Development of Marine Spatial Planning in Ro Korea

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Presentation Outline

Overview on
Evolution of Coastal and Marine Spatial Management

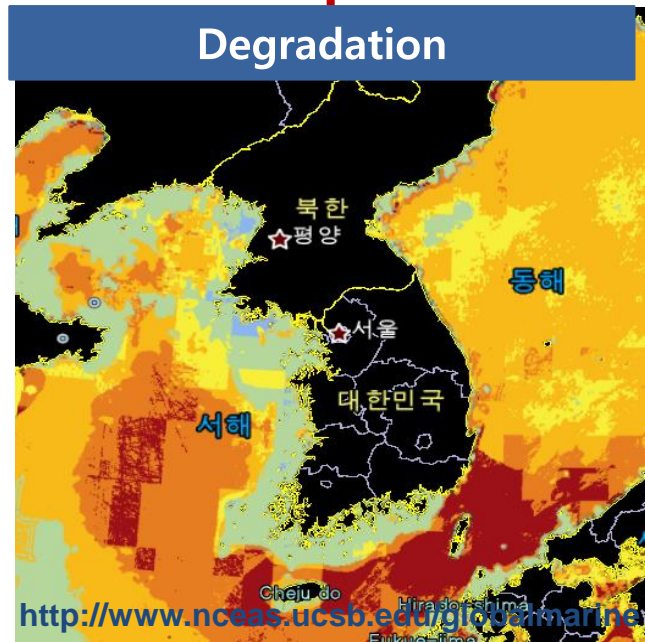*Practical Application* of
MSP & Ocean Zoning

Challenges & Recommendations for
Moving forward with ecosystem–based planning

Overview on

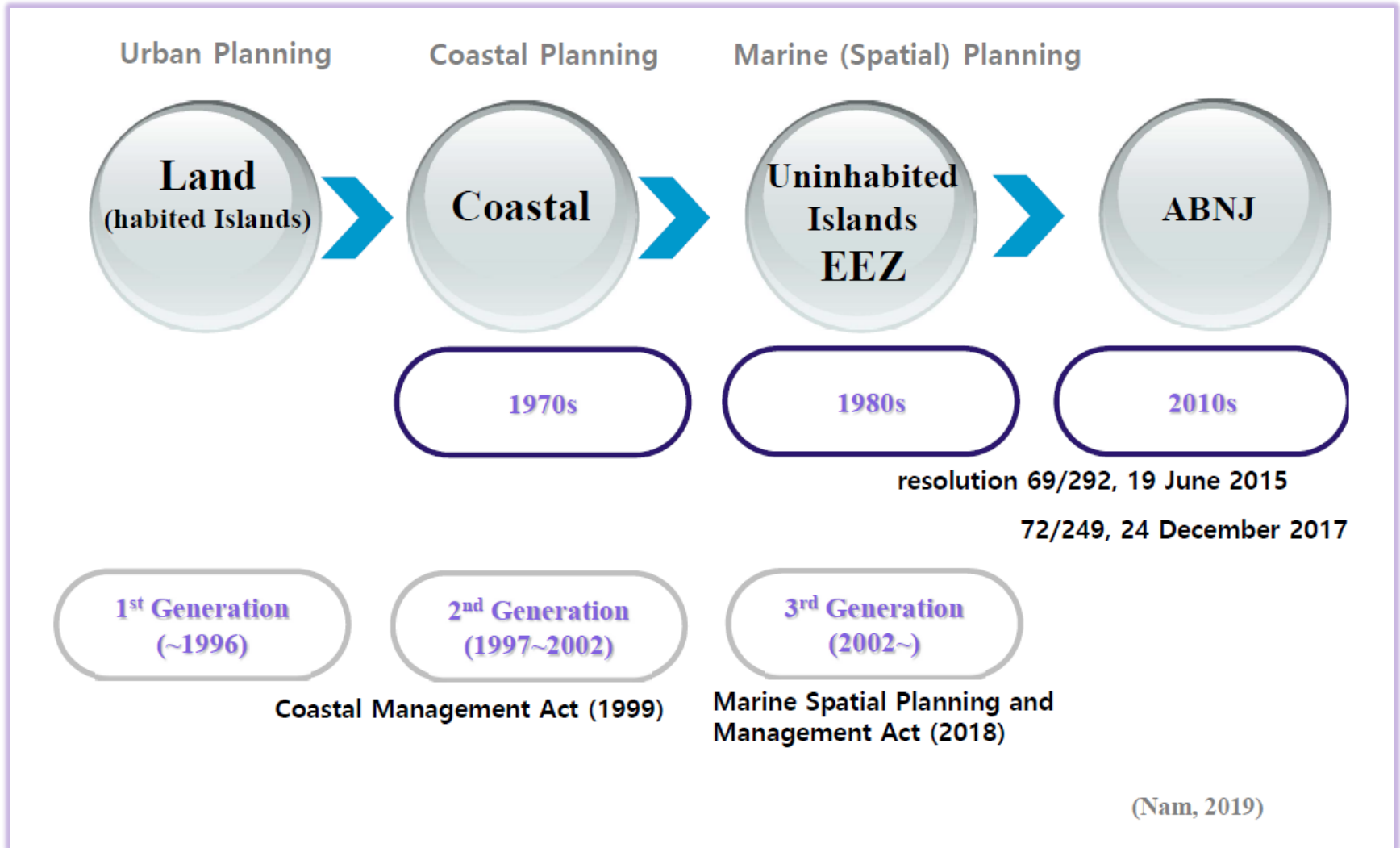## *Evolution of Coastal and Marine Spatial Management*

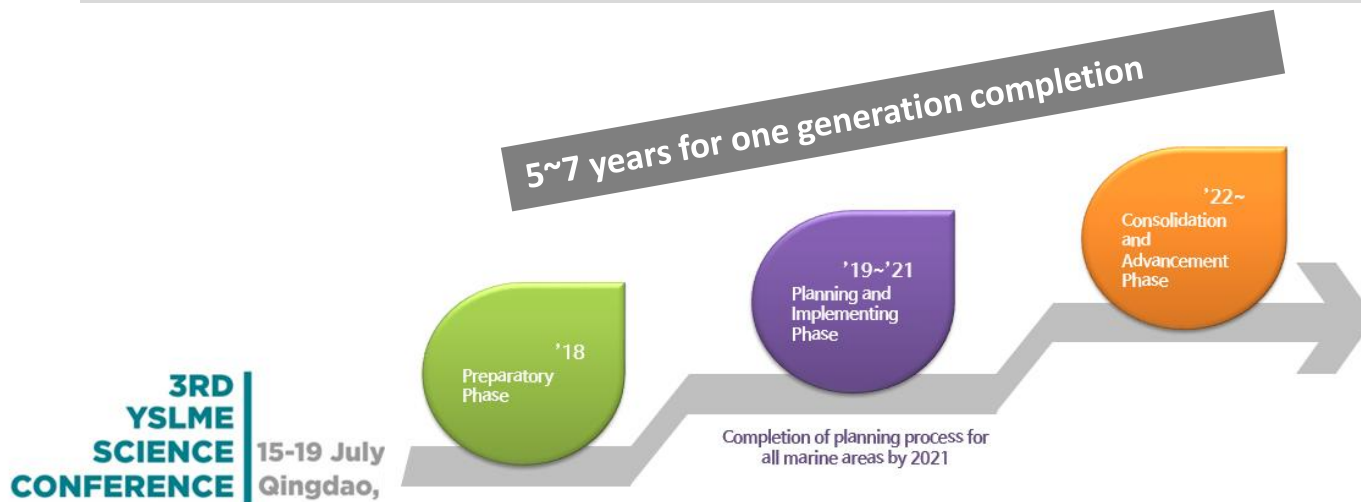# Background

Changing Ocean Uses : Bigger, Deeper, Multiple

Degradation	Conflict

http://www.nceas.ucsb.edu/globalmarine

What is a way to manage the marine spaces in Korea?

