ANNEX 15

RESOLUTION MEPC.377(80)
(adopted on 7 July 2023)

2023 IMO STRATEGY ON REDUCTION OF GHG EMISSIONS FROM SHIPS

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(e) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee (the Committee) to consider and take appropriate action with respect to any other matters falling within the scope of the Organization which would contribute to the prevention and control of marine pollution from ships,

ACKNOWLEDGING that work to address greenhouse gas (GHG) emissions from ships has been undertaken by the Organization continuously since the adoption of Conference resolution 8 on *CO_2 emissions from ships* in September 1997, in particular, through the adoption of global mandatory technical and operational energy efficiency measures for ships under MARPOL Annex VI,

ACKNOWLEDGING ALSO the decisions of the Assembly at its thirtieth and thirty-second sessions in December 2017 and December 2021, respectively, that approved for the Organization a strategic direction to "Respond to climate change",

RECALLING that the Committee at its seventy-second session (MEPC 72) in April 2018 adopted, by resolution MEPC.304(72), the *Initial IMO Strategy on Reduction of GHG Emissions from Ships* (Initial IMO GHG Strategy),

NOTING that the Initial IMO GHG Strategy foresees that a revised IMO GHG Strategy should be adopted in 2023,

RECALLING the United Nations 2030 Agenda for Sustainable Development,

RECALLING ALSO the Paris Agreement adopted at the UN Climate Change Conference (COP 21), which identifies the long-term goal to hold the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change, as was also reaffirmed in the Glasgow Climate Pact at COP 26 and in the Sharm el-Sheikh Implementation Plan at COP 27,

RECALLING FURTHER IMO Assembly resolution A.998(25) on the need to develop capacity-building for the development and implementation of new instruments and amendments to existing instruments,

RECALLING that the Maritime Safety Committee at its 107th session decided to initiate work on the "Development of a safety regulatory framework to support the reduction of GHG emissions from ships using new technologies and alternative fuels",

HAVING CONSIDERED, at its eightieth session, the draft 2023 IMO strategy on reduction of GHG emissions from ships,

1 ADOPTS the *2023 IMO Strategy on Reduction of GHG Emissions from Ships* (2023 IMO GHG Strategy) as set out in the annex to the present resolution;

2 ACKNOWLEDGES the challenges that developing countries, in particular least developed countries (LDCs) and small island developing States (SIDS), may face in the implementation of the 2023 IMO GHG Strategy;

3 ALSO ACKNOWLEDGES the importance of addressing the human element, including the impact on seafarers and other maritime professionals, in the safe implementation of the 2023 IMO GHG Strategy;

4 INVITES the Secretary-General to make adequate provisions in the Integrated Technical Cooperation Programme (ITCP), the IMO GHG TC-Trust Fund and any other means of support related to follow-up actions to the 2023 IMO GHG Strategy that may be further decided by the Committee and undertaken by developing countries, in particular LDCs and SIDS;

5 AGREES to keep the 2023 IMO GHG Strategy under review with a view to the adoption of a revised IMO GHG Strategy in 2028;

6 ALSO AGREES that the 2023 IMO GHG Strategy revokes the 2018 Initial IMO GHG Strategy, as from this date.

ANNEX

2023 IMO STRATEGY ON REDUCTION OF GHG EMISSIONS FROM SHIPS

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1 INTRODUCTION

1.1 The International Maritime Organization (IMO or the Organization) is the United Nations specialized agency responsible for safe, secure and efficient shipping and the prevention of pollution from ships.

1.2 The *2023 IMO Strategy on Reduction of GHG Emissions from Ships* (the 2023 IMO GHG Strategy) represents the continuation of work by IMO as the appropriate international body to address greenhouse gas (GHG) emissions from international shipping. This work includes Assembly resolution A.963(23) on *IMO policies and practices related to the reduction of greenhouse gas emissions from ships*, adopted on 5 December 2003, urging the Marine Environment Protection Committee (MEPC or the Committee) to identify and develop the mechanisms needed to achieve the limitation or reduction of GHG emissions from international shipping.

1.3 In response to the Assembly's request, work to address GHG emissions from ships has been undertaken by the Organization, as summarized in appendix 1.

