

Note by the International Maritime Organization to the fifty-seventh session of the UNFCCC Subsidiary Body for Scientific and Technological Advice (SBSTA 57) Sharm El Sheikh, Egypt, 6 to 12 November 2022

Agenda item 13(e)

“Emissions from fuel used for international aviation and maritime transport”

UPDATE ON IMO’S WORK TO ADDRESS GHG EMISSIONS FROM INTERNATIONAL SHIPPING

SUMMARY

The International Maritime Organization (IMO) contributes to international action to address climate change by regulating GHG emissions from international shipping.

Four years after adoption of the 2018 *Initial IMO Strategy on reduction of GHG emissions from ships* (the Initial IMO Strategy), IMO is accelerating its efforts to decarbonize the shipping sector as soon as possible. New mandatory technical and operational regulations enter into force globally in November 2022 to reduce by 2030 the carbon intensity of international shipping by at least 40% compared to 2008 levels, enhancing IMO’s comprehensive set of existing energy efficiency requirements.

In conjunction with the development of a revised IMO GHG Strategy with increased ambitions in July 2023, IMO Member States, through the Marine Environment Protection Committee (MEPC) and its Intersessional Working Group on Reduction of Greenhouse Gas Emissions from Ships (ISWG-GHG), are currently considering the development of mid- and long-term GHG reduction measures, including technical and carbon pricing elements, to pursue further GHG reduction. In parallel, as part of its efforts to encourage the production, supply and use of sustainable low-carbon and zero-carbon maritime fuels in the near future, IMO is developing new guidelines on the lifecycle GHG/carbon intensity of marine fuels along with the necessary safety regulatory framework allowing safe handling of the future marine fuels on board of ships.

In support of regulatory developments, IMO undertakes impacts on States of candidate measures, boosts its capacity-building and technical cooperation activities in developing countries, in particular SIDS and LDCs, and undertakes many other initiatives to ensure a ‘just and equitable’ transition to low-carbon shipping.

CONTEXT

1 Carrying more than 80% of the international trade of goods in volume, international shipping has increased fourfold over the past 50 years to a total of almost 11 billion tonnes despite the COVID-19 pandemic¹ which makes it a key enabler of global commerce. As such, most of the elements of the 2030 Agenda for Sustainable Development will only be realized

¹ Review of Maritime Transport 2021. UNCTAD

with a sustainable maritime transport sector supporting world trade and facilitating global economy².

2 The International Maritime Organization (IMO) is a specialized United Nations agency and the global standard-setting authority for the safety, security and environmental performance of international shipping. Its main role is to create a regulatory framework for the shipping industry that is fair and effective, universally adopted and universally implemented. This can be summed up by IMO's mission statement: "Safe, secure and efficient shipping on clean oceans".

1 IMO'S REGULATORY WORK TO REDUCE GHG EMISSIONS FROM INTERNATIONAL SHIPPING

3 For over a decade now, IMO has been acting to reduce GHG emissions from international shipping. A timeline summing up these actions is provided in the Annex of this document.

4 Shipping is the most cost-effective and energy efficient mode of mass cargo transport, and since 2009 the increase of CO₂ emissions of international maritime transport has been effectively decoupled from the continuous growth of global seaborne trade volume (see Figure 1). International shipping is also the enabler of the world's energy transition facilitating global trade in the renewable energy commodities of the future. Today, GHG emissions from international shipping still account for about 2.5% of global anthropogenic GHG emissions³.

