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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
(UNDP/GEF YSLME Phase II Project)

**Final report on implementation of CBD and
RAMSAR with recommendations for integration of
SDG14, CBD and RAMSAR targets into YSLME
SAP**

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Background

Biodiversity refers to the variability among living organisms of all forms of life, including terrestrial, marine, freshwater ecosystems and the ecological complexes of which they are part, including diversity within species, between species and of ecosystems. Biodiversity provides conditions for human survival, strategic resources for socio-economic development and important guarantees for ecological and food security. Biodiversity not only provides human beings with many livelihood necessities such as food, clean water, medicine, timber, energy and industrial materials, but also with many ecosystem services, such as carbon sequestration, oxygen release, water regulation, soil conservation, environment purification, nutrient cycling, recreation and tourism.

The Convention on Biological Diversity (CBD)-a multilateral agreement that entered into force in 1993 is presently the main international treaty focusing on biodiversity conservation. In addition to conservation in itself, it includes the sustainable use of biodiversity's components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. Yet despite the widespread concern around biodiversity loss, biodiversity loss continues globally, driving major alterations to earth's ecosystems and the services they provide to humans.

Global commitments made under the CBD to substantially reduce rates of biodiversity loss by 2010 were not met. In 2010, the CBD adopted a new Strategic Plan for 2011–2020, which included the Aichi Biodiversity Targets (ABTs). The Plan marked an important development towards better protection of our ecosystems, as its mission is to: “Take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet’s variety of life, and contributing to human well-being, and poverty eradication. To ensure this, pressures on biodiversity are reduced, ecosystems are restored, biological resources are sustainably used and benefits arising out of utilization of genetic resources are shared in a fair and equitable manner; adequate financial resources are provided, capacities are enhanced, biodiversity issues and values mainstreamed, appropriate policies are effectively implemented, and decision-making is based on sound science and the precautionary approach.”

The Convention on Biological Diversity (“ the CBD” hereafter) provides that each Party should develop and update in a timely manner its national strategy, plan or program. China is one of the first countries to establish the “National Biodiversity Conservation Plan”. The National

Environmental Protection Agency (currently upgraded to the Ministry of Environmental Protection), together with relevant departments, issued in June 1994 China Biodiversity Conservation Action Plan (“the Action Plan” hereafter) following the approval of the Environment Protection Committee of the State Council.

Since its initiation, the action Plan has played an important role in conservation and sustainable utilization of biodiversity in China. A great deal of achievements has been obtained during the process of implementation: The legal system of biodiversity conservation has been initially established. A series of plans and programmes on biodiversity conservation have been implemented. The mechanisms for biodiversity conservation have been gradually improved. The capacities of biodiversity identification, research and monitoring have been improved. Notable achievements have been made in in-situ conservation. Ex-situ conservation has been further strengthened. Biological safety management has been strengthened. Progress has been made in international cooperation and exchange.

The Government of China launched on 17 September 2010 China's National Biodiversity Strategy and Action Plan (2011-2030) (abbreviated as "NBSAP"). Together with relevant national plans developed with a view

to building an ecological civilization, NBSAP has provided a relatively comprehensive set of national targets for biodiversity conservation. According to China's Fifth National Report on the Implementation of the Convention on Biological Diversity, in recent years China has been implementing several actions to conserve its biodiversity: Improving legal and regulatory system and institutional mechanisms, Launching and implementing a series of plans for biodiversity conservation, Strengthening conservation systems, Promoting sustainable use of biological resources, Conserving and restoring habitats, Developing and implementing incentives favorable for biodiversity conservation, Enhancing establishment of biosafety management system, Controlling environmental pollution, Promoting public participation.

Wetlands are important features in the landscape that provide numerous beneficial services for people and for fish and wildlife. Some of these services, or functions, include protecting and improving water quality, providing fish and wildlife habitats, storing floodwaters and maintaining surface water flow during dry periods. Natural wetlands have been called the 'kidneys of the earth' because of their ability to store, assimilate and transform contaminants lost from the land before they reach waterways. Like a giant kidney, wetlands help to dilute and filter material that could

otherwise harm our ocean. Wetlands are among the most productive ecosystems in the world, comparable to rain forests and coral reefs. An immense variety of species of microbes, plants, insects, amphibians, reptiles, birds, fish and mammals can be part of a wetland ecosystem.

The intensifying human activity such as: reclamation has been leading to several wetland loss. The Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat is an international treaty for the conservation and sustainable use of wetlands. It is also known as the Convention on Wetlands. It is named after the city of Ramsar in Iran, where the Convention was signed in 1971. After joining the Ramsar convention, China has been pay great effects to conserve its wetland. Many achievements have been made: Completion of the second national wetland resources survey, Conservation funds for wetlands climbed and the protected wetlands expanded, Mainstreaming of wetland conservation and management further progressed, Further promoted the safeguarding mechanisms for wetland conservation management, Public interests on wetlands reached new high. Currently, 49 wetlands with a total area of 4,112,424 ha in China are listed into the international important wetland.

The expansion of protected areas for marine biodiversity and existing policies and treaties that encourage responsible use of ocean resources are still insufficient to combat the adverse effects of overfishing, growing ocean acidification due to climate change and worsening coastal eutrophication. As billions of people depend on oceans for their livelihood and food source and on the transboundary nature of oceans, increased efforts and interventions are needed to conserve and sustainably use ocean resources at all levels. The Sustainable Development Goal 14 is to “Conserve and sustainably use the oceans, seas and marine resources for sustainable development”, in which 10 targets (14.1~7 and 14.A,B and C) and 10 indicators were developed.

1. Evaluation of implementation of CBD with in YSLME

1.1 Aichi Target 1

By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.

Various public activities has been conducted in YSLME area to raise the public awareness on marine biodiversity. Marine biodiversity knowledge has been incorporated into classroom teaching in primary and middle schools in YSLME area. In Qingdao, the first marine education teaching material for primary school of China was official published in 2011. Several marine education and public benefit activities were organized. TV, newspapers and internet were mobilized to provide a series of activities for the public. Through communication and education, public awareness and participation have increased significantly, and the importance of biodiversity widely recognized. Fig. 1.1 shows the activity for public in YSLME area to raise their awareness of importance of marine biodiversity. So the implementation progress of this target is on good track.



Fig.1.1 Marine environmental protection public benefit activities in Qingdao, Shandong, 2017.

1.2 Aichi Target 2

By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.

The 18th National Congress of the Chinese Communist Party held in November 2012 laid out a vision for building an ecological civilization and Beautiful China. More and more attentions have been paid on the marine ecology and environment protection after that. The Marine Ecological Protection Red-line System was setup in all 11 coastal Provinces/Cities of China. In YSLME area, the Liaoning, Shandong and Jiangsu Provinces all issued their Red-line design. This red-line design is to protect important

marine functional zone, marine ecologically sensitive zone and vulnerable zone. This red-line design aims at protecting marine biodiversity by regulating the sewage outlet, reducing total amount of land-based pollutant discharged into sea, limiting the new added reclamation activities, adding new MPA et al. There are certain short term and long goals set in the Redline design. So the biodiversity values has been integrated into the YSLME area development.

