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YELLOW SEA LARGE MARINE ECOSYSTEM”**

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Final Draft Report on Regional Governance Analysis

To be presented by

Suh-Yong CHUNG
Korea University

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CHUNG, Suh-Yong

Director, Center for International Law and Policy

Myongji University

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EXECUTIVE SUMMARY

Several issues need to be considered to realize effective regional governance in the context of the YS LME Project. As the TDA and other YS LME reports point out, the serious condition of the marine environment in the Yellow Sea necessitates a sound and urgent response by the region.

Several stakeholders are involved in the regional governance in the Yellow Sea region. While local governments' involvement remains low in regional governance, the role of the central governments of China and Republic of Korea (hereinafter ROK) has been critical. In China, the State Oceanic Administration has been involved in the YS LME Project more closely than any other related ministries and governmental bodies, such as the State Environment Protection Agency, the Ministry of Agriculture and others. In the ROK, both the Ministry of Foreign Affairs and Trade and the Ministry of Maritime and Fisheries Affairs are equally important, taking responsibilities for different aspects of regional governance. Future efforts in regional governance must include attempts to secure the participation of the Democratic People's Republic of Korea (hereinafter DPRK), as this is critical for the geographical completeness and effectiveness of regional efforts. Other stakeholders, such as NGOs and the private sector, have participated in the regional governance less actively, although they may be more active in other realms. Among international organizations, the UNDP has been closely involved through the YS LME Project, and the UNEP and IMO seem to be relevant organizations to regional governance issues to some extent.

There are several cooperative mechanisms identified relevant by this report in the context of the YS LME Project. Northwest Pacific Action Plan by UNEP seems to be more relevant to the regional governance in the YS LME Project context than any other cooperative mechanism such as PEASEA, IOC/WESTPAC, and GPA. More coordinating efforts are required to increase synergic effects by utilizing other cooperative mechanism's achievements into the Yellow Sea region.

There are several important multilateral and bilateral treaties related to regional governance in the Yellow Sea region. The United Nations Convention on the Law of the Sea, the London Convention and its 1996 Protocol, MARPOL and the FAO Code of Conduct for the Responsible Fisheries have relevance to the protection of the Yellow Sea

marine environment. These instruments vary, however, in their levels of strictness and scopes of coverage. On the other hand, two bilateral treaties on environmental protection and fisheries also need to be considered in the regional governance context in the Yellow Sea region. While these two treaties have developed further detailed standards as well as cooperative institutions such as the Joint Fisheries Committee and the Joint Committee on the Environment, further coordination with other cooperative mechanisms and institutions is desirable to increase the overall effectiveness of regional governance.

Finally, this report suggests the establishment of the YS LME Commission after 2009. Further institutionalizing the YS LME Project's current efforts will ensure the continuity and effectiveness of regional governance. With assistance from the UNDP and the GEF, the YS LME Commission will ultimately become the central policy organization for the realization of an environmentally sound Yellow Sea region. To achieve this goal, the YS LME Commission will need to pursue action programs such as developing joint scientific research projects, strengthening legal institutions and partnerships, capacity building and financing.

I. Background of Assignment

1. To realize ecosystem-based, environmentally sustainable management and use of the YS LME, the UNDP/GEF YS LME project focuses on identifying better ways of furthering national and regional commitments to international agreements such as the United Nations Convention on the Law of the Sea (UNCLOS), the FAO Code of Conduct for Responsible Fisheries, and the Global Programme of Action (GPA). This objective of the YS LME may be fulfilled by the preparation of the Transnational Diagnostic Analysis (TDA) and Strategic Action Program (SAP) and the implementation of the SAP.

2. The YS LME project has completed its TDA, which identifies environmental problems, their root causes, and possible solutions. (UNDP/GEF, 2007) The TDA serves as the scientific foundation for the SAP. One of the key roles of the SAP is that of identifying management strategies for interventions and actions towards 2020. As this requires policy recommendations for improving current relevant institutions at the national level, YS LME also conducted two national governance analyses in China (Xu, 2006) and the Republic of Korea (Cho, 2006). The two reports deal with issues of stakeholder analysis, institutional analysis, and legal and policy analysis.

3. Although national governance analysis may provide useful policy options to related states, the purpose of the YS LME project can be better achieved by identifying and understanding regional governance issues and finding practical and effective management options at the regional level through the preparation and implementation of the SAP. This is especially important in the Yellow Sea region because of the transnational nature of the Yellow Sea region as well as its unique geopolitical features.

4. The importance of conducting regional governance analysis was raised during the third meeting of the Regional Working Group for the Investment Component held in Dalian, China, 9-12 September 2006. (RWG-Investment, 2006) In the same meeting, the RWG-Investment agreed to conduct regional governance analysis, which was considered in the third RSTP meeting held in Jeju, ROK, 20-22 November, 2006 and approved in the third PSC meeting held in Jeju, ROK, 23-24 November, 2006. (PSC, 2006)

5. The objective of regional governance analysis is to understand the underlying root causes of the Yellow Sea's ecosystem problems through the analysis of the political environment and to provide the basic foundation for identifying possible future interventions as part of the preparative work for the development of the SAP for the Yellow Sea.

II. Methods Used to Carry Out Assignment

6. In order to provide the basic foundation for identifying possible interventions at the regional level and increase understanding of current regional governance in the Yellow Sea region, this project is carried out using several methods.

A. YS LME Context

7. This project is carried out within the context of the YS LME project. As the current stage of the YS LME project is one of preparation for the SAP, this project's focus will lie in producing a report which will assist the YS LME in identifying policy, legal and institutional issues as well as future interventions at the regional level. To meet this objective, this project covers all previous and current products of the YS LME project. They include, but are not limited to, the report of TDA, the National Governance Analysis reports of China and the Republic of Korea, and the reports of the Regional Working Groups. This project also closely follows the preparations for the SAP so as to achieve its objectives as much as possible.

B. Legal and Political Science Analysis

8. Regional governance issues require social science-based analysis. While scientific considerations are valuable in conducting regional governance analysis, the main focus of this work will be on determining the most significant political and legal variables and their impact on the dynamics of regional governance and identifying future interventions required to improve regional governance.

9. In the legal field, international environmental law, the law of the sea, development law, and national legal institutions will be the primary subjects to be analyzed. Special attention will be given to relevant international treaties, including the Law of the Sea Convention, the London Convention, and the MARPOL Convention. Relevant bilateral treaties such as the bilateral fisheries treaty between China and the Republic of Korea may also be considered for analysis.

10. This study's political analysis will include the effects of traditional security issues on environmental regional governance, as political issues have important implications in

building a regional cooperative mechanism in the Yellow Sea region. In particular, the engagement of Democratic People's Republic of Korea (DPRK), a state that should be included to cover the complete geographical scope of the YS LME project, is also considered in this context.

11. Another important component of political analysis is to discuss the possible scenario of the evolvement of regional governance. This analysis will help to identify feasible future interventions for more effective regional governance. Analysis of the interactions of cooperative mechanisms such as NOWPAP, IOC/WESTPAC, GPA and PEAMSEA with YS LME is conducted and may provide a basis for helping the YS LME project to find more effective ways of improving regional governance to address Yellow Sea marine environmental issues.

C. Analysis of Stakeholders

12. It is important to identify relevant stakeholders to have effective regional governance in this region. Central governments, local governments, international organizations, NGOs and other actors are considered. Particular emphasis is given to the status of stakeholders' involvement in regional governance in the YS LME context and the merits and problems of this involvement.

D. Interviews

13. As important information and materials are not frequently available from secondary sources, both email and on-site interviews have been conducted to identify issues and collect valuable information and materials for regional governance analysis. Interviews were conducted with government and international organizations both in China and the Republic of Korea.

III. Major Environmental Problems in the Yellow Sea

14. In the Yellow Sea region, major environmental problems may be categorized into four different groups: pollution, ecosystem, fisheries and biodiversity. The YS LME Project has identified environmental problems according to these four areas.

A. Pollution

15. The major issue areas identified within the category of pollution are eutrophication and contamination. (UNEP/GEF, 2007)

16. Eutrophication results primarily from the increased availability of dissolved inorganic nitrogen and phosphorus in marine waters. This is caused by excessive dissolved nitrogen from rivers and direct deposit wastewater discharge. These shifting nitrogen, phosphate and silicate ratios are conditions under which blooms of potentially toxic microorganisms such as dinoflagellates are expected become more frequent. Excessive algal blooms that decrease water transparency have led to the creation of red tides. Eutrophication has also reduced diversity among algal and zooplankton species; newly dominant algae may have harmful effects on fish. In addition, excess organic matter created by eutrophication strains the supply of oxygen available for sustaining aerobic organisms in deeper waters.

17. Various contaminants enter the Yellow Sea, largely through the disposal of household and industrial wastes. Some other volatile contaminants, such as hydrocarbons, enter the marine environment via atmospheric transport or wet/dry deposition.

18. A wide variety of contaminants are known to affect the Yellow Sea region. Fecal substances enter the Yellow Sea primarily through sewer discharges, often carrying fecal pathogens. These pathogens can cause possibly fatal diseases such as dysentery and typhoid. Humans are in danger of coming in contact with fecal matter by consuming contaminated water or seafood. Heavy metals are discharged into the Yellow Sea mainly via industrial activities. Metals that may pose serious threats to the marine environment and human health include lead, copper and mercury. These metals can pose a threat to the public health as well as reduce the value of seafood. While Persistent

Organic Pollutants (POPs) are not regarded as an immediate threat to public health or the marine environment in the Yellow Sea region, they are of concern in the global context and could pose health risks to humans and/or animals. Polycyclic Aromatic Hydrocarbons (PAHs) come from petroleum refinery operations, the burning/incineration of solid wastes and metallurgical refining activities. These substances can cause mutations and cancer.

19. The problems caused by marine litter (floating, submerged and standing debris in the marine area) have become serious in the Yellow Sea region. Marine litter interferes with amenities such as beaches and can cause damage to marine vessels. Currently, little data is available to understand the exact impact of marine litter problems on the environment of the Yellow Sea.

20. The reasons for the serious pollution problems in the Yellow Sea region lie in inadequate controls over agricultural, industrial and municipal waste practices, limited investment in the infrastructure for waste management, rapid economic development in China, an inadequate balance in policies related to economic expansion and environmental protection, and inadequacies in contemporary policy priorities.

B. Ecosystem

21. The major issue areas identified within the ecosystem category are the increased frequency of harmful algal blooms, changes in species composition, changes in biomass or abundance, and loss of benthic habitat in coastal areas. (UNDP/GEF, 2007)

22. A significant increase has occurred in the annual rate of algal blooms. These blooms can cause increased mortality in mariculture stocks, thus reducing fishery yields and increasing the risk of toxic seafood consumption for seafood consumers.

23. Significant changes in species composition have been identified in the Yellow Sea ecosystem. For example, changes in dominant groups of zooplankton on the ROK coast reflect changes in food web dynamics that can affect organisms at higher trophic levels. In China, changes in the ratio of diatoms to dinoflagellates are likely due to the reduced ratio of silicate in Yellow Sea waters relative to other nutrients. As the majority of toxic algae and those that cause adverse effects on other marine organisms are dinoflagellates, this shifting ratio may become cause for serious concern in the Yellow Sea region.

Furthermore, a sudden rise in jellyfish levels and change in benthic species composition and dominant species are other sources of concern.