MSP as Evolution of ICM

Urban Planning — Coastal Planning — Marine (Spatial) Planning

Land (habited Islands) → Coastal → Uninhabited Islands EEZ → ABNJ

1970s — 1980s — 2010s

resolution 69/292, 19 June 2015
72/249, 24 December 2017

1st Generation (~1996) — 2nd Generation (1997~2002) — 3rd Generation (2002~)

Coastal Management Act (1999)

Marine Spatial Planning and Management Act (2018)
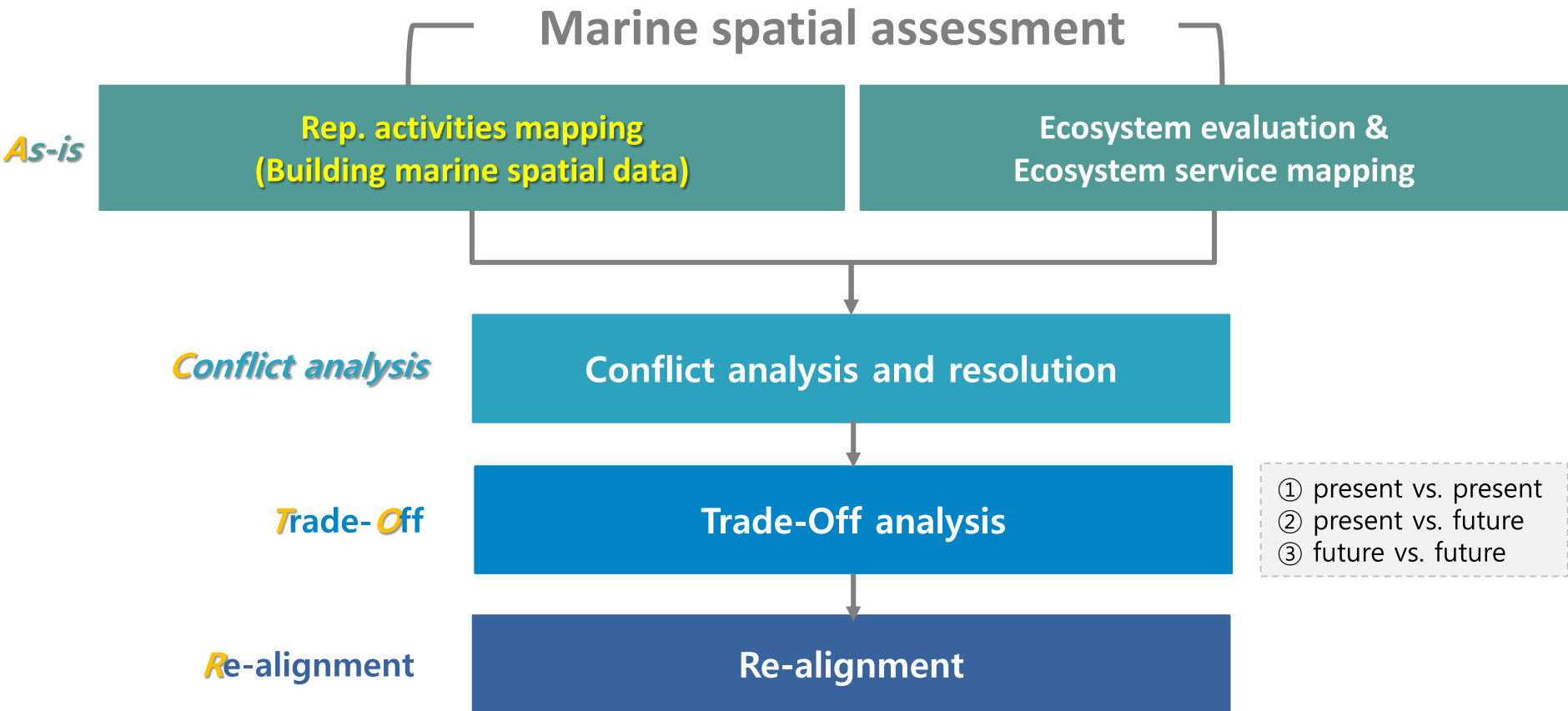
(Nam, 2019)

Brief Outline of MSP Establishment

2015 — **Adoption of re-arrangement policy and organization** of experts and core stakeholders forum, for incorporation of the MSP issue into institutional discourse

2015~ 2017 — **Team building** : MOF (Marine Spatial Policy Division), KMI (MSP Research Center), KIOST and other public entities in cooperation with private companies with related technologies, entire planning process led by KMI

Pilot project initiation for successful re-arrangement : 2.5 years

2017 — **Adoption of National Policy Agenda** "Establishment of Integrated Marine Spatial Management System"

