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PREVENTION OF AIR POLLUTION FROM SHIPS

Report of the outcome of the first Intersessional Meeting of the Working Group on Greenhouse Gas Emissions from Ships

Note by the Secretariat

1 GENERAL

1.1 The first Intersessional Meeting of the Working Group on Greenhouse Gas Emissions from Ships took place in Oslo, Norway from 23 to 27 June 2008 under the chairmanship of Mr. Andreas Chrysostomou (Cyprus). More than 210 representatives from Member Governments and observer organizations participated in the 5-day meeting hosted by the Government of Norway and organized by the Norwegian Maritime Directorate.

1.2 The first Intersessional Meeting was attended by delegates from the following Member Governments:

AUSTRALIA
BAHAMAS
BELGIUM
BRAZIL
CANADA
CHILE
CHINA
CYPRUS
DENMARK
FINLAND
FRANCE
GERMANY
GREECE
INDIA
ITALY
JAPAN
MALTA
MARSHALL ISLANDS
NETHERLANDS
NEW ZEALAND
NORWAY
PANAMA
POLAND
PORTUGAL
REPUBLIC OF KOREA
SAUDI ARABIA
SINGAPORE
SOUTH AFRICA
SPAIN
SWEDEN
TURKEY
UNITED KINGDOM
UNITED STATES

by representatives from the following Associate Member of IMO:

THE FAROE ISLANDS

by a representative from the following United Nations and Specialized Agencies:

UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC)

by observers from the following intergovernmental organizations:

EUROPEAN COMMISSION (EC)
ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD)

by observers from the following non-governmental organizations

INTERNATIONAL CHAMBER OF SHIPPING (ICS)
INTERNATIONAL FEDERATION OF SHIPMASTERS' ASSOCIATIONS (IFSMA)
BIMCO
INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES (IACS)
OIL COMPANIES INTERNATIONAL MARINE FORUM (OCIMF)
FRIENDS OF THE EARTH INTERNATIONAL (FOEI)
COMMUNITY OF EUROPEAN SHIPYARDS' ASSOCIATIONS (CESA)
INTERNATIONAL ASSOCIATION OF INDEPENDENT TANKER OWNERS (INTERTANKO)
CRUISE LINES INTERNATIONAL ASSOCIATION (CLIA)
INTERNATIONAL ASSOCIATION OF DRY CARGO SHIPOWNERS (INTERCARGO)
ASSOCIATION OF EUROPEAN MANUFACTURERS OF INTERNAL COMBUSTION ENGINES (EUROMOT)
THE ROYAL INSTITUTION OF NAVAL ARCHITECTS (RINA)
INTERNATIONAL BUNKER INDUSTRY ASSOCIATION (IBIA)

TERMS OF REFERENCE

1.3 The meeting had the following Terms of Reference (ToR) adopted by MEPC 57 (paragraph 4.117.2 of document MEPC 57/21):

MEPC 57, recognizing the need to address GHG emissions from the maritime sector, in co-operation with the UNFCCC, and taking into account the conclusions of MEPC 57 on the reduction of greenhouse gas emissions from ships, the submissions by Member States to MEPC 57, and further submissions received by the Secretariat before 30 May 2008, instructed the first Intersessional Meeting of the Working Group on Greenhouse Gas Emissions from Ships to further address market-based, operational and technical measures identified by the MEPC 57 Working Group on GHG-related issues and, in a non-prioritized order:

.1 develop a mandatory CO_2 Design Index for new ships and, if deemed appropriate, for approval at MEPC 58;

.2 review the existing CO_2 operational index guidelines (MEPC/Circ.471) with a view to finalization at MEPC 58 and, in particular:

.1 develop a methodology for a CO_2 baseline in terms of efficiency; and

.2 consider the purpose of the CO_2 operational indexing scheme;

.3 further develop mechanisms with GHG reduction potential for international shipping with a view to selecting the most promising measures for consideration at MEPC 58, *inter alia*:

.1 global levy/hybrid mechanism;

.2 Emissions Trading Schemes (ETS) and/or Clean Development Mechanism (CDM); and

.3 best practices on the range of measures as identified by MEPC 57 and how they can be implemented by shipbuilders, operators, charterers, ports and other relevant partners to make all possible efforts to reduce GHG emissions, with the aim of developing a resolution as appropriate;

.4 consider the level of reductions that can be achieved, address the design, implementation, cost benefit, capacity building and regulatory/legal aspects as well as the impacts for the shipping industry, the flag and port States and other stakeholders as appropriate, associated with each of these options; and

.5 present a written report to MEPC 58.

OPENING SESSION

1.4 The Norwegian Minister of Trade and Industry, Mrs. Sylvia Brustad, welcomed the delegates to the Intersessional Meeting in an opening speech where she pointed out that much of Norway's identity was connected to the sea and the maritime sector. She stated that shipping is an international sector and therefore challenges in this sector required international solutions and that harmonized regime would always be more powerful than fragmented regimes. The Minister also stated that Norway was a firm believer in international solutions through IMO. The full speech is set out in annex 1 to this report.

1.5 The Norwegian Minister of the Environment and International Development, Mr. Erik Solheim, gave an opening address where he recognized that climate change is a dominating issue on the global agenda and that also shipping needs to do its fair share. The Minister also elaborated on other related issues and concluded by stating that for IMO it was no longer a question of whether or not to respond to climate change, it was a question of how and when. He wished the participants good luck on the important task and hoped they would enjoy a productive meeting. The opening address is set out in annex 2 to this report.

1.6 The IMO Secretary-General in his opening remarks highlighted that in the context of sustainable development shipping was a very positive force as it made massive contribution to global prosperity with only minimum adverse impact on the global environment. He continued by stating that climate change and acidification of the world's oceans caused by emissions from burning of fossil fuels were matters that were uppermost in the thoughts of leaders of most countries and of civil society at large. The Secretary-General recalled that during debates of the issue in the Committee, centre stage was often taken by a recurrent debate on whether any GHG emission reductions agreed in IMO should apply exclusively to countries listed in Annex 1 to the Kyoto Protocol or whether their application should extend to all ships, no matter what flag they fly. He went on and said that in the circumstances and at present, it might be wiser to concentrate the attention and resources towards discussing and identifying the most effective

measures to achieve the objective, leaving their application and possible phase-in timetable for elaboration once the technical measures have been agreed. The divergence of opinion on this crucial issue was not, in his view, unbridgeable and, if the willingness to serve the environment was there, IMO would find the solution, designing measures that could be phased-in in a manner that would ensure that the interests and capabilities of developing countries were properly taken into account. The Secretary-General reasoned that IMO should come up with a regime that would contribute positively, fairly and visibly to the endeavours of the international community as a whole to combat climate change; a regime, where international shipping engages comprehensively in efforts to regulate effectively greenhouse gas emissions. The full speech is set out at annex 3 to this report.

1.7 The Chairman thanked the two Ministers for their kind and encouraging words and the Secretary-General for his guidance and support.

STATEMENTS

1.8 The delegations of Brazil, China, India, Saudi Arabia and South Africa provided general statements at the opening session. The full statements are set out in annex 4.

ADOPTION OF THE AGENDA

1.9 The first Intersessional Meeting of the Working Group on Greenhouse Gas Emissions from Ships (GHG-WG 1) (the group) adopted its agenda as set out in document GHG-WG 1/1.

2 DEVELOPMENT OF A CO_2 DESIGN INDEX FOR NEW SHIPS

GENERAL

2.1 Under this agenda item the group considered documents GHG-WG 1/2 (IADC) on Development of an appropriate CO_2 Design Index for Mobile Offshore Drilling Units; GHG-WG 1/2/1 (Denmark) on Assigning an Attained and a Required Design CO_2 Index to a ship; and GHG-WG 1/2/2 (Japan) on Draft Guidelines for assigning the CO_2 Design Index to new ships.

2.2 The group recalled that MEPC 57 had agreed that Denmark and Japan, with the assistance of other Members and industry organizations, should prepare draft text for assigning a design index to a ship and submit it to the intersessional meeting. The group noted that, in this context, Denmark and Japan had submitted two documents, GHG-WG 1/2/1 and GHG-WG 1/2/2, respectively.

2.3 The group, noting that IADC was not represented at the meeting, agreed to consider their document only if time allowed and, if no time was available, to refer it to MEPC 58 for further consideration.

DESIGN INDEX FOR NEW SHIPS AND BASELINE

2.4 With the aim of attaining the greatest possible clarity in the exposition of a highly technical matter, the documents by Denmark and Japan were introduced with the help of slide presentations. The group noted that the main elements contained in the proposal by Denmark (GHG-WG 1/2/1) were:

.1 mandatory design CO_2 index for new ships and a required CO_2 index limit based on the average CO_2 index (baseline) for the existing world fleet delivered between 1/1/1995 and 31/12/2004. The attained design index must be less than a required limit (threshold) to be set by IMO and be reconsidered periodically;

.2 proposed draft methodology and formula for calculation of the baseline;

.3 draft text for a new part B to MARPOL Annex VI and consequential amendments to the IAPP Certificate; and

.4 proposed formula for the CO_2 design index containing:

.1 in the numerator: installed power P in kW at a load of 100% of the MCR (main and auxiliary engines); specific fuel consumption of engines SFC in g/kWh; correction factors f_j and f_k to account for specific design elements such as ice strengthening, cargo gear, etc.; and conversion factor C_F between fuel consumption and CO_2 emission measured in g taken from MEPC/Circ.471; and

.2 in the denominator: speed in calm waters in the design condition V_{re}; and capacity in tonnes DWT, although other parameters such as tank volume for gas carriers and gross tonnage for ro-ro, ro-pax and passenger ships were also considered.

2.5 The group noted that the main elements in the proposal by Japan (GHG-WG 1/2/2) were quite similar to those of the Danish proposal described above, with some differences in the calculation of the relevant parameters, except for the introduction of two additional factors, k_1 and k_2, which were intended to account for diminution of speed under average real sea conditions, in the case of k_1, and the contribution to CO_2 emissions from auxiliary machinery depending on real running time and reduction in emissions due to installation of energy-conservation systems, such as exhaust heat recovery equipment, in the case of k_2.

DISCUSSION

General comments

2.6 The Chairman opened the floor for general comments on the proposals in the documents by Denmark and Japan.

2.7 The delegation of China, supported by the delegations of Saudi Arabia, South Africa, Brazil and India, expressed concerns on the grounds that the implementation of a mandatory CO_2 design index for new ships could result in a lack of transparency in the shipping market requiring new technologies that most developing countries could not adopt and would need capacity-building efforts for their implementation. Therefore, any new technology brought by this new measure should be provided to developing countries to avoid distortion of markets and putting developing countries in a disadvantaged position. In addition, the short time available for studying such complex documents had hindered proper consideration before the meeting. Adequate studies should be carried out on the consequences of establishing the mandatory CO_2 design index before taking any action, particularly in respect of those developing countries which might wish to enhance their shipbuilding and shipping capabilities in the future.

2.8 The delegation of Brazil expressed the view that it could not accept starting the discussion and drafting of a possible method for implementing and verifying the new ship CO_2 design index.

2.9 In response to the above concerns, the delegation of Norway, supported by the delegation of Japan and others, clarified that the fuel efficiency design index was just a tool that did not entail any new technological developments for shipbuilders as it was intended to provide fair, open and transparent assessment of the environmental efficiency of ships as regards fuel efficiency and resulting CO_2 emissions. It was also pointed out that far more onerous technological burdens now existed in the current structural requirements for ships, such as regulation 23 of MARPOL Annex I on Accidental oil outflow performance (in itself a complex formula), and others in SOLAS, which did not impede several developing countries to have flourishing shipbuilding industries.

2.10 On the issue of the short time available for the issuance of documents before the meeting, the Chairman clarified that he, in his capacity as Chairman of the MEPC, had proposed to relax the deadline for submission of documents for the intersessional meeting in order to foster a thorough discussion of the issue at this time based on a sufficient number of submitted documents and that the Committee had endorsed this view as reflected in the Terms of Reference of the group.

2.11 Many delegations, supported by observers from industry, agreed on the need to develop the new ship CO_2 design index on the basis of the documents submitted by Denmark and Japan. In the course of the discussion a certain preference was shown for the inclusion of factor k_l in the formula, although it was recognized that both proposals were viable and that the best solution would be a unified proposal with elements of both formulae.

2.12 The delegation of the Bahamas expressed concern about some elements of the proposed index, which might affect commercial considerations. In the view of the Bahamas, if the index was to be implemented as a mandatory provision, then the way to calculate the parameters should be agreed upon by all concerned.

Technical comments

2.13 In the course of the general debate the following points were made, *inter alia*, by the many delegations that intervened:

.1 the CO_2 design index should be developed by ship type, size and design speed;

.2 consideration should be given to the consequences for any given ship not attaining the required index;

.3 participation in the development of the index by shipbuilders and designers should be fostered;

.4 the possibility of designing underpowered ships as a consequence of the application of the index should be carefully considered;

.5 the effect of the index on ship design should be carefully monitored so as to avoid problems like those caused by the tonnage regulations which, in some cases, have distorted the design noticeably in some particular types of ships;

.6 verification procedures (survey and certificate) should be put in place;

.7 further thought should be given to the percentage of MCR (75-100%) to be applied in the calculation of the index;

.8 a decision should be made on TEUs *vs*. DWT for calculating the index for containerships;

.9 the proposed threshold of 400 GT for application of the index needed further evaluation; and

.10 the conversion factor C_F between fuel consumption and CO_2 emission should be revisited.

2.14 After a short debate, the group agreed to deal in plenary with the above-mentioned technical issues as well as with any others that might arise in the course of the discussion. However, in response to a suggestion by the Chairman supported by the group, the delegations of Denmark and Japan undertook to work together outside normal working hours towards a unified proposal including a merged formula combining elements of their respective papers, with the help of other experts present at the intersessional meeting who might wish to participate, and to report back to the group on Wednesday.

2.15 The delegation of Denmark, in response to several interventions requesting clarification on some points in its proposal (GHG-WG 1/2/1), indicated that it had made an effort to develop a fair and transparent system to evaluate the environmental efficiency of ships by means of goal-based requirements. Paragraph 10 of its document explained the reasons why some categories of special ships not dedicated to transport should not be included at this stage. On the issue of validation of the data used to calculate the baseline, or benchmark, against which the fuel efficiency design index was to be measured, background document MEPC 57/INF.12 provided detailed information. However, when a methodology for the baseline was finally agreed upon, then the baseline would have to be recalculated.

2.16 The delegation of Denmark further clarified that the 400 GT application threshold had been selected to be consistent with other MARPOL requirements; however it could be modified in order to reach a consensus figure. Regarding the parameters used in the proposed formula for the index, the most important condition was that they should form a consistent set of parameters, particularly regarding capacity, design speed and power.

2.17 In his preliminary summing-up, the Chairman recalled that the Terms of Reference for the intersessional meeting approved by MEPC 57 clearly mandated the group to, *inter alia*, develop a mandatory CO_2 design index for new ships for approval at MEPC 58, if deemed appropriate, and to develop a methodology for a CO_2 baseline in terms of efficiency. In addition, the issue of survey and certification of the index should be addressed and there were no concrete proposals in the course of the debate so that this subject should be discussed in the coming days. The group agreed to this approach.

2.18 Following the informal work by Japan, Denmark and other interested parties, a joint proposal for the index formula was presented to the group. The group undertook a thorough debate where the group considered the following:

.1 the use of mass (DW) or TEU for container vessels;

.2 whether the title should be amended to energy efficiency design index;

.3 the need for a trial period to test the robustness of the formula;

.4 the need for further clarifications on the terms used and the need for clear definitions or agreed standardized calculation methods for all parameters to be used in the formula;

.5 transparency and repeatability;

.6 verification;

.7 the issue of a possible lack of transparency in the statistics source (LR-F database) was mentioned as a difficulty for the calculation of the index;

.8 whether the reduction factor should be harmonized with emission reduction targets agreed within UNFCCC; and

.9 the design of the regulatory regime, if the formula and/or its correction factors should be part of the regulation or part of the guidelines.

2.19 Concerns were expressed that it would be difficult for any Administration to conduct a meaningful verification and to certify the index because it is based on data in a commercial contract. Others expressed the view that such contract documents are official documents and therefore can be used as basis for verification.

2.20 When considering verification of the CO_2 design index for new ships, the group noted that for many new ships the flag State would not be known until the ship was built. It was also noted that during the design and building phases, the classification society would be under contract to the shipbuilder, not to the owner, and would not necessarily act on behalf of a flag State.

2.21 A number of delegations expressed the view that the new ship CO_2 design index should be used on a recommendatory basis for a period to test and verify the methodology of calculation, gain experience of the application and improve it, if necessary and as appropriate.

2.22 When debating the baseline methodology, the equation of the regression curve (baseline value) was generally supported, although it was recognized that the values of factors "**a**" and "**c**" should be determined in line with the formula for the new ship CO_2 design index when finally agreed. The process of determining the two factors should be conducted within the framework of IMO in a transparent manner based on well-recognized methods and should widely represent data from existing ships. Some delegations expressed the view that factors "a" and "c" would differ with the size of ships within the same ship type. In other words, more than one regression curve (baseline value = a x b^{c-}) would be necessary for the same ship type, e.g., tankers, depending on the size ranges. Some ship types such as tankers might need further categorization, e.g., crude and product carriers, chemical tankers, etc. For some ship types, both baselines and new ship index would be needed both for ballast and loaded conditions to provide the full picture on fuel efficiency.

