# Recent developments in addressing shipping air emissions and the role of ports

**Busan International Port Conference 2018** 

Working Session II "Strategies to be Environmentally Sustainable Ports"

Mr Camille Bourgeon IMO Secretariat





# Context: IMO and ports





## Context : air emissions high on the agenda

- Over 80% of global trade by volume and more than 70% of its value carried on board ships
- World seaborne trade volumes expanded by 4% in 2017 to reach 10.6 billion tons of cargo
- Key regulatory trends focus on air emissions:
  - "Efforts to curb the carbon footprint and improve the environmental performance of international shipping remain high on the international agenda"
  - "With regard to air pollution, the global limit of 0.50% on sulphur in fuel oil used on board ships will come into effect on 1 January 2020"



(Review of Maritime Transport 2018, UNCTAD)



# Outline

- Context
- Initial IMO Strategy on reduction of GHG emissions from ships and its follow-up actions
- IMO 2020 sulphur regulations including outcome of MEPC 73
- Overview of global initiatives addressing port-related emissions







# IMO work to address GHG emissions from ships



## IMO work to address GHG emissions from ships

- In 2012, international shipping CO<sub>2</sub> emissions were estimated to be 796 million tonnes accounting for 2.2% of global CO<sub>2</sub> emissions
  - By 2050, CO<sub>2</sub> emissions from international shipping could grow by between 50% and 250%, depending on future economic growth and energy developments
  - Demand is the key driver for growth
- MARPOL Annex VI (Chapter 4)
  - Technical tools (new ships)
    - EEDI (Energy Efficiency Design Index)
  - Operational tools (existing ships)
    - EEOI (Energy Efficiency Operational Indicator)
    - SEEMP (Ship Energy Efficiency Management Plan)





Ref: Third IMO GHG Study 2014



Adoption of the Initial IMO Strategy on Reduction of GHG emissions from ships

#### **RESOLUTION MEPC.304(72)**

Adopted on 13 April 2018

#### INITIAL IMO STRATEGY ON REDUCTION OF GHG EMISSIONS FROM SHIPS

#### THE MARINE ENVIRONMENT PROTECTION COMMITTEE

RECALLING Article 38(e) of the Convention on the International Maritime Organization (the Organization) concerning the functions of the Marine Environment Protection Committee (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution from ships,

ACKNOWLEDGING that work to address greenhouse gas (GHG) emissions from ships have been undertaken by the Organization continuously since 1997, in particular, through ad ping global mandatory technical and operational energy efficiency measurements in the under



# Adoption of the Initial IMO Strategy on reduction of GHG emissions from ships



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# Future steps ?





# Programme of follow-up actions of the Initial Strategy up to 2023

- Last week the Marine Environment Protection Committee (MEPC 73) gathered in London and approved the Programme of follow-up actions of the Initial IMO Strategy on reduction of GHG emissions from ships up to 2023
- This programme of actions identifies several parallel streams of activity:
  - Consideration of concrete proposals for new measures by MEPC 74 (May 2019)
  - Impact assessment mechanism
  - Fourth IMO GHG Study to update estimates and projections
  - Capacity-building, technical cooperation, R&D





# IMO 2020 sulphur regulation



# IMO 2020 sulphur regulation





- MEPC 70 (October 2016) approved report on "Assessment of Fuel Oil Availability":
  - "In all scenarios, the supply of marine fuels with a sulphur content of 0.50% m/m or less and with a sulphur content of 0.10% m/m or less is **projected to meet demand for these products**."
- MEPC 71 (July 2017) approved a new output for the PPR Sub-Committee on "Consistent implementation of the 0.50% m/m sulphur limit" - Intersessional meeting held July 2018
- MEPC 73 adopted amendments to MARPOL Annex VI to "prohibit the carriage of noncompliant fuel oil for combustion purposes for propulsion or operation on board a ship" for entry into force on 1 March 2020 (carriage ban)