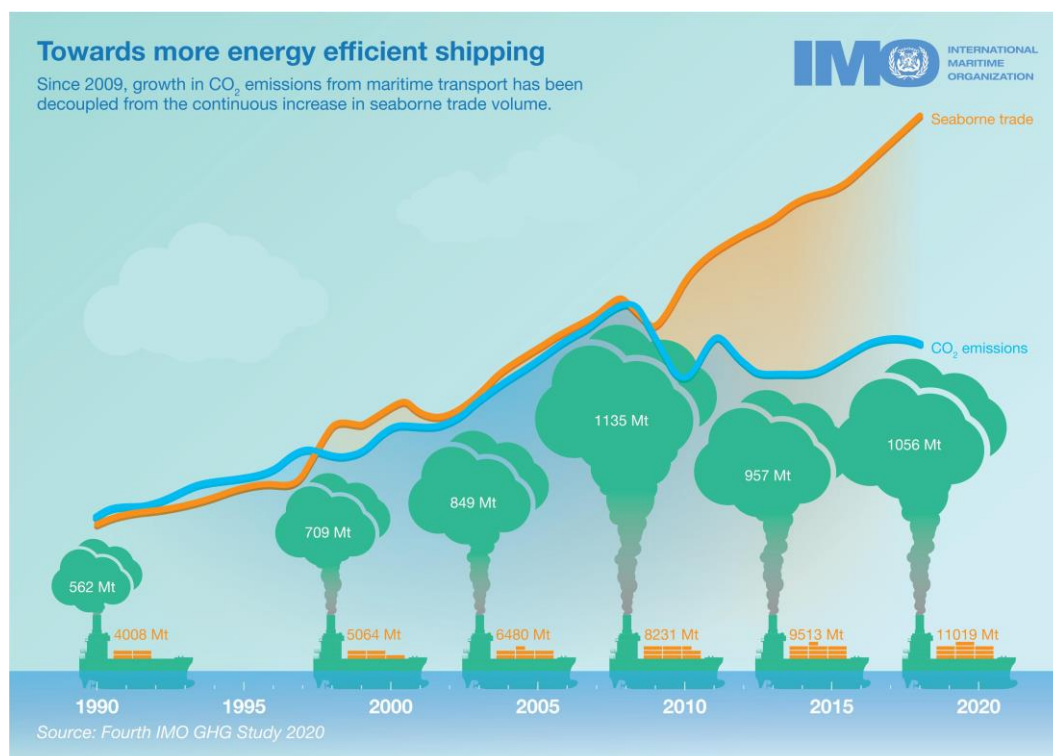


Figure 1: CO₂ emissions of global maritime transport and global seaborne trade

² <https://www.imo.org/en/MediaCentre/HotTopics/Pages/SustainableDevelopmentGoals.aspx>

³ Fourth IMO GHG Study 2020

Initial IMO Strategy on reduction of GHG emissions from ships

5 In 2018, Member States adopted the [Initial IMO Strategy on reduction of GHG emissions from ships](#) (resolution MEPC.304(72)), setting out IMO's ambition to reduce carbon intensity (emissions per transport work) by at least 40% by 2030, pursuing efforts towards 70% by 2050, and to reduce total annual GHG emissions from international shipping by at least 50% by 2050 compared to 2008, working towards phasing them out as soon as possible⁴. The Initial IMO Strategy envisages the 2050 level of ambition as "a point in a pathway of CO₂ emissions reduction consistent with the Paris Agreement temperature goals".

6 The Initial IMO GHG Strategy represents a global framework for Member States and the industry, setting out a vision for shipping decarbonization, levels of ambition to reduce GHG emissions and guiding principles; and includes candidate short-, mid- and long-term measures with possible timelines and an assessment of their impacts on States. The Initial GHG Strategy also foresees that a revised IMO GHG Strategy is to be adopted in 2023 (see section below).

7 Since the adoption of its Initial Strategy, IMO has been actively working on transposing the commitments into mandatory requirements that apply to individual ships from all flags to ensure that the levels of ambition are effectively achieved in line with the agreed timelines. As such, IMO's commitments do not just remain aspirational targets but lay down a binding regulatory framework that applies to the world fleet and is enforced globally, both the ship's flag State as well as any port State the ship visits.

8 IMO regulations apply worldwide without discrimination, thus providing a global equal level playing field, preventing distortion of specific trade flows and trade agreements, avoiding carbon leakage or sub-optimal shipping in certain parts of the world.

Short-term measures to reduce the carbon intensity of international shipping

9 As presented in previous IMO submissions to SBSTA, the short-term GHG reduction measure, composed of mandatory technical and operational requirements, has entered into force on 1 November 2022 and is aimed at reducing the carbon intensity of international shipping in 2030 by at least 40%, compared to 2008 levels.

10 The binding carbon intensity reduction targets are goal-based, leaving the choice to comply with different technical and operational measures to the ship owner/operator (see the compliance examples below).

11 IMO actively supports dissemination of recent information about the different technologies through its various projects. Under the Norway-funded project GreenVoyage2050 a [Practical Guide to the Selection of Energy Efficiency Technologies for Ships](#) and an [Energy Efficiency Technologies Portal](#) have been developed. The GEF-UNDP-IMO [Gloufouling](#) project analyses how advanced hull coatings can support fuel consumption reduction of ships.