2.23 The group agreed to draft guidelines on the method of calculation of the CO_2 design index for new ships including a draft formula for consideration by MEPC 58, set out as annex 5 to this report, but agreed that the formula would need some fine tuning and encouraged Member States and observers to undertake tests and trials and submit the results to subsequent sessions of

the Committee. The group also agreed that the formula and method of calculation would need to be kept under continuous review.

2.24 Recognizing the concerns expressed by various delegations, as reflected in paragraphs 2.7 to 2.21 above, and that the regulatory framework needed further consideration, the group developed draft regulatory text for a mandatory new ship CO_2 design index as set out as annex 6 to this document, and agreed to forward it to MEPC 58 for its consideration.

2.25 The delegation of China reserved its position on the application of a CO_2 design index for new ships and the draft text set out in annex 6. It expressed the view that the formula was developed by a few experts in a very short time and that it needed more in-depth and comprehensive study with consideration of the full impacts of all trade related and economic aspects. The robustness of the formula also needed to be verified through testing and trials, i.e. the ship designing practice, and be supported by a sufficient number of samples. Taking the significant effect on the global shipbuilding and shipping industries into account, IMO should act as a responsible organization and not rush any decision on the matter. In the view of the delegation of China, at a later stage, after experience was gained and the robustness of the formula verified, mandatory application could be considered.

2.26 When considering the draft report, the delegations of India and Saudi Arabia associated themselves with the view expressed by the delegation of China.

3 REVIEW OF THE CO_2 OPERATIONAL INDEX

GENERAL

3.1 Under this agenda item the group considered documents GHG-WG 1/3 (Japan) on Purpose of the CO_2 operational indexing scheme; GHG-WG 1/3/1 (INTERTANKO) on Review of Carbon to CO_2 reduction factors; and GHG-WG 1/3/2 (Germany) on Trials using the draft Guidelines for ship CO_2 emission indexing based on operational data.

3.2 The group noted a number of background documents, submitted to, but not all considered at, previous sessions of the MEPC, which could be useful for the consideration of the issues under this item.

3.3 The group recalled that MEPC 57 had agreed to review the Interim Guidelines for voluntary CO_2 emission indexing for use in trials (MEPC/Circ.471) at this intersessional meeting with a view to finalization at MEPC 58 as stated in the Guidelines.

3.4 In introducing document GHG-WG 1/3, the delegation of Japan stressed that the CO_2 operational index should be considered as an instrument for evaluating quantitatively the effect of operational fuel efficiency measures, such as speed reduction or optimum navigation, rather than as a method for reducing CO_2 emissions from ships. The use of the GISIS GHG module was advocated as a means for collecting sufficient data for analyzing the trends in the actual operational fuel efficiency of specific ships or fleets.

3.5 INTERTANKO, in its document GHG-WG 1/3/1, examined the current Carbon to CO_2 conversion factors, as specified in MEPC/Circ.471, and, after research and recalculation, proposed new conversion factors for those fuels most used in shipping, i.e.: MDO, MGO, HSFO and LSFO, by considering actual hydrocarbon content in each fuel type after deduction of impurities and other components.

3.6 Germany, in its document GHG-WG 1/3/2, provided the results of CO_2 index trials in 23 container ships and advocated the use of TEU as a basis for calculating the index for that type of ships, as suggested as an option in MEPC/Circ.471.

DISCUSSION

3.7 Many delegations, including observers, took the floor in the ensuing discussion. Most interventions supported the proposals by Japan and INTERTANKO. The following comments, *inter alia*, were made during the debate:

.1 the operational index should not be mandatory, but recommendatory in nature although it could be made mandatory in the future;

.2 it had the potential of being an invaluable tool for evaluating the environmental efficiency of a ship, or a fleet, as a performance indicator. A ship-specific approach was most adequate for the use of the index as it would allow a company to work out trends relative to the efficiency of its fleet;

.3 as a management efficiency tool, the index could also be very useful;

.4 flexibility should be allowed to calculate the index by using time or number of voyages as parameters;

.5 the Carbon to CO_2 conversion factor for LNG in MEPC/Circ.471 could also be recalculated as LNG was increasingly used as fuel in ships;

.6 it was recalled that the C to CO_2 factors in MEPC/Circ.471 had been taken from the revised 1996 IPCC Guidelines for national GHG inventories; and that consistency should be ensured between the data used by IMO and those by IPCC, UNFCC and other UN bodies;

.7 the revised C to CO_2 factors proposed by INTERTANKO should be validated by a scientific body or an international organization such as ISO;

.9 the ISM Code recommends shipping companies to implement both mandatory and recommendatory IMO instruments. It could then be used as a tool for the implementation of the operational index even if the latter, in itself, is recommendatory;

.10 it was clarified that the design and operational indices were different instruments and, as such, it was not necessary or desirable *per se* to harmonize parameters used in their respective formulae.

3.8 Regarding the proposal by Germany (GHG-WG 1/3/2), after a thorough debate on the merits of using TEU *vs*. DWT for calculating the operational index for container ships, the group agreed that both parameters should continued to be allowed (as in the interim guidelines contained in MEPC/Circ.471) to gain further experience. However, a cautious approach to the use of TEU should be taken for the time being as currently there is no mandatory requirement to declare the total cargo capacity of a container ship in TEU and it is a well-known fact that some companies do not disclose these data for commercial reasons.

3.9 In response to comments on the sulphur content of fuel oil used in the calculations for the revised C to CO_2 conversion factor, INTERTANKO clarified that they had used the 2.70% Sulphur figure as the prevailing number obtained from current monitoring of worldwide average sulphur. In this respect, the group agreed that it would be useful to calculate a factor for 0.1% sulphur content fuel oil due to be mandatory in a few years' time in ECAs under the revised MARPOL Annex VI.

3.10 In conclusion, following the summing-up by the Chairman, the group agreed that:

.1 the design and operational indexes are different in concept and there is no direct link between them and therefore no compelling need to harmonize them;

.2 the operational index should not be mandatory, but recommendatory in nature, but this does not mean that it could not be made mandatory in the future;

.3 implementation of the recommendatory operational index may be carried out by inviting Member Governments to give effect to the revised Guidelines through their national implementation of the ISM Code;

.4 a baseline is a matter of fact and represents the actual emissions of a specific ship or fleet;

.5 in order to approve the review of MEPC/Circ.471 at MEPC 58, documents submitted to previous sessions of the Committee which contain concrete proposals for amendments, can be used to prepare draft text of amendments for approval; and

.6 the Secretariat should liaise with the Secretariats of UNFCCC and IPCC in order to harmonize the C to CO_2 conversion factors and report the outcome to MEPC 58.

3.11 A collation of all proposals submitted to MEPC to date have been annexed to this report and all Member States and observers are requested to submit clear and concrete proposals at MEPC 58 for the revision of MEPC/Circ.471 (annex 7).

4 DEVELOPMENT OF A CO_2 BASELINE METHODOLOGY

GENERAL

4.1 Under this agenda item the Working Group considered document GHG-WG 1/4 (Secretariat) on Possible methodology and regulatory framework for establishing CO_2 efficiency baselines for different segments of international shipping.

4.2 The group recalled that MEPC 57 had noted that, once the CO_2 operational index Guidelines were finalized, and if applied to all ships engaged in international trade it would enable IMO to establish a world fleet efficiency baseline. This would also require the development of a reporting scheme and, as assignment of the index to individual ships would be done by shipping companies, there may be a need to establish an external verification scheme. MEPC 57 had also agreed that these issues should be discussed in depth at the intersessional meeting based on a document to be prepared by the Secretariat (paragraph 4.117 of document MEPC 57/21 and paragraph 5.1 of document MEPC 57/WP.8).

4.3 Following introduction of the document by the Secretariat, the group noted that whether or not these baselines were actually needed would depend on the final decisions by MEPC as to how a future GHG regime would be designed. It also noted that the baseline, if established for individual ships or groups of ships, may be used to illustrate operational efficiency improvements in the future. It should also be noted that the design index proposal (agenda item 2) contained its own baseline defined as the efficiency for ships built between 1995 and 2004.

4.4 The group noted that three baselines were under consideration:

.1 the overall baseline for total ship CO_2 emissions for a given year as called for by resolution A.963(23) to illustrate the total emission trends. Emission estimates back to 1990 were included in the ToR, and thereby in the report, for phase 1 of the ongoing update of the 2000 IMO GHG Study that would be submitted to MEPC 58;

.2 baselines for individual ship types and sizes for assigning of the design index for new ships. A baseline that would illustrate the efficiency improvement between comparable ship designs built at a given time, e.g., between 1995 and 2004 and the ship in question at the design stage; and

.3 the ship specific baseline under consideration under this agenda item was an efficiency baseline for the operational index used to illustrate the operational improvements between a baseline period and the time of the indexing.

4.5 The group, noticing that there existed some confusion about the use of the term "baseline" in the current discussions, noted the clarification provided by Norway and Japan that "baseline" should be considered under three different aspects: one, linked to the design index as a benchmark or mandatory minimum efficient standard; two, linked to the operational index, as the yardstick against which shipping companies can measure environmental performance of their individual ships; and three, in the current discussion to update the Interim Guidelines for voluntary ship CO_2 indexing for use in trials.

4.6 The group noted also that the methodology outlined by the Secretariat followed the same differentiation used by the Scientific Group of Experts on MARPOL Annex VI and was based on data derived from the Lloyds Register-Fairplay database of the world's fleet of merchant ships and is also used in the GHG module in GISIS. The world fleet is divided in 67 categories, although this number could be further reduced as appropriate. It should also be considered whether the baselines should be set by using data for a single year or over a period of, say, three years.

4.7 The Strategic Plan of IMO (resolution A.989(25)) contains a number of performance indicators, among which performance indicator 9 on ship-generated air pollution and CO_2 emissions contains the following three elements to be reported :

(a) 3-year rolling average of the sulphur content of fuel oil delivered to ships;

(b) tonnes of NOx, SOx and CO_2 released from ships subject to IMO instruments; and

(c) ratio of estimated tonnage of SOx, NOx and CO_2 released annually per tonne-mile of cargo carried by sea.

In this respect, in order to be able to report on 9(b) and (c) the fuel consumption may need to be reported to the Organization.

DISCUSSION

4.8 The delegation of the United States, supported by the delegation of Saudi Arabia, expressed its significant surprise that the Secretariat had tabled a proposal on matters of policy which were the prerogative of Member Governments.

4.9 The Chairman clarified that the request to the Secretariat to prepare a document as basis for discussion under this agenda item could be found in paragraph 5.1 of document MEPC 57/WP.8, the report of the Working Group on GHG Emissions from Ships as approved by the Committee.

4.10 Paragraph 5.1 of document MEPC 57/WP.8 states:

> "The Working Group agreed to review the Interim Guidelines for Voluntary Ship CO_2 Emission Indexing for Use in Trials (MEPC/Circ.471) at the intersessional meeting in Oslo with a view to their finalization at MEPC 58. Once these CO_2 Operational Index Guidelines were finalized, its mandatory application to all ships engaged in international trade would enable IMO to establish a world fleet efficiency baseline. This would also require the development of a reporting scheme and, as the assignment of an Index to individual ships would be done by shipping companies, there may be a need to establish an external verification scheme. It was agreed that these issues should also be discussed in depth at the intersessional meeting based on a document to be prepared by the Secretariat."

4.11 The delegation of China, supported by the delegations of Brazil, India, Saudi Arabia and South Africa, indicated that it was strongly opposed to developing a baseline based on mandatory reporting and that it should be recognized that shipping was one of the cleanest industries in the world taking into consideration its fundamental importance for trade and economy in general. Developing countries should not suffer any restrictions in the future development of their merchant fleets and, in any case, further studies on their needs as regards transfer of technologies and capacity-building should be carried out before taking any decisions.

4.12 The delegation of Norway, supported by other delegations, thanked the Secretariat for submitting a useful document and emphasized that there was a need to demonstrate to the world shipping's clean environmental record, particularly at this moment where unjustified and ill-founded criticism of the industry was widespread. In this respect, the dissemination of information and statistics on this industry's clean act would serve to improve the image of shipping. To achieve this, the delegation of Norway supported a mandatory requirement for reporting of fuel consumption.

4.13 Following an intervention by the delegation of the Bahamas, the group recognized, however, that the exercise IMO was embarked upon was not for the benefit of the image of shipping in the world's eyes, but rather for shipping's own sake as an extremely environmentally-efficient industry that is doing its best to show commitment and attain further improvement.

PRESENTATION ON THE UPDATE OF THE 2000 IMO GHG STUDY

4.14 The group recalled that MEPC 57 had agreed that, although the update of the 2000 IMO GHG Study would only be available after this meeting, any preliminary results, where relevant, should be communicated to the intersessional meeting for review.

4.15 The group noted with appreciation a presentation by the coordinator of the international consortium undertaking the update of the 2000 IMO GHG Study, Dr. Oyvind Buhaug of MARINTEK (Norway). Dr. Buhaug provided a progress report of phase 1 which will be submitted to MEPC 58 while the final report will be considered by MEPC 59. The presentation was focused on some provisional findings as well as on the methodology employed to carry out the task.

4.16 The group noted that a preliminary conclusion of the study was that the contribution of international shipping to global CO_2 emissions from fossil fuel consumption from ships above 100 GT engaged in international trade was deemed to be a 2.7% of the total. It was also noticed that this number rose to 3.3% if also merchant ships in domestic trade and fishing vessels were included. The group found the preliminary report by the Consortium useful and noted that satisfactory progress had been made.

FURTHER DISCUSSION

4.17 The Chairman posed three questions to the group in order to systematize the discussion:

.1 whether an aggregate baseline was needed;

.2 whether the methodology described in GHG-WG 1/4 was acceptable; and

.3 in that case, whether a mandatory reporting scheme should be used.

4.18 A considerable discussion followed on the three questions put forward by the Chairman. Regarding the necessity for a baseline, the group agreed it was necessary, with a majority of delegations showing preference for the "top-down" approach, i.e. assessing fuel consumption without collecting fuel consumption data from shipping. The group, however, recognized that this was a matter for the MEPC to decide. Having resolved this matter, the debate focused on the other two questions.

4.19 Regarding collection of a set of data from the world fleet (more than 100,000 ships of 100 GT and above) as a methodology for determining the baseline, as outlined in the document under consideration, the group, after a lively debate, recognized that processing such a huge amount of information would impose a very heavy administrative burden on individual ships, ship operators, flag States and the IMO Secretariat alike and that, even a mandatory reporting scheme – after adequate amendments to a mandatory instrument had come into effect – would not ensure an adequate level of reporting of data, as the poor record of compliance by Member States with other IMO mandatory reporting systems proved.

4.20 In concluding, the group:

.1 agreed that efficiency baselines for individual ship types and sizes may be useful to manage and illustrate efficiency improvements;

.2 agreed that the methodology described in GHG-WG 1/4 could be used for further discussion; and

.3 agreed that a mandatory reporting system was not the most feasible way to develop the baseline methodology at this stage but could alternatively be done by assessment (top-down) and agreed to advise the MEPC accordingly.

5 DEVELOPMENT OF REDUCTION MECHANISMS, INCLUDING THEIR IMPLEMENTATION

5.1 The group recalled that MEPC 57 had instructed the intersessional meeting to further develop mechanisms with GHG reduction potential for international shipping, *inter alia*:

.1 global levy/hybrid mechanism; and

.2 Emissions Trading Schemes (ETS) and/or Clean Development Mechanism (CDM).

5.2 The group considered the following documents:

.1 GHG-WG 1/5 (FOEI) proposing a suite of measures to reduce CO_2 emissions from international shipping such as target time frame, a package of measures and early implementation;

.2 GHG-WG 1/5/1 (Denmark) summarizing the informal correspondence work carried out in advance of GHG-WG 1 in order to further develop the proposal of a global levy on marine bunkers based on document MEPC 57/4/4 (Denmark);

.3 GHG-WG 1/5/2 (INTERFERRY) providing the outlines of a possible Maritime Carbon Reduction Scheme (MCRS) for international shipping, taking into account the experience from emission trading schemes used by land-based industries and the particular nature of international shipping;

.4 GHG-WG 1/5/3 (European Commission) providing a number of key design elements in designing a "cap and trade" emission trading scheme based on the experience of the European Union Emissions Trading Scheme (EU-ETS).

.5 GHG-WG 1/5/4 (Norway) outlining a levy-cap-and-trading scheme which combines a levy on CO_2 emissions and an emission trading system. The document further provides a regulatory framework needed to establish the scheme and administrative procedures, such as monitoring, reporting, verification and certification (the full intervention on the introduction by Norway is set out in annex 9 to this document);

.6 GHG-WG 1/5/5 (Norway) providing consideration of various possible elements related to a possible mandatory GHG reduction mechanisms, especially legal aspects related to market-based instruments such as emission trading schemes (the full intervention on the introduction by Norway is set out in annex 9 to this document);

.7 GHG-WG 1/5/6 (France) proposing to establish an international shipping carbon market using a shipping carbon unit (SCU) which represents one tonne of CO_2.

Under this scheme, the ship will be required to purchase the needed number of SCUs and to surrender the SCUs, when bunkering; and

.8 GHG-WG 1/5/7 (Germany) proposing a global Maritime Emissions Trading Scheme (METS) to be considered which is applicable to all vessels in international voyages regardless of flag and would avoid the complexity of allocation of free emissions allowances. In its introduction, Germany pointed out that the reason for submitting the document containing considerations on a potential emission trading scheme was to facilitate the development of different market-based instruments.

