

Report on the legal review of PR China and RO Korea regarding marine pollution control and compliance assessment with international ocean-related environmental agreements

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Forward

The Yellow Sea plays critical roles for the overall environment, economy and society of the three neighbouring countries. However, the semi-closed nature of the Yellow Sea and the rapid development of the surrounding area have rendered an increasingly polluted and over-exploited area. This large marine ecosystem faces major transboundary problems, inter alia, pollution and contaminants, eutrophication, plankton community changes, habitat loss and degradation, and climate-change related issues. One of the major tools to solve these problems from the societal perspective is rule of law. Both PR China and RO Korea rely heavily on rule of law in establishing their fundamental institutions, mechanisms and systems and adjusting behaviors to overcome marine environmental pollution issues. This report, by compiling an inventory of domestic and international legal documents of PR China and RO Korea related to marine environmental protection in the *Annex* as a starting point, further analyzes the status quo and shortages of the two legal systems on marine pollution control and proposes several recommendations for future improvements.

1. Legal sources and analysis on the side of PR China

The domestic legal sources of China on marine pollution heavily rely on its administrative laws and regulations while some other important provisions are reflected in its civil law, criminal law, procedural law and their judicial interpretations. Policies in particular formulated by the Central Committee of CPC or the State Council despite of their non-legally binding nature may play critical role for marine environmental stake-holders as well, which should not be underestimated.

Domestic authorities can be arranged by the following order: (1) Laws enacted by the National People's Congress (NPC) or its Standing Committee, (2) Regulations formulated by the State Council, (3) Measures formed by the administrative departments of the State Council or (4) the local governments¹, (5) Regulations adopted by the Local People's Congress, and (6) Judicial Interpretations promulgated by the Supreme People's Court, besides with (7) National Policies with significant values.

The fundamental and “keel” legislation in the marine environmental protection area is the Marine Environment Protection Law (MEPL) of PR China, which provides an overall and systematic regulation on marine pollution control and governance, although Environmental Protection Law is also very important for marine environment protection but in a more general manner. Other domestic legal authorities and their full texts can be accessed in the *Annex*.

1.1 Brief introduction of MEPL

In August 1982, the 24th meeting of the Standing Committee of the Fifth NPC passed the MEPL for the first time, which entered into force on March 1, 1983. In December 1999, the 13th meeting of the Standing Committee of the Ninth NPC adopted the revised MEPL, which came into effect on April 1, 2000. In December 2013, the Sixth meeting of the Standing Committee of the 12th NPC amended articles 43, 54 and 80. In November 2016, the 24th meeting of the Standing Committee of the 12th NPC made 19 amendments. And one year later in November 2017, the 30th meeting of the Standing Committee of the 12th NPC amended articles 30 and 77.

¹ The three provinces of China neighboring the Yellow Sea are Liaoning, Shandong and Jiangsu.

MEPL currently has ten chapters with a total of 97 articles, including *General Provisions, Supervision and Control over the Marine Environment; Marine Ecological Protection; Prevention and Control of Pollution Damage to the Marine Environment Caused by Land-based Pollutants; Prevention and Control of Pollution Damage to the Marine Environment Caused by Coastal Construction Projects; Prevention and Control of Pollution Damage to the Marine Environment Caused by Marine Construction Projects; Prevention and Control of Pollution Damage to the Marine Environment Caused by Dumping of Wastes; Prevention and Control of Pollution Damage to the Marine Environment Caused by Vessels and Their Related Operations; Legal Liabilities; and Supplementary Provisions.*

1.2 Historical review of all draft and amendments to MEPL

1.2.1 The adoption of the 1982 MEPL

1.2.1.1 Background of legislation

In the 1970s and 1980s, China's marine environment was damaged by various degrees of pollution. In some sea areas near estuaries, harbors, inland seas and coastal areas, the environmental pollution was quite serious. The annual industrial and domestic sewage discharged directly into the sea was about eight billion tons, of which nearly 2.1 billion tons of sewage was discharged into the Bohai Sea and the Yellow Sea. The pollution of toxic and hazardous substances such as petroleum, mercury, chromium, cadmium and cyanide was widely distributed. The pollution in the Yangtze River estuary and Hangzhou Bay became increasingly serious, and it had begun to endanger Zhoushan Fishing Ground, the largest fishery base in China. Seawater pollution caused fisheries to move outward in some sea areas, fish stocks vanished, residual poisons in fish increased, and many tidal flat farms had been

abandoned. The pollution problem caused serious concerns among fishing workers and fishermen, and some even lost their livelihoods. With the development of the marine industry, the number of foreign ships and foreign companies entering or having businesses in the sea areas under the jurisdiction of China for navigation, oil exploration and exploitation etc. was increasing as well, and then it became inevitable to strengthen the supervision and management of pollutants discharging and waste dumping from foreign ships, platforms and aircraft.

1.2.1.2 Legislative process

On September 13, 1979, the Standing Committee of the NPC passed and promulgated the "*Environmental Protection Law of the People's Republic of China (for trial purpose)*". Based on this basic law, the former Environmental Protection Leading Group of the State Council began to draft various environmental protection regulations. MEPL was one of them. In May 1980, the Leading Group and the State Oceanic Administration, cooperating with Ministry of Transportation, Ministry of Petroleum, and the State Aquatic Product General Bureau etc., with involvement from invited legal scholars of the Institute of Law of the Chinese Academy of Social Sciences and the Shanghai Institute of Law, formed the drafting group of MEPL. On the basis of information collection, investigation and research, and consultation and coordination, the drafting group completed a discussion paper and solicited opinions from relevant departments of the State Council and some ten coastal provincial governments. The State Council Standing Committee discussed the paper and forwarded it to the Standing Committee of the NPC for approval.

1.2.1.3 Main contents

The MEPL 1982 with eight chapters and 48 articles mainly regulates the prevention of marine pollution. It includes several chapters focusing on various sources of

pollution damage to the marine environment. The first is coastal engineering, which mainly refers to the construction of coastal ports, oil terminals and estuary water conservancy projects. The second is offshore oil exploration and exploitation, which needs special regulation during phases such as blasting exploration, drilling, oil testing, and oil transportation. The third is land-based pollution. The fourth is pollution damage to the marine environment from ships. The fifth is pollution damage caused by dumping waste to the marine environment. In addition, in the chapter on legal liability, the provisions cover administrative liability, liability for damage and criminal liability for violations of this law.

1.2.2 The thorough revision in 1999

1.2.2.1 Background of revision

In the 16 years of implementation of MEPL 1982, it had indeed played a positive role in promoting the development of China's marine economy and marine environmental protection. However, with the deepening of reform and opening up, the rapid development of coastal economy, and the development of international ocean affairs, MEPL 1982 was not able to keep fully adapted to the need of management and protection of marine environment.

