



Overview







Why marine pollution increase?

have no Central Point in law and research

The absence of Obligation

using Electronic Record Book for Establishment of **Vertical - Integrated DB**

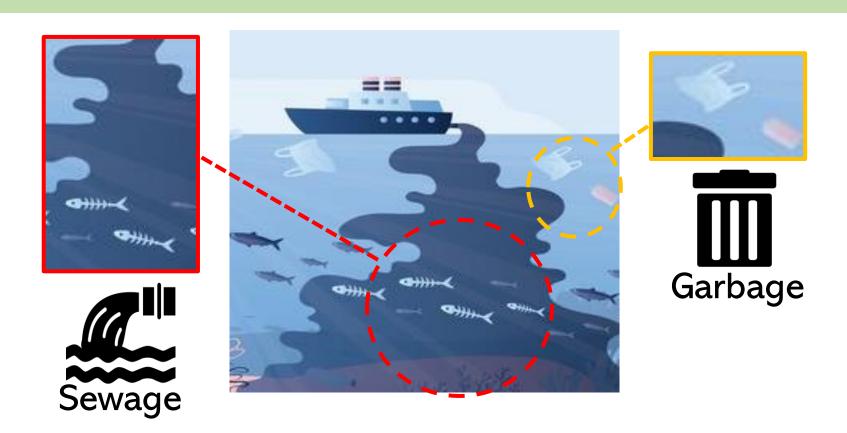
> Target the IMO's Strategic Direction

Citing & Revising the system considering developing country



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Unabated Pollution



Q

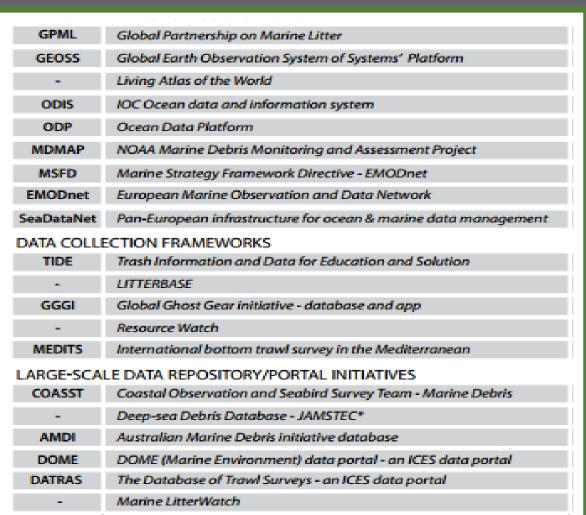




Waste Generation (3,000 passenger ship)	Amount of Waste	
Gray water	1 million gallons / week	
Sewage water	210,000 gallons / week	
Solid waste	8.0 tons / week	

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Heightened Concerns





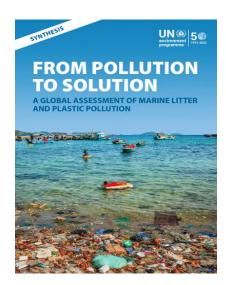
Illustrated by GRID-Arendal

Figure 9: A selection of data coordination, collection, repository and portal initiatives

Source: UNEP (2021), From pollution to Solution: A global assessment of marine litter and plastic pollution, Nairobi

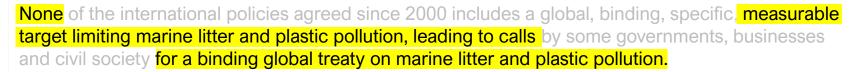
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Limits of Current Efforts



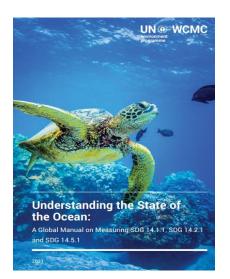
There is little policy coordination among countries and national and subnational policies are uneven, with loopholes, erratic implementation and inconsistent standards

From Pollution to Solution, UNEP / (Dauvergne 2018; Forrest et al. 2019; Birkbeck 2020).



