

.1 make immediate cuts to Black Carbon emissions from shipping in and near the Arctic, and urgently develop measures to reduce black carbon emissions from shipping globally;

.2 revise the levels of ambition in the recently agreed short-term carbon intensity reduction measures to include a 1.5°C-compatible improvement in the carbon intensity of ships; and

.3 revise its climate targets to ensure full decarbonization of international shipping well before 2050, with intermediate absolute emission reduction targets that provide a clear trajectory for the industry.

Conclusions

16 The Committee is invited to note the findings listed in paragraphs 4 to 12 from the first part of the Intergovernmental Panel on Climate Change's Sixth Assessment report, *Climate Change 2021: Impacts, Adaptation and Vulnerability*, together with the views expressed in paragraphs 13 to 14 and is urged to support the urgent action outlined in paragraph 15 and to implement without delay the immediate measures recommended.

Action requested of the Committee

17 The Committee is invited consider the information contained in this document, in particular the conclusions set out in paragraph 16, and to take action as appropriate.