Due to the large amount of urban domestic sewage and industrial/agricultural wastewater discharging into the sea, the frequency of marine environmental disasters or incidents such as red tides, oil spills, viruses, illegal dumping and mariculture pollution continued to increase. Consequently, the damages to the marine environment and the fundamental conditions of marine resources were seriously aggravated. The main manifestations were as follows: marine ecosystems degraded, local ecosystems were imbalanced and evolved to low-quality structures; pollution levels in offshore waters were exacerbated, and polluted sea areas

expanded outward; coastal and island natural landscape environment was seriously damaged, coastline environment mutated, and coastal erosion conditions intensified; and coastal and sea functions reduced. However, MEPL 1982 failed to provide clear and specific norms to protect the marine environment in a holistic manner, while it focused on pollution prevention from individual sources only.

Since the enactment of MEPL 1982, major changes had taken place in the legal system and environmental management. Provisions concerning new measures and systems were adopted by relevant laws, regulations or ministerial rules, which were imperative for marine environment protection and thus should be further confirmed and codified by MEPL. Since 1982, China had successively ratified several international conventions and protocols, in particular the *United Nations Convention on the Law of the Sea* (hereinafter referred to as the "UNCLOS") and the *London Protocol 1996*. Therefore, the country's rights and obligations in international ocean affairs had changed. When the contracting party enjoys the rights and interests entrusted to it by treaties, it must fulfill its international commitments as well, which should be reflected in the relevant domestic laws or regulations.

To this end, on the basis of the revision work initiated by the Eighth NPC Environmental Protection Committee in 1995, the NPC Environmental Protection Committee proposed a major amendment draft of MEPL, building upon extensive surveys, research, experience and widely solicited opinions.

1.2.2.2 Main contents

MEPL 1999 has ten chapters and 102 articles. Compared with MEPL 1982, two new chapters - *Supervision and Control over the Marine Environment* and *Marine Ecological Protection* – were added into MEPL 1999 and made it a more holistic

legal authority. From then on, the skeleton of the chapters of MEPL maintained the same, except with some articles' amendments.

1.2.3 Some articles' amendments in 2013

1.2.3.1 Background of amendment

In order to implement the decision on the institutional reform and functional transformation plan for the State Council adopted by the first meeting of the 12th NPC, promote the reform of administrative approval system and industrial/commercial registration system and the transformation of governmental functions, take advantage of local governments' close relationships with the grassroots, promote and guarantee the administrative mode to evolve from pre-approval to in-process or post-event supervision and management, and thus further stimulate the creative vitality of the market and society, based on the *Decision of the State Council on Matters concerning 50 Administrative Approval Items to Be Cancelled and Delegated to Lower Levels (No. 27 [2013] of the State Council)* promulgated on July 13, the *Decision of the State Council on Matters concerning Several Administrative Approval Items to Be Cancelled and Delegated to Lower Levels (No. 44 [2013] of the State Council)* promulgated on November 8, and the *Scheme for the Registration System Reform of Registered Capital* approved at the 28th executive meeting of the State Council, the Legislative Affairs Office of the State Council, in cooperation with other departments and agencies, proposed amendments to MEPL as well as to six other laws to the NPC Standing Committee.

1.2.3.2 Main contents

Article 43 of MEPL 1999 stipulates that the environmental impact report of a coastal engineering construction project shall be submitted to the environmental protection

administrative department for examination and approval after being reviewed by the oceanic administrative department. The 2013 amendment cancelled the pre-review procedure by oceanic administrative department, considering that the final approval of the environmental impact report of the coastal engineering construction project is carried out by the environmental protection administrative department. After the cancellation, on the one hand, the environmental protection administrative department should still solicit opinions from oceanic administrative department as necessary before approval; on the other hand, the efficiency of the examination and approval process was enhanced and thus the administrative counterpart could enjoy more benefits. Article 54 of MEPL 1999 stipulates that for the exploration and exploitation of offshore petroleum, an oil spill contingency plan is mandatory and should be reported to the national oceanic administrative department for review and approval. However, in practice, the three major elements of an oil spill contingency plan including status of platform operation and marine environment and resource, oil spill risk analysis and oil spill contingency response capacity had already been reviewed by the oceanic administrative department in the approval process for the environmental impact report. The emergency drills, manoeuvres and trainings should also be checked during the completion acceptance inspection of a project. A simple filing of the contingency plan can achieve the goals as much effective as approval. Therefore, the amendment finally adopted the filing procedure of an oil spill contingency plan instead of approval.

1.2.4 Various amendments in 2016

1.2.4.1 Background of amendment

The 2016 amendment was a response to the hotspot issues on marine environment at that time, codified the latest requirements of the Party Central Committee and the State Council since the 18th National Congress of the Communist Party of China

(NCCPC), and absorbed the latest provisions of other relevant environmental laws and regulations.

Response to the problems emerging in the Penglai 19-3 oil spill incident. In June 2011, after the Penglai 19-3 oil spill incident, the fine of only 200,000 yuan caused a strong and critical reaction in the society, exposing the problems existing in the liability regime of MEPL. On September 7, Premier Wen Jiabao presided over the State Council executive meeting on the handling work of the incident, proposing to "further revise and improve the marine environmental protection law and regulations, taking a long-term perspective."

Codification of the latest requirements of the central authorities on marine ecology and environment protection since the 18th NCCPC. Since the 18th NCCPC of China, the Party Central Committee and the State Council had made new arrangements for promoting eco-civilization development and institutional reform, which were mature to be codified in the law, including, inter alia, ecological protection offset and red line, total quantity control of pollutant discharge, and increased penalty upon polluting acts.

Adapting to new trend and requirements of reform and development. The *Environmental Protection Law* was revised in 2014, and the relevant provisions of MEPL needed to be amended to maintain consistency, in particular regarding the so-called "penalty on the daily basis". The pre-approval provisions on EIA of MEPL should be considered to be amended to contribute to the reform of investment project approval system. Some provisions needed to be deleted to keep consistent with the State Council's administrative institution reform, i.e. the "Fang Guan Fu" reform.

1.2.4.2 Major considerations and process

In response to the Penglai 19-3 oil spill incident occurred in June 2011, a task force was convened and led by the Legislative Affairs Office of the State Council in cooperation with other 15 departments and agencies in the end of September, considering amendments to *MEPL, Regulations of the People's Republic of China Concerning Environmental Protection in Offshore Oil Exploration and Exploitation*, and *Administrative Regulation on the Prevention and Treatment of the Pollution and Damage to the Marine Environment by Marine Engineering*.

Several amendment opinions were concluded in 2012, including that article 91 of MEPL should be revised to increase the violation penalty, other amendments could be incorporated into *Regulations of the People's Republic of China Concerning Environmental Protection in Offshore Oil Exploration and Exploitation*, and no amendment was needed to *Administrative Regulation on the Prevention and Treatment of the Pollution and Damage to the Marine Environment by Marine Engineering* yet.

In August 2013, the task force discussed the amendment to article 91 of MEPL, forming two schools of opinion on the basis for imposing penalty, i.e. the amount of oil spilled versus direct damage. In December 2014, the competent departments and agencies reached the consensus to amend article 91 on the basis of direct damage to punish violations rather than the amount of oil spilled.

