

Consistent implementation of the 2020 sulphur limit and work to further address GHG emissions from international shipping

IBIA/BMS United “A glimpse into the future of shipping”
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Dr Edmund Hughes
Marine Environment Division
International Maritime Organization



International Maritime Organization (IMO)

- A specialized agency of the UN
- The IMO Convention adopted in 1948 and IMO first met in 1959
- 174 Member States, 3 Associate Members
- Consultative organizations
- Develop and maintain a comprehensive regulatory framework for international shipping on safety, environment, legal matters, technical co-operation, security and the efficiency of shipping
- Marine Environment Protection Committee (MEPC) – IMO body responsible for MARPOL, BWMC, etc.



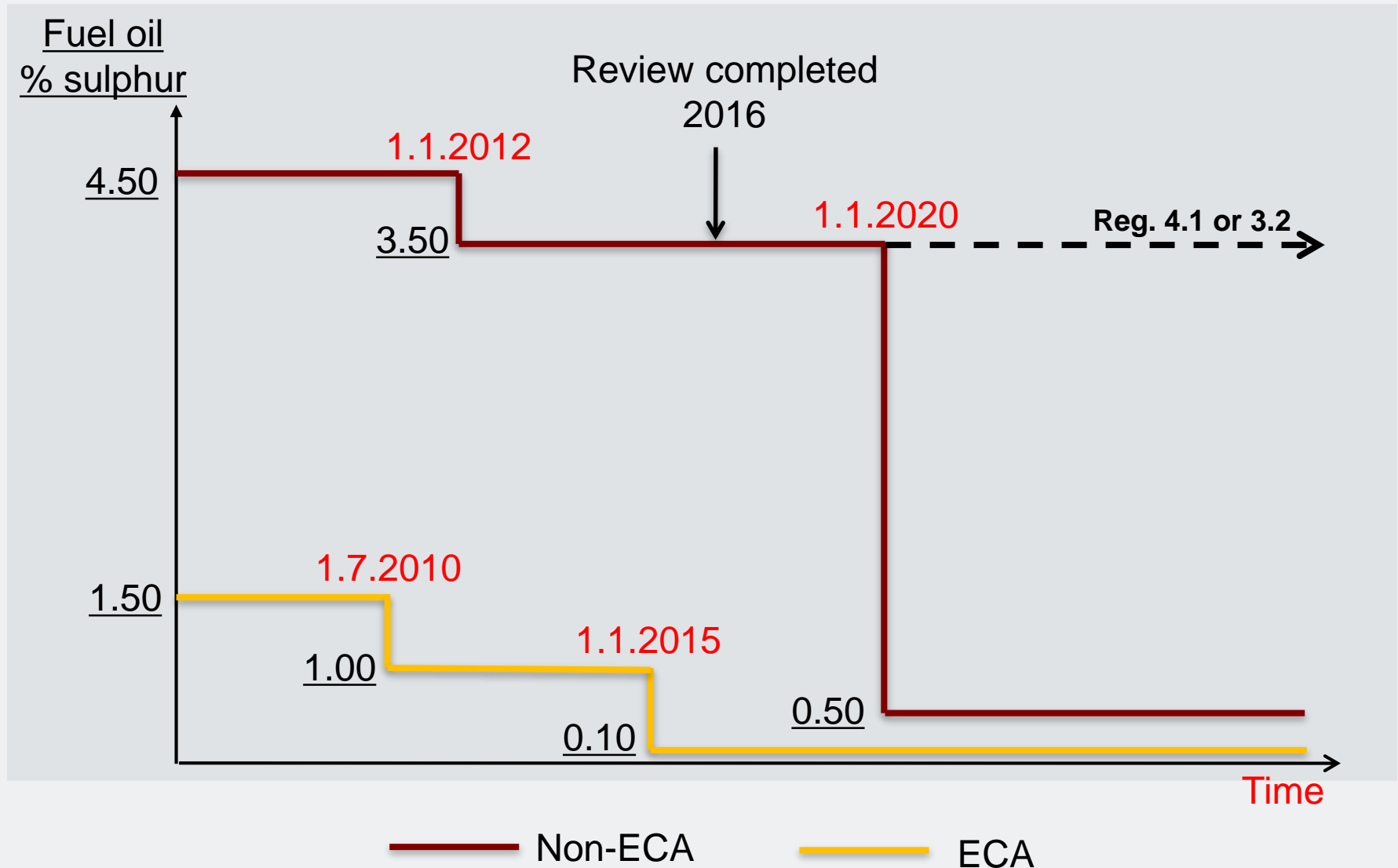
**Safe, secure and efficient
shipping on cleaner oceans**

