

발제문

**황해광역해양생태계 (YSLME)보전사업  
지속가능한 해양생태계 및 생물자원을 위한  
협력적 수단**

남정호  
한국해양수산개발원 연구위원

황해광역해양생태계 (YSLME)보전사업  
지속가능한 해양생태계 및  
생물자원을 위한 협력적 수단

2017년 11월 2일  
충청남도 공주 GOMA  
제3회 환황해포럼

남정호



한국해양수산개발원  
KOREA MARITIME INSTITUTE

## 소통 개요

황해는 지속가능성을 향해 나아가고 있는가?

황해광역해양생태계 (YSLME), 국제적인 협력  
메커니즘

지속가능한 황해 및 인간의 웰빙을 위한 미래 과제

황해는 지속가능성을 향해  
나아가고 있는가?

## 2000년대 초

Figure 8. Frequency of Intense Algal Blooms.

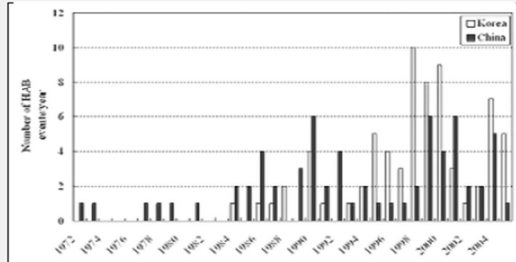


Figure 9. Capture Fisheries Landings in China and Korea in Relation to Global (tonnes).

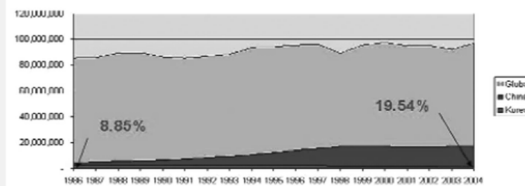


Figure 10. Annual Japanese anchovy biomass (bars) and Chinese landings (line).

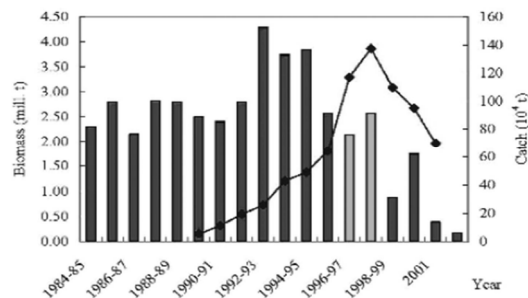
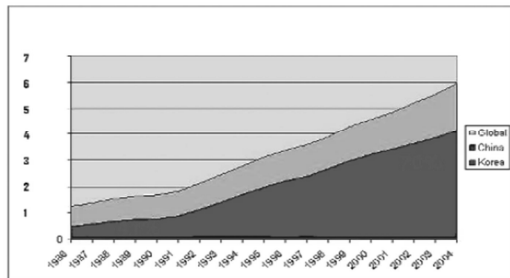
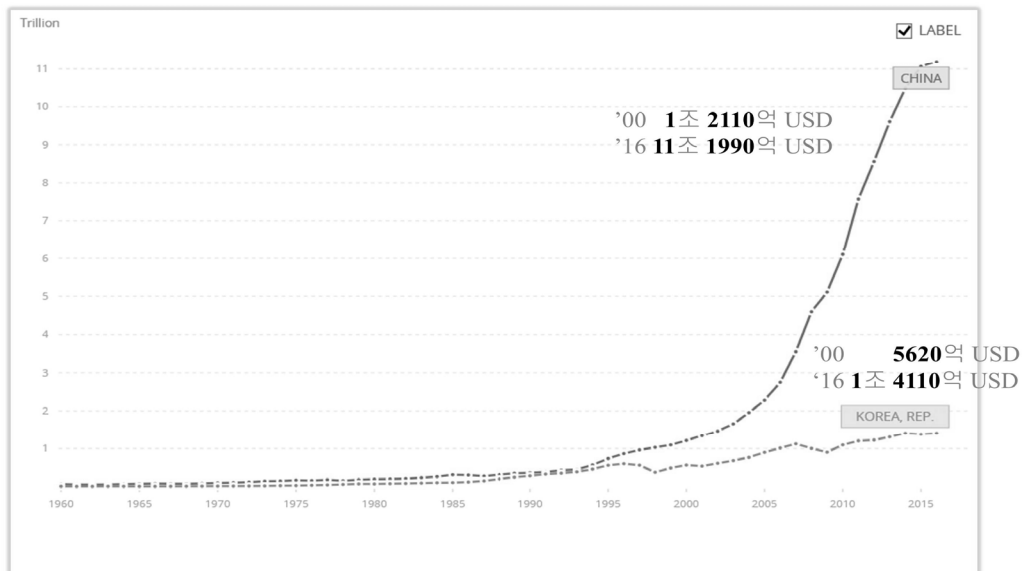


Figure 13. Growth of Combined Mariculture and Aquaculture Production in China and Korea in Comparison with Global (Millions of tonnes).



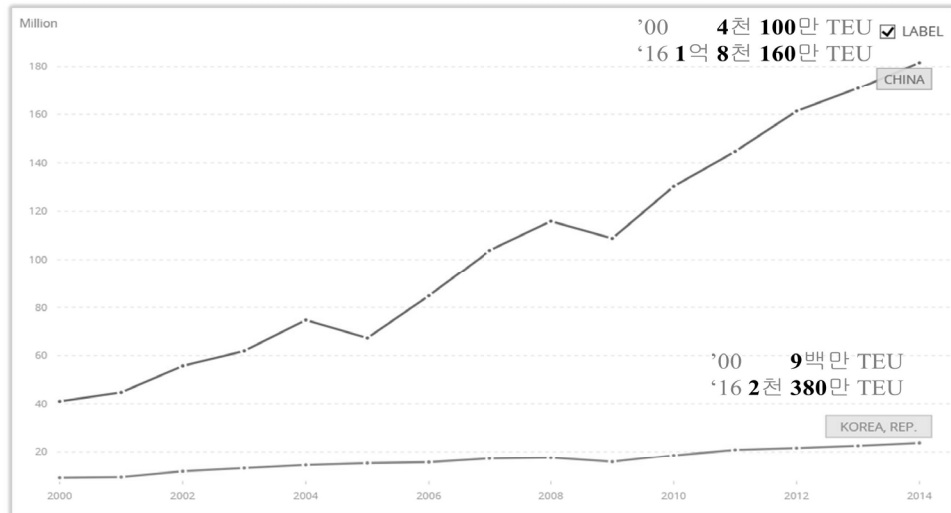
(UNDP/GEF, 2007)

## 2000년대 중반 이후 급증하는 사회경제적 활동 및 압박



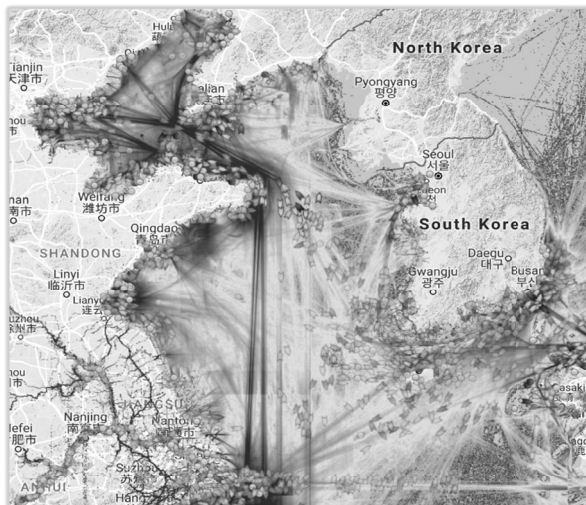
<https://data.worldbank.org/country/china?view=chart>

## 컨테이너 물동량



<https://data.worldbank.org/indicator/IS.SHP.GOOD.TU?locations=CN>

## 선박 교통량

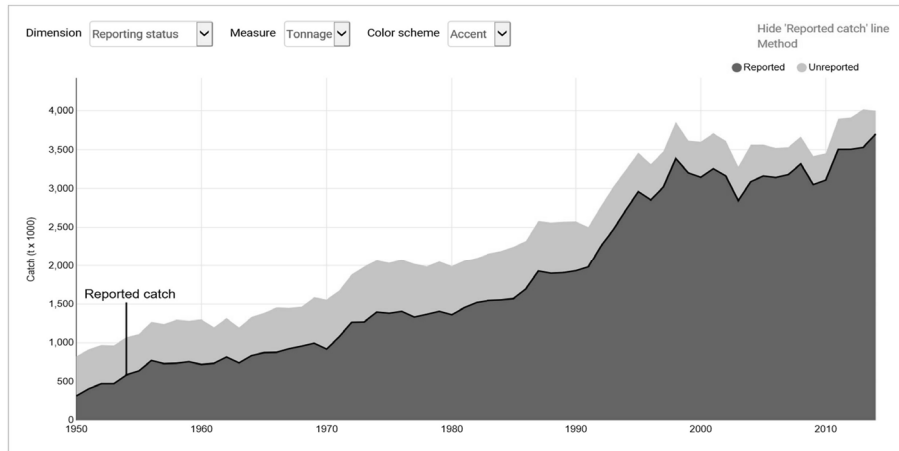


[www.marinetraffic.com](http://www.marinetraffic.com)