In 2015, the central authorities successively adopted the *Opinions of the CPC Central Committee and the State Council on Accelerating the Ecological Civilization Construction* and the *Action Plan for Prevention and Control of Water Pollution*,

which bring forward stricter and higher-level requirements for marine ecology and environment protection. Considering these facts, after many discussions between the State Oceanic Administration and the Legislative Affairs Office of the State Council, it was agreed that ecological protection offset, red line etc. should be added to MEPL besides of penalty increase.

In June 2016, after many rounds of meetings and consultations, the amended MEPL was widely agreed with a total of 19 amendments. The revised MEPL had ten chapters and 97 articles.

1.2.4.3 Main features

The 2016 amendments only focused on specific provisions which had distinct characteristics and mature conditions to be amended, rather than a thorough revision. The amendments mainly included penalty increase, total quantity control of pollutant discharge and index decomposition, regional approval limitation, and marine ecological protection offset, and red line.

For areas that exceeded quantity control index or failed to meet the goals or tasks of marine environmental protection, the mechanism of regional approval limitation should be applied. Exploitation and utilization of marine resources must strictly abide by the ecological protection red lines, and penalties for marine environmental violations sharply increased.

In consistent with the “*Fang Guan Fu*” reform of the State Council, the EIA could be completed before the construction of a project instead of the feasibility study phase. The procedure of filing environmental impact report of marine engineering project to the environmental protection administrative department was cancelled. Various

approval requirements for operations in harbor waters were cancelled as well except with the ship-to-ship transfer of bulk liquid cargo apt to cause pollution damage. The approval procedure was cancelled for trial operation of both coastal and marine engineering projects. And it was no longer required for the environmental protection administrative department to organize the completion acceptance inspection to the coastal engineering project.

1.2.5 Amendments in 2017

Also in consistent with the “*Fang Guan Fu*” reform of the State Council, the 2017 amendments revised articles 30 and 77 dealing with sea-disposed pollutant discharge outlet, and replaced the pre-approval procedure for establishing sea-disposed pollutant discharge outlet with a simple filing procedure, in order to further reduce companies’ burden and avoid duplication with other administrative procedures such as EIA. The amended article 30 stipulates that “*Any sea-disposed pollutant discharge outlet shall be sited in accordance with marine functional zonation scheme, marine dynamic conditions and relevant regulations, and shall, after scientific assessment, be reported to the administrative department in charge of environment protection under a people's government at or above the level of a districted city for recordation.*”

1.3 Regulations and policies implementing MEPL

For the purpose of implementing MEPL, seven administrative regulations, ten local regulations or measures, more than ten ministerial/department measures, and more than 200 technical standards or guidelines were formulated, thus establishing a basic framework of legal and technical system for marine environmental protection. The administrative regulations enacted by the State Council covered all major

sources of pollution to marine environment, similar to the arrangement of the chapters of MEPL, i.e. pollution caused by land-based pollutants, coastal engineering projects, marine engineering projects, oil exploration and exploitation activities, dumping of wastes, ship operations, and vessel recycling.

In terms of marine zonation, relevant departments of the State Council had successively formulated *the national marine major functional zonation plan, the national marine functional zonation scheme, the national marine ecology and environment protection plan, the master plan for environmental protection in the Bohai Sea, the outlining plan of ecology and environment protection for Xisha, Nansha and Zhongsha Islands and their surrounding waters, the program on the prevention and control of pollution in coastal waters, and the marine ranching plan*, etc. Most coastal governments at provincial level had already introduced zonation schemes or plans. Nearly 30% of the coastal waters and 37% of the mainland coastlines were under control of the marine ecological protection red lines.

In terms of marine ecological protection, the former State Oceanic Administration, the former Ministry of Agriculture and other relevant departments had successively issued more than ten regulatory documents such as the *Measures on the Management of Marine Nature Reserves, Measures on the Management of Special Marine Protected Areas*, and *Notice on Strengthening the Management of Marine Aquatic Wild Animals Protection*, as well as more than ten technical guidelines such as *Technical directives for the designation of special marine protected area, Technical guidelines for functional zonation and the overall plan compiling of special marine protected area*, and *Technical regulations for impact assessment of construction projects on marine living resources*, which formed a whole system covering area selection, construction, management, offset, compensation,

supervision and appraisal.

In terms of prevention and control of land-based pollution, the former Ministry of Environmental Protection in cooperation with other related departments jointly formulated the program on the prevention and control of pollution in coastal waters, established three mechanisms including filing procedure for setting up sea-disposed pollutant discharge outlet, quality evaluation of coastal waters, and pollutant discharge permit, and formulated more than 70 standards and six technical guidelines such as *Technical guidelines on integrated pollution remediation for key estuaries and bays (for trial purpose)*, *Standard for pollution control of sewage marine disposal engineering*, and *Catalogue for classified management of stationary pollution sources subject to discharge permit (2017 edition)*, thus basically forming a relatively complete system for land-based pollution prevention and control.

In terms of prevention and control of coastal and marine engineering pollution, the former Ministry of Environmental Protection and the former State Oceanic Administration successively formulated more than 30 department measures or regulatory documents such as the *Classified Administration Catalogue of Environmental Impact Assessments for Construction Projects*, *Administrative Measures on Regional Approval Limitation for Environmental Impact Assessment of Construction Projects (for trial purpose)*, *Administrative Provisions on Environmental Impact Assessment of Marine Engineering*, and *Measures for the Implementation of the Regulation on the Administration of Environmental Protection for Offshore Oil Exploration and Exploitation*, establishing more than ten mechanisms such as EIA approval, regional approval limitation, completion acceptance, “*three simultaneous*” inspection, charge for pollutant discharge, and

filing of oil spill contingency plan, and formulated more than 60 technical standards or guidelines such as *Technical guidelines for environmental impact assessment*, *Technical guidelines for environmental impact assessment of marine engineering*, and *Effluent limitations for pollutants from offshore petroleum exploration and production*, thus basically forming a relatively complete system for prevention and control of coastal and marine engineering pollution.

In terms of prevention and control of dumping of waste, the former State Oceanic Administration had successively formulated more than 10 department measures or regulatory documents such as *Measures for the Implementation of the Regulations of the People's Republic of China on the Dumping of Wastes at Sea*, *Interim Provisions on the Administration of Dumping Sites*, and *Administrative Provisions on the Record System for Marine Dumping Operations*, as well as more than 10 technical standards or guidelines such as *Assessment procedure for marine dumping of dredged material* and *Technical guidelines for selecting of ocean dumping area*, establishing several basic mechanisms such as dumping permit, dumping fee, and dumping site management, and forming a relatively complete system for management and standards.

In terms of prevention and control of pollution from vessel, the Ministry of Transport and the former Ministry of Agriculture had successively formulated *Opinions on the Implementation of the Regulation on the Prevention and Control of Vessel-induced Pollution to the Marine Environment*, *Administrative Measures for the Collection and Use of Compensation Funds for Vessel-Induced Oil Pollution Damage*, *Measures of the People's Republic of China for the Implementation of Civil Liability Insurance for Vessel-induced Oil Pollution Damage*, and *National Major Marine Oil Spill Emergency Disposal Plan* etc., as well as more than 20 technical standards or

guidelines such as *Discharge standard for water pollutants from ships*, and *Statutory inspection rules for fishing vessels*.

