The Assessment Report of

China's National and Local Capacity for Implementation of International Legal Documents in the YSLME Project II

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Content

List of Acronyms or Abbreviations 5

Executive Summary 6

Preface 9

Introduction 10

Chapter 1. The Assessment of China's National and Local Capacity for Implementation of UNCLOS 13

1.1 Assessment of China's Capacity for Implementation of UNCLOS 13

1.1.1 The 2018 Institutional Reform of Central Government 13

1.1.2 The Current Marine Management System 15

1.1.3 The Assessment to Current Marine Management System 20

1.2 Capacity Needs for Implementation of UNCLOS 22

1.2.1 The duties of administrative department need to be clearly defined 22

1.2.2 The overall planning function needs to be strengthened 23

1.2.3 A synthetical coordination mechanism needs to be established 23

1.3 Capacity Building Priorities 24

Chap. 2 The Assessment of China's National and Local Capacity for Implementation of CBD and RAMSA 25

2.1 Assessment of China's Capacity for Implementation of CBD and RAMSA 25

2.1.1 China's responsibilities under the CBD and RAMSA 25

2.1.2 China’s Biodiversity Management Framework 28
2.1.3 China’s capacity for implementation of CBD and RAMSA.....29
2.2 China’s Capacity Need for Implementation of CBD and RAMSA 32
2.2.1 Relevant laws, regulations and mechanisms 32
2.2.2 Capacities for surveying and monitoring biodiversity 32
2.2.3 In-situ and ex-situ measures.....32
2.2.4 Scientific research, public awareness and education 33
2.2.5 Wetland conservation 33
2.3 Priorities of Capacity Building.....34
Chap. 3 The Assessment of China’s National and Local Capacity for Implementation of UNFCCC 35
3.1 Assessment of China’s Capacity for Implementation of the UNFCCC..35
3.1.1 China’s obligations under the UNFCCC.....35
3.1.2 China’s climate change management framework 37
3.1.3 China’s capacity for implementation of UNFCCC 38
3.2 China’s Capacity Need for Implementation of UNFCCC 40
3.2.1 Develop National Programs to Mitigate Climate Change 40
3.2.2 Develop Integrated Coastal Zone Plans 40
3.2.3 Mitigation Measures.....41
3.2.4 Research, observation and data sharing 41
3.2.5 Education, training and public participation.....41
3.3 Capacity Building Priority 42

Chap. 4 The Assessment of China's National and Local Capacity for Implementation of FAO Code of Conduct for Responsible Fishing 43
4.1 Assessment of China's Capacity for Implementation of the FAO CCRF 43
4.1.1 Suggested management actions under the FAO CCRF 43
4.1.2 China's Management Framework of Fisheries.....47
4.1.3 China's Capacity for Implementation of FAO CCRF 49
4.2 Capacity needs for Implementation of FAO CCRF 53
4.2.1 Capacity Need for Institutional Arrangement.....53
4.2.2 Capacity Need for Responsible Fishing Operation 54
4.2.3 Capacity Need for Responsible Mariculture.....54
4.2.4 Capacity Need for Other Issues in Responsible Fisheries.....55
4.3 Capacity Building Priority.....55
Annex I.....57

List of Acronyms or Abbreviations

APF Armed Police Forces
CBD Convention on Biological Diversity and its protocols
CCG China Coast Guards
FAO CCRF FAO Code of Conduct for Responsible Fisheries
MARA Ministry of Agriculture and Rural Affairs
MEE Ministry of Ecological Environment
MEP Ministry of Environmental Protection
MLR Ministry of Land and Resources
MNR Ministry of Natural Resources
MOA Ministry of Agriculture
MOT Ministry of Transport
NBSAP National Biodiversity Strategy and Action Plan
NDRC National Development and Reform Commission
PA Protected Area
RAMSA Convention on Wetlands of International Importance Especially as Waterfowl Habitat
RWG Regional Working Group
SC State Council
SFGA State Forestry and Grassland Administration
SOA State Oceanic Administration
SOC State Ocean Commission
UNFCCC United Nations Framework Convention on Climate Change
UNCLOS United Nations Convention on the Law of the Sea
YSLME Yellow Sea Large Marine Ecosystem

Executive Summary

“Ensuring a sustainable regional and national cooperation for ecosystem-based management, based on strengthened institutional structures and improved knowledge for decision-making” is one of the objectives of the YSLME Phase II Project. As one aspect to achieve the objective, the project seeks to improve the compliance with regional and international treaties, agreements and guidelines by participating countries in the Yellow Sea.

This assessment report focused on China’s national and local capacity in implementing of existing international legal and regional treaties and guidelines, such as the UNCLOS, CBD, RAMSA, UNFCCC and FAO Code of Conduct, and tried to develop a possible capacity development plan.

The report first evaluated the need for capacity building to comply with the UNCLOS. UNCLOS is regarded as the constitution of the ocean, as it provides a basic international legal framework for the governance of ocean. As “integrated ocean management” theory is one of the most important contributions from UNCLOS, the assessment of capacity needs to implement UNCLOS was concentrated on whether the current marine management system provide a framework for integrated ocean management.

China’s marine management system has gone through a big change this year, as the 2018 central government reform has concentrated the scattered responsibilities of the former different government departments into two new ministries: The Ministry of Ecological Environment (MEE), and the Ministry of Natural Resources (MNR). MEE will adopt most of the responsibilities of the Ministry of Environmental Protection (MEP), and incorporate pollution control functions from State Oceanic Administration (SOA). MNR, on the other hand, will merge the natural resources management responsibilities that used to belong to the SOA, and SOA will be eliminated.

Therefore, after the restructuring, in the central government level, MNR (utilization and management of marine resources and planning of marine space), MEE (prevention and control of marine pollution), Ministry of Agriculture and Rural Affairs (fisheries management), Ministry of Transport (fishing boat management), and China Coast Guard (law implementation) excise the main administrative power over the sea. In the local level, Liaoning province has restructured its management structure to be consistent with the central reform, Shandong has kept its structure of combining ocean administration with fishery management, while Jiangsu’s plan hasn’t been revealed.

The reform promotes ecological civilization, holistic management and sector-based management and strengthened the enforcement of law, but it also left some problems unsolved, including lacking of over-all planning, lacking of coordination among different administrative departments, lacking of specified restructuring plan for local governments.

Hence, to promote the integrated management and enhance the capacity for implementation of UNCLOS, the duties of administrative department need to be clearly defined, the overall planning function needs to be strengthened and a synthetical coordination mechanism needs to be established.

The 2nd Chapter is an assessment of capacity needs to comply with CBD and RAMSA. China has established a sector-based management system, as well as a cross-sectoral working mechanisms. Besides the administrative structure, China has put a great effort on biodiversity conservation, including developing national policy, strategy or programmes; identifying and monitoring the components of biodiversity; carrying out various in-situ and ex-situ conservation measures; carrying out scientific research and training and promoting public awareness and education etc.

Though the Government of China has made tremendous progress into biodiversity conservation, gaps are still big as China has huge land areas, rich biodiversity and daunting challenges for biodiversity conservation. To fully implement the CBD and RAMSA, the following capacities are to be constructed: 1) developing relevant laws, regulations and mechanisms; 2) surveying and monitoring biodiversity; 3) carrying out In-situ and ex-situ measures continuously; 4) promoting Scientific research, public awareness and education; 5) carrying out measures to conserve wetland.

The 3rd Chapter is an assessment of capacity needs to comply with UNFCCC. The implementation of UNFCCC involves many industries, while speaking of ocean and coastal areas, the capacity needs mainly lie in ocean monitoring and forecast, prediction and adaption of disasters and emergency response of hazards. China established the National Leading Group on Climate Change in 2007, consisting of representatives from 20 relevant ministries and institutions. Department of Climate Change created under NDRC carries out the routine work for the National Leading Group on Climate Change. In the 2018 central government reform, the responsibility to address climate change was moved to MEE and the Department of Climate Change was established within MEE.

China has put a great effort to fight against climate change and implement the UNFCCC, including issuing the National Plan on Climate Change (2014-2020), developing overall plan for the protection and utilization of coastal zone in the provincial level, taking mitigation and adaption measures, enhancing research and education etc.

However, as a developing country, China has stronger demands for capacity building in the following areas: 1) enhancing the assessment on the implementation of national plans, programs and measures; 2) developing integrated coastal zone plans in local level; 3) improving the emergency response on extreme weather and climate events; 4) enhancing research, observation and data sharing; 5) improving education, training and public participation.

The 4th Chapter is an assessment of capacity needs to meet with the FAO CCRF. As the CCRF is not a legally-binding document, there are not compulsory responsibilities

that each State needs to obey, but China has done a lot based on this widely recognized management guideline. In responsible fishery, Chinese government has carried out double control of fishing vessels, stricter gear regulation, summer fishing moratorium, environmental monitoring in fishing waters, proliferation of aquatic resources, establishing an ecosystem compensation system on projects affected fishery areas. In sustainable mariculture, Chinese government has promoted the construction and management of aquatic germplasm resource reserve, the construction of marine ranches, and conducted general survey on pollution caused by mariculture activities.

The capacity needs for institutional arrangement are most strong in self-management of fisherman and law enforcement. To enhance the self-management of fisherman, more management duties should be devoluted to fisherman organizations. While for law enforcement, enhancing the construction of fishing port as a major law enforcement battlefield for fishing boat, gears and fish catch should be emphasized besides career training and the establishment of record system.

In responsible fishing operation, it is needed to continuously control fishing capacity, enhance fishing boat management and increase the monitoring and assessment of fishery resources. In responsible mariculture, capacities to better manage the nature reserve, promote proliferation and releasing and promote scientific mariculture are needed to be improved. In areas other than the above two, needs for enhancing education and public awareness, improving ecological compensation system should also be promoted.

Preface

The Yellow Sea Large Marine Ecosystem (YSLME) is one of the 66 large marine ecosystems (LMEs) in the world, with three coastal countries, namely PR China, RO Korea and DPR Korea. The regional efforts promoted by the UNDP/GEF YSLME Project to address environmental challenges in the Yellow Sea (YS) started from the beginning of the 21st century and, as one of the achievements, brought in the Yellow Sea Large Marine Ecosystem Strategic Action Programme (YSLME SAP) adopted by PR China and RO Korea with support of DPR Korea. One of the assistance programs to implement the SAP is the UNDP/GEF/UNOPS project entitled Implementing the Strategic Action Programme for the Yellow Sea Large Marine Ecosystem: Restoring Ecosystem Goods and Services and Consolidation of a Long-term Regional Environmental Governance Framework, or the UNDP/GEF YSLME Phase II Project.

One of the objectives of the YSLME Phase II Project is to “ensure a sustainable regional and national cooperation for ecosystem-based management, based on strengthened institutional structures and improved knowledge for decision-making”. As one aspect to achieve the objective, the project seeks to improve the compliance with regional and international treaties, agreements and guidelines by participating countries in the Yellow Sea.

Followed *the Assessment Report on China’s Legal Framework in Compliance with the International and Regional Legal Instruments for the Implementation of SAP in the YSLME Project II*, this assessment report focuses on China’s national and local capacity in implementing of existing international legal and regional treaties and guidelines and the possible capacity development plan.

The report is composed of three parts:

(1) Summarize the current national and local capacity for implementing of existing international and regional treaties and guidelines, such as the UNCLOS, CBD, RAMSA, UNFCCC and FAO Code of Conduct, and analyze the level of capacity development by pointing out the strong points as well as the areas that need further development;

(2) Assess the capacity needs for implementing of existing international and regional treaties and guidelines, and list priority areas of capacity building;

(3) Provide a capacity development plan with identification of partners, stakeholders and availability of experts.

Introduction

This assessment report aims to improve the implementation of international and regional treaties and guidelines, in particular to strengthen the national and local capacity to enforce the international and domestic laws.

- **Scope of Research**

The report focuses on the capacity needs at institutional and individual levels for China to implement and enforce international conventions, agreements and guidelines, including: (1) United Nations Convention on the Law of the Sea (UNCLOS); (2) Convention on Biological Diversity and its protocols (CBD); (3) Convention on Wetlands of International Importance Especially as Waterfowl Habitat (RAMSA); (4) United Nations Framework Convention on Climate Change (UNFCCC) and its protocols; and (5) FAO Code of Conduct for Responsible Fisheries (FAO CCRF). These international legal documents cover a wide range of issues and their fully implementations require a comprehensive capacity development plan. However, due to the limited time and resources, the scope of this research will be narrowed to: (1) Capacities that directly relate to marine environmental protection and sustainable usage of marine resources, particularly fisheries and biological resources. Capacities which are vital for the implementation of certain conventions or agreements, but have less connections with marine environment and resources protection, such as economic capacity for the implementation of UNFCCC, will not be assessed here. (2) Capacities that are needed to deal with transboundary priority issues in the Yellow Sea Large Marine Ecosystem (YSLME) region. Capacities which are needed to deal with marine environmental and resources protection issues that are not typical in the YSLME region, such as restoration of mangrove coastal wetlands, will not be addressed here. (3) Capacities that lie in the area of governance. Firstly, because it is an outcome from the Regional Working Group (RWG) of Governance of the YSLME, which works on to improve the management tools from the social science point of view. Secondly, the scientific capacities for implementation of international conventions are focused by other RWGs, e.g. RWG-Fishery, RWG-Pollution, RWG-Biodiversity etc. Thirdly, the capacity need in legislation has already been covered in the *Assessment Report on China's Legal Framework in Compliance with the International and Regional Legal Instruments for the Implementation of SAP in the YSLME Project II*, therefore will not be touch upon in this report. Although the parts on "capacity assessment" and "capacity need" might give a general picture on the implementation capacity including science and technology, the "capacity building priority" part will concentrate on social science activities except activities in legislation.