24. In the Yellow Sea, changes in the biomass and abundance of several key species have been identified. The abundance of zooplankton has increased on the side of the Yellow Sea bordering Korea while it has decreased on the side bordering China. On the Korean coast, a shift in the seasonal pattern of zooplankton has also been observed. Given that zooplankton and phytoplankton form the foundation of the entire marine food web, changes in their levels of biomass, abundance and species diversity can affect the entire food web and have consequences at higher levels of the marine organism community.

25. The reasons for the problems concerning the ecosystem in the Yellow Sea lie in overfishing, climate change associated with an increased concentration of carbon dioxide in the atmosphere, rapid coastal development, and an inappropriate legislative/regulatory balance between economic development and environmental protection. These are the results of the limited achievements of the Kyoto Protocol, weak enforcement of controls on fishing activities, and legislative and administrative weakness in facilitating adequate protection of the coastal zone within the context of economic development in the region.

C. Fisheries

26. The major issue areas in fisheries are declines in landings of many traditional commercially important species, increased landings of low values species including changes in dominant species, and unsustainable maricultural practices and their consequences. (UNDP/GEF, 2006)

27. The scale of fishing operations on the Yellow Sea has increased steadily in recent years. China and ROK's pooled percentage of total world fishing landings rose 10% from 8.85% in 1998 to 19.54% in 2004. The Yellow Sea fisheries industry appears relatively stable overall despite short-term fluctuations that could be attributable to climate change or natural recruitment cycles. The Yellow Sea has yielded roughly 2.3 million tons of wild fish, or roughly 2 tons/square kilometer, in recent years.¹ Catch per

¹ North Sea regions with similar bathymetry yielded roughly 6 tons/square kilometer catch, while Mediterranean Sea regions with far greater bathymetry yielded 4 tons/square kilometer.

unit effort (CPUE) has increased significantly from 3200 kg per fishing vessel in 1986 to 17,200 kg in 2004. This could be a sign of either the vitality of Yellow Sea fishing stocks or an increasing zealously in fishery efforts.

28. Though the overall yield from fisheries in the Yellow Sea appear to be fairly constant, landings of many traditional commercially important species have decreased, whereas landings of low value species have increased. The dominant species of fish in the Yellow Sea also appears to be changing. This is believed to be a direct effect of overfishing and overexploitation of certain fish species. For example, stocks of Pacific herring have declined substantially over time. The peak catch year for Pacific herring was 1972, with 180,000 tons caught. The causes of the Pacific herring's catch declines are thought to be overfishing and climate change. The annual catch of anchovies, on the other hand, has increased as a result of increasing stocks and increased fishing efforts. More than 1 million tons were caught in 1996 and 1997, making anchovy the largest single species fishery in China. Given that this figure exceeds the maximum annual sustainable yield of 0.6 million tons, the anchovy has also become a victim of overfishing.

29. The reasons for shifts in dominant species and landings of commercially important species lie in overexploitation of target fish species and climate change. These problems have been caused by the absence of a comprehensive and effective system of fisheries management, a lack of compliance assurance infrastructure, and poor recognition in the policy/public sector of the limits of sustainable natural resource exploitation.

D. Unsustainable maricultural practices

30. Mariculture has grown significantly in both China and Republic of Korea since the late 1980s. China's mariculture alone accounts for approximately 70% of the world's mariculture today. Yellow Sea mariculture has risen from 400,000 tons in 1985 to 4 million tons in 1997. Mariculture growth has resulted in increased catches for all cultivated species except shellfish. Seaweed is the dominant species in overall production. The Transnational Diagnostic Analysis (TDA) suggests, but does not state directly, that maricultural catch rates have become unsustainably high. (UNDP/GEF, 2006)

31. Between 1995 and 2004, the area devoted to mariculture on the west coast of ROK

has increased from 32,000 ha to 56,000 ha. Mariculture production has remained essentially unchanged during that time period, which suggests that the density of cultured organisms has decreased. China has not posted public data on this topic. However, projections suggest that the area devoted to mariculture in China rose from 400,000 ha in 1995 to 1 million ha in 2004. Total mariculture production in China appears to have grown by a factor of 2.25, which suggests that there has been no significant decline in farm density of cultured organisms in China. The main mariculture-related issues in China appear to be the increased coastal area devoted to mariculture and the increasing proximity of mariculture farms, which increases the threat of disease.

32. Reasons for unsustainable mariculture practices lie in overintensive mariculture development, overexploitation of nature habitats, and the consequences of the release of materials having adverse effects on the environment and human health concerns. These problems have been caused by a lack of comprehensive and cohesive legislative framework for coastal zone and maritime resource development, a lack of coordination among sectors, and deficiencies in the application of sound science to sustainable coastal development.

E. Biodiversity

33. The major problems in the Yellow Sea within the category of the biodiversity are habitat loss and degradation, the introduction of xenobiotic species, and the decline of endemic species. (UNDP/GEF, 2006) It is clear that anthropogenic, development driven habitat change and other activities have changed the biodiversity of the Yellow Sea system. However, currently available information cannot provide a comprehensive appraisal of changes in biodiversity or quantify the socioeconomic costs of these changes.

34. Anthropogenic actions have significantly changed the landscape of the Yellow Sea over the past few decades, resulting in habitat loss and degradation for Yellow Sea species. Land reclamation, for example, has turned 880,000 ha of the sea area into land. This is 37% of the intertidal area in China and 43% of mudflats in Korea. China and Korea both have aggressive plans to continue their land reclamation projects. Consequently, the majority of coastal wetlands and tidal mudflats will have been reclaimed for land development purposes within the next decade. This will have biggest

impact on tidal flat communities of organisms and will reduce the areas suitable for resting/feeding for migratory birds. Increased mariculture has decreased marshlands by 30 % in the last 30 years, leaving a reduced habit for waterfowl/migratory birds. Heavy erosion has occurred on roughly 2/3 of sandy foreshores due to sand mining of beaches and extensive agricultural activities on coastal plains. Species community structure and abundance of aquatic life in sandy and muddy shores have also been greatly altered, with some species (such as the endangered lancelet) no longer having viable habitats.

35. Foreign species have been introduced either intentionally for mariculture/aquaculture purposes or unintentionally via ballast water and vessel hull transport. An integrated investigation of introduced species has not yet been conducted, but some examples exist: scallops, kelp, suringar and *Spartine anglica* are among these introduced species. The introduction of foreign species is considered a significant problem within the field of environmental science and diminishes the integrity of an ecosystem.

36. The decline of endemic species, pollution, and overexploitation of marine and coastal living resources could be addressed within the category of biodiversity. However, these issues are addressed in other relevant categories in this report.

37. The most significant causes of problems in the area of biodiversity lie in overexploitation of fisheries and loss of habitat, climate change, increased demand for seafood, engineering works on watercourses, and an inadequate balance between economic development and environmental protection. These have been caused by development in the absence of comprehensive and cohesive legislation to ensure concomitant environmental and biodiversity protection, poor enforcement of existing legislation and inadequate provision of public information.

F. Concluding observations

38. Most of the causes for the environmental problems in the Yellow Sea can be traced back to the following:

- Development being undertaken with limited consideration or understanding of environmental and biodiversity protection coupled with poor enforcement and inadequate public information

- An inadequate balance between economic development and environmental protection
- Weakness in legislation and/or inadequate enforcement of legislation related to coastal zone management and protection
- Limited effectiveness of the environmental constituency on government policy
- Weak enforcement of controls on fishing activities, including illegal activities
- Deficiencies in policing and regulation of traditional natural resource exploitation practices and inadequate public information
- Limited application of research knowledge to assimilative capacity and coastal zone development
- Limited and/or inadequate compliance assurance infrastructure

39. The current environmental problems in the Yellow Sea region are due to a few linked root causes. The common features among identified root causes of the Yellow Sea's environmental problems appear to be an inadequate balance between socioeconomic development and environmental protection, poor enforcement of existing environmental protection regulations, and ineffectiveness of the environmental lobby on influencing regional governments. According to the TDA, the most important interventions to incorporate into the Yellow Sea SAP are improvements to legislation and related regulations that take the need for balance between socioeconomic development and environmental protection into consideration. (UNDP/GEF, 2006)

IV. Regional Stakeholder Analysis

40. Since the nature of transnational environmental issues is complex, it is important to have related stakeholders involved in the process of addressing these issues. Frequently, in the global environmental governance context, governments, international organizations, NGOs, and related industries are considered key stakeholders.

41. In the Yellow Sea region, various stakeholders need to be considered. As the level of economic development, the political system, and cultural backgrounds are very different among the Yellow Sea coastal states, concerted efforts to address environmental stress in the Yellow Sea region require some effort. While a general understanding of the importance of the participation of all relevant stakeholders, such as governments, international organizations, NGOs and related industries, applies to the Yellow Sea region, the unique dynamics of this region require a thorough understanding of the stakeholders involved in regional environmental governance.

A. Governments

42. Governments are the most important stakeholders in regional environmental governance in the Yellow Sea region. Traditionally, the Chinese central government has exercised strong influence and control over domestic institutions, though there have been tensions between the central and local governments in policy implementation. In the Republic of Korea, the government plays an important and influential role in developing and implementing policies. While the National Assembly, NGOs and the private sector are important participants in policy development and implementation, the executive branch has proposed, prepared, controlled, and implemented the nation's main laws and regulations. In the DPRK, the Kim Jung-il regime is extremely authoritarian. It is difficult to recognize other important stakeholders in developing and maintaining policies in any kind.

a. China

43. The central government of China has increasingly participated in the various regional efforts to deal with environmental problems including the marine environment in the Yellow Sea. As China has achieved fast economic growth, environmental issues

have posed serious threats not only to Chinese society but also to the region as a whole.

44. Several Chinese ministries and agencies are concerned with the environmental issues involved in the regional governance context. The State Oceanic Administration (SOA) may be the most relevant government agency. The SOA is responsible for managing, developing and monitoring state level policy measures such as (Xu, 2006):

- Managing the territorial sea area
- Conducting function zoning
- Supervising marine environmental protection
- Managing investigation and monitoring activities
- Organizing scientific research on the environment
- Preventing and controlling pollution damages
- Monitoring marine environmental quality
- Developing a State Oil Spill Contingency Plan for offshore oil exploration and exploitation

45. The State Environmental Protection Administration (SEPA) also plays a significant role in protecting the Yellow Sea marine environment. Responsibilities of SEPA in the Yellow Sea environmental context include (Xu, 2006):

- Guiding, coordinating and supervising the integrated environmental protection of the marine environment
- Preventing and controlling pollution damages to the marine environment by the land-based pollutants and coastal construction projects
- Making a State Contingency Plan for marine pollution by land-based pollutants
- Establishing state Sea Water Quality standards as well as Pollutant Discharge standards

46. Although SOA and SEPA have different responsibilities concerning the marine environment in the Yellow Sea, their frequently overlapping roles have been a problem. For example, among the cooperative mechanisms for the protection of the marine environment in the Yellow Sea, which will be discussed in far more detail in the later part of this report, SOA is actively involved in the YS LME Project while SEPA is representing China in NOWPAP. This lack of coordination poses problems in policy

effectiveness at the regional level.

47. The Ministry of Agriculture (MOA) is also relevant to regional governance in the Yellow Sea, as it is responsible for fishery related matters in China. The MOA deals with not only management and control of fishery resources but also pollution incurred by fishing vessels. (Xu, 2006) Other governmental bodies, such as the Navy and State Tourism Administration, are also involved in issues of regional governance to protect marine environmental issues in the Yellow Sea.