DISCUSSION

5.3 The Chairman opened the floor for general comments on economic instruments.

5.4 The delegation of Belgium stated that it was in favour of a global mechanism that would lead to a reduction of greenhouse gas emissions, either by the shipping sector itself, or by offsetting shipping emissions through reductions in other sectors. An important concern was that any chosen mechanism should not lead to a modal shift from short sea shipping, which is an environmentally friendly transport mode, to rail or road transport. At least a significant part of the revenues generated by a reduction mechanism should be transferred back to the shipping sector itself. The principle of a level playing field should be respected by any reduction mechanism. Moreover the reduction mechanism should not penalize operators who have already made early and considerable efforts to reduce greenhouse gas emissions. The intervention by the delegation of Belgium is set out in annex 9 to this report.

5.5 The delegation of Saudi Arabia, supported by the delegations of Brazil, China, and South Africa expressed the view that a levy on fuel used by international shipping would violate the principles under the UNFCCC and represent an international tax and, more specifically, would be a tax on international trade and that IMO should not embark on this path as it was outside its mandate and was not possible to implement. The delegation of Saudi Arabia stated that Clean Development Mechanisms (CDM under the Kyoto Protocol) can only be funded by Annex I countries to the UNFCCC. The delegation of Saudi Arabia also stated that the processes in the two organizations were interlinked and that IMO should refrain from proposing measures unacceptable by other United Nations bodies.

5.6 The delegation of India supported Saudi Arabia and expressed the view that the focus should be on combating climate change by following the principles of UNFCCC and that IMO should not establish different mechanisms or a separate framework. China supported action by IMO on control of GHG from international shipping but only in line with the principles of the UNFCCC. The full statement is set out in annex 9 to this report.

5.7 A number of delegations, including the delegations of Australia, Belgium, Denmark, the Netherlands, Norway, Spain, Sweden and the United Kingdom supported the need for economic instruments as essential tools among the other measures to increase fuel efficiency and reduce emissions from shipping. Spain advocated the need for a pragmatic and efficient economic instrument that would be simple to implement and manage, and would not impose additional burden for ship's crews. Finland supported the need for an economic instrument applicable to all ships engaged in international trade, but it advocated that it needed to be fair and due consideration should be given not to penalize fuel-efficient ships in the implementation phase.

5.8 Concerns were however expressed by many delegations over the possibility for modal shift to less fuel-efficient transport modes if an economic instrument imposes a significant economic burden on the shipping industry compared to other transport industries, especially in short sea shipping, leading to an overall negative effect for the atmospheric environment.

5.9 A number of Member States in favour of the introduction of an economic instrument saw such measures as effective tools to provide needed incentives for the shipping industry to invest in more fuel-efficient ships and to improve operation. Many advocated that IMO should continue to take the lead, that time was essential and that a balance should be found between reduction and timing. Some delegations expressed concerns over the long time associated with the development and adoption of a new legally binding instrument while others expressed concerns over the use of existing instruments not initially intended for mandatory market-based measures and that the tacit acceptance procedure may not be appropriate to use for non-technical measures.

5.10 The delegation of the United States, supported by a number of delegations, expressed the view that, historically, high oil prices were a very effective market-based instrument. The delegation of the United States further expressed the view that creative thinking was needed and that also other economic instruments, in addition to fuel levy and emissions trading, should be identified and assessed before any conclusion could be reached. The delegation of the United States saw a number of issues that needed to be considered and solved for the different mechanisms proposed and recognized the challenges in choice of legal instrument. It also expressed the view that the group should spend its time focusing on areas of consensus and not focus on divisive debates. The delegation of the United States informed the meeting that it hoped to submit a document to MEPC 58, among other things, identifying possible economic instruments other than those proposed to date.

5.11 The delegation of the United Kingdom reasoned that the proposals on the table needed further work before conclusions could be made and that document GHG-WG 1/5/5 (Norway) provided a thorough and useful consideration of the elements needed in a market-based instrument and on the balance between the need for reduction in the shortest possible time frame and the development of a robust legal instrument. Sweden pointed out the importance of credibility where developing off-setting projects where the collected funds would be invested and the use and management of funds in general.

5.12 The delegation of Denmark reasoned that IMO should find the most effective economic instrument and that the Committee should consider the various options. The delegation of the Netherlands supported the delegation of Denmark and stated that market-based tools are effective and needed, although it had no preference yet for the instrument IMO should choose. Further options should be sought and all options should be listed together with pros and cons. The delegation of Japan supported Denmark and the Netherlands and stated that it had no preference on which instrument to choose. The delegation of Japan advocated that the most effective instrument should be chosen and that continued work was needed before conclusions could be reached.

5.13 The delegation of Greece stated that some scientific reports indicated that emissions from shipping have a total cooling effect in contrast to the warming effect of CO_2. Greece reserved its position on any economic instrument until adequate impact assessments for all involved stakeholders on all the proposed instruments have been undertaken and presented to IMO. The full statement can be found in annex 9 to this report.

5.14 The European Commission advocated the need to rapidly further evaluate the advantages and disadvantages of the options before taking decisions. In addition, IMO and the shipping industry needed to set clear goals for their contribution to tackling climate change. The European Commission called on all Member States to make positive contribution on measures to address emissions and not only reject proposals from others. The European Commission expressed significant concern over the long period of time associated with the development, ratification and entry into force of a new instrument.

5.15 The delegation of Australia expressed the view that market-based instruments should be one key element of a future suite of measures, and saw benefits in both options tabled, in particular their proposed global coverage. However, the options tabled required further careful consideration, including detailed analysis of their economic and environmental costs and benefits. Any market-based instrument should apply to all ships, in line with the principles enunciated at MEPC 57. The delegation of Australia thought that, on first examination and without prejudice to future discussions, the levy proposal could offer a smoother implementation path, but the design, implementation and funding aspects of the proposal required further careful examination. The delegation of Australia also recognized that other potential market-based instruments might exist that warrant consideration. The legal instrument required for the introduction of market-based instruments should avoid any risk to the adoption of the current proposed amendments to Annex VI of MARPOL.

5.16 All the delegations that spoke on the issue supported that revenues aggregated through any economic instrument should mainly be used for mitigation and adaptation measures in developing countries, together with transfer of technology and capacity-building. A number of delegations also advocated that parts of the aggregated funds should be used for further research and development of fuel efficiency in ships.

Chairman's preliminary summary

5.17 The Chairman offered the following preliminary summary:

On the issue of market-based solutions, the Working Group should note that:

- commenting in general, delegations pointed out that any market-based solution should not promote modal shift, it should be realistic, pragmatic and implementable;

- a number of delegations strongly emphasized that a measure such as the global fuel levy, if agreed, since it was proposed and rejected in other fora, should follow the principles agreed under UNFCCC and the Kyoto Protocol and they also pointed out that funding of CDMs should and must be done by developed countries alone;

- some other countries had other concerns about the market-based measures proposed; and

- in general, there were still several queries that need to be answered.

Global levy on marine bunker fuel

5.18 The Chairman opened the floor for specific comments on the proposed global levy on marine bunker fuel for the acquisition of CO_2 allowances.

5.19 The delegation of the Bahamas viewed a levy as an international tax and strongly opposed implementation of such instrument as it entailed a range of difficult legal issues. Introduction of a global levy would be of doubtful value and would also lead to additional administrative burdens and that focus should be on technical and operational measures.

5.20 The delegations of Brazil, China, India and Saudi Arabia supported the view of the delegation of the Bahamas as they also viewed a global fuel levy as an international tax and strongly opposed its implementation. A global fuel levy for all ships by nature violated the principles of common but differentiated responsibilities and entailed a range of legal issues. They stressed that against the background of high oil prices, ship operators were already seeking all possible options to save fuel and that the price currently was the best motivator for fuel efficiency. Saudi Arabia stressed that the fuel prices are likely to remain high and were set to increase in the future as a consequence of lower sulphur bunker fuel requirements in the revised MARPOL Annex VI.

5.21 The delegation of Norway, supported by a number of other delegations, reasoned that the process on developing the proposal for a global fuel levy had been an open process. A useful outcome of this meeting would be a list of elements to be considered further, such as the responsible entity, the administrative body to manage the levy scheme, the scope of the levy (all ships, above [xx] GT), management of funds as well as monitoring and verification.

5.22 The delegation of the United Kingdom supported Norway and maintained the view that a fuel levy would have only a minor effect on the demand for, and continued growth of, shipping. The delegation of the United Kingdom stated that a global fuel levy could have merit but that further work was needed on the effectiveness of a fuel levy and if it would provide the needed incentive and how it would be managed. In the view of the United Kingdom, despite the innovation of national marine bunker fuels suppliers collecting the levy, more work needed to be done on the issues of hypothecation and sovereignty.

5.23 The delegation of Denmark argued that a fuel levy would not restrict growth in global trade and maritime transport and that the main purpose in their proposal was the off-setting of emissions and not to provide incentives for the shipping industry.

5.24 The delegation of ICS stated that it needed further information on how the levy scheme actually would work and the impacts for shipping before it could offer a position. ICS expressed the view that any measures under consideration should be assessed in light of the fundamental principles agreed by MEPC 57.

Chairman's summary on global fuel levy

5.25 The Chairman summarized the discussion by stating that in the present circumstances, it was not possible to bridge the two views and that further development had to be undertaken by Member States and observers and submitted to MEPC 58 for consideration. He further stated that although Denmark, in co-operation with interested parties, had replied to all the questions raised by MEPC 57 the group was not in a position to further develop the proposal.

Emission trading schemes

5.26 The Chairman opened the floor for specific comments on the proposals on introduction of emission trading schemes for international shipping.

5.27 The delegation of Norway supported by a number of other delegations pointed out that there was overwhelming common ground in the four proposals for ETSs for shipping, that market-based mechanisms are not new and that buying allowances is not a complicated thing when the market is set up. Norway recognized that the establishment of an ETS for shipping was challenging, but reasoned that it was possible.

5.28 The delegation of the Bahamas, supported by the delegation of Saudi Arabia and others, noted that all the proposals for ETS for shipping were submitted by European Countries and that a maritime ETS may have merit in a region where countries had a similar level of development, a high degree of political cohesion and a central enforcing body, but could not be expanded to work globally. Saudi Arabia further argued that a global ETS was tantamount to mandating the less-efficient ships from developing countries to subsidize the more-efficient ships of developed countries as many ships trading between developing countries are old and small. Saudi Arabia also stated that a possible starting point for an ETS could be among European States to gain experience on how the system would work and what reduction it can achieve.

5.29 The delegation of the Bahamas pointed out that if more efficient ships traded between developed countries and less efficient ships moved to trade between or within developing countries, it could be regarded as an export of waste from developed to developing countries and therefore contrary to the Basel Convention.

5.30 The delegation of Germany, supported by a number of other delegations, argued that CO_2 emissions and climate change is a global problem and that it would not matter where the emissions take place. Global application would be a challenge but by utilizing the familiar structure of other IMO instruments, such as certification by the Flag State and the right to conduct Port State Control (PSC) these challenges would be overcome. Germany also argued that the additional administrative burden would only be marginal by using the well-established IMO structure. Germany further stressed that the meeting should be used to bridge the gap between the two views and that the meeting should also consider the use of any revenues created by any economic instrument to be agreed. Sweden aligned itself with the intervention made by Germany and supported the development of an ETS for international shipping.

5.31 The delegation of China agreed with the delegations of the Bahamas and Saudi Arabia and pointed out its basic concerns with the proposals for ETS for international shipping. An ETS for shipping should only provide Annex I countries with a means to meet their reduction obligations, an ETS applicable for all ships irrespective of flag would destroy the consensus within UNFCCC and may penalize developing countries and lead to recourses flow from the poor to the rich.

5.32 The delegation of India endorsed the interventions by the delegations of the Bahamas, China and Saudi Arabia, and reasoned that PSC is already overburdened in many regions of the world. The delegations of Brazil and South Africa aligned themselves with the views expressed by the Bahamas, China, India and Saudi Arabia.

5.33 The delegation of Finland argued that IMO needs to act and to act globally and that the possible mechanisms needed to be developed further before a detailed assessment could be undertaken. Finland also argued that there was a need to include shippers and cargo owners in

the development and that the needs for developing countries should be duly taken into account when considering the matter.

5.34 The delegation of the United Kingdom echoed the intervention by Finland and argued that an open scheme would provide more flexibility to the participating entities. It also provided further comments related to monitoring of fuel consumption, allocation of allowances and setting of the cap. The full intervention may be found in annex 9 to this report.

5.35 The delegations of Denmark, Finland, France, Germany, the Netherlands, New Zealand, Norway, Sweden and the United Kingdom all supported that the meeting should develop a proposal based on the submitted documents for consideration by MEPC 58.

5.36 The delegation of the United States noted the importance of IMO to retain its leadership on this issue and expressed serious concerns that unilateral action to include vessels from other States would end the significant progress IMO had recently made on this issue.

5.37 The group considered whether an ETS for shipping should be open (exchange allowances with other industries) or a closed system (shipping only) but did not conclude on the matter.

5.38 The delegation of the Bahamas stated that an open system would involve exchange of allowances between shipping and land-based industries and that this could lead to conflict with the Kyoto Protocol to the UNFCCC.

5.39 The group noted that improvement in fuel efficiency was an ongoing work in the entire merchant fleet in developing and developed countries alike.

5.40 The group also noted that there is a difference between ships flying the flag of developing countries and ships serving the transport needs in regions dominated by developing countries (non-Annex I), as the latter often are undertaken by older and smaller ships than those serving the transport needs of the developed parts of the world.

Chairman's summary on maritime ETS

5.41 The Chairman summarized the discussion as follows:

.1 a number of delegates were of the view that an ETS for all ships irrespective of flag could violate the principles of UNFCCC, others had expressed the view that bridging the principles of IMO and the UNFCCC was possible;

.2 a number of delegates had expressed the view that an ETS for international shipping could increase the trend of fuel-efficient ships being used in the developed parts of the world and less fuel-efficient ships being used in developing parts;

.3 other countries had other concerns about the market-based measures proposed; and

.4 having identified the above major stumbling blocks, the sponsors behind the proposals, which in essence were proposing a new free-standing instrument, could in the interim period refine their proposals for further consideration at MEPC 58.

5.36 The Chairman stated that it was not possible to develop further the ETS proposal at this meeting and that interested parties should co-operate in submitting refined proposals to MEPC 58 for further consideration and that the considerations of the elements needed in the market-based mechanism in document GHG-WG 1/5/5 (Norway) should be taken into account, as well as the design elements described in document GHG-WG 1/5/3 (European Commission).

6 DEVELOPMENT OF BEST PRACTICES

6.1 The Chairman recalled that MEPC 57 had reviewed in detail the short-term and longer-term measures to reduce GHG emissions from ships identified by the Intersessional Correspondence Group (MEPC 57/4/5, paragraphs 5.2 to 6.8). Some of the possible measures could lead to immediate reduction of GHG emissions from ships and should be implemented as soon as possible. MEPC 57, therefore, had agreed that best practices on a range of measures should be further developed with the aim of developing a resolution at this session.

6.2 The group was invited to consider the best practices related to the range of measures identified at MEPC 57 (MEPC 57/WP.8, paragraph 3.1), *inter alia*:

.1 improvement of specific fuel consumption;

.2 onshore power supply;

.3 wind power;

.4 limitation of leakage rates for refrigerant gases;

.5 vessel speed reduction; and

.6 fleet management.

6.3 The group was also expected to consider how the identified best practices could be implemented by ship builders, operators, charterers, ports and other relevant partners to make all possible efforts to reduce GHG emissions from the maritime sector, with the aim of developing an IMO resolution, as appropriate. In this respect the Committee had requested the Secretariat to prepare a document to be considered by this meeting.

6.4 In introducing document GHG-WG 1/6, the Secretariat explained that it had prepared, in consultation with the Chairman of the working group, two draft MEPC resolutions for review by the group, as follows:

.1 a draft resolution on best practices for energy efficient operation of ships, intended as guidance for ship operators and ship masters and officers on measures they are able to influence, such as routeing, speed control, optimized ship handling, maintenance, improved fleet management and cargo handling; and

.2 another draft resolution on technical measures for *new ships*, or in connection with upgrading or maintenance of existing ships, and operational measures for fuel-efficient operation of ships that cannot be influenced by the ship masters and officers or the ship operators without involvement of others.

6.5 The delegation of the Netherlands introduced document GHG-WG 1/6/1 recommending measures to reduce leakages of refrigerants and coolants on board ships. Refrigerant gases and coolants used on board seagoing vessels are used for multiple purposes, in particular for cooling/freezing purposes such as cargo care, provisions storage and internal climate control. Leakage of some synthetic coolants and refrigerants (CFCs, HCFCs) damage the ozone layer and most refrigerants intensify the greenhouse effect (CFCs, HCFCs & HFCs). Surveys showed that there is a significant leakage of refrigerant gases and coolants, e.g., a survey conducted on board Netherlands' flagged ships showed an average leakage of 50% despite voluntary measures the Netherlands' merchant fleet has adhered to since 1992. The delegation proposed a detailed list of possible technical and operational measures which may be applicable to all ship types and which may inform the group when drafting a resolution containing best practices.