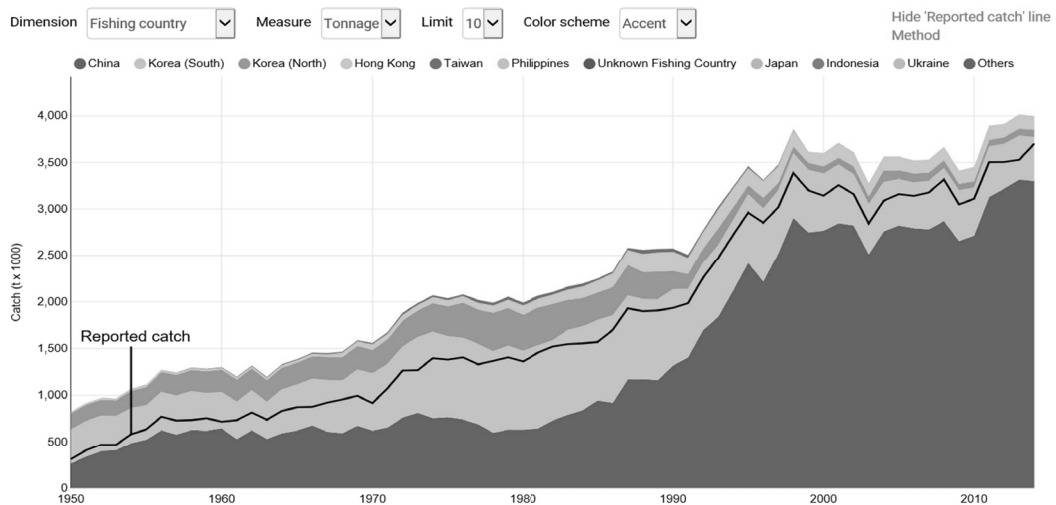


## 황해 어획량



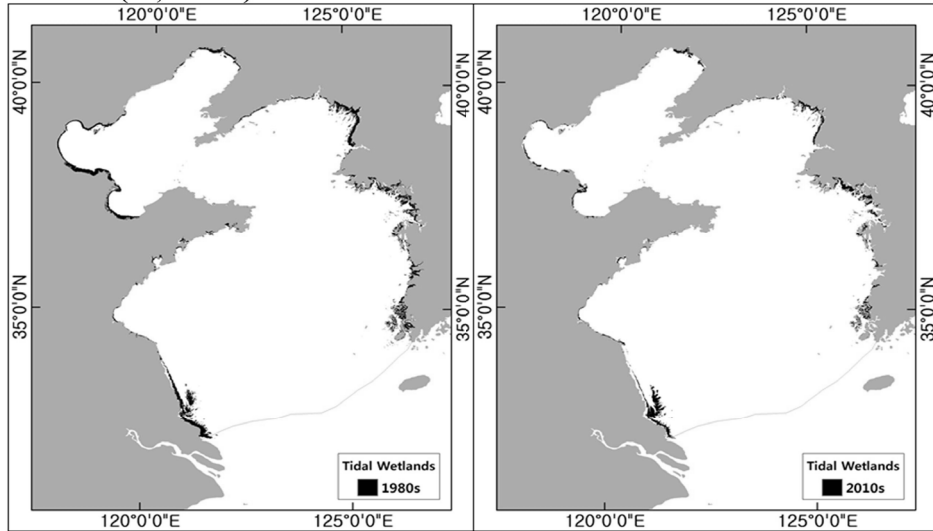
Note: The data we present ('reconstructed data') combine official reported data and reconstructed estimates of unreported data (including major discards), with reference to individual EEZs. Official reported data are mainly extracted from the Food and Agriculture Organization of the United Nations (FAO) FishStat database. The 'Reported catch' line overlaid on the catch graph represent all catches deemed reported (including foreign) and allocated to this spatial entity. For background information on the reconstruction data, download the .pdf file for the specific EEZ(s) and also examine our methods for data and spatial allocation.

[www.seaaroundus.org](http://www.seaaroundus.org)



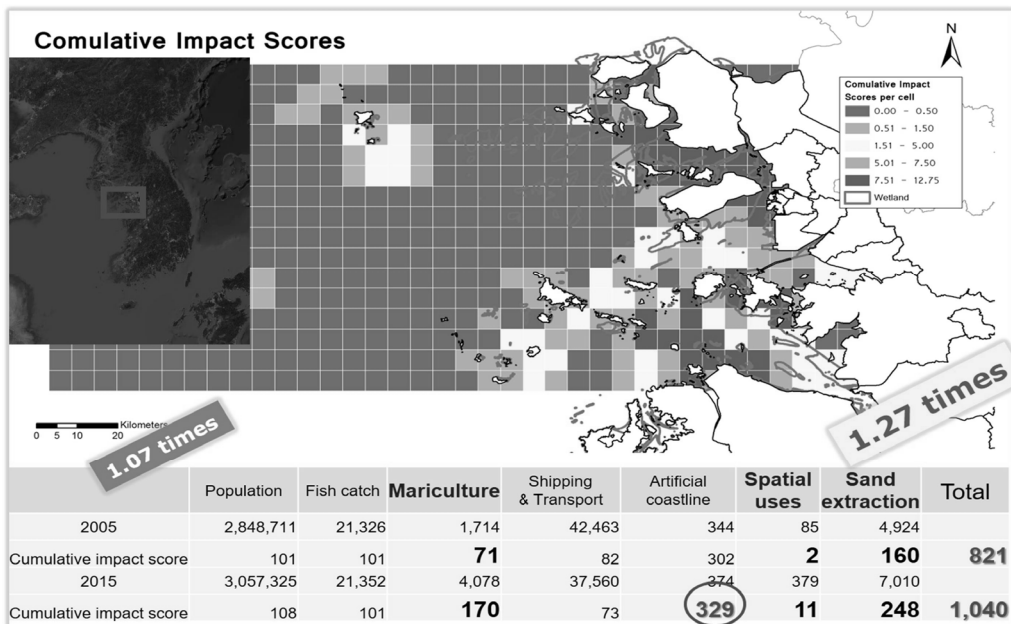
[www.seaaroundus.org](http://www.seaaroundus.org)

## 연안 서식지 손실 : 황해의 조수 습지

1980년대 (10,191 km<sup>2</sup>)2010년대 (6,525 km<sup>2</sup>)

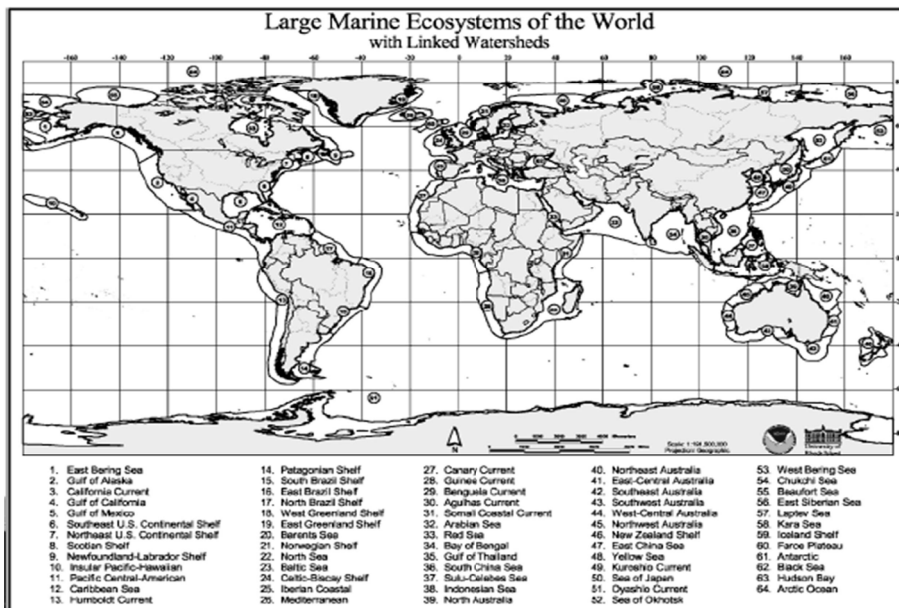
## 누적되는 영향의 증가

(Nam &amp; Choi, 2017)

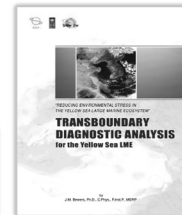


# 황해광역해양생태계 (YSLME), 국제적인 협력 메커니즘

## 광역해양생태계 세계지도 (64)



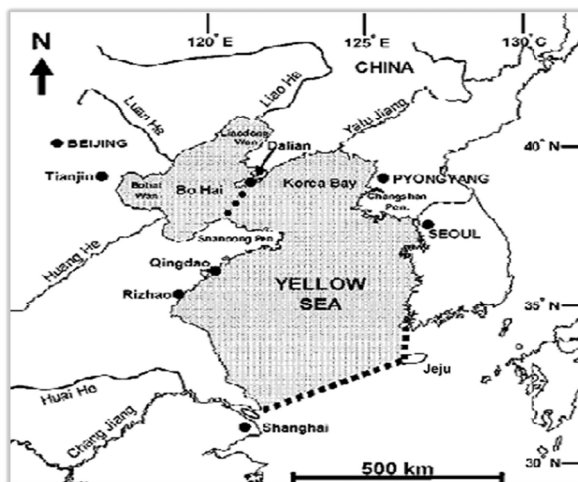
## YSLME 보전사업 발전 개요



## YSLME 보전사업 개요

### 사업 목표

인구밀집·도시화·산업화라는 특징을 지닌 반폐쇄 대륙붕 바다, 황해의 지속가능한 생태계 이용 촉진 및 개발압박 감소를 통해 YSLME 및 주변 분수령을 생태계에 기반하여 환경적으로 지속가능하도록 운영 및 이용



- 면적 404,000 km<sup>2</sup>, 길이 1000 km, 폭 700 km (최대)
- 인구: 6억 이상
- 대량의 하천 퇴적물: 연간 퇴적물 16억 톤
- 높은 어업 압력
- 급격한 경제 성장
- 연안 서식지 조정