48. In contrast with the ROK, the Ministry of Foreign Affairs does not participate in regional environmental issues in the Yellow Sea unless treaty related issues exist.

49. Jiangsu, Shandong and Liaoning provinces, the three provinces located on the Yellow Sea coastal line in China, primarily implement policy measures developed by the central government. The results of the interviews with Chinese local government officials demonstrate that the degree of their direct involvement in international activities remains low.

b. Republic of Korea

50. The ROK government has played an active role in international environmental cooperation. Cooperative efforts by the ROK government have been sought after the 1992 UNCED in various ways. Due to the active role of the ROK government, the first meeting of the Meeting of Senior Officials on Environmental Cooperation in Northeast Asia (NEASPEC) and the first Intergovernmental Meeting of Northwest Pacific Action Plan (NOWPAP) were held in Seoul. Since then, the ROK government has furthered its active leadership role in regional environmental cooperation. For example, it hosted the Regional Coordinating Unit (RCU) of NOWPAP in Busan (another office of the RCU is in Toyama, Japan) and the Project Management Office (PMO) of the YS LME Project in Ansan. On the Yellow Dust issues in Northeast Asia, the Korean government actively sought for the close cooperation among interested governments that was stressed by the Joint Press Statement by the head of the governments of China, Japan and ROK in the 10th ASEAN + 3 meeting. (Office of the President, 2007)

51. Within the ROK government, there are several ministries and other agencies concerning the marine environment. These include the Ministry of Foreign Affairs and

Trade (MOFAT), the Ministry of Marine and Fisheries Affairs (MOMAF), the Korea Coast Guard, the National Fisheries Research and Development Institute (NFRDI), the National Oceanographic Research Institute (NORDI), the Korea Ocean Research and Development Institute (KORDI) and the Korea Maritime Institute (KMI).

52. Examples of other ministries and agencies which are related to marine environmental issues include Ministry of Agriculture and Forestry (MAF), the Ministry of Construction and Transportation (MOCT), and the Ministry of the Environment (MOE). Particular attention needs to be paid to the Ministry of the Environment. According to the official distribution of government bodies' jurisdictions, the Ministry of the Environment only deals with non-marine environmental issues, but inland waters, the environmental quality of which are closely linked to the marine environment, are within its jurisdiction. Coastal marine environmental issues are mainly within the jurisdiction of the MOMAF and the Korea Coast Guard.(Cho, 2006)

53. Special attention must also be paid to the role of government agencies in international cooperation on marine environment issues. While the Ministry of Maritime and Fisheries Affairs is responsible for the majority of marine environmental issues, the Ministry of Foreign Affairs and Trade also plays an important role in international cooperation in marine environmental matters. Most cooperative efforts to address the marine environment in the Yellow Sea region are now in the development stage; their futures will be determined by negotiations. These negotiations include not only negotiations on legally binding treaties but other, non-binding cooperative mechanisms such as scientific cooperation, the development of partnership programs, and the search for the financial resources. Other non-marine environment diplomatic issues, such as a joint cruise effort by the YS LME, are also being considered. While joint cruise may be regarded as a solely scientific research activity, the results of the cruise may have other implications, such as maritime delimitation and marine security. As a result, both the Chinese and Korean governments have treated the joint cruise issue cautiously in light of its broader regional diplomacy context. This demonstrates that, although the Ministry of Marine and Fisheries Affairs specializes in the maritime issues, developing policies on the marine environment in the Yellow Sea often requires the active participation of the Ministry of Foreign Affairs and Trade.

54. Recently, the MOFAT has expanded its offices which deal with the marine environment, thereby securing more room for developing and implementing policies on

international cooperation in the marine environment. However, further expansion of the department's funding, expertise and capacity in this area is desirable.

55. The Korea Coast Guard has also been involved in international cooperation efforts in the Yellow Sea. As a subsidiary agency of MOMAF, the Korean Coast Guard is responsible for marine conservation and marine pollution response. For example, the Korea Coast Guard is an active participant in Northwest Pacific Action Plan (NOWPAP), supporting MERRAC's efforts to develop international cooperation against oil spills. However, the frequent overlapping of its activities with those of MOMAF needs to be addressed to avoid the creation of ineffective policy.

56. The importance of local government in international cooperation efforts related to the Yellow Sea marine environment is minimal in the Republic of Korea. While local governments may be important players in implementing policies, their role in developing international cooperative projects remains limited. The results of interviews with Korean local government officials show that this is partly because limited budgetary resources are available for developing international projects. Another reason for the limited importance of local governments in the regional governance is that most issues concerning regional governance are addressed by the central government. Local governments mainly focus on the implementing policies according to national laws and regulations. (Cho, 2006)

57. Government affiliated bodies, including several research institutes such as the Korea Ocean Research and Development Institute (KORDI) and the Korea Maritime Institute (KMI), also contribute to regional activities by the ROK government, as they frequently participate in international negotiations and policy development. Their constructive roles are particularly important. While government officials work on a rotation basis, which leads to a high turnover rate of desk officers of specific issues, researchers are often assigned to follow up the specific issues. Therefore, their involvement may guarantee the continuity of government projects.

c. Democratic People's Republic of Korea

58. As a hermit state, the DPRK's degree of involvement in any kind of international cooperative effort is extremely low. While the DPRK has gained much international attention due to its nuclear arms development, it has been reluctant to participate in

building partnership with other states. However, as its nuclear arms development issues are on the path to resolution through constructive negotiations with regional states, the DPRK may increase its willingness to engage in international cooperative efforts. In this context, the DPRK's participation in regional environmental protection efforts is more likely than before. While the degree of the DPRK's participation would likely be limited, the symbolic implications of its engagement in regional cooperation would be very high.

B. International Organizations

59. The role of international organizations in international environmental governance is a significant one. After the creation of the United Nations system, international organizations have played several important roles as follows (Porter & Brown, 1996):

- Setting the agenda for global and regional action, and determining which issues will be dealt with by the international community;
- Articulating the aggregate interests of groups in negotiations;
- Convening and influencing negotiations in regard to global and regional environmental regimes;
- Developing normative codes of conduct for various environmental issues;
- Influencing state policies on issues that are not under international negotiation.

60. In the Yellow Sea region, a few international organizations play a role in protecting the marine environment. Among them, the United Nations Development Program, the United Nations Environment Program and the World Bank (through the Global Environmental Facility) are more involved than other international organizations.

61. The above organizations participate in cooperative activities through regional cooperation mechanisms such as the YS LME Project and NOWPAP. Details of these two cooperative mechanisms are discussed in the latter part of this report.

62. The UNDP plays a critical role in developing cooperative efforts in this region. Among the five roles mentioned above, the UNDP seems to be most active in setting the agenda for global and regional actions and determining which issues will be dealt by the regional community. After the launch of the YS LME project, regional states, especially

China and the Republic of Korea, have paid noticeably more attention to addressing problems in the Yellow Sea marine environment. However, in playing the other four functions listed above, the UNDP faces limitations.

63. Present limitations to the UNDP's role are most significantly impacted by the powerful impact of political and security issues in the Yellow Sea region relative to other parts of the world. This situation poses some difficulties in the UNDP's efforts to play its various environmental governance roles in the region. Another factor impacting the UNDP's effectiveness is the limited availability of the financial resources. While the UNDP (through the YS LME Project) is currently having a positive impact on the region, it will face serious limitations in this regard if financial resources from the GEF expire.

64. The United Nations Environment Program's role in regional efforts to protect the marine environment in the Yellow Sea region is less significant than that of the UNDP. With limited financial sources and political influence on Yellow Sea coastal states, UNEP has faced limitations in carrying out the roles mentioned above except in a limited capacity through NOWPAP.

C. NGOs

65. NGOs have become significant stakeholders in international environmental governance. Frequently, NGOs have helped the global community understand serious environmental problems. This important role of increasing public awareness by NGOs is often carried out by demonstrations. Greenpeace and Friends of the Earth are good examples of these types of NGOs. On the other hand, NGOs also help the global community by providing policy alternatives. IUCN, World Resources Institutes and WWF publish various reports to increase understanding of global environmental issues and to exert influence over policy developments.

66. In the Yellow Sea region, however, the role of NGOs in regional environmental governance is limited. Although NGOs in the Republic of Korea are very influential in increasing public awareness and in influencing domestic policy, they have historically been an insignificant stakeholder in regional governance and continue to have a limited capacity in this realm. The case of the Korean Federation for Environment Movement (KFEM), the largest environmental NGO within Asia as well as the Republic of Korea,

illustrates the limited role of NGOs in regional environmental governance. Because KFEM's activities have historically been domestic in nature, including challenging the activities of military and authoritarian regimes in Republic of Korea, its impact on transnational issues has been limited. However, KFEM has recently made an increased effort to understand the UN's role in regional environmental matters and has taken steps to expand its activities in regional environmental issues such as Yellow Dust, waste dumping in sea bodies, and marine mammal protection.(KFEM, 2006) These initiatives will increase the level of participation of Korean NGOs in international environmental issues, including the protection of the Yellow Sea marine environment.

67. Unlike activist NGOs, non-activist NGOs such as academic organizations have played significant roles in regional environmental governance. They frequently organize regional activities and play various important roles, such as reporting their research results and networking with policy markers. In this sense, their level of involvement in regional environmental governance is higher than that of activist NGOs.

68. The situation in China and the DPRK is very different. Given that both countries maintain socialist political regimes, it is very difficult for NGOs to play significant roles. (Xu, 2006) Most Chinese NGOs cannot be characterized as "activist" since they don't share many characteristics with activist NGOs like those found in ROK; no domestic NGOs of this kind are known to exist at all in the DPRK. This sometimes leads to deficiencies in public awareness on environmental issues. On the other hand, non-activist NGOs exist in China and the DPRK and cooperate with the governments closely.

D. Private sector

69. Since environmental problems are largely byproducts of various industries' industrial activities, the involvement of the private sector in regional environmental governance is important to enhance the effectiveness of policies.

70. The Yellow Sea region is one of the most rapidly developing regions in the world. Major world ports such as Shanghai and Incheon are located along the coast of the Yellow Sea. Due to increased activity in the Yellow Sea, the likelihood of a major environmental accident will also increase unless effective cooperative efforts are made to control the heavy volume of trade in the region. The fishing industry has been

growing rapidly, especially in China as previously discussed. Tourism is also becoming important in the Yellow Sea, growing rapidly along the coast. Oil and other heavy industries have also contributed to significant environmental stress in the Yellow Sea region. In particular, the oil industry along the Bohai Bay may be playing a role in damaging the marine environment in the Yellow Sea, as frequent oil related environmental problems in the Bo Hai Bay are reported. (Xu, 2006)

71. Despite the significance of various industries in the Yellow Sea, their involvement in regional environmental governance is very limited. They have been regarded as the targets of the implementation of various policy measures and remain outside the policy formation process.

E. Concluding observations

72. In the Yellow Sea region, greater effort is needed for more effective environmental governance by securing adequate participation from relevant stakeholders. The following may be considered:

- While there are only three states in the Yellow Sea region, governmental structures are very different among them. Therefore, careful efforts must be made to have relevant governmental bodies construct effective environmental governance in the Yellow Sea region.
- More active involvement of international organizations in regional efforts to protect the marine environment in the Yellow Sea is required.
- Given the differing statuses of NGOs in each state, the proper role of NGOs must be identified and a constructive way of increasing their capacities and involvement in the regional environmental governance determined.
- The limited involvement of the private sector could become a problem. Increased private sector participation will increase the effectiveness of regional environmental governance efforts.