6.6 In introducing document GHG-WG 1/6/2, the delegation of the Netherlands also informed the group of a joint industry research project "Ship Service Performance Analysis (SPA)" that was being carried out in the Netherlands to develop a method for a speed-power performance analysis. Measurements which were already carried out indicated a saving of 10% fuel on existing ships. The delegation announced that the final results of the project would become available by the end of 2008 and be reported to MEPC 59.

6.7 The observer from ICS informed the group of the outcomes of an inter-industry meeting held on 11 June 2008 focussing on "climate change and international shipping: fuel efficiency". The maritime industry supported the development of a CO_2 Design Index for new ships provided it would be specific to ship type, size and speed and that it should be simple to apply, objective, and evaluated at sea trials. Such an index would enable shipowners to make informed decisions in selecting designs on a fuel-efficiency basis. The industry was discussing measures to improve the fuel efficiency of the existing fleet. The CO_2 Operational Index was regarded as an invaluable management tool, but the variability that can be expected from such indices across the various ship types made them inappropriate for a legislative approach (see also the conclusions in section 3 of this report). The industry would be open to discuss the various proposals for market-based instruments, favoured that they be based on the nine fundamental principles discussed at MEPC 57, and cautioned against drawing conclusions on any of the market-based instruments at this stage. The industry gave its full support for the most expedient IMO instrument to be chosen and for the IMO timetable necessary to agree on such an instrument. Finally, the shipping industry organizations intended to present to MEPC 58 an outline of possible best practices as a management tool for the shipping industry. The aim was to complete a comprehensive document by the end of 2008 for consideration by MEPC 59.

6.8 The group welcomed the announcement of submission on best practices by the maritime industry to the Committee.

6.9 Some delegations, drawing on the conclusion under item 3 of the agenda that the CO_2 Operational Index should primarily be seen as a voluntary management tool for the shipping industry, suggested developing the closely related best practices also as a management tool rather than as part of a draft MEPC resolution. They also recognized the fact that most of the best practices discussed at MEPC 57 would actually be carried out by the shipowners.

6.10 The delegation of China stressed that the identification of best practices should take into account the special needs and circumstances of developing countries.

6.11 The group noted that there were now three processes in place to provide further input for the work on GHG emissions from ships at MEPC 58: (1) the maritime industry initiative as announced by ICS; (2) individual submissions to the Committee by the agreed deadlines; and (3) through the Intersessional Correspondence Group on GHG Emissions from Ships established by MEPC 57 until its reporting deadline of 31 August of 2008.

6.12 In support of all three options the group agreed to elaborate on each of the best practices identified in documents GHG-WG 1/6, annex 1, and MEPC 57/WP.8 and identify any gaps, in accordance with its Terms of Reference. An informal group was established under the lead of Denmark to work on this issue outside working hours and report back to plenary by Friday, 27 June 2008.

Outcome of the informal group

6.13 The informal group on the development of best practices met on 25 and 26 June 2008 under the Chairmanship of Mr. L. Robert Pedersen (Denmark) and was attended by delegates from Australia, Belgium, Canada, China, Denmark, France, Germany, India, Italy, Japan, Netherlands, Norway, Republic of Korea, Singapore, Turkey, United Kingdom, United States, EC, BIMCO, CLIA, EUROMOT, FOEI, IBIA, ICS, INTERTANKO, INTERCARGO, and OCIMF.

6.14 As instructed, the informal group further elaborated on each of the "best practices" listed in documents GHG-WG 1/6, annex 1, (MEPC 57/4/5 and MEPC 57/WP.8) and developed:

.1 draft Guidance on best practices for fuel-efficient operation of ships; and

.2 draft Guidance on limitation of leakage rates for refrigerant gases and coolants in ships.

6.15 The informal group also recommended that further attention be given to the following issues:

.1 the ability of different trades to utilise different measures for the reduction of fuel consumption;

.2 the value of having a parallel process between industry and government efforts on further development of best practices and the value of these processes coalescing at a suitable time in the future; and

.3 the recognition of mutual exclusivity and/or trade-offs inherent between some of the best practices identified.

6.16 The informal group also recommended that further action be taken to resolve the issues kept in brackets in the draft Guidance on best practices for fuel-efficient operation of ships, preferably at MEPC 58.

6.17 In conclusion, the group:

.1 approved the report of the informal group;

.2 agreed to the draft Guidance on best practices for fuel-efficient operation of ships, as shown in annex 10 to this report;

.3 agreed to the draft Guidance on limitation of leakage rates for refrigerant gases and coolants in ships, as shown in annex 11 to this report;

.4 endorsed the recommendations of the informal group shown in paragraphs 6.15 and 6.16 above; and

.5 agreed to forward the above-mentioned guidance to the Committee for its consideration.

6.18 In discussing the measures to reduce leakages of refrigerants and coolants on board ships recommended by the Netherlands (GHG-WG 1/6/1), the group considered that for new ships and/or new installations, such measures were mainly a design issue and felt it would be most appropriate for MEPC to refer this issue to the DE Sub-Committee. The draft Guidance on limitation of leakage rates for refrigerant gases and coolants in ships, as shown in annex 11 therefore concentrated on *existing* ships and/or installations.

6.19 Finally, the group encouraged delegations to make use of the opportunity to provide input to the Intersessional Correspondence Group on GHG Emissions from Ships, which would prepare detailed proposals on the measures identified in the Correspondence Group report (MEPC 57/4/5; MEPC 57/4/5/Add.1), that had not been identified for further consideration by the GHG Working Group at this session prior to its reporting deadline of 31 August 2008[1] (MEPC 57/21, paragraph 4.117.4.1).

7 LEVEL OF REDUCTION AND OTHER GHG MATTERS

7.1 The group recalled that MEPC 57 had instructed the intersessional meeting to consider, in appropriate detail, the level of reductions that can be achieved, address the design, implementation, cost-benefit and regulatory/legal aspects as well as the impacts for the shipping industry, the flag and port States and other stakeholders as appropriate, associated with each of the control options under consideration.

7.2 The group noted document GHG-WG 1/INF.2 (Germany) presenting the results of the first commercial application of the "SkySails" system (auxiliary propulsion system assisted by towing kite) which indicate positive effect on the fuel consumption.

7.3 The Chairman opened the floor for comments and reiterated that capacity building was one of the matters that needed further consideration and work.

7.4 Following several interventions and a brief exchange of views the group noted the following:

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.1 the level of reduction could be more accurately assessed when the different options are developed further and will require a baseline or baselines. In considering the level of reduction the outcome of the update of the 2000 IMO GHG Study should be taken into account;

.2 capacity building is a pre-requisite for any new instrument in accordance with resolution A.998(25) and is also needed for any GHG emission reduction measures;

.3 the establishment of an ETS would also result in emission reduction outside the shipping sector as it would allow the shipping industry to reduce its climate impact by purchasing emission allowances also from other sectors;

.4 a number of delegations are advocating an ambitious total cap for international shipping and some advocated that this cap should be set by UNFCCC; and

.5 most delegations favoured a goal-based approach.

7.5 The Chairman concluded that IMO needs, through its outreach programme, to inform the public about the efficiency of shipping in relation to other transport modes, the level of reduction targets when established, and should address the issue of reduction of GHG emissions in a step approach, with short, medium and longer-term reductions targets.

7.6 Further, the issue of capacity building is of utmost importance and should be fully addressed taking into account the instructions of the Assembly stated in resolution A.998(25) and any previous resolutions on the subject.

Appreciations to the host Government

7.7 The group unanimously expressed profound appreciation and wholehearted thanks to the Government of Norway for its invitation to host the intersessional meeting in Oslo, providing an excellent meeting venue and for assisting in organizing the meeting and facilitating the work of the group in an expedient and professional manner. The group also thanked Det Norske Veritas and the Norwegian Shipowners Association for hosting a reception followed by a cruise on the Oslofjord to celebrate the Norwegian midsummer.

8 ACTION REQUESTED OF THE COMMITTEE

8.1 The Committee is invited to approve the report in general and in particular to:

.1 note the debate on development of a mandatory CO_2 design index for new ships (paragraphs 2.1 – 2.26);

.2 consider the draft guidelines on the method of calculation of the CO_2 design index for new ships including the draft formula (paragraph 2.23 and annex 5);

.3 note that the group agreed that the formula would need some fine tuning and encouraged Member States and observers to undertake tests and trials and submit the results to the Committee (paragraph 2.23 and annex 5);

.4 consider the draft regulatory text for a mandatory CO_2 design index for new ships developed by the group (paragraph 2.24 and annex 6);

.5 note the work on review of the existing CO_2 operational index guidelines (MEPC/Circ.471) (paragraphs 3.1 to 3.10);

.6 note the recommendation by the group that the operational CO_2 index should not be mandatory, but recommendatory in nature, but that this does not mean it could not be made mandatory in the future (paragraph 3.10);

.7 note that the group collated all proposed amendments to the CO_2 operational index guidelines contained in MEPC/Circ.471 (subparagraphs 3.10.5 and 3.10.6 and annex 7);

.8 note that three baselines were under consideration by the group:

.1 the over-all baseline for total ship CO_2 emissions for a given year as called for by resolution A.963(23) to illustrate the total emission trends;

.2 baselines for individual ship types and sizes for assigning of the design index for new ships. A baseline that would illustrate the efficiency improvement between comparable ship designs built at a given time, e.g., between 1995 and 2004 and the ship in question at the design stage; and

.3 the ship specific baseline for the operational index to illustrate the operational improvements between a baseline period and the time of the indexing (paragraph 4.4);

.9 note that the group:

.1 agreed that efficiency baselines for individual ship types and sizes may be useful to manage and illustrate efficiency improvements;

.2 agreed that the methodology described in document GHG-WG 1/4 could be used for further discussion; and

.3 agreed that a mandatory reporting system was not the most feasible way to develop the baseline methodology at this stage but could alternatively be done by assessment (top-down) and agreed to advise MEPC 58 accordingly (paragraphs 4.1 to 4.20);

.10 note the exchange of views on economic instruments and that the group was not in a position to further develop the proposed market based mechanisms (paragraphs 5.1 to 5.36);

.11 note the work undertaken to further develop guidance on best practices for fuel-efficient ship operation and that the group developed:

.1 draft Guidance on best practices for fuel-efficient operation of ships (paragraph 6.14 and annex 10); and

.2 draft Guidance on limitation of leakage rates for refrigerant gases and coolants in ships (paragraph 6.14 and annex 11);

.12 note that the group recommended that further attention should be given to (paragraph 6.15):

.1 the ability of different trades to utilize different measures for the reduction of fuel consumption;

.2 the value of having a parallel process between industry and government efforts on further development of best practices and the value of these processes coalescing at a suitable time in the future; and

.3 the recognition of mutual exclusivity and/or trade-offs inherent between some of the best practices identified;

.13 note the exchange of views under agenda item 7 – Level of reduction and other GHG matters (paragraphs 7.1 to 7.6); and

.14 take action as appropriate.

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ANNEX 1

SPEECH BY MRS. SYLVIA BRUSTAD, THE NORWEGIAN MINISTER OF TRADE AND INDUSTRY

Secretary-General, Ladies and Gentlemen,

Welcome to Oslo!

It is an honour and a pleasure to address you at the first meeting of the Intersessional Working Group on Green House Gases here in Oslo. I am glad to see that there are many Member States, industry organizations and NGOs attending this important meeting.

The Norwegian Government has singled out the maritime industries as one of five priority areas. The Government launched a national maritime strategy last fall. Environment is one of the main pillars in the strategy.

I am therefore pleased that the IMO's intersessional meeting on greenhouse gases is taking place here in Oslo. We need to address environment, we need to discuss possible solutions, and we need to achieve climate reductions for the maritime sector. These objectives are in line with our maritime strategy. IMO is very important for Norway. Why?

Much of Norway's identity is connected to the ocean. The maritime sector, the fishing sector and the oil and gas sector are the main industries in Norway. Even the name of the country is connected to the sea. Norway is a derivation of Nor Veg, or the North way. IMO's values – safety – quality– environmentally-friendly solutions – are also Norway's core values.

Shipping is an international sector, therefore challenges in this sector require international solutions. Global challenges need global solutions. A harmonized regime will always be more powerful than fragmented regimes. Norway is a firm believer in international solutions.

The International Maritime Organization has therefore a key role to play. It has the knowledge and the skills to find solutions.

Economic globalization has changed the world's economic order. We now face new opportunities and new challenges. We often hear that the world is becoming smaller. However, perhaps the most striking observation is how fast the world economy is growing bigger.

Shipping is a key component of globalization. If we look around the room, almost everything we see has relied upon shipping in one way or another. Raw materials, component parts, finished goods, fuel, and food ingredients. It is all transported around the world in ships.

As global trade grows, so does transport by sea. More traffic on the seas means more risk of accidents and more emissions from ships. It is therefore important that we together strengthen the international regimes of shipping.

However, today there are few incentives for the shipping industry to choose environmentally-friendly solutions that exceed the minimum standards laid down in international regulations. And when it comes to green house gases, we do not even have a minimum standard for shipping. That is why we are here today! We need to think together – we need to find solutions together!

The environmental impact of shipping gives the maritime industry new challenges and opportunities. Innovation and environmental challenges are closely linked. Approaching globalization within a sustainable framework will enable us to take better care of our planet. It will open up for new business opportunities and innovative solutions. Those companies that can offer green solutions will succeed.

Innovation requires interaction. The innovative ability of the maritime industry is influenced to a high degree by the willingness of enterprises to prioritize. As demanding customers, shipping companies can – and should – exert pressure for innovation throughout the value chain.

The Ballast Water Convention is an example of how IMO regulations have stimulated to new industrial ventures.

Another example linked to environmental improvement is: The Norwegian classification company, Det Norske Veritas, together with several other companies, are developing fuel cell technology. This technology implies zero emissions of NOx and 50% lower emission CO_2, as well as a 50% cut in fuel cost.

As you all know, in April, the Marine Environment Protection Committee (MEPC) approved the proposed amendments to the MARPOL Annex VI regulations to reduce harmful air pollution from shipping. In Norway, the agreement reached has been labelled as "historical" and a milestone after years of hard work on this issue. IMO proved that it is capable to develop future sound regulations.

We are now eager to achieve similar progress and results related to reduction of greenhouse gas emissions. Less than 5% of the total green house gas emissions originate from shipping. Although this is a small proportion of total emissions, the shipping industry has to play its part in reducing CO_2 emissions. Norway supports the work to explore alternative approaches. IMO has been tasked to find ways to limit emission of green house gases from ships.

Many ideas and solutions will be discussed this week. My message may be simple, but I believe it is important: viable solutions must apply globally and equally to all ships regardless of flag or register.

IMO is no more than the Member countries put into it. I know that you all will work hard this week to explore different solutions. The Government of Norway sees this meeting as an important step towards green house gas solutions for shipping. I will also use this opportunity to thank the IMO staff for their good work to make this meeting possible. It is raining outside, but today the sun rose at 3:54 am and the sunset will be at 10:44 pm. It is the brightest day of the year and Norway as many other countries celebrate midsummer today. You will be invited to take part in a celebration tonight. I wish to thank in advance Det Norske Veritas and The Norwegian Shipowner Assocation who are hosting what we call the St Hans celebration tonight.

I wish you all the best of luck in your deliberations and an enjoyable stay in Oslo. The Norwegian Government has set ambitious goals for our climate policy. Mr. Solheim, the Minister of the Environment and International Development, will explore this further in a few minutes.

Let me close by saying that the reduction of greenhouse gases represent many challenges. Let us also remember that it represent great opportunities for the industry!

Thank you for your attention!

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ANNEX 2

SPEECH BY MR. ERIK SOLHEIM, THE NORWEGIAN MINISTER OF ENVIRONMENT AND INTERNATIONAL DEVELOPMENT

Secretary-General, dear delegates,

- Welcome to Oslo. I am pleased that so many delegates have come to Oslo to participate in developing the response of the International Maritime Organization to the problem of climate change.

At present that response can be compared to a ship which has left the port without knowing the destination. But with a good captain like your Chairman, and a skilled crew like yourself, the IMO climate-change ship named "Consensus" will arrive safely at the port called "sustainable future". I am confident that the ship will not drift and end its voyage with grounding and total loss.

The importance of Climate Change

- It is no doubt that Climate Change is one of the dominating issues of the global community. It is dominating in science. It is becoming more and more dominating in technology development. It is a dominating issue in public debates and media reports. Clearly, it is high on the international political agenda.

- Why?

- Being aware of the dramatic consequences of climate change, how it can affect individuals, communities and the global environment. Being aware of the causes for climate change, how closely it is linked to the way global economy is structured. Being aware of the clear change in direction we need to take in order to respond effectively to Climate Change. Being aware of the variety and magnitude of changes which will strike us if we do not respond effectively; it is no wonder that Climate Change is a dominating issue.

- Whether it is in Asia, Africa or in Europe the effects of climate change will hit hard if we do not respond effectively and rapidly. Whether it is droughts, floods or storms, a change in weather systems will affect all regions.

- From Oslo, Norway stretches far to the North and into the Arctic. Therefore, we closely monitor the climate change in this region. The Arctic has a unique nature, plant and animal life. The ice is what gives the region its special character.

- The Arctic Climate Impact Assessment set out the basic facts about climate change in the Artic. The main conclusion of the report was that the temperature in the Artic increases twice as fast as the global average.

- Is it really so important to have large areas in the Arctic covered with ice and snow? Yes, clearly for the ecosystem in that region, but also in the global context. The large snow areas reflect most of the incoming sunlight. With less snow and ice areas the surface will

thus absorb more of the incoming sun energy. Therefore, especially in the Arctic the climate change is a reinforcing process. Global warming results in further global warming.