- **Methodology of Research**

In this assessment report, capacity is categorized at three levels, systemic, institutional and individual. As it is difficult for this research to develop a set of indicators to reflect the current status of capacity and to assess effectiveness of capacity building activities,

the assessment of needs for capacity building in China is produced mainly based on the literature study of many national reports and experiences and knowledge from experts through interviews and communications with different representatives of stakeholders, including officials at national, provincial and city levels, leaders of civil organizations, managers and engineers from enterprises, as well as researchers from academic institutions.

- **Structure of Research**

This report consists of four chapters and one annex, among which the previous four chapters are the separate assessments of needs for capacity building to comply with the UNCOLS, CBD and RAMSA, UNFCCC and FAO CCRF, and the Annex is a capacity building plan that wraps up the suggested activities.

The 1st Chapter is an assessment of need for capacity building to comply with the UNCLOS. UNCLOS is regarded as the constitution of the ocean, as it provides a basic international legal framework for the governance of ocean. It never be regarded as a pure international convention for marine environmental and resources protection, as marine environmental protection and resources management are only two of the topics that it touches upon. The responsibilities of States on marine environmental protection and resources management are mainly include : (1) conservation and utilization of natural resources；(2) pollution control；(3) global and regional cooperation; (4) monitoring and environmental assessment; and (5) international rules and national legislation to prevent, reduce and control pollution from the marine environment; (6) enforcement of law etc. These responsibilities are very general in nature, and many of them are broken down in details and reflected by subsequent specific international conventions, agreements or guidelines. For example, the responsibilities of conservation and utilization of natural resources are required in those regional fishery agreements and FAO CCRF; the responsibilities to control pollution are required in the Marpol 73/78, London Convention etc.; the responsibilities of monitoring and assessment are required by many international legal documents based on their areas of focus, e.g. CBD, UNFCCC etc. As UNCLOS is too general in marine environment protection and resources conservation, it is difficult to assess the capacity need for its fully implementation in such a short length of writing. Therefore, the specific capacity needs regarding resources conservation, climate change reduction and adaption, biological diversity protection are analyzed in other Chapters accordingly, and the capacity needs regarding pollution control are covered by other studies.

However, one of the most important contribution from UNCLOS is the advance of “integrated ocean management” theory. In the Preamble of UNCLOS, it is stated that “the States Parties to this convention are conscious that the problems of ocean space are closely interrelated and need to be considered as a whole”. Later in the Chapter 17 of Agenda 21, it is stated that “Coastal States commit themselves to integrated management and sustainable development of coastal areas and the marine

environment under their national jurisdiction"[1]. "Each coastal State should consider establishing, or where necessary strengthening, appropriate coordinating mechanisms (such as a high-level policy planning body) for integrated management and sustainable development of coastal and marine areas and their resources, at both the local and national levels."[2] Therefore, the assessment of capacity needs to implement UNCLOS will be concentrated on the marine management system, with an analysis of the current marine management system, the capacity needs to promote an integrated ocean management and priority areas for improvement.

The 2nd Chapter is an assessment of capacity needs to comply with CBD and RAMSA. The major three issues covered by CBD are the conservation of biological diversity, habitat protection and the share of genetic resources. Coastal wetland is the most important habitat for supporting abundant biodiversity, including millions of migratory water birds, along with many unique species of plants and other animals, and for providing valuable ecological services. Because of this, despite that the coastal wetlands also play a role in pollution control and natural disasters prevention and control, the report chooses to evaluate the capacity need to comply with CBD and RAMSA together.

The 3rd Chapter is an assessment of capacity needs to comply with UNFCCC. The implementation of UNFCCC involves many industries, while speaking of ocean and coastal areas, the capacity needs mainly lie in ocean monitoring and forecast, prediction and adaption of disasters and emergency response of hazards which will be the focuses of this report.

The 4th Chapter is an assessment of capacity needs to meet with the FAO CCRF. As the CCRF is not a legally-binding document, there are not compulsory responsibilities that each State needs to obey, but as a widely recognized management guideline, its implementation will promote the conservation of fishery resources in the Yellow Sea (YS) region.

The Annex will be a wrap-up for comprehensive capacity building activities based on the previous discussion, as a conclusion of this assessment report. As all the factors of marine ecosystem are interconnected with each other, the capacity building activities that has effect in one area might also promote the capacity in other areas. Therefore, it is necessary to look at all the capacity raising activities in an integrated and connected point of view.

[1] Agenda 21, Article 17.5

[2] Ibid, Article 17.6

Chapter 1. The Assessment of China's National and Local Capacity for Implementation of UNCLOS

As explained above, this Chapter will mainly focus on the marine management system and its capacity development. This is key to the implementation of international laws, not only to the implementation of UNCLOS.

1.1 Assessment of China's Capacity for Implementation of UNCLOS

Since the foundation of PR China, the marine management system has gone through 70 years of development, growing out of nothing and constantly adapting to new changes. In Mar. 2018, an institutional reform was made to the marine management system, which brought a big challenge to the existing system, especially to the marine integrated management which was proposed by UNCLOS and recognized by the international community and many countries.

1.1.1 The 2018 Institutional Reform of Central Government

In Mar. 2018, the Third Plenary Session of the 19th Communist Party of China Central Committee made the decision to deepen the reform of Party and State institutions, in order to facilitate the modernization of the country's governance system and capability from a strategic and long-term perspective.

The overlapping of functions and responsibilities of some Party and State organs remains a prominent issue, which, along with a series of other issues such as unreasonable division of power and duties among different institutions, underscores the need to deepen the reform of Party and State institutions, in order to offer institutional support and guarantee for continuously deepening reform and overcoming difficulties in the economic, social, political, cultural and ecological fields.

The reform is a comprehensive one that involves the Party, governments, legislatures, political advisory bodies, and judicial and military institutions at various levels, as well as social organizations and non-governmental organizations.

In China, people have long used the term "nine dragons conquer the sea" (jiu long nao hai) to refer to the fragmented roles and responsibilities for managing the sea. The new reform plan will concentrate the scattered responsibilities of different government departments into two new ministries: The Ministry of Ecological Environment (MEE), and the Ministry of Natural Resources (MNR). MEE will adopt most of the responsibilities of the Ministry of Environmental Protection (MEP), and incorporate pollution control functions from State Oceanic Administration (SOA). MNR, on the other hand, will merge the natural resources management responsibilities that used to

belong to the SOA, and SOA will be eliminated (See Chart 1).

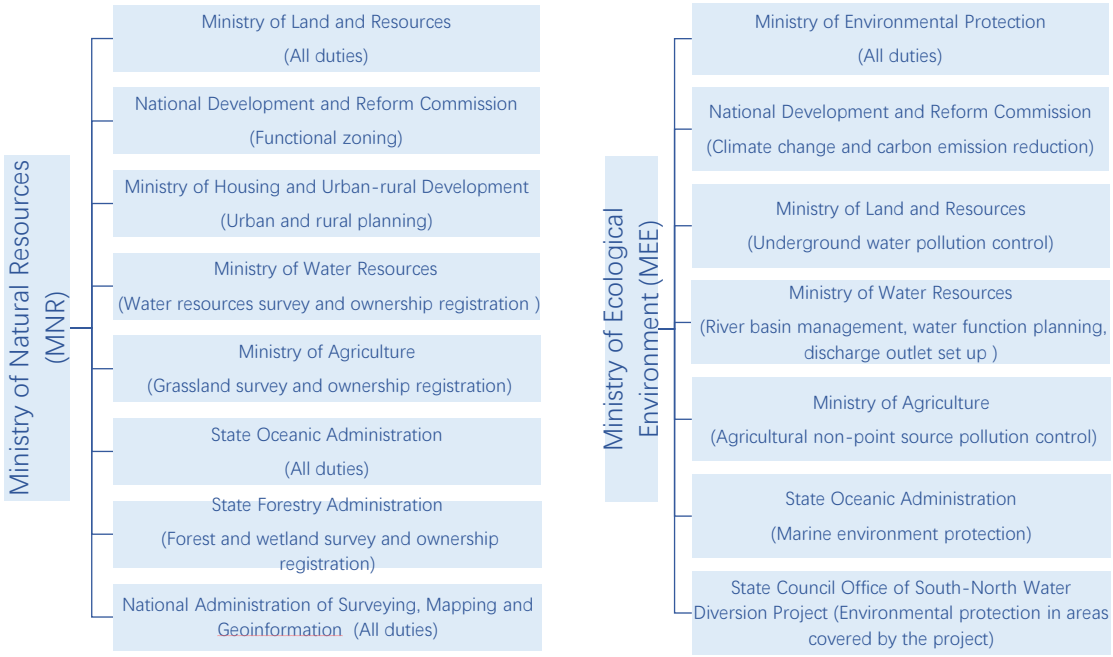

Chart 1. The Reform of Duties of MNR and MEE

To be specific, the reforms that relate to the current marine management system are as follows:

(1) Form a Ministry of Natural Resources to carry out the overall spatial planning of land, such as mountain, water, forest, farmland, lake and grassland, and the protection and restoration of ecosystem. The majority part of the duties of SOA，except that relate to marine environment protection，shifted to the newly formed MNR.

Its duties now mainly include: regulate the development, use and protection of natural resources; establish and implement the spatial planning system; carryout the ownership responsibilities for state-owned natural resources; carry out overall survey and ownership registration; establish a system for paid use of natural resources etc.

Within the MNR, form a State Forestry and Grassland Administration (SFGA). Its duties include supervise and manage the development, utilization and protection of resources of forest, grassland, wetland, desert and terraneous wild life; organize the protection and restoration of protected areas, including nature reserve, scenic spot, natural heritage, geo-park, national park and marine protected area etc.

(3) Form a Ministry of Ecological Environment, and integrate the duties of the former MEP, together with the duties of coping with climate change and greenhouse gases emission reduction from National Development and Reform Commission (NDRC), the duties of prevention and control of underground water pollution from the former Ministry of Land and Resources (MLR), the duties of water functional zoning, drainage outlet installation from the Ministry of Water Resources (MWR); duties of non-point

source pollution prevention and control from the former Ministry of Agriculture (MOA); the duties of marine environment protection from the former SOA etc.

Its main duties now include: draft and carry out ecological environmental policy, planning and criteria, take charge of the monitoring of ecological environment and enforcement of law; supervise and administer the prevention and control of pollution, nuclear and radiation safety; and organize the central government inspection on local environment.

(4) Form a Ministry of Agriculture and Rural Affairs (MARA) and shift the duties of inspection, management and supervision of fishing boat into the Ministry of Transport (MOT).

(5) Deepen law enforcement system reform.

Form an ecological and environmental protection law enforcement team and integrate law enforcement powers relate to pollution control and ecological protection from the former administrative departments, such as environmental protection, land and natural resources, agriculture, water resources and marine administration. The enforcement team will be put under the guidance of MEE.

Form a traffic and transportation law enforcement team to integrate all enforcement powers relate to transportation and road administration. The enforcement team will be put under the guidance of MOT.

(6) Deepen military-civilian reform

Change the administration of China Coast Guards (CCG) from the SOA to the Armed Police Forces (APF).

This round of institutional reform of central governments is still going on and a more specified plan with positions, duties and personnel allocation of different Ministries has just come out in Aug 14 2018. It is estimated that the central government reform will be finished at the end of 2018, while the reform of provincial level government is going on concurrently and will be the main focus for next year.

1.1.2 The Current Marine Management System

Based on the new reform plan, the current marine management system in China appears to be a combination of unified management and sector based management, and a combination of central and local government management.

1.1.2.1 Central Government Management System

The central governments which excise their duties on marine environment protection and resources exploration and conservation are as follows:

(1) Ministry of Natural Resources

The newly established MNR has set up 25 inner departments (See Chart 2), of which 3 departments only deal with marine affairs, including Department of Marine Strategic

Planning and Marine Economy, Department of Sea Area and Island Management and Department of Sea Early Warning and Monitoring. The rest departments carry out marine management duties within their responsibilities, e.g. Department of National Land Restoration manages the restoration of marine ecosystem, coastal zone and island. [3]The departments that have marine related responsibilities include:

- Dept. of Law and Regulation (Marine management law & regulation)
- Bureau of Natural Resources Ownership Registration（Sea area and island use right registration）
- Dept. of Natural Resources Exploitation （Paid use of marine resources and market transaction rules）
- Bureau of National Land Spatial Planning (Coastal zone planning)
- Dept. of National Land Space Usage Management (Annual planning of sea usage and sea area and island usage conversion policy)
- Dept. of National Land Space Restoration (Restoration of marine ecosystem, sea area, coastal zone and island)
- Dept. of Marine Strategic Planning and Marine Economy (Draw up major strategy for marine development, deep-sea and polar regions, and supervise its implementation; draw up and supervise the implementation of marine economy plan, coastal zones integrated protection and utilization plan, sea area and islands protection and utilization plan, and the integration of civil and military affairs. Undertake the development of emerging marine industries such as seawater desalination and comprehensive utilization, marine renewable energy and so on; carry out comprehensive monitoring, statistical accounting, investigation and evaluation, and information dissemination of marine economy.)
- Dept. of Sea Area and Island Management (Draw up policies and technical standards for the use of sea areas and the protection and utilization of islands, supervise and administer the development and utilization of sea areas and islands; organize the monitoring and assessment of islands and sea areas, manage the non-resident islands, naming of sea areas, seabed and laying of cable pipelines; undertake the examination and approval of the sea area and island usage which need get approval from the State Council, and organize the draft of policies to protect and manage islands with special purpose, e.g. territorial sea base point, and supervise their implementation.)
- Dept. of Marine Early Warning and Monitoring (Draw up policies and regulations for marine observation, prediction and marine scientific investigation, and supervise their implementations; carry out early warning and monitoring of marine ecosystem, disaster prevention, risk assessment and hidden danger investigation and control, and issue warnings and bulletins; build and manage the global ocean

[3] https://new.qq.com/omn/20180814/20180814A0B413.html

tridimensional observation network and organize marine scientific investigation and survey；take part in emergency response of major marine disasters.