Mauirhead and Porter 2019; Karasik et al. 2020; Raubenheimer and Urho 2020; WWF,the Ellen MacArthur Foundation and BCG 2021

UNEP (2021), From pollution to Solution: A global assessment of marine litter and plastic pollution, Nairobi



over 60 percent of the ocean surface and nearly 95 percent of the volume lie in areas beyond national jurisdiction, also called the high seas, where responsibilities for monitoring and reporting are not always straightforward.

The issue here is that the cost of in situ monitoring and lack of national mandates in the high seas limit the options for such primary data collection.

UNEP (2021), Understanding the State of the Ocean: A Global Manual on Measuring SDG 14.1.1, SDG 14.2.1 and SDG 14.5.1









Uneven implementations

The U.S has **Not Ratified** either Annex IV or Laws related with MARPOL Annex IV : CWA, APPS







Regulatory Mechanism to implement MARPOL

- Separated and Distinctive from CWA
- and other federal environmental laws





little coordination

MARPOL execution;

Conduct its own "Examination" to verify ship's compliance with international standards / or Detain ship







Regarding CWA section 312 requirements;

Coast Guard's Inspecting Responsibility for inspecting vessels

for compliance with the MSD Rules

The 2000 GAO report



Department and other Flag states that, even when referrals have been made,

The Response Rate From Flag States Has Been Poor

A number of factors limits the ability of inspectors to detect violations Focus on Safety / Limited Time and Staff for inspections

Laws in relation, Similar Loopholes?

CWA 's primary mechanism for controlling pollutant discharge (related with Annex IV)

NPDES_section 402

sewage is defined as a pollutant under the act

sewage from vessels is exempt from this statutory definition (exempt from requirements to obtain an NPDES Permit)

"discharges incidental to the normal operation of vessels" are excluded from regulation and thus from permit requirements

Marine protection, Research and sanctuaries act of 1972 (related with Annex V)

MPRSA

Outside of waters that are under U.S. jurisdiction, no MPRSA permit is required... to discharge solid waste

The routine discharge of effluent incidental to the propulsion of vessels is explicitly exempted from the definition of dumping in the MPRSA



