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REDUCTION OF GHG EMISSIONS FROM SHIPS

Global tipping points

Submitted by WWF, Pacific Environment and CSC

SUMMARY

Executive summary:	This document provides new information on planetary tipping points and introduces the concept of positive tipping points or sources of hope, in support of proposals contained in document MEPC 82/7/10 (FOEI et al.).
Strategic direction, if applicable:	3
Output:	3.2
Action to be taken:	Paragraph 14
Related documents:	MEPC 82/7/10; MEPC 80/7/11; MEPC 79/7/20 and MEPC 78/7/18

Introduction

1 This document is submitted in accordance with the provisions of paragraph 6.12.5 of the *Organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies* (MSC-MEPC.1/Circ.5/Rev.5) and provides comments on document MEPC 82/7/10 (FOEI et al.).

Global tipping points

2 Paragraph 6 of document MEPC 82/7/10 refers to global tipping points, identifying that tipping points and planetary thresholds are within reach and in some cases have already been crossed. It explains that tipping points occur when changes become self-sustaining, and even if the triggers are halted or reversed beyond a certain threshold significant and irreversible changes to planetary systems can still occur.

3 The Committee has been introduced to the concept of tipping points before. Documents MEPC 78/7/18 (WWF et al.), MEPC 79/7/20 (Greenpeace International et al.) and MEPC 80/7/11 (CSC et al.) have outlined recent scientific evidence on the risks of triggering cascading climate tipping points from climate heating and referred to the conclusions of the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment cycle (AR6) during

which the IPCC has produced reports of its three Working Groups (see figure 1 below from the European Space Agency website). In particular, the Working Group II contribution to AR6, which addressed climate change impact, adaptation and vulnerability, concluded that 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. It also concluded that there was high confidence that these processes are nearing points beyond which rapid and irreversible changes are possible and that cascading changes are likely over the next two centuries including regional warming and temperature extremes, permafrost thaw and sea ice loss beyond that experienced in human existence. Confidence is very high 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 possibly as early as 2050.