12 MEPC 78 in June 2022 further adopted a set of 12 guidelines supporting the uniform implementation of various elements of the short-term measure (Energy Efficiency Existing Ship Index (EEXI), enhanced Ship Energy Efficiency Plan (SEEMP), Carbon Intensity

⁴ The *Initial IMO Strategy on reduction of GHG emissions from ships* is available on the IMO website [here](#)

Indicator (CII) rating). The guidelines include those relating to method of calculation of the EEXI, the revised SEEMP and possible correction factors for CII.

13 MEPC 78 also approved (for adoption by MEPC 79 in December 2022) draft amendments to MARPOL Annex VI to require additional reporting by flag States to the IMO Ship Fuel Oil Consumption Database (DCS) on the ship's carbon intensity performance values (EEXI and CII), which provide a building block for carbon intensity reduction measures.

14 The Committee further agreed to include a new workstream on further revision of the IMO DCS in the agenda of ISWG-GHG 13 (5-9 December 2022), which will largely focus on possible reporting of cargo-related information to reflect the carbon intensity of a ship more accurately.

15 The IMO carbon intensity rating system provides a valuable tool to enhance the involvement of the private sector and other actors in the maritime value chain in promoting low-carbon shipping. It will allow the financial sector, e.g. banks and insurance companies, but also ports, charterers and cargo owners to use the mandatory ratings of these ships in a way to steer investment and equity to the most efficient ships.

16 The new regulations may also constitute building blocks for future GHG reduction measures to be developed in the mid- and long-term.

Comprehensive impact assessment of the short-term measure and its lessons-learned exercise

17 According to the Initial IMO Strategy, the adoption of emissions reduction measures should be supported by an evidence-based impact assessment taking into account, as appropriate, analysis tools and models. MEPC 74 approved a *Procedure for assessing impacts on States of candidate measures*, as was reported in IMO's submission to SBSTA 50. In line with the Initial IMO Strategy, particular attention is paid to the needs of developing countries, in particular SIDS and LDCs.

18 IMO conducted in spring 2021 a comprehensive impact assessment of the short-term measure, with the contribution of external stakeholders, including UNCTAD. The outcome of this impact assessment was approved by MEPC 76.

19 MEPC 76 agreed to keep under review the impacts on States of the aforesaid amendments to MARPOL Annex VI so that any necessary adjustments can be made, and to initiate a lessons-learned exercise of the comprehensive impact assessment.

20 Based on recommendations of an Ad-hoc Expert Workshop on Impact Assessments which identified concrete proposals for improving the impact assessment procedure, ISWG-GHG 13 is expected to complete the lessons-learned exercise, and, in particular, finalize the review of the *Procedure for assessing impacts on States of candidate measures* (MEPC.1/Circ.885), to be approved by MEPC 79.

National Action Plans

21 A resolution on [National Action Plans \(NAP\)](#) MEPC.327(75) was adopted in November 2020 at MEPC 75 urging Member States to develop and update a voluntary NAP with a view to contributing to reducing GHG emissions from international shipping by

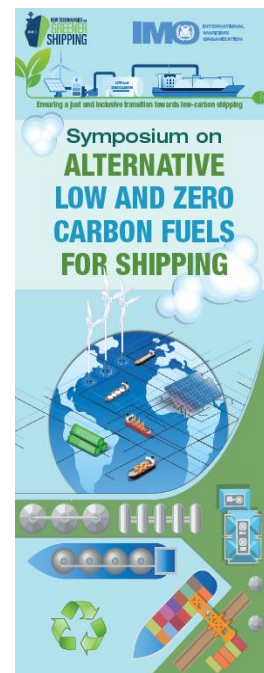
supporting actions at national level, such as cooperation between the ports and shipping industry as well as along the maritime value chain.⁵

22 Through the Norway-funded project “GreenVoyage2050”, IMO also developed useful guidance for Member States to embark on the development of such a National Action Plan involving all stakeholders.⁶

IMO action to promote the uptake of alternative low-carbon and zero-carbon maritime fuels

IMO Symposiums on alternative low-carbon and zero-carbon fuels

23 Technological innovation and the global introduction of alternative fuels and/or energy sources for international shipping will be integral to achieve the ambition set out in the Initial IMO Strategy. The [2021 IMO Symposium on alternative low-carbon and zero-carbon fuels for shipping](#) organized in February 2021 presented state-of-the-art in research and innovation, discussed the advancement of alternative low- and zero-carbon fuels in international shipping, and looked at initiatives to promote the availability, affordability and uptake of future marine fuels⁷.