2020 sulphur limit - background

- Definition of “fuel oil” set out in regulation 2.9 of MARPOL Annex VI:
“Fuel oil means any fuel delivered to and intended for combustion purposes for propulsion or operation on board a ship, including gas, distillate and residual fuels.”
- MEPC 70 (October 2016) approved report on “Assessment of Fuel Oil Availability” (documents MEPC 70/5/3 and MEPC 70/INF.6)

“In all scenarios, the supply of marine fuels with a sulphur content of 0.50% m/m or less and with a sulphur content of 0.10% m/m or less is projected to meet demand for these products.”
- MEPC 70 decided that the sulphur content limits for fuel oil in regulation 14.1.3 of MARPOL Annex VI (i.e. 0.50% m/m) shall become effective on 1 January 2020
- MEPC 70 approved amendments to appendix V of MARPOL Annex VI – Information to be included in the bunker delivery note that is required to be provided to the ship by the fuel oil supplier’s representative - permits continued supply of high sulphur fuel oils to ships fitted with EGCS (“Equivalents” reg. 4.1) or exemption (trials reg.3.2)
- MEPC 71 (July 2017) approved a new output for the PPR Sub-Committee on “Consistent implementation of the 0.50% m/m sulphur limit”, and that also an intersessional meeting should be held in second half of 2018

Sulphur content of fuel oil used on board ships (regulations 14.1 and 14.4 of MARPOL Annex VI)



Consistent implementation of regulation 14.1.3 of MARPOL Annex VI - scope

- 1. preparatory and transitional issues** that may arise with a shift from the 3.50% m/m sulphur limit to the new 0.50% m/m limit;
- 2. impact on fuel and machinery systems** that may result from the use of fuel oils with a 0.50% m/m sulphur limit;
- 3. verification issues and control mechanisms and actions** that are necessary to ensure compliance and consistent implementation;
- 4. develop a draft standard format (a standardized system) for reporting fuel oil non-availability** as provided in regulation 18.2.4 of MARPOL Annex VI that may be used to provide evidence if a ship is unable to obtain fuel oil compliant with the provisions stipulated in regulations 14.1.3 and 14.4.3;
- 5. develop guidance, as appropriate, that may assist Member States and stakeholders** in assessing the sulphur content of fuel oil delivered for use on board ship, based on the consideration of mechanisms to encourage verification that fuels supplied to ships meet the specified sulphur limit as stated on the bunker delivery note;
- 6. request ISO to consider the framework of ISO 8217** with a view to keeping consistency between the relevant ISO standards on marine fuels and the implementation of regulation 14.1.3 of MARPOL Annex VI; and
- 7. any consequential regulatory amendments and/or guidelines** necessary to address issues raised in items 1 to 6 above or otherwise considered necessary to ensure consistent implementation of regulation 14.1.3 of MARPOL Annex VI.
- 8. safety implications relating to the option of blending fuels in order to meet the 0.50% m/m sulphur limit.**

Outcome of MEPC 72 (9 to 13 April 2018)