1.3 Aichi Target 3

By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.

Shandong Finance Department and Ocean and Fishery Department jointly issued the first marine ecological compensation method in China in 2016. Marine environment protection has the priority to use the compensation fund. The compensation refers to the following aspects: MPA, Aquatic germplasm resources protected zone, redline area, other sea area need to be protected, National first and second class protected marine animals, other marine species listed in China species red list, and other species

need to be protected according to local government. The funding sources of the compensation fund are mainly from: government investment, sea construction project marine ecological loss compensation, and also welcomes social capital to join the marine ecological protection.

Jiangsu and Liaoning are forming their ecological compensation method steady. Many ecological compensation agreement were signed in these 3 provinces. Thus, in YSLME, positive incentives for the conservation and sustainable use of biodiversity are developed and applied.

1.4 Aichi Target 4

By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.

In YSLME area, in accordance with China's eco civilization blue print, has put great effects will to promote spatial layouts, industrial structure, production and consumption patterns characterized by green, recycling and low-carbon development, conserving natural resources and protecting the environment. In Shandong provenience, 151 redline zone were designated in Yellow sea area, in which, 36 were development-prohibited zone, 115 were development-restricted zone. Development-

prohibited zone included marine protected area. And important estuary system, important coastal wetland, important fishery area were ascribed to development-restricted zone. The total area of redline zones were 3134.84 km², which is 10.1% of the total Yellow sea area of Shandong. Up to 2020, all the sewage outlet must meet the discharge regulation, no more new industry sewage outlet can be added, total amount of land-based pollutant discharged into sea will be reduced by 10-15%.

1.5 Aichi Target 5

By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.

In Yellow Sea area, great effects have been made to prevent natural habitat loss. In 2012, the State Council authorized National Marine Functional Zoning (2011–2020), setting a goal to improve the marine environment with an expansion of the marine protected area (MPA) coverage in the sea areas under national jurisdiction to 5%. Until the end of 2016, there were 31 national level MPA, and 21 National level Aquatic Germplasm Resources Conservation Zones in Yellow sea area. And this number will keep increasing to reach the 5% goal.

According to the redline design in Shandong, Jiangsu and Liaoning provinces, the development prohibited redline area banned all construction activities. The development restricted redline area strictly control construction activities, reclamation is prohibited. This regulation will help prevent the habit loss in YSLME area.

1.6 Aichi Target 6

By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.

The Chinese government has made several plans to tap the nation's marine resources in a more sustainable manner to stimulate economies in coastal areas and better protect maritime interests.

The State Council, issued guideline to promote the sustainable and healthy development of marine fishery industry in 2013 to boost the country's marine fishing industry. Under the guidelines, China pledged to take an array of environmentally friendly measures, such as intensifying monitoring of fishery areas, strictly implementing off-season policies and

controlling offshore fishing. It will also target long-range fishing, intensive sea-farming and aquatic products processing to fine-tune the industrial structure. In addition, the guidelines highlight the significance of improved management of the sector in line with current international rules. Aspects including accelerating fishing boat upgrades, nurturing leading companies, improving fishermen's livelihood and stepping up infrastructure construction were also noted.

In Shandong Province, marine ranching is the key development industry of mariculture. The characteristics of Shandong marine ranching are: "releasing+ artificial fish reef + algae farm transplant + intelligent cage". Artificial fish reef can provide adhering substratum of algae and mollusk, improve surrounding environment quality, attract large amount fish and shrimp to gather, and increase biological resources. Organisms adhere to the artificial reef have the power to fix carbon. Through the seedling and grazing of marine ranching, large amount of carbon, nitrogen, and phosphorous can be removed from marine environment, red tide can also be reduced. In Shandong province, 19.5 thousand ha of the marine ranching can assimilate 499.2 thousand tons of carbon from air and ocean, which equals to plant 208 thousand ha of forest.

Dongtai, Jiangsu is one of the national marine eco-civilization demonstration site, national safe fishery industry demonstration site, and Fishery health culture demonstration site of Ministry of Agriculture. It is an important mariculture place of Jiangsu Province. The total mariculture area is 0.4 million mu. In recent years, Dongtai has been deepening the Supply-side structural reform of fishery industry. In the process of reform, Dongtai strives to develop saving, low-carbon, eco-fishery.

1.7 Aichi Target 7

By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.

As stated above, in YSLME area, sustainable aquaculture is developing steady.

1.8 Aichi Target 8

By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

In YSLME region, pollutant management is always an important work. In the recent environment supervision activity, several pollutant enterprises were closed or ordered to rectification. Inside the redline area, the land-

based pollutant monitoring will be strengthened, maritime pollutant emission will be strictly controlled. According to Shandong redline design, up to 2020, total amount of land-based pollutant discharged into sea will be reduced by 10-15%.

1.9 Aichi Target 9

By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.

According to Bai & Ma 2015, the number of marine invasive species in Yellow sea large marine ecosystem was 120, in which, 6 species were microbes, 45 species were animals and 69 species were plants. China has developed guidelines for emergency responses to 40 major IASs. China has undertaken communication and education concerning techniques for preventing, controlling and managing IAS by using radios, TV, newspapers and internet. However the trend of increase in the number of IAS has not been effectively contained and the damages caused by IAS are being aggravated.

China is one of the countries in the world most severely affected by invasion of alien species. Due to China's vast land area that covers nearly

50 latitudes and 5 climatic zones, as well as diversity of its ecosystems, China is more vulnerable to invasion of alien species, and species from any parts of the world may find suitable habitats in China. In 2003, 2010, 2014 & 2018, China published 4 batches of invasive species with severe impact to the ecosystem. The species newly included into this list in each batch was 16, 19, 18 and 18 respectively (Fig.1.2).

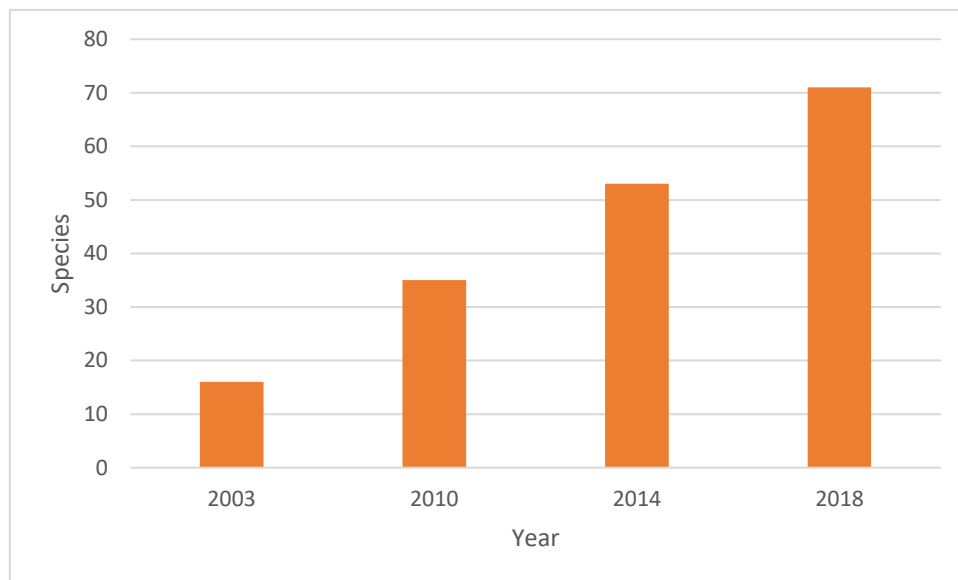


Fig.1.2 The increase in the number of invasive species in China with severe impact to the ecosystem

1.10 Aichi Target 10

By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.