V. Analysis of existing international cooperative mechanisms

73. There exist several international cooperative mechanisms which are related to Yellow Sea marine environmental protection. These include the UNDP/GEF YS LME Project, NOWPAP, IOC/WESTPAC, PEMSEA and GPA.

A. YS LME

74. The UNDP/GEF YS LME Project is one of the most relevant cooperative mechanisms pertaining to the Yellow Sea region. As a part of GEF's International Waters Program, YS LME was launched in the year of 2004. While the YS LME Project does not play its role as an independent entity according to international law, it has significantly boosted international cooperative efforts in the Yellow Sea region.

75. Major participants in the YS LME Project include the governments of China and the Republic of Korea, and related research institutions. Recently, YS LME has expanded its scope of cooperation by developing various partnership programs with international organizations, NGOs, universities and others. (YSLME, 2006)

76. The main objective of the YS LME Project is to prepare the Strategic Action Program for endorsement by participating governments. (YSLME, 2006) This will eventually help the Yellow Sea region increase the effectiveness of regional environmental governance, which will in turn help the region deal with environmental stress. As of this report's writing, the YS LME Project has completed the TDA and set regional targets which will become the basis for management and action via the SAP. The YS LME's first stage is scheduled for completion in 2009, with the endorsement of the finalized SAP by participating governments. At this time, the YS LME Project may continue its work.

77. An important feature of the YS LME Project relative to other existing international cooperative mechanisms is that only two governments are participating in it. As the main part of the Yellow Sea is shared by the coastlines of two states, the small number of participating states could increase the effectiveness of cooperation. Most YS LME meetings and documents have been attended and produced by a core body of personnel (government officials, experts, and NGOs). As a result, a naturally formed epistemic

community² has helped YS LME and the related governments secure easy access to experts and facilitated the use of existing resources.

78. At the governmental level, the central governments of both countries are more deeply involved in the YS LME Project than local governments. The key ROK ministries with an interest in the YS LME are the Ministry of Foreign Affairs and Trade and the Ministry of Maritime and Fisheries Affairs. While the MOFAT is concerned with general policy issues related to the marine environment in the Yellow Sea, the MOMAF is responsible for more detailed implementation activities, such as providing and arranging technical support. The level of participation of local ROK governments in the YS LME project is very low.

79. The State Oceanic Administration (SOA) is the main Chinese governmental body concerning the YS LME project. In addition, the Ministry of Agriculture, which is responsible for fisheries matters, is loosely related to YS LME activities. In contrast with the ROK's MOFAT, the Chinese Ministry of Foreign Affairs' degree of involvement is low except in occasional cases where security and treaty related issues are involved.

80. Furthermore, the involvement of China's local governments in regional environmental governance is minimal. This is a product of their lack of expertise and resources in carrying out international cooperative activities.

81. An important feature of the YS LME Project is that it depends heavily on experts to resolve various issues during the course of implementing Project objectives. Important technical decisions are often made via the discussions of experts in the five Working Groups. While the Project Steering Committee (PSC) is the ultimate decision-making body of the YS LME, it is rare that important decisions are made by PSC meetings. This bottom-up approach of the YS LME Project is certainly beneficial to its effectiveness.

82. While the participation of only two participating states in the YS LME project could be an asset, it could also be a serious barrier to its activities. Problems related to the Joint Cruise by the two countries are a good example. Although carrying out joint cruise activities is a critical part of the YS LME Project, tensions between China and Republic of Korea due to the political and security implications of the joint cruise have, as of yet,

² For the definition of the epistemic community, see Peter Haas, *Saving the Mediterranean* (1989).

not been resolved. Unless this issue can be overcome, other cooperative activities may also be affected.

83. The participation of the DPRK is another issue that the YS LME project needs to resolve. As the DPRK is an integral part of the Yellow Sea region, YS LME needs to ensure a way of having the DPRK formally participate in the Project. This will increase the feasibility and completeness of current cooperative efforts.

B. NOWPAP

84. The Northwest Pacific Action Plan is a part of the Regional Seas Program of the United Nations Environment Program. Since its first Intergovernmental Meeting was held in Seoul in the year 1994, NOWPAP has played an important role in stimulating cooperative activities among Northeast Asian states. (NOWPAP, 2007)

85. The Republic of Korea, China, Japan and the Russian Federation are the member states of the NOWPAP. While Mongolia attended the initial negotiations of the NOWPAP, it is no longer present at meetings. The DPRK, an important country due to its geographical location in the NOWPAP region, also does not participate in the NOWPAP.

86. Among the Yellow Sea states, China's State Environmental Protection Administration (SEPA) and the ROK's Ministries of Foreign Affairs and Trade and Ministry of Maritime and Fisheries Affairs participate in the NOWPAP. In the ROK, the specialized roles of participating ministries are similar to ones they play in YS LME.

87. The NOWPAP is a Regional Activity Center (RAC) based institution. Four RACs are located in four different countries. The Special Monitoring and Coastal Environment Assessment Regional Activity Center (CEARAC) is located in Toyama, Japan. The Northwest Pacific Region Environmental Cooperation Center (NPEC) currently hosts CEARAC. The main activities of CEARAC are to monitor and assess harmful algal blooms and to develop new monitoring tools using remote sensing skills. (CEARAC, 2007) The Data and Information Network Regional Activity Center (DINRAC) is located in SEPA's Policy Research Center for Environment and Economy in Beijing, China. DINRAC's main objectives are the development of a region-wide data and information exchange network, promotion of regional cooperation and exchange of

information on the marine and coastal environment in the NOWPAP region. DINRAC aims to ultimately become the clearinghouse of the NOWPAP region. (DINRAC, 2007)

88. The Marine Environmental Emergency Preparedness and Response Regional Activity Center (MERRAC) is based in the Maritime and Ocean Engineering Research Institute within the Korea Ocean R&D Institute (MOERI/KORDI) in Daejeon, Korea. MERRAC's main function is to develop regional cooperative measures in response to marine pollution incidents, including oil and hazardous and noxious substances (HNS) spills. (MERRAC, 2007) It is noteworthy that MERRAC's activities have been successfully completed through joint efforts of both UNEP and the International Maritime Organization (IMO). Recently, MERRAC also participated in work related to the land-based sources of marine litter. Lastly, the Pollution Monitoring Regional Activity Center (POMRAC), based in the Pacific Geographical Institute (PGI) of the Far East Branch of the Russian Academy of Sciences in Vladivostok, Russia, is in charge of cooperative measures to address the atmospheric deposition and riparian/direct inputs of contaminants into the marine and coastal environment. (POMRAC, 2007) Recently, integrated coastal and river basin management and work on NOWPAP's marine environmental report have been added as new projects for POMRAC.

89. NOWPAP launched a new project, the Marine Litter Activity (MALITA), at its 10th Intergovernmental Meeting in 2005. (NOWPAP-a, 2007) Under the oversight of the Regional Coordinating Unit (RCU), the Regional Activity Centers and the four Marine Litter Focal Points are in charge of the implementation of MALITA. Since its launch, two MALITA workshops have been held. The purpose of this project is to increase public awareness about marine litter and to prevent and reduce marine litter in the Northwest Pacific region in line with the global theme of sustainable development.

90. NOWPAP may be regarded as one of the most institutionalized cooperation mechanisms in Northeast Asia. Its institutional development was furthered by the launching the Secretariat and the Regional Coordinating Unit (RCU) in the year 2004. However, if it is unable to resolve its lack of financial resources and the dearth of serious results of activities, NOWPAP may face serious challenges and competitors in the future.

91. Within the context of Yellow Sea marine environmental protection, NOWPAP could

be utilized as an important cooperative policy vehicle. Its geographic scope is more comprehensive than that of the YS LME project, covering most of the marine area in Northeast Asia. Member states of NOWPAP include Japan and Russia in addition to China and the Republic of Korea, which could be a useful setting for the resolution of Yellow Sea issues in a broader context.

C. IOC/WESTPAC

92. The Intergovernmental Oceanographic Commission (IOC) started its regional project in the Western Pacific in 1965 and developed its Regional Committee for the Western Pacific in 1977. Later, this committee was transformed into the IOC Sub-Commission for the Western Pacific (WESTPAC) in 1989, based in Bangkok, Thailand.

93. As it is a regional subsidiary body of the IOC, IOC/WESTPAC performs its functions within the general policy and budgetary guidelines of the IOC. (IOC/WESTPAC, 2007) The primary objective of IOC/WESTPAC is to promote, develop and coordinate marine scientific research programs, ocean services and related activities. While pursuing its objective, IOC/WESTPAC takes into account the specific interests and needs of the member states in the region. IOC/WESTPAC, if necessary, makes recommendations and proposals to the Commission and cooperates with regional subsidiary bodies of UN organizations. IOC/WESTPAC also provides general guidance and serves as a mechanism for member states for the formulation, evaluation and follow-up of proposals for extrabudgetary projects aimed at strengthening national and regional capabilities in marine scientific research and the establishment of common institutions, services and facilities.

94. As of 2006, IOC/WESTPAC has twenty member states including France, United Kingdom, the United States, and seventeen Asian countries. The highest body of IOC/WESTPAC is the Session, which is held once every year.

95. IOC/WESTPAC is an expert-oriented organization, as it forms Task Teams to carry out specific assignments, establishes Groups of Experts and organizes technical meetings among the experts. Therefore, IOC/WESTPAC's outputs contribute to sharing information and knowledge related to relevant scientific research, which may have an influence on policy formation.

96. IOC/WESTPAC does not have any project directly related to the protection of the Yellow Sea region's marine environment. However, as the Yellow Sea shares many of the oceanic features of the greater Pacific Ocean, the results of the IOC/WESTPAC may be pertinent to issues in the Yellow Sea. In this sense, it is noticeable that IOC/WESTPAC has developed partnerships with YS LME, NOWPAP and PEMSEA.

D. PEMSEA

97. As East Asian seas are challenged by serious environmental problems, twelve countries in East Asia, with the supports of GEF, UNDP and IMO, launched the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA). For over a decade, PEMSEA has developed a number of activities through intergovernmental, interagency and multisectoral partnerships. These activities include integrated coastal management, subregional sea area and pollution hotspot management, capacity building, environmental investments, scientific research, an integrated information management system, coastal and marine policy work, work on regional mechanisms, risk assessment, regional networking, intellectual capital development, public mobilization, environmental investment and increasing political will on environmental issues.

98. The objective of integrated coastal management is to enhance sustainable development of coastal resources and the marine environment at the local level. (PEAMSEA, 2007) To achieve the goal, PEMSEA, in particular, emphasizes the important role of local governments in harmonizing environmental protection and development. Eight sites have been selected as demonstration sites, including the city of Nampo in North Korea. The major goals of each initiative include implementing organizational and legal arrangements, building local capacity to plan and manage coastal and marine areas, developing a 25-year strategic environment plan and short-term action plans, facilitating environmental investment by both the public and private sectors, installing an environmental monitoring program, training local people, and establishing partnerships and building awareness among NGOs and community organizations.

99. PEMSEA has selected demonstration sites such as the Bo Hai Bay, Saemankeum Reclamation Area, Manila Bay and the Gulf of Thailand and has applied an innovative approach to the environmental management of sub-regional sea areas. The purpose of

these activities is to create a common vision for semi-enclosed sea bordering areas in the region and develop and implement a collective strategy and environmental management program to achieve this goal. Capacity building is also an important component of PEMSEA. Government officials, technical personnel and researchers have participated in multi-focal training programs, which will help meet the demand for human resource development in coastal and marine environmental management.