- To ensure compliance and consistent implementation of the 0.50% sulphur limit PPR 5 (Feb 2018) recommended to MEPC 72 as an urgent matter the approval of an amendment to MARPOL Annex VI to prohibit the carriage of non-compliant fuel oil for combustion purposes for propulsion or operation on board a ship.
- Regulation 14 of MARPOL Annex VI is amended as follows:
 - "1 The sulphur content of fuel oil used or carried for use on board a ship shall not exceed 0.50% m/m."
 - "4 While a ship is operating within an emission control area, the sulphur content of fuel oil used on board that ship shall not exceed 0.10% m/m."
- Paragraphs 8, 9 and 10 are deleted
- Supplement to the IAPP Certificate amended
- ❖ MEPC 72 (April 2018) amendments approved
- ❖ MEPC 73 (October 2018) expected to adopt
- ❖ minimum 10 months tacit acceptance period + 6 months to enter into force so these amendments expected to enter into force on 1 March 2020
- Guidance on best practice for fuel oil purchasers/users for assuring the quality of fuel oil used on board ships (MEPC.1/Circ.875)

Outcome of MEPC 72 (9 to 13 April 2018) – IAPPC supplement amended

➤ Appendix I of MARPOL Annex VI is amended as follows:

"2.3 Sulphur oxides (SO_x) and particulate matter (regulation 14)

2.3.1 When the ship operates outside of an emission control area specified in regulation 14.3, the ship uses:

- .1 fuel oil with a sulphur content as documented by bunker delivery notes that does not exceed the limit value of 0.50% m/m, and/or.....□
- .2 an equivalent arrangement approved in accordance with regulation 4.1 as listed in paragraph 2.6 that is at least as effective in terms of SOX emission reductions as compared to using a fuel oil with a sulphur content limit value of 0.50% m/m□

2.3.2 When the ship operates inside an emission control area specified in regulation 14.3, the ship uses:

- .1 fuel oil with a sulphur content as documented by bunker delivery notes that does not exceed the limit value of 0.10% m/m, and/or.....□
- .2 an equivalent arrangement approved in accordance with regulation 4.1 as listed in paragraph 2.6 that is at least as effective in terms of SOX emission reductions as compared to using a fuel oil with a sulphur content limit value of 0.10% m/m□

2.3.3 For a ship without an equivalent arrangement approved in accordance with regulation 4.1 as listed in paragraph 2.6, the sulphur content of fuel oil carried for use on board the ship shall not exceed 0.50% m/m as documented by bunker delivery notes.....□"

Additional outcome of PPR 5 (5 to 9 February 2018)

- prepared terms of reference for an intersessional meeting of the working group on “Consistent implementation of regulation 14.1.3 of MARPOL Annex VI” to be held 9 to 13 July 2018
- agreed to develop a single set of guidelines to support consistent implementation of regulation 14.1.3 of MARPOL Annex VI
 - outline developed by PPR 5 and will be considered by intersessional meeting
 - Secretariat submitted document to ISWG-AP 1/2 providing indicative suggestions for the draft guidelines
- developed work plan to complete the output on “Consistent implementation of regulation 14.1.3 of MARPOL Annex VI”
- MEPC 72, having considered the recommendation by PPR 5, authorized the Intersessional Meeting on Consistent implementation of regulation 14.1.3 of MARPOL Annex VI, to report its outcome concerning the development of guidance on ship implementation planning for 2020 to MEPC 73, for consideration and action, as appropriate.

Terms of reference for intersessional meeting (9 to 13 July 2018)

- develop draft guidelines for consistent implementation of regulation 14.1.3 of MARPOL Annex VI (“2020 sulphur limit”)
- develop draft amendments to MARPOL Annex VI (expected entry into force summer 2021)
 - definition of ‘sulphur content’ (amendments to regulation 2)
 - testing and verification procedure of in-use fuel oil samples (amendments to regulation 14 and associated consequential amendments to regulation 18 and appendix VI)
- develop amendments to existing Guidelines:
 - *2009 Guidelines for port State control under the revised MARPOL Annex VI* (resolution MEPC.181(59))
 - *2010 Guidelines for monitoring the worldwide average sulphur content of fuel oils supplied for use on board ships* (resolution MEPC.192(61), as amended by resolution MEPC.273(69))
 - *Guidelines for onboard sampling for the verification of the sulphur content of the fuel oil used on board ships* (MEPC.1/Circ.864)
- amendments to regulation 14 of MARPOL Annex VI to require a dedicated sampling point for fuel oil