- Natural Resources Surveillance General Office (Surveillance of marine resources utilization)
- Bureau of Law Enforcement (Enforcement of marine laws and regulations)
- Dept. of Science and Technology Development (Development of marine science and technology)
- Dept. of International Cooperation/ Dept. of Marine rights and interests (Marine rights and interests protection; settle disputes in resources exploration and development, maritime delimitation and other negotiations and consultations work; polar, high seas and international seabed related matters; licensing examination and approval in the field of natural resources exploitation by foreigner.)

As a separate bureau under MNR, State Forestry and Grassland Administration takes charge of managing coastal wetland, marine nature reserve and protected areas and wild life.

(2) Ministry of Ecological Environment

The newly established MEE has set up 21 inner departments, of which 1 department has the responsibilities to manage marine environment, while some others have related responsibilities on marine environment.[4] These departments include:

- Ecological Environment Surveillance Office (Marine environment surveillance)
- Dept. of Integrated Management (Total discharge quantity control)
- Dept. of Law and standards (Draft of laws and standards related to marine environment protection)
- Dept. of Nature Conservation / Biodiversity Conservation Management Office, National Office of Biosafety Management (Undertake the relevant supervision work on the protection of nature reserve and ecological red line; organize biodiversity conservation, biological genetic resources protection and biosafety management; undertake the Secretariat of the National Committee on Biodiversity Conservation and the National Office of Biosafety Management.)
- Dept. of Marine Environment (Supervise marine environment protection throughout the country; supervise the discharge of land-based pollutants to the sea, be responsible for the prevention and control of pollution and damages from marine and coastal engineering projects, marine oil and gas exploration, and marine dumping, and organize the delimitation of marine dumping areas.)
- Dept. of Climate Change Response

[4] https://www.lmmw365.net/61/48906.html

- Enforcement Bureau
- Dept. of International Cooperation
- Dept. of Education

(3) Ministry of Agriculture and Rural Affairs

- To draw up laws, regulations, policies, plans, and standards to regulate fishery industry and organize their implementation after approvals.
- To be responsible for the management and protection of fishery resources and wild aquatic animals and plants.
- To safeguard the state's fishery rights, manage the off-shore fishing, implement international fishery conventions, agreements and treaty, and participate in bi-lateral or multi-lateral negotiations on fishery resources.
- To be responsible for the protection of ecological environment of fishery waters.
- To coordinate and handle fishery disputes.
- To manage the processing and circulation of aquatic products and the manufacture of fishing boat, fishing gears and fishing net.
- To execute the supervision and management rights of fishery administration and fishing ports on behalf of the state.
- To organize the survey of marine wild animals and plants and manage the protected areas for wild animals and plants.

(4) Ministry of Transport

- To supervise and manage the marine traffic safety, carry out registration and inspection on vehicles, fishing boat and water-based facilities.
- To prevent and control ship-based pollution and conduct emergency response to marine pollution caused by marine traffic accident, ships or water-based facilities.

(5) China Coast Guard

China Coast Guard is responsible for coastal defense, maritime search and rescue and law enforcement in the territorial waters of China. In 2013, the new CCG was formed as an integrated maritime law enforcement body, by merging the separated law enforcement power of China Marine Surveillance under SOA, Fishery Administration under MOA, the Maritime Branch of Customs Anti-smuggling and the Maritime Border Policy under Ministry of Public Security (Chart 2 and Chart 3). On July 1, 2018, the CCG was transferred from civilian control of the State Council (SC) and the SOA, to the People's Armed Police, ultimately placing it under the command of the Central Military Commission (Chart 4).

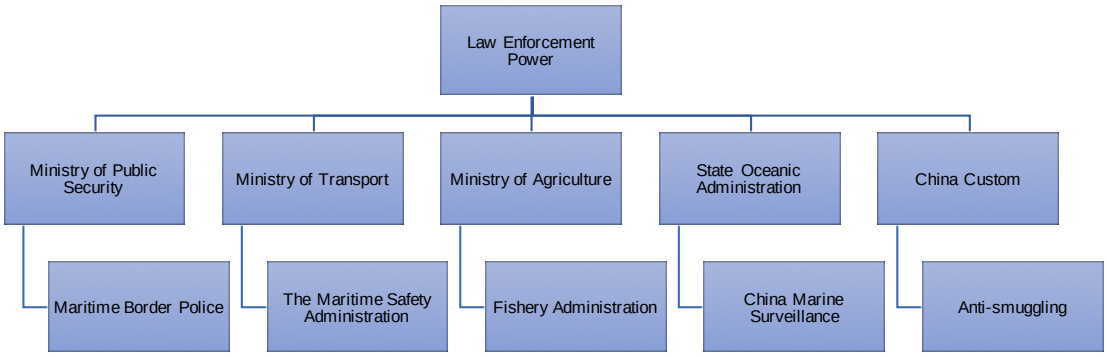

Chart 2. Law enforcement power before 2013

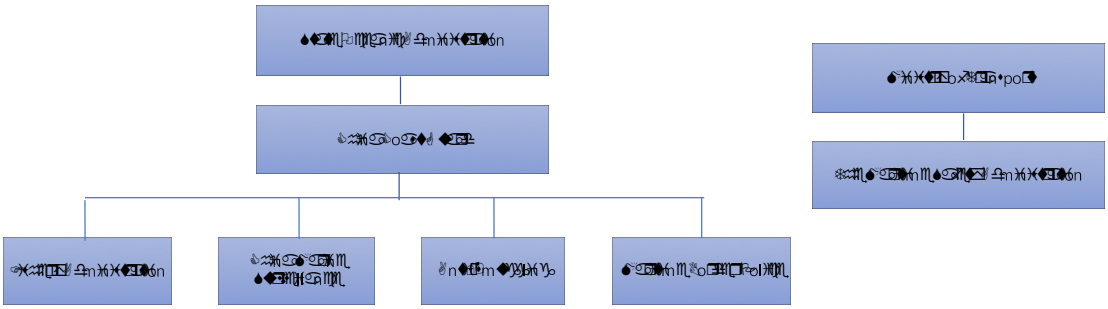

Chart 3. Law enforcement power after 2018

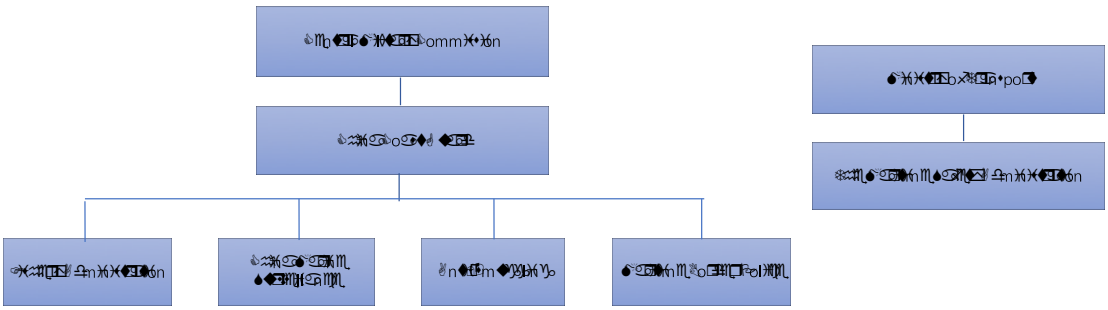

Chart 4. The changes on law enforcement power after 2018 reform

1.1.2.2 Local Government Management System

So far, every coastal province, autonomous region, municipality directly under the central government, city specifically designated in the state plan and coastal city and county, has set up local marine management system to conduct the integrated marine management within the local jurisdiction. Before this 2018 Reform, the local management institutions were set up under 3 models：

(1) A combination of ocean administration and fishery management

Among the 15 coastal provinces and cities specifically designated in the state plan, 10 of which adopted this model, including Liaoning, Shandong, Qingdao, Jiangsu, Zhejiang, Ningbo, Fujian, Xiamen, Guangdong and Hainan. The Ocean and Fishery Bureau is under the dual leadership of both MOA and the former SOA.

(2) A combination of ocean administration and natural resources management.

Hebei and Guangxi Province and Tianjin City have combined the Oceanic Administration and Natural Resources Administration, and formed the Provincial Bureau of National Resources.

(3) A combination of ocean administration and water management.

Shanghai combined the management of ocean and water together to make an integrated management of water and sea.

Due to the 2018 reform in the central government, these 3 models will for sure be changed. The reform plan of Liaoning Province has just come out, the duties of ocean management have been merged into the natural resources department, same as the central government structure. While, it is said that the unrevealed plan of Shandong Province still keeps the current model. And the plan of Jiansu Province stayed unknown.

The 2018 reform plan also said that local government will be granted with more power to manage their own issues. Therefore, it can be imagined that after this round of institutional reform, the coastal zone management power will be further delegated to local governments.

1.1.3 The Assessment to Current Marine Management System

The 2018 reform is broadly in line with previous recommendations by top Chinese think tanks. In 2015, the Chinese Academy of Sciences suggested reorganizing top government bodies into a “natural resources owner”, a “natural resources manager” and a “pollution controller”. MNR has emerged more or less as a natural resource owner and manager, while MEE will serve as the country’s top regulator of pollution, from all sources.[5]

1.1.3.1 Progress made by the reform

The reform did make some changes that are highly praised, including:

(1) The reform promotes ecological civilization

In 2012, at the 18th Party Congress, the need to build an ecological civilization was elevated to an unprecedented level, highlighting the importance of environmental affairs to the Chinese leadership. In 2015, a master plan for the reform of institutions and systems to realize ecological civilization was promulgated. The plan listed a set of

[5] https://www.chinadialogue.net/article/show/single/en/10502-China-reshapes-ministries-to-better-protect-environment

principles and objectives, and announced that by 2020, China should “complete institutional set-up in line with ecological civilization.”[6] The set-up of the two new ministries are seen as a step forward for the much-discussed concept of “ecological civilization”. A core duty of the MNR is to serve as the ultimate “owner” of most of the country’s natural resources and assign proper values to those resources. While MEE take over all the environmental protection duties.

(2) The reform promotes holistic management

Both the MNR and MEE reflect the “holistic management” idea, achieving reduced fragmentation in terms of regulatory mandates. It reduced the major marine management departments from 5 to 3, which could significantly lower the coordination cost among government agencies. It will also improve response time, strengthen communication, and bolster overall command and control mechanisms.

(3) The reform promotes sector-based management

As the comprehensive utilization of ocean, the marine affairs get more and more complicated and appear with a more specified characteristic. Creating a huge single management agency covering all the marine affairs is neither professional nor scientific. The natural connection of the land and sea makes it difficult to separate the two simply based on the territory. Take marine pollution control as an example, a heavy rain in the coastal city of Qingdao will result in an obvious degradation of seawater quality. The relevance of affairs and the similarity of management duties affect the effectiveness of the management activities if the land and sea pollution control go into different administrations. Therefore, extend the duties in land management to ocean management and carry out a more specified sector-based management may be a wise choice. [7]

(4) The reform strengthened the enforcement of law

CCG was transferred from the SOA to the APF, which reflects the decision of China’s leadership to enhance its maritime law enforcement capability and to transform it into a maritime power. This will reduce the conflicts at sea.

1.1.3.2 Problems unsolved

Although the Reform did make lots of progresses, it also left some problems unsolved, which include:

(1) Lack of over-all planning

The need of specified sector-based management is not conflict with the integrated ocean management as a whole. As early as in the 1988 government reform plan, the SOA was formally granted with the mandate to conduct integrated ocean management of China’s sea territory. The State Council clearly pointed out that “besides the sector-

[6] http://env.people.com.cn/n/2015/0922/c1010-27616769-2.html

[7] Wang Yinhong, Wang Qi. Re-examination and Reconstitution for Ocean Administration System under the Background of Super Ministry System Reform. Journal of Political Science College of Shanghai, Vol 5, 2014.

based management of the various development activities on the sea, the integrated management considering the overall interest of rights, resources and environment is also needed". [8] In the previous management system, although SOA's lower administrative level did hinder its duty in integrated ocean management, it did put a great effort to balance resources utilization and environmental protection.[9] During this round of government reform, the environment-related duties went to MEE, and the resources utilization duties went to MNR, but none of the two ministries is the right department to carry out the over-all planning duty.

(2) Lack of coordination among different administrative departments

The plan released in 2018 reduced the major marine-related management departments from 5 to 3, but the inter-ministerial coordination is unavoidable. If a national park is threatened by polluted water in the future, MNR will certainly need to negotiate with MEE.

Besides that, the law enforcement powers are integrated into CCG from 5 different administration branches. The coordination among the administrative departments and CCG, as well as coordination among different law enforcement teams within the CCG, are also needed.

(3) Lack of specified restructuring plan for local governments

The reform plan doesn't reveal the structure and specified duties of local governments. Therefore, whether the restructuring at the ministry level will be mirrored at the local level remains unknown. As the dynamic between China's central government and the authorities at provincial level and under is one of the key complications of the new governance, the relationship between central government and provincial and local authorities is another test of new institutional set-up.

1.2 Capacity Needs for Implementation of UNCLOS

Ecosystem-based management advocated by the YSLME Phase II Project is in nature an integrated ocean management firstly raised by UNCLOS, as it requires the governance body to consider the ecosystem as a whole and balance environmental protection and economic development. To promote the integrated management and enhance the capacity for implementation of UNCLOS, the following capacities are needed:

1.2.1 The duties of administrative department need to be clearly defined

The significant changes of the central governments made by 2018 reform are big

[8] Wang Gang, Song Kaiye. China's Marine Environmental Management System: Change, Dilemma and Reform. Journal of Ocean University of China, Vol. 2, 2017

[9] Wang Nannan, Chang YC. The Restructuring of the State Oceanic Administration in China: Moving Toward a More Integrated Governance Approach. The International Journal of Marine and Coastal Law, 30(4):795-807, November 2015.

challenges, as the general plan didn't draw a very clear picture on what are the specific duties and how they should be carried out. Climate change, for example, covers multiple sub-ministerial bodies under NDRC, including divisional offices and dedicated research centers. It is unclear if and how these NDRC units will be relocated to MEE. Furthermore, most of the restructuring plans of local government haven't been revealed yet. And as UNCLOS promotes the integrated ocean management and ecosystem-based management, what conflicts exist between these two management models and the new structure remains to be undeveloped.