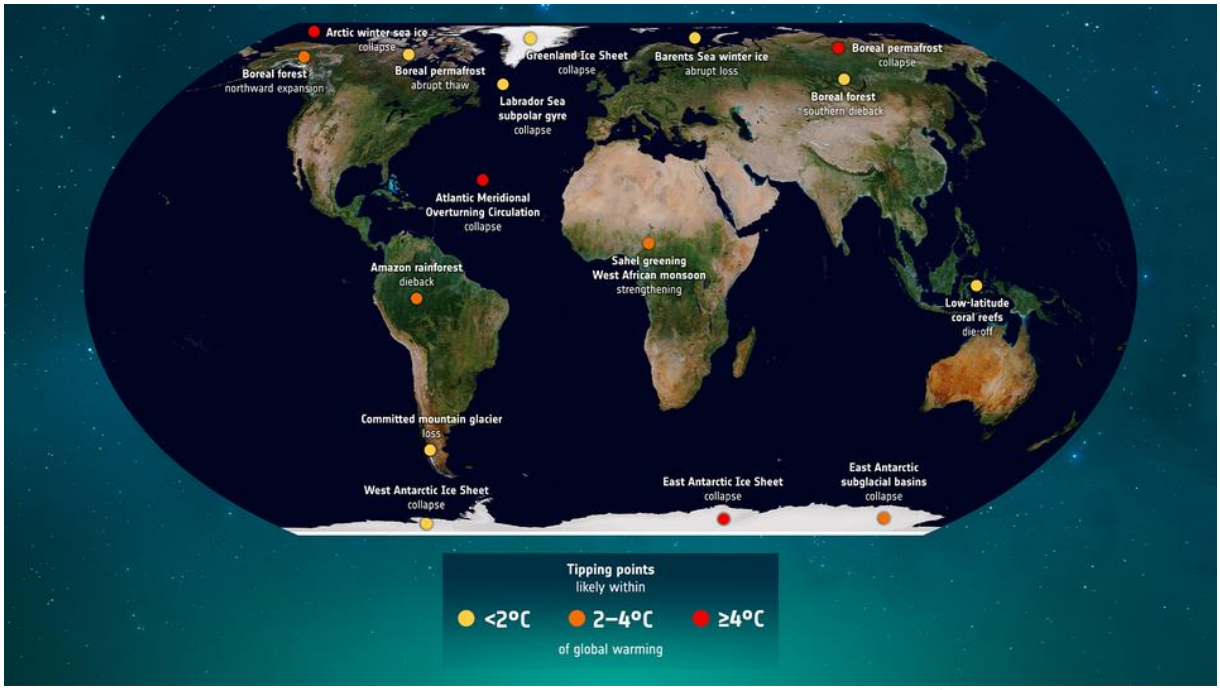

Figure 1: climate tipping points in Earth's climate system[1]

4 The Working Group III contribution to AR6 addressing the mitigation of climate changes was published in April 2022, accompanied by the words of the UN Secretary-General Antonio Guterres: "We are on a fast track to climate disaster. Major cities under water. Unprecedented heatwaves. Terrifying storms. Widespread water shortages. The extinction of a million species of plants and animals. This is not fiction or exaggeration. It is what science tells us will result from our current energy policies." He went on to warn that "climate scientists warn that we are already perilously close to tipping points that could lead to cascading and irreversible climate impacts."

5 This warning from the UN Secretary-General is now over two years old and, arguably, we are not only on a fast track to climate disaster – we are experiencing climate disaster – major cities underwater, unprecedented heatwaves, terrifying storms, and widespread water shortages are happening on a regular basis. However, since the publication of the Working Group III contribution to AR6, very little has changed in terms of action that reduces climate emissions. In the Arctic, one of the regions of the planet where tipping points are likely to be triggered in the near future, emissions of both CO_2 and Black Carbon from ships have increased in the past decade. As highlighted in document MEPC 79/7/20, potential early

[1] ESA - Understanding climate tipping points

warning signals of the Greenland ice sheet, Atlantic Meridional Overturning Circulation and Amazon rainforest destabilization have been detected and recent work suggests that up to 15 tipping elements are already active.[2]

6 In addition to the consequences of climate disasters being experienced globally, the ocean has warmed at an unprecedented rate in recent months. By May 2024, the monthly sea surface temperature had exceeded previous records for the respective month of the year for fourteen months in a row (see graph from Copernicus Climate Change Service/ECMWF).

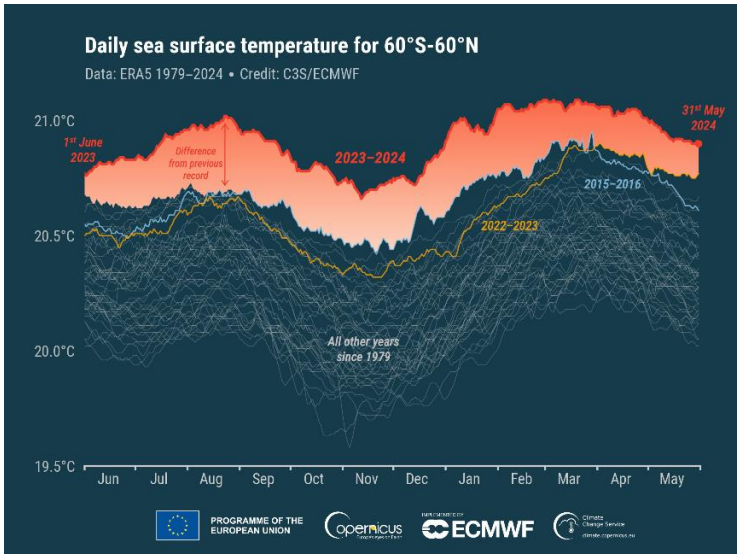

Figure 2: Copernicus Climate Change Service/ECMWF[3]

7 In December 2023, a new report on global tipping points was published. Led by the University of Exeter's Global Systems Institute, with the involvement of more than 200 researchers in 90 organizations and 26 countries, the report assessed both the risks and opportunities of negative and positive tipping points.[4] In addition to investigating climate tipping points, the researchers also identified sources of hope – positive tipping points. The report includes ten key messages[5] and six recommendations[6] which are set out below, however, the bottom line is that the current approach to linear incremental change is no longer an option. Existing governance institutions and decision-making approaches need to adapt to facilitate transformational change, and critical to achieving transformational change are positive tipping point opportunities.