Outline of draft guidelines for consistent implementation of regulation 14.1.3 of MARPOL Annex VI

1 Preparatory and transitional issues*:

- .1 ship implementation planning for 2020, including, as appropriate, but not limited to:
 - .1 relevant time schedules;
 - .2 calculations estimating the consumption of the remaining HS-HFO prior to the effective date;
 - .3 assessment of potential impact on machinery systems with the use of new fuel oils;
 - .4 calculation of the time needed in order to “be fully flushed of all fuel oils exceeding the applicable sulphur content” prior to entry into force of the regulation;
 - .5 cleaning of the fuel tanks, etc.; and
 - .6 a description of how to deal with and limit the impact of possible non availability of LS-HFO;
 - .7 crew awareness and training
- .2 preparation of steam ships;

* MEPC 72 to be requested that the output from the intersessional meeting in July 2018 on this issue be considered by MEPC 73 (October 2018)

Outline of draft guidelines for consistent implementation of regulation 14.1.3 of MARPOL Annex VI

2 Impact on fuel and machinery systems:**

- .1 addressing the impact on fuel and machinery systems resulting from new fuel blends or fuel types;

3 Verification issues and control mechanism and actions:

- .1 guidelines on the control mechanism to ensure compliance with the sulphur limit of fuel oil;
- .2 port State control:
 - .1 MARPOL samples analysis;
 - .2 targeting measurements (remote sensing or portable devices);
 - .3 other enforcement practices dedicated to open-sea compliance monitoring;
- .3 information sharing between Parties to MARPOL Annex VI related to non compliances under MARPOL Annex VI; and
- .4 in-use fuel oil samples;

4 Fuel oil non-availability:

- .1 guidance and information sharing on fuel oil non-availability; and
- .2 standard format for reporting fuel oil non-availability;

Outline of draft guidelines for consistent implementation of regulation 14.1.3 of MARPOL Annex VI

- 5 Safety implications relating to the option of blending fuels in order to meet the 0.50% m/m sulphur limit; and**

- 6 Other useful guidance/information that assist Member States and stakeholders:**
 - .1 guidance addressing quality assurance and integrity of the supply chain;
 - .2 guidance on the importance of fuel oil management on board;
 - .3 guidance on assuring availability of compliant fuel oil, including new fuel blends;
 - .4 guidance addressing fuel quality issues, particularly regarding new types of fuels and blends;
 - .5 best practice for fuel oil purchasers/users (MEPC.1/Circ.875, approved by MEPC 72);
 - .6 best practice for Member State/coastal State; and
 - .7 best practice for fuel oil providers.

“A glimpse into the future of shipping”

Shipping a global industry supporting international trade

- Over 80% of global trade by volume and more than 70% of its value carried on board ships
- World seaborne trade volumes expanded by 2.6% in 2016 to reach 10.3 billion tons of cargo
- Cargo flows are set to expand across all segments, with containerized and major dry bulk commodities trades recording the fastest growth

(Review of Maritime Transport 2017, UNCTAD)