Therefore, for the rest of 2018 and coming 2019, the first priority for the central and local governments is to complete the restructuring and figure out how specific functions and duties will be carried out.

1.2.2 The overall planning function needs to be strengthened

The overall planning is key to integrated ocean management as well as ecosystem-based management. There has been a call for the establishment of a high-level consultation and coordinating body on marine affairs to carry out the overall planning function for a long time both in the academia and politicians. The 2013 reform has set up the State Ocean Commission (SOC) in the SOA to carry out that function, but the composition and functions of SOC were unclear.[10] The 2018 reform has transferred the majority part of SOA to MNR except the environment related section, which means that SOC and its functions have been transferred as well. How SOC can perform its overall planning obligations in a ministry that manages resources is a question. Therefore, the capacity on overall planning needs to be further strengthened.

1.2.3 A synthetical coordination mechanism needs to be established

The establishment of a synthetical coordination mechanism is important to carry out integrated marine management. Integrated marine management is a multi-targets management of multi-resources, not a single target management of a single kind of resource like the sector-based management. It aims at resolving the conflicts among different sectors and making the sector management more effective. The management covers the activities of exploration and utilization in many different sectors, e.g. transport, fishery, energy, technology etc. The close interactions among all these activities decide the need for such a synthetical coordination mechanism.

The coordination should be done in at least three directions, namely, between different ministries, between central and local governments, and between administrative department and law enforcement department.

[10] Zhang Haizhu, Institutional Logic of the Restructuring of the State Oceanic Administration in China: A Historical Institutional Analysis. Contemporary world and socialism, Vol. 6, 2015.

1.3 Capacity Building Priorities

- Organize an inter-ministerial governance workshop to help enhance the communication among the new ministries and discuss how to carry out integrated and ecosystem-based ocean management.
- Organize an inter-ministerial governance workshop on how to establish the synergetic cross-sector mechanism to implement international convention.
- Hold a local government training workshop to help interpret the new government structure and duties, discover what changes might be needed in the local level and how to promote ecosystem-based management in the local level.

Chap. 2 The Assessment of China's National and Local Capacity for Implementation of CBD and RAMSA

China has a rich marine biodiversity. The number of marine species recorded so far has exceeded 28,000, accounting for about 11% of the world's total marine species.[11] However, China's marine biodiversity has met with many threats. The main factor that endangers wild species is the degradation or loss of habitats.[12] The area of land reclamation from the seas from 2008 to 2012 reached 650.6 km^2. Besides that, overexploitation of natural resources, environmental pollution, invasive alien species and climate change are thought to be the other critical factors. For example, high-intensity fishing has accelerated depletion of marine fishery resources, resulting in increases in catches of small, young, low-value fishes and lowering nutrition level of fishes. The pollution of China's coastal and near-shore marine areas is serious, causing many marine ecological disasters such as red tide. For invasive alien species, its number so far in China has exceeded 500.[13] And climate change modifies the population structure of marine species. The population and its density of cold-water animals in the Yellow Sea of China have decreased as the water temperature rises. The cold water benthic biota diversity in the Yellow Sea has decreased considerably compared with the situation of a half century ago.[14] Therefore, the implementation of CBD and RAMSA is of great necessity in China.

2.1 Assessment of China's Capacity for Implementation of CBD and RAMSA

To analyze China's capacity for implementation of CBD and RAMSA, teasing out China's responsibilities under the CBD and RAMSA should be the first step.

2.1.1 China's responsibilities under the CBD and RAMSA

The responsibilities of China under the CBD and RAMSA are listed separately in the tables below:

Table1: China's Responsibilities in CBD

Article	Content of the Article	Responsibility
A6		Develop national strategies, plans or programmes

[11] China's Fifth National Report on the Implementation of the Convention on Biological Diversity

[12] China Biodiversity Red List-Volume on Higher Plants. Ministry of Environmental Protection, Chinese Academy of Sciences. 2013.

[13] Xu Haigen, Qiang Sheng. Invasive Alien Species in China. Beijing: Sciences Press. 2011.

[14] Liu Ruiyu. Progress in research on marine biodiversity in China. Biodiversity, 19(6):614-626, 2011.

	General Measures for Conservation and Sustainable Use	Integrate the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies
A7	Identification and Monitoring	Identify components of biological diversity
		Monitor, through sampling and other techniques, the components of biological diversity
		Identify processes and categories of activities which have or are likely to have significant adverse impacts
		Maintain and organize data
A8	In-situ conservation	Establish a system of protected areas
		Develop, where necessary, guidelines for the selection, establishment and management of protected areas
		Regulate or manage biological resources important for the conservation of biological diversity
		Rehabilitate and restore degraded ecosystems and promote the recovery of threatened species
		Establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms
		Prevent the introduction of, control or eradicate those alien species
		Develop or maintain necessary legislation and/or other regulatory provisions for the protection of threatened species and populations;
A9	Ex-situ conservation	Adopt measures for the ex-situ conservation of components of biological diversity
		Establish and maintain facilities
		Adopt measures for the recovery and rehabilitation of threatened species
		Regulate and manage collection of biological resources
		Cooperate in providing financial and other support
A10	Sustainable Use of Components of Biological Diversity	Integrate consideration of the conservation and sustainable use of biological resources into national decision-making
		Adopt measures relating to the use of biological resources to avoid or minimize adverse impacts on biological diversity

		Encourage cooperation between its governmental authorities and its private sector in developing methods for sustainable use of biological resources.
A12	Research and Training	Establish and maintain programmes for scientific and technical education and training
		Promote and encourage research
A13	Public Education and Awareness	Cooperate, as appropriate, with other States and international organizations in developing educational and public awareness programmes
A14	Impact Assessment and Minimizing Adverse Impacts	Introduce appropriate procedures requiring environmental impact assessment
		Promote, on the basis of reciprocity, notification, exchange of information and consultation on activities
		Notify immediately the potentially affected States of such danger or damage, as well as initiate action to prevent or minimize such danger or damage
		Promote national arrangements for emergency responses to activities or events

Table 2: China's Responsibilities in RAMSA

Article	Responsibility
A2	Designate suitable wetlands
A3	Formulate and implement their planning
A4	Each Contracting Party shall promote the conservation of wetlands and waterfowl by establishing nature reserves on wetlands
	Encourage research and the exchange of data and publications regarding wetlands and their flora and fauna
	Increase waterfowl populations
	Training of personnel competent in the fields of wetland research, management and wardening

From the above tables, it is noticed that the responsibility "promote the conservation of wetlands and waterfowl by establishing nature reserves on wetlands" under RAMSA is covered under the A8 In-situ Conservation of CBD. The responsibility "increase waterfowl populations" under RAMSA falls in line with the purpose of in-situ and ex-situ protection measures. So, in general, the following capacities should be in place to carry out the CBD and RAMSA, under the marine biodiversity protection context.

- Be able to develop national policy, strategy or programmes on biological diversity

or incorporate biological diversity sections into existed management plans.

- Be able to identify and monitor the components of biological diversity.
- Be able to carry out the in-situ and ex-situ conservation measures, especially conservation of wetlands and waterfowl by establishing nature reserves on wetlands.
- Be able to carry out scientific research and training and promote public awareness and education.
- Be able to conduct impact assessment and minimize adverse impacts.

2.1.2 China's Biodiversity Management Framework

To implement the CBD, China established a sector-based management system, as well as a cross-sectoral working mechanisms.

MEE excises the leading and coordinating function for biodiversity conservation at the national level, by issuing policy, national strategy, work plan, establishing conservation program, collecting data and progress from other management organizations and coordinating the implementation of CBD.

MNR, accepting all the duties from SOA, manages the biodiversity conservation in marine ecosystem, as well as the sustainable use of biological resources.

The newly established SFGA under MNR takes charge of the management of biodiversity conservation in the forest, grassland, wetland ecosystem and the establishment and management of all kinds of protected areas.

MARA takes charge of the management of fishery and aquatic life conservation, and GMO resources and share of biological resources in agriculture related fields.

Ministry of Housing and Urban-Rural Development takes charge of the construction of zoo, botanical garden, urban green space and excises the ex-situ conservation

Ministry of Science and Technology manages the research and technology development of biodiversity; while Ministry of Education manages the safety of biodiversity information; Ministry of Public Security, Ministry Foreign Affairs, China Academy of Science etc. all excise their duties within the granted limits of power.

As the conservation and utilization of biodiversity scattered in various government bodies, China has set up cross-sector mechanism to implement the CBD. The State Council has approved the establishment of China's Coordinating Group for Implementation of the Convention on Biological Diversity, headed by the former MOE and composed of 24 departments. CBD Implementation Office was established in the former MOE. To strengthen conservation and management of biological resources, the State Council has also approved the establishment of an Inter-ministerial Joint Conference on Conservation of Biological Resources, headed by the former MOE and composed of 17 ministries and commissions. An office for this joint conference was

established in the former MOE. The National Committee on Biodiversity Conservation consisting of 25 departments was established in the former MOE as well. These three implementation coordination bodies headed by the former MOE and participated by relevant departments are mutually supportive while exercising their unique, important roles in enhancing biodiversity conservation in China. After the 2018 reform, all the duties of MOE were transferred to the new MEE and the Department of Nature Conservation was established with in MEE, which organizes biodiversity conservation, biological genetic resources protection and biosafety management and serves as the Secretariat of the National Committee on Biodiversity Conservation and the National Office of Biosafety Management.

Most provincial and municipal governments have also strengthened their biodiversity related departments or institutions such as those responsible for agriculture, the environment, forestry and marine management, as well as established inter-departmental coordinating mechanisms.

2.1.3 China's capacity for implementation of CBD and RAMSA

The assessment is done based on China's responsibilities under the two conventions.

2.1.3.1 Capacities to develop national policy, strategy or programmes

China's updated National Biodiversity Strategy and Action Plan (2011-2030) was approved at the 126th regular meeting of the SC on 15 September 2010, and promulgated by the former Ministry of Environmental Protection on 17 September 2010. This updated NBSAP has identified guiding principles, strategic goals and tasks for biodiversity conservation in China in the next two decades. The 18th National Congress of the Chinese Communist Party held in November 2012 laid out a blueprint for building an ecological civilization, and adopted a grand vision of "Building Beautiful China".

China also incorporated the conservation of marine biodiversity into sectoral strategies and plans. In 2012 the SC approved the National 12th Five-year Plan for Marine Development. This plan proposed that by 2020 land-based pollution will be effectively controlled; the environmental degradation of near-shore marine areas will be fundamentally reversed and the trend of marine biodiversity decline will be basically contained. The plan also identified some important actions such as strengthening conservation of marine biodiversity, enhancing restoration of marine ecosystems and strengthening marine ecological monitoring and management of ecological disasters. The National Twelfth Five-year Plan for Marine Economy Development, the National Plan for Marine Zoning 2011-2020 and the National Programme for Island Conservation 2011-2020, all of which have been approved and issued by the SC, have put marine biodiversity into a very prominent position and identified specific targets and requirements for conservation of marine biodiversity.

Local governments in coastal areas also give high importance to marine ecological conservation. Their marine development plans also give high priority to biodiversity conservation and identify protecting and restoring biodiversity as important targets and

tasks. They have also implemented a number of projects in preventing and controlling land-based marine pollutants and protecting and restoring marine biodiversity.

2.1.3.2 Identify and monitor the components of biological diversity.

From 2006 to 2008, China undertook a survey of coastal and near-shore marine species, which helped get the baseline data on marine biological resources. As a result, "China's Marine Species and Atlas" was published, which includes more than 28,000 marine species and pictures of more than 18,000 species.

Since 2004, China has established 18 marine ecological monitoring zones in a number of ecologically vulnerable and sensitive coastal and near-shore areas, and been undertaking systematic biodiversity monitoring, assessment and conservation in these zones. The area being monitored has reached 52,000 km^2, including typical marine ecosystems such as bays, estuaries, coastal wetlands, coral reefs, mangroves and sea grass beds. The national-level marine protected areas and marine special PAs are under regular monitoring every year and the dynamism of biodiversity in marine PAs are basically known.[15]

2.1.3.3 Carry out the in-situ and ex-situ conservation measures

（1）In-situ Conservation

A conservation system has been established, primarily composed of nature reserves and complemented by scenic spots, forest parks, community-based conservation areas, protected sites of wild plants, wetland parks, geological parks, special marine protected areas and germplasm conservation areas. By the end of 2012, more than 240 marine protected areas of various types have been established at different levels, with the total area covering 87,000 km^2, accounting for nearly 3% of the marine areas under China’s jurisdiction.[16] Most marine PAs have established their management bodies, with a certain number of staff members and funds for management and operation in place so that law enforcement capacities in PAs are strengthened.