# IMO 2020 Sulphur regulation

- MEPC 73 approved Guidance on best practice for fuel oil suppliers and Guidance on ship implementation planning that includes an indicative plan that identifies the following key elements:
  - risk assessment and mitigation plan (impact of new fuels);
  - fuel oil system modifications and tank cleaning (if needed);
  - fuel oil capacity and segregation capability;
  - procurement of compliant fuel;
  - fuel oil changeover plan (conventional residual fuel oils to 0.50% sulphur compliant fuel oil); and
  - documentation and reporting.
- Additional guidance that could be taken into account is also provided on impact on machinery systems and on tank cleaning.
- MEPC 73 invite further concrete proposals on how to enhance the implementation of regulation 18 of MARPOL Annex VI, in particular on fuel oil quality and reporting of non-availability of compliant fuel oils, to MEPC 74





# Port-related air emissions



# Harmful air pollutants in the port area

- Approximately 230 million people are directly exposed to harmful emissions (NOx, SOx and PM) from ships in the top 100 ports globally
- 2 main categories of measures:
  - International regulation of ship emissions (MARPOL Annex VI)
  - Local initiatives of individual ports



	1996	2004	2009
1	Port development (water)	Garbage / Port waste	Noise
2	Water quality	Dredging: operations	Air quality
3	Dredging disposal	Dredging disposal	Garbage / Port waste
4	Dredging: operations	Dust	Dredging: operations
5	Dust	Noise	Dredging: disposal
6	Port development (land)	Air quality	Relationship with local community
7	Contaminated land	Hazardous cargo	Energy consumption
8	Habitat loss/degradation	Bunkering	Dust
9	Traffic volume	Port development (land)	Port development (water)
10	Industrial effluent	Ship discharge (bilge)	Port development (land)

#### Top 10 environmental priorities of the European port sector over time

(source: ESPO, 2012)





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## Port-related GHG emissions

- Port-related GHG emissions account for only **2% of total shipping CO**<sub>2</sub> emissions but they are projected to rise four-fold by 2050 on a business-asusual basis (Merk, Shipping Emissions in Ports, OECD-ITF, 2014)
- The majority of port-related emissions of CO<sub>2</sub> come from ships rather than landward activities (58% in European and Asian ports) therefore decarbonization of ships will make a major contribution to port decarbonization
- Relative emissions from ship, ports and inland transport: example of carbon intensity values from container movement from China (Wuhan) to UK (Glasgow)



ALAN MCKINNON

(McKinnon, Decarbonizing logistics, 2018)



Deep sea

12g/tonne-km

Port

16-18kg/

container

Road in China

120g/tonne-km



Port

16-18kg/

container

Road in UK

(Rail in UK

75g/tonne-km

31g/tonne-km)

• the Initial Strategy identifies as a candidate short-term measure :

# "

consider and analyse measures to encourage port developments and activities globally to facilitate reduction of GHG emissions from shipping, including provision of ship and shoreside/onshore power supply from renewable sources, infrastructure to support supply of alternative low-carbon and zero-carbon fuels, and to further optimize the logistic chain and its planning, including ports;

"



- Initiative from Canada and IAPH to work on an MEPC resolution to encourage port developments and activities to facilitate the reduction of GHG emissions from ships:
  - Port incentive schemes
  - Infrastructures (OPS from renewable sources, etc.)
  - Optimization of port operations
  - Provision of low- and zero-carbon fuels,
  - Etc.
- MEPC 73 invited all interested Member States and organizations to work with Canada and IAPH to develop this resolution for adoption by MEPC 74









- GEF-UNDP-IMO Global Maritime Energy Efficiency Partnerships project
  - Overall objective: Build capacity in developing countries for implementing the technical and operational measures for energy efficient shipping and catalyze overall reductions in GHG emissions from international shipping.
  - 10 Lead Pilot Countries: Argentina, China, Georgia, India, Jamaica, Malaysia, Morocco, Panama, Philippines and South Africa
- Following a strategic partnership between IMO/GIoMEEP and IAPH, two port emissions guides have been published to support developing countries in:
  - Gaining a better understanding of emissions in their ports
  - Developing strategies to address emissions