IMO work to address GHG emissions from ships

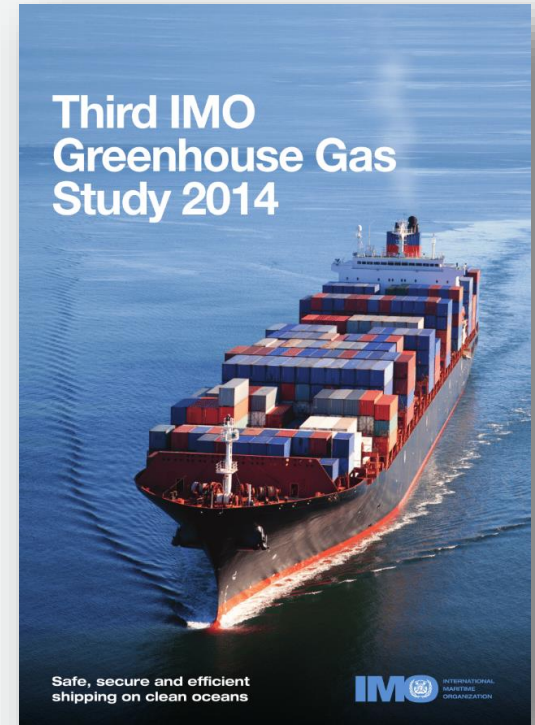
- In September 1997 Air Pollution Conference adopted resolution 8 on *CO₂ emissions from ships*
- Resolution A.963(23) on *IMO Policies and Practices Related to the Reduction of Greenhouse Gas Emissions from Ships*, adopted by Assembly 23 in December 2003
- MARPOL Annex VI – ODS, NO_x, VOC
- EEDI, SEEMP
- Collection and reporting of ship fuel oil consumption data – entered into force on 1 January 2018
- IMO Assembly in December 2017 adopted for the Organization a strategic direction entitled "Respond to Climate Change"



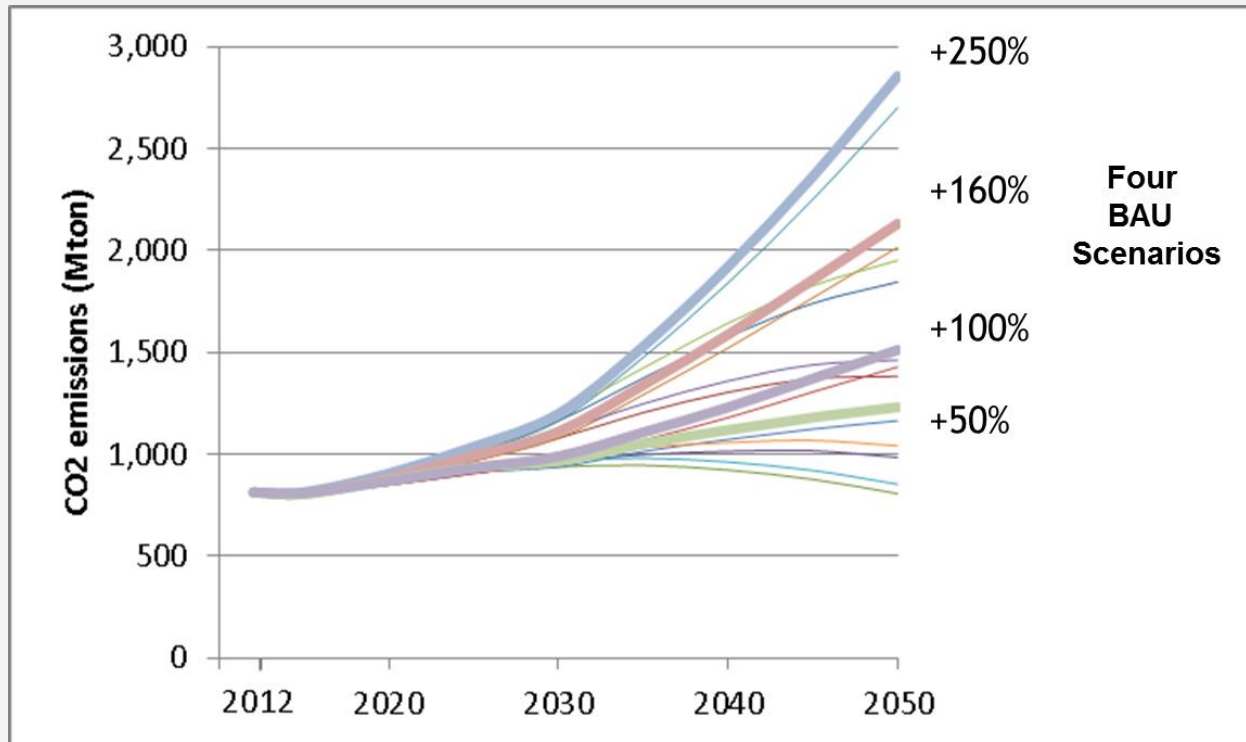
GHG emissions from international shipping