SOA is also exploring the establishment of marine ecological red line, focusing on important marine biodiversity areas such as important estuaries, coastal wetlands, marine PAs and fishery areas. Shandong Province has established such a red line in Bo Sea, with strict protection provided to over 40% of Bo Sea's marine areas.[17]

Speaking of conservation of wetlands, as indicated by the results of the Second National Wetland Resources Inventory released in January 2014, the coastal wetlands in China cover an area of 5.7959 million hectares, accounting for 10.85 percent of the total wetland area in China. Ranging from the Yalu River estuary to Hainan Island, there are 40 national coastal wetland nature reserves, 16 Ramsar sites and many wetlands of national importance. Coastal wetlands under protection amount to 1.3904 million hectares, accounting for 23.99 percent of the total area of coastal wetlands in

[15] China's Fifth National Report on the Implementation of the Convention on Biological Diversity.
[16] Ibid.
[17] http://www.gov.cn/gzdt/2012-10/17/content_2245965.htm

China. A total of 205 demonstration projects for wetland conservation and restoration have been completed, with nearly 800 km^2 of wetlands restored. So far, China has established 577 wetland nature reserves, 468 wetland parks and 46 wetlands of international importance, effectively protecting about 43.5% of wetlands. [18]

For invasive alien species, a national programme has been developed for IAS emergency preparedness and response. As a result, 18 provinces (autonomous regions and province-level municipalities) have established IAS Management Office or a mechanism of joint conference (of relevant departments); 27 provinces (autonomous regions, province-level municipalities) have announced emergency responses for managing invasion of alien species. China has also developed and issued 52 technical guidelines for monitoring, assessing, preventing and controlling invasive alien species as well as the first and second lists of invasive alien species for monitoring and tracking. [19]

(2) Ex-situ conservation (including genetic resources)

China has established a germplasm bank of marine species. The big seaweed germplasm bank located in China Ocean University has collected and stored nearly 500 stems of seaweed germplasm of 60 species. China National Storage Center of Marine Micro-organism Strains located in the Third Institute of Oceanography under the State Ocean Administration has stored more than 14,000 strains of bacteria. Genetic grouping or sequencing has been undertaken. [20]

2.1.3.4 Carry out scientific research and training and promote public awareness and education

The Government of China encourages and supports scientific research in conservation and sustainable use of biodiversity. Projects related to conservation and sustainable use of biodiversity have been included in a number of science and research plans or programmes, such as National Plan for Support to Science and Technology, National Plan for Development of Key Fundamental Research, National High-tech Development Plan, National Natural Sciences Fund and Specialized Funds for Research in Public Benefit Sectors.

To popularize biodiversity knowledge, related knowledge is incorporated into primary and middle school curriculum. Biology and related majors are offered in around 2000 universities to train professionals for biodiversity conservation and research. Various departments have organized various communication and education activities through media, as well as training workshops, lectures and dissemination of training materials. China Biodiversity Communication Trip has been organized to celebrate the International Year of Biodiversity in 2010 and around 800 million audiences were reached.

[18] Blueprint of Coastal Wetland Conservation and Management in China. Paulson Institute. 2016
[19] China's Fifth National Report on the Implementation of the Convention on Biological Diversity.
[20] Ibid.

2.1.3.5 Conduct impact assessment and minimize adverse impacts.

Strategic environment assessments for plans or programmes and environmental impact assessments for projects are required to be strictly implemented. For example, in undertaking environmental impact assessments of all development projects affecting nature reserves, one special chapter should be included in the assessment report that will predict impacts on the structure, functions and targets of protection and their values, and propose measures for protection (in case projects are approved) as well as how the project implementers can protect, restore and compensate, based on impacts of the project.

2.2 China's Capacity Need for Implementation of CBD and RAMSA

Though the Government of China has made tremendous progress into biodiversity conservation, gaps are still big as China has huge land areas, rich biodiversity and daunting challenges for biodiversity conservation.

To fully implement the CBD and RAMSA, the following capacities are to be constructed:

2.2.1 Relevant laws, regulations and mechanisms

China's existing laws on biodiversity conservation are yet to be improved, for example, some laws and regulations such as the Wild Animal Protection Law, Wild Plant Protection Regulation and Regulation on Nature Reserves urgently need to be revised or improved. There are no specialized laws or regulations to address issues such as access to genetic resources and benefit-sharing, wetland conservation and prevention and control of invasive alien species. Penalties for violating some laws and regulations are still inadequate, and for this reason some laws and regulations cannot deter relevant crimes or violations.

2.2.2 Capacities for surveying and monitoring biodiversity

Biodiversity monitoring capacity in China is still weak, e.g. lacking monitoring of coastal wetland ecosystem's structures, functions and processes on a long-term, site-specific and dynamic basis, which has limited our understanding about the patterns of coastal wetland changes in China. Biodiversity surveys should be undertaken on a regular basis. A monitoring and early warning system for biodiversity should be established to capture in time dynamic changes in biodiversity, to launch Biodiversity Red Lists, and to more effectively monitor important species and ecosystems.

2.2.3 In-situ and ex-situ measures

In recent years, the number and area of nature reserves in China has been maintained stable, with the total areas of nature reserves accounting for 14.8% of the total land

area of the country. [21]A network of nature reserves with different types, reasonable layout and relatively sound functions has been basically established. However, their ecological representativeness and management effectiveness need to be improved.

Spatial structures of nature reserves and scenic spots should be better designed for a more effective network of biodiversity conservation. A system of national parks should be established. Major ecological projects should be continued. Upgrade capacities of early warning and monitoring of and emergency response to alien species invasion.

2.2.4 Scientific research, public awareness and education

Due to inadequate investment for long and lack of professional researchers and techniques, researches in some areas such as biodiversity baseline survey and practical technologies and models for conservation are very weak. Some new issues and technologies are yet to be explored, in particular surveying and monitoring of biodiversity, in-situ conservation and biodiversity restoration should be given due attention. In terms of response and adaption of coastal wetlands to climate change and sea level rise, little research has been conducted and no solutions have yet been proposed. [22]

Awareness of conservation is yet to be further enhanced. The public awareness of biodiversity conservation and risks of inaction are yet to be further enhanced. Many people have not recognized the importance of biodiversity conservation, therefore their awareness of and participation in conservation is low. Some local governments one-sidedly pursue economic development goals. They promote economic development at the cost of biodiversity where economic development and biodiversity conservation conflict. The private sector is not enthusiastic about getting involved in biodiversity conservation. Decision makers and managers do not have adequate knowledge of biodiversity. Supervisory forces and capacities of civil society are not adequate.

2.2.5 Wetland conservation

The Second National Wetland Resources Inventory reveals that the coastal wetland area in China has declined by 1.3612 million hectares from 2003 to 2013, representing the highest loss rate in various types of wetlands across the country. Only 24 percent of coastal wetlands have been legally designated as protected areas, much lower than the mean wetland protection rate across China (43.5 percent). [23]In this sense, there need to be a significant change in coastal wetland conservation.

One issue with priority is to incorporate coastal wetland conservation efforts into the overall planning of land spatial development and protection. The competent authorities should adjust the land use classification standards to address the “tenure” of wetland as a new type of “ecological land use” in China’s national land classification system.

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[21] http://www.xinhuanet.com/politics/2017-02/20/c_129486709.htm

[22] Blueprint of Coastal Wetland Conservation and Management in China. Paulson Institute. 2016

[23] Ibid.

The provincial government agencies in developing the conservation and utilization plan of coastal zone area should clearly incorporate the coastal wetlands of national and international importance into the ecological conservation redline in China, and effectively implement protective measures.

Enhance basic scientific research on coastal wetlands, proactively carry out monitoring and assessment of coastal wetland ecosystem, study and develop technical models for coastal wetland protection and restoration to provide a strong scientific and technological support system for coastal wetland protection and management. And carry out restoration of degraded coastal wetlands at the earliest possible date.

Promote the development of a coastal wetland conservation network in China, extensively implement activities to raise public awareness on the importance of conserving coastal wetlands and migratory waterbirds, involve the general public and social forces in conserving coastal wetlands and migratory waterbirds, and actively participate in international cooperation and exchange on coastal wetlands and migratory waterbirds conservation.

2.3 Priorities of Capacity Building

- Provide training to local government officials on the importance of marine biodiversity, policies and laws and share good management experiences with them biodiversity protection to upgrade their management level and law enforcement capacity.
- Research on how to carry out the ecological compensation system and share the research result with local government and work out useful guidelines to support its implementation.
- Establish a demonstration project on strengthen the management capacities of nature reserves or wetland parks or aquatic germplasm conservation areas, and do a case study to summary good management practices and share the result with other protected areas.
- Organize various forms of biodiversity communication and education activities to increase public awareness of conservation with the help from NGOs and private sectors, e.g. bird watching in coastal wetland.
- Build an information sharing platform on biodiversity protection and coastal wetlands protection.
- Undertake extensively international exchanges and cooperation to introduce advanced management experiences from other countries to upgrade China's capacities and levels of biodiversity conservation.

Chap. 3 The Assessment of China's National and Local Capacity for Implementation of UNFCCC

From 1951 to 2009, the average temperature of land surface in China rose by 1.38 ^{0}C, with the warming rate being 0.23/10a. [24]Climate change has had recognizable impacts on China's ecosystems and species from offshore to coastal areas.

Climate change shows a noticeable trend of sea level rise along China's coasts. In the last 30 years, the coastal sea level has risen at a mean rate of 2.6 mm per year, higher than that of the global sea level rise (1.7 mm/year). Under global climate change, the severity of storm surge-induced disasters is increasing in China's coastal zones. According to statistics, in the past 20 years, 3 storm surges of the orange warning level hit China's coasts annually, showing a slow increasing trend. Climate change has worsened some coastal erosion events, including the segment in Yingkou, Liaoning province, where the land erosion rate is nearly 5 m per year. Climate change tends to alter marine species. In the last 20 years, some marine species in China's offshore seas have shifted north due to climate warming and increasing sea temperature. In the next 3 decades, the sea level will continue to rise along China's coasts with the mean rising amplitude in 80-130 mm, adding vulnerabilities to coastal zones.[25] The ecological pressure given by climate change makes the work to fight against climate change important and urgent.

3.1 Assessment of China's Capacity for Implementation of the UNFCCC

UNFCCC, as an international framework convention to cope with climate change, aims to "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". Ocean, as one of the most critical ecosystems, on one hand is affected greatly by climate change, on the other hand will affect the speed and depth of climate change.

3.1.1 China's obligations under the UNFCCC

Under the context of YSLME, the obligations of China under UNFCCC are listed in the Table 3:

[24] Second National Communication on Climate Change of The People's Republic of China
[25] Ibid.

Table 3. China's Obligation under UNFCCC

UNFCCC		
Article	Content of the Article	Responsibility
A4.1	Commitments	Develop national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases
		Formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change
		Promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases
		Promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases
		Cooperate in preparing for adaptation to the impacts of climate change; develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture
		Employ appropriate methods, for example impact assessments, to mitigate or adapt to climate change
		Promote and cooperate in scientific, technological, technical, socio-economic and other research, systematic observation and development of data archives related to the climate system
		Promote and cooperate in education, training and public awareness related to climate change and encourage the widest participation
A5	Research and systematic observation	Support and further develop, as appropriate, international and intergovernmental programmes and networks or organizations aimed at defining, conducting, assessing and financing research, data collection and systematic observation
		Support international and intergovernmental efforts to strengthen systematic observation and national scientific and technical research capacities and capabilities, particularly in developing countries, and to promote access to, and the exchange of, data and analyses thereof obtained from areas beyond national jurisdiction; and
A6	Education, training and public awareness	Development and implementation of educational and public awareness programmes on climate change and its effects
		Public access to information on climate change and its effects
		Public participation in addressing climate change
		Training of scientific, technical and managerial personnel

		Development and exchange of educational and public awareness material on climate change
		Development and implementation of education and training programmes, including the strengthening of national institutions and the exchange or secondment of personnel to train experts in this field

From the above table, it is concluded that the YSLME should focus on the following governance capacities for a better implementation of the UNFCCC:

- Be able to formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change.
- Be able to cooperate in preparing for adaptation to the impacts of climate change; develop and elaborate appropriate and integrated plans for coastal zone management.
- Be able to employ appropriate methods, for example impact assessments, to mitigate or adapt to climate change.
- Be able to promote and cooperate in research, observation and data sharing.
- Be able to provide public access to information and educational and public awareness material, promote public participation and training.

3.1.2 China's climate change management framework

To enhance the leadership on issues related to climate change, China established the National Leading Group on Climate Change in 2007. It consists of representatives from 20 relevant ministries and institutions, and is mandated to develop major strategies, guidelines and policies on climate change, to take actions in response to climate change, to review the response plans for international cooperation and negotiations, and to coordinate and address the major issues in addressing climate change. Department of Climate Change created under NDRC carries out the routine work for the National Leading Group on Climate Change. In the 2018 central government reform, the responsibility to address climate change was moved to MEE and the Department of Climate Change was established within MEE.

At the provincial level, almost all provincial governments have set up the Leading Groups on Climate Change, which are headed by provincial leaders, and composed of relevant local agencies. These groups are responsible for taking actions in response to climate change at local level, and executive bodies for addressing climate change have also been put in place under the Provincial Development and Reform Committees. Many governments at prefecture and county levels have also set up the leading groups on climate change and working bodies.

In support of the science-based national decision-making on climate change, China has established the National Panel of Experts on Climate Change, which provides

scientific advisories and policy-relevant suggestions on strategies, guidelines, policies, legislations & regulations, and measures for coping with climate change.

3.1.3 China's capacity for implementation of UNFCCC

China has put a great effort to fight against climate change and implement the UNFCCC. China's capacity has been greatly increased as well.

3.1.3.1 Develop national programs to mitigate climate change

In 2007, China issued the National Climate Change Programme, which specifies the specific targets, basic principles, key areas and policies and measures for China to cope with climate change by 2010. During the 12th Five-Year, China did not formulate any special plan to cope with climate change, but released a working plan to control the greenhouse gas emissions. In 2014, China issued the National Plan on Climate Change (2014-2020). The plan has made clear the road map and timetable for China's low carbon development from 2014-2020. To some extent, the Plan is equivalent to a13th Five-Year Plan for tackling climate change, which put forward the goal of 2020, but in fact it mainly repeated the commitment of Chinese government to the international community in 2009.