2018 — **MSP Planning Roadmap & Preparation of MSP plans** for 2 regional areas

2019 — **Drafting of MSP Strategic Plan**, 10-year long-term policy direction

Drafting of MSP Local Plans for four regional areas

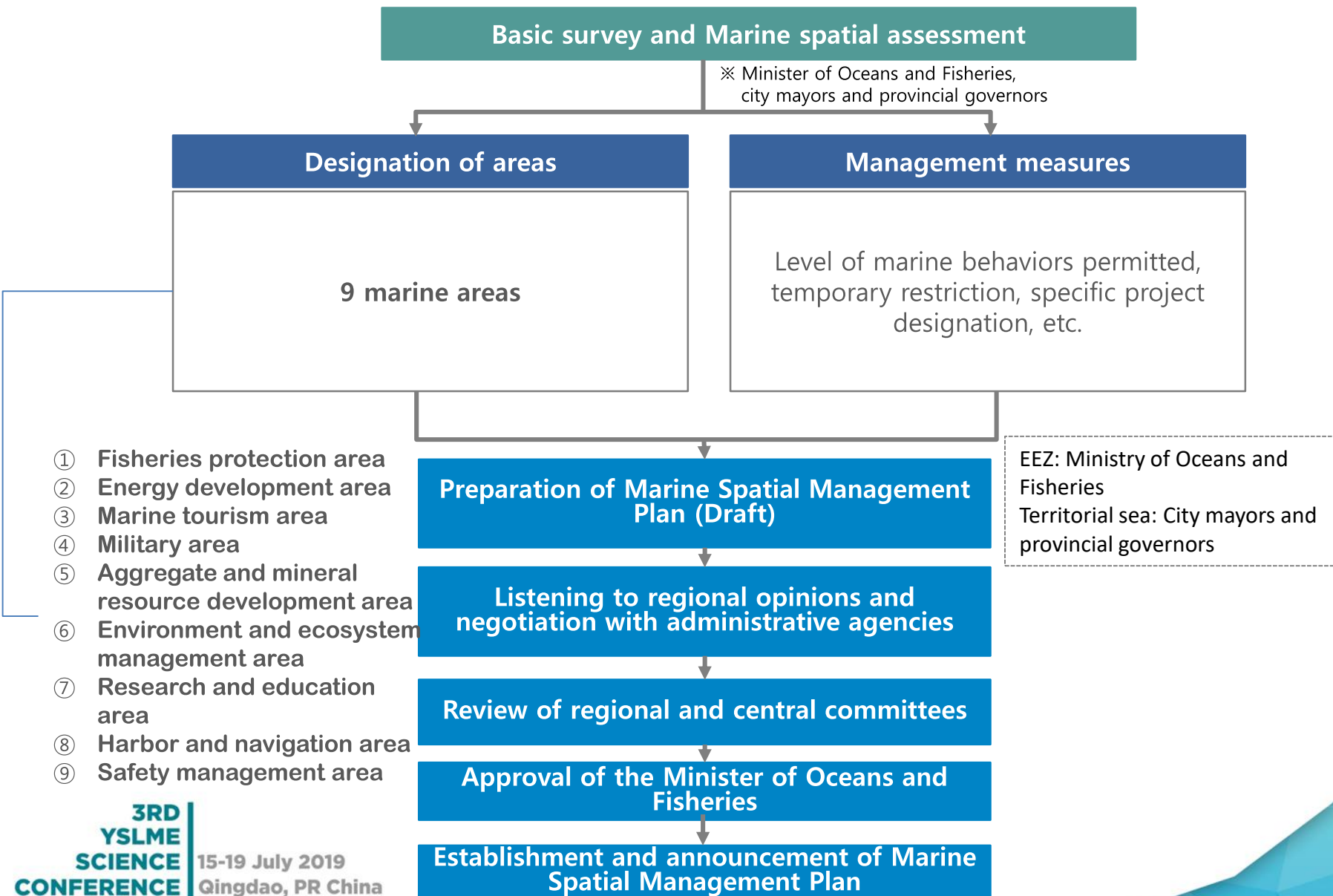5~7 years for one generation completion

'18 Preparatory Phase

'19~'21 Planning and Implementing Phase

'22~ Consolidation and Advancement Phase

Completion of planning process for all marine areas by 2021

3RD YSLME SCIENCE CONFERENCE | 15-19 July Qingdao,

Evidence-based Decision Making : ACTOR

<Operation method of Marine spatial management>

Marine spatial assessment

As-is

| Rep. activities mapping (Building marine spatial data) | Ecosystem evaluation & Ecosystem service mapping |

Conflict analysis

Conflict analysis and resolution

Trade-Off

Trade-Off analysis

① present vs. present
② present vs. future
③ future vs. future

Re-alignment

Re-alignment

Zoning Scheme of Korea's Marine Spatial Planning

〈Operation of Marine Spatial Management System〉

Basic survey and Marine spatial assessment

※ Minister of Oceans and Fisheries,
city mayors and provincial governors

Designation of areas

9 marine areas

Management measures

Level of marine behaviors permitted, temporary restriction, specific project designation, etc.

① **Fisheries protection area**
② **Energy development area**
③ **Marine tourism area**
④ **Military area**
⑤ **Aggregate and mineral resource development area**
⑥ **Environment and ecosystem management area**
⑦ **Research and education area**
⑧ **Harbor and navigation area**
⑨ **Safety management area**

Preparation of Marine Spatial Management Plan (Draft)

EEZ: Ministry of Oceans and Fisheries
Territorial sea: City mayors and provincial governors

Listening to regional opinions and negotiation with administrative agencies

Review of regional and central committees

Approval of the Minister of Oceans and Fisheries

Establishment and announcement of Marine Spatial Management Plan

Zoning Scheme of Korea's Marine Spatial Planning

① **Fisheries**

② **Mining and extraction**

③ **Energy development**

④ **Marine tourism**

⑤ **Environment and ecosystem management**

⑥ **Research and education**

⑦ **Harbor and navigation**

⑧ **Military activity area**

⑨ **Safety management**

Practical Application of
MSP & Ocean zoning

Setting up of Policy Objectives

Conflicts resolution, Environmental Protection, pollution prevention, Production Increase, Income Increase etc.

Spatial Allocation with Harmonization among Uses

 : ***9 Zones-based*** *Spatial Management*

Marine spatial assessment

1) What is Marine spatial assessment?

» Marine spatial Assessment(assessment of marine spatial characteristics) is a progress of scientifically assessing values of marine development and preservation, selecting core values, and grading them. Ocean Zone(priority area) are designated and changed according to the assessment result.

» Marine spatial Assessment is intended to identify marine space with relatively high environmental, social and cultural interests, in addition to high environmental, social and economic values.

» This method was developed to assess core marine values based on information about marine environment, ecology, resource and use.

「**Act on Marine Spatial Planning and Management** 」 Article 2

⑦ "Marine spatial assessment" refers to assessment for directing and determining sustainable use, development and preservation of marine space.

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2) Method

» Setting of area for each representative activities after deducing representative activities of assessment target