100. PEMSEA emphasizes scientific research and cooperation among member states. It has established a Multidisciplinary Expert Group (MEG) and has conducted case studies on ecosystem carrying capacity, the relationship between economic development and ecological benefits, the impact of maritime trade on endangered species, the transboundary impacts of national economic activities, and the socioeconomic benefits of integrated coastal management. The results of research conducted, along with other available data, are collected and managed in a database system. This serves as a foundation for effective decision-making.

101. The participation of civil society is also an important component of PEMSEA. Target civil society groups include NGOs, grassroots organizations, religious groups, environmental journalists and other stakeholder groups.

102. One of the unique components of PEMSEA is its emphasis on private-public partnerships. Encouraging private sector participation in PEMSEA initiatives has helped meet its demand for financial and technological resources. Waste prevention and management, environment related services, and information and technology are among the projects available for private sector investment.

103. PEMSEA makes efforts to strengthen coastal and marine policy in the PEMSEA region. A common strategy, action program, and long-term vision will be introduced to the seas of East Asia. Measures developed for adoption into national coastal policy include guidelines for the formulation and adoption of national coastal policy, model national coastal policy and model implementing legislation. This activity will involve policy level officials and regional and legal experts in PEMSEA's work. As national coastal and marine policy is strengthened, PEMSEA will aim to develop a regional mechanism to solve problems in the coastal and marine environment.

104. As PEMSEA is active in addressing issues in East Asian seas, it has important

implications for the Yellow Sea region. As a part of the greater body of East Asian Seas, the Yellow Sea region may draw from the PEMSEA's experiences and results. That all three of the Yellow Sea's coastal states are members of PEMSEA is another benefit, because of the importance of DPRK's participation in the YS LME project in enhancing its effectiveness. In particular, ongoing projects in Bohai Bay, Nampo City, and the Saemankeum area (all are located in the Yellow Sea region but not addressed in the YS LME Project) may add synergistic effects to the existing activities of the YS LME Project.

E. GPA

105. Most sources of marine pollution originate from various human activities on land. One billion people live in the coastal areas surrounding the Yellow Sea, and many local economies also depend on these coastal areas. Despite the importance of addressing pollution in these coastal and in-land areas, the global community remained inactive on this issue until 1995, when the Global Program of Action for the Protection of the Marine Environment from Land-based Activities and the Washington Declaration were adopted. In the next year, the GPA Implementation Plan was presented to the Commission on Sustainable Development. The GPA furthered its activities by establishing the UNEP/GPA Coordination Office in the Hague, Netherlands in 1998.

106. The objective of the GPA is to prevent the degradation of the marine environment from land-based activities by facilitating states' duty to preserve and protect the marine environment as set out by many international treaties, including the United Nations Convention on the Law of the Sea. (UNEP, 1999) The GPA provides recommendations to states on the following activities:

- Identifying and assessing problems
- Establishing priorities for action as identified by problem assessment
- Setting management objectives for high-priority problems
- Identifying, evaluating and selecting strategies and measures to achieve these objectives
- Developing criteria for evaluating the effectiveness of strategies and measures.

107. To help states undertake its recommended activities, the GPA provides three levels of capacity building and technical programs. Areas that the GPA focuses on are as

follows:

- National Program of Action
- Physical Alteration and Destruction of Habitats
- Wastewater
- Financing
- Legislation
- Small Island Developing States
- Training
- Regional Seas

108. Within the Yellow Sea context, the GPA may be of assistance in providing a global scheme for addressing land-based pollution. As the GPA emphasizes the importance of utilizing the Regional Seas Program, NOWPAP is expected to play a significant role in GPA efforts to develop schemes to address land-based sources pollution in the region. However, as discussed above, NOWPAP's ability to meeting the demands of the region is limited.

F. Concluding observations

109. While the YS LME Project is the most relevant cooperative mechanism in the Yellow Sea region, NOWPAP has developed significant relevance to the issues of the Yellow Sea marine environment.

110. Neither body has been able to secure the participation of DPRK. Given their short histories, they have not also produced tangible results.

111. Political elements in the Yellow Sea region affect cooperative efforts to address marine environmental problems among coastal states.

112. While the importance of participation of relevant stakeholders in cooperative activities is well understood, their levels of participation vary.

113. IOC/WESTPAC, GPA and PEMSEA have only limited relevance in the Yellow Sea region. Further developments are needed to incorporate global or other regional initiatives effectively into current efforts in the Yellow Sea region.

VI. Analysis of existing legal institutions

114. International cooperative activities are implemented by legal institutions. As the implementation of international efforts is in the hands of states, domestic legislation is a decisive factor for the effective implementation of international institutions. Because interaction among states in the form of trans-boundary movement of goods, transnational transportation and transnational communication is increasing rapidly and states are obligated under international law to enact compliant domestic laws, international legal institutions are having a significantly greater impact on domestic legislation. As a result, understanding the international legal institutions of relevance to the Yellow Sea region marine environment is a critical step in enhancing the effectiveness of regional efforts.

115. Those global and regional treaties that need to be given attention within the context of the Yellow Sea region marine environment are the United Nations Convention on the Law of the Sea, the London Convention and its 1996 Protocol, MARPOL, and bilateral treaties between Republic of Korea and China on the environment and on fisheries.

A. UNCLOS

116. The United Nations Convention on the Law of the Sea acts as the framework treaty governing the maritime issues. It provides basic principles on the preservation of living resources, pollution, and regional cooperation. The basic principle of the Law of the Sea divides the world's marine area into smaller pieces, with different levels of sovereign jurisdiction in each portion.

117. 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.

118. Marine areas outside of state jurisdiction are known as the high seas. International law has developed unique principles in these areas. Only flag and port states may exercise jurisdiction concerning pollution in the high seas. Because of the greater legislative freedom that exists in the high seas, the current UNCLOS framework may not be effective in preventing and controlling environmentally harmful activities therein.

119. 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.

120. UNCLOS regulates different types of sources of pollution to protect the marine environment: land-based sources, marine vessels, and various installations and devices. States are required to prevent, reduce and control marine environment pollution resulting from the use of technologies or the introduction of alien or new species.

121. One of the features of the UNCLOS in addressing marine environmental problems is that it does not provide specific regulatory standards for the prevention, reduction and control of pollution. Instead, it urges states to cooperate, globally and regionally, with international organizations such as the International Maritime Organization in formulating and elaborating international rules, standards and recommended practices and procedures. UNCLOS also emphasizes the enactment of the domestic laws and regulations which are consistent with international standards.

122. Under the UNCLOS, states that become aware of the imminent pollution-related damage of the marine environment are obligated to notify other states and international organizations that are likely to be affected by such damage.

123. 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. To this end, states need to participate in regional or global fact-gathering programs. A stringent set of rules, standards, and scientific criteria are also required to protect the marine environment. UNCLOS has provisions concerning technical assistance on this issue for developing countries.

124. To ensure the effective enforcement of international law and standards and relevant domestic laws and regulations for the protection of the marine environment, flag states, port states and coastal states are allowed to exercise their jurisdictions under the conditions provided by UNCLOS.

125. In conclusion, while UNCLOS has introduced a number of provisions to protect the marine environment, they are insufficient for developing detailed regulatory standards on their own. Rather, it leaves the task of preparing and enforcing international and domestic laws and regulations to international organizations and states. UNCLOS also lacks the enforcement measures to ensure states that violate its principles, decreasing its effectiveness in preventing, reducing and controlling pollution in marine areas.

126. UNCLOS serves as the legal framework for states in the Yellow Sea region. Both China and the Republic of 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 standards required for pollution prevention, reduction, and control and other environmental issues in the Yellow Sea region remains undefined. This will depend on whether a well designed web of international and domestic legal institutions emerges through the development of regional environmental governance.

B. The London Convention and its 1996 Protocol

127. The 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter is a global treaty to address the issue of marine dumping. Its purpose is to control all sources of marine pollution and prevent pollution by dumping wastes and other matter. The London Convention has been amended several times, most recently in 1996 with the adoption of the 1996 Protocol. (IMO, 2007)

128. Article 2 of the London Convention obligates states to take effective measures, both collectively and individually according to their scientific, technical and economic capabilities, to prevent marine pollution caused by dumping and to harmonize their policies with those of other states.

129. The London Convention uses a permit system to regulate sources of dumping-related pollution, categorizing wastes and other matter into three categories and regulating them accordingly. Annex I lists materials which are prohibited from being dumped in the sea; Annex II list materials which require special permits for dumping. All other materials require general permits for dumping.

130. Materials that are prohibited from being dumped in the sea under Annex I 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

131. Materials that may be dumped with a special permit under Annex II are as follows:

- Wastes containing significant amounts of arsenic, beryllium, chromium, copper, lead, nickel, vanadium, zinc, and their compounds
- Organosilicon compounds
- Cyanides
- Fluorides
- Pesticides and their by-products not covered in Annex I
- Waste and other materials which contain materials prohibited under the Annex I
- Waste and other materials which contain de minimis levels of radioactivity

- Containers, scrap metal and other bulky wastes liable to sink to the sea bottom which may present serious obstacles to fishing or navigation
- Materials which, though of a non-toxic nature, may become harmful due to the quantities in which they are dumped, or which are liable to seriously reduce amenities

132. Waste and other materials, dumping of which is not prohibited or requires a special permit, are allowed to be dumped in the sea with a general permit. The London Convention provides a guideline for issuing such permits.

133. The London Convention also provides provisions concerning the development of cooperation in the region as well as with other international organizations. Article 8 of the London Convention asks states to endeavor to enter into regional agreements consistent with the Convention. Article 12 states that nations should make efforts to promote measures to protect the marine environment against pollution caused by materials governed by the London Convention via competent specialized agencies and international organizations.

134. The Protocol to the Convention of Marine Pollution by Dumping of Wastes and Other Materials was adopted in 1996 and entered into force in 2006. The 1996 Protocol can be regarded as an amendment to the London Convention. It introduces the innovative approach of preventing dumping wastes and other materials in the sea with only limited exceptions. (IMO, 2007)

135. The 1996 Protocol strengthens prevention and control of the sources of dumping-related pollution by introducing a provision of general obligations. Article 3 of the 1996 Protocol emphasizes a precautionary approach, a polluter pay principle and an obligation not to transfer damage to others.

136. As mentioned above, the most innovative feature of the 1996 Protocol is its limited-exception ban on dumping. Article 4 of 1996 Protocol allows states to dump wastes and other materials only under Annex I with a permit. Those wastes and materials under Annex I are:

- 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, and
- Bulky items primarily comprising iron, steel, concrete and similarly unarmful materials for which the concern is physical impact, and limited to those circumstances where such wastes are generated at locations such as small islands with isolated communities having no practicable access to disposal options other than dumping

137. Dumping wastes and materials under Annex I requires a permit. States have an obligation to adopt administrative or legislative measures to ensure that their issuance of permits and permit conditions complies with provisions of Annex II. States can take further steps to prohibit wastes and materials from dumping.

138. The 1996 Protocol leaves open the possibility of extending its geographical scope of application to internal waters, which usually are not within the interests of international law. According to Article 7, states must apply the 1996 Protocol to control the deliberate disposal of wastes and other matter in marine international waters. States have the additional obligation of providing the IMO with information on legislation and institutional mechanisms regarding implementation, compliance and enforcement in marine internal waters.

