The IMO Action Plan to Address Marine Plastic Litter from Ships and Its Follow-Up Timeline

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ABSTRACT
On a global level, the pollution of the marine environment caused by marine plastic litter is becoming increasingly serious. Even if more than 80% of source of marine plastic litter comes from land-based activities, sea-based activities, such as losing fishing gear at sea, account for a significant amount of marine plastic litter. Accordingly, the discussion on the development of an action plan to address marine plastic litter from ships has begun since the IMO 73rd MEPC meeting.

With regard to various measures to reduce marine plastic litter from ships at the international level, in this paper, the following issues will be introduced and discussed: (1) An accidental loss or discharge fishing gear (ALDFG) which has accounted for a significant portion of marine plastic litter from ships, (2) Encouragement for the ratification of the 2012 Cape Town Agreement (CTA) adopted by the International Maritime Organization (IMO), which outlines fishing vessel standards and includes other regulations designed to protect the safety of seafarers, (3) Development of a management system on containers lost at sea, which prevents a potential danger to maritime safety and a threat to the environment, particularly with regard to plastics, (4) Timeline of follow-up actions at the IMO level for the action plan to address marine plastic litter from ships. Finally, it emphasizes the fact that various and sensitive issues for solving marine plastic litter problems from ships still remain. Therefore, research in the aspect of related policies and cooperation with related industries should be highlighted based on the circumstances of each country.

Introduction
In June 2017, the high-level UN Ocean Conference was held at UN Headquarters in New York to specifically support the implementation of SDG 14: Conserve and sustainably use the oceans, seas, and marine resources for sustainable development. The UN SDGs (The Sustainable Development Goals), also known as the Global Goals, were adopted by all United Nations Member States in 2015 as a universal call to action to end poverty, protect the planet, and ensure that all people enjoy peace and prosperity by 2030. The UN SDG consists of a total of 17 items, of which SDG 14 is closely related to the protection of the marine environment. At the conference, there was a consensus about the declaration “Our Ocean, Our Future: Call for Action” to support the implementation of SDG 14. The content of the “Call for Action” includes the need for reduction of marine plastic litter and microplastics from shipping.

At the 30th Assembly of IMO held in November 2017, the declaration “Our Ocean, Our Future: Call for Action” adopted by the high-level UN Ocean Conference was mentioned in IMO Assembly documents (A 30/11/1) submitted by Australia and co-sponsors. In this document, a need for regulations and measures concerning marine plastic litter at the international level was proposed to ensure the smooth implementation of SDG 14’s aims and the prevention of marine environment pollution caused by marine plastic litter and microplastics from ships. In addition, the member states which submitted this document with Australia have proposed that the International Maritime Organization (IMO) should positively address these issues on marine plastic litter problems from ships.

At the IMO 73rd Marine Environment Protection Committee (MEPC, 2018) meeting held in October 2018, a discussion on the agenda “Development of an Action Plan to Address Marine Plastic Litter from Ships,” which was finally adopted as a new output at the IMO 72nd MEPC, has been carried out according to the proposal of the 30th Assembly of IMO. In addition, a separate working group was established at the IMO 73rd MEPC meeting for a more in-depth discussion on marine plastic litter. As a result of the discussion at the working group, RESOLUTION MEPC.310(73) “ACTION PLAN TO ADDRESS MARINE PLASTIC LITTER FROM SHIPS” was adopted, which included 30 action measures to reduce marine plastic litter and microplastics from ships.

In this paper, we will introduce major contents of the action plans for reduction of marine plastic litter...
from ships adopted by the IMO 73rd MEPC, and discuss effective counterplans that will be conducted internationally focusing on merchant vessels and fishing vessel activities.

An Action Plan to Address Marine Plastic Litter from Ships

The IMO 73rd MEPC held in October 2018 has adopted an action plan to address marine plastic litter from ships [Resolution MEPC.310(73)]. This resolution has emphasized that IMO should recognize the importance of preventing pollution by garbage, including plastics from ships since the adoption of MARPOL convention Annex V, as well as dumping of various types of waste, including plastics, into the sea by the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (London Convention) and its 1996 Protocol (London Protocol). In addition, the objective of an action plan is providing the global solution for preventing marine plastic litter entering the oceans through ship-based activities. In order to propose the solution, the following specific outcomes related to marine plastic litter from ships have been identified as table 1 below, and appropriate measures for the corresponding outcomes have been discussed at the IMO 73rd MEPC working group meeting. “An action plan to address marine plastic litter from ships” was adopted as Resolution MEPC.310(73) as a first step at the IMO level. According to the contents of the table 1, IMO discusses measures on marine plastic reduction focusing on “from ships.”