• Selection and creation of information that can show activities, rights, and potential values and future demands for setting of area for each core value
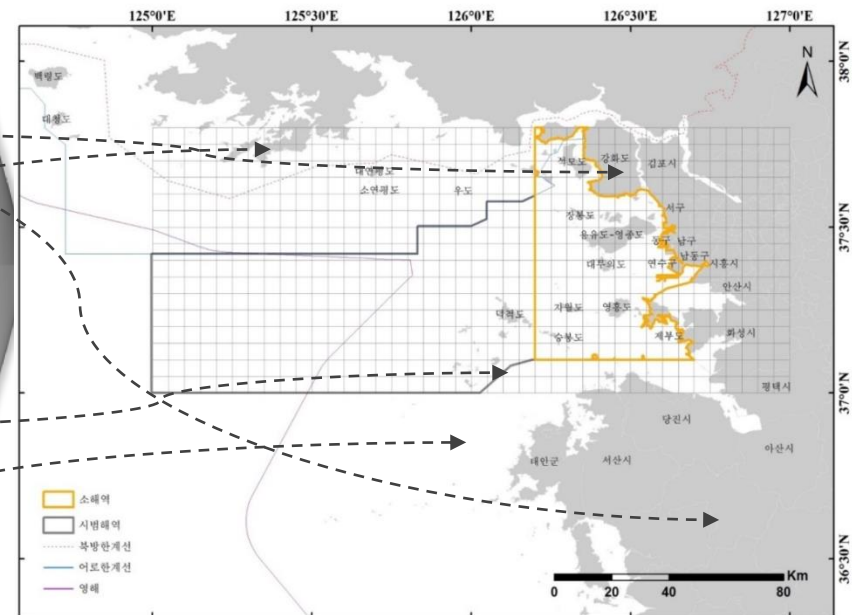
| Basic data survey | → | Selection of assessment items | → | Computation of input standard and input value for each assessment item (standardization) | → | Combination of assessment items for each core value | → | Conflict analysis (overlay) |
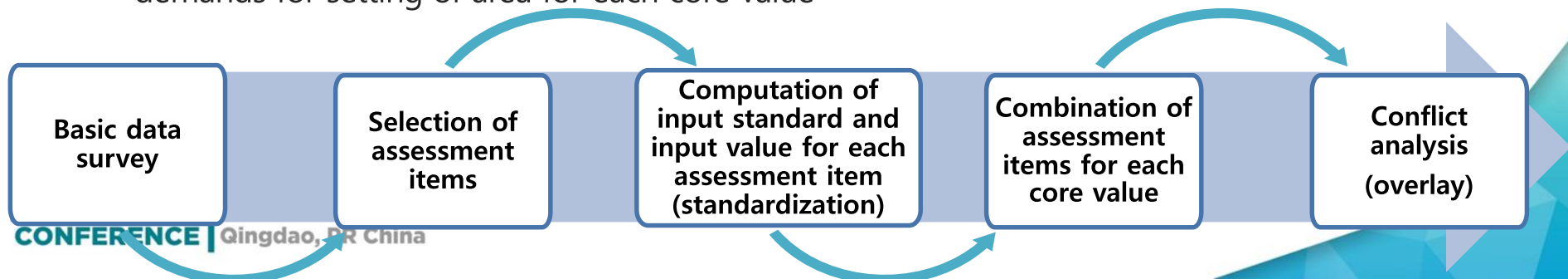
Marine spatial assessment