24 Based on the success of the 2021 Symposium, IMO organized its [2nd Symposium](#) in October 2022, focusing on “Ensuring a just and inclusive transition to low-carbon shipping”. The Symposium, open to all Member Governments, IGOs, NGOs and the general public, focused on the challenges and opportunities that renewable fuel production represents in the context of shipping decarbonization, particularly for developing countries, and the need for enhanced cooperation at all levels to support this global transition.

Lifecycle GHG/carbon intensity assessment for marine fuels

25 [Lifecycle GHG/carbon intensity assessment \(LCA\) of marine fuels](#) is a key element supporting the uptake of alternative marine fuels for international shipping by adequately calculating the overall GHG/carbon footprint of those fuels.

26 MEPC 78 established a correspondence group to further develop draft guidelines on lifecycle GHG intensity of marine fuels (LCA Guidelines), covering various issues such as various fuel production pathways, sustainability criteria issues, Well-to-Tank, Tank-to-Wake and entire Well-to-Wake emission calculation methodologies, third-party verification, etc. MEPC 79 will consider an interim report of the correspondence group.

27 The Global Industry Alliance to Support Low Carbon Shipping (Low Carbon GIA), a partnership under the IMO-Norway GreenVoyage2050 Project, has issued a [report on sustainability criteria and life cycle GHG emission assessment methods and standards for alternative marine fuels](#).

Safety considerations

28 In parallel, since 2018, IMO’s [Maritime Safety Committee](#) (MSC) has been working on the development of the appropriate regulatory framework to ensure a safe use of low- and

⁵ The submitted national action plans and strategies are available on the IMO website [here](#)

⁶ The guidance is available [here](#)

⁷ The 1st IMO Symposium’s presentations and recordings are available on the IMO website [here](#)

zero-carbon marine fuels, e.g. hydrogen, methanol, fuel cells, ammonia, etc. MSC approved the *Interim guidelines for the safety of ships using methyl/ethyl alcohol as fuel* (MSC.1/Circ.1621) and the *Interim guidelines for the safety of ships using fuel cell power installations* (MSC.1/Circ.1647) in 2020 and 2022, respectively. Moreover, a circular on *Interim Guidelines for the safety of ships using LPG fuels* is foreseen to be approved in 2023.

29 MSC also developed a work plan for the development of new guidelines for other alternative fuels; namely, Guidelines for ships using hydrogen and ammonia are planned to be finalized by 2024. Development of mandatory instruments regarding methyl/ethyl alcohols will be finalized by 2025 while consideration on the development of mandatory instruments regarding fuel cells will commence by 2025.

Development of mid- and long-term measures

30 As presented in the IMO submission to SBSTA 56, MEPC 76 approved a [Work plan for development of mid- and long-term measures](#) aiming at supporting the achievement of the vision and the levels of ambition agreed in the Initial IMO Strategy. The Work plan consists of three main phases:

- Phase I – Collation and initial consideration of proposals for measures;
- Phase II – Assessment and selection of measure(s) to further develop; and
- Phase III – Development of (a) measure(s) to be finalized within (an) agreed target date(s).

31 MEPC 78 supported, in general, the further development under Phase II of the Work plan of a basket of candidate mid-term GHG reduction measures, integrating both various technical and carbon pricing elements while recognizing the necessary flexibility.

32 In accordance with Phase II of the Work plan, the Committee agreed to continue its work by means of assessing the various proposed measures, in particular, their (1) feasibility, (2) effectiveness to deliver the long-term levels of ambition and (3) potential impacts on States, with a view to further developing the basket of candidate mid-term measures.

33 MEPC 78 also noted the need for additional information on the proposed mid-term measures. The Committee encouraged proponents of measures to work together with a view to exploring how different elements of these proposals could be combined in the context of the basket of candidate mid-term measures. Member States and international organizations were invited to submit new documents to a future session of ISWG-GHG, including refined proposals to that purpose.

34 ISWG-GHG 13 and MEPC 79 will further consider proposed measures along with initial impact assessments with a view to identifying a basket of IMO's next set of measures to reduce GHG emissions from shipping. Current proposals contain GHG fuel standards, fuel levies, emissions cap-and-trade system, feebate system, and combinations of concepts.