1.4 Management undertaken to protect the marine environment

1.4.1 Prevention of land-based pollution including from discharge outlets

The management of channels through which land-based pollutants flow into the sea was strengthened. A comprehensive inventory check of various rivers and streams into the sea was conducted. A quality supervision platform for coastal seawaters was established, and the registration information of pollutant discharge outlets into the sea was able to be populated online. The total quantity control of nitrogen and phosphorus emissions in key industries at key watersheds was implemented. A national information platform for the management of pollutant discharge permit was built, and 15 industries such as thermal power and papermaking had been subject to discharge permit issuance.

Under the guidance of the former Ministry of Environmental Protection, the local governments and their environmental protection departments adopted strict supervision and environmental access upon existing or newly-built pollutant discharge outlets into the sea, monitoring the concentration of pollutants, emission ratio of wastewater etc., and paying attention to the position and the discharge method of the outlets. For newly-built outlets, the position and the discharge method were considered as important aspects to the environmental access.

The management system for pollutant discharge outlet was improved, with the conditions for defining the “*two categories*” of pollutant discharge outlets into the sea clarified, i.e. the illegally and the unreasonably set-up outlets, and the

management requirements for the “*two categories*” specified respectively. The quality supervision platform for coastal seawaters collected information such as on pollutant discharge outlets, water discharge outlets, and rivers, which could influence the marine environmental quality, identified the “*two categories*” of outlets by analyzing the remote-sense images, and notified the coastal provincial governments accordingly.

A preliminary inspection by the former Ministry of Environmental Protection and the former State Oceanic Administration conducted in 2017 indicated a total of 2835 coastal outlets into the sea of China, including 1246 pollutant discharge outlets, of which 602 outlets could be attributed to the “*two categories*”. By December of 2017, 97% of the outlets of the “*two categories*” had been rectified.

1.4.2 Prevention of coastal engineering pollution

The development and utilization activities along coastal zones were highly restricted. The former Ministry of Environmental Protection, by implementing the *protection-priority* idea and the eco-civilization ideology, restrained the discretionary power in EIA approval process. During the twelfth Five-Year Plan period of China, only 143 coastal engineering projects were approved. Coastal port development plan covering more than more than 170 kilometers had been cancelled in recent years. More than 220 square kilometers for sea reclamation was chopped.

Modernized and smart management of marine environment for coastal engineering was enhanced. In 2014, the former Ministry of Environmental Protection built an information platform for environmental management of coastal engineering, counting indexes such as regional distributions, EIA industrial patterns, pollutant discharge outlets, pollutant discharge quantities, and the total quantity. The platform

had completed a check upon construction projects approved by the Ministry of Environmental Protection during 1990 to 2013, identifying 929 projects as coastal engineering ones.

1.4.3 Prevention of marine engineering pollution

In accordance with the requirements of eco-civilization, the approval of EIA for marine engineering projects became stricter. The site selection and construction must conform to the major marine functional zonation plan, the marine functional zonation scheme, ecological protection red line, and other relevant norms and standards.

According to the “*Fang Guan Fu*” reform, the intermediary service for compiling the monitoring report for completion acceptance of environmental protection facilities was not mandatory any more. Companies may compile the report on its own or by hiring a contractor on voluntary basis.

For oil platforms, the construction company should record in the “anti-pollution log” the drilling mud, oil content of drilling cuttings, discharge time, and discharged quantity in accordance with relevant regulatory documents and national standards, and report to the competent department.

The oil spill contingency plan filed should include filled filing form, review comments by experts, and the contingency plan itself. The “*three simultaneous*” mechanism applying to the environmental facilities should be implemented by in-process or post-event supervision and management instead of pre-approval.

The former State Oceanic Administration and CNOOC jointly established an oil spill

emergency management information system to realize interconnection and interoperability of the system, video conference, and resource sharing of oil platform video surveillance. Joint oil spill emergency drill was organized annually, as well as inspection on risk and hidden danger for oil platforms and submarine oil pipelines.

1.4.4 Prevention of pollution by dumping of wastes

No dumping activities were allowed without a prior permit by the competent authority. The waste to be dumped at sea must fall within the *reverse list* of the London Protocol 1996, i.e. dredged material; sewage sludge; fish waste, or material resulting from industrial fish processing operations; vessels and platforms or other man-made structures at sea; inert, inorganic geological material; organic material of natural origin; bulky items with certain conditions; and carbon dioxide streams from carbon dioxide capture processes for sequestration, and then undergo the assessment of waste components and characteristics.

Dumping fees vary depending upon the location and method of dumping and the specific type of waste and other matter for dumping. Vessels for dumping activities need to be equipped with dumping recorder. The dumping sites can be divided into two categories: permanent dumping sites and temporary ones. The former are approved by the State Council, where wastes generated by the regular production of certain areas can be dumped. The latter are limited to satisfy the needs of construction projects such as coastal and marine engineering.

From 2007 to 2017, a total of around 4300 permits were issued, and the actual quantity of wastes dumped at sea was about 1.7 billion m³. The dumping fee charged in the year 2017 was about 50 million yuan. Six batches of permanent dumping sites were approved by the State Council in 1986, 1987, 1988, 1990, 1993

and 2009, respectively. By the end of 2017, the dumping sites in use were 92.

Supervisory monitoring of the dumping sites was conducted annually, focusing on factors such as depth, water quality, and organisms. The monitoring results on the one hand could be used as basis to adjust management from time to time, and on the other hand were posted in the *Bulletin of Marine Environmental Status of China* annually and the *bulletin on management of dumping activities* monthly.

1.4.5 Prevention of pollution from vessels

With the approval and issuance of the *National Major Maritime Oil Spill Response Capacity Building Plan (2015-2020)* in 2016, competent departments and governments at all levels have strengthened the building of oil spill response capacities in their respective industries and regions, of which the emergency removal, emergency organization and command, and the surveillance and monitoring were greatly improved. In 2018, the Ministry of Transport in cooperation with relevant ministries and commissions initiated a special supervision of the implementation of the Plan.

The fund for compensation for oil pollution damage from ships was established, which levies on the owners of goods or their agents who receive oily materials (including crude oil and fuel oil) from waters under the jurisdiction of China, and is mainly used to compensate the damage arising from oil pollution incident caused by ship but beyond the scope that the ship owner and its insurer are obligatory to cover for the injured party. By the end of 2017, the fund had collected a total of 670 million yuan, and accepted 5 cases, with expected compensation of more than 16 million yuan benefitting 11 entities.

1.4.6 Protection and restoration of marine ecosystems

Since 2011, the former State Oceanic Administration had invested more than 300 million yuan of central government funds for the capacity building of national marine protected areas, mainly for management, protection and monitoring. At the same time, 44 million yuan was invested to build surveillance system for national marine protected areas and realize informationized and dynamic management of national marine nature reserves.