Identifying and Mapping rep. activities
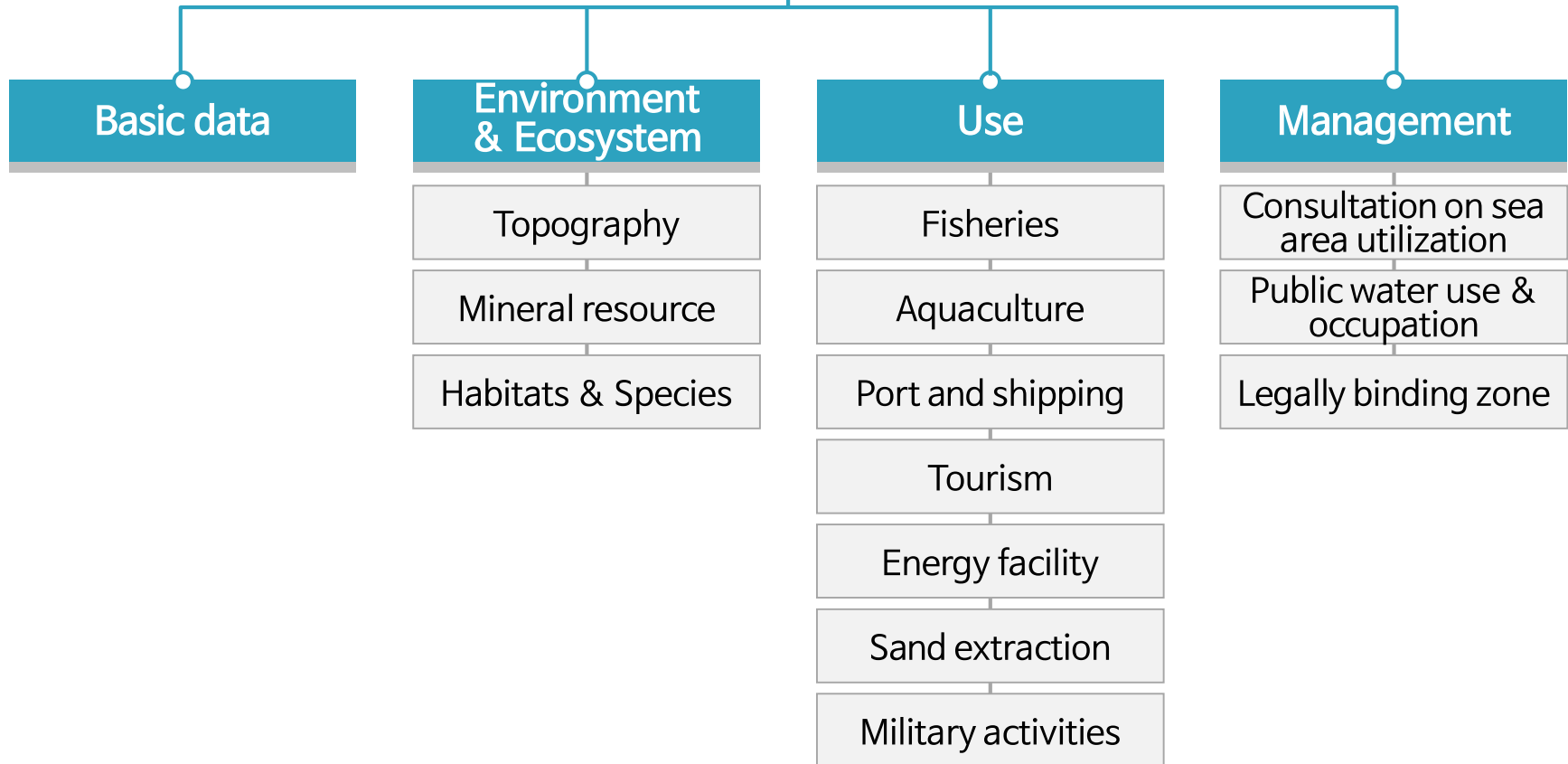

What is rep. activities in Gyeonggi bay?
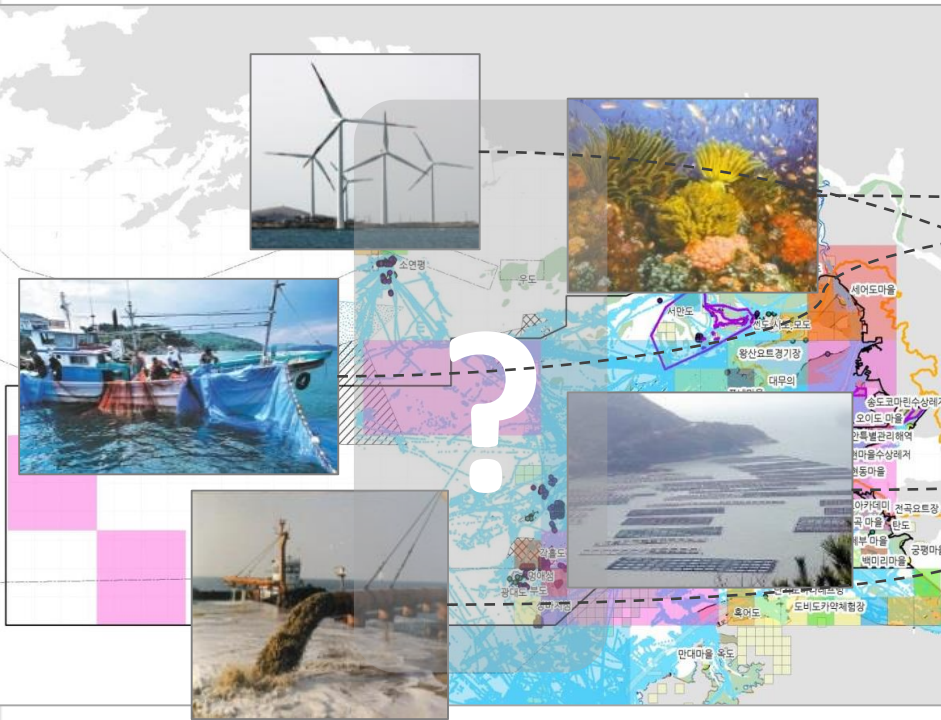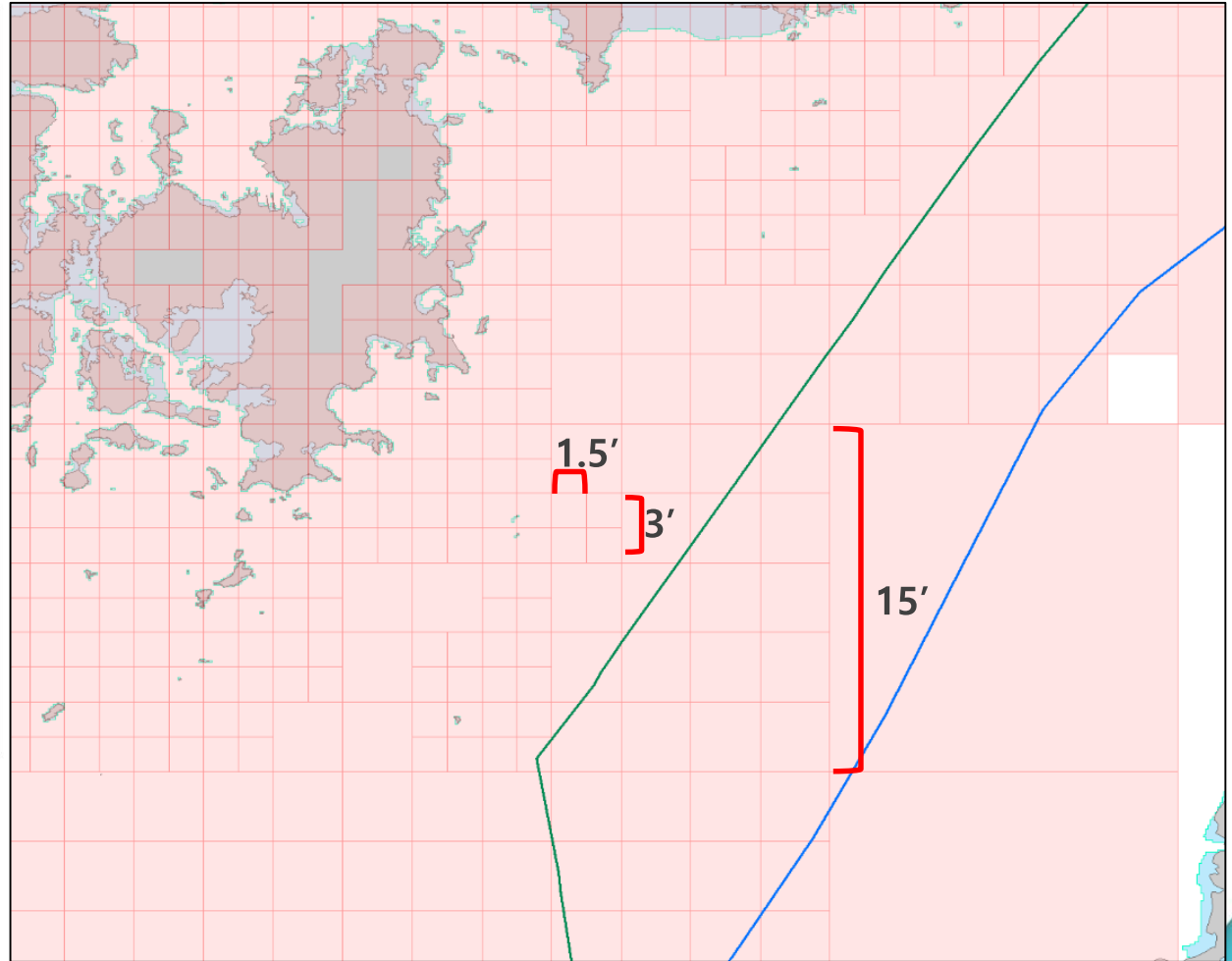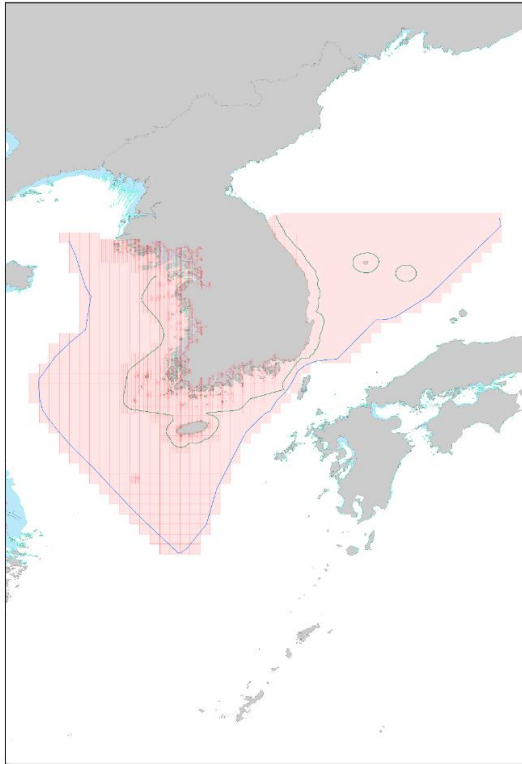
Where is rep. activities in Gyeonggi bay?

Identification of Existing Data & Information

Ocean information Category for MSP

- **Basic data**

- **Environment & Ecosystem**
  - Topography
  - Mineral resource
  - Habitats & Species

- **Use**
  - Fisheries
  - Aquaculture
  - Port and shipping
  - Tourism
  - Energy facility
  - Sand extraction
  - Military activities

- **Management**
  - Consultation on sea area utilization
  - Public water use & occupation
  - Legally binding zone

Marine spatial assessment

■ Grids for the entire marine area (draft)：1.5', 3', 15'

1.5'

3'

15'

Collection of Objectives relevant Data & Info.