139. In conclusion, the London Convention and its 1996 Protocol have served as a good regulatory basis for addressing the dumping of wastes and other materials in the sea. They provide not only related principles but also a detailed list of regulated wastes and materials. Strengthening regulations on the dumping of wastes and other materials by prohibiting dumping in general only with limited exceptions as well as expanding its geographical scope of regulation to internal waters through the 1996 Protocol will contribute to the increasing effectiveness of dumping regulation.

140. As a large part of the Yellow Sea region's pollution problems occur as a result of dumping, establishing an effective compliance mechanism to the London Convention and its 1996 Protocol will help the region prevent, reduce and control dumping-related pollution in the Yellow Sea. However, among regional states, only China is the member to both the London Convention and the 1996 Protocol. (IMO, 2007) The ROK is a

member only to the London Convention, and the DPRK is not member to either of the two treaties. Given that not all regional states are members to the London Convention and the 1996 Protocol, efforts need to be made to ensure the full participation of the region's states in these two treaties.

C. 1973/1978 MARPOL

141. The 1973 International Convention for the Prevention of Marine Pollution from Ships and its 1978 Protocol aim to preventing marine pollution by ships from accidental and operational causes. Since the issue was first discussed in Washington in 1926, public awareness of the seriousness of ship-related pollution has been increased. The 1954 International Convention for the Prevention of Pollution of the Sea by Oil (OILPOL) primarily addressed pollution from routine tanker operations and from the discharge of oily wastes from machinery spaces. As oil trade and development increased, further actions were required. After the Torrey Canyon accident of 1967, an international conference organized by IMO led to the 1973 adoption of the International Convention for the Prevention of Pollution from Ships. This convention was intended to address pollution via chemicals, harmful substances carried in package form, sewage, and garbage in addition to oil. However, this convention got little attention from the international community and faced the possibility of not entering into force. Consequently, the MARPOL Protocol was adopted in 1978, providing states more flexibility in observing their obligations than under the 1973 MARPOL. As a result, the 1973 International Convention for the Prevention of Marine Pollution from Ships, as modified by the 1978 Protocol (MARPOL 73/78), finally entered into force in 1983. (MOMAF, 2007)

142. To achieve its goal of regulating pollution from ships caused by accidents as well as routine operations, MARPOL 73/78 has six technical Annexes as follows:

- Annex I: Regulations for the Prevention of Pollution by Oil
- Annex II: Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk
- Annex III: Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form
- Annex IV: Prevention of Pollution by Sewage from Ships
- Annex V: Prevention of Pollution by Garbage from Ships

- Annex VI: Prevention of Air Pollution from Ships

143. Annex I is to prevent pollution by oil. The 1973 Convention maintained the oil discharge criteria under the 1969 amendments to the 1954 OILPOL without substantial changes. It allows operational discharge of oil from tankers only when three conditions are met. Those conditions are:

- the total quantity of oil which a tanker may discharge in any ballast voyage whilst under way must not exceed 1/15,000 of the total cargo carrying capacity of the vessel;
- the rate at which oil may be discharged must not exceed 60 liters per mile traveled by the ship; and
- no discharge of any oil whatsoever must be made from the cargo spaces of a tanker within 50 miles of the nearest land

144. Furthermore, in Annex I of the 1973 Convention, the maximum quantity of oil permitted to be discharged on a ballast voyage of new oil tankers was reduced from 1/15,000 of cargo capacity to 1/30,000 of the amount of cargo carried.

145. The 1978 Protocol amended Annex I extensively. Its segregated ballast tanks (SBT) requirement was strengthened and provisions concerning crude oil washing, clean ballast tanks (CBT) systems, and drainage and discharge arrangements were introduced or altered under the 1978 Protocol.

146. Annex II concerns the control of pollution by noxious liquid substances by providing four discharge criteria and measures for the control of pollution by noxious liquid substances carried in bulk. Approximately 250 evaluated substances have been cleared for discharge to reception facilities under the conditions provided by the MARPOL 73/78.

147. Annex III prevents pollution from harmful substances in packaged form. Unlike Annexes I and II, Annex III-VI are optional. Requirements for the issuing of detailed standards for packing, marking, labeling, documentation, storage, quantity limitations, exceptions and notifications of harmful substances are provided by Annex III.

148. Prevention of pollution by sewage and garbage from ships is addressed in Annex

IV and V, respectively. Detailed requirements for the control of sewage and garbage from ships are provided by these Annexes. Annex V completely prohibits the dumping of all forms of plastic.

149. Annex VI was adopted in 1997 and entered into force in 2005. This Annex controls sulfur oxide and nitrogen oxide emissions from ship exhausts and bans the deliberate emission of ozone depleting substances.

150. In conclusion, through a number of amendments to the 1973 Convention, in the form of MARPOL 73/78, marine pollution from ships has been decreased. All three of the Yellow Sea's coastal states are members to all of MARPOL's annexes, except Annex VI by the Democratic People's Republic of Korea. (IMO, 2007) Therefore, it is important for each state to ensure the effective implementation of MARPOL 73/78 through domestic laws and regulations to address the pollution from ships in the region.

D. Biodiversity Convention

151. The Convention on Biological Diversity was adopted in 1992 and entered into force in 1993. The main objective of the Convention on Biological Convention is the sustainable use and equitable sharing of benefits of biological assets. Substantive provisions deal with measures for the conservation of biological diversity, incentives for the conservation and sustainable use of biological diversity, research and training, public awareness and education, assessment of the impacts of projects on biological diversity, regulation of access to genetic resources, and access to and transfer of technological and financial resources.

152. The Conference of Parties of the Convention of the Biological Diversity has developed five thematic work programs, addressing marine and coastal biodiversity, agricultural biodiversity, forest biodiversity, the biodiversity of inland waters and the biodiversity of dry and sub-humid lands. These programs have several common components as follows:

- establishing a vision for and basic principles to guide future work
- setting out key issues for consideration
- identifying potential outputs
- suggesting a timetable and means for achieving the outputs

153. Other features of the Convention of Biological Diversity include an emphasis on the ecosystem approach, a review of Convention operations and development of a Strategic Plan, and cooperation with other biodiversity-related conventions, institutions and processes.

E. Agreement on Environmental Cooperation Between the Government of the Republic of Korea and the Government of the People's Republic of China

154. Since it was signed in 1993, the Agreement on Environmental Cooperation between the government of the Republic of Korea and the government of the People's Republic of China has provided a bilateral cooperation framework for solving common issues between two countries. The Agreement falls under the jurisdiction of the Ministry of Foreign Affairs of Trade of the Republic of Korea and the Chinese State Environment Protection Administration (SEPA).

155. In adherence to the Agreement, China and ROK 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.

156. To maintain effective cooperation between the two governments, the Agreement established the Joint Committee on Environmental Cooperation between the government of Republic of Korea and the government of People's Republic of China (JCEC). The JCEC is the primary organization responsible for the implementation of the Agreement. The majority of relevant ROK ministries and agents participate in the JCEC, including the Ministry of Foreign Affairs and Trade, the Ministry of Environment, the Ministry of Fisheries and Marine Affairs, the Korea Meteorological Administration, and related research institutes. On the other hand, the State Environment Protection Agency is virtually the sole Chinese participant in the JCEC, with the Chinese Ministry of Foreign Affairs and Trade participating in limited terms.

157. Several important projects have been conducted under the JCEC. Seven of these projects are on-going, including the Joint Research of the Yellow Sea Marine Environment. At the most recent (12th) meeting of the JCEC, held in China in June

2007, commitments were made to carry out several new joint projects, including cooperation on response to problems associated with Yellow Dust, marine environmental protection in the Yellow Sea, cooperation in the development of environmental industries, and joint research on environmental technologies. (MOFAT, 2007a)

158. This bilateral treaty could serve as a solid basis for addressing comprehensive regional environmental problems, including the Yellow Sea marine environment, between Republic of Korea and China. However, the fact that SEPA remains virtually the sole Chinese participant in the JCEC could be a very serious limitation in yielding effective results from the cooperation-building efforts between two states.

F. Treaties Concerning Fisheries

159. The issue of fisheries is one that merits careful discussion, as it has become a serious threat to the maintenance of a sustainable marine environment in the Yellow Sea as discussed above. The primary legal institutions related to the fisheries issue in the Yellow Sea region include the UNCLOS, the FAO Code of Conduct for Responsible Fisheries and the bilateral Fisheries Agreement between the Republic of Korea and China.

160. As in other environmental issues in the Yellow Sea, *UNCLOS* serves as general legal guideline in fisheries issues. *UNCLOS* introduced an Exclusive Economic Zone (EEZ) for fisheries, breaking with historical conventions of dividing maritime areas into High Seas and Territorial Seas. Coastal states may extend their jurisdiction to the EEZ beyond their own territorial seas by obtaining rights to control EEZ living resources. In the EEZ, coastal states are obligated to conserve and manage living resources rather than simply exploiting them.

161. Article 61 of the *UNCLOS* states that the coastal states have obligations to determine the allowable catch of living resources and to maintain or restore populations of harvested species at levels which will be able to produce the maximum sustainable yield in EEZs. States are required to share and consider relevant scientific data and evidence. Under Article 62, coastal states also need to utilize an EEZ's living resources optimally while allowing other states access to the surplus of the allowable catch through agreements and other arrangements and pursuant to the laws and regulations of

the coastal states. Articles 63 to 67 address special species-related issues. The implication of extending coastal states' jurisdiction over living resources in EEZs is the establishment of an effective legal basis for the prevention of overfishing by these states.

162. In territorial seas, UNCLOS allows coastal states to exercise sovereign rights over natural resources, including fisheries. On the other hand, in the high seas beyond the EEZ, all states have the right to engage in fishing under the certain conditions provided by UNCLOS. At the same time, states also have an obligation to take necessary measures to conserve living resources in the high seas. To this end, UNCLOS urges states to establish regional or sub-regional fisheries organizations.

163. *The FAO Code of Conduct for Responsible Fisheries* is not a legally binding instrument, but provides guidelines to states. While UNCLOS is general in its nature, the FAO Code of Conduct is more detailed and specific concerning fisheries-related issues. It sets out principles and standards of behavior for states related to the conservation, management and development of fisheries. As an instrument of reference for both FAO member and non-member states, the FAO Code of Conduct covers the entire process of capture, processing and trade of fish and fish products, fishing operations, aquaculture, research and the integration of fisheries into coastal area management. Geographically, while UNCLOS applies different rules to territorial seas, EEZs and the high seas, the FAO Code of Conduct treats fisheries on the high seas, within the EEZ, and in territorial waters in a uniform manner.

164. Article 6 of the FAO Code of Conduct is usually regarded as a provision which sets out the outline of the FAO Code of Conduct. The principles stipulated in Article 6 are as follows:

- Conservation of aquatic ecosystems
- Promotion of food security interests
- Prevention of overfishing and excess capacity
- Dependence on the best scientific evidence available for conservation and management decisions
- Application of the precautionary principle
- Development of further selective and environmentally safe fishing gear
- Maintenance of the nutritional value, quality and safety of fish and fish

products

- Protection and rehabilitation of critical fisheries habitats
- Ensuring compliance with and enforcement of conservation and management measures and establishing effective mechanisms to monitor and control the activities of fishing vessels and fishing support vessels
- Exercising effective flag state control
- Cooperation with sub-regional, regional, and global fisheries management organizations
- Ensuring a transparent and timely decision making process
- Conducting fisheries-related trade according to established WTO rules
- Cooperation to prevent disputes and resolving disputes in a timely, peaceful and cooperative manner
- Promoting public awareness
- Ensuring safe and healthy fish facilities and fish farms
- Protection of fishermen and fish workers

165. *The Republic of Korea and China's bilateral Fisheries Agreement* concerning fisheries issues in the Yellow Sea also deserves attention. This agreement articulates these states' agreement to conserve and manage living resources, manage fishing activities and promote cooperation on fisheries activities in accordance to UNCLOS in the EEZs of the two countries.