A network of marine protected areas with complete types and reasonable layout was established. By August of 2018, China had set up more than 270 marine protected areas, covering an area of more than 12 million hectares, accounting for 4.1% of the jurisdictional sea area. Among them, there were 85 national marine nature reserves and national special marine protected areas, with an area of 7.38 million hectares. The network of marine protected areas covered the coastal waters of 11 provinces (including autonomous region and municipalities), providing effective protection for rare and endangered marine life such as coral reefs, mangroves, sea turtles, and Chinese white dolphins, as well as typical and important marine ecosystems.

From 2013 to 2014, the three provinces and one municipality around the Bohai Sea completed the red line delineation, which accounted for about 37% of the management area of the Bohai Sea and about 31% of the mainland coastlines. By the end of 2017, 11 coastal provinces (including autonomous region and municipalities) had completed their marine ecological protection red line delineation, which had been released for implementation as well.

From 2010 to 2015, the Ministry of Finance and the former State Oceanic

Administration arranged 8.5 billion yuan from the central sea-utilization fund supporting more than 270 projects for restoration or protection of sea areas, islands, and coastal zones. More than 190 kilometers of coastlines, 1,200 hectares of beaches, and 2,000 hectares of wetlands were restored. Major restoration projects such as *Blue Bay, South Mangroves and North Tamarisks, and Eco Islands and Reefs* provided about 5 billion yuan supporting 18 cities to invest in ecological remediation and restoration. By the end of 2017, a total of more than 70 kilometers of coastlines, 2,100 hectares coastal wetlands, and 40 hectares of beaches were restored.

2. Legal sources and analysis on the side of RO Korea and comparison with PR China

2.1 Development of RO Korea's marine environmental protection laws

RO Korea's marine environment-related laws initially were part of and thus have shorter legislative history than the territorial environmental law. However, following the establishment of the Ministry of Oceans and Fisheries in 1996, the environmental laws were greatly improved and the legal system was formed. After its establishment, the Ministry of Oceans and Fisheries strengthened the management of marine environment. Most marine environmental laws in effect were enacted or modified after the establishment of the Ministry of Oceans and Fisheries in 1996.

The *Prevention of Marine Pollution Act*, promulgated in 1977, can be seen as the beginning of the laws related to marine environment. The Act was to implement the 1954 *International Convention for the Prevention of Pollution of the Sea by Oil*, and

fully revised in March 1991. Before 1996, the Act was the basis on which the authorities of marine environmental management was divided, and was jointly administered by the Office of Environment, the Division of Maritime Transport, Harbors and Bays, the Division of Fisheries, and the Division of Maritime Police, who drafted or formulated Premier or Ministerial orders on specific matters. Since 1996, the Ministry of Oceans and Fisheries had unified the administrative authorities of marine environmental protection and acquired the functions on specific matters as well.

Consequently, an integrated ocean management regime emerged. Afterwards, based on that system, more acts and decrees were enacted and the coverage expanded from oil pollution prevention to other aspects of marine environment, for example, *Coastal Management Act* and *Wetland Conservation Act*.

After the enactment of the 1977 *Prevention of Marine Pollution Act*, more acts and decrees were formulated focusing on vessel-based pollution prevention so as to better implement IMO conventions, such as 1992 *Compensation for Oil Pollution Damage Guarantee Act*. Although the *Prevention of Marine Pollution Act* was the most-widely-applied law for marine environment, the starting point and the major scope of it was still targeting on oil pollution from ships, which largely limited the progress and expansion of the Act even though it had undergone 10 times' revisions.

Eventually, the *Prevention of Marine Pollution Act* was repealed and replaced by a more comprehensive law on marine pollution control from all sources. The *Marine Environment Management Act* was adopted by the Congress and entered into force in 2009 with the latest amendment in 2017, when an overarching and more

fundamental law was adopted as well, i.e. the *Act on Conservation and Utilization of the Marine Environment*, prescribing matters concerning basic direction-setting for policies to conserve and utilize the marine environment and concerning the establishment and implementation system for such policies.

2.2 Comparison with PR China

<p>Similarities</p>	<ul style="list-style-type: none"> ① Both once incorporated into an overall environment protection law and later separated and independent ② Various layers of legal systems ③ Management functions once fell upon several departments and later centralized ④ Once focusing on pollution issues and later expanded to other aspects of marine environment in particular ecology ⑤ Highly influenced by domestic marine economy and international agreements
<p>Differences</p>	<ul style="list-style-type: none"> ① China seems have more layers of legal systems and more legal documents than Republic of Korea, ② which suggests that the laws and regulations of RoK have more implementation rules and application details than those of China ③ Adopted different approaches of centralization: For RoK, all ocean management functions (not only on marine environment) were centralized upon one ministry; while for China, only marine environment functions were centralized (lately with land environment functions) upon one agency or ministry, like US NOAA and EPA somehow ④ The primary legislation of China is apt to cover all aspects of marine environment while that of RoK seems more focused on pollution issues; other aspects such as marine ecology are administered by other specific legislations

3. Major international agreements for PR China and RO Korea directly related to marine pollution

3.1 UNCLOS

The United Nations Convention on the Law of the Sea (UNCLOS) was adopted in 1982 and entered into force in 1994. UNCLOS provides a comprehensive, universal, 'umbrella' framework for international oceans' governance, including the prevention, reduction and control of marine pollution from all sources. The normative provisions of UNCLOS are considered to be customary international law.

Part XII contains 11 sections and 45 articles. It addresses all sources of pollution, e.g. land-based sources, seabed sources, dumping, vessel pollution and atmospheric pollution. As part of the general provisions, UNCLOS requires States to take measures necessary to prevent, reduce and control pollution of the marine environment from any source (article 194) and to act "so as not to transfer, directly or indirectly, damage or hazards from one area to another or transform one type of pollution into another" (article 195).

UNCLOS requires enforcement jurisdiction by the coastal state for dumping within its territorial sea, exclusive economic zone, or continental shelf; the flag state for vessels flying its flag or registered there.

Part XV of UNCLOS contains the provisions for the settlement of disputes relating to the interpretation or application of UNCLOS. Article 287 outlines the choice of procedures for Parties to UNCLOS to use in the event of a dispute for which no

settlement has been reached.

Within its territorial seas, a sovereign state may exercise exclusive jurisdiction on marine environmental issues, no matter where the sources of the seas originate. The coastal state may enact and enforce relevant legislation to address issues pertaining to the marine environment. In contiguous zones, states may exercise the control necessary to prevent and punish infringement of its customs, fiscal, immigration or sanitary laws and regulations. While UNCLOS does not explicitly address the issue of pollution in the contiguous zone, states may address pollution related activities if they are related to sanitary issues. UNCLOS also provides that coastal states have jurisdiction concerning the protection and preservation of the marine environment.

Under the UNCLOS, member states bear responsibilities to preserve and protect the environment. While states have the sovereign right to exploit their natural resources, this right is limited to an extent that does not harm the marine environment. States are required to take, individually or jointly as appropriate, all measures to prevent, reduce and control pollution of the marine environment from any source. States also shall take all measures necessary to ensure that their activities do not cause pollution-related damage to other states and their environments.

