Maritime transport: The international regulatory framework for pollution prevention

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Maritime transport: The international regulatory framework for pollution prevention

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International Maritime Organization (IMO)

Basic facts

- UN specialized agency with Headquarters in London
- Safety and security of international shipping and prevention of pollution from ships
- 171 Member States and 3 Associate Members
- 77 NGOs and 65 IGOs affiliated
- Annual budget £30+ million
- Secretariat - 265 staff
# Technical work of IMO

## Environmental issues

<table>
<thead>
<tr>
<th>Marine Environment Protection Committee (MEPC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMO's senior technical body on marine pollution related matters, aided in its work by a number of IMO's Sub-Committees.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Sub-Committee on Pollution Prevention and Response (PPR)</th>
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<tbody>
<tr>
<td>Prevention and control of pollution of the marine environment; recycling of ships; evaluation of safety and pollution hazards of liquid substances in bulk transported by ships; control and management of harmful aquatic organisms in ships' ballast water and sediments; biofouling; pollution preparedness, response and cooperation for oil and hazardous and noxious substances.</td>
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<table>
<thead>
<tr>
<th>Sub-Committees under MEPC and MSC (Maritime Safety Committee)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-Committee on Implementation of IMO Instruments (III)</td>
</tr>
<tr>
<td>Sub-Committee on Carriage of Cargoes and Containers (CCC)</td>
</tr>
</tbody>
</table>
IMO’s work on environmental issues

- MARPOL
- Air pollution and energy efficiency
- Greenhouse gas (GHG) emissions
- Ballast water management
- Ship recycling
- Ships operating in polar waters (Polar Code)
- Pollution preparedness and response (OPRC)
- Dumping of wastes at sea (London Convention)
- Scientific advice (GESAMP)
International Convention for the Prevention of Pollution from Ships

Annex I: Oil
Annex II: Noxious liquid substances in bulk
Annex III: Harmful substances in packaged form
Annex IV: Sewage
Annex V: Garbage
Annex VI: Air pollution

(NO\textsubscript{x} Technical Code)
### Air pollution - Fuel oil availability

**Review required by MARPOL reg VI/14.8**

<table>
<thead>
<tr>
<th>MARPOL regulations</th>
<th>Steering Committee</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regulation 14.1.3 of Annex VI:</strong></td>
<td><strong>Review initiated in September 2015</strong></td>
</tr>
<tr>
<td>1 The sulphur content of any fuel oil used on board ships shall not exceed the following limits: …</td>
<td><strong>Steering Committee established to oversee review</strong></td>
</tr>
<tr>
<td>.3 0.50% m/m on and after 1 January 2020.</td>
<td><strong>Following tender process CE Delft was awarded contract for review study</strong></td>
</tr>
<tr>
<td><strong>Regulation 14.8 of Annex VI:</strong></td>
<td><strong>Steering Committee meets regularly to consider progress reports by CE Delft</strong></td>
</tr>
<tr>
<td>8 A review of the standard set forth in paragraph 1.3 of this regulation shall be completed by 2018 to determine the availability of fuel oil to comply with the fuel oil standard set forth in that paragraph and shall …</td>
<td><strong>Final report expected for July 2016, for consideration and decision at MEPC 70 (Oct. 2016)</strong></td>
</tr>
</tbody>
</table>
### Air pollution - Fuel oil quality

#### Development of control measures agreed

<table>
<thead>
<tr>
<th>Outcome of Committees</th>
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</thead>
<tbody>
<tr>
<td>MEPC 66: agreed to develop possible quality control measures for fuel oil delivered to ships</td>
</tr>
<tr>
<td>MSC 93: “out of specification” marine fuels are serious safety issue</td>
</tr>
<tr>
<td>MEPC 67 to 69: correspondence group considers issues</td>
</tr>
<tr>
<td>MEPC 69 encouraged fuel oil supply industry to develop draft best practice for fuel oil providers and agreed that best practice for oil purchasers/users and for Member States/coastal States</td>
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<table>
<thead>
<tr>
<th>Correspondence group</th>
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</thead>
<tbody>
<tr>
<td>CG re-established and instructed to:</td>
</tr>
<tr>
<td>develop best practice for fuel oil providers and agreed that best practice for oil purchasers/users and for Member States/coastal States</td>
</tr>
<tr>
<td>report to MEPC 71 (May 2016).</td>
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Energy efficiency of ships