Figure 1 is part of a survey report; “Plastic in Marine Environmental (2016)” on the analysis of sources of the Marine plastic litter, which was carried out by Eunomia, a UK Research and consulting company in the marine environment sector, in June 2016. As a result of the survey, it is shown that marine plastic litter from land-based sources are much higher than from sea-based activities such as shipping and fishing. About 85% of all marine plastic litter is generated from land-based activities according to Figure 1. However, discussions at the IMO meeting do not address all sources of marine plastic litter which comes from both land-
based and sea-based activities. Currently, discussions at the IMO meeting such as MEPC and PPR subcommittee did focus mainly on the development of measures for the reduction of marine plastic litter from shipping activities including fishing activities, through various measures such as the amendment of the international convention and guidelines in relation with garbage from ships. Among the various measures, we are going to discuss abandoned, lost or otherwise discarded fishing gear (ALDFG), the mandatory marking of fishing gear, the 2012 Cape Town Agreement (CTA), and the management system on containers lost at sea, which are currently becoming significant and sensitive issues at IMO committee and sub-committee meetings.

An Accidental Loss or Discarded Fishing Gear (ALDFG)

Although not shown on the map of the world, the Great Pacific Garbage Patch (GPGP), which is about 16 times the size of the territory of the Republic of Korea, actually exists in the Pacific Ocean. According to a recent study on the GPGP, it was estimated that about 46% of these garbage islands consist of abandoned, lost, or otherwise discarded fishing gear (ALDFG) from fishing activities.

At the 73rd MEPC meeting held in October 2018, a lot of member states have raised concern about the seriousness of marine environment pollution caused by ALDFG. In order to prevent pollution of the marine environment cause by ALDFG from fishing activities, a number of discussions were carried out at the working group meeting of the 73rd MEPC and, consequently, various measures have been included in the Resolution MEPC.310(73). Among the various measures related to ALDFG problems, the following are the key issues of the measures: (1) Consideration of the mandatory marking of fishing gear; (2) Encourage the ratification of the CTA.

Consideration of the Mandatory Rule regarding Marking of Fishing Gear

The terminology “fishing gear” is used to refer to all the equipment necessary for fishing vessels to engage in fishing activities. It should be noted that fishing gears are mainly made of plastic materials because of the lightweight of plastic and easy processing deformation. During fishing activities, fishing gear is often lost accidentally or discharged into the sea due to natural disasters such as typhoons. The problem, however, is that even if a lost fishing gear is retrieved, the owner who owned the lost fishing gear cannot be found, because the fishing gear itself does not contain any information of the owner, and type of the fishing gear. Therefore, owners who are responsible for managing the fishing gear do not need to carry out a thorough management of fishing gear, and accordingly, the marine environment pollution caused by marine plastic litter such as lost fishing gear becomes more serious.

At the working group meeting in 73rd MEPC, the necessity of the development of mandatory regulations at the IMO level to the marking of fishing gear was raised, taking into account that lost fishing gear is the main reason for marine plastic litter pollution from ships. However, at the present step, most of the member states of IMO agreed that it is difficult to apply the fishing gear marking system internationally and consistently to all fishing vessels for the reasons mentioned above.

Firstly, the method for marking fishing gear is technically different for each country. According to the study, "Report of the Expert Consultation on the Marking of Fishing Gear" released by the FAO (Food and Agriculture Organization of the United Nations, 2016), various methods for marking fishing gear are introduced as follows: (1) Electronic tagging; (2) Coded wire tags; (3) Color coded ropes; (4) Internal marker tapes; (5) Metal stamping; (6) Radio surface transponders; (7) Acoustic transponders; (8) Metal/steel tags. In order to apply the effective marking fishing gear system internationally, a consistent marking method should be established, taking into account the type of fishing gear.

Secondly, it should be noted that national policies on the management of fishing vessels including fishing gear vary from country to country. Fishing activities done by fishing vessels are carried out more actively in the coastal water areas than in international water. Therefore, the level of national policies related to the management of fishing vessels and fishing gear in each country should be considered in terms of different international rules and policies.