In order to minimize the damaging effects of pollution, states are obliged to develop and promote contingency plans for responding to pollution incidents in the marine environment. States are also required to promote studies, undertake programs of scientific research and encourage the exchange of information and data acquired about marine environment pollution. A stringent set of rules, standards, and

scientific criteria are also required to protect the marine environment.

3.2 MARPOL

The International Convention for the Prevention of Pollution from Ships (MARPOL) is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes.

The MARPOL Convention was adopted on 2 November 1973 at IMO. The Protocol of 1978 was adopted in response to a spate of tanker accidents in 1976-1977. As the 1973 MARPOL Convention had not yet entered into force, the 1978 MARPOL Protocol absorbed the parent Convention. The combined instrument entered into force on 2 October 1983. In 1997, a Protocol was adopted to amend the Convention and a new Annex VI was added which entered into force on 19 May 2005. MARPOL has been updated by amendments through the years.

The Convention includes regulations aimed at preventing and minimizing pollution from ships - both accidental pollution and that from routine operations - and currently includes six technical Annexes. Special Areas with strict controls on operational discharges are included in most Annexes.

Annex I - Regulations for the Prevention of Pollution by Oil (entered into force 2 October 1983) covers prevention of pollution by oil from operational measures as well as from accidental discharges; the 1992 amendments to Annex I made it mandatory for new oil tankers to have double hulls and brought in a phase-in schedule for existing tankers to fit double hulls, which was subsequently revised in 2001 and 2003.

Annex II - Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk (entered into force 2 October 1983) details the discharge criteria and measures for the control of pollution by noxious liquid substances carried in bulk; some 250 substances were evaluated and included in the list appended to the Convention; the discharge of their residues is allowed only to reception facilities until certain concentrations and conditions (which vary with the category of substances) are complied with. In any case, no discharge of residues containing noxious substances is permitted within 12 miles of the nearest land.

Annex III - Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form (entered into force 1 July 1992) contains general requirements for the issuing of detailed standards on packing, marking, labelling, documentation, stowage, quantity limitations, exceptions and notifications. For the purpose of this Annex, "harmful substances" are those substances which are identified as marine pollutants in the International Maritime Dangerous Goods Code (IMDG Code) or which meet the criteria in the Appendix of Annex III.

Annex IV - Prevention of Pollution by Sewage from Ships (entered into force 27 September 2003) contains requirements to control pollution of the sea by sewage; the discharge of sewage into the sea is prohibited, except when the ship has in operation an approved sewage treatment plant or when the ship is discharging comminuted and disinfected sewage using an approved system at a distance of more than three nautical miles from the nearest land; sewage which is not comminuted or disinfected has to be discharged at a distance of more than 12 nautical miles from the nearest land.

Annex V - Prevention of Pollution by Garbage from Ships (entered into force 31 December 1988) deals with different types of garbage and specifies the distances from land and the manner in which they may be disposed of; the most important feature of the Annex is the complete ban imposed on the disposal into the sea of all forms of plastics.

Annex VI - Prevention of Air Pollution from Ships (entered into force 19 May 2005) sets limits on sulphur oxide and nitrogen oxide emissions from ship exhausts and prohibits deliberate emissions of ozone depleting substances; designated emission control areas set more stringent standards for SO_x, NO_x and particulate matter. A chapter adopted in 2011 covers mandatory technical and operational energy efficiency measures aimed at reducing greenhouse gas emissions from ships.

Often discussed with the London Convention and its 1996 Protocol is MARPOL Annex V (differentiation of waste dumped from vessel and garbage from the normal operation of ship), which first entered into force in 1988. Amendments to tighten regulations for the management of ships' garbage entered into force on 1 January 2013. Under the amendments to MARPOL Annex V, "garbage" includes all plastics, all kinds of food, cargo residues, cooking oil, fishing gear, animal carcasses, domestic and operational waste, excluding fresh fish, generated during the normal operation of the vessel and liable to be disposed of continuously or periodically. A Revised Guidance on the management of spoilt cargoes was prepared to clarify boundary issues between the London Convention and Protocol (LC/LP) and MARPOL Annex V in relation to cargoes that are spoilt during voyages (LC-LP.1/Circ.58). Spoilt cargo should only be considered for disposal at sea when there is a marked degree of urgency, facilities on land are un-available, and it will not cause harm to the environment or human health.

3.3 Anti-fouling Systems Convention

The International Convention on the Control of Harmful Anti-Fouling Systems on Ships (adopted on 5 October 2001; entry into force on 17 September 2008) prohibits the use of harmful organotins in anti-fouling paints used on ships and establishes a mechanism to prevent the potential future use of other harmful substances in anti-fouling systems.

Anti-fouling paints are used to coat the bottoms of ships to prevent sealife such as algae and molluscs attaching themselves to the hull – thereby slowing down the ship and increasing fuel consumption.

In the early days of sailing ships, lime and later arsenic were used to coat ships' hulls, until the modern chemicals industry developed effective anti-fouling paints using metallic compounds. These compounds slowly "leach" into the sea water, killing barnacles and other marine life that have attached to the ship. But studies have shown that these compounds persist in the water, killing sea-life, harming the environment and possibly entering the food chain. One of the most effective anti-fouling paints, developed in the 1960s, contains the organotin tributyltin (TBT), which has been proven to cause deformations in oysters and sex changes in whelks.

Under the terms of the AFS Convention, Parties to the Convention are required to prohibit and/or restrict the use of harmful anti-fouling systems on ships flying their flag, as well as ships not entitled to fly their flag but which operate under their authority and all ships that enter a port, shipyard or offshore terminal of a Party.

Anti-fouling systems to be prohibited or controlled are listed in an annex to the Convention, which will be updated as and when necessary.

The Convention includes a clause which states that a ship shall be entitled to compensation if it is unduly detained or delayed while undergoing inspection for possible violations of the Convention.

Annex I states that all ships shall not apply or re-apply organotins compounds which act as biocides in anti-fouling systems. This applies to all ships (including fixed and floating platforms, floating storage units (FSUs), and Floating Production Storage and Offtake units (FPSOs).

The Convention provides for the establishment of a “technical group”, to include people with relevant expertise, to review proposals for other substances used in anti-fouling systems to be prohibited or restricted. Article 6 on Process for Proposing Amendments to controls on Anti-fouling systems sets out how the evaluation of an anti-fouling system should be carried out.

3.4 London Convention and its 1996 Protocol

Between 1950 and the early 1970s, dumping of waste materials into ocean waters was recognized as a major contributor to the degradation of the health of the world’s oceans and coastal waters. At the international level, countries came together supporting a global goal to protect marine waters. They negotiated the Convention on the Prevention of Marine Pollution by Dumping of Waste or Other Matter, 1972 (London Convention), one of the first international conventions for the protection of

the marine environment from human activities. In 1996, the London Protocol was adopted to modernize the London Convention after more than 20 years of practical experience. The London Protocol, considered to be a more stringent agreement for the protection of the marine environment, entered into force on 24 March 2006.