1.4 The *Initial IMO Strategy on Reduction of GHG Emissions from Ships* (resolution MEPC.304(72)) was the first milestone set out in the *Road map for developing a comprehensive IMO strategy on reduction of GHG emissions from ships* (the Road Map) approved at MEPC 70. The Road Map identified that a revised strategy was to be adopted in 2023.

1.5 The adoption of the 2023 IMO GHG Strategy is the latest milestone set out in the Road Map. The 2023 IMO GHG Strategy also sustains the momentum and represents the continuation of work by IMO as the appropriate international body to address GHG emissions from international shipping.

Context

1.6 The 2023 IMO GHG Strategy falls within a broader context that includes:

.1 other existing instruments related to the law of the sea, including UNCLOS, and to climate change, including the UNFCCC and its related legal instruments, including the Paris Agreement;

2 the leading role of the Organization in the development, adoption and assistance in implementation of environmental regulations applicable to international shipping;

.3 the decision of the thirty-second session of the Assembly (A 32) in December 2021 that adopted for the Organization a strategic direction entitled "Respond to climate change"; and

.4 the United Nations 2030 Agenda for Sustainable Development.

Emissions and emission scenarios

1.7 The Third IMO GHG Study 2014 estimated that GHG emissions from international shipping in 2012 accounted for some 2.2% of anthropogenic CO_2 emissions and that such emissions could grow by between 50% and 250% by 2050.

1.8 The Fourth IMO GHG Study 2020 estimated that GHG emissions from shipping in 2018 accounted for some 2.89% of global anthropogenic GHG emissions and that such emissions could represent between 90% and 130% of 2008 emissions by 2050.

1.9 Future annual IMO emission and carbon intensity estimates using the available data from the IMO Ship Fuel Oil Consumption Database (IMO DCS) and other relevant sources would help reduce the uncertainties associated with these emission estimates and scenarios.

Objectives of the 2023 IMO GHG Strategy

1.10 The 2023 IMO GHG Strategy is aimed at:

.1 enhancing IMO's contribution to global efforts by addressing GHG emissions from international shipping. International efforts in addressing GHG emissions include the Paris Agreement and its goals and the United Nations 2030 Agenda for Sustainable Development and its SDG 13: *"Take urgent action to combat climate change and its impacts"*;

.2 identifying actions to be implemented by the international shipping sector, as appropriate, while addressing impacts on States and recognizing the critical role of international shipping in supporting the continued development of global trade and maritime transport services; and

.3 identifying actions and measures, as appropriate, to help achieve the above objectives, including incentives for research and development and monitoring of GHG emissions from international shipping.

2 VISION

IMO remains committed to reducing GHG emissions from international shipping and, as a matter of urgency, aims to phase them out as soon as possible, while promoting, in the context of this Strategy, a just and equitable transition.

3 LEVELS OF AMBITION, INDICATIVE CHECKPOINTS, AND GUIDING PRINCIPLES

Levels of ambition

3.1 Subject to amendment depending on reviews to be conducted by the Organization in accordance with section 7, the 2023 IMO GHG Strategy identifies levels of ambition for the international shipping sector noting that technological innovation and the global introduction and availability of zero or near-zero GHG emission technologies, fuels and/or energy sources for international shipping will be integral to achieving the overall level of ambition.

3.2 The levels of ambition and indicative checkpoints should take into account the well-to-wake GHG emissions of marine fuels as addressed in the *Guidelines on life cycle GHG intensity of marine fuels* (LCA guidelines) developed by the Organization[1] with the overall objective of reducing GHG emissions within the boundaries of the energy system of international shipping and preventing a shift of emissions to other sectors.

[1] Resolution MEPC.376(80)

3.3 Levels of ambition directing the 2023 IMO GHG Strategy are as follows:

.1 carbon intensity of the ship to decline through further improvement of the energy efficiency for new ships

to review with the aim of strengthening the energy efficiency design requirements for ships;

.2 carbon intensity of international shipping to decline

to reduce CO_2 emissions per transport work, as an average across international shipping, by at least 40% by 2030, compared to 2008;

.3 uptake of zero or near-zero GHG emission technologies, fuels and/or energy sources to increase

uptake of zero or near-zero GHG emission technologies, fuels and/or energy sources to represent at least 5%, striving for 10%, of the energy used by international shipping by 2030; and

.4 GHG emissions from international shipping to reach net zero

to peak GHG emissions from international shipping as soon as possible and to reach net-zero GHG emissions by or around, i.e. close to, 2050, taking into account different national circumstances, whilst pursuing efforts towards phasing them out as called for in the Vision consistent with the long-term temperature goal set out in Article 2 of the Paris Agreement.