- In 2012, international shipping CO₂ emissions were estimated to be 796 million tonnes accounting for 2.2% of global CO₂ emissions
- By 2050, CO₂ emissions from international shipping could grow by between 50% and 250%, depending on future economic growth and energy developments
- Demand is the key driver for growth in emissions

(Third IMO Greenhouse Gas Study 2014)



Forecasted GHG emissions from international shipping



Ref: Third IMO GHG Study 2014

MEPC.304(72) Initial IMO Strategy on Reduction of GHG emissions from ships

Resolution MEPC.304(72)

Adopted on 13 April 2018

INITIAL 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 (the Organization) concerning the functions of the Marine Environment Protection Committee (the Committee) conferred upon it by international conventions for 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 1997, in particular, through adopting global mandatory technical and operational energy efficiency measures for ships under MARPOL Annex VI,

ACKNOWLEDGING ALSO the decision of the thirtieth session of the Assembly in December 2017 that adopted for the Organization a strategic direction entitled "Respond to Climate Change",

RECALLING the United Nations 2030 Agenda for Sustainable Development,

1 ADOPTS the *Initial IMO Strategy on reduction of GHG emissions from ships* (hereinafter the Initial Strategy) as set out in the annex to the present resolution;

2 INVITES the Secretary-General of the Organization to make adequate provisions in the Integrated Technical Cooperation Programme (ITCP) to support relevant follow up actions of the Initial Strategy that may be further decided by the Committee and undertaken by developing countries, particularly Least Developed Countries (LDCs) and Small Island Developing States (SIDS);

3 AGREES to keep the Initial Strategy under review, with a view to adoption of a Revised IMO Strategy on reduction of GHG emissions from ships in 2023.

Initial IMO Strategy on Reduction of GHG emissions from ships – Contents

- 1 INTRODUCTION
- 2 VISION
- 3 LEVELS OF AMBITION AND GUIDING PRINCIPLES
- 4 LIST OF CANDIDATE SHORT-, MID- AND LONG-TERM FURTHER MEASURES WITH POSSIBLE TIMELINES AND THEIR IMPACTS ON STATES
- 5 BARRIERS AND SUPPORTIVE MEASURES; CAPACITY BUILDING AND TECHNICAL COOPERATION; R&D
- 6 FOLLOW-UP ACTIONS TOWARDS THE DEVELOPMENT OF THE REVISED STRATEGY
- 7 PERIODIC REVIEW OF THE STRATEGY

Initial IMO Strategy on Reduction of GHG emissions from ships

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.

Initial IMO Strategy on Reduction of GHG emissions from ships

Levels of ambition

3.1 Subject to amendment depending on reviews to be conducted by the Organization, the Initial Strategy identifies levels of ambition for the international shipping sector noting that technological innovation and the global introduction of alternative fuels and/or energy sources for international shipping will be integral to achieve the overall ambition. The reviews should take into account updated emission estimates, emissions reduction options for international shipping, and the reports of the Intergovernmental Panel on Climate Change (IPCC), as relevant. Levels of ambition directing the Initial 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 CO₂ emissions per transport work, as an average across international shipping, by at least 40% by 2030, pursuing efforts towards 70% by 2050, compared to 2008; and

.3 *GHG emissions from international shipping to peak and decline*

to peak GHG emissions from international shipping as soon as possible and to reduce the total annual GHG emissions by at least 50% by 2050 compared to 2008 whilst pursuing efforts towards phasing them out as called for in the Vision as a point on a pathway of CO₂ emissions reduction consistent with the Paris Agreement temperature goals.