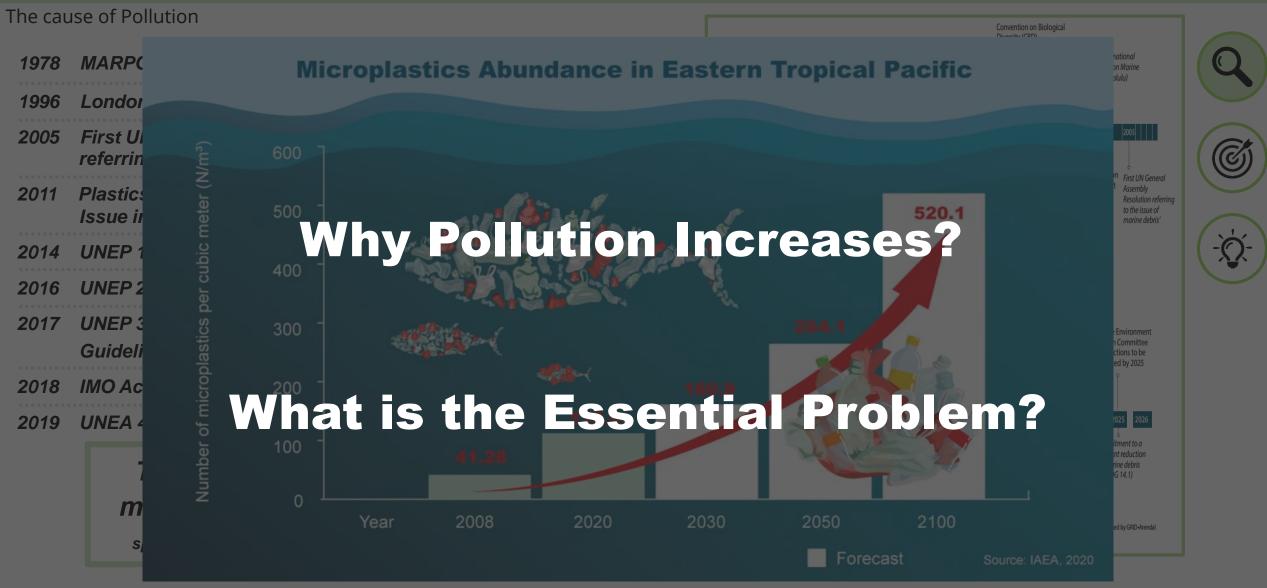




Similar Loopholes

Discharges occur all the time





UNEP (2021), From pollution to Solution: A global assessment of marine litter and plastic pollution, Nairobi

Eric P. Chassignet, Xigobigo Xu. Olmo Zavala-Romero (2021 April), Tracking Marine Litter With a Global Ocean Model: Where Does It Go? Where Does It Come From?

World Oceans Day 2020: New IAEA Research Records Dramatic Increase in Microplastic Pollution in Eastern Tropical Pacific Ocean (n.d.) /

https://www.iaea.org/newscenter/news/world-oceans-day-2020-new-iaea-research-records-dramatic-increase-in-microplastic-pollution-in-eastern-tropical-pacific-ocean

UNEA Resolutions On Marine Litter(n.d.), https://unea.marinelitter.no/



Current MARPOL Limit

MARPOL Annex IV







3.1

Every ship which is required to comply with the provisions of this annex and which is engaged in voyages to ports or offshore terminals under the jurisdiction of other parties to the convention shall be subject to the surveys specified below...

4.1

An International Sewage Pollution Prevention Certificate shall be issued, after survey in accordance with the provisions of regulation 3 of this Annex, to any ship which is engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties to the Convention ...

8.1

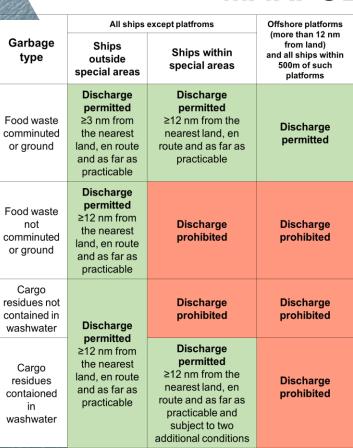
The ship is discharging comminuted and disinfected sewage of sewage into the sea is prohibited, except when...

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Current MARPOL Limit

Discharge permitted





Cleaning agents and additives contained in cargo hold washwater	Discharge permitted	Discharge permitted ≥12 nm from the nearest land, en route and as far as practicable	Discharge prohibited
Cleaning agents and additives in deck and external surfaces washwater		Discharge permitted	Discharge prohibited
Carcassed of animals carried on board as cargo and which died during the voyage	Discharge permitted as far from the nearest land as far as possible and en route	Discharge prohibited	Discharge prohibited
All other garbage including plastics, synthetic ropes	Discharge prohibited	Discharge prohibited	Discharge prohibited







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Current MEPC Resolution problem analysis

Technical Measures (Guidelines)

MEPC.157(55)

Standards for the rate of discharge of untreated Sewage From Ships

MEPC.227(64)

Standards and performance test for sewage treatment plants

MEPC.244(66)

Standards specification for shipboard incinerators

MEPC.309(73)

Guidelines on survey and certification of EEDI

Institutional Measures

MEPC.220(63)

Developments of garbage management plan

MEPC.295(71)

Guidelines for the implementation of MARPOL Annex V

MEPC.310(73)

Action plan to address marine plastic litter from ships

MEPC.312(74)

Use of electronic record books under MARPOL

MEPC.321(74)

port state control under MARPOL Annex IV chapter 3







Marine
nvironment
Protection

Committee



Current MEPC Resolution problem analysis

MEPC.295(71)

2.1.2

Using / Avoiding supplies...

2.9.5

Outside special areas and Artic waters, ships operationg ...are encouraged to install and use comminuters ...

