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WORKING GROUP ON REDUCTION OF
GHG EMISSIONS FROM SHIPS
14th session
Agenda item 2

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**FURTHER CONSIDERATION AND FINALIZATION OF THE DEVELOPMENT OF THE
DRAFT REVISED IMO STRATEGY ON REDUCTION OF GHG EMISSIONS FROM SHIPS**

**Risks to climate safety of overshooting the Paris Agreement temperature limit of 1.5°C
and implications for the revision of the IMO's Initial Strategy**

Submitted by CSC

SUMMARY

Executive summary: This document contains important new information about the progress and effects of global heating and a commentary on their implications for international shipping and the revision of the Initial Strategy.

Strategic direction, if applicable: 3

Output: 3.2

Action to be taken: Paragraph 12

Related documents: MEPC 75/7/15, MEPC 75/10/6; MEPC 78/7/18, MEPC 78/7/27; MEPC 79/7/20 and MEPC 79/INF.29

Introduction

1 Following up on document MEPC 79/7/20 (Greenpeace International et al.), CSC would like to bring to the Group's attention some of the latest science and science commentary relating to global heating (including the latest climate tipping point and sea level rise science) and explain the implications of this for the revision of the *Initial IMO Strategy on reduction of greenhouse gas emissions from ships* (the 'Initial Strategy'). CSC addresses the scope, levels of ambition and timelines established in the Revised Strategy, and the importance of addressing CO_{2e}.

Risks of overshooting 1.5°C of global heating

2 Recent analysis¹ shows that temporary overshoots of 1.5°C of global heating can increase tipping point² risks by up to 72% compared with non-overshoot scenarios, even when the long-term equilibrium temperature stabilizes within the Paris Agreement range. Once the tipping point process is initiated, even by a temporary global warming overshoot, a cascading ripple effect starts, and is effectively impossible to stop. The results of this modelling suggest that avoiding high-end climate risks is possible only for low-temperature, limited duration overshoots and if long-term temperatures stabilize at or below today's levels of global heating (1.2°C above pre-industrial levels³). The analysis concludes that only halving emissions by 2030 can minimize the risks of crossing cryosphere thresholds.

3. The US National Oceanic and Atmospheric Administration (NOAA) has reported⁴ that after three consecutive years of La Niña, the equatorial Pacific Ocean will return to its neutral state between March and May of 2023, and it is likely that El Niño conditions will develop during the northern hemisphere's autumn and winter. A strong El Niño can add up to 0.2°C to the average temperature of the Earth, increasing the risks of overshooting 1.5°C.

4 Greenland and the West Antarctic ice sheet melt, two of the most important tipping points, are at risk of tipping for small overshoots, underlining that they are among the most vulnerable tipping elements. The Greenland and Antarctic tipping points are also linked to triggering other significant tipping points and risk irreversible cascading impacts⁵. If triggered, these will rapidly cascade through socio-economic and ecological systems, leading to severe effects on human and natural systems and imposing important challenges for human adaptation. Triggering these tipping points is particularly risky for maritime infrastructure, ports, SIDs, LDCs and low-lying nations as previously highlighted in IPCC AR6 WG2⁶ report and document MEPC 79/7/20.

5 The Arctic is warming four times faster than the global average. The sea-ice there is shrinking and on course to set a winter minimum extent record in February this year.

New model shows increased risks of sea level rise with greater land inundation

6 Recent modelling⁷ based on a new more accurate method of satellite monitoring, shows that the worst impacts of sea level rise will hit much earlier than expected. Contrary to

¹ Kloebe, U., Nauels, A., Pearson, P. et al. Only halving emissions by 2030 can minimize risks of crossing cryosphere thresholds. *Nat. Clim. Chang.* 13, 9–11 (2023). <https://doi.org/10.1038/s41558-022-01566-4>

² Tipping point - the critical point in a situation, process, or system beyond which a significant and often unstoppable effect or change takes place

³ Source: The CAT Thermometer (Climate Analytics and New Climate Institute, 2021) <https://climateactiontracker.org/global/cat-thermometer/>

⁴ https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf

⁵ OECD (2022), *Climate Tipping Points: Insights for Effective Policy Action*, OECD Publishing, Paris, <https://doi.org/10.1787/abc5a69e-en>

⁶ <https://www.ipcc.ch/report/ar6/wg2/>

⁷ Verninmenn and Hooijer, 2023, New LiDAR-Based Elevation Model Shows Greatest Increase in Global Coastal Exposure to Flooding to Be Caused by Early-Stage Sea-Level Rise, <https://doi.org/10.1029/2022EF002880>

previous understandings, the study indicates that the fastest increase in the area of exposed land will occur in the early stages of sea-level rise. In one-third of countries most of this increase will be caused by the first meter of sea-level rise. The cumulative evidence from this and other recent analyses reinforces the case for rapid action, and that any delay will be extremely costly if not catastrophic. The authors conclude that in many regions the time available to prepare for increased exposure to flooding may be considerably less than assumed to date.