(UNDP/GEF, 2007; Shin, 2012)

## 주요 문제에 기반을 둔 YSLME 월경성 오염물질 분석 (TDA) 작업

제안 단계의 주요 문제

- 어장 & 바다 양식
- 생물다양성
- 수질 & 인간의 건강
- 제도적 개발과 역량 강화

Objective	Component
I Develop Regional Strategies for Sustainable Management of Fisheries and Mariculture	A. Stock Assessment
	B. Carrying Capacity in Fisheries and Mariculture
	C. Mariculture Production
	D. Disease in Mariculture
	E. Regional Fisheries Agreements and National Laws
	F. Fisheries Management Plan
II Propose and Implement Effective Regional Initiatives for Biodiversity Protection	A. Habitat Conservation
	B. Vulnerable Species
	C. Genetic Diversity
	D. Introduced Species
	E. Biodiversity Regulations
	F. Regional Biodiversity Assessment & Regional Biodiversity Action Plan
III Propose and Implement Actions to Reduce Stress to the Ecosystem, Improve Water Quality and Protect Human Health	A. Stressors to Ecosystem
	B. Carrying Capacity of Ecosystem
	C. Contaminant Inputs
	D. Contaminant Levels
	E. Harmful Algal Blooms and Emerging Disease
	F. Hot Spot Analysis
	G. Emergency Planning and Preparedness
	H. Legal and Regulatory
	I. Fate and Transport Analysis to Facilitate SAP Analysis

지역 실무단 작업 분야

- 어장
- 생물다양성
- 생태계
- 오염
- 투자

(UNDP/GEF, 2007)

## YSLME TDA 기반 전략적 행동프로그램 (SAP) (11개 목표와 32개 활동)

SAP 관련 문제 재확인

- 오염과 공해
- 부영양화
- 유해 적조
- 생태계 포화밀도를 넘는 어획 노력
- 지속불가능 문제에 직면한 바다양식
- 서식지 손실 및 악화
- 생태계 구조의 변화
- 해파리 증식
- 기후변화 관련 문제

(UNDP/GEF, 2009)

## YSLME TDA 기반 전략적 행동프로그램 (SAP) (11개 목표와 32개 활동)

### Provisioning Services

#### Target 1: 25-30% reduction in fishing effort

- Action 1-1: Control fishing boat numbers
- Action 1-2: Stop fishing in certain areas/seasons
- Action 1-3: Monitor and assess stock fluctuations

#### Target 2: Rebuilding of over-exploited marine living resource

- Action 2-1: Increase mesh size
- Action 2-2: Enhance stocks
- Action 2-3: Improve fisheries management

#### Target 3: Improvement of mariculture techniques to reduce environmental stress

- Action 3-1: Develop environment-friendly mariculture methods and technology
- Action 3-2: Reduce nutrient discharge
- Action 3-3: Control diseases effectively

### Regulating Services

#### Target 4: Meeting international requirements on contaminants

- Action 4-1: Conduct intensive monitoring and assessment
- Action 4-2: Control contaminants discharge with reference to Codex alimentarius and Stockholm Convention
- Action 4-3: Implementing MARPOL 1973/78 effectively

#### Target 5: Reduction of total loading of nutrients from 2006 levels

- Action 5-1: Control total loading from point sources
- Action 5-2: Control total loading from non-point sources and sea-based sources
- Action 5-3: Apply new approaches for nutrient treatment

Box 1: Regional targets and technical actions proposed by the YSLME SAP	
Provisioning Services	
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Cultural Services	
Target 6: Reduced standing stock of marine litter from current level	<ul style="list-style-type: none"> <li>Action 6-1: Control source of litter and solid wastes</li> <li>Action 6-2: Improve removal of marine litter</li> <li>Action 6-3: Increase public awareness of marine litter</li> </ul>
Target 7: Reduce contaminants, particularly in bathing beaches and other marine recreational waters, including endangered and endemic species	<ul style="list-style-type: none"> <li>Action 7-1: Conduct regular monitoring, assessment and information dissemination particularly in bathing beaches and other marine recreational waters</li> <li>Action 7-2: Control pollution in bathing beaches and other marine recreational waters</li> </ul>
Supporting Services	
Target 8: Better understanding and prediction of ecosystem changes for adaptive management	<ul style="list-style-type: none"> <li>Action 8-1: Assess and monitor the impacts of N/P/Si ratio change</li> <li>Action 8-2: Assess and monitor the impacts of climate change</li> <li>Action 8-3: Forecast ecosystem changes in the long-term scale</li> <li>Action 8-4: Monitor the transboundary impact of jellyfish blooms</li> <li>Action 8-5: Monitor HAB occurrences</li> </ul>
Target 9: Maintenance and improvement of current populations/distributions and genetic diversity including endangered and endemic species	<ul style="list-style-type: none"> <li>Action 9-1: Establish and implement regional conservation plan to preserve biodiversity</li> </ul>
Target 10: Maintenance of habitats according to standards and regulations of 2007	<ul style="list-style-type: none"> <li>Action 10-1: Develop regional guidelines for coastal habitat management</li> <li>Action 10-2: Establish network of MPAs</li> <li>Action 10-3: Control new coastal reclamation</li> <li>Action 10-4: Promote public awareness of the benefits of biodiversity conservation</li> </ul>
Target 11: Reduction of the risk of introduced species	<ul style="list-style-type: none"> <li>Action 11-1: Control and monitor ballast water discharge</li> <li>Action 11-2: Introduce precautionary approach and strict control of introduction of non-native species</li> </ul>

## YSLME TDA 기반 전략적 행동프로그램 (SAP) (11개 목표와 32개 활동)

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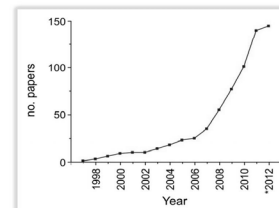
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# 지속가능한 황해 및 인간의 웰빙을 위한 미래 과제

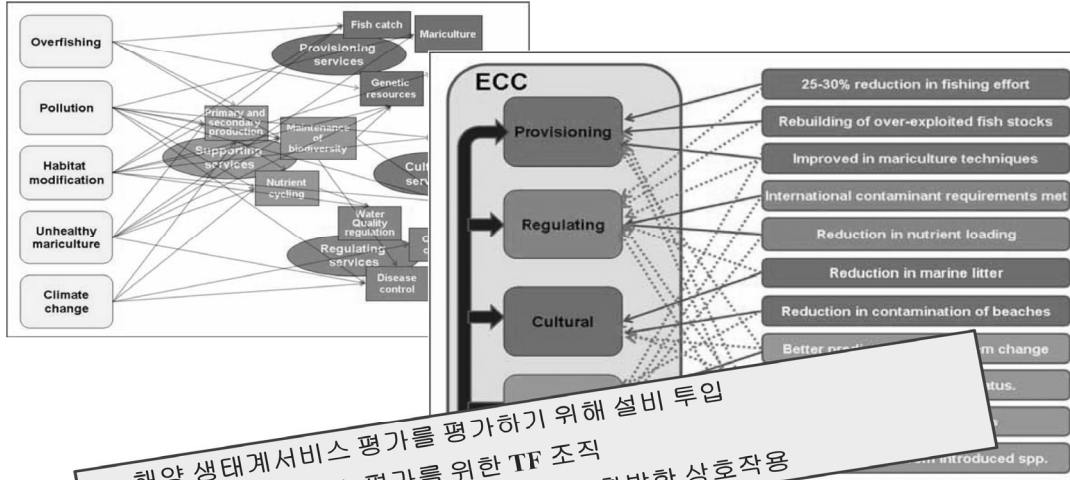
## 해양 생태계 서비스 평가

주류 생태계서비스의 YSLME 통합

1997	Costanza et al.
2001~2005	천년생태계평가 (Millennium Ecosystem Assessment, MA)
2006	유엔 환경 기획(UNEP)
2007	SGAN-UNEP WCMC TEEB, (G8+5 summit)
2008	제9차 생물다양성협약 당사국총회 (CBD COP9) 생태계서비스 파트너십 (Ecosystem Service Partnership, ESP)
2009	UNESCO-IOC
2010	해양 생태계서비스 파트너십 (ESP)
2011	EU(생태계 평가 & 매핑)
2012	생물다양성과학기구 (IPBES)
2015	유엔 지속가능발전목표 (UNSDGs) (Nam, 2014)



이미 해양생태계 서비스 개념을 YSLME에 통합시켰으나, 황해 생태계의 생태계서비스 (MES)를 평가할 수 있는 실행가능한 계획이 마련되지 못함.