"Copenhagen 2009" – UNFCCC – COP 15

- The Intergovernmental Panel on Climate Change, IPCC, works hard to present the scientific background for Climate Change. The assessment reports of the Panel should be a key element in our international response to the problem.

- Clearly, the 15th meeting of the Conference of the Parties to the Framework Convention on Climate Change (UNFCCC) in Copenhagen 2009 will be crucial in order to establish the overall international response to Climate Change. I know that Denmark as a host, and all governments, are working hard to secure a good outcome of that meeting.

- It is important that the IMO secretariat continues to participate in the process under the Convention on Climate Change and informs on IMO activities. It is important that the Convention on Climate Change – and the IMO processes are coordinated and mutually supportive. I am confident that progress will not be disturbed by unclear roles and mandates.

IMO response to environmental problems

- Scientific information has always been upfront when IMO has responded to environmental problems, and I am sure that the co-operation in the United Nations system will take care of the regular update of IMO delegates on the climate change problem.

- I am pleased with your own scientific initiatives through the ongoing update of the IMO scientific Greenhouse Gas Emissions Study. Norway has proposed for the Intergovernmental Panel on Climate Change to produce a Special Report on Shipping and Climate Change. The IMO Study will provide valuable input to such a report.

- Throughout its history, IMO has demonstrated more and more effective responses to international needs for safe and secure shipping in a clean environment. The long list of IMO achievements on enhanced environmental protection the last decade makes the Organization a vital United Nations Agency.

- Such achievements have been possible because of the input from all stakeholders including the maritime community, and because of the well known IMO spirit of co-operation. But also because of the well-established IMO principles and well-structured proceedings and method of work. And last but not least, I have to compliment the excellent work of the IMO Secretariat as a key element for your achievements.

- Dear delegates, obviously emissions of greenhouse gases are your focus at this moment. However, it is good reason to be inspired by previous IMO achievements.

- One example is how the IMO updated the regulatory framework for transportation of chemicals on ships. With a strong will to establish good compromises, new and ambitious requirements were adopted in a complex regulatory framework.

- Another tremendous example which could inspire you is the historical approval of the new air pollution requirements which your Committee agreed by consensus in April. In both these examples, only one element was not compromised: that was to secure the needed environmental effect of the requirements. The solutions agreed provided the needed response to the environmental challenge.

- With the expected adoption of the new Convention on Safe and Environmentally Sound Ship Recycling in May 2009, the IMO will have an almost full set of regulatory requirements on the environmental challenges related to shipping. The issue which is lacking is a mandatory regime responding to climate change.

- I am therefore pleased that the IMO's response to climate change is a high priority item on your work programme. I would also like to compliment you Mr. Secretary-General for your initiative to speed up the process. The agreement to hold this meeting clearly demonstrates that the IMO Member States appreciate such leadership.

Specific issues regarding this meeting

- What are my expectations for the IMO process?
  First, it is no secret that it is the view of Norway that a mandatory regime to reduce greenhouse gas emissions from ships should be established. And may I add that it is urgent. IMO's well-established role as a global regulator for shipping makes IMO an appropriate Organization to develop and agree upon such a regime. I am also confident that requirements regarding greenhouse gas emissions, which we manage to develop under the auspices of the IMO, will take full benefit of the IMO principles.

- What should be the content of the regime?
  Well, it is not my task to explain to you what that should be. I hope that in the end of the day you will explain to me, and that you all give the same explanation. What I do hope is that the solutions to be agreed upon will imply real and measurable emission reductions. The IMO response should imply a clear change in direction.

- The terms of reference for this meeting provide for the needed discussions in order to progress on possible solutions. The traditional IMO approach with a focus on technical and operational requirements is on your agenda.

- In my contact with the maritime industry, I get information on various measures taken by shipowners to cut emissions. It may be the use of gas-powered engines, hull maintenance, fleet and voyage planning, speed reductions and other measures. Their innovative ideas on possible solutions combined with their positive approach, is very encouraging. Significantly more energy efficient design and operation can be triggered through a proper regulatory regime.

- It is very positive that market-based mechanisms are on your agenda. Such mechanisms are already in place in some States and regions in order to reduce GHG emissions. It is likely that the use of mechanisms such as those established under the Kyoto Protocol will escalate in the coming years. Several interesting proposals are submitted to this session, and I have good hopes for your work on these mechanisms.

- Finally, I am aware that you also will consider the level of reduction that can be achieved. That is the core of the issue. Less amounts of greenhouse gases should be emitted.

- All technical and operational reduction options should be identified. And I know that soon you will receive the updated information on this from the IMO Greenhouse Gas Emissions Study. Such numbers vary, but to illustrate the magnitude, reports communicated to my Ministry estimate the potential to be 30-50% reductions on existing vessels, and 50-70% reductions on new vessels.

Final comment

- There is no single solution on how to tackle climate change. It is a large menu, and international shipping is on that menu. Each industry, each shipowner, each ship, each individual, may characterize itself as a minor contributor to the problem of climate change. However, it is the actions of the many "minor" which are needed to deliver the major response.

- For the IMO it is no longer a question of whether or not to respond to climate change, it is a question of how and when. I wish you good luck on your important task and I hope you will have a productive meeting.

Thank you.

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ANNEX 3

(As delivered)

ADDRESS OF THE SECRETARY-GENERAL AT THE OPENING OF THE FIRST INTERSESSIONAL MEETING OF THE WORKING GROUP ON GREENHOUSE GAS EMISSIONS FROM SHIPS

(Oslo, Norway, 23 to 27 June 2008)

Honourable Ministers, Mr. Chairman, distinguished delegates and observers, media representatives, ladies and gentlemen,

It is a pleasure for me also to welcome you all to this first Intersessional Meeting of the MEPC Working Group on Greenhouse Gas Emissions from Ships, here in Oslo, a great maritime capital, the roots of which date back to the time when the Vikings ruled the seas of the known world. I would, first of all, wish to thank the Norwegian Minister for Trade and Industry, Mrs. Sylvia Brustad, for her warm welcome and kind words in praising IMO's work, and the Minister of the Environment and International Development, Mr. Erik Solheim, for his encouragement on the challenging work before us this week and his generous depicting of the Organization's achievements.

Today, a substantial part of the world's merchant fleet is still managed from this city, despite the fact that geographically Oslo lies closer to the North Pole than to most of the world's markets. In fact, I am told that only one in ten of all the ships flying the Norwegian flag has ever sailed in Norwegian waters or called in a Norwegian port, a fact that clearly illustrates the true character of Norwegian shipping that thrives beyond national boundaries and, at the same time, the global nature of international shipping. For the last century or more, Norway has risen to becoming one of the major carriers of world trade – and, as a flag, port and coastal State, is one of the most active and influential IMO Member State, as well as being a generous supporter of the Organization's technical co-operation programme.

However, before I proceed any further with my speech, I wish to express my grief and anguish at the loss of so many lives through Saturday's ferry accident in the Philippines. Whatever the reason, or reasons, and without risking any speculation as to the cause of the accident, it is hard to be reconciled with the idea that, notwithstanding IMO's great strides to enhance safety in ferry operations and the efforts of Governments and industry to comply with IMO's measures, adjusting them, as appropriate, to domestic trades, accidents of that magnitude still occur – especially in our days, when science, including accurate meteorological forecasts, provides sound advice to ensure the planning and execution of safe passages. I am sure that the Government of the Philippines, which shows a great sensitivity on matters pertaining to the safety of seafarers and passengers at sea, will act promptly to investigate the accident and identify its causes; and, then, submit to IMO any findings that might help us learn any lessons that come to light in the course of its investigation, for the benefit of international shipping. In the meantime, our thoughts and prayers are with the families and friends of those who perished in the tragic accident.

* * *

The last time I visited Oslo was in November 2006, when I spoke at an equally crucial IMO intersessional meeting, also hosted by the Government of Norway, concerning the control of exhaust emissions from ships and, later, had meetings with Ministers and representatives of the maritime industry, as I will do later today. At that meeting, the work on the revision of MARPOL Annex VI on Prevention of air pollution from ships and its closely related NOx Technical Code was given vital impetus and the momentum was maintained until MEPC 57 approved, less than two months ago, the resulting proposed amendments by consensus, for adoption at the Committee's next session in October.

The successful outcome of the revision of MARPOL Annex VI was a remarkable achievement, given the complexity of the issues involved and the controversy surrounding the very diverse sets of possible options presented to the Committee. The approved amendments represent the last significant step towards the formal revision of existing global standards, which will significantly enhance the protection of the marine and atmospheric environment, having thoroughly addressed all the foreseeable risks to human health and the environment, as well as the possible repercussions to the shipping and petroleum industries, that each of the original options would have entailed. What pleases me immensely, in the context of the agreed provisions, is that, by no means, do they represent the lowest common denominator – rather, they represent the highest practicable standards that could be attained in the circumstances; standards that, once in force, will impose the strictest emission limits, while enabling shipping to continue serving, efficiently and effectively, world trade and sustainable development.

Through the April decisions of the MEPC, a clear message has, again, been sent to the entire world that we, at IMO and the shipping community, as a whole, are responding to current and emerging environmental challenges with a due sense of its seriousness, proactively and decisively, motivated by our own green agenda, our genuine and ever-present aspiration to serve the best interests of the marine and atmospheric environment and our own duty of care for the planet we inhabit and the seas and oceans that sustain us – a planet we are only temporarily borrowing from our children and their descendants. The exceptional spirit of co-operation and flexibilty, so patently displayed by all Member States and observer delegations during MEPC 57, should be widely acknowledged and greatly appreciated by all. It demonstrated, beyond any doubt, that IMO is capable of taking important and difficult decisions to protect the environment and human health in a thorough and timely manner. I am confident that the same spirit will prevail throughout this week's deliberations and beyond, thus enabling us to address effectively the intricate and complex issues surrounding our efforts to regulate the emission of greenhouse gases from ships.

Ministers, distinguished delegates,

Although I am, this morning, addressing an audience well-versed in the realities of today's maritime world, I will not mind repeating on this occasion that, in the context of **sustainable development**, shipping is a very positive force, as it makes a massive contribution to global prosperity with minimum adverse impact on the global environment. Notwithstanding its excellent environmental credentials – largely the product, I should add, of internationally-agreed standards developed through IMO and technological developments introduced voluntarily by the industry – shipping and its regulators are actively and diligently engaged in efforts to reduce its environmental impact even further, in response to our own and growing worldwide concern about the sustainability of our planet and of the quality of life that we all seek for ourselves, our children and grandchildren and which some of us are fortunate enough to enjoy.

Distinguished delegates,

There is no denying that, today, **climate change** and **acidification of the world's oceans** caused by emissions from the burning of fossil fuels are matters that are uppermost in the thoughts of the leaders of most countries and of civil society at large (according to the United Nations Secretary-General "climate change is the defining challenge of our generation" and for him it represents the No.1 priority). The threat is far too serious to be neglected and the shipping industry, although **the most environmentally friendly and fuel efficient of all modes of transport**, must join, to the extent feasible and necessary, in the efforts already being made by other, mainly land-based, industry sectors.

Although, at present, no mandatory IMO instrument covers the emission of greenhouse gases from ships, the Organization has been deliberating on the matter and considering possible solutions at each and every session of our Marine Environment Protection Committee for some considerable time. And, because of its steadfast determination to address the issue effectively and from a universal perspective, the Organization stands poised to develop and deliver, in accordance with a work plan and timetable agreed unanimously by its Members, realistic, pragmatic and well-balanced solutions aimed at contributing substantively to worldwide efforts to address the phenomena of climate change and global warming.

To that end, as most of you will know, at its last session in March/April, the Committee decided to proceed along certain **fundamental principles for a coherent and comprehensive future IMO regulatory framework** as its reference for further debate. This was the culmination of considerable and in-depth discussions within the Committee, where centre stage was often taken by a recurrent debate on whether any GHG emission reductions agreed in IMO should **apply exclusively to countries listed in Annex 1 to the Kyoto Protocol** or whether their application should **extend to all ships, no matter what flag they fly**.

In my view, if reductions in CO_2 emissions from ships are to **benefit the environment as a whole**, they must apply globally to all ships in the world fleet, regardless of their flag. To help you understand my view, I will ask the following simple question: why should two ships of the same tonnage and horse power, carrying the same quantity of cargo, loaded in the same port, sailing at the same speed and having the same destination, be treated differently because they are registered under two different flags? They might even be sister ships, built by the same yard and operated by the same company but one flying the flag of a non-Annex 1 country and, the other, that of an Annex 1 country; they would each be releasing the same amount of greenhouse gases, wherever they might sail to. If mandatory reduction measures are applied only to ships flagged in Annex 1 countries, which in today's shipping reality represent a mere 25% of the world's merchant fleet, the net benefit for the global environment would be minimal and that, clearly, should not be an objective that an Organization such as ours, with its excellent record on environmental protection and, more importantly, its **global mandate and responsibility**, could possibly espouse.

If the suggestion is made that the "IMO measures" should not be extended to countries not on the list of Annex 1 to the Kyoto Protocol – in other words, that their application should be left for industrialized countries only – then, one might not ask how the developing countries will benefit from such discrimination, but would, however, feel tempted to ask how will developing countries benefit from such a measure not applying to ships flying the flag of non-listed developing countries visiting their ports or sailing along their coasts, such ships constituting, in today's shipping reality, more than 75% of the world fleet?

And what service will we be rending to the cause of reducing GHG emissions to halt climate change if, in case we legislate in a fragmented manner leaving out developing countries' shipping, we see a massive exodus of ships from the registries of industrialized countries for the want of the owners of such ships to avoid complying with whatever measures we decide in order to add shipping's contribution to reduce/limit GHG emissions?

In the circumstances, it might be wiser to concentrate our attention and direct our resources, at present, towards discussing and identifying the most effective measures to achieve our objective, leaving their application and possible phase-in timetable for elaboration once the technical measures have been agreed.

The divergence of opinion on this crucial issue is not, in my view, unbridgeable and, if the willingness to serve the environment is there, we can find the solution, designing measures that can be phased-in in a manner that will ensure that the interests and capabilities of developing countries are properly taken into account. It is there and then that I could see a "**common but differentiated approach"** being applied.

We should, therefore, come up with a regime that will contribute positively, fairly and visibly to the endeavours of the international community as a whole to combat climate change; a regime, where international shipping in its entirety, not a small fraction thereof, engages comprehensively in efforts to regulate effectively greenhouse gas emissions.

In the Organization's sixty years' history, the guiding principle has always been that, in order to avoid unfair competition, a **level playing field** should be created for all ships irrespective of their flag and this has been sought by ensuring that all IMO instruments impose the same requirements and obligations equally to all flag States. This is one of the reasons why the IMO Conventions, from the most to the least significant, have been so widely ratified and are being implemented by countries that represent the overwhelming majority of the world's tonnage of merchant shipping. There is **no precedence** in any of the nearly 50 IMO treaty instruments currently in existence where measures are applied **selectively to ships according to their flag**.

These considerations will, of course, be debated at length in October by the MEPC, the proper forum where **issues of policy**, and the fundamental principles under which a future IMO regime, to reduce and control greenhouse gas emissions from ships, will continue to be elaborated until agreement is reached. Your task here in Oslo should, instead, be to embark, with vigour and convincing argumentation, on the development phase of the issue from its technical point of view. To this end, you should progress the **CO_2 design index for new ships**; improve the **interim operational CO_2 index**; and consider **how these indexes should be applied in the future**. You are also expected to further develop a range of mechanisms with promising reduction potentials, as well as best practices on the range of measures, which were identified by the Committee at its last session. The level of reduction that can be achieved through these measures, and matters related to their implementation, together with consideration of their regulatory and legal aspects, are among the aspects of the issue on which the MEPC expects advice from you. The outcome of this intersessional meeting will, therefore, be of great value to your parent body to enable it to make balanced decisions on a global issue of global dimensions, which has, unsurprisingly, generated global interest as well.

In doing so, the Organization and the maritime community at large should act in concert with, and contribute to, the wider international efforts aimed at swift and substantive action to combat climate change – which, in the context of the UNFCCC and, as agreed by **last year's Bali Conference**, entail the development and adoption of a new global treaty to be negotiated at **next year's Conference of Parties in Copenhagen**. The same call to concerted action was expressed, only last Monday, by the Secretary-General of the United Nations, Mr. Ban Ki-moon, when addressing the Organization as it celebrated a number of milestone anniversaries falling this year. He said, and I quote: "I am personally doing all that I can to galvanize global action on climate change. All of us have a stake in this - individuals, Governments and industries. The IMO has carried out laudable work to deal with pollution and reduce greenhouse gas emissions from ships . . . In order to respond to what the world's scientists have told us, we must step up our efforts to respond to calls to further reduce air pollution and tackle greenhouse gas emissions. We need strong policies and, at the same time, it is essential to help developing countries implement such measures. I have confidence that the IMO will play its part in this global campaign to address the problem of climate change."