Specifically, by 2020, the emission of green-house gases per unit of GDP will be reduced by 40% to 50% over the level of 2005, and a binding target that by 2015 CO_2 emission per unit of GDP will decrease by 17%; the proportion of non-fossil energy to the primary energy consumption will be increased to about 15%; the forest area and forest stock volume will be increased to 40 million hectares and 13 billion cubic meters than that of 2005; the low carbon pilot demonstration project will make significant progress.[26] The ability of climate change adaption will be greatly improved; important achievements will be made in capacity building, and extensive international exchanges and cooperation will be carried out.

3.1.3.2 Integrated plans for coastal zone management

In 2013, Liaoning province formulated China's first coastal zone plan, the Plan for the Protection and Utilization of Coastal Zone in Liaoning Province (2013-2020).[27]

In December 2017, in order to integrate and coordinate the spatial distribution of coastal zone, consider the land and sea as a whole and promote the harmonious development of man and nature, the SOA launched a pilot project on the development of the overall plan for the protection and utilization of coastal zone in the provincial level. The overall plan is an integrated arrangement for economic and social development, ecological protection, resources utilization and prevention and control of hazards in the coastal zone area. Subsequently, most of the coastal provinces began to draw up their own coastal zone plans. Shandong Province started the draft process

[26] http://www.gov.cn/xinwen/2014-09/23/content_2754700.htm
[27] http://www.ln.gov.cn/zfxx/zfwj/szfwj/zfwj2011_99988/201310/t20131024_1201875.html

from Mar. 2018.[28]

3.1.3.3 Appropriate methods to mitigate or adapt to climate change

China has taken a series of policies and actions on climate change adaptation. These policies and actions mainly include: (1) enhancing capacity of infrastructures in coastal zones and areas in adaptation to sea level rise by heightening and fortifying seawalls; (2) increasing carbon sinks and strengthening ecological conservation, e.g. coastal wetland conservation, to further increase their carbon sequestration capacities while conserving biodiversity; (3) monitoring and assessing responses of ecosystems to climate change, in particular monitoring and assessing sea level change, sea water invasion, soil salinization and coastal erosion in key regions; (4) further improving the system of early warning of extreme weather and climatic events, developing a plan for responses to climate disasters and enhancing capacities to respond to extreme climate events in very bad weather conditions.[29]

3.1.3.4 Research, observation and data sharing

China has preliminarily built a 3-Dimentional ocean observing network for climate, which is composed of coastal stations, buoys, ships, radars, satellite and aircraft remote sensing etc. for monitoring such marine environment elements as tide level, water temperature, salinity, sea wave, ocean current, sea ice in offshore and marginal sea areas, as well as marine hazards like storm surges, high waves, red tides, sea level changes and salt tide intrusions[30]

China has enhanced scientific and technological advances and innovations in the field of climate change, and it has actively promoted international scientific and technological cooperation. In 2006, the Chinese government issued the National Guideline for Medium- and Long-term Plan for Scientific and Technological Development (2006-2020), in which the global environmental change monitoring and response strategies were clearly defined as one of the priority themes. In 2007, the China's Scientific and Technological Actions on Climate Change was issued. The implementation of the National Basic Research Program and its supportive projects has enhanced the basic scientific research on climate change. The implementation of the National Key Science and Technology R&D Program and the National High Technology Research and Development Program of China has accelerated technological R&D for climate change mitigation and adaptation.

The international cooperation in climate change science and technology on a bilateral, multilateral and South-South basis has seen a rapid progress. A number of internationally recognized findings on climate change patterns, mechanisms, regional climate change response and interactions with human activities have been obtained.

The oceanic department archives oceanographic data and products, mainly including

[28] http://www.soa.gov.cn/zwgk/zcgh/ghjj/201712/t20171221_59672.html
[29] Second National Communication on Climate Change of The People's Republic of China
[30] Ibid.

a marine environment database, marine environment and disaster information and products, analyses and products about ocean tides and current, etc.[31]

3.1.3.5 Education, training and public participation

China attaches great importance to public education and outreach on climate change in an effort to increase public awareness of climate change. China has incorporated the climate change knowledge into the national education system for the basic education, adult education and higher learning education as a quality-oriented education component using the form of internet, TV programs, brochure series, annual report, conferences and forums.

For recent years, China has witnessed increasingly emerging NGOs in the field of climate change, which have played an important role in disseminating climate change knowledge, and in enhancing public awareness and participations.

China has enhanced the learning by and training on officials in an effort to improve their competence in understanding and tackling climate change. Trainings and workshops were organized focusing on the “climate change, sustainable development and environmental management”, the “capacity building for decision-makers on addressing climate change”, the “capacity building in adaptation to climate change” etc. at national, provincial and local levels.

3.2 China’s Capacity Need for Implementation of UNFCCC

Capacity building is crucial for developing countries to effectively deal with climate change. The Fifth Conference of Parties (COP-5) of the Convention endorsed the decision on capacity building for the developing countries. As a developing country, China has stronger demands for capacity building in many areas.

3.2.1 Develop National Programs to Mitigate Climate Change

China has formulated National Climate Change Program and National Plan for Climate Change, as well as incorporating measures for climate change mitigation and adaption into general plans or specific plans, e.g. the 13th Five Year Plan for National Economic and Social Development and the 13th Five Year Plan for Marine Economy Development. However, the assessment on the implementation of these plans and measures are inadequate.

3.2.2 Develop Integrated Coastal Zone Plans

The work to develop integrated coastal zone plans at the provincial level has been launched in the end of 2017 and are now under process. The central government specified clearly that the plan has to be an integrated arrangement for economic and social development, ecological protection, resources utilization and prevention and

[31] Second National Communication on Climate Change of The People’s Republic of China.

control of hazards in the coastal zone area. So, there is a need from the local government to get support in developing the integrated coastal zone plan.

3.2.3 Mitigation Measures

In order to effectively cope with climate change, to ensure smooth economic and social developments, and to protect people's life and property, China must enhance its capacity in adaptation to climate change. Currently, China is relatively weaker in impact assessments and dealing with extreme weather and climate events including their monitoring, early warning and preparedness, and its capabilities to prevent and mitigate natural disasters. Therefore, international cooperation and exchanges are needed for China to develop climate change adaptation projects, to launch case studies on extreme climate events, to improve its early warning and prediction of various extreme weather and climate events, and data sharing.

3.2.4 Research, observation and data sharing

For ocean and coastal zone area, the main areas of China's future research on climate change might include:

(1) theories, methodologies and technologies for climate change observations; reconstruction of highly precise long sequences of past climate; behaviors and mechanisms of global climate change; multi-sourced and multi-scale data integration; development of an Earth system model; and climate change simulations and predictions.

(2) mechanisms of climate change impacts in ocean and disaster prevention and mitigation, and assessment methodologies; R&D of climate change adaptation theories and technologies; adaptation demonstrations in typical coastal vulnerable regions and sectors.[32]

The ocean observing stations are sparsely and unevenly distributed in China's coastal seas, to which the ocean observing facilities are mainly confined, and China lacks of ability for making long-term and stable observations of the oceanic environment in open seas and major oceans. In coastal zones and regions, China need to further facilitate establishment of an operational marine climate observing (monitoring) system, establish and improve climate change-related marine hazard monitoring, early warning and climate predictions.

3.2.5 Education, training and public participation

Addressing climate change is a systematic engineering task, involving all aspects of economy, politics, culture and society, and it requires enhanced leadership, improved planning, good coordination, implementation measures, and enhanced capabilities to organize and accomplish the work in dealing with to climate change. Although

[32] Second National Communication on Climate Change of The People's Republic of China

provincial leading groups on climate change, working bodies and local expert teams for addressing climate change have already been set up at request of the central government, overall, local government officials still lack of awareness in response to climate change without sufficient working capabilities in this aspect. It is imperative for local governments to enhance their capabilities in developing coastal zone planning, technological R&D for addressing climate change, and develop mitigation and adaption measures. It is urgent to enhance education and training on climate change for local management teams. At the same time, capacity building for teams in support of local decision making on climate change should also be intensified through extensive international cooperation and exchanges, to effectively enhance local capabilities in addressing with climate change.

China has organized lots of activities to enhance public education and training. For next step, it is necessary to explore new approaches and improve the existing ones for climate change education and public participation, in a greater effort to improve all people's awareness of tackling climate change. The education and training should be carried out in a regular and systematic way.

3.3 Capacity Building Priority

- Establish a mid-term or final assessment system to evaluate the implementation of national programs and plans and cooperatively develop a set of indicators to reflect the implementation level.
- Organize a workshop with experts and officials to discuss about issues in the development of coastal zone planning.
- Conduct successful case study on the mitigation and adaption measures taken by other coastal countries and share the experiences nationwide.
- Improve scientific research, monitoring and data sharing, especially social and economic research on major strategies and policies on climate change, raising public awareness of participation in actions to tackle climate change etc.
- Organize education and training on climate change for local management teams and teams in support of local decision making on climate change through extensive international cooperation and exchanges, to effectively enhance local capabilities in addressing with climate change.
- Develop a systematic educational plan to enhance education on climate change and raise public awareness.

Chap. 4 The Assessment of China's National and Local Capacity for Implementation of FAO Code of Conduct for Responsible Fishing

Overall, Chinese fisheries have experienced a rapid development since the late 1970s. The total fishery production has increased to over 66 million tones in 2015 from the 4.4 million tones in 1980. [33]During the past two decades, especially during the 12th Five-Year Plan period (2011-2015), the fishery industry has undergone rapid development, which not only brought pressures to marine fishery resources, but also threw out challenges to the protection of marine ecosystem and sustainable development of coastal societies.

Being voluntary in nature, the FAO Code of Conduct for Responsible Fishing provides principles and standards guiding the benign development of all fisheries. It covers the capture, processing and trade of fish and fishery products, fishing operations, aquaculture, fisheries research and the integration of fisheries into coastal area management. Considering the scope and major tasks of the YSLME Project, the capacity building to implement the CCRF should be promoted.

4.1 Assessment of China's Capacity for Implementation of the FAO CCRF

There are no compulsory responsibilities under the FAO CCRF due to its "non-legally" binding nature. However, analyzing the terms and articles of CCRF give us a picture on what "good management" of fishery resources is and the conducts where capacities need can be derived of.

4.1.1 Suggested management actions under the FAO CCRF

Under the context of YSLME, the management actions suggested by the FAO CCRF are listed in the Table 4:

Table 4: The Management Actions under FAO CCRF

FAO CCRF		
Content of Articles	Article	Suggested Management Actions

[33] Fishery and Aquaculture Country Profiles: The People's Republic of China, http://www.fao.org/fishery/facp/CHN/en

Fisheries Management	Management measures	7.6.1	Ensure that the level of fishing permitted is commensurate with the state of fisheries resources
		7.6.2	Adopt measures to ensure that no vessel be allowed to fish unless so authorized
		7.6.4	Ensure that fishing gear, methods and practices which are not consistent with responsible fishing are phased out and replaced
		7.6.9	Take measures to minimize waste, discards, catch by lost or abandoned gear, catch of non-target species
		7.6.10	Introduce measures to recover depleted resources and resources threatened with depletion
	Implementation	7.7.1	Ensure an effective legal and administrative framework at the local and national level
		7.7.2	Ensure that sanctions applicable in respect of violations are adequate in severity to be effective
		7.7.3	Implement effective fisheries monitoring, control, surveillance and law enforcement measures
Fishing Operations	Duties of all States	8.1.1	Ensure that fishing operations allowed are conducted in a responsible manner
		8.1.2	Maintain a record, updated at regular intervals, on all authorizations to fish
		8.1.3	Maintain statistical data, updated at regular intervals, on all fishing operations allowed
	Flag State duties	8.2.4	Fishing gear should be marked in order that the owner of the gear can be identified
	Fishing activities	8.4.2	Prohibit dynamiting, poisoning and other comparable destructive fishing practices
		8.4.3	Documentation with regard to fishing operations, retained catch of fish and non-fish species
		8.4.5	Develop and implement technologies and operational methods that reduce discards
	Fishing gear selectivity	8.5.1	Fishing gear, methods and practices are sufficiently selective so as to minimize waste, discards, catch of non-target species
		8.5.2	Take into account the range of selective fishing gear, methods and strategies available to the industry while drawing up the laws

	Protection of the aquatic environment	8.7.1	Introduce and enforce laws and regulations based on MARPOL 73/78
	Protection of the atmosphere	8.8.1	aAdopt relevant standards and guidelines to reduce dangerous substances in exhaust gas emissions
	Artificial reefs and fish aggregation devices	8.11.1	Develop policies for increasing stock populations and enhancing fishing opportunities through the use of artificial structures
		8.11.3	Establish management systems for artificial reefs and fish aggregation devices
Aquaculture Development	Resp. dev. of aquaculture under national jurisdiction	9.1.1	Establish, maintain and develop an appropriate legal and administrative framework for responsible aquaculture
		9.1.2	Promote responsible development and management of aquaculture, including an advance evaluation of the effects of aquaculture development on genetic diversity and ecosystem integrity, based on the best available scientific information
		9.1.3	Produce and regularly update aquaculture development strategies and plans
		9.1.5	Establish effective procedures specific to aquaculture to undertake appropriate environmental assessment and monitoring
	Use of aquatic genetic resources	9.3.1	Minimize the harmful effects of introducing non-native species or genetically altered stocks used for aquaculture
		9.3.2	Cooperate in the elaboration, adoption and implementation of international codes of practice and procedures for introductions and transfers of aquatic organisms
		9.3.4	Promote the use of appropriate procedures for the selection of broodstock and the production of eggs, larvae and fry
	Responsible aquaculture at the production level	9.4.3	Promote efforts which improve selection and use of appropriate feeds, feed additives and fertilizers, including manures
		9.4.4	Promote effective farm and fish health management practices favouring hygienic measures and vaccines
		9.4.5	Regulate the use of chemical inputs

Integration of Fisheries into Coastal Area Management	Institutional framework	10.1.1	Ensure that an appropriate policy, legal and institutional framework is adopted to achieve the sustainable and integrated use of the resources
		10.1.3	Develop institutional and legal frameworks in order to determine the possible uses of coastal resources
	Policy measures	10.2.1	Promote the creation of public awareness of the need for the protection and management of coastal resources
		10.2.4	Establish or promote the establishment of systems to monitor the coastal environment
	Regional cooperation	10.3.1	Cooperate in sustainable use of coastal resources and the conservation of the environment
		10.3.2	Timely inform and consult with the affected states in adverse transboundary environmental incidents
	Implementation	10.4.1	Establish mechanisms for cooperation and coordination among national authorities involved in planning, development, conservation and management of coastal areas
Fisheries Research		12.1	Ensure that appropriate research is conducted into all aspects of fisheries including biology, ecology, technology, environmental science, economics, social science, aquaculture and nutritional science
		12.2	Establish an appropriate institutional framework to determine the applied research
		12.3	Ensure that data generated by research are analyzed and published
		12.4	Collect reliable and accurate data
		12.5	Monitor and assess the state of the stocks under their jurisdiction

From the above table, it is concluded that the following capacities are needed to meet the requirement of the CCRF：

- Ensure an effective legal and administrative framework at the national and local level to carry out the fisheries management and the implementation of law.[34]
- Ensure the measures, human and financial resources for responsible fishing operations are in place in the field of fishing permit management, illegal fishing, selective fishing gear, methods and practices, recovering of resources, and fishery water pollution control etc.