EEDI – Energy Efficiency Design Index

MARPOL Annex VI:
Chapter 3: Requirements for control of emissions from ships
Chapter 4: Regulations on energy efficiency of ships
(entered into force on 1 January 2013)

Mandatory under chapter 4:
EEDI – Energy Efficiency Design Index
SEEMP – Ship Energy Efficiency Management Plan
IEE (International Energy Efficiency Certificate)

\[
\text{EEDI} = \frac{\text{Impact to environment}}{\text{Benefit to society}} = \frac{\text{Power} \times \text{fuel consumption} \times \text{CO}_2 \text{ emission factor}} {\text{Capacity} \times \text{ship speed}}
\]
GHG emissions from ships

Third IMO GHG Study 2014 approved at MEPC 67

Study found that shipping, in total, accounted for approximately 3.1% of annual global CO$_2$ emissions for the period 2007–2012. For international shipping, the CO$_2$ estimate dropped from **2.8% in 2007** to **2.2% in 2012**.

<table>
<thead>
<tr>
<th>Year</th>
<th>Global CO$_2$</th>
<th>Total shipping</th>
<th>% of global</th>
<th>International shipping</th>
<th>% of global</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>31,409</td>
<td>1,100</td>
<td>3.5%</td>
<td>885</td>
<td><strong>2.8%</strong></td>
</tr>
<tr>
<td>2008</td>
<td>32,204</td>
<td>1,135</td>
<td>3.5%</td>
<td>921</td>
<td>2.9%</td>
</tr>
<tr>
<td>2009</td>
<td>32,047</td>
<td>978</td>
<td>3.1%</td>
<td>855</td>
<td>2.7%</td>
</tr>
<tr>
<td>2010</td>
<td>33,612</td>
<td>915</td>
<td>2.7%</td>
<td>771</td>
<td>2.3%</td>
</tr>
<tr>
<td>2011</td>
<td>34,723</td>
<td>1,022</td>
<td>2.9%</td>
<td>850</td>
<td>2.4%</td>
</tr>
<tr>
<td>2012</td>
<td>35,640</td>
<td>938</td>
<td>2.6%</td>
<td>796</td>
<td><strong>2.2%</strong></td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>33,273</strong></td>
<td><strong>1,015</strong></td>
<td><strong>3.1%</strong></td>
<td><strong>846</strong></td>
<td><strong>2.6%</strong></td>
</tr>
</tbody>
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### Monitoring of emissions

#### Data collection system for fuel consumption

<table>
<thead>
<tr>
<th>Outcome of MEPC 69</th>
<th>Correspondence group</th>
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</thead>
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<tr>
<td>• Mandatory data collection system for fuel consumption of ships approved for adoption at MEPC 70 (Oct 2016)</td>
<td>• Corresponding amendments to SEEMP Guidelines</td>
</tr>
<tr>
<td>• Part of three-step approach: data collection; data analysis; and consideration of policy options and decision-making on any measures</td>
<td>• Guidelines for data verification procedures</td>
</tr>
<tr>
<td>• Basis for further work on GHG emissions from shipping by delivering data to work with</td>
<td>• Electronic communication and standardized reporting format</td>
</tr>
<tr>
<td></td>
<td>• IMO Ship Fuel Consumption Database</td>
</tr>
<tr>
<td></td>
<td>• Guidelines to address non-party ships submitting data</td>
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Follow-up Paris Agreement

