Fee systems for ship-generated waste

UNEP Regional Meeting on the further implementation of the regional plan for the management of marine litter in the Mediterranean

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Shipping as a source of marine litter

- The main sea/ocean-based sources of marine litter
  - merchant shipping, ferries and cruise liners
  - fishing vessels
  - pleasure craft
  - military fleets and research vessels
  - offshore oil and gas platforms
  - aquaculture
Shipping as a source of marine litter
Shipping as a relevant source of marine litter

**Estimated sources of marine litter:**

- 80% land-based
- 20% sea-based

**However:**

- D North Sea: “*shipping, fisheries and offshore are main sources of beach litter*” (Fleet, 2003)
- NL North Sea: up to/over 40% sea-based sources *(Dutch Coastguard)*
- Texel (NL): up to 90% of plastic litter from shipping/fisheries *(van Franeker, 2005)*
Ship’s waste as a potential source of valuable materials

- A substantial volume of ship’s waste consists of recyclable and (possibly) valuable materials:
  - oil
  - plastics
  - paper/cardboard
  - metals

- Volume of ship’s garbage (MARPOL Annex V) collected in 2015 in 3 Flemish ports*: 23,944 m³

(* Antwerp, Ghent, Zeebrugge)
Composition of ship’s garbage

Garbage from merchant vessels: *(data: Port of Antwerp Authority)*

MARPOL Annex V waste from maritime shipping (in m$^3$) collected in port of Antwerp 2014

- Cargo associated waste
- Small hazardous wastes
- Food waste
- Cargo residues/was waters
- Plastics
- Other

*Flanders State of the Art*
Regulatory framework

International Convention on Prevention of Pollution from Ships (MARPOL):
→ provision of adequate port reception facilities
→ revised Annex V: discharge at sea is prohibited, unless explicitly allowed and under certain conditions
→ no requirements regarding fee systems

EU: Directive 2000/59/EC on PRF for ship-generated waste and cargo residues:
→ provision of adequate port reception facilities
→ additional requirements:
  ▸ port waste reception and handling plans
  ▸ mandatory delivery for ships (with exceptions)
  ▸ cost recovery systems
  ▸ enforcement schemes
EU principles for fee systems: article 8

→ application of “polluter pays” principle:
  MS are to ensure that the cost of PRF, incl. treatment and disposal, is to be covered by ships

→ fee system is to include incentive not to discharge at sea:
  all ships have to contribute significantly

→ for ships other than fishing and recreational vessels (authorized to carry more than 12 passengers): art. 8.2
  a. all ships calling an EU port shall contribute significantly, irrespective of actual use of the PRF. Fees can be:
     • incorporated in port dues
     • separate fee
     • be differentiated according to size/type of the ship
  b. part of the cost that is not covered by fee: paid directly to PRF
  c. possibility of reduced fees for “green” ships
EU principles for fee systems: article 8

→ fishing and recreational vessels: more flexibility

→ fees are to be:
  ▪ fair
  ▪ transparent
  ▪ non-discriminatory
  ▪ reflect the costs of the PRF and the services made available/used

→ in order to ensure this: amount of fees and the basis on which they have been calculated on should be made clear to the port users
Types of fee systems applied in EU ports

Identification: based on
- EMSA inspections in all coastal Member States + Norway/Iceland
- studies

→ No-Special Fee (NSF) systems
→ Administrative Fee (ADM) systems
Each of them with variations.

Was also identified: 100% Direct Fee system, but:
- system does not contain incentive not to discharge at sea
- therefore not compliant with PRF Directive requirements
- not successful (no increased deliveries)
No-Special Fee (NSF)

Key elements of NSF:
• waste fee is included in port dues, or is charged as a separate standard fee
• waste fee is to be paid irrespective of delivery of waste
• system includes a right to deliver a certain volume of ship-generated waste

• maximum volume that can be delivered: may vary, depending on:
  ○ national/regional approach
  ○ last port of call/delivery
  ○ duration of the journey
• additional volumes delivered: charged directly, on top of fee
No-Special Fee (NSF) - variations

100% NSF:
- delivery of all waste (100%) is included in the fee
- some ports with 100% NSF tend to define “excessive amounts” in order to avoid abuse of the system

NSF for “reasonable mounts”:
- delivery of “reasonable amounts” of waste is included in the fee
- volumes included have been defined and maximum limits have been set
- direct charges for additional volumes

NSF for garbage only:
- fee only includes delivery of certain volume of garbage
- also here volume limitations can be applied
- delivery of other types of waste: direct charge
Administrative waste fee (ADM)

Key elements of ADM systems:
• a waste fee is charged by the port
• waste fee is to be paid irrespective of delivery of waste
• in combination with:
  o separate direct charging in case of delivery
    +
  o financial incentives for delivery
Administrative waste fee (ADM) - variations