In order to effectively apply the marking system in relation to fishing gear, there are many factors to be considered. It is necessary to apply the fishing gear marking system for the efficient management of lost fishing gear and for the protection of the marine environment problem caused by marine plastic litter. Therefore, much research on the effective marking system of fishing gear based on the circumstances of different countries should be conducted at the IMO level.

Encouraging the Ratification of the 2012 Cape Town Agreement

The 2012 Cape Town Agreement (CTA), adopted by IMO, outlines fishing vessel standards related to ship’s safety and includes other regulations designed to protect the safety of crews and observers, and also provide a level playing field for related industry. The CTA of 2012 will enter into force 12 months after the date on which not less than 22 States, the aggregate number of whose fishing vessels of 24 m in length and over operating on the high seas is not less than 3,600, have expressed their consent to be bound by it.
At the 73rd MEPC meeting, Member States have agreed that the majority of marine plastic litter originating from ships currently being issued mostly comes from fishing activities of fishing vessels, not merchant vessels. Therefore, in order to reduce marine plastic litter from fishing vessels, it has been argued that a systematic management system for the safety of fishing vessels should be established preferentially, prior to the development of any regulations on the reduction of marine plastic litter from ships. The importance of the 2012 Cape Town Agreement, which is closely related to the safety of fishing vessels, has been emphasized accordingly among the member states at the meeting.

The Republic of Korea has not yet ratified the 2012 Cape Town Agreement. However, recent research and analysis on the ratification of CTA is being carried out under Korean government initiative. Therefore, in order to smoothly ratify the 2012 Cape Town Agreement and successfully accept it under domestic law on safety of fishing vessels, it is necessary to prepare for the following matters at the government level: (1) Analysis of domestic and foreign trends related to improvement of the safety of fishing vessels; (2) Analysis of each subcategory of the CTA and investigation of conformity with national law related to the safety of fishing vessels; (3) Analysis of the impact on fishing and shipping industry when the 2012 CTA is ratified; (4) Investigation of ways to reform domestic rules related to the management systems to enhance the safety of fishing vessels. Based on the above research and analysis, the Korean government should implement various effective policies to improve the safety of fishing vessels.

Development of a Management System of Containers Lost at Sea

Containers lost during ship sailing represent a potential danger to maritime safety in terms of navigation and a threat to the marine environment, particularly with regard to plastics they contain. According to the United Nations Conference on Trade and Development (UNCTAD) Review of Maritime Transport 2019, the expected annual growth in containerized trade for the period 2019–2024 is 4.5%. The size of containerships is also growing. In addition, the number of container lost accidents at sea has been increased according to the below figure. Figure 2 is an analysis graph showing the number of containers lost at sea, which was part of the survey report “Container Lost at Sea – 2017 Update” which was released by the World Shipping Council (WSC).

For example, with a ship accident related to marine plastic litter caused by lost containers, we can mention the MSC ZOE container vessel. In early 2019, the MSC ZOE has lost 342 containers near the Wadden sea, a particular sensitive sea area along the north coast. This incident raised concerns in economic, environmental, and safety aspects. Some of the pollution spread to the Wadden Islands affected the UNESCO World Heritage Nature Reserve. Despite costly clean-up operations, much of the plastic has not yet been collected. As a result, it has threatened the surrounding ecosystems and marine biodiversity.

At the 73rd MEPC meeting, most member states have recognized the seriousness of increased marine plastic litter pollution caused by containers lost at sea. Accordingly, RESOLUTION MEPC.310(73) “ACTION PLAN TO ADDRESS MARINE PLASTIC LITTER FROM SHIPS” was adopted at the meeting, and the following measures were included in relation to lost containers: (1) Considering establishment of a compulsory system of formatted declarations of the loss of containers and the means on board to easily identify the exact number of losses, (2) Considering establishment of an obligation to report the loss of containers through...
a standardized procedure, (3) Considering ways to communicate the location of lost containers overboard and providing additional information by interested parties.