〈Assessment items for different marine uses and input standard for each assessment item〉

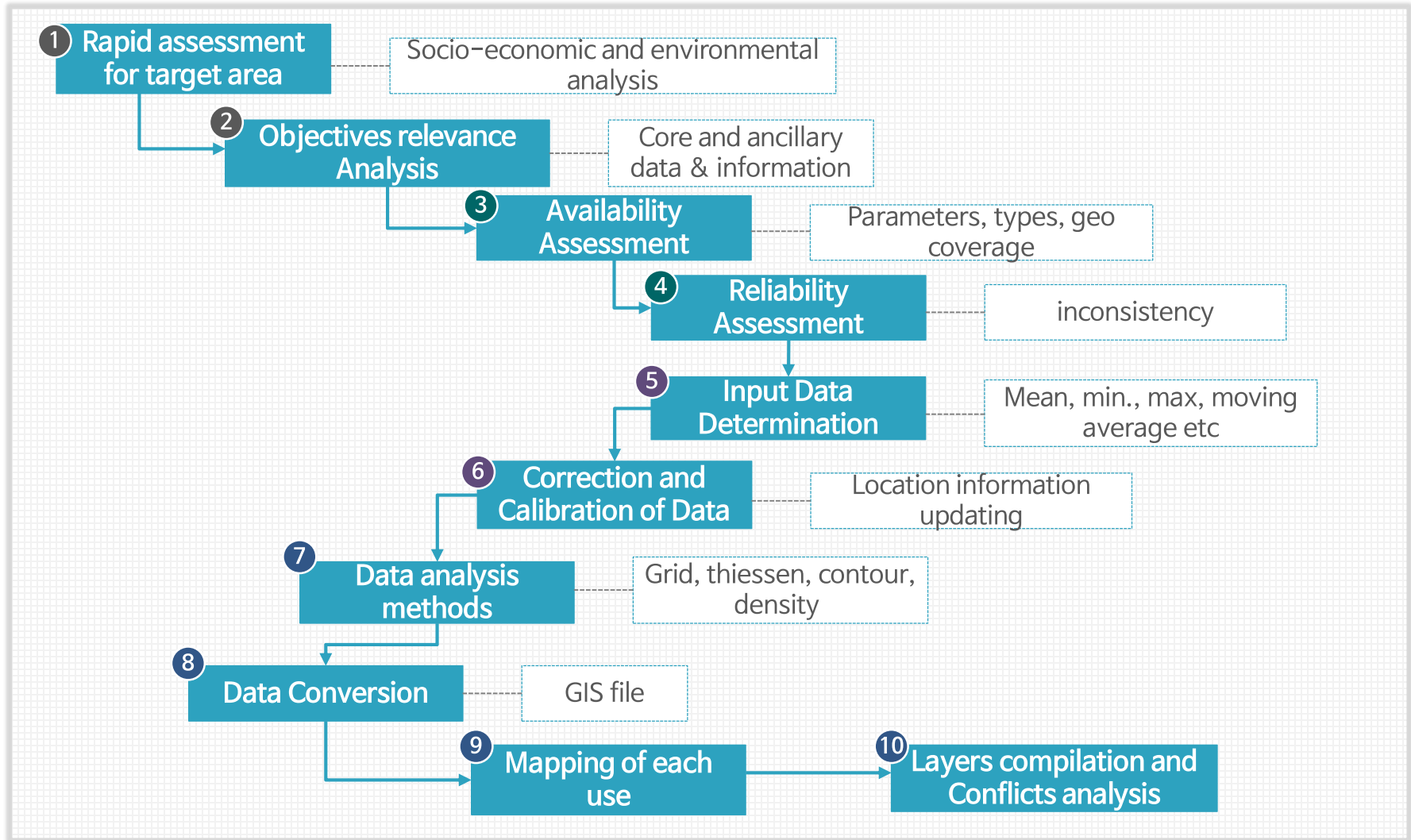| Category	Assessment Item	Input Standard for Each Grid	Combined Score for Category
Fishing	• Volume of catch in near sea	5-year arithmetic average, 5-point scale (1~5)	① Scoring of each assessment item based on input standard of each grid ② Standardization of combined value ③ Grading on a 5-point scale
	• Volume of catch per unit effort (random)	5 grades (top 2 grades)	
	• Fish farm(fishing license)	Existence (yes=1, no=0)	
	• VPASS fishing density analysis	5 grades (top 4 grades)	Not included when computing combined score
Aggregate and mineral resource development	• Registration of mining right	Existence (yes=1, no=0)	
	• Permission to extract marine aggregates	Existence (yes=1, no=0)	
	• Aggregate reserve		
	• Promising aggre		
Energy development	• Existence of therm facility	e (yes=1, no=0)	
	• Existence of tidal power facility	Existence (yes=1, no=0)	
	• Existence of LNG facility	Existence (yes=1, no=0)	① Scoring of each assessment item based on input standard of each grid ② Standardization of combined value
	• Existence of underwater cable and pipeline	Existence (yes=1, no=0)	
	• Stock (random) of wind power, wave power, tidal current and tidal power (tide)	Standardization of stock (0~1)	

Integrated Analysis of > 50 Spatial Data/Information Layers

Category	Assessment Item	Input Standard for Each Grid	Combined Score for Category
Marine tourism	• Beaches (coastal)	Existence (yes=1, no=0)	① Scoring of each assessment item based on input standard of each grid ② Standardization of combined value ③ Grading on a 5-point scale
	• Fishing villages(coastal)	Existence (yes=1, no=0)	
	• Marina harbors(coastal)	Existence (yes=1, no=0)	
	• Rock fishing points(coastal)	Existence (yes=1, no=0)	
	• Boat fishing points (marine)	Existence (yes=1, no=0)	
	• Tidal flat information centers	Existence (yes=1, no=0)	
Environment and ecosystem management	• Tidal flats	Existence (yes=1, no=0)	① Scoring of each assessment item based on input standard of each grid ② Standardization of combined value ③ Grading on a 5-point scale
	• Salt plants	Existence (yes=1, no=0)	
	• Seagrass	Existence (yes=1, no=0)	
	• Protected marine organisms	Existence (yes=1, no=0)	
	• Marine ecology	1st grade=1/2nd grade=0.5	
	• Marine biodiversity (Delta+)	Good, excellent=1/ Bad, poor, moderate=0	
	• Protected coastal and marine areas	Existence (yes=1, no=0)	
Research and education	• Marine science research facility and activity (e.g. Ieodo Ocean Research Station, etc.)	Existence (yes=1, no=0)	※ No combined score because this category is designated based on existing laws, policies and research activities
	• Precise monitoring activity	Existence (yes=1, no=0)	
Harbor and navigation	• Harbor and port area	Existence (yes=1, no=0)	① Scoring of each assessment item based on input standard of each grid ② Standardization of combined value ※ Assessment items related to harbor and navigation activities are set based on areas designated by the legal system.
	• Navigation route	Existence (yes=1, no=0)	
	• Anchorage	Existence (yes=1, no=0)	
	• Specific traffic safety area	Existence (yes=1, no=0)	
Military activity	• Legal military area (e.g. controlled area, restricted area, etc.)	Existence (yes=1, no=0)	※ No combined score because this category is designated based on existing laws, policies and research activities
Safety management	• Marine leisure prohibited area	Existence (yes=1, no=0)	※ No combined score because this category is designated based on existing laws, policies and research activities
	• Industrial and basic facility such as marine energy facility, etc. (tidal power, nuclear power, thermal power)	Existence (yes=1, no=0)	
	• Coastal erosion control area	Existence (yes=1, no=0)	
	• Area of frequent safety accidents non-power leisure (random)	Existence (yes=1, no=0)	