[34] Fisheries management includes integrating fisheries into coastal area management.

- Ensure the measures, human and financial resources for responsible mariculture are in place, in the field of mariculture development plan and strategy, safely use of genetic resources, promote effective and healthy mariculture practices, environmental assessment and monitoring etc.
- Ensure that appropriate research is conducted into all aspects of fisheries including biology, ecology, technology, environmental science, economics, social science, aquaculture and nutritional science, including monitoring, data analysis and publish.

The assessment to the current implementation capacity is conducted based on the above capacity needs.

4.1.2 China's Management Framework of Fisheries

According to the Fisheries Law of the People's Republic of China, revised in 2013, in its supervision over the fisheries, the State operates under the principle of unified leadership and decentralized administration at different levels. With the exception of those sea areas that the SC puts under the supervision of the administrative department for fisheries under it or of the fisheries authorities subordinate to the department and those fishing grounds endowed with special fishery resources designated as such by the SC, marine fisheries shall be subject to supervision by the administrative departments for fisheries under the people's governments of provinces, autonomous regions and municipalities directly under the Central Government that are contiguous to the sea areas.[35]

4.1.2.1 Central government

In the central government level, Chinese fisheries administrations consist of MARA, CCG and MOT.

(1) The Bureau of Fisheries, MARA

The highest level of fisheries administration is the Bureau of Fisheries under MARA. The main functions of the Bureau are:

- Develop a national fisheries development strategy and relevant policies;
- Draft out the relevant fisheries laws, regulations and codes, then to supervise their enforcement;
- Be responsible for fisheries management, to guide the adjustment of the value chain; to develop and implement fisheries scientific research and technology expansion;
- Create policies and regulations aimed at increasing the sustainable utilization of fisheries resources, and the overall conservation of the marine and freshwater

[35] Article 6 and 7 of Fisheries Law

ecosystems; to be responsible for the rights and safety of fishers;

- Implement safe and functional processing facilities, develop fish market systems and promote the international fisheries products trade;
- Be responsible for the management of fisheries standardization and quality assurance; disease prevention and drug testing and regulated use;
- Participate in international fisheries conventions, and multilateral and bilateral fisheries agreements; to overlook international fisheries cooperation; to be responsible for the design, project review, coordination and the management of distant water fisheries;
- Develop natural disaster management strategies;
- Be responsible for the collection and dissemination of fisheries information and statistics;
- Represent the interests of fisheries associations and societies.

(2) CCG

The main task of Fishery and Fishing Harbor Supervision Branch under the CCG is the inspection and supervision of fishing ports and vessels and exercising administrative and supervisory authority over external relations pertaining to fisheries and fishing ports.

(3) MOT

The main task of MOT in fishery management is the inspection of fishing vessels.

4.1.2.2 Local Government

Under Bureau of Fisheries, MARA, has fisheries bureaus located at the provincial level, which were set up by and under the leadership of the provincial government and the guidance under the Bureau of Fisheries, MARA. The fisheries bureaus at provincial level are responsible for the fisheries management of their own province, their main function is almost the same as those mentioned for the Bureau of Fisheries, MARA. These provincial departments shall be authorized to set up fishery superintendency agencies in important fishing areas and fishing ports.

12 coastal provinces and cities, including Liao Ning, Shan Dong and Jiang Su, combined the administration of fishery with ocean administration, and created a government body “Bureau of Ocean and Fishery”.

4.1.2.3 Social Organization

The China Fisheries Association is a non-governmental organization which bridges the government and the fishing industry. Under the China Fisheries Association, there are provincial level and city level fisheries associations. Most of the local level associations are administered by local fisheries bureaus, and closely work with local fisheries research institutes.

Another important social organization is China Society of Fisheries. It is also a non-government body which focused on fisheries research under the leadership of both the MARA and the China Science Association. It is the main center for fisheries science and technology development in China. Currently, the Society has four subordinated committees and 17 affiliations.

4.1.3 China's Capacity for Implementation of FAO CCRF

The marine fisheries sector is an important component of China's fishing industry. In 2014, the production amounted to 32.96 million tonnes of which capture fisheries contributed 12.8 million tonnes and marine culture 18.12 million tonnes.[36] Chinese government has done lots of works to ensure a healthy and growing fishery industry.

4.1.3.1 China's Capacity for Carrying Out Responsible Fishery Operation

In 2014, there were 277,453 mechanized marine fishing vessels with a total power of 16.96 million kW and 5.12 million fish farmers in China, ranking first in the world in the number of mechanized fishing vessels and fish farmers.[37] Due to the longtime extensive and pirate fishing, the species captured have undergone significant changes. The catch of traditional high value marine species has been unstable or, in some cases, in decline. Therefore, the Chinese government has carried out lots of work in responsible fishery.

(1) Double control of fishing vessels

The control of fishing vessels both in number and power has been carried out since the 8th FYP. The Implementation Measures on Controlling of Marine Fishing Vessels in 2003-2010 issued by MOA in 2003 set clear requirements and overall targets on the control of marine fishing vessels. In 2011, MOA sent out Notice on Further Control of Marine Fishing Effort in the 12th FY. In 2015, MOA issued the National Targets on Marine Fishing Vessel Reduction in 2015-2020 (Table 5) and National Targets on the Control of Marine Fishing Vessels of Large and Medium Size in 2015-2020 (Table 6).[38]

Table 5: National Targets on Marine Fishing Vessel Reduction in 2015-2020

Province	Total Reduction		Vessels of Large and Medium Size Reduction		Vessels of Small Size Reduction.	
	No. of Vessels.	Power/kw	No. of Vessels	Power/kw	No. of Vessels	Power/kw
Liaoning	2473	105610	907	88860	1566	16750
Shandong	2782	178278	1379	163621	1403	14657
Jiangsu	845	73846	630	70740	215	3106

[36] Fishery and Aquaculture Country Profiles: The People's Republic of China, http://www.fao.org/fishery/facp/CHN/en

[37] The yearbook of fisheries 2014.Ministry of Agriculture, Bureau of Fishery, 2015.

[38] Notice on further strengthening control of domestic fishing vessels to implement the total quantity control of marine fishery resources, Ministry of Agriculture.

Table 6: National Targets on the Control of Marine Fishing Vessels of Large and Medium Size in 2015-2020

Province	2015 High Limit		2020 High Limit	
	No. of Vessels	Power/kw	No. of Vessels	Power/kw
Liaoning	7084	703520	6177	614660
Shandong	10355	1292888	8976	1129267
Jiangsu	4274	550932	3644	480192

(2) Enhance Gear Regulation

The Code of Aquatic Resources Reproduction Protection and the Fisheries Law prohibit fishing with destructive fishing gears and methods, including electrified and magnetic nets. The law also requires the administrations to set the minimum mesh size of fishing nets and regulate the number of fishing gears. The Notice on the Implementation of Applicable Gear and Minimum Mesh Size of Fishing Net has been implemented since June. 1st, 2014, which clearly set down the prohibited gears and applicable mesh size.

(3) Conduct the Summer Fishing Moratorium

China has been implementing a summer closure in the East China Sea, the Bohai Sea and the Yellow Sea since 1995, and in the South China Sea since 1999 to recover the declining coastal fishery resources. The fishery authorities have strengthened their management and inspection resources.

(4) Conduct environmental monitoring in fishing waters

An ecological environment monitoring network covering 120 major fishing areas and 43 national aquaculture germplasm resources protected areas has been established, which could conduct regular monitoring on 18 indicators and cover the total area of around 20 million hectares. Specific monitoring and emergency monitoring have been carried out during ecological hazards as well.[39]

(5) Promote the proliferation of aquatic resources

Artificial reefs and sea ranching stock enhancement is an effective way to restore the ecosystem and the fisheries resources. In recent years, the Chinese government issued a series of policies, including the “Regulation of Wild Aquatic Animal Protection” and “The Notice of promoting stock enhancement for fisheries resources” and began to standardize stock enhancement practices. In 2014, 1.08 billion Yuan was spent on the proliferation, and 34.33 billion seedlings were released. Along with the practice, MOA also enhanced the management of proliferation and releasing activities by issuing a “Notice on Further Regulation of the Proliferation and Releasing of Aquatic Marine Resources” in the same year. [40]

[39] Cui Lifeng. Current Situation, Problems and Countermeasures of Aquatic Biological Resources Conservation in China. Training materials provided by MOA.
[40] Ibid.

(6) Establish an ecosystem compensation system on projects affected fishery areas.

The adverse effect on fishery areas caused by project construction has attracted attention of governments. The review of environmental impact assessment has been strengthened for projects that may cause negative effect to ecosystem and compensations are collected for the restoration of ecosystem. Till 2014, MOA has reviewed the EIA for more than 730 projects, which covers offshore oil, port and waterway, road and bridge and chemical and electronical engineering, and collected 103 billion Yuan for ecosystem and resources compensation and restoration. [41]

4.1.3.2 China's Capacity for Carrying Out Sustainable Mariculture

Marine aquaculture has grown rapidly over the last two decades. According to the newly issued "2018 The State of World Fisheries and Aquaculture", in 2016, the maximum yield of fishery production has reached 1.71 billion tones, of which 47% are from aquaculture.[42] Gradually, aquaculture has become the main force that support the fish consumption. Chinese government has done the following measures to promote responsible mariculture.

(1) Comprehensively promote the construction and management of aquatic germplasm resource reserve

The MOA also established National aquatic germplasm resource reserve to protect the seedling resources. During 2011-2015, the MOA established 272 national aquatic germplasm resource reserve, and by the end of 2015, there were 492 these conservation areas, including 50 marine and 442 inland. These conservation areas are found in rivers, lakes, gulfs, reef water tidal flats; and are gradually formalizing an aquatic seedlings resources network. To regulate and enhance the management of reserves, "Interim Regulations on the Management of Germplasm Resources Reserve" was issued by MOA in 2011 to emphasize the construction and approval procedures of reserves and the duties of fishery administrative departments.[43]

(2) Promote the construction of marine ranches

According to incomplete statistics, till 2010, 3100 m^3 artificial reefs have been built, covering the sea area of 460 m^2 with a total investment over 20 million Yuan. Most of the ranches located in nearshore coast, e.g. major bays, islands. 989.52 m^3 artificial reefs have been built in the Bo Sea and Yellow Sea, accounting for 31.4% of the national total.[44]

（3）Conduct the general survey on pollution caused by mariculture activities.

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[41] Cui Lifeng. Current Situation, Problems and Countermeasures of Aquatic Biological Resources Conservation in China. Training materials provided by MOA.

[42] http://www.fao.org/fishery/publications/sofia/en

[43] Fishery and Aquaculture Country Profiles: The People's Republic of China, http://www.fao.org/fishery/facp/CHN/en

[44] Cui Lifeng. Current Situation, Problems and Countermeasures of Aquatic Biological Resources Conservation in China. Training materials provided by MOA.

An estimation on pollution and major pollutant from mariculture activities was done based on actual measurement and material balance method, in order to provide support for the development of mariculture. The major pollutants, like COD, N, P etc. accounting for 1%-3% of the national total.

4.1.3.3 China's Capacity for Fisheries Research, Education and Training and Foreign Aid

(1) Constantly promote the development on science and technology in fishing and mariculture.

The Chinese Government encouraged science and technology innovation in the key areas of the fisheries industry, which shown great progress. There have been new key technologies applied effectively in resource conservation and ecological restoration, efficient health cultivation, modern seedlings industry, energy conservation, environmental protection, fishery equipment systematic upgrade, emission reduction and comprehensive utilization of aquatic products processing technology. China has developed the agricultural non-point source pollution comprehensive treatment project planning (2014-2018), which covers the technology of ecological breeding engineering to reduce emissions, the technology of the industrial water-circulating farming and the technology of net-cage aquaculture. Steady progress was made in reform of the aquaculture technology popularization system at the grass-roots level, constantly enhancing its capability of public service. In recent years, a fishery information collection and release system has been installed; a national marine fishing management database has been built up, and the fishing management linked.

(2) Enhance Education and Training on Fishery

The Chinese Government is dedicated to fisheries education. A number of universities and colleges focusing on fisheries, such as the Ocean University of China (in Qingdao), Shanghai Ocean University, Dalian Ocean University, Fisheries College of Jimei University and Guangdong Ocean University. Every year, there are over 100,000 students who graduate from these universities and become skilled professionals in the fishery industry.

Yearly, since the 1980s, there have been over 300,000 persons trained by the fisheries technology extension department and by fisheries institutes. The training courses help the fisheries workers to increase their comprehension, science and technology quality and innovation ability.