MPA construction is growing in YSLME region. From 2010-2015, 20 new national MPA were established in YSLME area, covering an area of 18000 ha. Until the end of 2016, there are 31 national MPAs in YSLME region. Vulnerable marine ecosystems in YSLME area are ascribed into the redline region and get strict protection.

1.11 Aichi Target 11

By 2020, at least 17 per cent of terrestrial and inland water areas and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascape.

Table 1.1 shows the Yellow sea eco-redline designation in 3 Provinces. In each province more than 10% of the sea area were designated as redline area. Those area will be strictly protected. According to the redline design in Shandong, Jiangsu and Liaoning provinces, the development prohibited redline area banned all construction activities. The development restricted redline area strictly control construction activities, reclamation is prohibited. This regulation will help prevent the habit loss in YSLME area.

Table 1.1 Yellow sea eco-redline designation in 3 Provinces.

Province	Number	Area (km ²)	%of YS area in that Province
Shandong	151	3134.84	10.1
Jiangsu	73	9676.07	27.83
Liaoning	52	6796.9	25.4

1.12 Aichi Target 12

By 2020, the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

Several MPA in YSLME region are designed to protect rare and endangered species. For example, Rudong wetland is critical to the survival of many migratory waterbird species using the East Asian-Australasian Flyway (EAAF), by providing staging and over-wintering habitats for migratory waterbirds. Every early winter, thousands of birds can be found in Rudong area, they are found low flying or searching for food in great numbers.

Many rare birds can be found in this area, such as: Red-crowned crane, White crane, White-headed crane and Grey crane. About 30 species were listed as first and second class national protected animals of China. In Rudong area, the recorded first class national protected animals are: Oriental white stork, Relict gull, White crane and Red-crowned crane. According to the IUCN Red List of Threatened Species 2015, some critically endangered species can be found in this area, such as: Spoon-billed Sandpiper, Baer's Pochard and White crane. Also, some endangered species were recorded in this area: Oriental white stork, Black-faced Spoonbill, Nordmann's Greenshank, Red-crowned crane, Eastern Curlew and Great Knot. The National Marine Park in Xiaoyangkou, Jiangsu is for the protected of Spoon-billed Sandpiper and other rare bird species. Currently, the number of it in the world is no more than 150 pairs. In Oct. 2013, a bird survey recorded 143 Spoon-billed Sandpiper in Xiaoyangkou area, suggesting the effectiveness in rare bird protection by MPA construction.

1.13 Aichi Target 13

By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

China has developed and issued strategies related to genetic resources, including National Programme for Conservation and Use of Biological Resources and National 12th Five-year Plan for Conservation and Use of Livestock Genetic Resources.

In YSLME region, until the end of 2016, there are 21 national level aquatic germplasm resources conservation zones, Fig.1.3 shows the location of them. But the trends of genetic resources loss was not effectively contained in China.

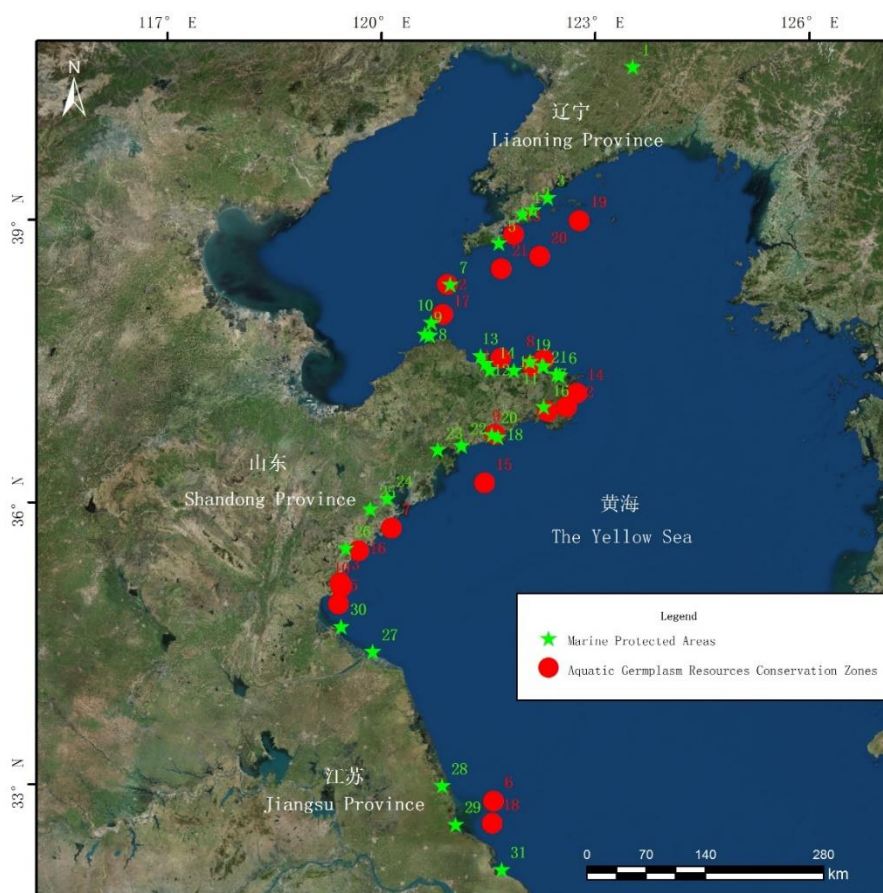


Fig. 1.3 21 National level Aquatic Germplasm Resources

Conservation Zones in Yellow sea.

1.14 Aichi Target 14

By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

As stated above, important marine ecosystems in YSLME area are being included in the eco-redline plan and being protected.

1.15 Aichi Target 15

By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks have been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

As stated above, important marine ecosystems in YSLME area are being included in the eco-redline plan and being protected. More MPAs are going to be established to prevent habitat loss and prevent degraded ecosystem. Many important ecosystem restoration project, such as Blue

bay project and South Red and North Willow project. Those project are conducted in China's coastal provinces to restore vast areas of degraded ecosystem.

Blue bay project: 25.9 hundred million RMB was approved for 18 coastal cities to conduct blue bay actions. This project plans to restore the key bays and island with important ecological value. Aiming that 70% of the seawater quality is better than standard level 2, remediation of 400km sand beach, repair 400k ha damaged sea area. 12 coast park will be built and 300km landscape will be constructed.

South Red and North Willow project: red means mangrove, while willow mainly means tamarix. This project is a wetland restoration project. In south part of China, mangrove, sea grass, salt algae will be planted to restore the degrading wetland. In the North part, tamarix, reed and suaeda will be the main wetland restoration plant. By the end of the project, 2500ha of mangrove, 4000ha of reed, 1500 ha of suaeda and 500 tamarix will be planted to restore the wetland.