Parties to the London Convention agreed to control dumping by implementing regulatory programmes to assess the need for and to control the potential environmental impact of dumping wastes or other matter at sea. They prohibited dumping of certain types of waste and, gradually, made the Convention's regime more restrictive by encouraging pollution prevention concepts and promoting sound dumping management strategies. The overarching achievement of the London Convention was a halt to unregulated dumping of wastes and other matter at sea. Under the London Convention, prohibitions are in force for dumping of industrial and radioactive wastes, biological and chemical warfare agents, as well as incineration at sea of industrial waste and sewage sludge.

Materials that are prohibited from being dumped in the sea under Annex I of London Convention are as follows: *Organohalogen compounds; Mercury and mercury compounds; Cadmium and cadmium compounds; Persistent plastic and other persistent synthetic materials; Crude oil and its wastes, refined petroleum products, petroleum, distillate residues, and any mixtures containing any of these, taken on board for the purpose of dumping; Radioactive wastes or other radioactive matter; Materials produced for biological and chemical warfare; Incineration at sea of industrial wastes defined in paragraph 11 of Annex I.*

In 1996, Contracting Parties to the London Convention concluded negotiations toward a new, free-standing treaty, referred to as the London Protocol, to modernize

and eventually replace the London Convention. The London Protocol entered into force in 2006. The London Protocol is intended to be more protective of the marine environment. The London Protocol expressly prohibits incineration at sea and the export of wastes and other matter for the purpose of ocean dumping.

Under the London Protocol, dumping of all wastes and other materials is prohibited except the following materials listed in Annex I of the London Protocol (“the reverse list”), which may be considered for dumping: *Dredged material; Sewage sludge; Fish wastes or material resulting from industrial fish processing operations; Vessels and platforms or other man-made structures at sea; Inert, inorganic geological material; Organic material of natural origin; Bulky items primarily comprising iron, steel, concrete and similarly unharmed materials for which the concern is physical impact, and limited to the circumstances where such wastes are generated at locations with no land-based alternatives; Carbon dioxide streams from carbon dioxide capture processes for sequestration in sub-seabed geological formations.*

3.5 Bilateral agreement on environmental cooperation

Since it was signed in 1993, the *Agreement on Environmental Cooperation* between the governments of the RO Korea and PR China has provided a bilateral cooperation framework for solving common issues between two countries. The Agreement used to fall under the jurisdiction of the Ministry of Foreign Affairs of Trade (MFAT) of the Republic of Korea and the Chinese State Environment Protection Administration (SEPA). However, in 2013, MFAT reverted to its earlier name of Ministry of Foreign Affairs, and the responsibility for trade matters was handed over to the Ministry of Knowledge Economy, which was renamed the Ministry of Trade, Industry and Energy. In the institutional restructuring in 2008 and

2018, SEPA was successively promoted to the Ministry of Environmental Protection and the Ministry of Ecology and Environment, the administrative functions on marine environment of which were greatly strengthened.

Based on the Agreement, RO Korea and PR China have conducted several cooperative activities such as the exchange of information, experts and government officials, joint seminars/symposiums and joint research. Areas of focus have included air pollution, water contamination, coastal and marine pollution control, control of hazardous wastes and regulation of the movement of hazardous wastes.

To maintain effective cooperation between the two governments, the Agreement established the Joint Committee on Environmental Cooperation (JCEC) between the two governments in 1994. The JCEC is the primary organization responsible for the implementation of the Agreement. In January 2019, the 23rd round of meeting of JCEC was held in Seoul.

In 2016, the Ministry of Environmental Protection of PR China and the Ministry of Environment of RO Korea signed the *Letter of Intent on deepening environmental cooperation* between PR China and RO Korea, based on which the two ministries hold policy dialogue on environmental cooperation annually. In 2017, the two ministries signed *China-ROK Environmental Cooperation Plan (2018-2020)*, based on which a joint environment cooperation center was established.

3.6 The Future We Want

The Future We Want is the declaration on sustainable development and a green economy adopted at the UN Conference on Sustainable Development in Rio on

June 19, 2012. The Declaration includes broad sustainability objectives within themes of Poverty Eradication, Food Security and Sustainable Agriculture, Energy, Sustainable Transport, Sustainable Cities, Health and Population and Promoting Full and Productive Employment. It calls for the negotiation and adoption of internationally agreed Sustainable Development Goals by end of 2014. It also calls for a UN resolution strengthening and consolidating UNEP both financially and institutionally so that it can better disseminate environmental information and provide capacity building for countries.

Paragraph 158 of document focuses marine pollution including marine debris, especially plastic, persistent organic pollutants, heavy metals and nitrogen-based compounds, from a number of marine and land-based sources, including shipping and land run-off. It requires commitment to take action to reduce the incidence and impacts of such pollution on marine ecosystems, including through the effective implementation of relevant conventions adopted in the framework of the International Maritime Organization, and the follow-up of relevant initiatives such as the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, well as the adoption of coordinated strategies to this end. It further requires commitment to take action to, by 2025, based on collected scientific data, achieve significant reductions in marine debris to prevent harm to the coastal and marine environment.

3.7 The 2030 Agenda

Transforming our World: the 2030 Agenda for Sustainable Development including its 17 Sustainable Development Goals (SDGs) and 169 targets was adopted on 25 September 2015 by Heads of State and Government at a special UN summit. The

Agenda is a commitment to eradicate poverty and achieve sustainable development by 2030 world-wide, ensuring that no one is left behind. The adoption of the 2030 Agenda was a landmark achievement, providing for a shared global vision towards sustainable development for all.

The journey started in June 2012, with the "Rio+20" Conference on Sustainable Development, where Governments decided to develop global Sustainable Development Goals, building on the Millennium Development Goals but also including issues such as natural resources management, sustainable consumption and production, effective institutions, good governance, the rule of law and peaceful societies. The reports of the Open Working Group on Sustainable Development Goals and the Intergovernmental Committee of Experts on Sustainable Development Financing formed the basis of the final Agenda package, through a series of intergovernmental negotiations in partnership with major groups and stakeholders, ensuring the broadest possible ownership of this new Agenda.

The 2030 Agenda itself consists of four sections: (i) A political Declaration (ii) a set of 17 sustainable Development Goals and 169 targets (iii) Means of Implementation (iv) a framework for follow up and review of the Agenda.

The scale, ambition and approach of the Agenda are unprecedented. One key feature is that the SDGs are global in nature and universally applicable, taking into account national realities, capacities and levels of development and specific challenges. All countries have a shared responsibility to achieve the SDGs, and all have a meaningful role to play locally, nationally as well as on the global scale.

Among the 17 SDGs, Goal 14 focuses on marine environment and is to conserve

and sustainably use the oceans, seas and marine resources for sustainable development. Subparagraphs under SDG 14 which are closely related to marine pollution are 14.1 and the more general 14.c.

Subparagraph 14.1 reads, by 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution. Subparagraph 14.c reads, enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in the United Nations Convention on the Law of the Sea, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of “The future we want”.