- 해양 생태계서비스 평가를 평가하기 위해 설비 투입
- 해양 생태계서비스 평가를 위한 TF 조직
- 생태계서비스 (MES) 관련 국제 조직과 활발한 상호작용

## 해양보호구역 (MPA) 네트워크 재구축

### MEMORANDUM OF UNDERSTANDING (MOU) BETWEEN UNDP/GEF PROJECT ON "REDUCING ENVIRONMENTAL STRESS IN THE YELLOW SEA LARGE MARINE ECOSYSTEM"

#### ON KOREA MARITIME INSTITUTE

#### CO-OPERATION IN PROMOTING CONSERVATION AND SUSTAINABLE USE OF MARINE AND COASTAL ENVIRONMENT IN THE YELLOW SEA

Following the exchanging of project information and discussing potential areas and mechanisms for co-operation in promoting protection of marine and coastal environment in the Yellow Sea, the UNDP/GEF Project "Reducing Environmental Stress in the Yellow Sea Large Marine Ecosystem" (YSLME) and Korea Maritime Institute (KMI),

#### Recognising:

The Global Environment Facility, through the United Nations Development Programme as implementing agency, is supporting the Project, "Reduce Environmental Stress in the Yellow Sea Large Marine Ecosystem";

The long-term objective of the YSLME aims at: Ecosystem-based, environmentally-sustainable management and use of the YSLME and its watershed by reducing development stress and promoting sustainable exploitation of the ecosystem from a densely populated, heavily urbanized, and industrialized semi-enclosed shelf sea;

The Medium-term objectives of the YSLME are:

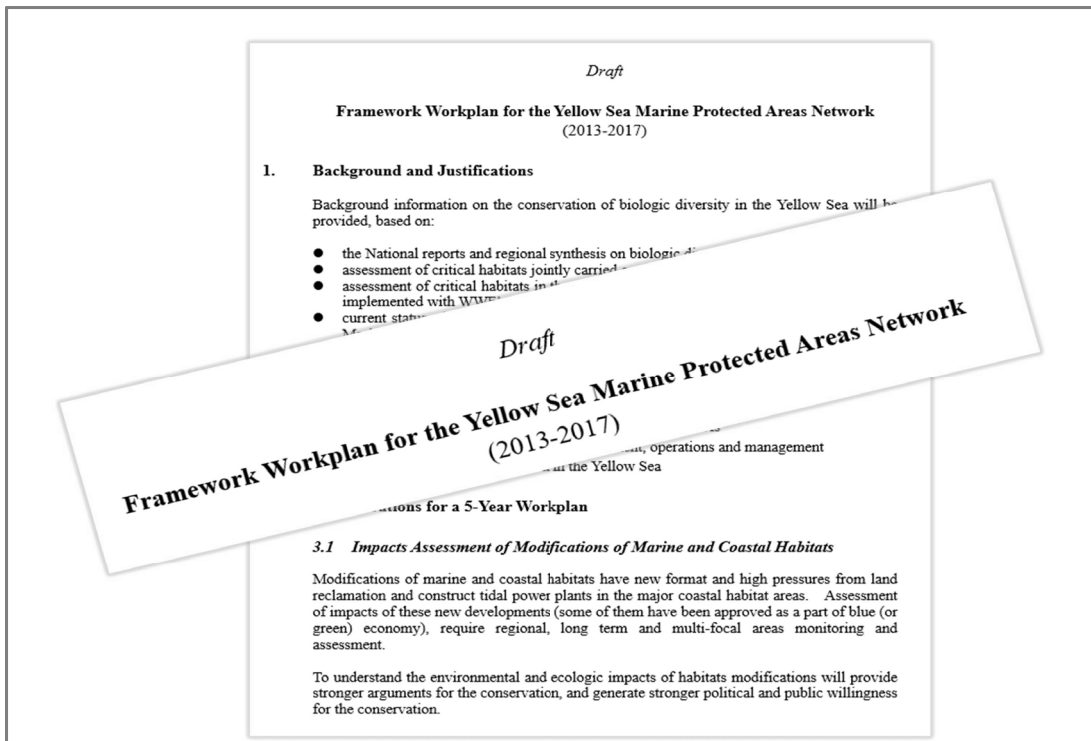
- Enhancing national capacities in protection of marine environment and sustainable use of marine and coastal resources;
- Strengthening regional co-operation in marine environment protection and management through establishment of regional mechanisms established in the Yellow Sea, and co-operative spirit enhanced by the project; and
- Facilitating cross-sector co-operation and co-ordination of relevant national institutions dealing with marine environmental management.

#### Also Recognising:

KMI is a government-affiliated research institute under the Prime Minister's Office of the Republic of Korea, focusing on developing national marine policies on marine affairs and fisheries. Major functions of KMI are as follows:







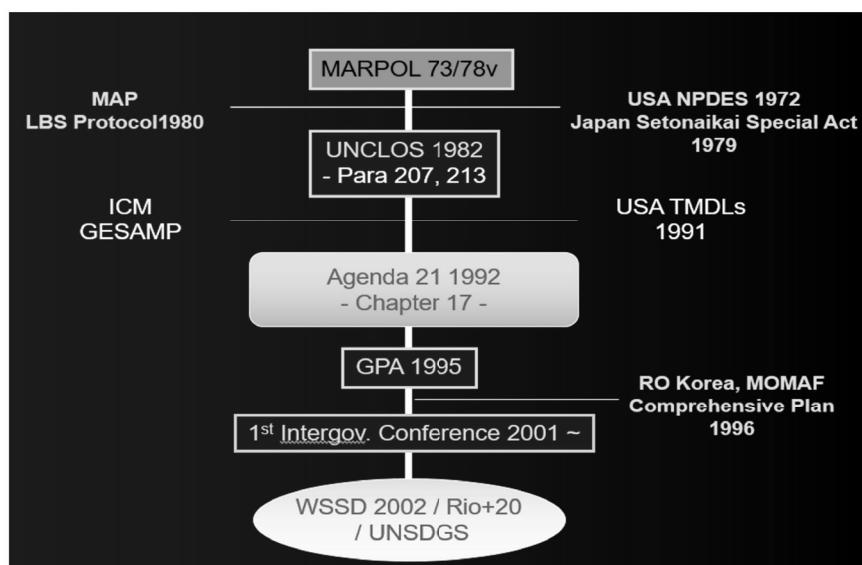
2017년 7월 둘째 주까지 아무 일도 일어나지 않았다.



- 비전, 목표, 우선순위 및 활동을 공유하는 해양보호구역 (MPA) 네트워크의 공식화와 시행
- 국가 수준에서 성공 사례를 위한 더욱 일치된 노력; 한국의 증도, 순천만 등
- 지역, 국가, 하위국가 수준의 MPA 네트워크를 설계하는 데 있어서의 공간정보 활용
- MPA 네트워크를 위한 전략적 기획

### 육상활동 관리를 위한 조약

육상활동 관리를 위한 국제 제도의 발전



유엔환경계획 (UNEP) 지역 해양 프로그램을 광역 해양 생태계와 연계



## 국제 해양공간계획 도입

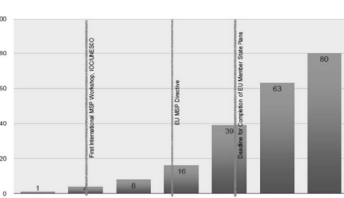
- 40개국 60개 지역의 해양공간계획(MSP), 일부 자료 누락
- 2030년 전 세계 지역의 2/3 가 MSP에 포함됨

Table 1. The Status of Examples of Marine Spatial Planning in 2013.

Country	Region	Planning Status	Country	Region	Planning Status	Country	Region	Planning Status
Belgium	North Sea EEZ	Approved/Implemented	Norway	Barents Sea	Approved/Implemented	Cambodia	Territorial Sea	Underway
Netherlands	North Sea EEZ	Approved/Implemented	Norway	Norwegian Sea	Approved/Implemented	Philippines	Territorial Sea	Underway
Germany	North Sea EEZ	Approved/Implemented	Norway	North Sea	Approved/Implemented	USA	Massachusetts State	Approved/Implemented
Germany	Baltic Sea EEZ	Approved/Implemented	Portugal	Continental EEZ	Underway	USA	Rhode Island State	Approved/Implemented
Germany	Mecklenburg-Vorpommern Land	Approved/Implemented	Denmark	Baltic Sea/North Sea	Underway	USA	Oregon State	Approved
Germany	Schleswig-Holstein Land	Approved/Implemented	Israel	EEZ/Territorial Sea	Underway	USA	Washington State	Underway
Germany	Lower Saxony Land	Approved/Implemented	United Arab Emirates	Abu Dhabi Emirate Waters	Underway	USA	Northeast Region	Underway
England	East Planning Regions	Completed/Approved	Australia	Southeast Bioregion	Completed, under revision	USA	Midwest Region	Underway
England	South Planning Regions	Underway	Australia	Southwest Bioregion	Completed, under revision			
Scotland	EEZ	Underway						
Scotland	EEZ	Underway						
Wales	EEZ	Underway						
North Ireland	EEZ	Underway						
Ireland	EEZ	Underway						
Poland	Baltic Sea	Underway						
Lithuania	Baltic Sea	Completed						
Estonia	Baltic Sea	Underway						
Latvia	Baltic Sea	Pilot MSP Completed						
Finland	Baltic Sea	Underway						
Sweden	Baltic Sea/North Sea	Underway						

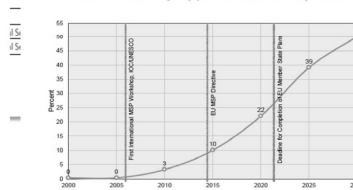
• 초국가적인 MSP 태스크 포스 조직  
 • 초국가적인 MSP 가이드라인 마련  
 • 황해 해양공간계획 형성 → 도전적 안전한 생태계 기반 계획

Estimated Cumulative Number of Countries Engaged in Marine Spatial Planning



Note: About 150 countries have marine waters

Percent of Surface Area of World's Exclusive Economic Zones Covered by Approved Marine Spatial Plans



Note: Surface Area of the World's EEZs is 1140 million km²

경청해주셔서 감사합니다.