1.16 Aichi Target 16

By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.

China is improving the system of access to genetic resources and benefit-sharing from their use. With the support of relevant research plans China has strengthened information collection concerning access to genetic resources and benefit-sharing as well as studies on ABS mechanisms. China is currently promoting development of a regulation on ABS and ratification of the Nagoya Protocol on ABS.

1.17 Aichi Target 17

By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.

The UNDP/GEF project entitled “Reducing environmental stress in the Yellow Sea Large Marine Ecosystem” or YSLME project. This first phase of the project followed the GEF supported use of the Transboundary Diagnostic Analysis (TDA) where priority transboundary problems are identified and the causes analyzed by technical teams established by the participating countries. The problems identified in the TDA are then

addressed in the Strategic Action Programme (SAP), which outlines the management actions required to overcome these problems. Country specific actions are further detailed in the National Strategic Action Plans (NSAP), drafted by the individual countries.

1.18 Aichi Target 18

By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.

Chinese government respects traditional knowledge and practice that people of various ethnicities have passed down from generation to generation. Relevant projects have been established to compile and document traditional knowledge and support provided to studies on the system of intellectual property rights protection. For example, there are many research papers regarding the Chinese traditional marine folk culture.

1.19 Aichi Target 19

By 2020, knowledge, the science base and technologies relating to biodiversity, its

values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.

As stated in Target 1, YSLME region is putting great attention in raising public awareness of importance of biodiversity.

Many biodiversity research projects are being approved at different levels to promote biodiversity research. Large amount of funding, as stated above are being released to support biodiversity conservation.

1.20 Aichi Target 20

By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization should increase substantially from the current levels. This target will be subject to changes contingent to resources needs assessments to be developed and reported by Parties.

As stated in target 3, in YSLME region, large amount of investments have been into biodiversity conservation.

2.Evaluation of implementation of RAMSAR with in YSLME

2.1 Second national wetland resources survey completed, including YSLME region

China has finished its second nationwide wetland resource investigation. Started in 2009 and completed in 2013, the survey by 22,000 forestry professionals was conducted and completed by the State Forestry Administration with great support from relevant departments of the State Council.

The survey has firstly adopted a wetland classification system in line with that recommended by the Ramsar Convention. It has also applied advanced techniques, including remote sensing (RS), geographical information system (GIS), and the global positioning system (GPS), in field sampling and satellite imagery analysis. The survey was designed to cover all of China's wetland patches no less than eight hectares individually in size. Each eligible wetland patch was portrayed by eleven survey parameters, e.g. wetland type, water supply, dominant aquatic plants, land tenure, and governance status. The statistics also had an in-depth

description of 1,579 nationally or internationally important wetlands by studying their aquatic environment, fauna and flora, conservation and exploitation of wetland resources, socioeconomic context, and ecological threats.

The survey results indicated that China's wetlands falling into 34 types in 5 categories cover an area of 53,420,600 ha, exclusive of 30,057,000 ha paddy fields, amounting to 5.58 percent of China's total land area. Findings from the survey also showed that China's wetlands declined by an estimated 3,396,300 ha between 2004 and 2013, including an estimated 3,376,200 ha or 9.33 percent of the losses for the natural wetlands. The statistics presents China the latest information on wetland resources, key aquatic plants and animals, main threats to wetlands, and land tenure.

Table 2.1 and Fig. 2.1 give the information on the wetland in Shandong, Jiangsu and Liaoning Provinces. In total, the YSLME area approximately accounts for 11.15% of the total wetlands in China.

Table 2.1 shows the wetland information in 3 YSLME Coastal provinces

Province	area(million ha)	%
Jiangsu	2.82	5.28
Shandong	1.74	3.25
Liaoning	1.39	2.61
total	5.95	11.15

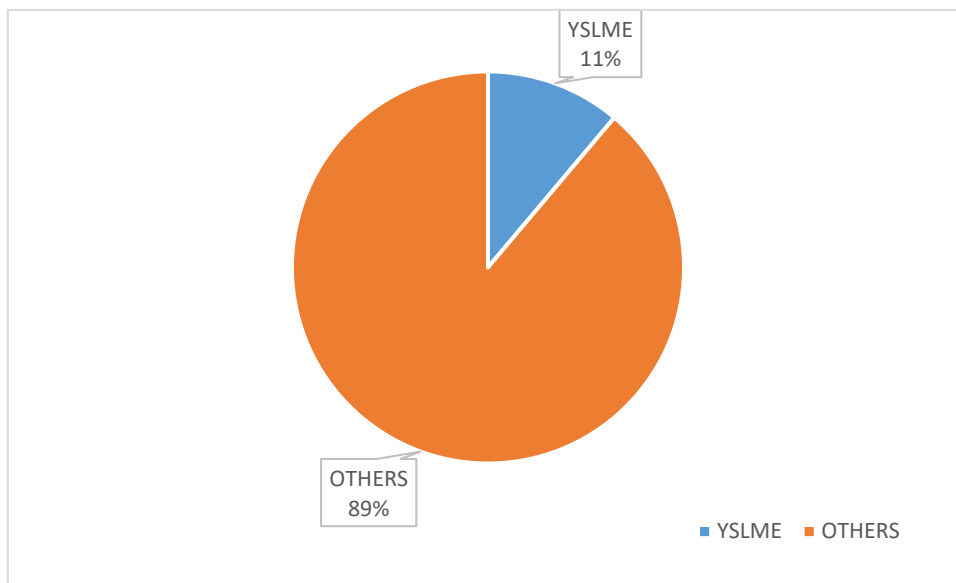


Fig. 2.1 the percentage of wetland in YSLME region

2.2 Protected wetland area is increasing continuously in YSLME region

Currently, in China, 49 wetland have been listed in to the International important wetland. 2 wetlands are in YSLME region: The National Nature Reserve for Rare Birds in Yancheng, Jiangsu, and National Nature Reserve

for David's Deer in Dafeng, Jiangsu. They were listed into the International important wetland in 2002.

Other than these two wetlands, there are increasing protected wetlands in YSLME region, as shown in Table 2.2. The wetland protection area is growing continuously.

As shown in Fig. 2.2. The wetland protection area is growing continuously. Before 2007, there are 3 wetland protection wetland, with a total area of 3.87×10^5 ha. By the end of 2016, the number increased to 9 and the total area was 4.22×10^5 ha.