Therefore, to ensure that IMO can, and does, contribute effectively and in the appropriate manner to the resolution of the **defining challenge** that climate change presents us with, the new treaty, which is intended to succeed the Kyoto Protocol after the first commitment period ends in 2011, should recognize IMO as the sole intergovernmental body responsible for regulating greenhouse gas emissions from ships engaged in international trade, with the UNFCCC playing its role as a framework convention, as has been the case with UNCLOS. The Kyoto Protocol has, wisely in my opinion, left the task of **limitation and reduction of GHG emissions from shipping to IMO to regulate** – and, from civil aviation, to ICAO; and I see no compelling reason why we should, in any way, depart from this arrangement. That is why I feel strongly that, at the Copenhagen Conference, we should **seek the same decision**. It would, again in my opinion, be unwise to allow shipping to be treated as an industry belonging to the same league as industries of domestic spread and application. If this were to happen, we run the risk of losing control of the situation – and this would end up with rendering a disservice not only to the industry but to the environment as well. However, in seeking to maintain control of the situation, as we should, we should also be clear about two things:

- one, that we go about achieving this objective fully conscious of the responsibility we should be determined to continue shouldering; and

- two, that our firm position not to lose control derives from our equally firm determination **to do more, not less**, about the environment – and that we successfully convey this message to all concerned: here in Oslo today, at MEPC 58 tomorrow, in Copenhagen the day after tomorrow.

And while focusing on the technical aspects of the issue and how best to respond to them, we should ensure that the complex challenges associated with the limitation, control and reduction of greenhouse gas emissions from international shipping are properly understood by the international community – and that, to succeed in this, we must show leadership, not only by moving in parallel with, but also by foreshadowing developments within, the agreed UNFCCC process, and taking early action as appropriate.

An instrumental step in the process of forging ahead in IMO's respective endeavours is the **update of the 2000 Greenhouse Gas Emissions Study** – an exercise, which is currently underway by an international consortium of research institutions, thanks to financial contributions generously provided by a number of Member States and international organizations. The findings of the updating exercise will provide the Committee with the factual and objective information it needs to make well-informed, sound, workable and balanced decisions. We expect that a report on Phase 1 of the update will be submitted to MEPC 58 for consideration. In the meantime, and since scientists engaged in the update are attending this meeting, I think it would be useful if they gave you a presentation of the progress made thus far. I am hopeful that the preliminary information they may be able to provide will be of help to you, although no conclusions should be drawn at this stage until the updated study is submitted to the Committee as a whole in due course.

Distinguished delegates,

Of all the items on your terms of reference, I have highlighted just a few, but I acknowledge that you have not only a heavy workload to deal with this week but also several crucially important issues to address in your task to assist the MEPC to make the right decisions for the benefit of the environment – first and foremost. Very rarely in the past has an intersessional meeting generated such great interest – here and in almost all capital cities around the world and within international organizations, including the United Nations. Your task will not be easy at times; the stakes are high and the expectations even higher – failure is not, therefore, an option. I am confident that, with IMO's renowned spirit of co-operation and under the able leadership of your Chairman, Mr. Chrysostomou of Cyprus (the Chairman of the MEPC – and this underlines the importance and significance of this meeting), you will rise to the challenge, respond to the expectations and, thus, serve well the worthy cause of protecting and preserving the marine and atmospheric environment against the harm caused by increased levels of greenhouse gas emissions.

As I have seen for myself this morning, our hosts are making available to us excellent facilities and services in a splendid setting and I reiterate my thanks to the Norwegian Government for their hospitality and generosity. The stage has, therefore, been set and it is now up to you, distinguished delegates, to play the very important role that the Committee has entrusted you to perform.

I wish you every success and good luck in your deliberations and look forward to a productive meeting.

Thank you.

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ANNEX 4

GENERAL STATEMENTS GIVEN DURING OPENING SESSION

STATEMENT BY BRAZIL

Thank you, Mr. Chairman,

Firstly, this delegation would like to thank the host Government for the hospitality, the excellent facilities provided and for the opportunity to progress work on such an important matter in such a pleasant environment.

Secondly, this delegation would like to express its awareness to the fact that this meeting is scheduled to discuss technical aspects of this matter. However, as these aspects are based on political decisions still under negotiation, Brazil would like to take this opportunity to make the following considerations, in line with the view expressed by the distinguished delegation of China:

1 This delegation believes that IMO should play a constructive role in the mitigation of climate change by facilitating national actions for mitigating greenhouse gas emissions. IMO activities should be guided by the recognition that the UNFCCC and the Kyoto Protocol remain the appropriate fora for general decisions on internationally-binding, global actions for reducing emissions in all sectors, including international maritime transport. And here, I stress the co-operation that should exist between IMO and the UNFCCC.

2 Negotiations are currently under way within the *Ad Hoc* Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP) on the analysis of the means that may be available to Annex I Parties to reach their emission reduction targets and on ways to enhance their effectiveness and their contribution to sustainable development.

3 Furthermore, the Subsidiary Body for Scientific and Technological Advice (SBSTA) of UNFCCC, in its twenty-eighth session, recognizing the need to continue the co-operation and the exchange of information between ICAO, IMO and the UNFCCC, agreed to continue to receive information from ICAO and IMO on relevant work on this issue in order to enable Parties to exchange views on this information during its next three sessions. The SBSTA agreed to further consider issues relevant to this agenda item at its thirty-second session. This channel can play a constructive role in addressing issues related to greenhouse gas emissions from international maritime transport under UNFCCC.

4 Therefore, any actions supported by IMO should take into account the discussions and decisions in those fora, in particular, the negotiations on the Second Commitment Period of the Kyoto Protocol and on the Bali Action Plan, while also adequately harmonizing the technical-legal requirements of the international maritime regime and those of the climate change regime, **especially the provisions on common but differentiated responsibilities and respective capabilities**. In Brazil`s view, the argument that some developing countries have a greater number of ships flying its flags than those of developed countries is a specific situation of this Organization and should not be seen as an argument or justification to apply binding rules to all flag States.

5 It is paramount that IMO`s assistance in national actions for reducing GHG emissions from international transport should not conflict with the current multilateral framework on climate change and should recognize the particular circumstances of developing countries. Developing countries' actions must be supported by developed countries by means of adequate financial resources and technology transfer in favourable conditions.

6 In summary, the opportunity given this week for all delegates to work on the technical aspects under each agenda item, as instructed by MEPC 57, should be wisely used and a positive outcome be forwarded to MEPC 58 and the UNFCCC/Kyoto Protocol in order to maintain the required coordination and co-operation between the two fora.

7 This delegation would appreciate it if this statement is recorded in the final report of this working group.

Thank you.

STATEMENT BY CHINA

Mr. Chairman,

The Chinese delegation is happy to see this session gets underway under your leadership, as we are looking forward to have a very productive meeting here in Oslo.

We wish to thank our host and the Secretariat for the efficient preparatory work. With your permission, the Chinese delegation wishes to make a brief statement of a general nature.

Climate change is the most significant challenge faced by the international community today. China is happy to see that the international maritime organization, as a broad-based international intergovernmental organization, has given this issue its due importance, and has worked actively in this regard.

The Chinese Government welcomes and supports this Organization to play a pro-active role in addressing the issue of GHG emissions from ships, within its mandate and as requested by the Kyoto Protocol. I wish to assure you, Mr. Chairman, that China is fully prepared to work with all parties concerned to address the issue and to contribute to the global effort to respond to climate change.

China understands and respects the special nature of the international shipping sector, as well as the current provisions governing IMO's work. On this basis, we have participated actively in IMO's work on the technical and methodological issues related to the reduction of emissions from ships. We will continue to do so. But in this connection, Mr. Chairman, my delegation finds it imperative to reiterate and emphasize the following points:

First, the principles of "common but differentiated responsibilities" and "respective capabilities" must not be misinterpreted simply as UNFCCC principles with no relevance to other international organizations. Instead, these principles represent the fundamental consensus of the international community with regard to fighting climate change. All relevant international organizations, when making their own contributions, should give due respect to these principles, and the IMO is no exception. Without this very foundation, international co-operation will not be possible.

Secondly, the fight against climate change requires the broadest participation of all international organizations within their respective mandates and competence, with the United Nations' Framework Convention on Climate Change as the main platform for negotiations. In this connection, it is essential that coordination and consistency be maintained among the participating organizations. All efforts must be geared to ensure a successful conclusion of the Bali Roadmap and the establishment of a comprehensive post-2012 international regime on climate change by the end of next year in Copenhagen. We must avoid any action that may prove to be unhelpful to reaching this critical objective.

My third point is related to the work on climate change in this Organization. Mr. Chairman, due to complexities of the issue at hand, as well as the multitude of the factors involved, our work must be conducted in a spirit of co-operation. All views must be heard, respected, and thoroughly discussed, with a view to reaching mutual agreements. Any arbitrary approach to decision-making, which will prove to be counter-productive, and not conducive to maintaining the spirit of co-operation, either in this Organization, or in other processes, must be avoided. We must all recognize that if the spirit of co-operation is destroyed in one forum, negative repercussions are bound to occur in other parallel processes, thereby making the road to Copenhagen even more difficult. As Member countries of this Organization it is up to us and nobody else to make sure that this does not happen.

Mr. Chairman, the work ahead for this intersessional meeting is important and complex. The Chinese delegation will work actively and constructively with all parties in this process, so that together, we can contribute to reaching an agreement on GHG emissions from ships on the basis of full consultations.

Thank you, Mr. Chairman.

STATEMENT BY INDIA

Mr. Chairman,

At the outset may I on behalf of the Indian delegation congratulate you on assuming the chair of this important intersessional meeting of the working group on Greenhouse Gas (GHG) emissions from ships.

India appreciates the importance given by the International Maritime Organization (IMO) and the Secretary-General to the issues of identifying and developing the mechanism needed to achieve reduction of GHG from international shipping and supports their efforts at being part of the global effort aimed at addressing climate change.

We support the comments made by the delegation of China and Brazil.

We consider the methodological issue connected with the emission from fuel used for international shipping very important. We note with concern that the deliberation in the IMO on this issue has failed to take sufficient cognizance of the provision and principles of ***common but differentiated responsibilities.*** This principle is paramount in dealing with the issue of reduction of global GHG emissions. India supports meaningful progress on effective measures to reduce GHG emissions from ships; however, it should be based on the principle of ***common but differentiated responsibilities.*** We wish to remind this group of IMO resolution A.963(23) concerning IMO policies and practices related to the reduction of GHG from ships, wherein it has been mentioned that countries listed in Annex 1 to the UNFCCC to pursue the limitation or reduction of GHG emissions from bunker fuels and it should co-operate with the Conference of the Parties to the UNFCCC.

Article 2.2 of the Kyoto Protocol states that Annex 1 countries are required to work through the IMO to pursue limitations or reduction of emissions of GHG. As such any proposal with respect to technical, operational and market-based mechanism to address reduction of GHG emissions from international shipping should be in accordance with the provisions and principle of UNFCCC and the Kyoto Protocol.

With respect to global CO_2 levy on marine bunker as proposed in document GHG-WG1/5/4 under Agenda 5, i.e. Development of reduction mechanisms, including their implementation, we believe that a global levy on marine bunker will not only penalize the shipping, cargo and all related economic activity originating from and destined to developing countries. The global levy would also jeopardize the principle of ***common but differentiated responsibilities***.

As such we would urge far greater emphasis on research and development, at this stage, before we make mandatory GHG emission control from ships to non-Annex 1 countries.

Mr. Chairman, it is once again reiterated that the entire structure of UNFCCC and Kyoto Protocol is driven by a need to equitably address climate change. The common but differentiated responsibilities and respective capabilities enshrined in the principles and provision of the Kyoto Protocol is based on social and economic conditions and relevant factors of the developed and developing countries.

Further, India does not agree to any mandatory provision with CO_2 indexing at this stage. The principles of ***common but differentiated responsibilities*** is critical and has to be adopted in letter and spirit **before** any measure, including the mandating of CO_2 indexing is introduced or adopted."

India understands that international shipping; particularly issues of ownership and management are complex involving registration of ships and ownerships. This is why we should discuss and study all aspects of this proposal including the ramifications of our actions before we act. India would make a submission in this regard at MEPC 58.

In concluding, India would like to propose that IMO should confine itself to developing and determining a CO_2 baseline methodology and, thereafter refer the matter of bunker levy/hybrid scheme to the UNFCCC, as is evident from the conclusion of the Subsidiary Body on Scientific and Technical Advice (SBSTA) in their 28th session held at Bonn (4-13 June 2008) with regard to the submission made by the IMO informing the development and latest GHG considerations within the IMO including the framework, after the MEPC 57th session (31 March to 4 April 2008), wherein decision on the matter by SBSTA has been deferred till May 2010.

Thank you, Mr. Chairman.

STATEMENT BY SAUDI ARABIA

We listened with concern to the statement delivered this morning by the Secretary-General of the IMO, particularly due to the focus of the Secretary-General on selling a view advocated by some IMO Members to the other Members of the IMO. It would have been more incumbent upon the Secretary-General to maintain neutrality on this delicate and complex matter.

Saudi Arabia fully supports the views expressed by China, India, Brazil and South Africa. We will not repeat their statements. Both the K.P. and IMO Assembly resolution A.963(23), call for the IMO to pursue GHG emissions reduction from ships in co-operation with the UNFCCC and that, to us, targets Annex I Parties. Actions by the IMO should therefore proceed, taking into full consideration of the principles of the UNFCCC, particularly the principle of common but Differentiated Responsibilities and Respective Capabilities. We therefore caution against decision taken in haste, without due consideration to the adverse socio-economic impacts of these decisions on parties that are least capable or equipped of adapting to these decisions.

We also support the call for a thorough study of the options, taking into consideration the principle of common but differentiated responsibilities. Besides, flag is not the only way to determine the identity of a ship. There should not be different principles under which the IMO operates in its climate change effort from the larger umbrella of the UNFCCC. This would otherwise undermine the larger global efforts in this regard.

Thank you, Mr. Chairman.

STATEMENT BY SOUTH AFRICA

South Africa feels welcome in Oslo. We look forward to enjoying the hospitality of your country and its people. This is the best venue for this meeting because of your long maritime tradition. Mr. Chairman, we are meeting because our countries, who are Parties to the United Nations Framework Convention on Climate Change and its Kyoto Protocol, agreed on how a process

connected with Greenhouse Gas emissions from ships was to be tackled. The Framework recognizes that all of us have a role to play in GHG reductions. Article 2.2 of the Protocol identifies a lot of countries that must pursue limitation or reduction of GHG emissions, understanding the peculiarities of shipping.

As can be observed, this meeting is mainly made up of Annex I countries. The principle of "common but differentiated responsibilities and respective capabilities of countries" has to be respected throughout this process. The IMO has to analyse the principle of common but differentiated responsibilities and respective capabilities on how it could be internalized to inform further work by IMO on GHG emissions from ships. Efforts by the IMO should not contradict such noble provisions of the UNFCCC and the Kyoto Protocol. We, however, note the strong view of the Secretary-General as expressed this morning.

This intervention is a demonstration of my Government's commitment to the UNFCCC process. We believe that once we have clearly-developed measures, a process to apply the principle of common but differentiated responsibilities in keeping with peculiarities of the maritime industry will have to be undertaken before adoption. South Africa is of the opinion that developing countries represented here and outside will be concerned with any measures that will stifle the advancement of developing countries. Therefore, research on the negative impacts on developing countries needs to be done.

We look forward to working with this group and the MEPC on the identification of possible negative impacts on developing countries before any measure is considered for adoption or implementation.

Thank you, Mr. Chairman.

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ANNEX 5

DRAFT GUIDELINES ON THE METHOD OF CALCULATION OF THE NEW SHIP DESIGN CO_2 INDEX

The attained new ship design CO_2 index is a measure of ships CO_2 efficiency and is:

$$Attained\ new\ ship\ design\ CO_2\ index = \frac{\left(\prod_{j=1}^{M} f_j\right)\left(\sum_{i=1}^{NME} C_{FMEi}\ SFC_{MEi}\ P_{MEi}\right) + \left(\prod_{k=1}^{L} f_k\right)\left(\sum_{i=1}^{NAE} C_{FAEi}\ SFC_{AEi}\ P_{AEi}\right)}{Capacity \times\ \ V_{ref} \times f_W}$$

Where:

1 C_F is a non-dimensional conversion factor between fuel consumption measured in g and CO_2 emission also measured in g based on carbon content. The subscripts $_{MEi}$ and $_{AEi}$ refer to the main and auxiliary engine respectively.

Table-1
Conversion Factors for Fuels
(Table to be attached)

NOTE: MEPC/Circ.471 contains C_F for types of fuel. Document GHG-WG 1/3/1 contains proposals of amendments to the values described in MEPC/Circ.471. This proposal is under review in light of recent activities of UNFCCC/IPCC in this regard.

2 V_{ref} is the design ship speed, measured in nautical miles per hour (knot), on deep water in the maximum design load condition (*Capacity*) as defined in paragraph 3 at the output of the engine(s) (*P*) as defined in paragraph 5 and assuming the weather is calm with no wind and no waves.

3 *Capacity* is the design capacity of total payload of the ship and should be as follows:

.1 For dry cargo carriers, tankers, and general cargo ships, deadweight should be used as *Capacity*.

.2 For gas carriers, the total volume of cargo tanks measured in cubic metres should be used as *Capacity*.

.3 For container ships, [deadweight] [maximum capacity of number of TEU] [number of TEU x average weight] should be used as *Capacity*.

.4 For passenger ships, ro-ro passenger ships and ro-ro cargo ships, gross tonnage in accordance with the International Convention on Tonnage measurement of ships 1969, Annex 1, regulation 3 should be used as *Capacity*.

4 *Deadweight* means the difference in tonnes between the displacement of a ship in water of relative density of 1.025 at the load waterline corresponding to the assigned summer freeboard and the lightweight of the ship.