The shipping sector is finally on board in the fight against climate change

April 18, 2018 6:46am BST

U.N. shipping agency reaches deal to cut CO2 emissions

Shipping Regulators Reach Deal to Cut Carbon Emissions For The First Time, Maritime Shipping Has A Climate Target

The Washington Post
Democracy Dies in Darkness

Energy and Environment

The shipping industry is finally going to cut its climate change emissions. That's a big deal.

Carbon dioxide from ships at sea to be regulated for first time

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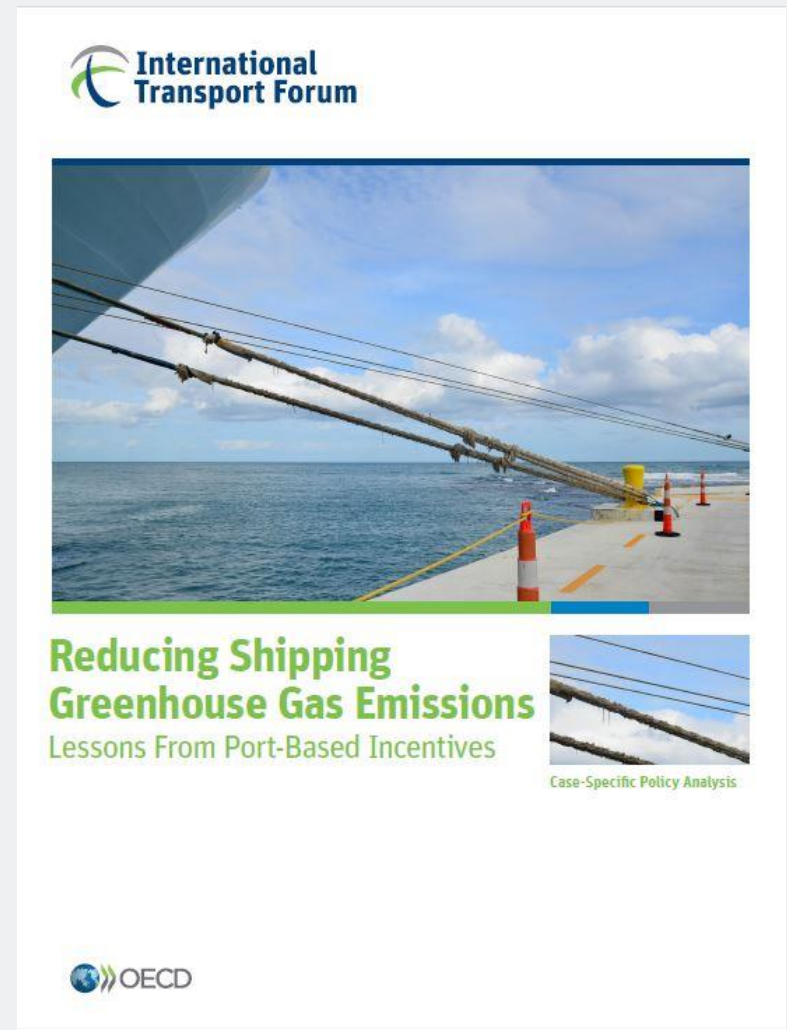
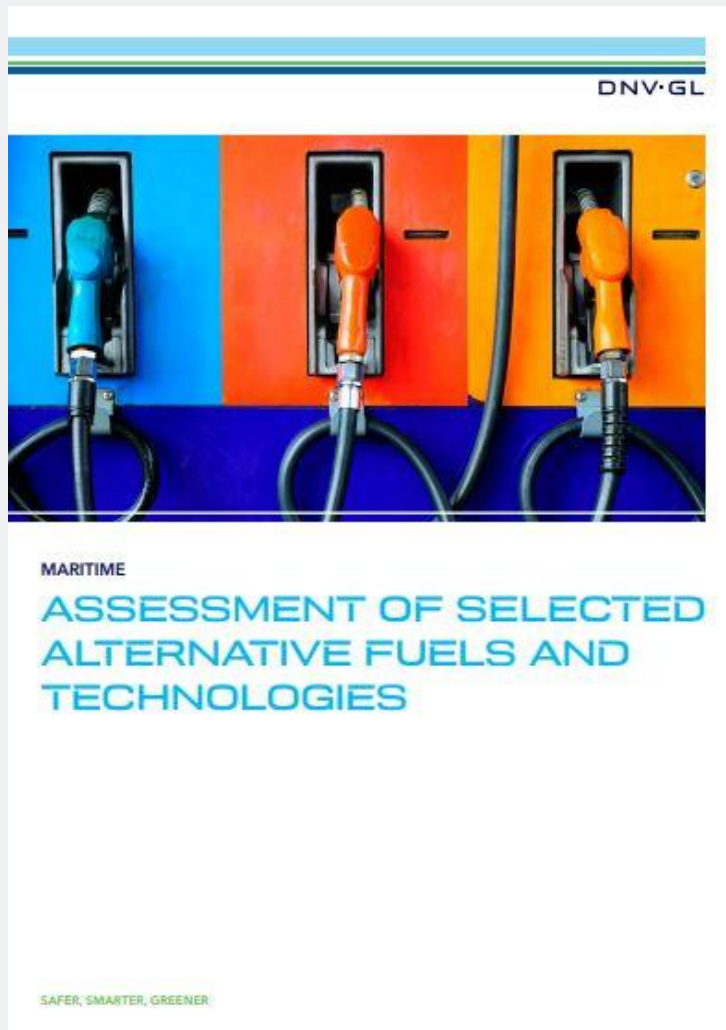
Science & Environment