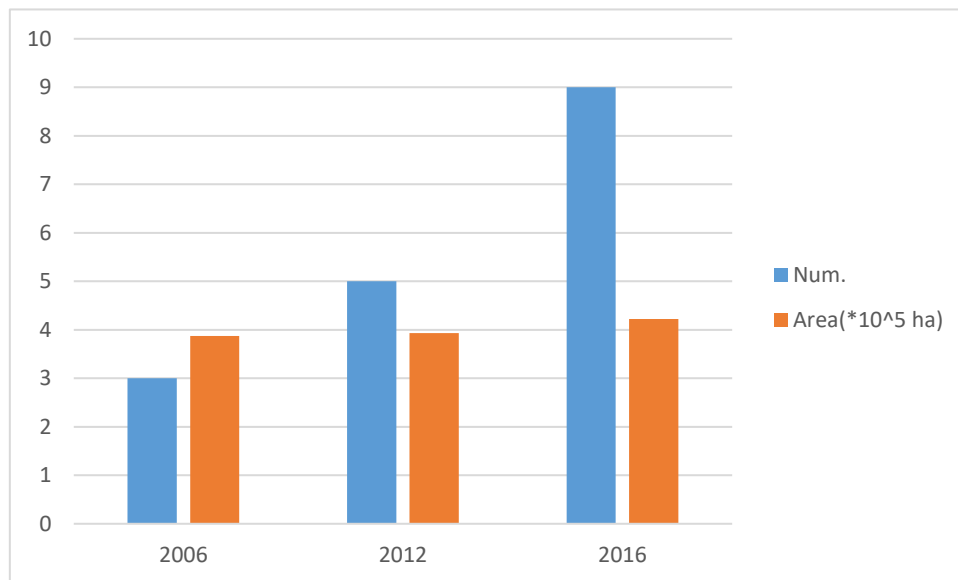


Fig.2.2 The increase in wetland protection MPAs from 2007 to 2016.

China launched several wetland conservation project to mitigate the impact of reclamation. In Yellow Sea area, great effects have been made

to prevent natural habitat loss. In 2012, the State Council authorized National Marine Functional Zoning (2011–2020), setting a goal to improve the marine environment with an expansion of the marine protected area (MPA) coverage in the sea areas under national jurisdiction to 5%. Until the end of 2016, there were 31 national level MPA, and 21 National level Aquatic Germplasm Resources Conservation Zones in Yellow sea area. And this number will keep increasing to reach the 5% goal.

According to the redline policy in the three coastal provinces of YSLME, a total of 19,607.81 km² sea area were designated as development restricted zone (DRZ) or development prohibited zone (DPZ). According to the redline design in Shandong, Jiangsu and Liaoning provinces, the development prohibited redline area banned all construction activities. The development restricted redline area strictly control construction activities, reclamation is prohibited. This regulation will help prevent the habit loss in YSLME area.

2.3 Wetland conservation and management integrated into national and local strategic development plan.

Wetland conservation and management have been integrated into several

national strategic development plans since 2010 as follows:

Drafted by the Ministry of Environmental Protection, the China National Biodiversity Conservation Strategy and Action Plan (2011-2030) was approved by the State Council in September 2010.

The Twelfth Five-Year Plan for National Forestry Development (2011-2015) was issued by the State Forestry Administration in August 2011, setting targets of wetland conservation.

The Opinions of the State Forestry Administration and the National Tourism Administration on Accelerating the Development of Forest-based Tourism, announced in November 2011, pointed out: 'to establish a tourism network built on forest parks, wetland parks, nature reserves, and etc.

The Twelfth Five-Year Plan for China's Environmental Protection (2011-2015), endorsed by the State Council in December 2011, highlighted four environmental issues to be tackled, two related to wetlands: water environment improvement and ecological protection and enhancement of law enforcement.

Delivered by the Ministry of Transport in January 2012, the Twelfth Five-year Plan for Protecting the Surrounding Environment of Transportation Networks of Highways and Waterways identified protecting the environment adjacent to highways and waterways and combating environmental pollution by transportation-related practices as two priority activities.

The National Land Consolidation Plan (2011-2015) was issued by the Ministry of Land and Resources in March 2012. The Plan viewed environmental integrity and wetland conservation as a guideline to land consolidation.

Approved by the State Council in August 2012, the Twelfth Five-Year Plan for Implementing National Wetland Conservation Programme (2011-2015), was to direct 12.987 billion RMB, both central and sub-national funding, to wetland conservation, wetland restoration and integrated improvement, the wise use of wetlands, and wetland management capacity building between 2011 and 2015.

Table 2.2 The National level wetland protected area in YSLME

No.	Name	Province	Area(ha)	Protection Target	Time of Approval
1	<i>National Nature Reserve for Coastal Wetland in Yalu River Delta</i>	Liaoning	101000	Coastal wetland and water birds	1987
2	<i>National Nature Reserve for Rare Birds in Yancheng, Jiangsu</i>	Jiangsu	284179	Rare birds and coastal wetland	1983
3	<i>National Nature Reserve for David's Deer in Dafeng, Jiangsu</i>	Jiangsu	2667	David's deer and wetland ecosystem	1986
4	<i>National Marine Special Protected Area for Coastal Wetland in Wulong River Estuary Laiyang, Shandong</i>	Shandong	1219	Coastal wetland	2011
5	<i>National Marine Park in Xiaoyangkou, Jiangsu</i>	Jiangsu	4700	Rare bird habitat	2012
6	<i>National Marine Park in Penglai</i>	Shandong	6830	Estuary wetland, sandy beach	2014
7	<i>Haixitou National Marine Park in Weihai</i>	Shandong	1274	Coastal wetland and	2014
8	Laishan National Marine Park in Yantai	Shandong	581	Estuary wetland and sandy coastal line	2016
9	Jiaozhou Bay National Marine Park in Qingdao	Shandong	20011	Wetland of north part of Jiaozhou Bay and Dagu River mouth	2016

The Twelfth Five-Year Plan for China's Marine Economic Development (2011-2015) was put out by the State Council September 2012. The Plan aimed to strengthen protecting marine environment with five key strategies.

The Master Plan for Protecting the Environment and Ecosystems of Lakes with Good Water Quality (2013-2020) was promulgated by the State Council in December 2013. The plan was prepared for controlling and preventing water pollution in key watersheds and for saving lakes suffering notorious pollution except protecting water bodies in pristine condition across China's five lake districts.

Approved by the State Council in March 2014, the National Ecological Protection and Development Plan (2011-2020) will serve as a framework for mainstreaming wetland conservation into a wide range of natural resource exploitation and conservation plans.

A municipal-level Biodiversity Conservation Strategy and Action Plan is under preparation by the Hong Kong Special Administrative Region, and is

supposed to be implemented in 2015.

Approved by State Council in 2016, the 13th five year plan for National ecological environmental protection guideline regulated that strict manage the Red-line area, conserve and raise the ecosystem function of wetland. Up to 2020, the wetland inventory will exceed 800 million mu.

In 2017, National wetland protection implementation Plan during 13th five year was also released. The plan pointed out that, up to 2020, the wetland inventory will exceed 800 million mu, wetland protection rate will exceed 50%, restore degraded wetland more than 0.14 million ha, add new wetland (including farmland returned to wetland) 0.2 million ha. A wetland protection system will be established, the management capacity will be enhanced.

Wetland conservation and management have been integrated into local strategic development plans with in YSLME as follows:

In 2017, Shandong provincial government executive meeting approved the guideline on promoting wetland conservation and restoration.

According to this guideline, up to 2020, in Shandong province, the wetland

inventory will exceed 26 million mu. A hierarchy system of wetland management will be established. Occupancy of important wetland without permission will be prohibited.