Revision of the Initial IMO Strategy on reduction of GHG emissions from ships

35 As presented in the IMO submission to SBSTA 56, 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. The decision came in the wake of COP 26 and in view of the urgency for all sectors to accelerate their efforts to reduce GHG emissions. At MEPC 77, IMO Member States also agreed that a final draft Revised IMO GHG Strategy will be considered by MEPC 80 (scheduled to meet in July 2023), with a view to adoption.

36 MEPC 78 (6-10 June 2022) had for its consideration a number of documents submitted by Member States and observer organizations providing concrete proposals and comments related to the revision of the Initial IMO GHG Strategy, including, inter alia, the level of ambition for 2050, intermediate GHG reduction targets, and how to ensure a “just and equitable” transition that addresses the interests of developing States, in particular SIDS and LDCs, often also the most climate vulnerable States.

37 Having made further progress with the discussions towards the revision of the Initial GHG Strategy, MEPC 78 reiterated its commitment to adopt a revised and strengthened IMO GHG Strategy by MEPC 80 (July 2023). Thereto, the Committee invited further submissions containing concrete proposals, including possible text proposals, as appropriate, addressing all relevant sections of the Initial Strategy, taking into account the discussions during MEPC 78.

38 Further work will continue at ISWG-GHG 13 before MEPC 79 (12-16 December 2022) and further sessions of the working group, including two meetings of intersessional GHG working group are planned prior to MEPC 80, so that the Revised Strategy can be adopted at MEPC 80 as planned. IMO will continue to update SBSTA on its action to address GHG emissions from international shipping.

Mediterranean Sea Emission Control Area for Sulphur Oxides

39 Although not directly related to the reduction of GHG emissions from ships, it is worth mentioning that MEPC 78 agreed to designate the entire Mediterranean Sea as an emission control area, meaning that ships will - from 2025 - have to comply with more stringent controls on sulphur oxide emissions. In a SO_x-ECA, the limit for sulphur in fuel oil used on board ships is 0.10% mass by mass (m/m), while outside these areas the limit is 0.50% m/m.

40 The associated amendments to MARPOL Annex VI were approved by MEPC 78, with a view to adoption at MEPC 79. The amendments could enter into force in mid-2024, with the new limit taking effect from 2025.

2 CAPACITY-BUILDING, TECHNICAL COOPERATION AND OTHER SUPPORTING ACTIVITIES

Multi-donor trust fund to support implementation of the Initial IMO Strategy

41 In May 2019, IMO established 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. The IMO GHG TC Trust Fund has funded a number of initiatives aimed at enhancing IMO’s informed and inclusive decision-making, such as the Fourth IMO GHG Study 2020, the comprehensive impact assessment of the short-term GHG reduction measure and a recently launched study on maritime transport costs in the Pacific region.

The Integrated Technical Cooperation Programme (ITCP)

42 To help developing countries improve their ability to comply with international rules and standards relating to maritime safety and the prevention and control of maritime pollution, IMO has developed an [Integrated Technical Cooperation Programme](#) (ITCP), which is designed to assist governments which lack the technical knowledge and resources that are needed to operate a shipping industry safely and efficiently.

43 The effects of the COVID-19 pandemic have continued to have an impact on the work of IMO in the implementation of capacity-building activities delivered through the

Organization's ITCP. Consequently, the Secretariat has continued to adapt its working practices to meet the challenges and to develop new implementation methodologies, taking into account the lessons learned and experience gained, with a strong focus on online training in lieu of "traditional" in-person training.

44 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. In addition, national and regional training and capacity-building activities support Member States for following up the outcomes of impact assessments of candidate measures and to better understand IMO's Data Collection System (DCS).

45 During the 72nd session of the Technical Cooperation Committee (TC 72), held from 17 to 20 October 2022, the Committee was informed on the technical cooperation work undertaken by the Secretariat so far to support implementation of the energy efficiency requirements in MARPOL Annex VI and the Initial IMO Strategy on the reduction of GHG emissions from ships.