- Guide No.1: Assessment of port emissions
- Updates previous works
- Covers critical inventory planning elements
  - Drivers
  - Source categories
  - Geographical & operational domains
  - Air quality pollutants & GHGs
  - Level of detail
  - Data streams
- Port-related sources
- Regulatory frameworks
- Types of assessments
- Methods & approaches

- Assessing tools & use
- Putting results in perspective
- Comparing year over year



Available here: <u>http://glomeep.imo.org</u>



**Gl MEEP** 



#### Strategy analysis & evaluation considerations

**Guide No.2 : Development of port emission reduction** 

Implementation options & considerations

Covers critical strategy planning elements

Administration considerations

Pollutant/GHG hierarchy

Tracking progress & reporting considerations

Challenges & opportunities for viable strategies

- Methods & approaches
- Scenario analysis

strategies

.

Updates previous works

Drivers

• Determining cost effectiveness

One-off strategy vs. programmatic approaches

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# Overview of global initiatives to address port-related emissions

POR EMISSION TOOLK

### Available here: http://glomeep.imo.org

- Strategy ranking & selection considerations
- Examples



MO = SIAPH



- Global Industry Alliance (GIA)
  - Support tackling existing barriers towards decarbonizing the shipping sector
  - Through implementation of selected projects (within scope of 5 priority areas including ports)

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- Initiate pilot projects, promote R & D
- Initiate industry fora and information exchange activities
- Showcase positive initiatives by maritime sector
- Develop capacity-building tools





GLOBAL INDUSTRY ALLIANCE TO SUPPORT LOW CARBON SHIPPING



ABITIME

- GIA = a public-private partnership
- Current membership of 16 companies





GLOBAL INDUSTRY ALLIANCE TO SUPPORT LOW CARBON SHIPPING

INTERNATIONAL

MARITIME

• GIA = five ongoing projects

 bevelopment of study on Just-In-Time Operation of ships - solutions for different shipping sectors
 • Industry Roundtable held

 • Tendering procedure initial



#### GLOBAL INDUSTRY ALLIANCE TO SUPPORT LOW CARBON SHIPPING

No	Activity Title	Progress/Status
1	Development of E-learning course on the energy-efficient operation of ships (for seafarers and onshore personnel)	<ul> <li><u>Videotel</u> KVH contracted</li> <li>E-learning course under development</li> </ul>
2	Development of a Protocol for validation of performance of energy efficiency technologies	<ul> <li>Industry Roundtable held (12 July 2018)</li> <li>White Paper on fuel performance monitoring</li> <li>Tendering procedure initiated by GIA Secretariat</li> </ul>
3	Development of guide on alternative fuels their potential for shipping and barriers to uptake with a timeline to 2050	Discussions initiated within the GIA TF
4	Idea generation workshops -Workshops to facilitate brainstorming and idea generation for effective collaboration	• First workshop held (30 May 2018)
5	Development of study on Just-In-Time Operation of ships - solutions for different shipping sectors	<ul> <li>Industry Roundtable held (29 June 2018)</li> <li>Tendering procedure initiated by GIA Secretariat</li> </ul>



- GIA work related to Just-In-Time (JIT) operation of ships:
  - Gather experience from ports that (not)successfully implemented JIT
  - Analyze/categorize barriers (both general and trade specific)
  - Study concrete measures (including incentives) for removal of contractual/operational barriers to large-scale uptake of JIT:
    - short-term measures (2018-2023)
    - mid-term measures (2023-2030)
- Call for tender for the study: <u>http://www.imo.org/en/About/</u> <u>Procurement/Pages/default.aspx</u>



GLOBAL INDUSTRY ALLIANCE TO SUPPORT LOW CARBON SHIPPING



(Preliminary assessment Port of Rotterdam)



# To watch the video, please visit: https://youtu.be/ioUpqZUNSIg



# Thank you for your attention





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