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GHG EMISSIONS FROM SHIPS  
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**DISCLAIMER**

As at its date of issue, this document, in whole or in part, is subject to consideration by the IMO organ to which it has been submitted. Accordingly, its contents are subject to approval and amendment of a substantive and drafting nature, which may be agreed after that date.

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

**Draft 2023 IMO Strategy on Reduction of GHG Emissions from Ships**

**Note by the Chair**

1 The Group further considered annex 1 to MEPC 79/WP.10 (Report of the Working Group on Reduction of GHG emissions from ships) containing the Chair's reflection of discussions on the revision of the Initial IMO GHG Strategy during ISWG-GHG 13 and the Working Group during MEPC 79 in conjunction with documents submitted to this session.

2 Following the discussions on the revision of the Initial Strategy during this session, the Chair prepared his reflection of the status of discussion to this point, as set out in the annex to this document.

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## **ANNEX**

### **[2023 IMO STRATEGY ON REDUCTION OF GHG EMISSIONS FROM SHIPS**

#### **Contents**

- 1 INTRODUCTION
  - 2 VISION
  - 3 LEVELS OF AMBITION AND GUIDING PRINCIPLES
  - 4 CANDIDATE SHORT-, MID- AND LONG-TERM GHG REDUCTION MEASURES AND SUPPORTIVE ACTIONS WITH POSSIBLE TIMELINES AND THEIR IMPACTS ON STATES
  - 5 BARRIERS AND SUPPORTIVE MEASURES; CAPACITY-BUILDING AND TECHNICAL COOPERATION; R&D
  - 6 FOLLOW-UP ACTIONS
  - 7 PERIODIC REVIEW OF THE STRATEGY
- 
- Appendix 1 OVERVIEW OF PREVIOUS WORK UNDERTAKEN BY THE ORGANIZATION TO ADDRESS GHG EMISSIONS FROM SHIPS
- Appendix 2 OVERVIEW OF RELEVANT INITIATIVES BY THE ORGANIZATION SUPPORTING THE REDUCTION OF GHG EMISSIONS FROM SHIPS

## INTRODUCTION

1.1 The International Maritime Organization (IMO) 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 of 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) 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 *Roadmap for developing a comprehensive IMO Strategy on reduction of GHG emissions from ships* (the Roadmap) approved at MEPC 70. The Roadmap 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 Roadmap. 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 including:

- .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 for 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 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

1.6 The *Third IMO GHG Study 2014* has estimated that GHG emissions from international shipping in 2012 accounted for some 2.2% of anthropogenic CO<sub>2</sub> emissions and that such emissions could grow by between 50% and 250% by 2050.

1.7 The *Fourth IMO GHG Study 2020* has 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.

1.8 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**

1.9 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 in this century.]

## **3 LEVELS OF AMBITION AND GUIDING PRINCIPLES**

### **Levels of ambition**

3.1 Subject to amendment depending on reviews to be conducted by the Organization, 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 alternative low-carbon and zero-carbon technologies, fuels and/or energy sources for international shipping will be integral to achieve the overall level of ambition.

3.1bis The reviews should take into account updated emission estimates, emissions reduction options and availability for international shipping, and the reports of the Intergovernmental Panel on Climate Change (IPCC), in particular, the IPCC Special Report on Global Warming of 1.5°C (2018) and the Sixth Assessment Report (2021, 2022), and future IMO GHG inventories and studies, as relevant, to assess progress towards [phasing out] [reaching net-zero] GHG emissions of international shipping.

3.1ter The levels of ambition 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 with the overall objective of preventing an increase

of emissions within the boundaries of the energy system of international shipping and a shift of emissions to other sectors.

3.1qrt Levels of ambition directing the 2023 IMO GHG Strategy are as follows:

**.1 *carbon intensity of the ship to decline through implementation of further phases of the energy efficiency design index (EEDI) for new ships***

to review with the aim to strengthen the energy efficiency design requirements for ships with the percentage improvement for each phase to be determined for each ship type, as appropriate;

**.2 *carbon intensity of international shipping to decline***

to reduce CO<sub>2</sub> emissions per transport work, as an average across international shipping, by at least 40% by 2030, compared to 2008, subject to amendment following the review of the short-term GHG reduction measure to be completed by 1 January 2026;

**.3 *uptake of low-carbon and zero-carbon fuels to accelerate***

to ensure that low-carbon and zero-carbon fuels represent at least 5% of the [energy used] [world fleet [measured by fuel mass consumed on-board]] by international shipping by 2030;

**.4 *ensuring progress towards [phasing out] [reaching net-zero] GHG emissions from international shipping***

[to reduce the total annual GHG emissions from international shipping by at least [50%] [96%] by 2040, compared to 2008] [to determine a GHG reduction target for 2040 in the 2028 review of this Strategy];

**.5 *GHG emissions from international shipping to peak and [phase out] [reach net-zero]***

to peak GHG emissions from international shipping as soon as possible whilst pursuing efforts towards [phasing them out] [reaching net-zero emissions] [by 2050 at the latest]] [by or around mid-century, taking into account different national circumstances].