Key messages and recommendations

8 Climate change and nature loss could soon trigger "tipping points" in the natural world – with five major tipping systems already at risk of crossing tipping points at the present level of global warming: the Greenland and West Antarctic ice sheets, warm-water coral reefs, North Atlantic Subpolar Gyre circulation and permafrost regions. These tipping points pose threats of a magnitude never before faced by humanity – these threats could materialize in the coming

2 Climate tipping points — too risky to bet against (nature.com)

3 Copernicus: May 2024, streak of global records for surface air and ocean temperatures continues | Copernicus

4 Global Tipping Points | Home (global-tipping-points.org)

5 Global Tipping Points | Key Messages (global-tipping-points.org)

6 Global Tipping Points | Key recommendations (global-tipping-points.org)

decades and at lower levels of global warming than previously thought, furthermore triggering one Earth system tipping point could trigger another causing a domino effect. The effects of tipping points will be transmitted and amplified throughout the globalized world – causing multiple crises and escalating to threaten the breakdown of economic, social and political systems.

9 Stopping these threats is possible but requires urgent global action. Global governance is currently inadequate to minimize tipping point threats equitably, so governance is needed across multiple scales to address different drivers and potentially rapid changes but must guard against misguided reliance on counterproductive reactions such as speculative solar geoengineering approaches. Even with urgent global action, some earth system tipping points may be unavoidable, but mitigating risk is still possible by reducing vulnerability.

10 Positive tipping points can accelerate a transformation towards sustainability – the scale and pace of action necessary to mitigate tipping point threats can be achieved and positive tipping point opportunities can be exploited with strategic interventions leading to disproportionately large and rapid benefits that accelerate the transition of societies towards sustainability. One positive tipping point can trigger others, creating a domino effect of change, for example as electric vehicles pass a positive tipping point towards becoming a dominant form of transport, this reduces the costs of battery technology, which in turn provides essential storage capacity to reinforce the positive tipping point to renewable power. Triggering positive tipping points however requires concerted and coordinated action that considers equity and justice with appropriate governance enabling this process.

11 A deeper understanding of tipping points is needed to support governance and decision-making, but this must be developed without delaying or slowing down action, however positive tipping points can create a powerful counter-effect to the risk of earth system tipping points cascading out of control.

12 The recommendations associated with the key messages are far-reaching and include phasing out fossil fuels and land use emissions, with fossil fuel emissions needing to be phased out worldwide before 2050 and a rapid end to land use change emissions needed with a shift to worldwide ecological restoration. Secondly, it is necessary to strengthen adaptation and loss-and-damage governance. Tipping point impacts will inevitably be felt worse by the most vulnerable communities with knock-on impacts for global inequality, the stability of the world economy and geopolitics. Consequently, strengthening adaptation and loss – and damage – governance will be important.

13 Tipping points, both negative and positive, should be incorporated in national policy and within nationally determined contributions (NDCS) as well as in the global stocktake. Additionally, policy efforts should be coordinated to trigger positive tipping points, including coordinated action by coalitions of state and non-state actors across governance, business and civil society in order to bring forward positive tipping points in politics, economies, technology, culture and behaviour. Finally, convening a global summit on tipping points, and deepening knowledge of tipping points and translation into action are also recommended.

Action requested of the Committee

14 The Committee is invited to consider the information contained in this document, in conjunction with the proposal in document MEPC 82/7/10, and take action as appropriate.