Indicative checkpoints

3.4 Indicative checkpoints to reach net-zero GHG emissions from international shipping:

.1 to reduce the total annual GHG emissions from international shipping by at least 20%, striving for 30%, by 2030, compared to 2008; and

.2 to reduce the total annual GHG emissions from international shipping by at least 70%, striving for 80%, by 2040, compared to 2008.

Guiding principles

3.5 The principles guiding the 2023 IMO GHG Strategy include:

.1 the need to be cognizant of the principles enshrined in instruments already developed, such as:

.1 the principle of non-discrimination and the principle of no more favourable treatment, enshrined in MARPOL and other IMO conventions; and

.2 the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances, enshrined in UNFCCC, its Kyoto Protocol and the Paris Agreement;

.2 the requirement for all ships to give full and complete effect, regardless of flag, to implementing mandatory measures to ensure the effective implementation of this Strategy;

.3 the need to consider the impacts of measures on States, including developing countries, in particular on LDCs and SIDS, and their specific emerging needs, as recognized in the Revised Strategic Plan for the Organization (resolution A.1149(32)); and

.4 the need for evidence-based decision-making balanced with the precautionary approach as set out in resolution MEPC.67(37).

4 CANDIDATE SHORT-, MID- AND LONG-TERM GHG REDUCTION MEASURES WITH POSSIBLE TIMELINES AND THEIR IMPACTS ON STATES

Timelines

4.1 Candidate measures set out in this 2023 IMO GHG Strategy should be consistent with the following timelines:

.1 short-term GHG reduction measures are the measures finalized and agreed by the Committee between 2018 and 2023, as included in appendix 1;

.2 the basket of mid-term GHG reduction measures should be finalized and agreed by the Committee by 2025. Dates of entry into force and when the measure(s) can effectively start to reduce GHG emissions could be defined for the basket or for each measure individually;

.3 other candidate mid-term GHG reduction measures could be finalized and agreed by the Committee between 2023 and 2030. Dates of entry into force and when the measure can effectively start to reduce GHG emissions would be defined for each measure individually; and

.4 possible long-term measures could be measures finalized and agreed by the Committee beyond 2030, to be developed as part of the 2028 review of the IMO GHG Strategy.

4.2 The list of candidate measures is non-exhaustive and is without prejudice to measures the Organization may further consider and adopt.

Short-term GHG reduction measures

4.3 In accordance with regulations 25.3 and 28.11 of MARPOL Annex VI, a review of the mandatory goal-based technical and operational measures to reduce carbon intensity of international shipping (the "short-term GHG reduction measures") shall be completed by 1 January 2026.

4.4 The Committee may decide to initiate a review of the other short-term measure(s) as included in appendix 1.

Basket of candidate mid-term GHG reduction measures

4.5 In accordance with the timelines set out in this Strategy and the Work Plan, a basket of candidate measure(s), delivering on the reduction targets, should be developed and finalized comprised of both:

.1 a technical element, namely a goal-based marine fuel standard regulating the phased reduction of the marine fuel's GHG intensity; and

.2 an economic element, on the basis of a maritime GHG emissions pricing mechanism.

The candidate economic elements will be assessed observing specific criteria to be considered in the comprehensive impact assessment, with a view to facilitating the finalization of the basket of measures.

The mid-term GHG reduction measures should effectively promote the energy transition of shipping and provide the world fleet with a needed incentive while contributing to a level playing field and a just and equitable transition.

4.6 In accordance with Phase III of the Work Plan, the measure(s) in the basket should be developed and adopted, along with the assessments of impacts on States.

4.7 The development of the basket of candidate mid-term GHG reduction measures should take into account the well-to-wake GHG emissions of marine fuels as addressed in the LCA guidelines developed by the Organization with the overall objective of reducing GHG emissions within the boundaries of the energy system of international shipping and preventing a shift of emissions to other sectors.

Synergies with existing measures

4.8 In addition, the potential synergies with other existing measures such as the Carbon Intensity Indicator (CII) will be considered, in particular regarding incentives for energy efficiency and for the adoption of better operational practices in the shipping value chain or other technologies to reduce emissions from ships.