46 In 2022, through IMO's ITCP, the following activities were delivered aimed at enhancing awareness, knowledge, and skills of participants on relevant aspects of MARPOL Annex VI:

- .1 The capacity of maritime officials from Francophone countries in west and central Africa was strengthened through delivery of back-to-back in-person workshops held in Abidjan, Côte d'Ivoire, from 3 to 7 October 2022. Some 36 government personnel from Benin, Cameroon, Republic of the Congo, Democratic Republic of the Congo, Côte d'Ivoire, Gabon, Guinea, Mauritania, Senegal and Togo received training, in French, on the process of ratification, implementation and enforcement of MARPOL Annex VI. Participants were familiarized with IMO regulations to fight against air pollutants from shipping and the principles and objectives of the Initial IMO Strategy on reduction of GHG from ships. The training covered a wide range of issues such as, e.g.: sulphur regulations, the energy efficiency and carbon intensity of international shipping including the latest amendments to MARPOL Annex VI and data collection system for fuel oil consumption of ships. A similar regional workshop is planned for delivery in the first quarter of 2023, for the benefit of Pacific Island countries and territories.
- .2 Within the margins of the seventeenth meeting of the Group of Twenty (G20), a national symposium on energy transition in shipping was held in Bali, Indonesia, from 27 and 28 October 2022. This high-level national symposium aimed at raising awareness within the G20 around the need to decarbonize shipping. This included an understanding of decarbonization pathways and the fuels and technologies that can be deployed. Moreover, the symposium provided a good momentum for Indonesia to develop its National Action Plan on reducing GHG emissions from shipping in line with IMO resolution MEPC.327(75) to encourage Member States to develop national action plans to address GHG emissions from shipping and explore other opportunities.
- .3 A needs assessment mission is currently underway to support the uniform application of MARPOL Annex VI in Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua and Panama. A report to ascertain the real needs of the region with respect to MARPOL Annex VI,

the IMO Initial GHG Action Plan and the global sulphur limit, as well as recommendations to support the ratification and effective implementation of MARPOL Annex VI, is due by the end of 2022.

- .4 A year-long project to support the Philippines to enhance the safety and energy efficiency of its domestic ferry operations is nearing completion. Funded by the World Bank Group (WBG), the International Finance Corporation (IFC) and IMO's ITCP, the project as a whole will produce a clear roadmap for regulators, operators, enforcement agencies and private sector partners to map out the way forward for the safety, energy efficiency and decarbonization of domestic passenger ships in the Philippines. To support energy efficiency improvements, the project aims to analyse the current state of the domestic ferry industry in the Philippines, in terms of energy efficiency and carbon footprint. The most practical and cost-effective options for improvement will be identified and a feasible road-map for action drawn up. This work will support the climate commitments of the Philippines through the reduction of GHG emissions from its domestic fleet. Relevant IMO resolutions include (MEPC resolution on National Action Plans (resolution MEPC.327(75)) and the MEPC resolution on voluntary cooperation between ports and shipping sectors to reduce GHG emissions from ships (resolution MEPC.323(74)). It is anticipated that this pilot project will provide a blueprint to be expanded to other regions in future. Domestic ferry operations play a crucial role in the movement of people and goods, particularly in archipelagic States and island nations in the Asia-Pacific region where the vast expanse of water separate island economies.
- .5 A project on "Improving access to maritime transport costs in the Pacific region" is currently underway. This project, funded by IMO's GHG Trust Fund and implemented by the Pacific Community (SPC) and the Maritime Technology Cooperation Center in the Pacific (MTCC Pacific), aims to improve the availability of relevant maritime transport costs data in the Pacific region with a view to facilitating future assessments of impacts of candidate IMO mid- and long-term GHG reduction measures in that region. The project is running well, and is expected to end by February 2023.
- .6 A short-term measure to achieve the objectives of the initial strategy for 2030 was adopted by the IMO in June 2021. It specifically aims to improve the energy efficiency of ships. In support of the implementation of this measure, a pilot project is being delivered by SPC in collaboration with Fiji Government Shipping Services to retrofit a Fijian government ship with new technology systems to increase energy efficiency and reduce carbon emissions. Funded by IMO's GHG TC Trust Fund, it is envisaged that this pilot project will be rolled out to other Pacific Islands countries and territories, including dissemination of the results and lessons-learned.



GreenVoyage2050

47 The [Green Voyage 2050 Project](#), funded by Norway (\$7.5 million), builds upon the experience of the earlier GEF-UNDP-IMO Global Maritime Energy Efficiency Partnerships (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.