In 2015, the Jiangsu province wetland protection plan (2015-2030) was approved by Jiangsu Provincial People's Government. In this plan, up to 2020, wetland inventory will be 2.82 million ha, natural wetland protection rate will be 50%, 0.3 million ha degraded wetland will be restored.

In 2017, Liaoning Province had the Liaoning Province Forestry wetland protection and restoration plan in 13th five year. During the 13th five year period, Liaoning will strengthen the wetland protected area and wetland park construction, and strengthen the provincial important wetland infrastructure construction and enhance the wetland protection capacity building.

2.4 Public awareness raised in YSLME region

Various public activities has been conducted in YSLME area to raise the public awareness on marine biodiversity.

In 2016, the State Forestry Administration (SFA) in conjunction with China Central Television (CCTV) hold an public activity to select the top ten most beautiful wetlands in China. The Jiangsu Yancheng Dafeng wetland was selected as the one of the top ten most beautiful wetland in China.



Fig. 2.3 The David's deers in Jiangsu Yancheng Dafeng wetland

In 2016, the first Shandong non-government wetland protection group was founded in Jinan, Shandong: the Jinan Wetland Protection Public Welfare Organization.

In 2017, on the World Wetland Day, Changzhou, Jiangsu hold the wetland

publicity activity with the theme of “reduction on wetland disaster risk”. This activity attracted many local citizens, and raised the public awareness of wetland value.

In 2015, Dandong, Liaoning hold the “International Yalvjiang Wetland bird-watch Activity”, and the Yellow Sea Wetland Bird Protection Workshsop. This activity’s theme was:” Ecological Dandong, home of birds”. Many participants, coming from China, New Zealand, Australia, United states and Wetland International Joined this activity.

3. Implementation Status of RO Korea

3.1 Korea's policies on the restoration of marine ecosystems and biodiversity

Laws regarding restoration of marine ecosystem and biodiversity:

Wetland Conservation Act (enacted in 1999), Conservation and Management of Marine Ecosystems Act (enacted in 2006), Marine Spatial Planning and Management Act (enacted in 2018), Law on the Management and Restoration of Mudflats and their Surroundings Areas (enacted in 2019), Conservation and the Use of Biodiversity Act (enacted in 2012), Natural Environment Conservation Act (enforced on Sep. 1, 1992) Wildlife Conservation and Management Act (enforced on Feb. 10, 2005) Nature Parks Act (enforced on Jun. 1, 1980) Baekdudaegan Protection Act (enforced on Jan. 1, 2005) Act on the Transboundary Movements of LMOs, etc (enforced on Jan. 1, 2008), etc.

Institutional arrangement: Ministry of Oceans and Fisheries (MOF), Marine Environment Management Corporation (KOEM), Marine Biodiversity Institute of Korea (MABIK), National Institute of Fisheries Science (NIFS)

Korea Institute of Ocean Science and Technology (KIOST)

Korea Maritime Institute (KMI)

Korea Fisheries Resources Agency (FIRA)

Establishment of a basic management plan: 3rd National Wetland Conservation Plan (2018-2022), 2nd Plan for the Preservation and Management of Marine Ecosystems (2019-2028)

National Marine Ecosystem Survey: annual survey of the marine ecosystems of mudflats and nearby seas throughout Korea to monitor Korea's marine ecosystem and biodiversity

3.2 Status of the MPA designation and RAMSAR sites in RO Korea

Status of implementation of Aichi Targets: A total of 82 protected areas have been designated across Korea's coasts and seas, spanning a total area of 9,675.51 sq. km. (including overlapping regions).

They comprise 11.14% of domestic/territorial areas and 2.18% of total sea area (as of December 2018).

The RO Korean government designated 29 Marine Protected Areas until 2017. The location of MPA is provided as Fig.3-1.



Fig.3-1 Location of MPAs in RO Korea (figure source: from Framework plan for the YSLME Biodiversity conservation in RO Korea 2018-2030, prepared by Dr. Won-Tae Shin)

Tab.3-1 List of Marine Protected Areas in RO Korea (2017)(from Framework plan for the YSLME Biodiversity conservation in RO Korea 2018-2030, prepared by Dr. Won-Tae Shin)

Type of Marine Protected Area	Name	Year
Coastal Wetland Protected Area	No. 1. Muan Tidal Flat	2001
	No 2. Jindo Tidal Flat	2002
	No 3. Suncheon Bay Tidal Flat	2003
	No 4. Bosung Bulgyo Tidal Flat	2003
	No 5. Ongin-Jangbongdo Tidal Flat	2003
	No 6. Buan Julpo Tidal Flat	2006
	No 7. Gochang Tidal Flat	2007
	No 8. Seocheon Tidal Flat	2008
	No 9. Songdo Tidal Flat	2009
	No 10. Jeungdo Tidal Flat	2010
	No 11. Masan Bongam Tidal Flat	2011
	No 12. Siheung Tidal Flat	2012
	No 13. Biguem-Dochodo Tidal Flat	2015
	No 14. Daebudo Tidal Flat	2017
Marine Ecosystem Protected Area	No 1. Sinduri Sand Dunes	2002
	No 2. Mun Island and vicinity marine area	2002
	No 3. Oryuk Island and vicinity marine area	2003
	No 4. Daeijak Island and vicinity marine area	2003
	No 5. Gageo Island and vicinity marine area	2012
	No 6. Sohwa Island and vicinity marine area	2012
	No 7. Namhyungje Island and vicinity marine area	2013
	No 8. Namu Island and vicinity marine area	2013
	No 9. Cheongsan Island and vicinity marine area	2014
	No 10. Ulreung Island and vicinity marine area	2015
	No 11. Chuja Island and vicinity marine area	2016
	No 13. Tokki Island and vicinity marine area	2017
	No 14. Yangyang Jo Island and vicinity marine area	
	Marine Species Protected Area	No 1. Garorim Bay

Gochang and Buan Tidal Flats is registered as RAMSAR site (Fig3-2). Also, there is one UNESCO-MAB Biosphere Reserve which is Shi nan Dadohae due to its ecological and marine biodiversity importance.

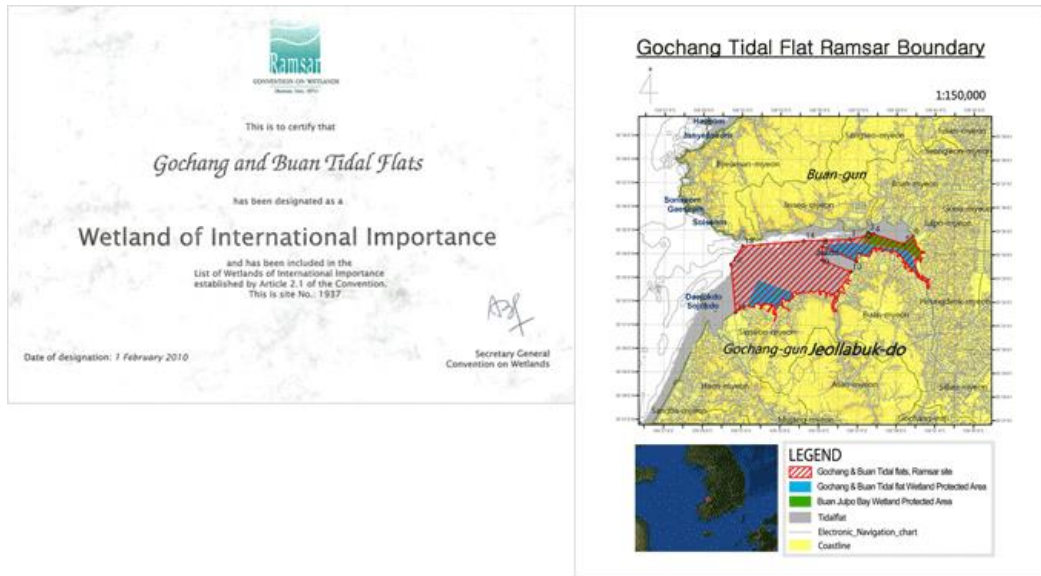


Fig.3-2 Gochang and Buan Tidal Flats RAMSAR site (figure source: from Framework plan for the YSLME Biodiversity conservation in RO Korea 2018-2030, prepared by Dr. Won-Tae Shin)