Other candidate mid-term GHG reduction measures

4.9 In addition to the basket of candidate mid-term GHG reduction measures, the Organization should continue to develop other mid-term GHG reduction measures to reduce GHG emissions from ships. All the following candidate mid-term measures represent possible mid-term further action by the Organization on matters related to the reduction of GHG emissions from ships:

Informed policymaking:

.1 the Secretariat to undertake annual IMO GHG emission and carbon intensity estimates using the available data from the IMO DCS and other relevant sources; and other studies to inform policy decisions;

.2 development of a feedback mechanism to enable lessons learned on implementation of measures to be collated and shared through a possible information exchange on best practice;

Supporting global availability and uptake of zero or near-zero GHG emission technologies, fuels and/or energy sources:

.3 further development of the LCA guidelines;

.4 undertake a regulatory assessment of safety aspects associated with reducing GHG emissions in accordance with this Strategy and develop a road map to support the safe delivery of the Strategy;

.5 consider and analyse measures to address emissions of methane and nitrous oxide and further enhance measures to address emissions of volatile organic compounds;

.6 incentives for first movers to develop and take up new technologies; and

.7 consider and analyse measures to both encourage port developments and activities globally to facilitate reduction of GHG emissions from shipping, including provision of ship and shoreside/onshore power supply from renewable sources, and infrastructure to support supply of zero or near-zero GHG emission fuels and/or energy sources, and to further optimize the logistic chain and its planning, including ports.

Impacts on States

4.10 The impacts on States of a measure/combination of measures should be assessed and taken into account as appropriate before adoption of the measure(s) in accordance with the *Revised procedure for assessing impacts on States of candidate measures.*[2] Particular attention should be paid to the needs of developing countries, in particular LDCs and SIDS.

4.11 The Committee should consider the comprehensive impact assessment in order to inform further consideration of the proposed measure(s), and take action as appropriate.

4.12 When assessing impacts on States, the impact of (a) measure(s) should be considered, as appropriate, inter alia, in the following terms:

.1 geographic remoteness of and connectivity to main markets;
.2 cargo value and type;
.3 transport dependency;
.4 transport costs;
.5 food security;
.6 disaster response;
.7 cost-effectiveness; and
.8 socio-economic progress and development.

4.13 Once the comprehensive impact assessment is completed, and disproportionately negative impacts assessed and addressed, as appropriate, the measure(s) may be considered for adoption.

4.14 Once a measure is adopted and enacted, the Committee should keep its implementation and impacts under review, upon request by Member States, so that any necessary adjustments may be made.

5 BARRIERS AND SUPPORTIVE ACTIONS, CAPACITY-BUILDING AND TECHNICAL COOPERATION, AND R&D

5.1 The Committee recognizes that developing countries, in particular LDCs and SIDS, have special needs with regard to capacity-building and technical cooperation.

[2] MEPC.1/Circ.885/Rev.1

5.2 The Committee recognizes the challenges that some delegations of developing countries, in particular LDCs and SIDS, may face in participating in the work of the Organization, in particular on GHG-related matters. In this regard, the Organization should periodically assess the provision of financial resources through the Voluntary Multi-Donor Trust Fund established by the Organization for the purpose of assisting developing countries, in particular LDCs and SIDS, in attending the meetings of MEPC and the Intersessional Working Group on Reduction of GHG Emissions (ISWG-GHG).

5.3 When developing candidate mid- and long-term GHG reduction measures, due account should be taken to ensure a just and equitable transition that leaves no country behind, including supportive measures.

5.4 The Committee acknowledges that developing and making globally available zero and near-zero GHG emission technologies, fuels and/or energy sources, and developing the necessary associated port infrastructure could be specific barriers to the implementation of possible measures.

5.5 The Committee recognizes the need for a broad approach to regulating safety of ships using zero or near-zero GHG emission technologies, fuels and/or energy sources, including addressing the human element, to ensure the safe implementation of this Strategy.

5.6 Recognizing the impact this Strategy will have on seafarers and other maritime professionals, the Organization is further requested to assess its instruments, guidance and training standards to help ensure a just transition for seafarers and other maritime workforce that leaves no one behind.