48 During the reporting period, the project initiated and promoted global efforts to demonstrate and test technical solutions for reducing GHG emissions by identifying several concrete proposals for potential implementation, as well as by enhancing knowledge and information sharing to support the implementation of the Initial IMO GHG Strategy, and in particular launching new guidance on the development of NAPs to address GHG emissions from ships.

49 Several developing countries, including LDCs and SIDS, across the globe are participating in the project, supported by strategic partners from the private sector, who contribute expertise and experience through the project's Low Carbon Global Industry Alliance.



GHG-SMART training programme

50 The GHG-SMART Programme (Sustainable Maritime Transport Training Programme to Support the Implementation of the GHG Strategy), funded by the Republic of Korea (\$2.5 million), is a Training Programme to support the implementation of the Initial IMO GHG Strategy by building capacity in LDCs and SIDS. During the reporting period, the Programme finalised its first cycle of annual training programme with supporting 15 LDCs and SIDS individual capacity development needs in the field of maritime decarbonization.

51 The Annual Programme has consisted of a core training (January 2022, online), followed up by Individual Trainee Structured Training Plans (TSTPs), addressing individual needs, concluding in a practical training held in September 2022 in the Republic of Korea combined with study visits hosted by the Korea Maritime Transportation Safety Authority (KOMSA). The Training Programme as such finished its first year cycle of training, with 3 additional annual training cycles to take place, with the aim of providing further, individual need targeted trainings, supporting future maritime leaders in LDCs and SIDS and enabling them with relevant knowledge and experience in relation to IMO GHG Strategy implementation.



Global Maritime Technology Cooperation Centres Network (GMN)

52 The EU-funded [Global Maritime Technologies Cooperation Centres](#) (MTCC) Network (GMN) Project (€10 million) has come to a conclusion in 2022 and as such completed a range of pilot projects including technology demonstration projects.

53 Tangible results have already been observed, for example in port energy audits, establishing technology baselines, developing models for trim optimization and retrofitting of domestic ships for better energy efficiency. GMN Phase I project has now been successfully completed and plans are now being finalized for a GMN Phase II project.

54 Five MTCCs continue their work to support maritime decarbonization in the respective regions and have been linked to other IMO projects and initiatives related to supporting maritime decarbonization, developing countries R&D needs, such as TEST Biofouling, IMO CARES, GHG SMART, FINSMART, Innovation Forum, GreenVoyage2050 and the IMO Integrated Technical Cooperation Programme.



GloFouling Partnerships

55 The [GloFouling Partnerships](#) is part of the wider efforts by IMO, in collaboration with the United Nations Development Programme (UNDP) and Global Environment Facility (GEF, 6.9 million USD), 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 as showcased by the Analysis of the impact of biofouling on the hydrodynamic resistance and energy efficiency of ships', which has been launched during the 2nd GloFouling Partnerships R&D Forum and Exhibition on Biofouling Prevention and Management for Maritime Industries in October 2022 in IMO HQs, London.

56 During the reporting period, a new project, entitled Transfer of Environmentally Sound Technologies (TEST Biofouling, \$ 4.0 million) was launched with the support of Norway to implement specific technical cooperation activities in the area of biofouling. This project is complementing the existing GloFouling Partnerships project, by showcasing, through pilot demonstration projects in developing regions, some of the latest advances in technological solutions for managing ship's biofouling. Additionally, the project will deliver capacity building activities including training courses in participating countries, with a focus on R&D issues and areas.



IMO CARES

57 The IMO CARES (Coordinated Actions to Reduce Emissions from Shipping) Foundation Project, funded by Saudi Arabia (\$400,000), 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.

58 The framework once finalized, ideally by end of 2022, will aim to assist in a structured manner the maritime sector in developing countries, especially in SIDS and LDCs to transition towards a low-carbon future with key involvement of the MTCCs at a regional level, to support the IMO GHG strategy and the SDGs.

Blue Solutions

59 Through the Blue Solutions Preparatory Project, IMO has partnered with the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) to undertake preparatory work to develop a full project proposal to reduce maritime transport emissions in East and Southeast Asian countries with the funding support of the International Climate Initiative (IKI) of Germany (€385,000).

60 The preparatory phase finished for Blue Solutions in mid-2022, which in case followed up by a full-size project, once approved, will target the reduction of GHG and other pollutant emissions from ships, ports, and from hinterland transport through energy efficiency improvements, optimized processes and innovative technologies (blue solutions) with the foreseen budget of approximately €15 million.