3.3 Public awareness raised in RO Korea

Diverse content related to marine biodiversity is reflected in textbooks of public schools (elementary, middle, and high schools). Field trips for students are conducted nationwide to enhance their understanding of the need to preserve the marine ecosystem (mudflats, etc.).

An average of 3 million people per year are participating in educational classes and exploratory programs at mudflat visitors' centers

that are registered members of the Regional MPA (Marine Protected Area) Center network.

3.4 Marine species protection and foreign species management

Total of 80 species (mammals: 16, invertebrates: 34, marine algae: 7, reptiles: 4, fish: 5, birds: 14) were designated as protected species. Under the law, RO Korea identified a total of 77 marine species as protected marine species as shown in Table 4. Regarding the protection of marine species, especially for 4 species of sea turtles and 2 species of sea horses and Indo-Pacific bottlenose dolphin (*Tursiops aduncus*), proactive conservation programs are also underway based on the law. (Sources: Framework plan for the YSLME Biodiversity conservation in RO Korea 2018-2030, prepared by Dr. Won-Tae Shin)

Out of all birds reported to inhabit Korea, there are 391 migratory birds, which comprise 86% of total bird species observed in Korea, with 337 of them visiting Russia, 281 visiting Japan, 337 visiting China, and 59 visiting Australia. In this light, Korea signed bilateral agreements on the protection of migratory birds with Russia, Australia and China in 1994, 2006, and 2007, respectively. Furthermore, in 2008, the city of Incheon hosted on the Secretariat of East Asian-Australasian Flyway Partnership

(EAAFP).(Framework plan for the YSLME Biodiversity conservation in RO Korea 2018-2030, prepared by Dr. Won-Tae Shin)

1 Ecosystem disruptive species and 17 harmful marine life forms have been designated and continue to be monitored.

Korea's activities to control non-native species with precautionary approaches includes revision of the regulation on and management system for the introduction of non-native species, conducting epidemiological and damage studies for non-native species and the creation of an information management system, a project to eliminate harmful marine organisms, and efforts to raise public awareness of and draw attention to the introduction of introduced species.(Sources: Korean- YSLME NSAP, p147 – 156)

3.5Mudflat restoration policies in RO Korea

Mudflats, like coastal wetlands, are key habitats for shellfish, invertebrates, and migratory waterbirds along East Asian – Australasian Flyway.

Laws on the management and restoration of mudflats and their surrounding areas (enacted in 2019)

Medium-term plan for the restoration of mudflat ecosystems (2019

-2023) currently being implemented (goal: restoration of 3 sq. km. of mudflats in five years)

Maintenance of adequate wetland area by measuring the total area of Korea's mudflats and conducting a restoration project every five years.

Monitoring efforts from 2003 to 2013 by local governments indicate that the total area of mudflats along the Korean coast of the Yellow Sea generally appears to be increasing. (Sources: Transboundary Diagnostic Analysis for the Yellow Sea Large Marine Ecosystem, p 35)

3.6 Marine Spatial Planning establishment

Law on the planning and management of marine spaces (enacted in 2018)

Reason for implementation: to establish a comprehensive system for managing marine spaces based on a "plan first, use later" policy that takes the unique characteristics and value of marine spaces into consideration in an effort to mitigate social conflicts and prevent the development of marine areas and indiscrete use of marine resources without due consideration of environmental issues

Status of Marine Spatial Planning per region: Gyeonggi Bay (2017),

Busan/Gyeongsangnam-do (2018), Jeollanam-do/Jeju-do/southwestern coast (EEZ currently being implemented as of 2019), Jeollabuk-do/Chungcheongnam-do/western coast EEZ (expected in 2020)

3.7 Establishment of K-SDG14

No.	Targets (8)	Indices (14, of which 8 are new)	Competent ministry
14-1	Establishment of a managerial system for the protection of the marine environment from harmful substances by land or sea	<ul style="list-style-type: none"> ○ (New) Rate of improvement of sea water quality per ecosystem-based sea area based on the utilization of the Water Quality Index (WQI) (%) ○ (New) Volume of retrieved marine litter based on outcomes of the national monitoring of marine litter 	Ministry of Oceans and Fisheries, Ministry of Environment
14-2	Proactive management of the ocean ecosystem's environment and the habitats of marine life	<ul style="list-style-type: none"> ○ (New) Total area of sea forest established (ha) ○ (New) Area of mudflats restored (sq. km.) 	Ministry of Oceans and Fisheries
14-3	Minimizing of the influence of marine acidification through strengthened cooperation on science and technology development	<ul style="list-style-type: none"> ○ Maintenance of appropriate average pH level (8.0-8.2) for coastal seas 	Ministry of Oceans and Fisheries
14-4	Sustainable management of marine resources and prevention of excessive fishing	<ul style="list-style-type: none"> ○ Amount of caught TAC fish compared to fishing volume of nearby seas ○ TAC fish species ○ (New) Reduction in number of fishing vessels (buyba 	Ministry of Oceans and Fisheries

		ck)	
14-5	Expansion of Marine Protected Areas for the systematic preservation and rational use of the marine ecosystem	<ul style="list-style-type: none"> ○ Area of Marine Protected Areas 	Ministry of Oceans and Fisheries
14-6	Securing of economic profit through the sustainable use of marine resources	<ul style="list-style-type: none"> ○ (New) Fishing household income (unit: KRW 1 million) ○ (New) Proportion of fishing household income compared to household income of urban workers (%) 	Ministry of Oceans and Fisheries
14-7	Strengthening of research capabilities in marine sciences and transfers of marine technologies	<ul style="list-style-type: none"> ○ (New) Proportion of R&D investment for maritime/fisheries compared to government's R&D budget (%) 	Ministry of Oceans and Fisheries
14-8	Support for the stable fishing activities of small-scale (individual) fishers	<ul style="list-style-type: none"> ○ Payment rate of Conditional Fisheries Payment System (%) ○ Unit cost of Conditional Fisheries Payment System 	Ministry of Oceans and Fisheries

4 Integration of SDG14, CBD and RAMSAR targets into YSLME SAP

4.1 Targets for integration into SAP

Within YSLME, many achievements has been obtained during the process of implementation of CBD convention: Biodiversity values have been integrated into national and local development and poverty reduction strategies. A series of plans and strategies on biodiversity conservation have been implemented. The capacities of biodiversity research and monitoring have been improved. More nature habitats have been protected, Sustainable fishery has been popularized. Public awareness of biodiversity is rising. So YSLME region is on a good track to fulfill the Aichi Target in 2020.