The discussion of lost containers at sea is still at an early stage and has not been officially discussed at the IMO level. However, based on various lost container accident cases as Figure 3 so far, it has been demonstrated that the relation between container lost at sea and marine environment pollution was obvious. Therefore, it could be expected that at the MEPC meeting, discussions on the reporting and management of lost containers arising from ships at sea will be carried out internationally, in connection with the issue of reduction of shipping’s contribution to marine plastic litter. Taking into account the economic, commercial, and environmental aspects of lost containers at sea, more attention on the management of the lost containers at sea is required. In the case of the Republic of Korea, a tracking and reporting system for lost container accidents at sea has not yet been developed. Therefore, active interests and efforts of related industries regarding the development of the system for lost container accidents are necessary.

Follow-up Timeline for the Action Plan

In May 2019, the 74th MEPC committee (2019) has discussed a timeline for the action plan to address marine plastic litter from ships. Based on the RESOLUTION MEPC.310(73): “ACTION PLAN TO ADDRESS MARINE PLASTIC LITTER FROM SHIPS,” the MEPC committee has established the following timeline with short-term, medium-term, and long-term action plans, respectively.

- **Short-term Actions**: those that can be referred to the relevant sub-committees to begin work.
- **Mid-term Actions**: those that are reliant on the outcomes of the IMO Study on Marine Plastic Litter from ships to progress.
- **Long-term Actions**: those that are reliant on the further concrete proposals being submitted to the committee.

**Short-term Actions**

A short-term action plan, taking into account the contents of Resolution MEPC.310(73), immediately able to process through discussions on IMO sub-committee has been selected. The tasks related to the reduction

![Figure 3. Accident on containers lost at sea (MSC ZOE, 2019).](image)
of marine plastic litter from ships allocated to each IMO sub-committee are as follows:

(1) Pollution Prevention and Response (PPR) sub-committee will address the amendment of MARPOL Convention Annex V on reporting requirement regarding lost fishing gear from fishing vessel and amendment the 2017 Guidelines for the implementation of MARPOL Annex V (Resolution MEPC.295(71)). And, PPP Sub-committee will prepare an MEPC Circular to encourage Member States and international organizations that have conducted any research related to marine litter to share the results of such research, including any information;

(2) Implementation of IMO Instruments (III) sub-committee will address how to enhance the enforcement of MARPOL Convention Annex V, including PSC Procedure and PRF, in relation with garbage disposal and management from ships;

(3) Human Element, Training, and Watchkeeping (HTW) sub-committee will address the review of provisions in STCW-F Convention to all fishing vessel personnel receive appropriate training on marine environmental awareness focused on marine plastic litter from ships and abandoned, lost or otherwise discarded fishing gear from fishing vessels and, will strengthen the environmental training provisions to explicitly address the management of onboard plastics and marine plastic litter. HTW sub-committee will endeavor to recognize the seriousness of marine plastic litters from ships and importance of management of garbage from ships to seafarers through the above-mentioned takes.

Based on the timeline shown in Figure 4, the short-term actions will be implemented immediately by the IMO sub-committee meeting from 2020. Therefore, the Korean government will also need a comprehensive review of seafarer training provisions related to the management of marine plastic litter, and Port Reception Facility (PRF) status related to disposal of garbage from ships in Korea. In particular, with regard to the amendment of MARPOL Convention Annex V on reporting requirements regarding lost fishing gear from fishing vessels, this issue is closely related to the development of Korea overseas fisheries industry. Therefore, the government should actively respond to this issue through close consultations with overseas fisheries industry of Korea.

**Mid-term Actions**

The IMO MEPC Committee is preparing the study: “The IMO study on marine plastic litter from ships” at the IMO level, as its mid-term actions to address marine plastic litter from ships. At the 74th MEPC meeting, the Terms of Reference (ToR) for the IMO study on marine plastic litter from ships, which is to be carried out through the IMO study project, has been decided as follows: (1) Estimate the contribution to marine plastic litter (macro and microplastics) by all ships (including fishing vessels) and identify any knowledge gaps in determining this contribution; (2) Provide, where possible, a variety of analyses and visualizations (e.g., by ship type, ship size, geographical region/location, volumes, sources, and potential marine plastic litter

![Figure 4. Timeline of Follow-up Actions for the Action Plan to Address Marine Plastic Litter from Ships (2019).](image-url)
streams including, but not limited to, fishing gear or containers lost at sea in relation to the estimates in (1) above; (3) With regard to storage, delivery, and reception of plastic waste from ships. The purpose of this IMO study is to derive scientific and objective data on marine plastic litter from ships.