Further action on climate change

- MEPC 69 welcomed Paris Agreement as major achievement by international community
- Also unanimously recognized IMO’s role in mitigating impact of GHG emissions from international shipping and acknowledged current efforts and measures already introduced to enhance energy efficiency of ships
- Data collection system as significant contribution to ongoing work by international community to mitigate climate change
- IMO only Organization to have adopted energy-efficiency measures legally binding across an entire global industry
- Working group at MEPC 70 to discuss reduction target for international shipping
Transfer of technology for ships

Ad hoc Working Group

Resolution MEPC.229(65) on Promotion of technical cooperation and transfer of technology relating to the improvement of energy efficiency of ships
Establishes Ad hoc Expert Working Group (TT-EG) on facilitation of transfer of technology for ships

Results considered by MEPC 69 in April 2016
- Impact MARPOL Annex VI on developing countries
- Inventory of energy-efficient technologies for ships (information portal under development – GloMEEP)
- Barriers to transfer of technologies
- Enabling transfer between MARPOL Parties (Model Agreement approved – MEPC.1/Circ.861)
Ballast water management

BWM Convention

**Objective:** Prevent, reduce and eliminate the risks to environment, human health, property and resources caused by the transfer of aquatic organisms and pathogens by ships.

Discharge of ballast water into the sea shall be managed according to the provisions of the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention).

**Status:** Not yet in force

49 States, 34.70% world fleet (35% needed for EIF)
Ballast water management

Outcome of MEPC 69 (April 2016)

- Number of type-approved ballast water management systems making use of Active substances reaches 65.
- Roadmap for development of measures to facilitate implementation of the Convention agreed at MEPC 68 as guidance for further work.
- Revisions of Guidelines for approval of ballast water management systems (G8) continues in correspondence group.
- Draft amendments to regulation B-3 of the Convention relating to the time scale for implementation of the requirements approved.
**Objective:** Ensuring that ships, when being recycled after reaching the end of their operational lives, do not pose any unnecessary risks to human health, safety and the environment.

The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009, addresses all aspects of ship recycling.

**Status:** Not yet in force
4 accessions (15 needed for EIF)

- design, construction, operation and preparation of ships so as to facilitate safe and environmentally sound recycling without compromising their safety and operational efficiency
- operation of ship recycling facilities in a safe and environmentally sound manner
- establishment of an appropriate enforcement mechanism for ship recycling, incorporating certification and reporting requirements
- inventory of hazardous materials
Ship recycling

IMO/Norad TC project for Bangladesh

Key data

- **Goal:** Improvement of safety and environmental standards in the country’s ship recycling industry
- **Partners:** Norad, IMO, BRS, ILO, UNIDO
- **Budget:** US$ 1.2 million from Norad, US$ 250,000 from EU/BRS
- **Timeframe:** Oct 2014 to December 2016 (18 months) (Phase I)
Polar Code

New mandatory requirements for polar shipping

- **International Code for ships operating in polar waters (Polar Code) – Parts I and II**
  Adopted in November 2014 by MSC (Part I) and May 2015 by MEPC (Part II). Will take effect on 1 January 2017 upon entry into force of SOLAS and MARPOL requirements.

- **Amendments to SOLAS (new chapter XIV)**
- **Amendments to MARPOL annexes I, II, IV and V**
  Will make parts I-A (Safety measures) and II-A (Pollution prevention measures) of the Polar Code mandatory. Expected to enter into force on 1 January 2017.
HOW THE POLAR CODE PROTECTS THE ENVIRONMENT

OIL
- DISCHARGES: Discharge into the sea of oil or oily mixtures from any ship is prohibited.
- STRUCTURE: Double hull and double bottom required for all oil tankers, including those less than 5,000 gross tons (G/T) ships constructed on or after 1 January 2017.
- HEAVY FUEL OIL: Heavy fuel oil is banned in the Antarctic (under MARPOL).
- LUBRICANTS: Consider using non-toxic biodegradable lubricants or water-based systems in lubricated components outside the underwater hull with direct seawater interfaces.