In YSLME region, the implementation of Ramsar on wetland protection is also developing vigorously. The second national wetland resources survey has been completed, showing that YSLME region approximately accounts for 11% of the wetland in China. Protected wetland area is increasing in YSLME region. Wetland conservation and management integrated into YSLME local strategic development plan. And the public awareness on wetland value is increasing by many public activities. So, Ramsar convention is well carried out In YSLME region.

Although progresses have been made, the threats to YSLME biodiversity still exists:

overfishing, habit loss, pollution, unsustainable mariculture, harmful algae bloom, invasive species, climate change. These threats should be addressed in the YSLME SAP. In the CBD, SDG14 and RAMSAR targets, there are some targets closely related to YSLME situation, which could be recommended to be integrated into the YSLME SAP. The possible targets for consideration are listed as follows:

Some targets could be considered to be included into the SAP of YSLME:

Aichi Target 1:

By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.

Aichi Target 5:

By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.

Aichi Target 8:

By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

Aichi Target 9:

By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.

SDG14.1

By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution

SDG14.4

By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics

SDG14.5

By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information

4.2 Proposed contents of YSLME biodiversity conservation SAP

Considering the current threats and those related targets, we here propose 4 strategic tasks. Each strategic tasks has several actions and activities. These strategic tasks could be considered for the YSLME SAP.

- 1) Strengthening in situ conservation of biodiversity
- 2) Strengthening the safety management of invasive alien species
- 3) Construct a pollution control mechanism by the land and sea coordination
- 4) Establish a public participation mechanism for biodiversity conservation

➤ **Strengthening in situ conservation of biodiversity**

● **Action 1 Improve the biodiversity of YSLME wetlands**

- (1) Carry out general survey of wetland resources, and rescue natural rivers such as river beaches and coastal intertidal zones.

(2) Carry out ecological protection and restoration of degraded wetlands.

Increase the intensity of returning farmland to wetlands, returning fisheries to wetland, and mudflat culture ponds within the ecological red line must strictly implement the returning fishing to wetland regulation.

(3) According to the characteristics of different coastal wetlands, the suitable wetland plant species should be planted according to local conditions to enhance the stability of wetland ecosystems.

- Action 2 strengthen the conservation on YSLME biodiversity priority area

(1) Conduct assessment of the relevance of existing zoning schemes to connectivity of existing MPAs and/or potential MPAs.

(2) Propose new MPA according to gap analysis.

(3) Identifying the BD priority of YS, draw the map of priority areas for designation as conservation areas in YS and identify opportunities for

improvements in connectivity with existing and new MPAs.

- Action 3 Improvement of YSLME MPA planning and management

(1) Coordinate the implementation of the development plan of MPAs and establish an information management system.

(2) Strengthen the construction of MPAs in the priority areas of biodiversity conservation, optimize the spatial layout, and improve the connectivity and overall protection capacity.

- Action4 Promote fish spawning and habitat restoration and reconstruction

(1) Fish spawning and habitat restoration and reconstruction. Identify key areas for fish spawning grounds and habitat restoration and reconstruction, and prepare fish spawning grounds and habitats for ecological remediation and reconstruction plan to achieve biodiversity restoration in key areas.

(2) Further increase the diversity of artificial reef types, improve the effectiveness of proliferation and release, rebuild fish spawning grounds and habitat environment, and restore biodiversity.

(3) Standardize the management of spawning grounds and habitat areas.

In the key areas, any form of development, coastal engineering, and illegal sand mining are prohibited to protect fish spawning grounds and habitats from damage. Establish a dynamic monitoring system for fish spawning grounds and habitats. Standardize fishing equipment during fishing activities.

➤ **Strengthening the safety management of invasive alien species**

● **Action 5 Strengthen the invasive species control**

(1) Strengthen the broadcast and management of alien species hazards.

Improve the ecological security awareness of the whole society against biological invasion. Carry out various forms of publicity ways to improve residents' awareness of alien species and jointly resist invasive alien species.

(2) Investigate data on the species, quantity and distribution of invasive species for ecological damage. Assessment of invasive species such as

Spartina alterniflora, which has a high degree of damage and rapid spread. Accelerate the research on invasive species control.

(3) Establish risk assessment of alien species. Prevention and assessment are prerequisites for risk management of alien species and should be established.

(4) The integrated management mechanism of invasive alien species builds a comprehensive prevention and control system for the prevention and control of invasive alien species. Take timely early warning and emergency measures, and use effective prevention and control measures to strengthen the prevention and control of invasive alien species.

➤ **Construct a pollution control mechanism by the land and sea coordination**

● Action 6 Strengthen the control of ecological red line areas

(1) Strictly implement the redline area management regulation.

DPZ management measure

In nature reserve DPZ, no construction of production facilities was

allowed. No organization or individual is allowed to entry without special reason. In marine special protected area, the important protected area prohibits any construction project not related to protected area. In reserve area, human disturbance is strictly controlled, no constructions allowed here. Any production activities that might change the natural ecological condition will be prohibited.

- Action 7 Strengthen seawater and estuary pollutant discharge control and supervision

(1) Strengthen the supervision of pollution from land to sea, in accordance with the “watershed – nearshore waters – red line region” hierarchical system to strengthen pollution monitoring and management of rivers entering the sea, comprehensively ban the illegal or unreasonable land-source discharge into the sea.

(2) Strictly control marine pollution discharge and strengthen the protection of germplasm resources and their neighbors

Pollution control of regional ports, terminals, loading and unloading stations and ships, ports, terminals, loading and unloading stations

It should have pollutants receiving and disposing facilities, anti-pollution emergency facilities and equipment, and strengthen the ship

Receiving and disposing of pollutants such as waste oil, sewage oil, washing water, domestic sewage, garbage and waste gas should have strict supervision and inspection. Illegal discharge is strictly prohibited.

➤ **Establish a public participation mechanism for biodiversity conservation**

● **Action 8 Improve public education on biodiversity conservation**

(1) Carry out biodiversity conservation education, disseminate ecological culture, ecological health, and ecological environment knowledge. The awareness of promoting the concept of biodiversity protection of the citizens.

(2) Carry out publicity and education on biodiversity conservation for government.

(3) Carry out publicity and education on biodiversity conservation in educational institutions such as schools.

(4) Integrating biodiversity conservation culture knowledge education into kindergartens, primary and secondary schools, and colleges and

universities, in order to deepen the students' awareness of biodiversity conservation.

(5) Carry out publicity and education on multimedia biodiversity conservation. Promote the importance and main measures of biodiversity conservation through public service advertisements.

To improve the level of biodiversity protection and responsibility of citizens; make full use of magazines and newspapers, radio and television, Internet, WeChat public account, etc.

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