Continue and enhance partnerships, technical cooperation, capacity-building activities and technology cooperation

5.7 The Committee could assist the efforts to promote zero and near-zero GHG emission technologies, fuels and/or energy sources by facilitating public-private partnerships and information exchange.

5.8 The Committee should continue to provide mechanisms for facilitating information sharing, technology transfer, capacity-building and technical cooperation, taking into account resolution MEPC.229(65) on *Promotion of technical co-operation and transfer of technology relating to the improvement of energy efficiency of ships*.

5.9 The Committee recognizes that the decarbonization of shipping should be possible for all IMO Member States and may create new opportunities also for developing countries, including LDCs and SIDS, to take part in the value chain of the production and distribution of zero and near-zero GHG emission technologies, fuels and/or energy sources for international shipping.

5.10 The Organization should assess periodically the provision of financial and technological resources and capacity-building to implement the Revised Strategy through the Integrated Technical Cooperation Programme (ITCP), the IMO GHG TC-Trust Fund and other initiatives, including both IMO and Member States-sponsored programmes, as listed in appendix 2.

5.11 In addition, the Organization may:

.1 develop a seafarers' training and skills programme to support the reduction of GHG emissions from ships;

.2 initiate R&D activities and pilots addressing marine propulsion, zero or near-zero GHG emission technologies, fuels and/or energy sources to further enhance the energy efficiency of ships and supporting the global availability and uptake of low-carbon and zero-carbon fuels and technologies;

.3 support, including through partnerships and provision of financial and technological resources, enhanced technical cooperation, capacity-building activities and technology cooperation, the implementation of the existing short-term GHG reduction measures; and

.4 initiate efforts to explore renewable fuel production opportunities to be made available to international shipping, notably in developing countries, including LDCs and SIDS.

6 FOLLOW-UP ACTIONS

6.1 A programme of follow-up actions for the 2023 IMO GHG Strategy should be developed.

6.2 The key stages towards the adoption of a 2028 IMO GHG Strategy are as follows:

Target dates	**Milestones**		
	Comprehensive impact assessment of the basket of candidate mid-term measures	**Development of candidate mid-term measures**	**Other milestones**
MEPC 80 (Summer 2023)	Initiation of CIA	Initiate Phase III of the Work Plan on the development of mid-term measures	
MEPC 81 (Spring 2024)	Interim report	Finalization of basket of measures	
MEPC 82 (Autumn 2024)	Finalized report		
MEPC 83 (Spring 2025)		Approval of measures	Review of the short-term measure to be completed by 1 January 2026
Extraordinary one or two-day MEPC (six months after MEPC 83 in Autumn 2025)		Adoption of measures	
MEPC 84 (Spring 2026)			
MEPC 85 (Autumn 2026)			
16 months after adoption (2027)		Entry into force of measures	

Target dates	Milestones		
	Comprehensive impact assessment of the basket of candidate mid-term measures	**Development of candidate mid-term measures**	**Other milestones**
MEPC 86 (Summer 2027)			Initiate the review of the 2023 IMO GHG Strategy
MEPC 87 (Spring 2028)			
MEPC 88 (Autumn 2028)			Finalization of the review of the 2023 IMO GHG Strategy with a view to adoption of the 2028 IMO GHG Strategy

6.3 The Marginal Abatement Cost Curve (MACC) for each measure, as appropriate, should be ascertained and updated, and then evaluated on a regular basis.

7 PERIODIC REVIEW OF THE STRATEGY

7.1 The IMO GHG Strategy should be subject to a five-yearly review with the first review due in 2028.

7.2 The Committee should undertake the review including defining the scope of the review and its terms of reference.

7.3 The reviews of the levels of ambition should take into account updated emission estimates, emission reduction options and availability for international shipping, and the reports of the Intergovernmental Panel on Climate Change (IPCC), and future IMO GHG inventories and studies, as relevant, to assess progress towards reaching net-zero GHG emissions of international shipping. The reviews should also take into account available data on the impact on States of any measure(s) applied, including information provided by the States or by international organizations or institutions, so that any necessary adjustments may be made as provided for in the *Revised procedure for assessing impacts on States of candidate measures* (MEPC.1/Circ.885/Rev.1).