※ Protected coastal and marine area: Protected marine areas, protected wetlands, protected cultural heritages, seabird (natural monument), national marine parks, provincial and county parks, etc.
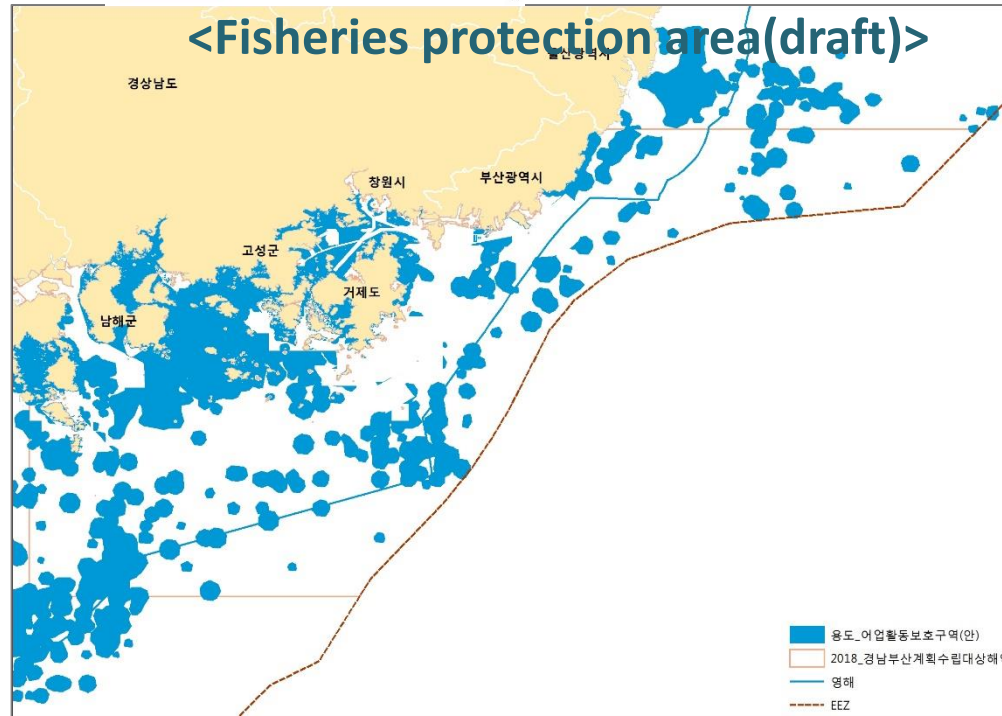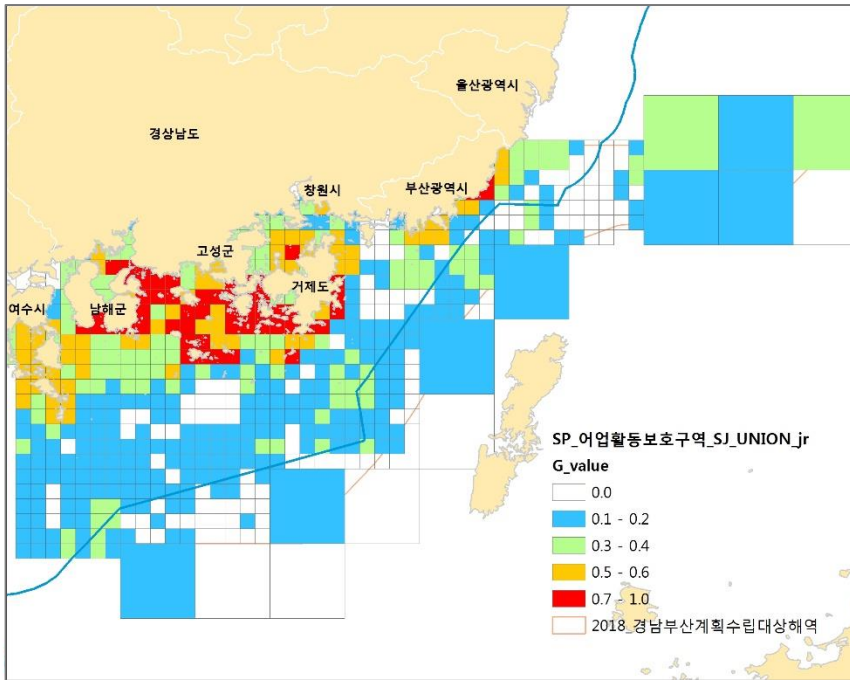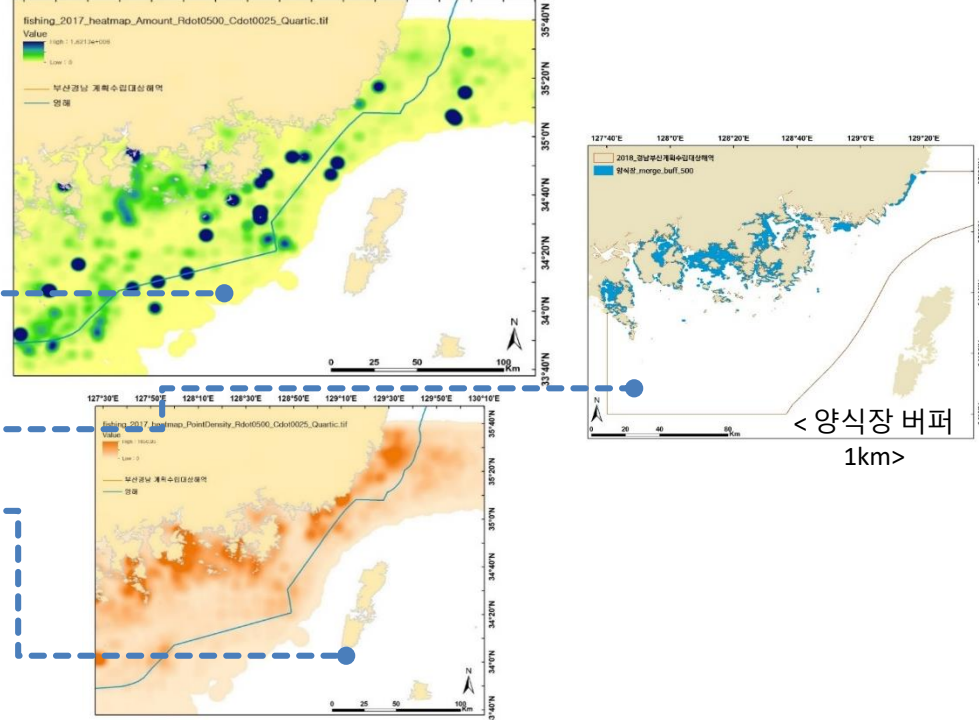
Spatial Analysis of the Data and Information