GARBAGE
- PLASTICS: All disposal of plastics prohibited (under MARPOL).
- FOOD WASTES I: Discharge of food wastes onto the ice is prohibited.
- FOOD WASTES II: Food wastes which have been comminuted or ground (no greater than 25 mm) can be discharged only when the ship is not less than 12 nm from the nearest land, nearest ice-shelf, or nearest fast ice.
- ANIMAL CARCASSES: Discharge of animal carcasses is prohibited.
- CARGO RESIDUES: Cargo residues, cleaning agents or additives in hold washing water may only be discharged if they are not harmful to the marine environment, both departure and destination ports are within Arctic waters, and there are no adequate reception facilities at those ports. The same requirements apply to the Antarctic area under MARPOL.

SEWAGE
- DISCHARGES I: No discharge of sewage in polar waters allowed (except under specific circumstances).
- TREATMENT PLANTS: Discharge is permitted if the ship has an approved sewage treatment plant, and discharges treated sewage as far as practicable from the nearest land, nearest ice-shelf, or areas of specified ice concentration.
- DISCHARGES II: Sewage not comminuted or disinfected can be discharged at a distance of more than 12 nm from any ice-shelf or fast ice.
- Comminuted and disinfected sewage can be discharged more than 3 nm from any ice-shelf or fast ice.

INVASIVE SPECIES
- INVASIVE AQUATIC SPECIES: Measures to be taken to minimize the risk of invasive aquatic species through ships' ballast water and bilge water.

BACKGROUND INFO
- The International Code for Ships Operating in Polar Waters will enter into force on 1 January 2017.
- It applies to ships operating in Arctic and Antarctic waters, additional to existing MARPOL requirements.
- It provides for safe ship operation and protects the environment by addressing the unique risks present in polar waters but not covered by other instruments.

DEFINITIONS
- SHIP CATEGORIES: Three categories of ship designed to operate in polar waters:
  - Category A: at least medium first-year ice
  - Category B: at least thin first-year ice
  - Category C: open waters/ice conditions less severe than A and B
- FAST ICE: See ice which forms and remains fast along the coast, where it is attached to the shore, to an ice wall, to an ice front, between shears or grounded icebergs.
- ICE-SHELF: A floating ice sheet of considerable thickness showing 2 to 50 m or more above sea-level, attached to the coast.
- DISCHARGES: Discharge of noxious liquid substances (NLS) or mixtures containing NLS is prohibited in polar waters.

CHEMICALS
Pollution preparedness and response

OPRC Convention and Protocol

International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990 (OPRC 90) provides framework to facilitate international co-operation and mutual assistance in major oil pollution incidents.

Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances, 2000 (OPRC-HNS Protocol) extends regulatory framework to address pollution incidents involving hazardous and noxious substances, i.e. chemicals.
OPRC Convention

Latest guidelines addressing certain aspects

Approved in May 2015
- Guidelines on international offers of assistance in response to a marine oil pollution incident
- Part III of the Guidelines for the use of dispersants for combating oil pollution at sea (Operational and technical sheets for surface application of dispersants)

Under development for approval in 2016
- Part IV of the IMO Dispersant Guidelines (Sub-sea dispersant application)
- Section II of the Manual on Oil Pollution – Contingency Planning
- Guide on oil spill response in snow and ice conditions
- Update of the IMO OPRC Model Courses
Dumping of wastes at sea

London Convention and Protocol


Regulate dumping of wastes and other matter at sea, by providing framework to prevent, reduce and where practicable eliminate marine pollution caused by dumping.

Annual meetings of Contracting Parties held at IMO and report directly to Council and Assembly.
Joint group of experts on scientific aspects of marine protection

GESAMP

Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) provides authoritative, independent, interdisciplinary scientific advice to organizations and governments to support the protection and sustainable use of the marine environment.

- established in 1996, Secretariat hosted by IMO (MED)
- sponsored by 9 UN agencies with interests and responsibilities in marine environmental matters
- GESAMP experts participate in individual capacity
- IMO leads 2 working groups: EHS and BWWG
Thank you for listening.

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