5 P is the designed power of the main and auxiliary engines, measured in kW. The subscripts $_{ME}$ and $_{AE}$ refer to main and auxiliary engine, respectively. The summation on i is for all engines with the number of main engines (*NME*) and the number of auxiliary engines (*NAE*).

.1.1 P_{ME} is the required main engine power to obtain the design speed (V_{ref}) under the loading condition of *Capacity*;

.1.2 For engine-generator + electric motor driven propulsion system, P_{ME} is the power required from the generator engines to obtain the same condition as per .1.1;

.2 P_{AE} is the required auxiliary engine power to supply normal maximum sea load including necessary power for machinery, systems, equipment and living on board in the condition where the ship engaged in voyage at the design speed (V_{ref}) under the design loading condition of *Capacity*. Required fuel consumption for boiler(s) should also be included as one of P_{AEi}, where any steam generated is not obtained from the exhaust gas.

6 V_{ref}, *Capacity*, and P should be consistent with each other, and should represent the designed sea-going condition of the ship [in a calm sea condition].

7 *SFC* is the designed specific fuel consumption, measured in g/kWh, of the engines at the power output of P determined by paragraph 5. The subscripts $_{MEi}$ and $_{AEi}$ refer to the main and auxiliary engine, including any boilers, respectively.

8 f_j and f_k are corrections to account for ship specific design elements [such as, e.g., ice strengthening, cargo gear or reefer containers]. f_j and f_k refer to main and auxiliary engine respectively.

NOTE: A method for determination of f_j and f_k should be prepared and prescribed in this document.

9 f_W is a non-dimensional coefficient indicating the decrease of speed in representative sea conditions of wave height, wave frequency and wind speed (e.g., Beaufort Scale 6), and should be determined as follows:

.1 It can be determined by conducting the ship-specific simulation of its performance at representative sea conditions. The simulation methodology shall be prescribed in the Guidelines developed by the Organization and the method and outcome for an individual ship shall be verified by the Administration or an organization recognized by the Administration.

.2 In the case that the simulation is not conducted, f_W value should be taken from the "standard f_W" table/curve. A "Standard f_W" table/curve, which is to be contained in the Guidelines, is given by ship type (the same ship as the "baseline" below), and expressed in a function of the parameter of *Capacity* (e.g., DWT). The "Standard f_W" table/curve is to be determined by conservative approach, i.e. based on the data of actual speed reduction of as many existing ships as possible under the representative sea conditions.

Table-2
standard f_W" table/curve
(Table or curve to be attached)

NOTE: If "standard f_W" table/curve or simulation methodology is not provided in this document , f_W can be assumed [one (1)] [0.9] until such table/curve is given.

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ANNEX 6

PROPOSED FORMULATION FOR A MANDATORY NEW SHIP DESIGN CO_2 INDEX

Regulation (n)
Application

1 The provisions of this Part shall apply to ships of not less than [150] [400] [X] gross tonnage engaged in international voyages:

.1 for which the building contract is placed on or after [date of implementation]; or

.2 in the absence of a building contract, the keels of which are laid or which are at a similar stage of construction on or after [date of implementation]; or

.3 the delivery of which is on or after [3 (or X) years after the implementation date].

Regulation (n+1)
Attained new ship design CO_2 index

1 The attained new ship design CO_2 index shall be calculated in accordance with the Guidelines developed by the Organization. The results of the calculation and data and simulation method, if applicable, shall be verified by the Administration or an organization recognized by the Administration.

2 The attained new ship design CO_2 index shall be kept on board the ship.

Regulation (n+2)
Baseline

1 The baseline shall be determined in accordance with the following equation:

$$Baseline\ value = a \times b^{-c}$$

Where *a, b* and *c* is parameters taken from the following table for the relevant ship type, and the value of *b* shall be the value which is used for the calculation of attained new ship design CO_2 index :

Ship type	***a***	***b***	***c***
Dry Bulk		DWT	
Tankers		DWT	
Gas carriers		Tank volume	
Container ships		DWT	
General cargo ships		DWT	
Ro-ro cargo ships		GT	
Passenger ships		GT	

Regulation (n+3)
Requirements for new ship design CO_2 index

1 The attained new ship design CO_2 index obtained in accordance with the regulation (n+1) shall be [equal to or] lower than the required design CO_2 index for the relevant ship type. The required design CO_2 index shall be calculated as follows:

$$Required\ CO_2\ index = (1 - \frac{X}{100}) \times baseline\ value$$

Where:

.1 *X* is the reduction factor of the design CO_2 index in per cent compared to the baseline value.

.2 *baseline value* shall be obtained in accordance with regulation (n+2) for the type and size of the ship concerned using applicable ***a***, ***b*** and ***c***.

2 The required design CO_2 index shall apply as follows:

.1 for ships built on or after [1 January 2012 and before 31 December 2014], X is equal to [*p*];

.2 for ships built on or after [1 January 2015 and before 31 December 2017], X is equal to [*q*];

.3 for ships built on or after [1 January 2018] X is equal to[*z*].

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ANNEX 7

PROPOSALS FOR IMPROVING MEPC/CIRC.471 PROVIDED IN DOCUMENTS SUBMITTED TO PREVIOUS MEPC SESSIONS AND ISWG FOR GHG

MEPC 52/4/2

7 Definition of ship fuel consumption is a major element in the draft guidelines. Additional work is required to finally decide how the fuel consumption should be defined and documented.

8 Distance to be included in index calculation may be defined in various ways. Additional work is required to define how distance should be defined and recorded for CO_2 indexing purposes. The guidelines should provide advice on how to consider and document impact of navigational choices (e.g., weather routeing, crumb line or composite great circle instead of great circle, and the use of mandatory IMO routeing schemes).

9 Consistent and transparent definition of all alternative cargo types and how these should be considered for calculation of the index need further elaboration.

10 Verification and reporting requirements are likely to vary if alternative mechanisms for implementation are pursued. This has at this stage not been fully addressed and will require further work.

11 The calculation algorithms must be further developed, and provide detailed guidance on the selection and extent of input data for calculations necessary to establish and update the index.

MEPC 55/4/3 Germany and Norway

7 In general, operational variations in index are mainly caused by:

.1 variation in utilization cargo space;

.2 variation in fuel consumption on ballast voyages (related to the length of ballast voyages);

.3 variation in ship efficiency (engine condition, hull and propeller fouling, etc.);

.4 variation in speed between voyages;

.5 weather and currents; and

.6 errors in measurement and registration.

Recommendations for improvement of the index

10 Experience using the index has resulted in the following recommendations towards the further development of the IMO index:

11 Ferries currently report transport work either as passenger miles or car unit miles. Passengers and cars transported by a ferry could preferably be converted to a singular unit (such as mass) in order to get a better expression for transport work.

12 The IMO guidelines could preferably clarify that it is not necessary to measure the fuel consumption for individual voyage legs in order to get a correct overall index, it is only the transport work that must be recorded for each leg. This simplification is particularly for ships making many short legs to collect or deliver goods in conjunction with long voyages.

13 Also, ships operating back and forth in a regular single leg schedule (such as a ferry) can calculate the IMO index for any given period using aggregated data to calculate transport work. This approach is beneficial since aggregated data are typically more readily available and could be mentioned in the guidelines.

14 LNG boil-off is used as fuel for LNG carriers, however, a carbon factor for boil-off is not provided in the guidelines. It is suggested that the guidelines should either state specifically that the carbon factor for natural gas given in the circular can be applied to LNG boil-off, or derive an applicable factor for LNG boil-off.

MEPC 55/4/4 Norway

Experience from Voluntary Ship CO2 Emission Indexing

7 The average emission index value obtained in trials has been observed to vary considerably from ship to ship. Moreover, the potential optimal index value differs between ships. Particularly, larger ships are generally more efficient than smaller ships.

8 For the purpose of comparison it is generally accepted that ships must be divided into categories. At the very least, some categorizations are inevitable due to differences in the definition of transport work.

9 The definition of such categories must inevitably lead to a compromise between the need for more categories to reflect differences in ship capabilities and the desire to limit the number of categories for reasons of practicality and to facilitate comparison.

10 However, as explained in the annex to this document, variations in the demand for transport between ports, as well as the geographical distribution of ports, impose variable constraints and opportunities for efficient transport of cargo. Optimal solutions to different transport problems may result in different index value potentials.

11 A consequence is that identical ships, all optimally operated, can obtain significantly different index values if they operate in different trade patterns. Furthermore, this creates the theoretical possibility that an optimally operated ship have a higher emission index than a sister ship that is not optimally operated.

12 Therefore, both for the purpose of internal management and for external reporting, evaluating performance by comparing ships necessitates that the categorization of ships reflect trade pattern.

13 When collecting trial data it is advised that information on the trade pattern of the ship is also recorded.

14 Experience so far suggests that finding the best means of comparison between ships can be a technically challenging issue that could preferably be discussed in MEPC.

Route specific sub-indexes

15 To facilitate comparison, additional sub-index values could be reported on specific transport tasks, such as for instance the transportation of containers, Hong Kong to Los Angeles. In this case, comparison can be made with no regard to ship particulars or ships in other trade patterns.

16 In principle, such sub-index would be based on those voyages made between the specific ports within a reporting period. Each ship could have several sub-index values which could also possibly be aggregated to company level. Specific guidelines for the calculation of such sub-index would have to be developed by the Organization.

17 It should be stressed that the proposition relates to development supplementary figures to aid interpretation and comparison. It is not the intention to replace the original index.

MEPC 55/INF.9 Japan

Checking and the evaluation of the environmental impact of CO_2 emission from ships

6 MEPC/Circ.471 only provides methods to obtain data of today's CO_2 emission from ships, but does not contain any procedures and guidance on analysis for consideration to control CO_2 emission from ships in the circumstance of continuous growth of shipping industries and transport by ships.

Matters for improving the guidelines in MEPC/Circ.471

7 For the purpose described above, the guidelines in MEPC/Circ.471 should be improved. The following paragraphs provide some ideas for such improvement. It should be noted that proposals are based on the view point of improvement of environmental impact of each ship, but not on the view point of global reduction of CO_2 emission from ships.

7.1 In order to pursue the purpose in paragraph 6, CO_2 emission during ballast voyage should be counted. For the purpose in paragraph 5, cargo owners would have no interest and no need for CO_2 emission of ballast water voyage. It should be noted that in many cases, even in loaded voyages, ships carry ballast water. Therefore, it is necessary to consider how to deal with CO_2 mission from ships for carriage of ballast water and ballast water exchange.

7.2 It is necessary to consider how to deal with voyages which are not used for transport, such as voyage for docking service. CO_2 emission during such voyage may be necessary to consider for the purposes described in paragraphs 4 and 6.

7.3 It is necessary to stipulate who is the reporter of, and how to report CO_2 emission from ships, considering the ship operation system. It is also necessary to stipulate how to evaluate and validate the report.

MEPC 57/4/22 Marshall Islands

Observations and conclusions

CO_2 Index Variation

6 Calculated CO_2 indexes varied considerably as experienced in past efforts at container ship CO_2 indexing trials. Examination of the data from these trials would indicate that this reflects the following:

.1 cargo mass, by definition, is a critical factor and part of the index calculation. The number of full containers carried by any ship during the trial period varied considerably and never approached maximum capacity. The index calculation uses the total fuel consumed for the trial period so the fuel consumed during the voyage where less cargo was carried was apportioned to a lower tonnage of cargo mass with consequent higher resulting index. While a ship with less cargo may require less fuel, there is a point of diminishing returns as cargo is reduced;

.2 voyage length is also a critical factor where long trans-ocean voyages with the ship operating at design speed experiencing a lower index as compared to ships on short voyages where a greater proportion of time is spent at a less efficient lower transit or manoeuvring speed;

.3 the combination of low cargo mass combined with short duration voyages is significant resulting in high-index extremes; and

.4 generally, larger ships with higher TEU/DWT capacity had a lower index, depending on voyage length and cargo loading.

Cargo Mass for Container Ships

7 With regard to the most appropriate approach to the issue of .cargo mass. to be used in trials, generally, on a voyage-by-voyage basis, with the exception of ship G, use of the container estimate of 10MT for full containers and 2MT for empty containers resulted in a higher calculated index than using actual cargo DWT to calculate the index. The average index for each ship was less for actual cargo DWT compared to using the TEU estimated approach and use of total DWT resulted in an even lower index. Accordingly, use of the actual cargo DWT, based on a ship's capacity plan, using draft readings at sailing, probably provides a more accurate assessment of CO_2 index. It also allows comparison to trials involving bulk carriers, tankers and general cargo ships.

Comparison to Other Vessel Classes

8 Compared to Marshall Islands past trials involving crude oil and LNG tankers, the container ship trials resulted in much more variation, index extremes and, overall, a considerably higher average index as compared to crude oil tankers. Examination of the data would indicate that this reflects the following:

.1 the crude oil and LNG tankers involved in the trials operate during cargo voyage legs at full seasonal cargo load and generally on long trans-ocean voyages. It should be noted that this is quite different than containership operating conditions described above; and

.2 much higher tanker DWT cargo capacity.

Vessel Class Indexing Differences

9 The wide variation observed in these trials between containerships compared with previous tanker trials support the concept that separate CO_2 index baselines must be developed for different classes of vessels. However, use of a common measure of actual cargo mass such as cargo DWT might provide a useful means of comparison between classes as previously noted.

GHG-WG-1/3/2 Germany

5 The results show that for a fair comparison of containerships, the CO_2 Index should be based on TEU since the ship and its operator do not have any influence on the contents of the containers and therefore on the ship's payload composition. Therefore, the following reference values for the calculation of the operational CO_2 Index can be regarded as useful:

Ship type	**Cargo capacity limit**	**Cargo acc. Circ.471**
Bulker	Mass of cargo	Tons on board
Combination	*to be discussed*	*to be discussed*
Container	Number of containers	TEU on board
Dry Cargo	*to be discussed*	TEU and/or tons on board
Miscellaneous	*to be discussed*	*to be discussed*[1]
Offshore	*to be discussed*	Supply vessel: tons
Cruise Ship	Number of pax	No. of pax on board
Ferry	*to be discussed*	(per mile only)
Ro-ro	Length of lane meters	Occupied lane meters
Tanker	Volume of cargo	m^3 of cargo

A comparison of the CO_2 Indexes for all ships irrespective of their ship type is deemed not to be necessary.

[1] Research-/SAR-/offshore assistance-/salvage-vessels not to be regulated.

GHG-WG-1/3/1 INTERTANKO

Proposals for revision to Carbon conversion factors

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ANNEX 8

INTERVENTIONS UNDER AGENDA ITEM 4

STATEMENT BY INDIA

Interventions by India (Tuesday, 24 and Wednesday, 25 June 2008)

Agenda 4: Development of a CO_2 baseline methodology

Mr. Chairman,

The Indian delegation strongly oppose any mandatory reporting of CO_2 operational index, setting of CO_2 efficiency baseline, monitoring of CO_2 efficiency of the world merchant fleet and reporting of fuel consumption. If any reporting is required for collection of data it should be voluntary. Reporting of consumption of bunker fuel by ships under its flag will make enormous administrative burden on the flag States and ships.

We are all aware of the low level of mandatory reporting being done at present by the flag States, which was also confirmed by the Secretariat, under various International Maritime Organization Conventions.

Thank you.

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ANNEX 9

INTERVENTIONS UNDER AGENDA ITEM 5

STATEMENT BY BELGIUM

The Belgian delegation is in favour of the development of a global mechanism that leads to a reduction of greenhouse gas emissions, either by the shipping sector itself, or by offsetting shipping emissions through reductions in other sectors.

An important concern for the Belgian delegation is that any chosen reduction mechanism may not lead to a modal shift from short sea shipping, which is an environmentally friendly transport mode, to rail or road transport. In other words, the reduction mechanism should take into account the needs of short sea shipping, which is very different from intercontinental shipping.

At least a significant part of the revenues generated by a reduction mechanism should be transferred back to the shipping sector itself.

The principle of a level playing field should be respected by any reduction mechanism.

Moreover the reduction mechanism may not penalize operators who have already made early and considerable efforts to reduce greenhouse gas emissions.

STATEMENT BY GREECE

Greece fully shares the increased awareness towards "global warming" irreversible effects. In this respect and taking also account of the preliminary results of official IMO study – Phase 1, being carried out by an international consortium, which were presented during IMO GHG 1 Working Group in Oslo, contribution of international shipping to air pollution and climate change should be examined very carefully. Indeed, reliable and safe conclusions should be drawn subject to an in-depth analysis and based on scientific research and proper studies with facts and accompanied statistics, clearly illustrating the environmental, technical and financial dimensions associated with each of the specific proposals. In this regard, it is stressed that according to articles appearing from time to time on accredited academic sources and scientific magazines, such as an article titled "Climate Forcing from the Transport", National Marine Academy of the United States, dated 15 January 2008, issue No.15, PNAs, the impact of maritime activity on the environment is viewed differently.

Greece reserves its position on this very important issue towards proposals, such as ETS, until full impact assessments will be conducted and their results made available. The assessment(s) should cover at least the following:

- the energy efficiency to be achieved by world fleet with the introduction of the proposed measure;

- the impact of the proposal on the international maritime activity; and

– a clear demonstration for the proposal of its potential to be effectively implemented.