4.2

Governments may exchange and maintain information relevant to compliance, non-compliance and information on legal proceedings for violations with Annex V regulations through the organization. Governments are encouraged to provide the organization with the following ...

4.2.3

In order to assess the effectiveness of Annex V, these studies should provide details on amounts ...

6.2.4

Governments should consider the use of garbage management reporting systems





The Marine Environment Protection Committee



Current MEPC Resolution problem analysis

MEPC.310(73) section 4; action

Reduction of shipping's contribution to marine plastic litter (9)

Review the application of placards, garbage management plans and garbage record-keeping, for example making the Garbage Record Book mandatory for ships of 100 GT and above

Improved understanding of the contribution of ships to marine plastic litter (22)

Consider extending the reporting requirement in regulation 10.6 of MAPROL Annex V to include reporting data on discharge of accidental loss of to IMO via GISIS or other means if appropriate

Encourage Member States and international organizations that ...to share the results of such research, including any information on the areas contaminated by marine litter from ships

Conduct a study on marine plastic litter, including macro and microplastics, from all ships





The Marine Environment Protection Committee



Drawback; The cause of low effectiveness



Absence of **Concrete Methods** of Compliance **Monitoring** for Implementation of Regulation









Regulatory guidelines difference by region

Difficulty monitioring / Low implementation rate of contracting parties





Realtime monitoring & Establishment of Vertical Integrated DB

Every Onboard Sewage / Garbage Discharge



Record & Report Is Mandatory

Integrated Data Access Authority

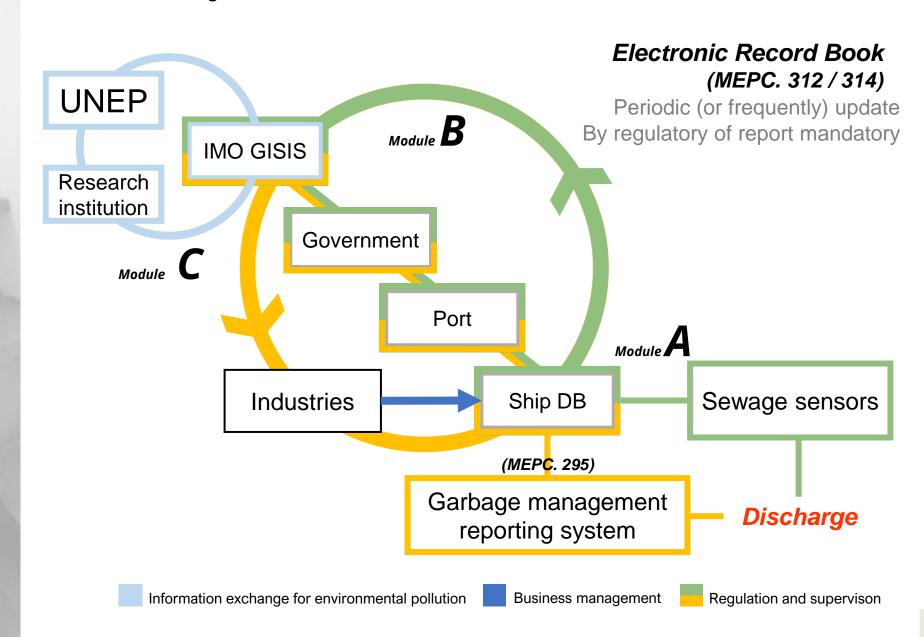






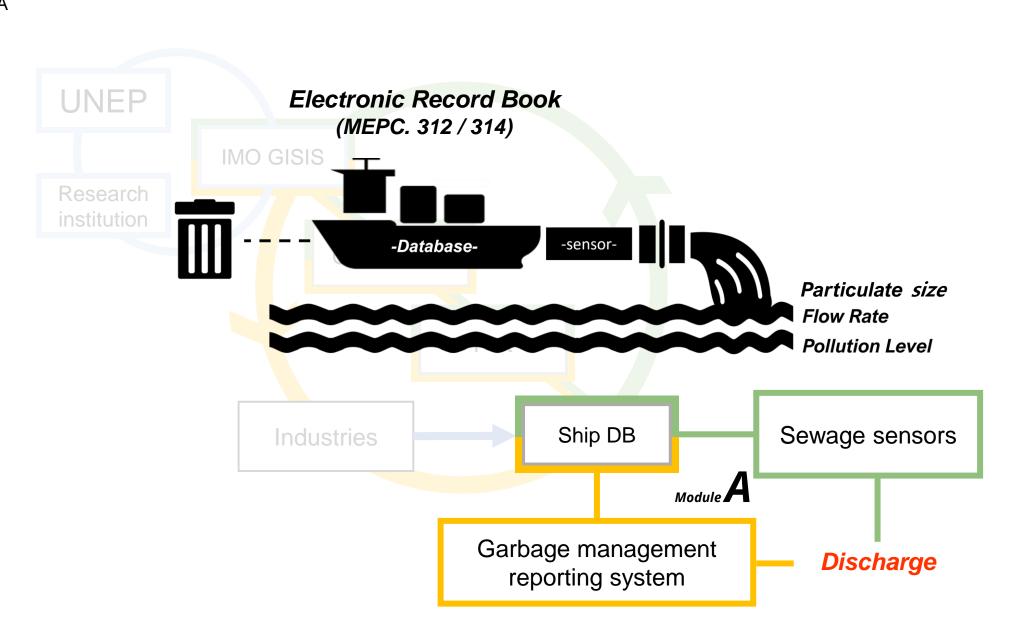


Realtime monitoring & Establishment of Vertical Integrated DB





Module A







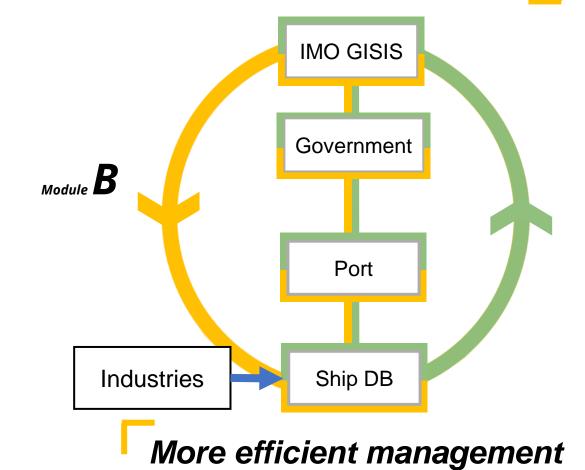




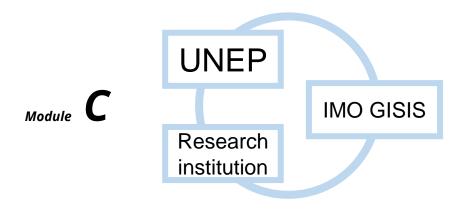
Module B & C

Increase IMO Convention Implementation Rate

and Regulation



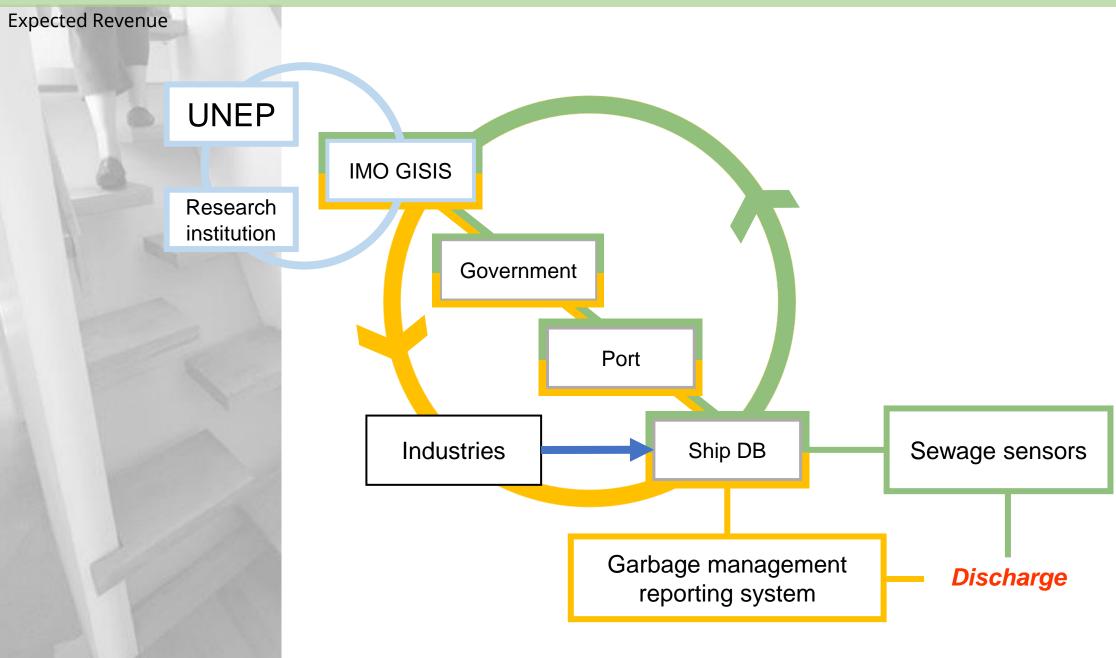
A virtuous cycle of the environment





Create more Advanced Data!











Expected Revenue













Monitoring Garbage Discharge

Apply by citing, Revising the following: MEPC.295(71)

6.2.4

Governments should consider the use of garbage management reporting systems.

Governments consider the use of garbage management reporting systems.



A garbage management reporting system may also include reporting of discharges of garbage. Particular attention should be given to the reporting of any discharges in ...

A garbage management reporting system may also include reporting of discharges of garbage. Particular attention should given to the reporting of every discharges in ... except permitted cases







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Monitoring Garbage Discharge

Apply by citing, Revising the following: MEPC.312(74)