7 In addition to the impact on lives, livelihoods, and economies – in particular among SIDS and LDCs - inundation and other climate hazards will cause serious damage to the shipping industry. Shipping and Freight Resource⁸ has identified five primary impacts of climate change on the shipping industry. The adverse effects include more frequent re-routing, increased damage to port infrastructure, lower port productivity, increased unplanned operating costs, and decreased demand for services. A recent analysis⁹ of the cost of these impacts estimates that failing to quickly reduce emissions could cost the shipping industry \$1.8 to \$7.1 billion annually by 2050 and up to \$25 billion a year by the end of the century.

Global terrestrial and marine ecosystems are struggling to cope with the effects of climate change

8 Recent analysis¹⁰ finds that the world's ecosystems are showing symptoms of resilience loss, and 30% are on the brink of critical tipping points that can change their function and structure with severe consequences for humans and society. The Arctic tundra and boreal forest are the most affected, as well as the Indian Ocean and Eastern Pacific. Resilience is the ability of a system to withstand disturbances without losing its function, structure, and ability to adapt to changing environmental conditions. Russia, Canada, the United States and Australia are the countries identified as having suffered the largest areas of resilience loss.

Financial cost to industry of delaying shipping climate action

9 While it has been argued that a revised level of ambition should be kept under review due to the costs of existing measures, or that any new absolute reduction targets are premature, CSC can only highlight the finding in document MEPC 79/INF.29 (United Kingdom) that "a 5-year delay in the onset of deep-decarbonization from 2025 to 2030, increases the cumulative costs of the transition by ~\$0.5 trillion". This means every year of delay this decade adds approximately \$100 billion to the cost of the shipping industry's transition, an additional cost that will be borne by the shipping industry. This is in addition to the billions of extra costs already mentioned above, and of course does not consider the cost of the other many impacts of global heating. Overall, delaying the start of the decarbonization results in significantly more disruptive change for the industry and much more cost.

Implications for the revision of the Initial Strategy

10 This review of the Initial Strategy is a critical moment for IMO, the shipping industry, and the climate. Policy decided today will determine action in the coming years and can thus decide the future trajectory of the ice sheets for centuries or even millennia to come. Every

⁸ <https://www.shippingandfreightresource.com/5-adverse-effects-of-climate-change-on-maritime-transport/>

⁹ [Act Now or Pay Later: The Costs of Climate Inaction for Ports and Shipping, 2022, EDF report](#)

¹⁰ Juan C Rocha, Ecosystems are showing symptoms of resilience loss, 2022 Environ. Res. Lett. 17 065013

tenth of a degree counts in the challenge to protect planet and people from rising temperature extremes, and to enable a just and equitable transition while maintaining stable societies globally. Action to limit global heating must be taken across all sectors of the global economy, including shipping. Every month 1% of the remaining 1.5°C degrees aligned climate budget is used up.¹¹ More than 10% of shipping's 1.5°C carbon budget is used up every year.

11 The implications of this for the revision of the Initial Strategy are clear. The Revised Strategy must be true to the science and include at least the following elements if tipping points, and dangerous global heating are to be avoided:

- .1 a target of halving ship (CO₂e) GHG emissions by 2030;
- .2 full decarbonization around 2040;
- .3 no overshoot of shipping's 1.5°C degree carbon budget;
- .4 all targets based on well-to-wake CO₂e, including Black Carbon;
- .5 ensuring a just and equitable transition;
- .6 an immediate switch to distillates or cleaner fuels for ships operating in and near the Arctic;
- .7 enhanced ambition consistent with above and enforcement of the short-term measures; and
- .8 the development of mid-term measures that result in significant emissions reductions before 2030.

Action requested of the Working Group

12 The Group is invited to consider the information contained in this document and recommendations set out in paragraph 11 and to take action as appropriate.

¹¹ <https://earthcommission.org/news/earth-commission-news/pioneering-science-reveals-set-of-earth-system-boundaries-that-can-secure-a-safe-and-just-planet-for-all/>