166. The following principles have been established for the countries' EEZs:

- Fishing vessels from each country need to acquire fishing permits from the other country within the EEZ of the other country.
- Fishing vessels are under obligation to observe the laws and regulations for the conservation of the marine environment of the other country while within the EEZ of the other country.
- Each coastal country reserves the right to enforce relevant measures to maintain fisheries within its own EEZ.

167. The Fisheries Agreement also instituted a unique system to deal with the two countries' overlapping EEZs. This overlapping area was designated as the Provisional Area³ and was governed by a unique set of rules. (Y.H.Park, 2006) The Joint Fishery

³ Before June 30, 2005, a so-called Transitional Area also existed. This area was established in the area

Commission was established to decide marine environment conservation issues and enforce measures to maintain fisheries order. Under the circumstance that one party was found to breach a decision of the Joint Fishery Commission, the other party had authority to alert the other party of this fact and call attention to the other party's act.

168. In conclusion, in the Yellow Sea, fisheries matters are mainly governed by the Fisheries Agreement between the Republic of Korea and China. This agreement reflects related provisions of the UNCLOS. On the other hand, the FAO Code of Conduct remains loosely applied and is not incorporated into any sub-regional cooperative mechanisms.

where the two parties could not agree on whether to apply the rules of the EEZ or of the Provisional Area. As a result, for a period of four years after the agreement entered into force, rules of the EEZ were not applied to the Transitional Area. However after June 30, 2005, this area became part of the EEZ of both countries and was henceforth governed by the rules of the EEZ.

VII. Recommendations for future interventions

169. Future interventions for the ecosystem-based, environmentally sustainable management and use of the YS LME require an understanding of various aspects of regional governance issues. Interventions suggested in this section are ones that may be adopted and pursued to be implemented until 2020 in the YS LME project context. Different interventions may be required if the geographical and/or project scope is expanded or changed.

A. Stakeholders

170. This report's analysis has identified different levels of involvement among stakeholders within the current regional governance framework in each of the region's states. This is natural because each country has unique political, social and economic dynamics.

Degree of Current Stakeholder Involvement in Regional Governance
in the Yellow Sea region

	Central Gov.	Local Gov.	NGOs	Private Sector
China	very strong	weak	weak	weak
ROK	very strong	weak	weak	weak
DPRK	n/a	n/a	n/a	n/a

a. China

171. In China, the central government, especially the SOA, has been heavily involved in regional governance in the YS LME context. In the case of the local governments, more coordination among the local governments, along with capacity building for their contributing role in the regional efforts, is necessary. The weak participation of Chinese NGOs in regional governance is assumed to be the result of the relative weakness of civil society in China. While the participation of the private sector in regional governance is important, both the relatively small scale of industries and the public

sector's domination of the private sector in Chinese social institutional dynamics has resulted in the weak participation of the private sector in regional governance.

172. In the Republic of Korea, central government agencies such as the Ministry of Foreign Affairs and Trade and the Ministry of Maritime and Fisheries Affairs play important roles in Yellow Sea regional governance. The results of interviews with Korean government officials demonstrate that the degree of participation of local government remains low as most transnational issues are decided by the central government. The strong influence of the central government over local governments may also play a role in local governments' relative unimportance as a player in regional governance issues. Though they are very influential in domestic environmental issues, South Korean NGOs' limited capacity for handling transnational issues has limited their involvement in regional governance issues in the Yellow Sea. The ROK private sector is an important actor in the Yellow Sea region's marine environment but has not been given the opportunity to become involved in regional governance.

173. Future interventions concerning regional governance stakeholders need to take the balance between reality and desired outcomes into consideration. The following chart demonstrates the participation levels of stakeholders in regional governance through 2020.

Importance of Stakeholders in Regional Governance through 2020

	Central Gov.	Local Gov.	NGOs	Private Sector
China	very strong	medium	weak	medium
ROK	very strong	medium	medium	medium
DPRK	very strong	weak	weak	weak

174. In China, fragmentation and competition among ministries and agencies is much more serious than in Korea. Given the resources available to the YS LME, it may not be feasible to involve all relevant governmental bodies in YS LME regional governance. Instead, the involvement of China's most important government organizations, especially the SOA, should be sought. Additionally, continuous efforts to include other relevant central government bodies, such as SEPA and MOA, should be made. Local government may be also considered for inclusion in future regional governance measures. In particular, relevant provincial governments are in need of involvement in

transnational efforts to some extent.

175. As it will take a relatively long time for Chinese NGOs to play a constructive role in addressing environmental issues, it is not realistic to expect their strong participation in regional governance in the Yellow Sea. Instead, efforts should be focused on NGO capacity building.

176. The private sector, particularly large scale multinational corporations, should be involved more actively in the regional efforts. Given the situation where limited resources are available to Chinese local governments, their involvement may increasingly provide adequate financial and informational sources to Chinese society.

b. Republic of Korea

177. In the Republic of Korea, cooperation among related ministries is welcomed. Due to its similarity in roles with its Chinese counterpart, the Ministry of Fisheries and Maritime Affairs seems to be the most appropriate body for future cooperative efforts. This does not mean that other ministries or agencies such as the Ministry of Foreign Affairs and Trade need to be excluded from cooperative activities. The Ministry of Foreign Affairs and Trade's influence in coordinating foreign policy measures among ministries makes it important for MOFAT to remain involved in general diplomatic and negotiation issues. The Ministry of Environment and the Korea Coast Guard could also be encouraged to participate in future cooperative efforts related to their missions.

178. In the Republic of Korea, policy implementation is effective due to the well established rule of law at the local government level. However, local governments' experience and capacity in regional governance is limited. Local governments' increased participation in regional governance may be beneficial.

179. As the capacity of ROK NGOs in regional governance issues is not sufficient to warrant their active participation, the focus should be placed on the capacity building of NGOs in the regional governance context. However, they may be invited to participate more actively as in domestic endeavors.

180. It is critical to develop a way of securing more active involvement from the ROK private sector. Due to the development of the market economy, public regulations may

not address all the issues that the private sector brings up concerning the marine environment in the Yellow Sea region.

c. DPRK

181. Efforts must be made to secure the participation of the Democratic People's Republic of Korea's central government in the YS LME process. Given the DPRK's lack of engagement on many global and regional issues, its expected level of involvement as a stakeholder in regional governance would be different from those of China and the ROK.

e. International Organizations

182. International organizations will remain an important stakeholder in regional governance in the Yellow Sea region. Given the unique geopolitical situation of this region as described above, international organizations can play an intermediary role in addition to their work on funding, agenda setting, information sharing, and capacity building. Among relevant international organizations, the UNDP will continue to play the most critical role. In addition, other relevant international organizations, such as the IMO and the UNEP, should also be encouraged to engage in regional environmental governance.

B. Cooperative Mechanisms

183. There are a number of international cooperative mechanisms concerning the Yellow Sea marine environment as discussed in the previous section. While each mechanism plays its own role in the Yellow Sea region, the significance of each mechanism in the Yellow Sea context is widely different. The following chart demonstrates these differences:

Significance to the Yellow Sea region in the YS LME context

YS LME
NOWPAP
PEAMSEA
IOC/WESTPAC
GPA

184. The YS LME Project seeks to build close cooperative partnerships with relevant cooperative mechanisms. Partnerships should be developed based on the relevance of these mechanisms to the current and future activities of the YS LME. NOWPAP is the most important, relevant, and complementary mechanism to the YS LME Project. PEAMSEA is less significant to the YS LME, though it plays an active role in the greater East Asia seas. However, its Bo Hai Bay, Saemankeum and Nampo City projects of PEAMSEA are very relevant to the YS LME. Although IOC/WESTPAC has significant implications on the YS LME project, its recent relative inactivity has diminished its importance to Yellow Sea regional governance. Finally, the GPA needs to be utilized to acquire global experiences and networks to address land-based sources pollution in the Yellow Sea region.

C. Legal Institutions

185. Several global and bilateral treaties have been identified as relevant to the Yellow Sea marine environment by this report. However, they vary in terms of issue coverage, regulatory implications, etc. The following chart demonstrates the degree of effectiveness of these treaties in resolving issues in the Yellow Sea marine environment:

Effectiveness in Resolving Issues in the Yellow Sea

Bilateral treaties

London Convention/ 1996 Protocol/ MARPOL

FAO Code of Conduct

UNCLOS

Biodiversity

186. The following chart demonstrates the effectiveness of the above treaties on the various marine environment issue areas in the Yellow Sea region.

	Effectiveness of Legal Institutions
Pollution	strong
Biodiversity	medium
Ecosystem	weak
Fisheries	strong

187. For the purposes of the YS LME project, it may become problematic that different government ministries are in charge of each bilateral treaty and do not coordinate their efforts. In China, for example, the SEPA is in charge of the JECE, while the MOA deals with fisheries matters under each bilateral treaty and the SOA is the primary body involved in the YS LME. An efficient coordination mechanism among relevant ministries and agencies is needed.

D. Creating the YS LME Commission

188. Considering the complex issues analyzed in this report, it is desirable to create a YS LME Commission as a central mechanism to address the issues identified.

189. The current YS LME Project is set to expire in the year 2009, as it is a temporary project-based activity by the UNDP and GEF. However, further efforts are desirable to implement suggested policy measures through the SAP after the year 2009, when the current stage of YS LME Project expires. Consequently, institutionalizing current efforts must be considered.

190. From 2009 to 2020, institutionalizing efforts may be divided into two stages. As the participating governments in current YS LME activities may not have the capacity to implement SAP's suggested policy measures on their own, financial and technical assistance from the UNDP/GEF will be needed through 2015. During this period, the current YS LME Project Management Office, which is to be transformed into the Secretariat, may focus on helping participating governments and other relevant stakeholders secure financial resources and increase their capacities in carrying out activities on their own.

191. Between 2016 and 2020, an institutionalized cooperative mechanism, the YS LME Commission, may start to carry out activities by its own. In this stage, UNDP/GEF may provide limited assistance only when necessary.

192. The YS LME Commission is to be a soft, non-legally binding, cooperation based institution. Due to the geopolitical characteristics of this region and the complex competitions and coordination difficulties among government bodies, it is unfeasible to establish a treaty based YS LME Commission at this time, but this may be a long term goal for the project. However, sufficient political will among participating governments should be secured to give the Commission sufficient authority and justification. This may be achieved in the form of a joint declaration or a MOU among the participating governments.