Global shipping in 'historic' climate deal
For The First Time, Maritime Shipping Has A Climate Target

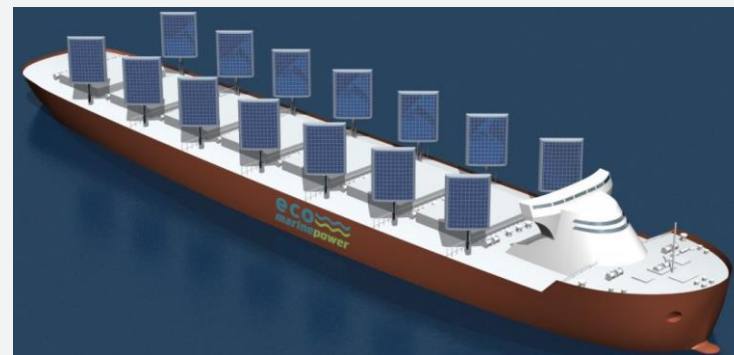
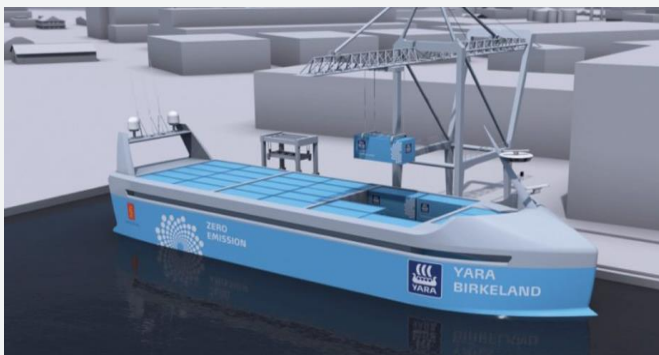
Carbon emissions from global shipping to be halved by 2050, says IMO

Nations Strike Historic Deal to Curb Shipping Emissions

The future of international shipping



The future of international shipping



Thank you for your attention