Last but not least, we would like to draw the attention of the Working Group to point 7.1 of document GHG-WG 1/1/1 related to Terms of Reference for this meeting:

"The intersessional meeting is expected to consider in appropriate detail, the level of reduction that can be achieved, address the design, implementation, cost-benefit and regulatory/legal aspects as well as the impacts for the shipping industry, the flag and port States and other stakeholders as appropriate, associated with each of the control options under consideration".

Thank you Mr. Chairman.

STATEMENT BY INDIA

Agenda 5: (General comment on Development of reduction mechanisms, including their implementation)

Mr. Chairman,

While we thank distinguished delegates from Denmark, Germany and others for their submissions and presentations made today, with respect to Development of reduction mechanisms, including their implementation, we are concerned at various proposals given in the documents. Mr. Chairman, at the beginning of this meeting on Monday we had intervened to make it clear that the focus of our discussion was climate change, based on the principles and objectives of the UNFCCC.

Introducing the concept of competitiveness would bring in wholly new paradigm which would undermine the very foundation of UNFCCC, and adversely impact developing countries.

We wish to remind this group that the entire structure of the UNFCCC and Kyoto Protocol is driven by a need to equitably address Climate change given the non-level sharing of the available environmental space by the developed and developing countries.

India, therefore, does not understand why it should adopt a separate framework and guiding principle that detracts from specific commitments necessary for Annex 1 countries to address the challenge of climate changes.

India spends over 2.63% of its GDP on adaptation as part of our national development programmes, including on cyclone warning, coastal protection, floods and drought control and relief, major and minor irrigation projects, control of malaria, food security measures, research on drought resistant crops, etc.

Developing countries have contributed very little to climate change, but would be worst affected by it and hence it is very illogical to suggest that GHG reduction measures like bunker levy scheme should be binding and equally applicable to all flag States in order to avoid evasion and minimize competitive distortion.

Mr. Chairman, Principle 11 of the Rio Declaration applies in this context. I would remind delegates of what Principle 11 states:

"Environmental standards, management objectives and priorities should reflect the environmental and development context to which they apply. Standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries in particular developing countries."

We reiterate that the International Maritime Organization should confine itself to developing and determining a CO_2 baseline methodology and therefore refer the matter of levy to the UNFCCC.

Mr. Chairman, I would like to comment on various submissions separately, as and when they come up for discussion.

Thank you.

STATEMENT BY NORWAY

Introduction of GHG-WG 1/5/5 and GHG-WG 1/5/4.

Thank you Mr. Chairman,

I am afraid our presentation will be somewhat long. We have submitted two documents on this agenda item and despite the short period it has been on the IMO document site, I do hope that delegates have had time to consider them. I will start by presenting document GHG-WG 1/5/5.

This document contains consideration of some general legal elements which most market-based GHG reduction mechanisms should be based upon. The document further describes an Emission Trading Scheme for shipping.

The first issue I will raise in my presentation is that any Party to the treaty which establishes the scheme has all obligations and rights which the total GHG regime requires regardless of other Conventions States may or may not be Party to. If elements of an existing legal regime are to be used, these elements should be included in the new regime establishing the market mechanism.

The second issue I will raise is that also market-based mechanisms in our view should be based upon the principles of flag State obligations and port State rights.

Thirdly, I will draw your attention to the need for an emission cap. Market-based mechanisms are suitable for including emission caps for total emission from international shipping. A cap on total emissions cannot be established as a Party obligation, but as an objective of the legal instrument which the Parties adhere to. The total set of Party obligations should consequently be designed in order to meet the objective of the instrument.

The fourth issue: we have identified that some market-based mechanisms may need an international entity to undertake some tasks in order to secure proper functioning of the regime. Our point is that such tasks can only be of administrative character and under the control of the Parties to the regime.

The final general issue I will raise is that market-based instruments are conceptually different from existing IMO mandatory instruments. Hence, our investigation on the legal basis for such mechanisms concludes with a need for a new free-standing legal instrument. I will not go in further detail on that in my presentation because several legal models can be explored, our viewpoint is now communicated.

Now, I will specifically go into the option of using **Emission Trading** in order to reduce emissions from international shipping. I do not believe in stating a list of positive phrases in order to make a mechanism more attractive. However, I would claim that the following main characteristic is undisputable:

Namely, precise and cost-efficient emission control. If a cap on total emissions is desired, an emission trading system is a cost-efficient tool to meet such a cap.

Mr. Chairman, I will now present the main elements which in our view an emission trading scheme for international shipping should build upon.

.1 The mechanism should be established in a new free-standing legal instrument under the auspices of the IMO.
There are several reasons for such an approach. One is that such a mechanism conceptually is different from any existing IMO instruments, and hence a new and free-standing legal instrument can more easily be suitably designed to meet the defined objective. Another reason is that the topic is of a political nature which should allow for States to explicitly examine if they want to become Party to such an instrument regardless of whether or not being a Party to other instruments.

.2 In the view of Norway an ETS for international shipping should include an emission cap and a target period.
If the cap is related to total emissions from international shipping, such a cap cannot be established as a Party obligation, but as an objective of the instrument which the Parties adhere to. The total set of Party obligations should consequently be designed in order to meet the objective of the instrument.

.3 The main Party obligation would be to ensure that ships under the flag of the Party meet the requirements of the system, and the main requirement of ships would be to obtain an emission allowance, and several specific requirements, e.g., reporting and record keeping.

It would be an advantage if it was required that the ship continuously possessed the appropriate emission allowance. If that is the case, port State control would be a powerful enforcement mechanism. Appropriate actions could then be taken if an emission allowance were not present, exceeded or not sufficient in order to be compliant throughout the next voyage.

.4 The price of emission allowances. The basic approach is that price is decided by supply, i.e. the total amount of emission quotas for the defined period, and demand, i.e. the number of ships in the system and their activity.

If, international shipping is included in an international trading systems (an open system) the quotas (i.e. price) should be balanced towards that system.

.5 How to put the emission quotas into the market? Our document describes two models for how it can be done, but in order to save time I will only refer to the description of those two models in our document.

.6 The last element from our outline of the system which I will highlight for you is that when the system is in force Parties should not treat non-Party ships more favourably, and it is therefore important that non-Party ships have access to the basic element and be able to obtain emission quotas.

Regarding this mechanism Mr. Chairman, we have concluded that a market-based mechanism should be established in **new and free-standing legal instrument** under the auspices of the IMO. Furthermore, relative to the market mechanisms, an Emission Trading System for international shipping in our view is the most suitable option for controlling GHG emission, and the systems should be further developed by the IMO.

Mr. Chairman, please allow me to continue, and present the other document GHG-WG 1/5/4.

This document describes the levy cap and trade system, which is a further development of the scheme we presented in MEPC 56/4/9. The scheme consists of three main elements:

- firstly, establishment of a cap as CO_2 emissions from international shipping. Norway's view is that the UNFCCC should decide the level, since it must be seen in context with the development of a long-term goal on climate change;

- secondly, establishment of a flat levy on CO_2 emissions calculated from fuel consumption; and

- thirdly, establishment of a maritime GHG Fund where the money from the levy should be transferred.

The fund would have different purposes:

- it should be used for buying CO_2 credits to offset emissions above the cap, including from CDM-projects;

- it should be used for funding adaptation projects in developing countries by supporting the Adaptation Fund of the UNFCCC; and

- other purposes should also be discussed, such as research and development and technology transfer.

The document further describes elements of the regulatory framework that should be established:

- the legal subject should be the ship, which would be responsible for paying the levy;

- it would involve flag State obligation to ensure that ships under its flag comply;

- port State control should ensure that ships entering its ports have paid the levy; and

– rules and modalities of the fund should be included in the legal framework as well as rules of procedure of an administrative entity to be established.

Mr. Chairman, I am now at the end of the presentation of these two documents. Our task at this meeting is to develop what the terms of reference instruct us to develop. If it is desired that a market mechanism should be established in addition to technical and operational requirements, clearly IMO can only adopt one. Our preference is then an Emission Trading System for international shipping. Thank you Mr. Chairman.

STATEMENT BY THE UNITED KINGDOM

The United Kingdom has the following initial comments on the points raised by Germany in its paper, GHG-WG 1/5/7.

The United Kingdom believes that any emissions trading scheme must be open to ensure flexibility in the system and be of a global nature – covering all CO_2 emissions if possible.

The United Kingdom notes that while recorded sales of bunker fuel give lower estimates of emissions compared with other methodologies, the infrastructure in place for the bunker delivery note should be investigated further. The role of port State control also needs to be clarified.

Any scheme should contain independent accredited verifiers for compliance purposes – IMO may be best placed to accredit these verifiers.

The United Kingdom believes that auctioning all CO_2 allowances would save time and effort on developing rules for allocation. This would also prevent windfall profits and companies buying more credits than they need.

Finally, the United Kingdom considers that only a stringent cap on allowances for CO_2 will ensure their scarcity and demonstrate the IMO's ambition to reduce greenhouse gas emissions from ships.

The United Kingdom would welcome the opportunity to respond to the other points raised in the German proposal when convenient.

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ANNEX 10

GUIDANCE ON BEST PRACTICES FOR FUEL-EFFICIENT OPERATION OF SHIPS

The Marine Environment Protection Committee (MEPC), in the course of its work on the reduction of Greenhouse Gases emissions (CO_2) from international shipping, identified measures which, if implemented individually or collectively, would notably reduce fuel consumption and if applicable, the CO_2 Design Index.

Recognizing that this current guideline pertains only to ships, it should be noted that taking an overall supply-chain approach offers additional opportunities to improve fuel efficiency. Since many of these measures are by their nature not suitable for enforcement through international requirements, relevant stakeholders[2] are urged to implement the appropriate measures below as soon as possible on a voluntary basis.

Notwithstanding the recommendations in this guidance the safety of the crew, the ship and its cargo, as well as the protection of the marine environment shall not be compromised.

Any guidance given in this document on crew training should be aligned with the requirements of the STCW Convention.

1 Voyage planning and conduct of the voyage

1.1 Improved voyage planning

[Development of] cross-modal freight routeing optimization tools that factor in energy and emissions, time, and cost.

The IMO Guidelines on voyage planning, resolution A.893(21) refer.

Stakeholders: (to be identified)

1.2 Weather routeing

- Consideration of effects of ocean current and tides
- Consideration of effects of weather systems
- Crew, and if appropriate, passenger safety and comfort

If applicable based on trade and route

The IMO Circular on weather routeing, MSC/Circ.1063 refers.

Stakeholders: (to be identified)

[2] Member States, Charterers, Ports, Terminals, Cargo handlers, Shipbuilders, Engine manufacturers, Shipowners, Operators, Ship Masters and Officers.

1.3 "Just in time"

Building on early notification of berthing time, good communication between port and ship will allow for minimization of fuel use.

Optimized port operation could involve a change in business model involving different handling arrangements in ports.

Stakeholders: (to be identified)

1.4 Speed optimization

Reduction of the speed, wherever possible and keeping within the range in which the efficiency of the engine is maintained, is strongly recommended.

- Speed selection is important, but beware of the consequences of slow speed operation, including increased vibration and sooting (engine de-rating should be mentioned if slow steaming is permanent)

- E-navigation strategies may assist in determining the optimum speed

- Reference should be made to the engine manufacturer's speed/consumption curve for the engine and other relevant operating instructions

- Commercial considerations should be taken into account

- Modification of engine and propeller to improve fuel efficiency at lower speed

Stakeholders: (to be identified)

1.5 Optimized shaft RPM

Speed or power variations during a voyage will increase the fuel consumption, compared to running on a constant shaft RPM. Steady conditions during a voyage will, therefore, be favourable. A constant shaft RPM will normally be the simplest option to implement and also be the most economical. To implement this saving, the procedure for selection of engine speed in relation to a given estimated time of arrival to the destination port should be given more attention.

Stakeholders: (to be identified)

2 Optimized shiphandling

Efficiency can be improved through careful use of propulsion power and rudder movement during shiphandling operations. Initial improvement can be obtained by making better use of the available information, documentation and training manuals on board as supplied by, e.g., shipyards and equipment manufacturers. Enhanced familiarization and training procedures, i.e. increasing awareness, could benefit the efficiency.

Further improvements may be obtained by enhancing the quality and ship specific nature of the onboard documentation.

Stakeholders: (to be identified)

2.1 Optimum trim

The fuel efficiency can be increased by a sufficient degree of immersion of rudder and propeller.

Trim should be adjusted at sea based on seagoing conditions using GPS speed tracking to obtain best speed at the particular engine power output. This will help achieve the optimum propeller immersion level as well.

Hog and Sag of the ship contribute to deterioration of the hull performance and should be minimized.

Ideally, a full set of speed/trim/draft experiments should be conducted to provide the ships Master with curves showing optimum trim as a function of draft and speed. This will make it easy to adjust the trim at any given operational situation.

Stakeholders: (to be identified)

2.2 Optimum ballast

Optimum ballast should be carried taking into consideration the requirements to meet optimum trim and steering conditions.

Optimum ballast can be achieved through good cargo planning for both dry cargo ships and liquid cargo ships.

When determining the optimum ballast conditions, the limits, conditions and ballast management arrangements set out in the Ballast Water Management Plan, if available, should be observed for that ship.

(The IMO Ballast Water Management guidelines resolution MEPC.127(53))

Stakeholders: (to be identified)

2.3 Optimum propeller considerations

Sea state/weather have significant bearing on this and should be addressed.

Stakeholders: (to be identified)

2.4 Optimal use of rudder and heading control systems (autopilots)

Proper use of heading control systems should be considered at all times with special focus on proper settings in adverse weather conditions and on ballast voyages.

Stakeholders: (to be identified)

3 Hull maintenance

Consideration of docking intervals should be integrated with ship operators' ongoing assessment of ship performance.

Hull maintenance will be determined by existing coating types, cleaning intervals and types of trade. Regular in-water inspection of the condition of the hull is recommended.

Propeller cleaning and polishing will increase fuel efficiency, and should be applied according to condition.

The possibility of in-water hull cleaning should be facilitated by Member States.

Generally, the smoother the hull is the better fuel efficiency can be achieved.

Stakeholders: (to be identified)

4 Propulsion system

4.1 Propulsion system maintenance

Care should be taken when performing maintenance to maintain high efficiency of the engines.

The use of engine monitoring may be a useful tool to maintain high efficiency at all times.

Efficiency, reliability and maintenance-oriented data sharing among intra-company ships can be a tool to promote friendly competition among ships and should be encouraged.

4.2 Propulsion system modifications

Retrofit of parts or the whole of the propulsion system may be considered as a way to improve the fuel efficiency of an existing ship.

Considerations to retrofit better propeller designs to older ships may be given to enhance the fuel efficiency of the ship.

Stakeholders: (to be identified)

5 Improved fleet management

Better utilization of fleet capacity can often be achieved by improved fleet planning. An increased fleet utilization will result in reduction in fleet fuel consumption and hence a reduction in CO_2 emissions. For example, there may be a possibility to avoid long ballast voyages for new loads through improved fleet planning.

Stakeholders: (to be identified)

[6 Improved cargo handling

Load optimization
Use and development of port loading/offloading facilities that serve as intermodal hubs

Stakeholders: Container ship managers, Tanker ship managers, Bulk carrier managers]

7 Energy management

A review of electrical services versus their utilization and time in use can reveal opportunities for considerable power savings.

Careful management through the use of manual or automatic systems can improve the fuel efficiency, however safety considerations (e.g., engine-room fans and possible under-pressurization) must always be given due consideration.

Waste heat recovery systems and shaft generators should be used to the largest extent possible.

Thermal insulation should be applied as required.

Stakeholders: (to be identified)

8 Fuel oil

Use of alternative fuels could reduce emission of CO_2.

Availability and applicability of alternative fuels will dictate the use of such fuels.

Stakeholders: (to be identified)

9 Other measures

Development of: (1) metric-based incentive programs that create tools for the calculation of fuel consumption; (2) the establishment of an emissions "footprint"; (3) the optimization of operations to increase efficiencies; and (4) the establishment of goals for improvement and tracking of progress may all be considered.

Charter Parties of ships are encouraged to revise their requirements to permit shipowners, where appropriate, to implement suitable measures as set forth in this guidance.

Renewable energy sources, such as wind, solar (or photovoltaic-) cell technology, have improved enormously in recent years. Therefore, it is worth considering their installation on board ships.

While some ships are at berth, power supply may be available from shore in certain ports. This may be aimed at avoidance of air pollution near the port area by not using the power generator on board ships. In addition, if used, it may reduce CO_2 emissions depending on the power-generating source ashore. Stakeholders should be aware that there maybe

trade-offs in this regard. IEC and ISO, upon the request of IMO, are working on standards for connecting onshore power supply to ships.

Ships may consider using onshore power if available.

Technology transfer and sharing of experiences in the shipping sector are useful for promoting a reduction of CO_2 emissions from ships and should therefore be encouraged.

Stakeholders: (to be identified)

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ANNEX 11

GUIDANCE ON LIMITATION OF LEAKAGE RATES FOR REFRIGERANT GASES AND COOLANTS IN SHIPS

Refrigerant gases and coolants on board seagoing ships are used for multiple purposes, especially for cooling/freezing purposes such as cargo care, provisions care and internal climate control. Most refrigerants (CFCs, HCFCs & HFCs) have a high global warming potential.

There is evidence of a significant leakage of refrigerant gases and coolants used in systems on board ships.

For existing ships, reduction of the leakage rates can best be achieved by raising awareness and standards of training of the crew involved and by enhancing operational management (service and maintenance) of the installations.

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