APPENDIX 1

OVERVIEW OF PREVIOUS WORK UNDERTAKEN BY THE ORGANIZATION TO ADDRESS GHG EMISSIONS FROM SHIPS

An overview of IMO work undertaken to address GHG emissions from ships is provided below:

.1 MEPC 62 (July 2011) adopted resolution MEPC.203(62) on *Inclusion of regulations on energy efficiency for ships in MARPOL Annex VI* introducing mandatory technical (EEDI) and operational (SEEMP) measures for the energy efficiency of ships;

.2 MEPC 65 (May 2013) adopted resolution MEPC.229(65) on *Promotion of technical co-operation and transfer of technology relating to the improvement of energy efficiency of ships*, to provide technical assistance to Member States to enable cooperation in the transfer of energy efficient technologies, in particular to developing countries;

.3 MEPC 67 (October 2014) approved the Third IMO GHG Study 2014, estimating that GHG emissions from international shipping in 2012 accounted for some 2.2% of anthropogenic CO_2 emissions and that such emissions could grow by between 50% and 250% by 2050;

.4 MEPC 70 (October 2016) adopted, by resolution MEPC.278(70), amendments to MARPOL Annex VI to introduce the data collection system for fuel oil consumption of ships, containing mandatory requirements for ships to record and report their fuel oil consumption, and also adopted the *Road map for developing a comprehensive IMO strategy on reduction of GHG emissions from ships* (the Road Map). Ships of 5,000 gross tonnage and above (representing approximately 85% of the total GHG emissions from international shipping) are required to collect consumption data for each type of fuel oil they use, as well as other, additional, specified data including proxies for "transport work";

.5 MEPC 72 (April 2018) adopted, by resolution MEPC.304(72), the *Initial IMO Strategy on Reduction of GHG Emissions from Ships*, setting out a vision which confirmed IMO's commitment to reducing GHG emissions from international shipping and to phasing them out as soon as possible, and agreed to keep the Initial Strategy under review, with a view to adoption of a Revised Strategy in 2023;

.6 MEPC 73 (October 2018) approved the *Programme of follow-up actions of the Initial IMO Strategy*, intended to be used as a planning tool in meeting the timelines identified in the Initial IMO Strategy;

.7 MEPC 74 (May 2019) approved MEPC.1/Circ.855 on *Procedure for assessing the impacts on States of candidate measures*; adopted resolution MEPC.323(74) on *Inviting Member States to encourage voluntary cooperation between the port and shipping sectors to contribute to reducing GHG emissions from ships,* as revised by MEPC 79 by resolution MEPC.366(79); and agreed to establish a voluntary multi-donor trust fund ("GHG TC-Trust Fund"), to provide a dedicated source of financial support for technical cooperation and capacity development activities to support the implementation of the Initial IMO Strategy on Reduction of GHG Emissions from Ships;

.8 MEPC 75 (November 2020) adopted resolution MEPC.327(75) on *Encouraging Member States to develop and submit voluntary National Action Plans to address GHG emissions from ships,* as revised by MEPC 79 by resolution MEPC.367(79); approved the Fourth IMO GHG Study 2020; and adopted, by resolution MEPC.324(75), amendments to MARPOL Annex VI advancing and strengthening EEDI Phase 3 requirements for several ship types;

.9 MEPC 76 (June 2021) adopted, by resolution MEPC. 328(76), amendments to MARPOL Annex VI introducing the short-term GHG reduction measure containing a technical Energy Efficiency Existing Ship Index (EEXI), an operational Carbon Intensity Indicator (CII) and an enhanced Ship Energy Efficiency Management Plan (SEEMP); adopted a series of seven technical guidelines supporting the EEXI and CII frameworks; approved a *Work plan to progress development of mid- and long-term GHG reduction measures in line with the Initial IMO Strategy on Reduction of GHG Emissions from Ships and its Programme of follow-up actions*;

.10 MEPC 77 (November 2021) agreed to initiate the revision of the *Initial IMO Strategy on Reduction of GHG Emissions from Ships*, recognizing the need to strengthen the ambition during the revision process; and adopted resolution MEPC.342(77) on *Protecting the Arctic from shipping Black Carbon emissions* recognizing that Black Carbon was a potent short-lived contributor to climate warming; and

.11 MEPC 78 (June 2022) adopted a series of 10 technical guidelines to support the implementation of the short-term GHG reduction measure;