ADM fee system with partial refund in case of delivery:
• waste fee to be paid by each ship (irrespective of delivery)
• ships that deliver waste to PRF also pay direct charge to PRF
• ship is granted a financial incentive by the port when proof of delivery is provided, either through:
  o partial refund of the waste fee by the port to ship; or
  o parts of the fee are used for contributing to cost of PRF, therefore reducing the price for collection and treatment per m³ for the ship

ADM fee system with full refund (or no fee) in case of delivery:
• same as above, but with full refund of waste fee in case of delivery

ADM fee system only for ships not delivering:
• ADM fee is only charged when ship does not deliver to PRF (“penalty fee”)
• when ship delivers, only direct fees are charged by waste contractor based on volumes and types of waste delivered
Findings in studies on fee systems

- fee systems affect incentives to port users to deliver waste
- large variety of systems, taking into account ports/ship's characteristics
- increased delivery of oily waste: ADM
- increased delivery of garbage: NSF (100%) and ADM

Some quotes:
- “difficult to say whether one system is better than the other, and the waste figures cannot document that one system should be more effective than another”
- “the waste volume figures provided by ports analysed do not document that one waste fee system is more efficient than the other”
- “general trend of increased waste delivery to PRF with fee systems in line with PRF Directive (NSF/ADM systems)”
Comparison of systems?

• Difficult!

• Fee systems are adapted to the specific characteristics of the port

• Ports are very different:
  o types of traffic (commercial, fishing, recreational, navy, offshore support)
  o number and size of ships calling the port
  o size of the port
  o geographical location (seasonal influences e.g. obstruction of traffic due to floating ice)
  o presence of industrial clusters in port area
  o port structure and governance
  o existing capacity for waste collection and treatment
  o relationship with local community

• “One system fits all” (as discussed in context of EU-wide harmonization): questionable

• Better option:
  • to clarify/define key elements
  • tailor made approach (e.g. for commercial/fishing/recreational ports)
## Comparison of systems?

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<th>NSF</th>
<th>ADM</th>
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<tr>
<td><strong>Benefits</strong></td>
<td>• Provides incentive to deliver to PRF</td>
<td>• Strong incentive to deliver to PRF (maximum delivery)</td>
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<td>• Incentives for better waste handling (e.g. segregation)</td>
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<td>• Relatively simple to manage</td>
<td>• In combination with open market (= competition between PRF) with quality criteria: high service levels</td>
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<td>• Clear for port users</td>
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<td>• Seems particularly appropriate for garbage (as, differing from oily waste, ships deliver garbage more frequently)</td>
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<td><strong>Issues for improvement</strong></td>
<td>• Calculation of costs for PRF is difficult (impact of volumes, impact of hazardous wastes)</td>
<td>• More complex than NSF (system is to be managed more intensively)</td>
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<td>• Fairness between ports: some ports may have higher cost for treatment/disposal</td>
<td>• Issue of transparency: system is not always clear for port users</td>
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<td>• No incentive for on board waste minimization (and unfair for ships with limited volumes)</td>
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<td>• Incentive for delivery up to maximum limit installed by port (?)</td>
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Examples: fee systems in Mediterranean ports

Port of Barcelona: (system applied in all Spanish ports)
- 100% NSF
- ships pay fee, irrespective of use of PRF
- ships can deliver all MARPOL Annex I and V waste (no limits)
- hazardous waste: max. 2 m³
- sewage, fishing waste: to be paid directly to PRF (not included in NSF)

Port of Piraeus:
- combined NSF/ADM fee system
- ships in scheduled traffic (frequent and regular calls):
  - NSF with limited amounts
  - hazardous waste: not included
- other ships: ADM with partial refund (in case of delivery to PRF: 80% discount on waste fee)
Example: port of Piraeus
Non-Med example: Flemish fee system for fishing ports

- voluntary system, but 97% of vessels have joined (June 2016)
- yearly waste fee: based on engine power of ship (900 to 1800 euros)
- right to deliver garbage (incl. fishing gear), without extra charges
- “Fishing For Litter” is facilitated for all vessels that participate in the fee system
- other vessels: pay a waste fee per port call (200 to 400 euros)
- system was developed in close consultation with fishermen
- system is managed by regional fishing association, but controlled by the environmental authorities
- tailor made waste management for fishing ports (differing from commercial, recreational and inland ports)
Conclusions

- ship’s waste is a relevant source of marine litter
- important prerequisite for successful fee systems: availability of adequate PRF

proper collection and management is important:
  - discharge of ship’s waste at sea has environmental and socio-economic impact
  - waste is potential source of materials
  - “greening” of maritime industry: competitive advantage for ports

fee systems:
  - provide a positive incentive for delivery
  - tailor-made port waste management planning, taking into account port/ship characteristics
  - strong stakeholder involvement: consultation forums
Thanks for your attention
Are there any questions?