3.8 Analysis

UNCLOS, as the “constitution” of the governance of the oceans and seas, serves as the legal framework and fundamental basis for states in drafting new specific legislations and taking international initiatives including the present one at the Yellow Sea region. Both PR China and RO Korea have developed detailed laws and regulations related to the marine environment, thereby meeting the obligations under the UNCLOS. However, the extent to which UNCLOS will be able to guarantee the development and enforcement of the effective norms and standards required for pollution prevention, reduction, and control and other environmental issues in the Yellow Sea region remains uncertain. This depends on whether a well-designed web of international and domestic legal institutions could emerge from the development of regional environmental governance and duly implemented, so do other related specific treaties or agreements.

Unlike London Convention/Protocol for dumping of wastes or MARPOL for pollution from vessels, provisions on the prevention of pollution from land or man-made structures in UNCLOS lack in corresponding and detailed treaties or agreements, which causes shortage of uniform and clear guidance for states' domestic legal transformation or implementation and even hinders the transnational cooperation.

For example in China, the *Regulations on the prevention and control of marine pollution caused by land-based sources* has been in effect for almost 30 years but no amendment yet, hardly to say it can fully adapt to meeting with the contemporary demands of land-based pollution prevention. After the institutional restructuring in 2018, the preparatory study on the new round of amendment to MEPL organized by the Ministry of Ecology and Environment found that the amendment in 2017, in which the approval procedure was repealed and replaced by filing procedure, had caused some confusion on the management of discharge outlets into the sea, and in the meantime, the MEPL encountered problems such as ambiguous distinction between coastal and marine engineering projects, and some management "vacuum" of debris disposed on the beach or floating in the sea, etc.

Even for sources of marine pollution that have corresponding and detailed treaties or agreements, application of certain provisions, in particular on boundary issues, needs further interpretation or clarification, for example, article 2 of the London Protocol literally covers not only dumping of wastes but also all other sources of pollution, and spoilt cargo disposing at sea constitute waste from vessel normal operation but in some occasions waste for ocean dumping, etc.

4. Inadequacies of the legal system and its implementation of marine environmental protection in China

At present, the pollution in some coastal areas of China is relatively serious, and the marine ecological environment is still grim. About one-tenth of the country's bays are polluted. The natural coastline of the mainland is less than 40%. About 42% of the coastal resources and environment are overloaded. In some areas, the destruction of ecosystems such as mangroves, coral reefs and coastal wetlands is more serious. Ecological disasters such as red tides and green tides occur frequently. The environmental risk of such as oil spills and hazardous chemicals leakage continues to increase.

4.1 Setting-up and management of pollutant discharge outlets into the sea

Article 30 of MEPL sets clear requirements for the establishment and management of discharge outlets into the sea. It was found that the problems of irregular installation and lax supervision were prominent. The exact number of outlets into the sea was unclear. The number of outlets reported by some local governments was not consistent with the result of the national inspection. A number of sources of pollution into the sea were not covered in the supervision. The illegal and unreasonable setting up of outlets was outstanding. In many places, some outlets were set up in protected areas, and some were not placed in the deep sea according to the requirements of EIA. The specified filing procedures for newly established outlets were not available yet, which in some degree caused uncertainties for the administration and the companies.

4.2 Land-based pollution prevention

The rivers flowing into the sea were heavily loaded with pollutants. In 2017, the overall water quality of China's rivers flowing into the sea was of moderate pollution, and 21% of the cross sections of these rivers were inferior to Class V quality. The construction of urban sewage pipe network lagged behind. The operation of sewage treatment facilities was unstable in villages and towns. Rural non-point source pollution was severe. The problem of near-shore solid waste pollution was common. In some places, sea-drifting debris or industrial wastes piled along the coasts or beaches were not handled effectively.

4.3 Sea-based pollution prevention

In some places, the construction of municipal sewage pipelines connected to the ports lagged behind. The port pollutant reception facilities did not linked up well with the municipal public transport and disposal facilities. Facilities receiving hazardous chemicals and household sewage had imperfections. Capacities of emergency removal and recycling of oil spills lagged behind. In some ports, the costs of reception and disposal of land-based pollutants from ports were relatively high, and the illegal discharge of pollutants was common. Many of the newly-built, rebuilt and expanded marine farms did not carry out EIA as required. Sewage discharge of mariculture was not covered by administrative supervision. The problem of illegal sand mining was prominent as well, occupying most of the illegal cases of law enforcement of the sea.

4.4 Supervision and management

The standard system of marine environmental quality is not perfect. The current parameters of marine environmental quality standard are subject to uniform limiting values applicable to the whole jurisdictional sea area, without due consideration of various backgrounds such as hydrodynamics, biology and chemistry in different sea regions such as estuaries, coastal zones and open seas. Applying uniform standards to special ecosystems such as estuaries or bays where strong interactions between land and sea occur seems not quite reasonable. The current standards of pollutant discharge into the sea were based on that into the river, which apparently was not able to fully meet with the demand of marine environmental protection. In the meantime, although the scheme of total quantity control of pollutant discharge was established, it had been criticized for long time due to lacking in specific guidance and procedures for implementation. Additionally, monitoring points at coastal zones, rivers and outlets into the sea, and key marine functional zones and ecological sensitive areas are less than needed, along with inconsistent technical standards of assessment. Capacity of pollution emergency prevention and response lags behind, and the scope and degree of information disclosure is less than public expectation.

5. Recommendations for enhancement of the legal system of marine pollution control in China

5.1 To build pollution prevention and control system based on coordinated development for land and sea

Adjust and optimize the total quantity control system of pollutant discharge in key

sea areas; establish and improve the supporting systems for interactive governance of watersheds and sea regions, in particular the environmental quality management system for rivers flowing into the sea, the supervision and management system for pollutant discharge outlets into the sea, the system of regional approval limitation at coastal zones, and the pollutant discharge permit system at sea; specify and improve regulatory and management systems for mariculture and solid waste upon shore, strengthen pollution prevention measures on sea-related engineering projects, ocean dumping, shipping and ports, etc., and establish and enhance regulatory and management measures on oil discharge, thermal effluent, marine litter and microplastics.

5.2 To strengthen the risk prevention and control system based on hierarchical management

Improve the risk prevention system for hazardous chemical leakage or oil spill along the coasts or at sea, and clarify the risk assessment regulations; establish a risk prevention mechanism with multi-sector coordination and collaboration; specify the requirements for monitoring, early warning and emergency response to marine environmental pollution incidents at key areas; define the requirements of incident report and information disclosure; and establish and improve the hierarchical management and emergency response system.

5.3 To improve the supervision and management system

Strengthen the planning system for marine ecology and environment protection, clarify the *“Three Lines and One List”* regulations, and improve the marine

environmental quality standard system. Establish and improve the systems of joint prevention and control and integrated governance for key sea areas, establish and implement the “*Bay Chief*” system, improve the marine environment monitoring and surveillance system, and establish a regular baseline survey system for marine pollution.

5.4 To build a clear and powerful legal liability system

Improve the division of responsibilities and mechanisms of coordination among relevant departments, clarify the legal responsibilities of local governments at all levels, relevant departments and related enterprises, and establish an appraisal system to promote the realization of marine environmental protection goals. Enhance the legal liability clauses, and increase the punishment for violations of laws. Link up well with relevant laws, regulations and relevant international conventions.