### **Guiding principles**

3.2 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 the UNFCCC, its Kyoto Protocol and the Paris Agreement; and

- .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));
- .4 the need for evidence-based decision-making balanced with the precautionary approach as set out in resolution MEPC.67(37); and
- .5 the need for a broad approach to regulating safety of ships using new low-carbon and zero-carbon technologies and fuels, including addressing the human element, to ensure a safe implementation of this Strategy.

#### **4 CANDIDATE SHORT-, MID- AND LONG-TERM GHG REDUCTION MEASURES AND SUPPORTIVE ACTIONS 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 a basket of candidate mid-term GHG reduction measures should be the measure(s) finalized and agreed by the Committee [by 2024] [by 2025] [between 2023 and 2030]. 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 and supportive actions could be finalized and agreed by the Committee between 2023 and 2030. Dates of entry into force and when the measure/action can effectively start to reduce GHG emissions would be defined for each measure/action individually; and
- .4 possible long-term measures and supportive actions 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 and supportive actions is non-exhaustive and is without prejudice to measures and supportive actions 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 *Work plan for development of mid- and long-term measures as follow up of the Initial IMO Strategy on reduction of GHG emissions from ships*<sup>1</sup> and the timelines set out in this Strategy, a basket of candidate measure(s) consisting of both technical and economic elements should be developed and finalized.

*[placeholder to reflect possible additional elements to be inserted reflecting the outcome of consideration of agenda item on the development of a basket of candidate mid-term measures]*

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 Guidelines on life cycle GHG intensity of marine fuels (LCA guidelines) developed by the Organization with the overall objective of preventing an increase of emissions within the boundaries of the energy system of international shipping and a shift of emissions to other sectors.]

### **[Other candidate mid-term GHG reduction measures and supportive actions**

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

#### *Informed policy making:*

- .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 low-carbon and zero-carbon fuels:*

- .3 [further develop the LCA guidelines;]

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<sup>1</sup> Document MEPC 76/15, annex 14



- .4 undertake a regulatory assessment of safety aspects associated with reducing GHG emissions in accordance with this Strategy and to develop a road map to support the safe delivery of the Strategy;
- .5 develop a seafarer's training and skills programme to support the reduction of GHG emissions from ships;
- .6 consider and analyse measures to address emissions of methane and nitrous oxide and further enhance measures to address emissions of Volatile Organic Compounds;
- .7 initiate R&D activities and pilots addressing marine propulsion, alternative low-carbon and zero-carbon fuels, and innovative technologies to further enhance the energy efficiency of ships and supporting the global availability and uptake of low-carbon and zero-carbon fuels and technologies;
- .8 incentives for first movers to develop and take up new technologies;

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

- .9 support, including through partnerships and provision of financial and technological resources, enhanced technical cooperation, capacity-building activities and technology cooperation as set out in section 5, with the objective of supporting the implementation of the existing short-term GHG reduction measures;
- .10 consider and analyse measures to 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, infrastructure to support supply of alternative low-carbon and zero-carbon fuels, and to further optimize the logistic chain and its planning, including ports; and
- .11 initiate efforts to explore renewable fuel production opportunities to be made available to international shipping, notably in developing countries, including SIDS and LDCs;]

### **Impacts on States**

4.9 The impacts on States of a measure/combination of measures should be assessed and taken into account as appropriate before adoption of the measure in accordance with the *Revised procedure for assessing impacts on States of candidate measures*<sup>2</sup>. Particular attention should be paid to the needs of developing countries, especially SIDS and LDCs.

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

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

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<sup>2</sup> MEPC.1/Circ.885/Rev.1

- .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

4.12 Once the comprehensive impact assessment is completed, and disproportionately negative impacts assessed and addressed, as appropriate, the measures may be considered for adoption.

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

## **5 BARRIERS AND SUPPORTIVE MEASURES; CAPACITY-BUILDING AND TECHNICAL COOPERATION; 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.

5.2 The Committee recognizes the challenges that some delegations of developing countries, especially SIDS and LDCs, may face in participation 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 as established by the Organization for the purpose of assisting developing countries, in particular SIDS and LDCs, in attending the meetings of MEPC and ISWG-GHG (C 128/D, annex 4 and CL No. 4703).