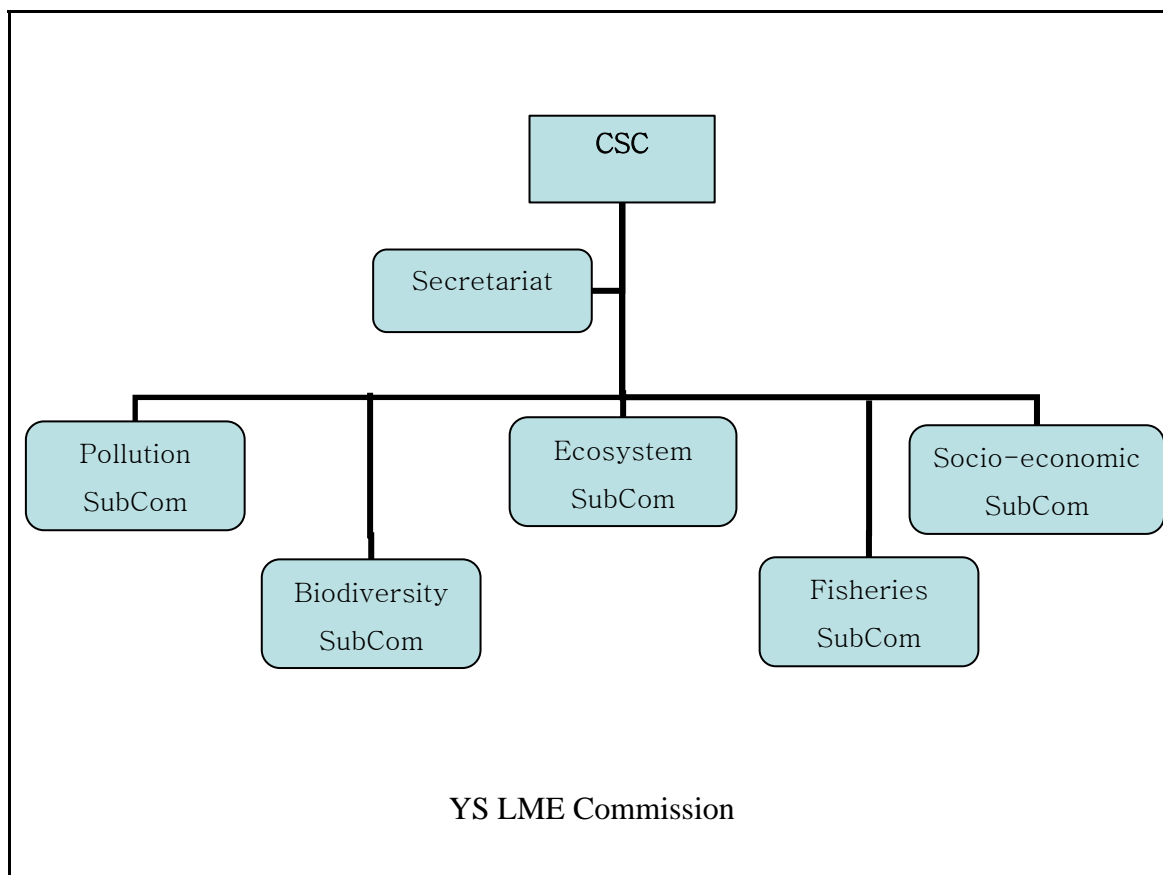
193. The basic institutional framework of the YS LME Commission will be similar to the current scheme of the YS LME Project. A YS LME Commission Steering Committee (CSC) will be created as a supreme decision making body. This Committee will include Representatives of each participating government and the Secretariat. China's SOA and one of ROK's MOFAT and MOMAF will be the Commission's primary players. The participation of a relevant DPRK ministry must also be secured.

194. A permanent Secretariat will be created to assist the CSC and coordinate various activities of the YS LME Commission, as the PMO currently does for the YS LME project. The Secretariat should be small but secure enough expertise to address the policy and scientific interests of the YS LME Commission. The location of the Secretariat will be desirably in Ansan, Korea where current PMO of the YS LME Project is located. This will certainly ensure the continuity of the works of YS LME Commission Secretariat.

195. Under the YS LME Commission, five Sub-Commissions will be established in the areas of Pollution, Ecosystem, Biodiversity, Fisheries and Socio-economic. Each Sub-Commission will be responsible for technical issues in its area and will be composed of experts in each field from participating countries.

196. The YS LME Commission must develop a mechanism whereby other related stakeholders, such as other international organizations, local governments, private

sectors and NGOs, can become involved. The degree of involvement of these stakeholders will be issue and/or country specific.



197. The YS LME Commission may develop several action programs including the following:

- YSLME 1: Developing joint scientific research projects
- YSLME 2: Strengthening legal institutions
- YSLME 3: Strengthening partnership
- YSLME 4: Capacity Building
- YSLME 5: Financing

198. The YS LME Commission needs to continue and expand the activities of the current Working Group of the YS LME Project through developing joint scientific research projects. Given the different characteristics of each issue area (pollution, biodiversity, ecosystem and fisheries), each Sub-Commission should identify its own

realistic targets and timeline. Building a reliable scientific data system will pave the way for furthering policy coordination among regional states.

199. According to the recommendations of the TDA, the main sources of environmental stress in the Yellow Sea region lie in socio-economic factors. Therefore, the YS LME Commission should focus on improving the effectiveness of socio-economic institutions. Much may be done through strengthening legal institutions and partnerships with other cooperative mechanisms and related stakeholders, and increasing the capacities of local governments and NGOs.

200. Efforts to strengthen legal institutions at the regional level need to improve the implementation of existing global and regional treaties and standards. As discussed in the previous section, treaties and other international legal standards vary in their provision of detailed standards. They also differ in whether states in the Yellow Sea region are members to them.

201. In the cases of the London Convention, its 1996 Protocol and MARPOL, efforts should be made to ensure full participation of the Yellow Sea states in these treaties. As these treaties provide detailed and global standards for specific pollutants, effective implementation of these treaties by the Yellow Sea coastal states will lead to the greater effectiveness of regional efforts. This will also facilitate harmonization of the national environmental standards as coastal states develop and change their existing national standards in accordance to international treaty standards.

202. The FAO Code of Conduct for Responsible Fisheries may be a useful guideline for the management of fisheries in the Yellow Sea region. Although the FAO is not legally binding, efforts should be made by the YS LME Commission to incorporate suggested guidelines into YS LME states' national legislation. Furthermore, coordinating efforts should be made with the bilateral Fisheries Agreement between China and ROK in the YS LME Commission Context. This is particularly important because the SOA, the likely primary representative government body for the YS LME Commission, does not have jurisdiction over the fisheries matters, which belong to MOA.

203. UNCLOS, along with the Biodiversity Convention, may function as an overall legal framework for furthering regional standards in other areas of the YS LME Commission. The YS LME Commission should seek to prepare guidelines on matters

not covered in detail by these treaties.

204. The two bilateral treaties between China and the ROK are important as ways of strengthening coordination with other YS LME Commission activities. In particular, the activities of the JCEC under the bilateral environmental agreement and the Joint Fisheries Commission under the bilateral fisheries agreement should be incorporated into those of the YS LME Commission so as to increase synergic effects.

205. Other tasks related to the strengthening of legal institutions may be also considered. They include:

- Periodic review of the implementation of global and bilateral treaties
- Exchange of information on relevant domestic legislation
- Developing projects to harmonize domestic legislation according to the guidelines of relevant treaties
- Developing schemes to address disputes

205. Strengthening its partnerships with other cooperative mechanisms and related stakeholders will increase the overall effectiveness of the YS LME Commission. As it is likely to maintain a small secretariat, partnerships with NOWPAP, PEMSEA and other cooperative mechanisms will complement the activities of the YS LME Commission. For example, the endeavors of the MERRAC of NOWPAP help the YS LME Commission address marine pollution, as the MERRAC has achieved effective cooperation on oil spills among NOWPAP participating states.

206. Furthering partnerships with relevant stakeholders should be also sought. Building partnerships with NGOs, interested private sectors, universities and other educational and research organizations will benefit the efforts of the YS LME Commission.

207. Analysis of this report along with other YS LME Project reports reveals the necessity of developing the capacities of local governments and NGOs for more constructive roles in Yellow Sea regional governance. Capacity building programs should be country specific and take differing circumstances into consideration. Examples of such programs include the following:

- Increasing understanding of international/regional institutions

- Learning advanced management measures, and
- Development of cooperation abilities with related stakeholders.

208. Sound financing will be a critical element for the YS LME Commission. Even though it will be desirable for the YS LME Commission to receive financial assistance from the GEF through 2015, it should seek alternative financial sources to continue its activities after 2015. Possible contributions may be available from government and the private sector.

Annex I. Interview Questions

The Yellow Sea is a common natural resource from which China, the DPRK and the ROK have yielded long-ranging benefits. Recent studies demonstrate that the Yellow Sea region may face serious environmental problems unless effective regional efforts are carried out to address serious environmental stresses in the region. The UNDP/GEF Yellow Sea Large Marine Ecosystem project was launched towards this end. The YS LME project is preparing a regional Strategic Action Program (SAP) which requires endorsements by two states, i.e. China and the Republic of Korea. It is crucial to identify key issues and problems in order to recommend policy measures for improved regional governance in the Yellow Sea region. In this context, the Regional Governance Analysis project team would like to conduct email and/or on-site interviews as follows:

1. To your knowledge, what are the multilateral and bilateral cooperative mechanisms relevant to the Yellow Sea marine environment?
2. What is your opinion on the YS LME project's effectiveness and usefulness in addressing important regional marine environmental issues and establishing a regional mechanism in the Yellow Sea region?
3. What improvements to the current regional cooperative mechanism that would be feasible given the unique constraints of the Yellow Sea region?
4. What are the key roles central and local governments should play within the context of the YS LME project?
5. What are your organization's roles in the context of the YS LME project?
6. Are there any bilateral cooperative mechanisms between China and the Republic of Korea AND between China and the Democratic People's Republic of Korea? How effectively are these mechanisms functioning?
7. To what extent do experts, research institutions and NGOs participate in the YS LME project in China?
8. What is your opinion on the effectiveness of the bilateral fisheries agreement between China and the Republic of Korea?
9. To what extent do you think non-environmental issues such as territorial issues affect the effectiveness of the YS LME project in addressing marine environment issues?
10. How significant are local governments in the context of the YS LME project, in

- particular in the preparation and implementation of the SAP?
11. What are the major requirements of local governments which may be related to the YS LME project?
 12. Provide any further ideas, if any, to improve the current regional governance system in the context of the YS LME project.

Annex II. List of Interviewees

[China]

1. Mr. Fengkui LIANG, Director, Department of International Cooperation, State Oceanic Administration
2. Professor Xiangmin XU, Dean, Law School, Ocean University of China
3. Mr. Dexin MENG, Director, Division of Marine Environmental Protection, Marine and Fishery Bureau, Liaoning Province
4. Mr. Jaijian Zhang, Deputy Director, Marine and Fishery Bureau, Jiangshu Province
5. Mr. Ennian XIE, Division of Environmental Protection, Marine and Fishery Bureau, Shandong Province

[Republic of Korea]

1. Mr. Dong-Shik WOO, Director, Marine Policy Bureau, Ministry of Marine and Fisheries Affairs
2. Mr. Won-Tae SHIN, Deputy Director, Marine Policy Bureau, Ministry of Marine and Fisheries Affairs
3. Ms. Gye-yeon CHO, Second Secretary, Environmental Cooperation Division, Ministry of Foreign Affairs and Trade
4. Mr. Kwang Ho PARK, Division of Maritime Affairs and Fisheries, Maritime Section, Jeollanam-do Province
5. Mr. Gyu Seok PARK, Agriculture, Fisheries Division, Jeollabuk-do Province
6. Mr. Cun-Ho AHN, Division of Maritime Affairs and Fisheries, Gunsan City, Jeollabuk-do Province

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