발제문

**Yellow Sea Large Marine Ecosystem Project**  
**A Collaborative Vehicle for sustainable**  
**marine ecosystem and living resources**

Jung-ho Nam  
Research Fellow, Korea Maritime Institute

***Yellow Sea Large Marine Ecosystem Project***  
***A Collaborative Vehicle for sustainable marine***  
***ecosystem and living resources***

*November 2, 2017*  
*GOMA, Gongju, Chugcheongnam-do*  
*3rd Pan-Yellow Sea Forum*

**Jungho Nam**



**한국해양수산개발원**  
KOREA MARITIME INSTITUTE

## ***Communication Outline***

**Yellow Sea is heading for Sustainability?**

**YSLME, Transboundary Cooperation Mechanism**

**Future Tasks for Sustainable Yellow Sea and People's Well-being**

**Yellow Sea is heading for  
Sustainability?**

## Early 2000s

Figure 8. Frequency of Intense Algal Blooms.

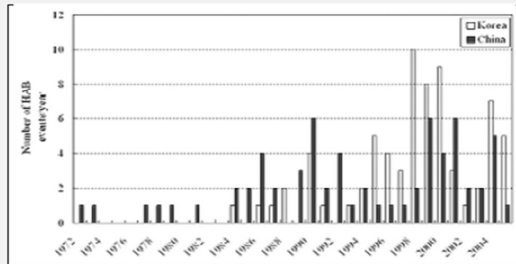


Figure 9. Capture Fisheries Landings in China and Korea in Relation to Global (tonnes).

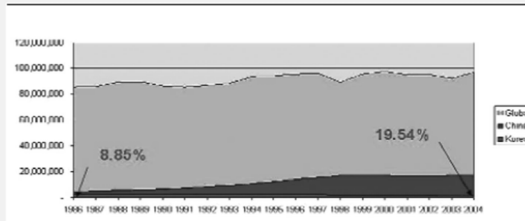


Figure 10. Annual Japanese anchovy biomass (bars) and Chinese landings (line).

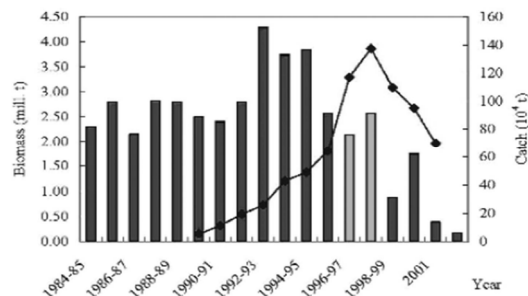
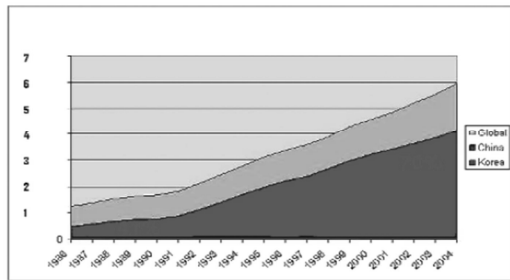
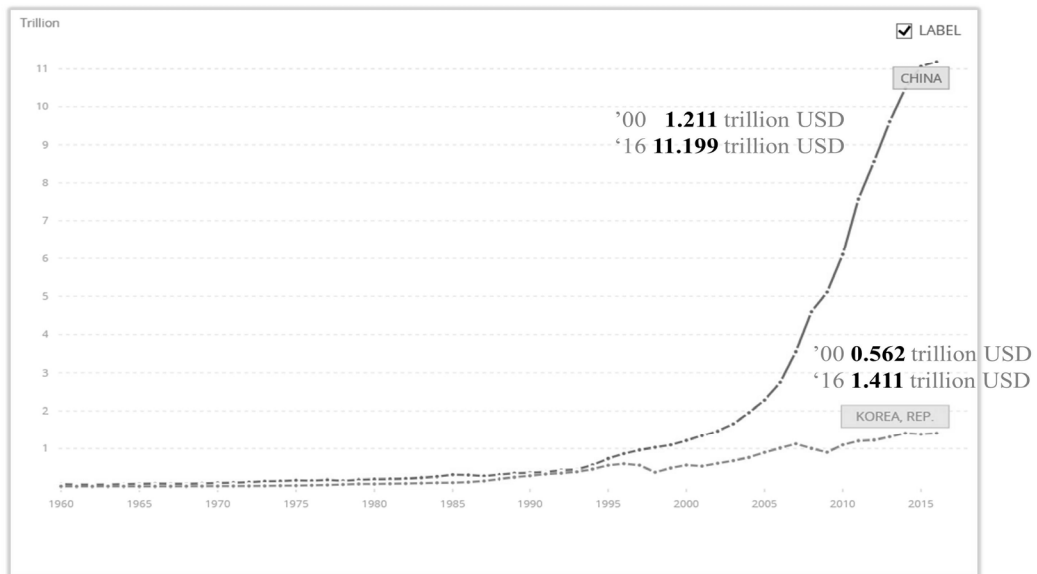


Figure 13. Growth of Combined Mariculture and Aquaculture Production in China and Korea in Comparison with Global (Millions of tonnes).



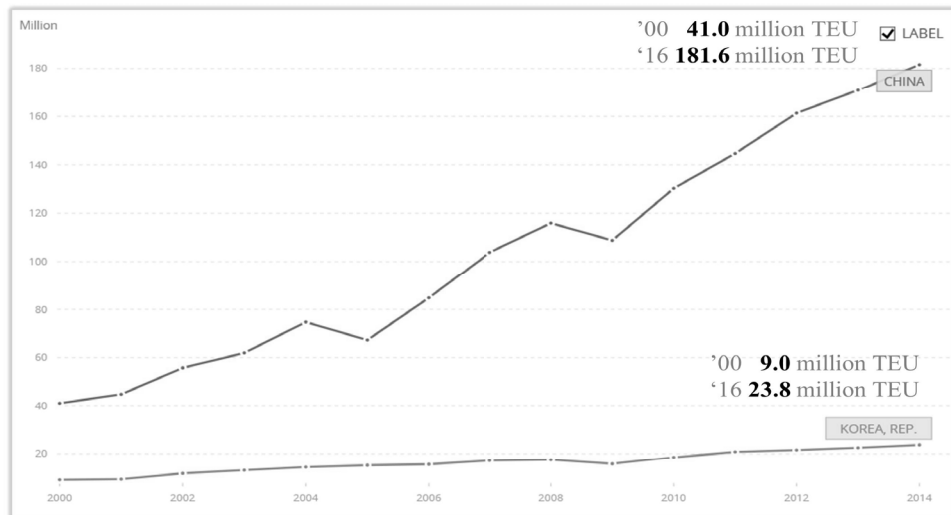
(UNDP/GEF, 2007)

## Rapidly increasing socioeconomic activities and pressure since mid 2000s



<https://data.worldbank.org/country/china?view=chart>

### Container Traffic



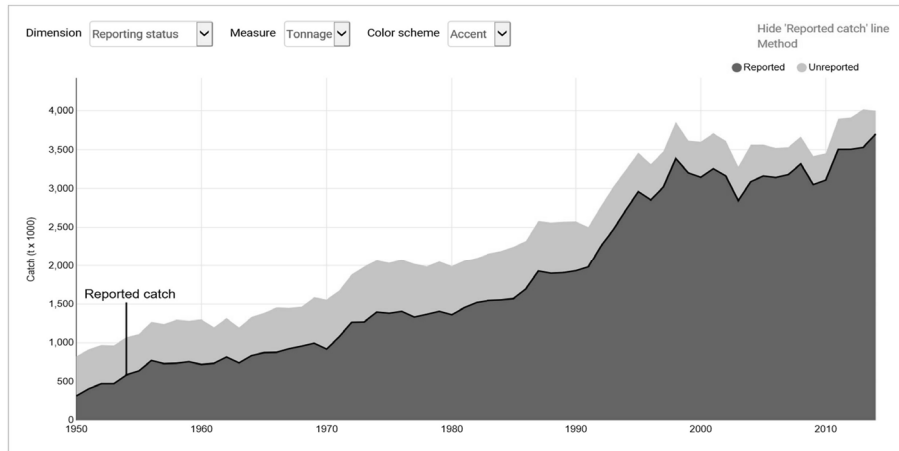
<https://data.worldbank.org/indicator/IS.SHP.GOOD.TU?locations=CN>

### Vessel Traffic Density



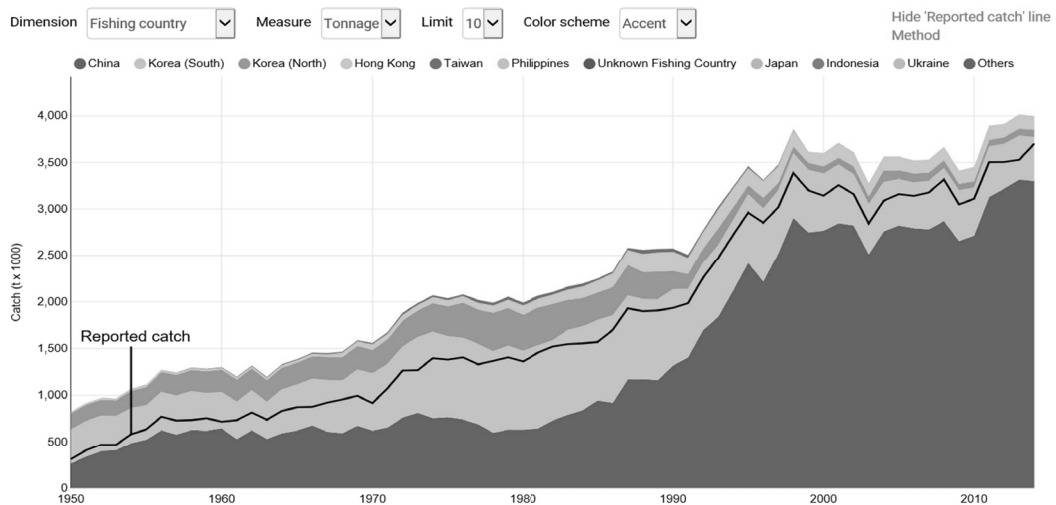


## Fishery Catch in Yellow Sea



**Note:** The data we present ('reconstructed data') combine official reported data and reconstructed estimates of unreported data (including major discards), with reference to individual EEZs. Official reported data are mainly extracted from the Food and Agriculture Organization of the United Nations (FAO) FishStat database. The 'Reported catch' line overlaid on the catch graph represent all catches deemed reported (including foreign) and allocated to this spatial entity. For background information on the reconstruction data, download the .pdf file for the specific EEZ(s) and also examine our methods for data and spatial allocation.