- .4 Ozone-depleting Substances Record Book (Annex IV regulation 12.6)
- .6 Record of **Fuel Oil Changeover** (Annex IV regulation 14.6)



These Guidelines do not address the exchange of information form a ship to a company ... is not a requirement of record books under MARPOL

Shall be amended

Including Sewage Discharge and Garbage Discharge Report (whether treated or not)











Overall Effciency of Supervison of Central DB

Apply by Citing the following: MEPC.312(74)

3.2 (Application)

Audit Logging; Logs are kept for an agreed period to assist in investigations and access control monitoring

3.10 (Application)

Digital Signature; ...that allows a recipient of the data unit to prove the source and integrity of the data unit and protect against forgery

4.1.2

which can automatically input required data be installed to ensure accuracy... be protected by measures preventing attempts at manipulation or falsification...









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Required Prerequisites

Apply by citing and revising the following: both MEPC.295(71) and MEPC.312(74)







"Aforementioned reporting system will be subjected to **mandatory** report and **mandatory** of data collecting of Discharge Record Database"

e.g. IMO GISIS

Other (New or existing) reporting platform

Depending on the purpose of data utilization

Publish To

Public

Members

Secretariat



Overall Effciency of Supervison of Central DB

Phased Application

For Developing Countries in insufficient fiscal state Considering Technical Coordination Committee