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Findings in 2012 EMSA study

- “Study on the delivery of ship-generated waste and cargo residues to port reception facilities in EU ports” (commissioned by EMSA, finalized in 2012)
- Based on information received from 40 EU ports

- **Findings:**
  - in general volumes delivered to PRF in EU ports have increased
  - “difficult to say whether one system is better than the other, and the waste figures cannot document that one system should be more effective than another”
  - “the waste volume figures provided by ports analysed do not document that one waste fee system is more efficient than the other”
Findings in 2015 ex-post evaluation (1)

- Ex-post evaluation of PRF Directive, commissioned by EC (DG MOVE)
- Critical judgment of 5 evaluation criteria (relevance, effectiveness, efficiency, EU added value and coherence)

- Findings:
  - in general: large variety of systems, lack of transparency, no level playing field
  - overall conclusions are difficult to draw due to:
    - lack of comparable statistics
    - multitude of factors influencing waste delivery
  - “general trend of increased waste delivery to PRF with fee systems in line with PRF Directive (NSF/ADM systems)”
Findings in 2015 ex-post evaluation (2)

Delivery of oily waste (MARPOL Annex I):
- NSF: reduced volumes
- ADM: increased volumes
- direct systems: downward trend

Delivery of sewage (MARPOL Annex IV):
- both systems show positive trends, but larger volumes delivered in NSF

Delivery of garbage (MARPOL Annex V):
- NSF with “reasonable amounts”: no clear trend
- NSF with “unlimited amounts”: increased delivery
- ADM: stable to increased (depending on deposit vs. opposite system)
- direct systems: levels of delivered waste are considerably lower than in other fee systems
Findings in 2015 ex-post evaluation (3)

Some conclusions:
- fee systems affect incentives to port users to deliver waste
- MARPOL Annex I and V: increased deliveries in ports with ADM fee system
- variation in delivery trends: also other relevant factors influence waste delivery behavior, such as:
  - differences in enforcement standards in ports
  - other incentives in port dues
  - type of traffic/ships calling the port
  - efficiency of waste operations/adequacy of PRF
Findings in 2016 DG ENV study (1)

- Study to support the development of measures to combat a range of marine litter sources (commissioned by DG ENV, finalized 2016)
- Focus on litter from sea-based sources and microplastics in cosmetics
- Identification of fee systems (similar to EMSA and DG MOVE studies)
- Specifically looked at how they might incentivize waste delivery

- **Findings:**
  - incentive for delivery: when there is direct relationship between quantity of waste delivered and the cost of discharging it to PRF
  - if fee (ADM: deposit/penalty) is high enough the ship will lose more money by illegally discharging at sea, then it would by paying when delivering to PRF
  - best option: ADM fee system with positive incentive (refundable deposit)
Findings in 2016 DG ENV study (2)

Recommendations: fee systems should
  • be harmonized at regional level
  • incentivize waste minimization on board
  • remove disincentive to deliver in ports
  • tailored appropriately to different users (e.g. cruise ships)
  • no exceptions for military vessels, small ships, fishing and recreational vessels

In addition:
  • inspection authorities should have accurate data on legal garbage disposal in order to detect infringements:
    • mandatory reporting by PRF of ship’s waste delivery
    • centralize information provided by ship’s waste notification
  • ensure and harmonize inspection regimes so that appropriate numbers of vessels can be efficiently assessed for the risk of illegal discharges
  • extensive consultations with stakeholders
Example: Flemish fee system for merchant ports

- applied in ports of Antwerp, Ghent, Zeebrugge (+ NL ports)
- **open market** approach:
  - ✓ competition between PRF, leading to competitive prices and high service levels
  - ✓ ship’s waste as a business opportunity for private waste contractors: no (or limited) investments needed by port authority
  - ✓ free choice for ship owner/operator
- providing **maximal incentive** to deliver waste: positive financial incentive
  - ✓ partial reimbursement of costs depending on waste delivered = reduced cost for ships that deliver
- linked with **state-of-the-art information and monitoring system**:
  - ✓ reducing administrative burden
  - ✓ enforcing authorities have access
Flemish fee system for merchant ports
Flemish fee system for merchant ports

MARPOL Annex V

MARPOL Annex V (in m³) collected in 3 Flemish merchant ports
Flemish fee system for recreational ports

- yearly fee, included in membership (± 45 euros)
- visitors (non-members): fee per call
- limited amounts of waste can be delivered without extra charges:
  - oil, paints, solvents, metals, mixed household waste
- expired pyrotechnics: not accepted by port (are to be returned to seller)