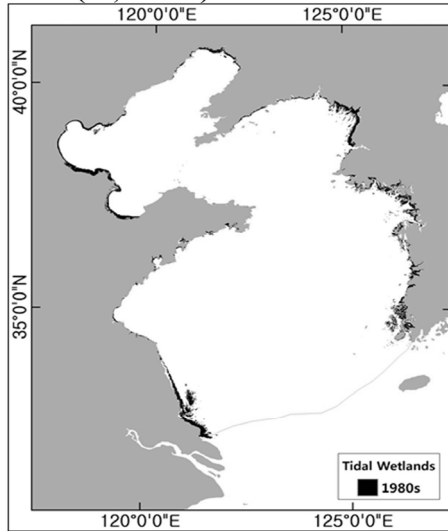
[www.seaaroundus.org](http://www.seaaroundus.org)



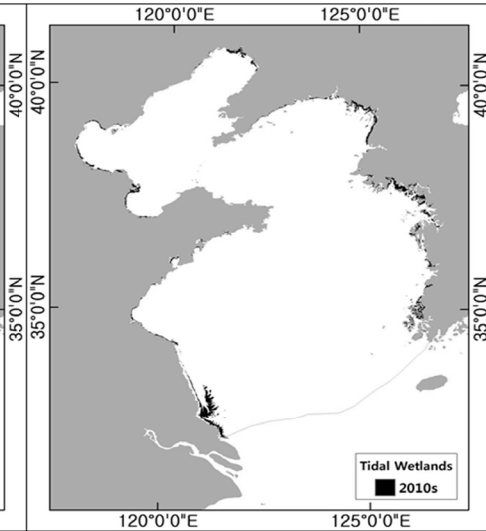
[www.seaaroundus.org](http://www.seaaroundus.org)

### Coastal Habitat Loss : Tidal Wetlands in Yellow Sea

1980s (10,191 km<sup>2</sup>)



2010s (6,525 km<sup>2</sup>)

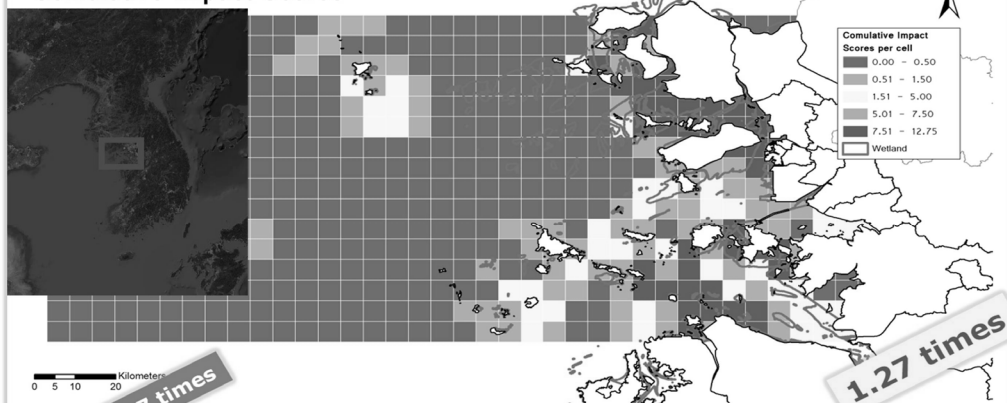


(Khim & Nam et al, in submission)

### Increasing Cumulative Impacts

(Nam & Choi, 2017)

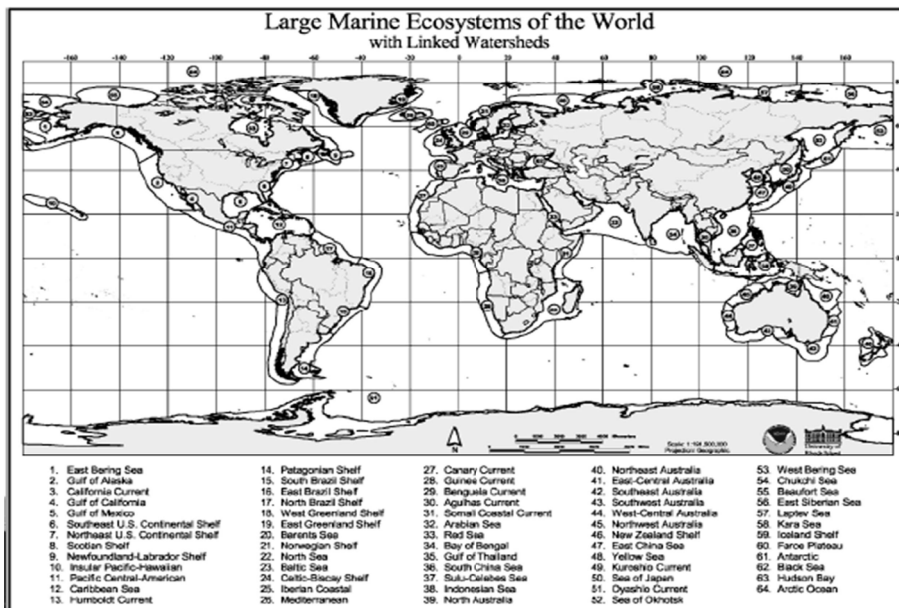
#### Cumulative Impact Scores



	Population	Fish catch	Mariculture	Shipping & Transport	Artificial coastline	Spatial uses	Sand extraction	Total
2005	2,848,711	21,326	1,714	42,463	344	85	4,924	
Cumulative impact score	101	101	<b>71</b>	82	302	<b>2</b>	<b>160</b>	<b>821</b>
2015	3,057,325	21,352	4,078	37,560	374	379	7,010	
Cumulative impact score	108	101	<b>170</b>	73	<b>329</b>	<b>11</b>	<b>248</b>	<b>1,040</b>

# YSLME, Transboundary Cooperation Mechanism

## *Global Map of Large Marine Ecosystems (64)*



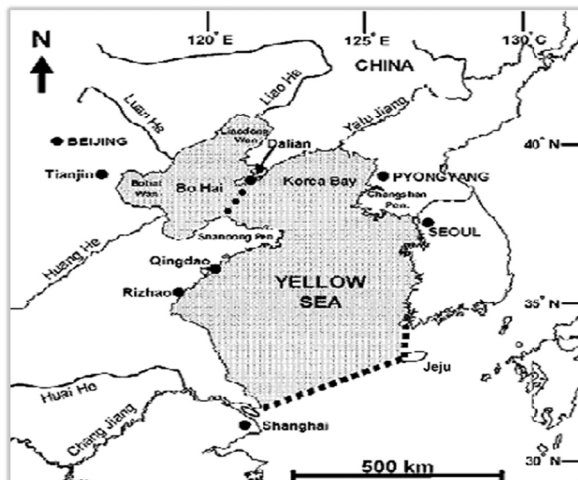
### ***Brief outline of YSLME Project Evolution***



### ***Overview of YSLME Project***

Objective is to achieve

***Ecosystem-based, environmentally-sustainable management and use of the YSLME and its watershed by reducing development stress and promoting sustainable exploitation of the ecosystem from a densely populated, heavily urbanized, and industrialized semi-enclosed shelf sea***



- Area 404,000 km<sup>2</sup>, 1000 km long, 700 km wide(max.)
- Population: more than 600 million
- Large riverine inputs : 1.6 bil. Tons of sediments / year
- High fishing pressures
- Rapidly economic growth
- Coastal habitat modification

(UNDP/GEF, 2007; Shin, 2012)

***Works for YSLME TDA, based on primary issues***

Primary Issues at a proposal stage	
<ul style="list-style-type: none"> <li>• <b>Fisheries &amp; Mariculture</b></li> <li>• <b>Biodiversity</b></li> <li>• <b>Water Quality &amp; Human Health</b></li> <li>• <i>Institutional development and Capacity building</i></li> </ul>	
Objective	Component
I Develop Regional Strategies for Sustainable Management of Fisheries and Mariculture	A. Stock Assessment
	B. Carrying Capacity in Fisheries and Mariculture
	C. Mariculture Production
	D. Disease in Mariculture
	E. Regional Fisheries Agreements and National Laws
	F. Fisheries Management Plan
II Propose and Implement Effective Regional Initiatives for Biodiversity Protection	A. Habitat Conservation
	B. Vulnerable Species
	C. Genetic Diversity
	D. Introduced Species
	E. Biodiversity Regulations
	F. Regional Biodiversity Assessment & Regional Biodiversity Action Plan
III Propose and Implement Actions to Reduce Stress to the Ecosystem, Improve Water Quality and Protect Human Health	A. Stressors to Ecosystem
	B. Carrying Capacity of Ecosystem
	C. Contaminant Inputs
	D. Contaminant Levels
	E. Harmful Algal Blooms and Emerging Disease
	F. Hot Spot Analysis
	G. Emergency Planning and Preparedness
	H. Legal and Regulatory
	I. Fate and Transport Analysis to Facilitate SAP Analysis

**Regional WGs on**

- **Fisheries**
- **Biodiversity**
- **Ecosystem**
- **Pollution**
- **Investment**