Primary Subject of
Regulatory



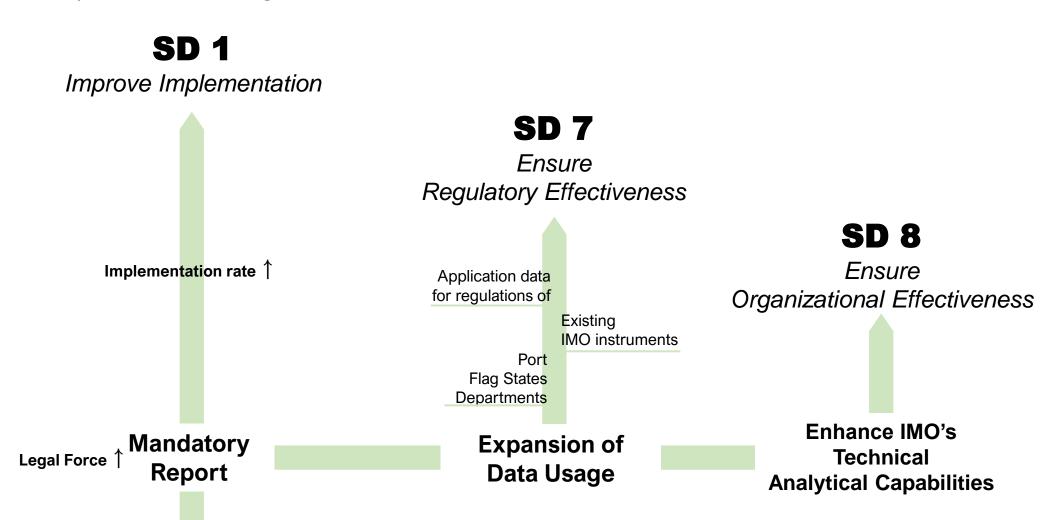
Large Volume of waste Produced in seagoing vessels

Determinants of Waste Volume

- Tonnage level
- Numbers of passengers and crew
- The number of days of the voyage



Link between Proposal and IMO Strategic Directions



Anti-Forgery / Alteration by Real-time Monitoring Discharge









Other Refference



- 전유정, 연유림(2021), 해양플라스틱 쓰레기 저감 기술, 한국과학기술기획평가원 기술동향브리프
- IMO 국제해사 정책동향 Vol.52 / 2020년 5월 : 해양환경 / 한국해양수산개발원
- 이학춘. 이현주(2017). 선박으로 인한 해양오염 규제와 MARPOL 73/78
- 한철환(2019), 크루즈선 환경오염 저감방안에 관한 탐색적 연구
- 최재선, 육근형(2004), 국제해사기구(IMO)의 해양환경 오염규제 대응방안 연구
- 법제처 법제조정법제관실. 국제해사기구(IMO) 해양환경규제 협약들 관련 법률안. 2019.12
- 석지훈, 한국선급 정부대행업무팀, MARPOL 73/78 상 당사국의 보고의무에 대한 연구, 해양환경안전학회지 제 18권 5호 pp. 496-504, 2012.10.31
- EU Marine Strategy Framework Directive(n.d.), European Commission
- Marine Protection, Research and Sanctuaries Act(Ocean Dumping Act) (n.d.), U.S. EPA, https://web.archive.org/web/20120508220037/http://www.epa.gov/aboutepa/history/topics/mprsa/
- Annex IV of MARPOL 73/78, Regulations for the Prevention of Pollution by Sewage from Ships
- IMO(2018), Simplified overview of the discharge provisions of the revised MARPOL Annex V which entered into force on 1 March 2018
- IMO(2006). MEPC157(55), Recommendation on Standards for the Rate of Discharge of Untreated Sewage from Ships
- IMO(2012), MEPC.227(64), 2012 Guidelines on implementation of Effluent Standards and Performance Test for Sewage Treatment Plants
- IMO(2012), MPEC.220(63), 2012 Guidelines for the Developments of garbage management plan
- IMO(2014), MPEC.244(66), 2014 Standards Specification for Shipboard Incinerators
- IMO(2017), MEPC.295(71), Guidelines for the Implementation of MARPOL Annex V
- IMO(2018), MEPC.309(73), Amendments to the 2014 Guidelines on Survey and Certification of the Energy Efficiency Design Index(EEDI)
- IMO(2018), MEPC.310(73), Action Plan to Address Marine Plastic Litter from Ships
- IMO(2019), MEPC.312(74), Guidelines for the Use of Electronic Record Books Under MARPOL
- IMO(2019). MEPC.321(74). 2019 Guidelines for Port State Control Under MARPOL Annex VI Chapter 3

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