.12 Council 128 (November 2022) endorsed the finalized terms of reference of a Voluntary Multi-Donor Trust Fund to Facilitate the Participation of Developing Countries, Especially Small Island Developing States (SIDS) and Least Developed Countries (LDCs) in IMO GHG Meetings, and agreed to review the terms of reference, based on the experience of the first full year of operations of the Fund, no later than at the 130th session of the Council;

.13 MEPC 79 (December 2022) adopted amendments to MARPOL Annex VI to revise the data collection system for fuel oil consumption for the implementation of the EEXI and the CII framework, approved a *Revised procedure for assessing the impacts on States of candidate measures* (MEPC.1/Circ.885/Rev.1) and adopted resolutions MEPC.366(79) and MEPC.367(79) on *Invitation to Member States to encourage voluntary cooperation between the port and the shipping sectors to contribute to reducing GHG emissions from ships* and *Encouragement of Member States to develop and submit voluntary National Action Plans (NAPs) to address GHG emissions from ships*, respectively; and

.14 MEPC 80 (July 2023) adopted resolution MEPC.376(80) on *Guidelines on life cycle GHG intensity of marine fuels* (LCA guidelines); initiated the comprehensive impact assessment of the basket of candidate mid-term measures; and adopted resolution MEPC.377(80) on *2023 IMO Strategy on Reduction of GHG Emissions from Ships* (2023 IMO GHG Strategy).

APPENDIX 2

OVERVIEW OF RELEVANT INITIATIVES BY THE ORGANIZATION SUPPORTING THE REDUCTION OF GHG EMISSIONS FROM SHIPS

An overview of relevant IMO initiatives supporting the reduction of GHG emissions from ships is provided below:

.1 The **Integrated Technical Cooperation Programme (ITCP)** is designed to assist Governments which lack the technical knowledge and resources that are needed to operate a shipping industry safely and efficiently. Support for IMO's GHG-related activities under the ITCP is a clear priority for the Organization. For 2022-2023, a dedicated global programme "Reducing atmospheric emissions from ships and in ports and effective implementation of MARPOL Annex VI and the Initial IMO GHG Strategy" was designed to assist Member States with the implementation of the Initial IMO Strategy, thereby increasing energy efficiency measures for ships, as well as reducing atmospheric pollution from ships, including when in ports.

.2 MEPC 74 (May 2019) agreed to establish a **voluntary multi-donor trust fund ("GHG TC-Trust Fund")**, to provide a dedicated source of financial support for technical cooperation and capacity development activities to support the implementation of the *Initial IMO Strategy on Reduction of GHG Emissions from Ships* (MEPC 74/18/Add.1, annex 17). The resources of the Trust Fund include voluntary contributions from IMO Member States, UN agencies, international organizations and other entities who have expressed support for the Initial IMO Strategy.

.3 With support from the European Union, the **Global Maritime Technologies Cooperation Centres (MTCC) Network (GMN)** project (approximately $11 million, 2016-2022) established five MTCCs in China (MTCC Asia), Fiji (MTCC Pacific), Kenya (MTCC Africa), Panama (MTCC Latin America) and Trinidad and Tobago (MTCC Caribbean). Plans are now being finalized for a GMN Phase II project for the five MTCCs to continue their work to support maritime decarbonization in the respective regions and to be linked to other IMO projects and initiatives. Phase II is to pay particular attention to the delivery of smaller scale (for example, ships retrofitting) pilot demonstration projects, with a focus on the needs of developing countries, in particular LDCs and SIDS.

.4 With support from Norway, the **Green Voyage 2050** project (approximately $7.1 million, 2019-2023) is currently supporting countries to undertake assessments of maritime emissions in the national context, develop policy frameworks and National Action Plans (NAPs) to address GHG emissions from ships, and draft legislation to implement MARPOL Annex VI into national law. Partnering countries are also supported in identifying and implementing of low- and zero-carbon pilot projects on board ships and in ports. Phase 1 of the project is expected to terminate in December 2023 and a new phase envisioned to ensure that efforts can be further continued both in relation to scaled-up pilot projects and NAP development.

.5 The **GHG-SMART Programme** (Sustainable Maritime Transport Training Programme to Support the Implementation of the GHG Strategy) project ($2.5 million, 2020-2025), funded by the Republic of Korea, is a training

programme to support the implementation of the *Initial IMO Strategy on Reduction of GHG Emissions from Ships* by developing capacity in LDCs and SIDS. This is a series of annual training programmes consisting of comprehensive training online, followed by individual training plans, and a practical training and study visit, combined with an opportunity for two trainees (one female and one male) to further benefit from a World Maritime University (WMU) scholarship.