(UNDP/GEF, 2007)

***SAP based on YSLME TDA (11 Targets and 32 actions)***

**Re-identification of Issues on SAP**

- **Pollution and Contamination**
- **Eutrophication**
- **Harmful Algal Blooms**
- **Fishing Effort Exceeding Ecosystem Carrying Capacity**
- Mariculture Facing Unsustainable Problems
- Habitat Loss and Degradation
- Changes in Ecosystem Structure
- Jellyfish Blooms
- Climate Change-related issues

(UNDP/GEF, 2009)

## SAP based on YSLME TDA (11 Targets and 32 actions)

### Provisioning Services

#### Target 1: 25-30% reduction in fishing effort

- Action 1-1: Control fishing boat numbers
- Action 1-2: Stop fishing in certain areas/seasons
- Action 1-3: Monitor and assess stock fluctuations

#### Target 2: Rebuilding of over-exploited marine living resource

- Action 2-1: Increase mesh size
- Action 2-2: Enhance stocks
- Action 2-3: Improve fisheries management

#### Target 3: Improvement of mariculture techniques to reduce environmental stress

- Action 3-1: Develop environment-friendly mariculture methods and technology
- Action 3-2: Reduce nutrient discharge
- Action 3-3: Control diseases effectively

### Regulating Services

#### Target 4: Meeting international requirements on contaminants

- Action 4-1: Conduct intensive monitoring and assessment
- Action 4-2: Control contaminants discharge with reference to Codex alimentarius and Stockholm Convention
- Action 4-3: Implementing MARPOL 1973/78 effectively

#### Target 5: Reduction of total loading of nutrients from 2006 levels

- Action 5-1: Control total loading from point sources
- Action 5-2: Control total loading from non-point sources and sea-based sources
- Action 5-3: Apply new approaches for nutrient treatment

Box 1: Regional targets and technical actions proposed by the YSLME SAP	
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Cultural Services	
Target 6: Reduced standing stock of marine litter from current level	<ul style="list-style-type: none"> <li>• Action 6-1: Control source of litter and solid wastes</li> <li>• Action 6-2: Improve removal of marine litter</li> <li>• Action 6-3: Increase public awareness of marine litter</li> </ul>
Target 7: Reduce contaminants, particularly in bathing beaches and other marine recreational waters	<ul style="list-style-type: none"> <li>• Action 7-1: Conduct regular monitoring, assessment and information dissemination particularly in bathing beaches and other recreational waters</li> <li>• Action 7-2: Control pollution in bathing beaches and other marine recreational waters</li> </ul>
Supporting Services	
Target 8: Better understanding and prediction of ecosystem changes for adaptive management	<ul style="list-style-type: none"> <li>• Action 8-1: Assess and monitor the impacts of N/P/Si ratio change</li> <li>• Action 8-2: Assess and monitor the impacts of climate change</li> <li>• Action 8-3: Forecast ecosystem changes in the long-term scale</li> <li>• Action 8-4: Monitor the transboundary impact of jellyfish blooms</li> <li>• Action 8-5: Monitor HAB occurrences</li> </ul>
Target 9: Maintenance and improvement of current populations/distributions and genetic diversity including endangered and endemic species	<ul style="list-style-type: none"> <li>• Action 9-1: Establish and implement regional conservation plan to preserve biodiversity</li> </ul>
Target 10: Maintenance of habitats according to standards and regulations of 2007	<ul style="list-style-type: none"> <li>• Action 10-1: Develop regional guidelines for coastal habitat management</li> <li>• Action 10-2: Establish network of MPAs</li> <li>• Action 10-3: Control new coastal reclamation</li> <li>• Action 10-4: Promote public awareness of the benefits of biodiversity conservation</li> </ul>
Target 11: Reduction of the risk of introduced species	<ul style="list-style-type: none"> <li>• Action 11-1: Control and monitor ballast water discharge</li> <li>• Action 11-2: Introduce precautionary approach and strict control of introduction of non-native species</li> </ul>

## SAP based on YSLME TDA (11 Targets and 32 actions)

### Cultural Services

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#### Target 11: Reduction of the risk of introduced species

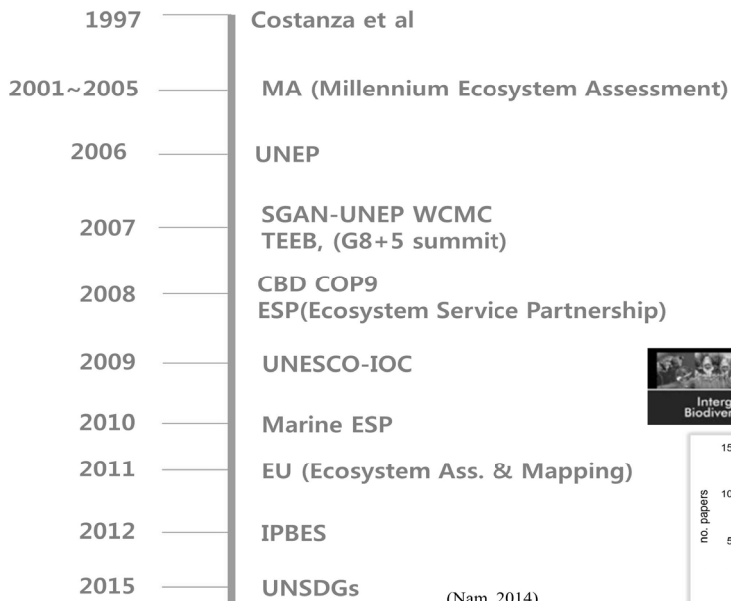
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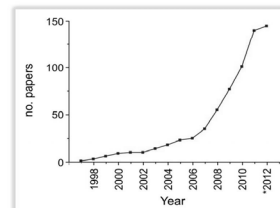
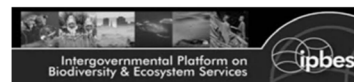
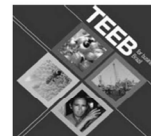
# Future Tasks for Sustainable Yellow Sea and People's Well-being

## Assessing Marine Ecosystem Services

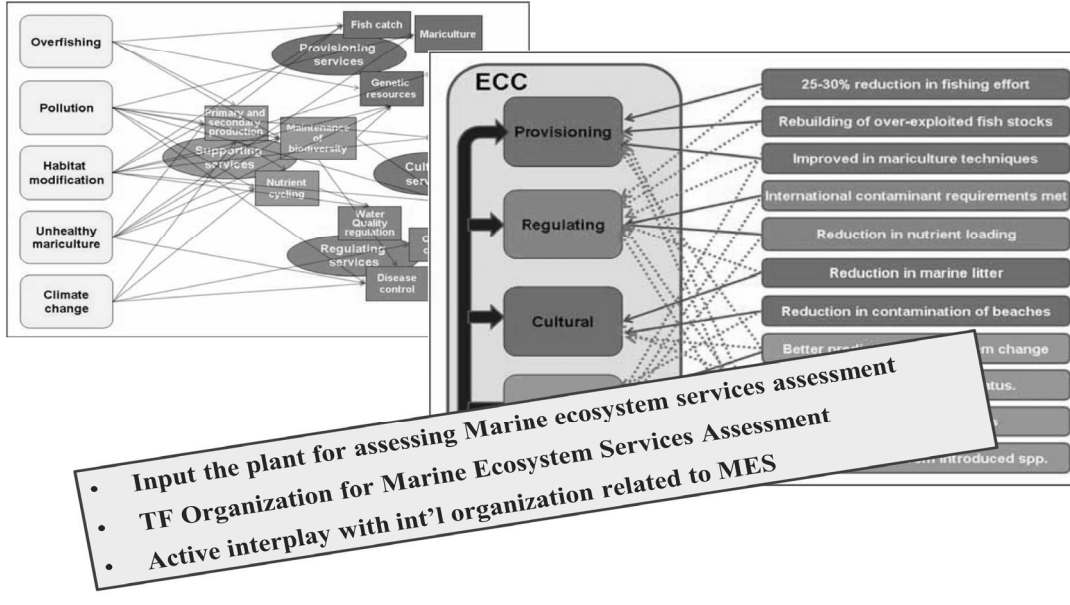
### *Mainstream Ecosystem Services into YSLME*



(Nam, 2014)



YSLME has already conceptualized incorporation of marine ecosystem services concept into YSLME, but workable plan to assess MES for Yellow Sea ecosystem



## Re-building MPA networks

### MEMORANDUM OF UNDERSTANDING (MOU) BETWEEN UNDP/GEF PROJECT ON "REDUCING ENVIRONMENTAL STRESS IN THE YELLOW SEA LARGE MARINE ECOSYSTEM"

AND  
KOREA MARITIME INSTITUTE

#### ON CO-OPERATION IN PROMOTING CONSERVATION AND SUSTAINABLE USE OF MARINE AND COASTAL ENVIRONMENT IN THE YELLOW SEA

Following the exchanging of project information and discussing potential areas and mechanisms for co-operation in promoting protection of marine and coastal environment in the Yellow Sea, the UNDP/GEF Project "Reducing Environmental Stress in the Yellow Sea Large Marine Ecosystem" (YSLME) and Korea Maritime Institute (KMI),

#### Recognising:

The Global Environment Facility, through the United Nations Development Programme as implementing agency, is supporting the Project, "Reduce Environmental Stress in the Yellow Sea Large Marine Ecosystem";

The long-term objective of the YSLME aims at: Ecosystem-based, environmentally-sustainable management and use of the YSLME and its watershed by reducing development stress and promoting sustainable exploitation of the ecosystem from a densely populated, heavily urbanized, and industrialized semi-enclosed shelf sea;