In addition, Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) is currently conducting a “SEA-BASED SOURCES OF MARINE LITTER – A REVIEW OF CURRENT KNOWLEDGE AND ASSESSMENT OF DATA GAPS” by GESAMP Working Group on Sea-based Sources of Marine Litter (WG 43), and the first interim report of GESAMP WG 43 was released in January 2020. This study is similar to the one currently being pursued by IMO. The purpose of conducting these studies is to obtain scientific and reliable evidence for developing international regulations and guidelines on marine plastic litter from ships. If international regulations on marine plastic litter from ships at the IMO level are developed based on the results of these studies, it will have a great influence on the related industries in Korea such as fishing and shipping. Therefore, it is necessary to analyze the progress of the study on marine plastic litter from ships that is currently being promoted by IMO and to actively proceed with related research projects.

**Long-term Actions**

As a long-term action plan, IMO is planning to encourage the ratification of the CTA in order to consider the establishment of externally funded major projects under the auspices of IMO in support of the action plan to address marine plastic litter from ships and to promote the technical cooperation projects related to the reduction of marine plastic litter from ships.

The CTA, as mentioned earlier, is an international convention adopted by IMO related to the safety of fishing vessels. Given that a significant proportion of marine plastic litter comes from fishing activities by fishing vessels, IMO will continue to encourage Member States to enter into force the CTA internationally to improve the safety of fishing vessels.

In terms of long-term plans, effective technical cooperation projects and establishment of fund for these projects should be continuously carried out. Even if IMO develops effective international regulations and guidelines for reduction of marine plastic litter from ships, it would not be effective if Member States such as developing countries do not have the capacity to implement these regulations and guidelines. Therefore, IMO should support projects such as technical cooperation in the long term in order for developing countries or small island countries with insufficient capacity to implement the international regulations and guidelines adopted by IMO, and to independently implement relevant provisions related to marine plastic litter without external assistance.

**Conclusion**

At the 73rd MEPC meeting, the Resolution MEPC.310(73): “ACTION PLAN TO ADDRESS MARINE PLASTIC LITTER FROM SHIPS” was adopted, and various research and regulatory developments on marine plastic litter from ships for the reduction of marine plastic litter are being conducted at the international level. It is inevitable for the overseas and domestic fisheries industry to undergo some changes such as strengthened regulations on the management of lost fishing gear for reduction of marine plastic litter.

This paper identified sensitive key issues related to the reduction of marine plastic litter from ships currently being discussed at IMO meetings. As a result, the following observations could be drawn from the analysis of “ACTION PLAN TO ADDRESS MARINE PLASTIC LITTER FROM SHIPS.” Firstly, taking into account the seriousness of marine environment pollution caused by lost fishing gear accidents, various measures and regulations were developed internationally to reduce lost fishing gears at sea. Among various measures, marking of a fishing gear is the most basic schemes to manage the lost fishing gears during fishing activities and this scheme makes it possible to collect general information about lost fishing gear accidents. However, various factors are to be considered in implementing the scheme of marking a fishing gear scheme due to many different types of a fishing gear. Therefore, promoting the development of marking of the fishing gear scheme suitable for the status of the fishing industry in Korea should be required.

Secondly, taking into account the growth in containerized trade worldwide by shipping, appropriate measures to prevent marine environment pollution caused by lost containers from ships at sea should be prepared at the IMO level. Since the discussions on the lost containers at sea have already begun internationally in connection with the marine plastic litter from ships, an active countermeasure should be needed in cooperation with the container shipping industries in Korea.

Thirdly, domestic counterplans on the reduction of marine plastic litter from ships should be prepared according to “the timeline of follow-up actions for the action plan to address marine plastic litter from ships” by IMO. In particular, with the analysis of the IMO study on marine plastic litter, research projects on the reduction of marine plastic litter from ships should be established promptly. Since this issue is closely related to the Korea overseas fisheries industry, the impact on industries in Korea should be sufficiently considered.

To sum up, a number of significant and sensitive challenges on marine plastic litter from ships still remain to be
resolved; however, in order to protect the marine environment, various measures such as strengthening and reviewing the relevant international conventions related to marine plastic litter should be developed on a global level in cooperation with related industries.

Disclosure statement

No potential conflict of interest was reported by the author.

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