5.3 The Committee acknowledges that development and making globally available new energy sources that are safe for ships could be a specific barrier to the implementation of possible measures.

5.4 The Committee could assist the efforts to promote low-carbon and zero-carbon fuels and technologies by facilitating public-private partnerships and information exchange.

5.5 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*.

5.6 The Committee recognizes that the decarbonization of shipping should be possible for all IMO Member States and creates new opportunities also for developing countries, including LDCs and SIDS, to take part in the value chain of the production and distribution of low- and zero-emission fuels.

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

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

5.9 The Organization is further requested to assess the Organization’s instruments, guidance and training standards to help ensure a just transition of the workforce that leaves no one behind.

## 6 FOLLOW-UP ACTIONS

6.1 A programme of follow-up actions of 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
MEPC 80 (Summer 2023)	Adoption of the 2023 IMO GHG Strategy on reduction of GHG emissions from ships [...]
MEPC 81 (Spring 2024)	[...]
MEPC 82 (Autumn 2024)	[...]
MEPC 83 (Summer 2025)	Review of the short-term measure to be completed by 1 January 2026 [...]
MEPC 84 (Spring 2026)	[...]
MEPC 85 (Autumn 2026)	[...]
MEPC 86 (Summer 2027)	Initiation of 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 Strategy on reduction of GHG emissions from ships [...]

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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.

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## 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<sub>2</sub> 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 further adopted the *Roadmap for developing a comprehensive IMO Strategy on reduction of GHG emissions from ships* (the Roadmap). 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), IMO 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 Circular 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-building 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 the 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 Council 130;
- .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) [placeholder]

## 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 to 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-building 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 financial support from the Global Environment Facility (GEF), UNDP and IMO have between 2015 and 2019 cooperated through the **Global Maritime Energy Efficiency Partnerships Project (GloMEEP)** project to strengthen the national capabilities for countries to become Party to and effectively implement MARPOL Annex VI, through legal, policy and institutional reforms, awareness raising and capacity-building activities and establishment of public-private partnerships to support innovation and low carbon shipping. This project involved ten Lead Pilot Countries (Argentina, China, Georgia, India, Jamaica, Malaysia, Morocco, Panama, Philippines and South Africa) and several private sector stakeholders through the participation of the "Global Industry Alliance to support low-carbon shipping" (GIA), a partnership to develop innovative solutions to address common barriers to the uptake and implementation of energy efficiency technologies and operational measures.
- .4 With financial support from the European Union, the **Global Maritime Technologies Cooperation Centres (MTCC) Network (GMN)** project saw the establishment of five MTCCs in China (MTCC Asia), Fiji (MTCC Pacific), Kenya (MTCC Africa), Panama (MTCC Latin America) and Trinidad and Tobago (MTCC Caribbean).
- .5 With financial support from Norway, the **Green Voyage 2050** project builds upon the experience of the earlier GloMEEP project's most successful activities, Green Voyage 2050 project 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.
- .6 The **GHG-SMART Programme** (Sustainable Maritime Transport Training Programme to Support the Implementation of the GHG Strategy), funded by the Republic of Korea, is a training programme to support the implementation of the *Initial IMO GHG Strategy on Reduction of GHG emissions from ships* by building capacity in LDCs and SIDS.
  - .7 The **GloFouling Partnerships** 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 (IAS). Reducing biofouling also contributes to the reduction of GHG emissions from ships.
  - .8 The **IMO CARES** (Coordinated Actions to Reduce Emissions from Shipping) Foundation Project, funded by Saudi Arabia, started its implementation phase in late 2021, with the ultimate objective to create a framework for a long-term programme of action that aims to coordinate and link the various global initiatives dealing with low/zero carbon research and development, technology transfer, technology diffusion and uptake activities, pilot demonstration projects, and green financing initiatives.
  - .9 The **NextGEN** (where “GEN” stands for “Green and Efficient Navigation”) portal, was launched by IMO and the Maritime and Port Authority of Singapore (MPA) in September 2021. The concept aims to facilitate 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.
  - .10 The IMO-EBRD-World Bank co-lead **Financing Sustainable Maritime Transport (FIN-SMART) Roundtable** launched in 2020, has been providing a platform among Member State representatives, IFIs, representatives of private banks and other key maritime stakeholders to identify maritime decarbonization investment risks, opportunities and potential financial solutions, with a special emphasis on financing needs and options in developing countries, particularly in SIDS and LDCs.
  - .11 The Future fuels and technology for low- and zero-carbon shipping project (**FFT project**) is a partnership project between the Republic of Korea and IMO, funded through the Voyage Together Trust Fund and implemented by the Marine Environment Division (MED). This project is 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.

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