2nd IMO-UNEP-Norway Innovation Forum

61 The [IMO-UNEP-Norway Innovation Forum 2022](#) (Innovation Forum 2022) was held on 28 and 29 September 2022 in IMO Headquarters, London, to explore how to ensure inclusive innovation in support of the transition of maritime sector towards decarbonization.

62 The Forum, which is the second of its kind and aim to hold it as regular, annual event, in 2022 has been linked to the IMO World Maritime Day theme 2022 "New Technologies for Greener Shipping", with a special emphasis on inclusive innovation for decarbonization of the maritime sector. The Forum was attended by nearly 2,000 participants in person and online on UN TV and YouTube.

FIN-SMART

63 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.

64 During the reporting period, FINSMART project was showcased at the Economist event where EBRD, IMO, private banks and Kenya highlighted importance of private and public financing of maritime decarbonisation. FINSMART has also featured during the IMO-UNEP Innovation Forum. Co-leaders of the FINSMART Roundtable agreed, to make Roundtables more practical, looking into best ways to enable potential investors to learn about ongoing and recent promising pilot projects and discuss their upscaling potential, as well as possible investment. The Roundtable foresees in the future to work in this direction, with more Roundtables to take place in year 2023.

NextGEN



65 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.

66 The [online Portal](#) aims to facilitate information sharing among stakeholders, identify opportunities for and gaps in maritime decarbonisation, and build networks and platforms for collaboration. The next phase of the NextGEN initiative was launched by IMO and MPA on 6 April 2022 during the IMO-Singapore Future of Shipping Conference (FOSC). Titled as the NextGEN Connect Project, this new phase will identify and support a pilot initiative that will aim to demonstrate route-based actions in Asia-Pacific region to reduce emissions from international shipping. NextGEN Connect will bring together industry stakeholders, academia and global research centres to offer inclusive solutions on maritime decarbonisation for trials along specific shipping routes. Call for proposals for consideration to be part of NextGEN Connect has been circulated in 2022.

Future fuels and technology for low- and zero-carbon shipping project (FFT project)



67 At MEPC 78 (June 2022), several delegations expressed the view that the Revised IMO Strategy should explicitly state a vision and levels of ambition over a timeframe consistent with the Paris Agreement’s 1.5°C temperature goal, i.e. to peak GHG emissions as soon as possible and phase them out no later than 2050.

68 Several other delegations stressed the importance for the credibility of the Organization to adopt realistic and achievable levels of ambition, and that this decision should be based on the study or assessment of the readiness and availability of fuels taking into account, in particular, different national circumstances and capacities.

69 Following its consideration, the Committee requested the IMO Secretariat to consider carrying out additional studies and organizing information session(s) and/or symposia, as appropriate, supporting the revision process of the Initial GHG Strategy.

70 In this regard, the IMO Secretariat, through the IMO's Future fuel and technology for low- and zero-carbon shipping project (Future Fuel Project) will carry out a study on the readiness and availability of low- and zero-carbon technology and marine fuels, and by that contribute to the identification of the state-of-play and projections regarding the global uptake and dissemination of low- and zero-carbon marine technology and fuels.

71 Other workstreams of the project include:

- .1 identifying and supporting possible incentives/regulatory methods to promote the uptake of low- and zero-carbon fuels and technology; and
- .2 promoting pilot projects to analyse and demonstrate the feasibility and effectiveness of the IMO GHG strategy and relevant GHG reduction pathways.

72 The Future fuels and technology for low- and zero-carbon shipping project (FFT project) is a partnership project between the Government of the Republic of Korea and the International Maritime Organization (IMO), funded through the Voyage Together Trust Fund and implemented by the Marine Environment Division (MED).

73 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.

74 The IMO GHG TC Trust Fund will complement the project, as appropriate.

ACTING TO DECARBONIZE INTERNATIONAL SHIPPING

SHIPPING:

- ▶ Indispensable to global trade and sustainable development
- ▶ Serving the world's energy transition



IMO'S WORK
TO CUT GHG
EMISSIONS
FROM
SHIPPING



ANNEX – ADDRESSING CLIMATE CHANGE: A DECADE OF IMO ACTION TO CUT GHG EMISSIONS FROM SHIPPING



Addressing climate change

A decade of **regulatory action** to cut GHG emissions from shipping:
towards phasing out GHG emissions from shipping as soon as possible in this century