The Medium-term objectives of the YSLME are:

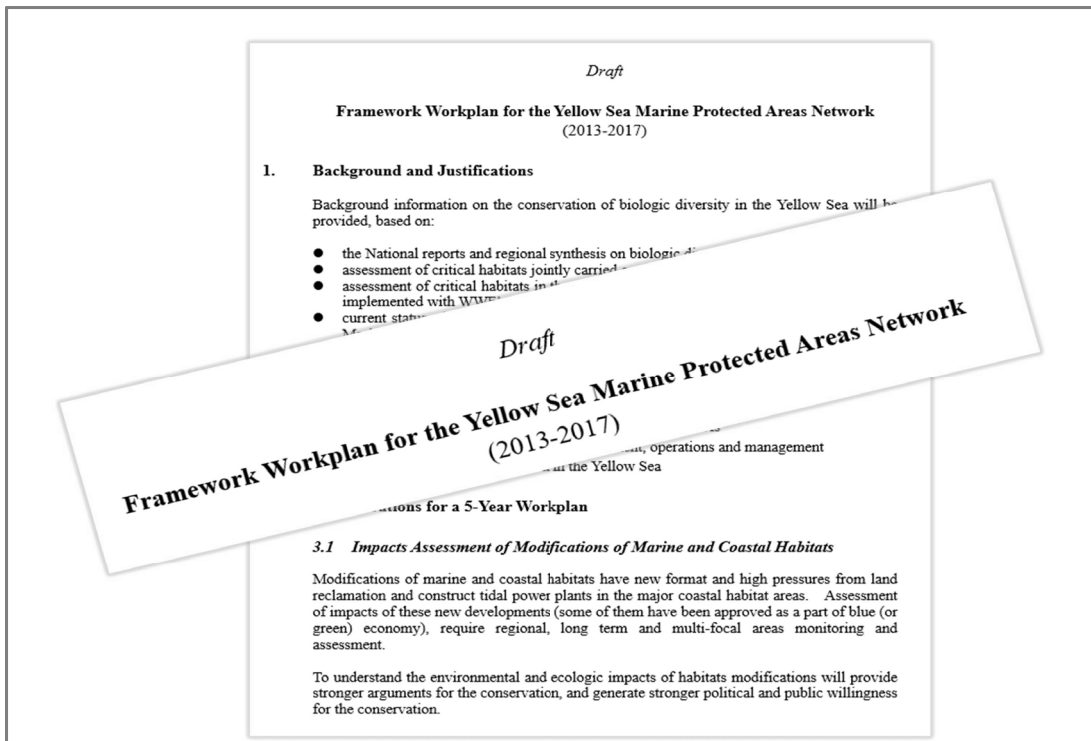
- Enhancing national capacities in protection of marine environment and sustainable use of marine and coastal resources;
- Strengthening regional co-operation in marine environment protection and management through establishment of regional mechanisms established in the Yellow Sea, and co-operative spirit enhanced by the project; and
- Facilitating cross-sector co-operation and co-ordination of relevant national institutions dealing with marine environmental management.

#### Also Recognising:

KMI is a government-affiliated research institute under the Prime Minister's Office of the Republic of Korea, focusing on developing national marine policies on marine affairs and fisheries. Major functions of KMI are as follows:







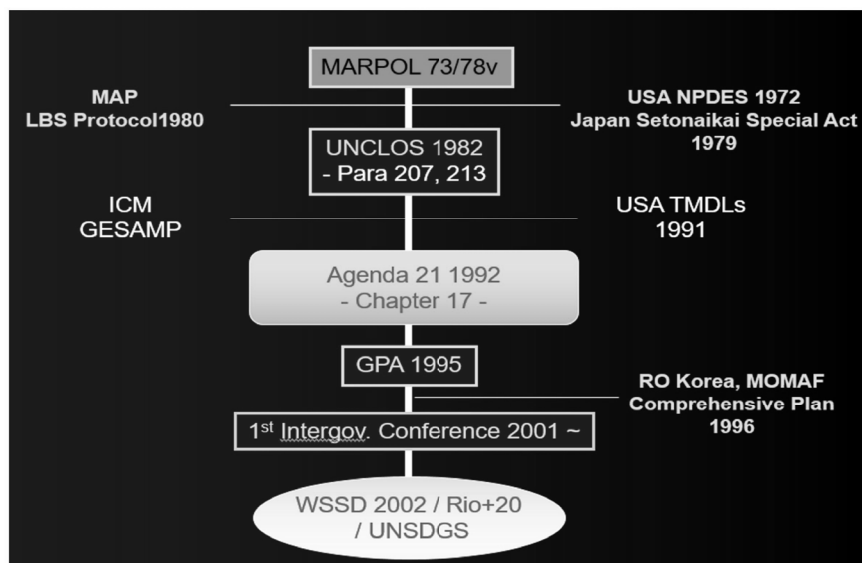
Nothing Has Happened before the 2nd Week of July, 2017



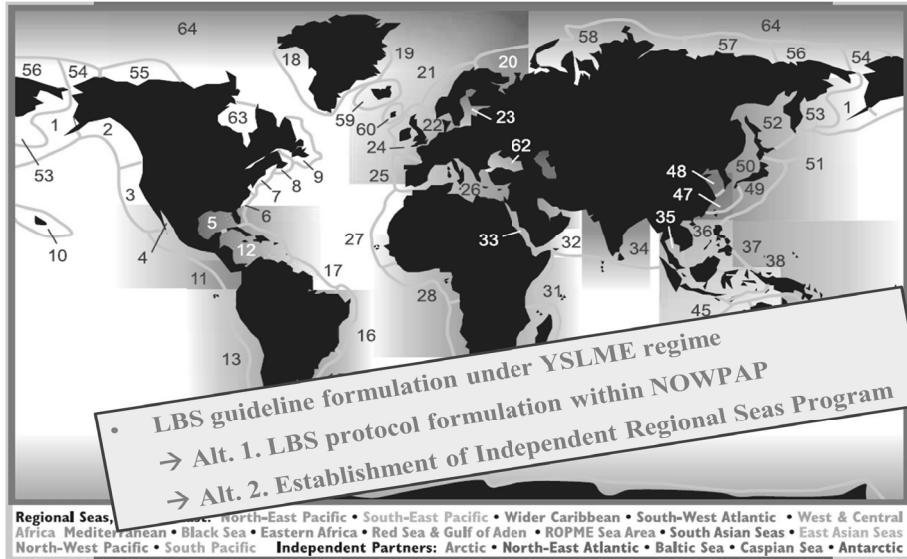
- Formulation and Implementation of Work Plan for MPA Networking with common vision, goals, priority and activities
- More concerted efforts for Successful Cases at national level; Jeung-do, Suncheon Bay etc in Korea
- Spatial Information Application in Designing MPA Network at Regional, National or Sub-nation Levels
- Strategic planning for MPA Network

### Convention for Land-based Activities Management

Evolution of Global Regime for Land-based Activities Control



## Linking UNEP Regional Seas Program with Large Marine Ecosystems



## Introduction of Transboundary Marine Spatial Planning

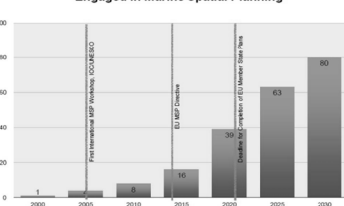
- MSP in 60 areas of 40 countries, some data are missing
- 2/3 of global areas under MSP in 2030

Table 1. The Status of Examples of Marine Spatial Planning in 2013.

Country	Region	Planning Status	Country	Region	Planning Status	Country	Region	Planning Status
Belgium	North Sea EEZ	Approved/Implemented	Norway	Barents Sea	Approved/Implemented	Cambodia	Territorial Sea	Underway
Netherlands	North Sea EEZ	Approved/Implemented	Norway	Norwegian Sea	Approved/Implemented	Philippines	Territorial Sea	Underway
Germany	North Sea EEZ	Approved/Implemented	Norway	North Sea	Approved/Implemented	USA	Massachusetts State	Approved/Implemented
Germany	Baltic Sea EEZ	Approved/Implemented	Portugal	Continental EEZ	Underway	USA	Rhode Island State	Approved/Implemented
Germany	Mecklenburg-Vorpommern Land	Approved/Implemented	Denmark	Baltic Sea/North Sea	Underway	USA	Oregon State	Approved
Germany	Schleswig-Holstein Land	Approved/Implemented	Israel	EEZ/Territorial Sea	Underway	USA	Washington State	Underway
Germany	Lower Saxony Land	Approved/Implemented	United Arab Emirates	Abu Dhabi Emirate Waters	Underway	USA	Northwest State	Underway
England	East Planning Regions	Completed/Approved	Australia	Southeast BioRegion	Completed			
England	South Planning Regions	Underway						
Scotland								
Wales								
North Ireland								
Ireland								
Lithuania								
Estonia								
Latvia								
Finland								
Sweden								

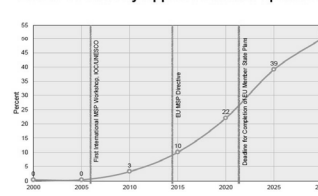
- Organization of Transboundary MSP Task Force
- Preparation of Transboundary MSP Guideline
- Formulation of Yellow Sea Marine Spatial Plan → ES-based Planning as a Challenging Agenda

Estimated Cumulative Number of Countries Engaged in Marine Spatial Planning



Note: About 150 countries have marine waters

Percent of Surface Area of World's Exclusive Economic Zones Covered by Approved Marine Spatial Plans



Note: Surface Area of the World's EEZs is 1140 million km<sup>2</sup>

*Thank you for your attention*