.6 The **GloFouling Partnerships** project (approximately $7 million, 2018-2025) is part of the wider efforts by IMO, in collaboration with UNDP and GEF, to improve biofouling management and protect marine ecosystems from the negative effects of invasive aquatic species . By supporting the implementation of the IMO *2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species*, this project also contributes to the reduction of GHG emissions from ships. The project has developed and published in 2022 a study entitled *Analysing the Impact of Marine Biofouling on the Energy Efficiency of Ships and the GHG Abatement Potential of Biofouling Management Measures*.

.7 The **TEST Biofouling** (Transfer of Environmentally Sound Technologies) project ($4 million, 2022-2025), funded by Norway, aims to assist developing countries to build their knowledge on control and management of biofouling and showcase effective approaches to biofouling management and the mitigation of environmental risks associated with the transfer of invasive aquatic species through biofouling by means of demonstration projects at both regional and country levels. The project focuses on testing novel technologies and new sustainable methods of biofouling management, which, in line with the above study, indirectly contributes to reducing GHG emissions.

.8 The **IMO CARES** (Coordinated Actions to Reduce Emissions from Shipping) Foundation Project, project (approximately $1.5 million, 2022-2024), funded by Saudi Arabia, started its implementation phase in early 2023, with the ultimate objective to help link the global North and global South for the identification and trial of ready for market technology solutions, technology transfer, technology diffusion and uptake activities, pilot demonstration projects and green financing initiatives. This project will assist the maritime sector in developing countries in their transition towards a low-carbon future with key involvement of the MTCCs at a regional level.

.9 The Future Fuels and Technology for Low- and Zero-carbon Shipping Project (**FFT project**) (approximately $1.2 million, 2022-2024) is a partnership project between the Republic of Korea and IMO, designed to support GHG reduction from international shipping by providing technical analysis to the Organization in support of policy discussions held in the Marine Environment Protection Committee (MEPC).

.10 The **IMO-UNEP-Norway Innovation Forum** (approximately $650,000, 2020-2023) identified as championing innovation to accelerate the transition of the marine sector towards a zero- and low-emission future. Its aim is to promote innovation by providing a global platform to exchange best practices and fill necessary gaps by gathering ideas and latest developments from all competent international policy makers.

The second Innovation Forum was held in a hybrid format on 28 and 29 September 2022 and was linked to the IMO World Maritime Day (WMD) theme 2022 "New Technologies for Greener Shipping". It was attended by a total of 1,900 in-person and virtual participants.

The 2023 session will be held in conjunction with WMD, under the theme "MARPOL at 50 — Our commitment goes on", celebrating the fiftieth anniversary of the MARPOL Convention, continuing to support the global South and the green transition of the maritime sector into a sustainable future.

.11 The IMO-EBRD-World Bank co-led **Financing Sustainable Maritime Transport (FIN-SMART) Roundtable** initiative has been providing a platform among Member State representatives, international financial institutions, representatives of private banks and other key maritime stakeholders to identify maritime decarbonization investment risks, opportunities and potential financial solutions and innovative financial instruments to address financing needs and investment opportunities in developing countries, in particular LDCs and SIDS.

The third FIN-SMART roundtable in June 2023, through concrete examples of maritime decarbonization projects resulting in investment or having the potential to become bankable projects in developing countries, aims to highlight concrete success factors and the role of the various actors in achieving investment in maritime decarbonization. It also showcases to the financial community the investment opportunity in more concrete terms, as developing countries may have large unused sustainable resources (for example, wind or solar energy) that could be used for the production of green fuels that the maritime industry requires to accelerate decarbonization.

.12 The **NextGEN** (Green and Efficient Navigation) portal, which was launched by IMO and the Maritime and Port Authority of Singapore (MPA) in September 2021, is an online platform to support information sharing and collaboration on decarbonization initiatives and projects in the field of maritime, presenting an opportunity to provide an online platform of collaboration across the maritime value chain. The next phase of the NextGEN initiative was launched in 2022 as the NextGEN Connect Project, the new phase of which supports a pilot route-based action in the Asia-Pacific region to reduce emissions from international shipping.

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