(3) Enhance fishery international cooperation

China has signed more than 20 bilateral fishery cooperation agreements, involving the fisheries resources management and maintenance in the Exclusive Economic Zone, the fishing, aquaculture, science and technology exchanges and cooperation in various fields. Involved states are: Republic of Korea, Japan, Vietnam, the United States, Australia, Malaysia, the Seychelles, Uruguay, Norway, Indonesia, Russia. Between 2001 and 2005, China's navy fleet patrolled the national EEZ a total of 787

times over 9334 days. The total distance covered was over 900,000 miles. The inspecting navy insured the execution of the bilateral fisheries agreements.[45]

4.2 Capacity needs for Implementation of FAO CCRF

There are two major control targets in the 13th FYP period, one is the input target and the other one is the output target. The control target for input is “to reduce fishing boat and total power to make fishing effort appropriate with resources amount”. 20,000 fishing boats with a total power of 1.5 million KW will be reduced till 2020, and construction and import of new fishing boat will be ceased, except for renewal and modernization. The control target for output is “to achieve a negative growth in fishing” by aiming to keep the annual total output from fishing within 10 million ton till 2020, reducing about 3 million ton compared with the 2015 output. [46]These targets are in line with the requirements from CCRF. To achieve these targets, the following capacities are needed:

4.2.1 Capacity Need for Institutional Arrangement

4.2.1.1 Enhance the self-management of fisherman

At present, the financial and human resources assigned for fishery management do not match with the big number of fishing boats and fisherman. It is very difficult to achieve a sound management purely rely on the management of government. There is a need to enhance the self-management of fisherman in the local level, in the form of fishery association, fishery cooperative organization etc. Improve the services provided by the self-management organizations, e.g. application of fishing boat certificate, quota allocation, fishing arrangement, fisherman training, policy implementation and supervision of production etc. More management duties should be devoluted to fisherman organizations to ensure the wide participant of fisherman in the fishery management and explore the joint management of government and fisherman.

4.2.1.2 Enhance the capacity for law enforcement

Implement the Law Enforcement Certificate system and make sure all the officers get certificate before they are granted with the law enforcement power. Enhance the pre-job training and career training with enforcement methods, procedures, discretion standards and law etc. Establish the Record System for the whole process of law enforcement, to make the enforcement standardized and precise. Enhancing the construction of fishing port as a major law enforcement battlefield for fishing boat, gears and fish catch.

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[45] Fishery and Aquaculture Country Profiles: The People's Republic of China, http://www.fao.org/fishery/facp/CHN/en

[46] Notice on further strengthening control of domestic fishing vessels to implement the total quantity control of marine fishery resources, Ministry of Agriculture.

4.2.2 Capacity Need for Responsible Fishing Operation

4.2.2.1 Control fishing capacity and enhance fishing boat management.

(1) Establish a fishing boat management database and integrated the certificate application, approval and issuing process into the management database, to implement strict control on boats.

(2) The local governments have carried out many measures to promote the fishermen to turn to aquaculture, processing sector or recreational fishery. Due to the inadequate training to fishermen and incomplete implementation of preferential policies, fishermen met many difficulties transferring to other sectors. There has not been significant interest for many fisherman and/or boat owners to sell their vessels and seek employment in the aquaculture or processing sectors. Therefore, the training to fishermen has to be enhanced and carried out in a regular basis to support the boat reduction policy.

(3) Develop the standards for fishing gear management and fishing gear admittance system, including the admittance standards and catalogue. Enhance the enforcement activities for minimum net size and standard fishing gear. Strengthen the enforcement ability of fishing port by law education and enforcement training.

4.2.2.2 Increase the monitoring and assessment of fishery resources.

Establish a dynamic monitoring network to conduct monitoring on composition, distribution, migration route and allowable catch of fishery resources to provide scientific support for total control of landing and policy-making.

4.2.3 Capacity Need for Responsible Mariculture

4.2.3.1 Promote the further construction of nature reserves.

Promote the further construction of nature reserves, including enlarge the establishment of aquatic germplasm resource reserve, the construction of basic facilities, develop management rules, enhance the management activities and fight against pollution and other activities that damage the nature reserves.

4.2.3.2 Promote proliferation and releasing

(1) Promote the advocacy and demonstration of marine ranch. A certain number of marine ranches have been built in China. It is necessary to enlarge the construction of marine ranches and share the successful experiences on management and operation to a larger scale.

(2) Continue the proliferation and release. As a major tool to increase the resources, proliferation and release will be carry out continually. Therefore, it is necessary to clarify the quantity and quality requirements of the proliferation and release, further strengthen the management, reduce the negative effects on the ecological environment as much as possible, and maximize the benefit of the proliferation and

release. At the same time, large-scale activities of proliferation should be carried out to expand the social influence and enhance public participation.

4.2.3.3 Promote scientific mariculture

The capacity of scientific mariculture should be improved, including develop a set of technical standards, adjust mariculture structure, density and distribution, carry out monitoring on water quality, environment, promote scientific bait, fertilization and rational drug use. Actively explore the ecological culture mode that combine the tradition and modern, establish a demonstration area for healthy mariculture, and actively promote ecological mariculture techniques and reduce pollution.

4.2.4 Capacity Need for Other Issues in Responsible Fisheries

4.2.4.1 Improve ecological compensation system. Carried out the Polluter Pays Principle, improve the ecological environment assessment on fishery waters for construction projects, and make sure an ecological compensation plan be raise and compensation in place.

4.2.4.2 Raise public awareness and enhance education

Activities to raise public awareness on the importance of fishery resources conservation should be held by using all kinds of ways. For fishermen, knowledge on laws and regulations should be taught regularly to help them balance the short-term and long-term interests, and gain their understanding, support and cooperation for the implementation of policies and laws. For public, host the national aquatic resources proliferation and release activities to enhance the public awareness and make the protection of the fishery ecological environment gradually become a conscious action of the whole society.

4.3 Capacity Building Priority

- Provide training to fishery cooperative organizations to improve their management capacity for better self-management and joint-management.
- Provide training to local officials working in the fishery administrative departments to increase their capacity to enforce the law. The training might include latest interpretation on laws, regulations and policies, law enforcement procedures or fishing gear inspection etc.
- Together with local governments and fishery cooperative organization, provide training to fishermen, including interpretation of national laws, regulations, policies, fishing gear admittance catalogue, and successful examples of sustainable fisheries.
- Provide policy support and training to fishermen who wants to transfer to another business, e.g. training on how to run a recreational fishery.
- Strengthen the construction of fishing port and enhance its enforcement capacity

to make the fishing port an important gateway for law enforcement. Improve the fishing log filing and inspection system, and gradually promote the electronic fishing logs. Improve the facility of fishing port to carry out the fixed-point landing system and fish landing inspection system.

- Promote the construction of natural reserves, especially the marine germplasm resources conservation areas. Improve the infrastructure construction and the management practice as well, and share the experience of good practice.
- Enhance the construction of marine ranch demonstration project and promote the sharing of good practice. Develop marine ranch guidelines and operational models.
- Carry out ecological mariculture and build pilot project. Promote technologies that are healthy and environment-friendly. Spread the responsible mariculture experiences and publicize the good models as well.
- Carry out economic and social analysis on the fishing boat reduction, total quantity control of fish catch, pilot mariculture projects etc. to further the integrate management of coastal zone.
- Strengthen the monitoring and assessment of fisheries resources. Improve the investigation capacity and the dynamic monitoring network of fishery resources nationwide. Increase investment in funds and further study the ecological protection of fishery resources, so as to raise resource investigation and dynamic monitoring capacity.
- Carry out large-scale proliferation and releasing activities to expand the social impact and promote public participation.

Annex I

Suggested Capacity Building Priority					
No.	Suggested Activities	Major Conventions Related	Ecosystem Service Enhanced	Participants	Organizer
1	Organize an inter-ministerial governance workshop to help enhance the communication among the new ministries and discuss how to carry out integrated and ecosystem-based ocean management.	UNCLOS, CBD, RAMSA, UNFCCC, FAO CCRF	Regulating, provisional, supporting and cultural services	National government officials	Regional (PMO)
2	Organize an inter-ministerial governance workshop on how to establish the synergetic cross-sector mechanism to implement international convention.	UNCLOS, CBD, RAMSA, UNFCCC, FAO CCRF	Regulating, provisional, supporting and cultural services	National government officials	Regional (PMO)
3	Hold a local government training workshop to help interpret the new government structure and duties, discover what changes might be needed in the local level and how to promote ecosystem-based management in the local level.	UNCLOS, CBD, RAMSA, UNFCCC, FAO CCRF	Regulating, provisional, supporting and cultural services	National and local government officials	Regional (PMO)
4	Provide training to local government officials on the importance of marine biodiversity, policies and laws and share good management experiences with them on biodiversity protection to upgrade their management level and law enforcement capacity.	CBD, RAMSA	Supporting and cultural services	Local government officials	Regional (PMO)

5	Research on how to carry out the ecological compensation system and share the research result with local government and work out useful guidelines to support its implementation.	CBD, RAMSA	Supporting service	Local government officials	National (MNR)
6	Establish a demonstration project on strengthen the management capacities of nature reserves or wetland parks or aquatic germplasm conservation areas, and do a case study to summary good management practices and share the result with other protected areas.	CBD, RAMSA	Supporting and cultural services	Local government officials	Regional (PMO)
7	Organize various forms of biodiversity communication and education activities to increase public awareness of conservation with the help from NGOs and private sectors, e.g. bird watching in coastal wetland.	CBD, RAMSA	Supporting and cultural services	Public, NGOs, private sectors	National (SFGA)
8	Build an information sharing platform on biodiversity protection and coastal wetlands protection.	CBD, RAMSA, UNFCCC	Supporting and cultural services	National (SFGA)	National (SFGA)
9	Undertake extensively international exchanges and cooperation to introduce advanced management experiences from other countries to upgrade China's capacities and levels of biodiversity conservation.	CBD, RAMSA	Supporting and cultural services	National and local government (natural resources division)	Regional (PMO)
10	Establish a mid-term or final assessment system to evaluate the implementation of national programs and plans of climate change and cooperatively develop a set of indicators to reflect the implementation level.	UNFCCC	Supporting, regulating and cultural services	Research institute and national government	National （MEE）

11	Organize a workshop with experts and officials to discuss about issues in the development of coastal zone planning.	UNFCCC	Supporting, regulating and cultural services	Local government officials and experts	Regional (PMO)
12	Conduct successful case study on the mitigation and adaption measures taken by other coastal countries and share the experiences nationwide.	UNFCCC	Supporting service	National government	Regional (PMO)
13	Improve scientific research, monitoring and data sharing, especially social and economic research on major strategies and policies on climate change, raising public awareness of participation in actions to tackle climate change etc.	UNFCCC	Supporting service	Research institute	National （MEE）
14	Organize education and training on climate change for local management teams and teams in support of local decision making on climate change through extensive international cooperation and exchanges, to effectively enhance local capabilities in addressing with climate change.	UNFCCC	Supporting service	Local government officials	Regional (PMO)
15	Develop a systematic educational plan to enhance education on climate change and raise public awareness.	UNFCCC	Supporting and cultural services	Schools and universities	National （MEE）
16	Provide training to fishery cooperative organizations to improve their management capacity for better self-management and joint-management.	FAO CCRF	Provisional and cultural services	Fishery cooperative organizations	Local (local fishery bureau)
17	Provide training to local officials working in the fishery administrative departments to increase their capacity to enforce the law. The training might include latest interpretation on laws, regulations and policies, law enforcement procedures or fishing gear inspection etc.	FAO CCRF	Provisional service	Local government officials	National （MARA）

18	Together with local governments and fishery cooperative organization, provide training to fishermen, including interpretation of national laws, regulations, policies, fishing gear admittance catalogue, and successful examples of sustainable fisheries.	FAO CCRF	Provisional service	Fisherman	Local (local fishery bureau)
19	Provide policy support and training to fishermen who wants to transfer to another business, e.g. training on how to run a recreational fishery.	FAO CCRF	Provisional and cultural services	Fisherman	Local (local fishery bureau)
20	Strengthen the construction of fishing port and enhance its enforcement capacity to make the fishing port an important gateway for law enforcement. Improve the fishing log filing and inspection system, and gradually promote the electronic fishing logs. Improve the facility of fishing port to carry out the fixed-point landing system and fish landing inspection system.	FAO CCRF	Provisional service	Local fishing port	National （MARA）
21	Promote the construction of natural reserves, especially the marine germplasm resources conservation areas. Improve the infrastructure construction and the management practice as well, and share the experience of good practice.	FAO CCRF, CBD	Provisional and supporting services	Local fishery bureau	National （MARA）
22	Enhance the construction of marine ranch demonstration project and promote the sharing of good practice. Develop marine ranch guidelines and operational models.	FAO CCRF	Provisional service	Fisherman and local fishery bureau	Regional (PMO)

23	Carry out ecological mariculture and build pilot project. Promote technologies that are healthy and environment-friendly. Spread the responsible mariculture experiences and publicize the good models as well.	FAO CCRF, CBD	Provisional and regulating services	National and local fishery administration, fishery research institute, and fisherman self-management organizations	National（MARA）
24	Carry out economic and social analysis on the fishing boat reduction, total quantity control of fish catch, pilot mariculture projects etc. to further the integrate management of coastal zone.	FAO CCRF	Provisional and cultural services	National and local fishery administration, fishery research institute	National（MARA）
25	Strengthen the monitoring and assessment of fisheries resources. Improve the investigation capacity and the dynamic monitoring network of fishery resources nationwide. Increase investment in funds and further study the ecological protection of fishery resources, so as to raise resource investigation and dynamic monitoring capacity.	FAO CCRF, CBD	Provisional service	National and local fishery administration, fishery research institute	National（MARA）
26	Carry out large-scale proliferation and releasing activities to expand the social impact and promote public participation.	FAO CCRF	Provisional and cultural services	Public	National（MARA）