1 Rapid assessment for target area — Socio-economic and environmental analysis

2 Objectives relevance Analysis — Core and ancillary data & information

3 Availability Assessment — Parameters, types, geo coverage

4 Reliability Assessment — inconsistency

5 Input Data Determination — Mean, min., max, moving average etc

6 Correction and Calibration of Data — Location information updating

7 Data analysis methods — Grid, thiessen, contour, density

8 Data Conversion — GIS file

9 Mapping of each use

**10** Layers compilation and Conflicts analysis

Mapping
<Fisheries protection area>

Assessment Item
• Volume of fish catch
• Fish farm(fishing license)
• VPASS fishing density analysis (fishing vessel location)

< 양식장 버퍼 1km>

<Fisheries protection area(draft)>

SP_어업활동보호구역_SJ_UNION_jr
G_value
- 0.0
- 0.1 - 0.2
- 0.3 - 0.4
- 0.5 - 0.6
- 0.7 - 1.0
- 2018_경남부산계획수립대상해역

용도_어업활동보호구역(안)
2018_경남부산계획수립대상해역
영해
EEZ

<Environment and ecosystem management area>

Assessment Item
• Tidal flats
• Salt plants
• Seagrass
• Protected marine organisms
• Marine ecology
• Marine biodiversity (Delta+)
• Protected coastal and marine areas
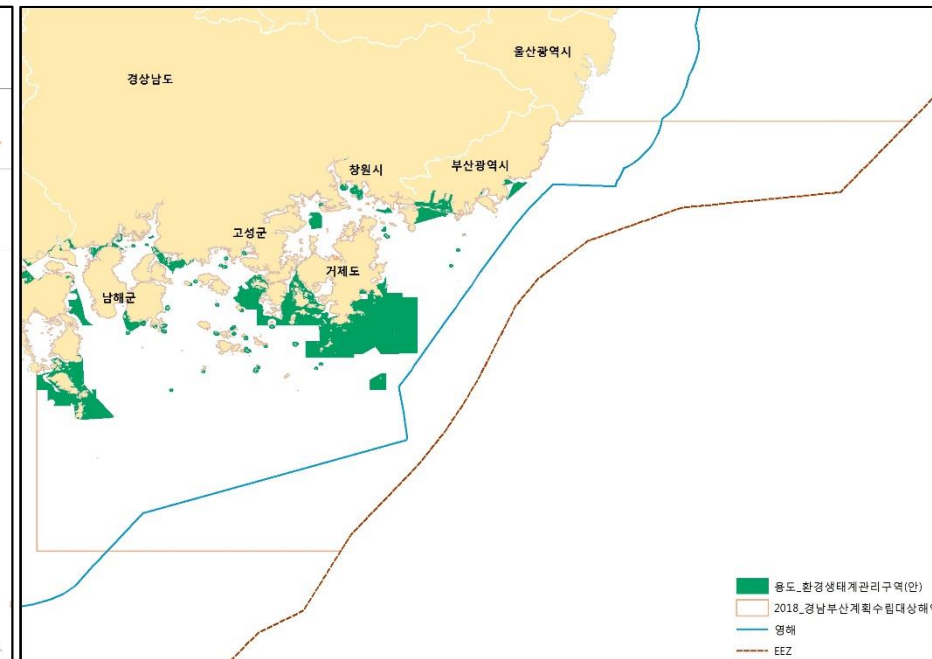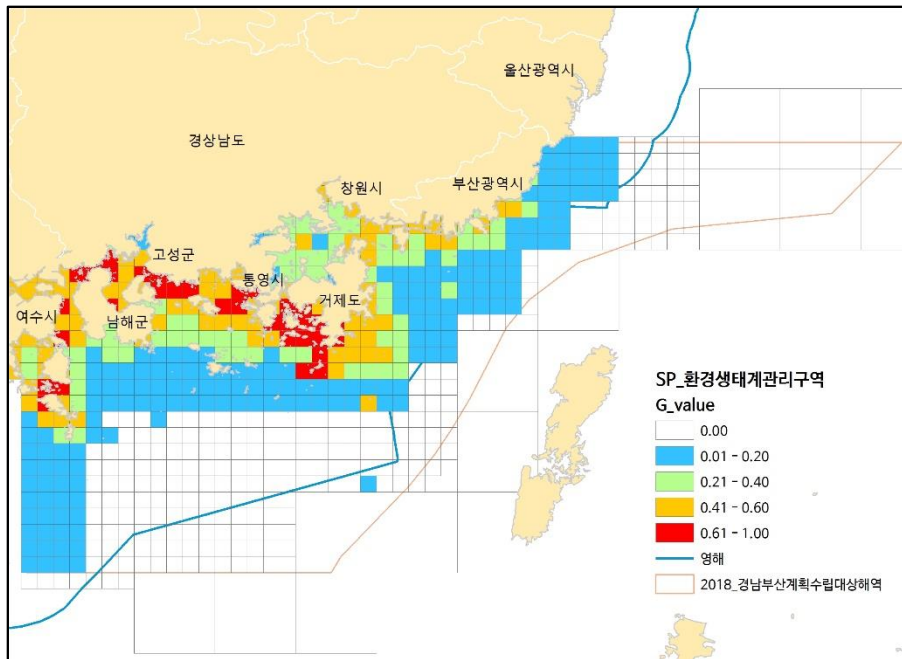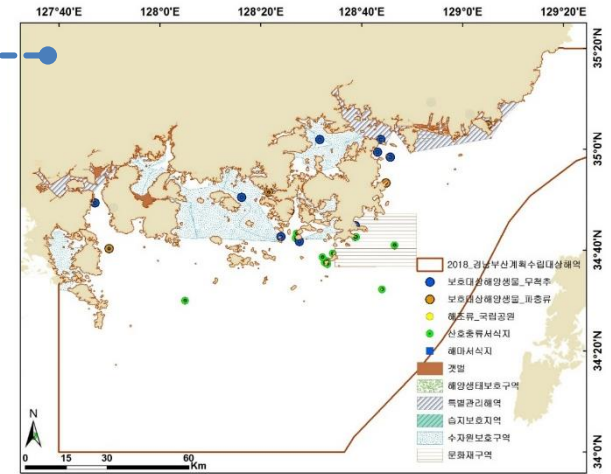
Preparing and Approving the Plan

**Drafting zoning scheme** → **Review and consultation** → **Feed-back from public**

Approval of the draft plan
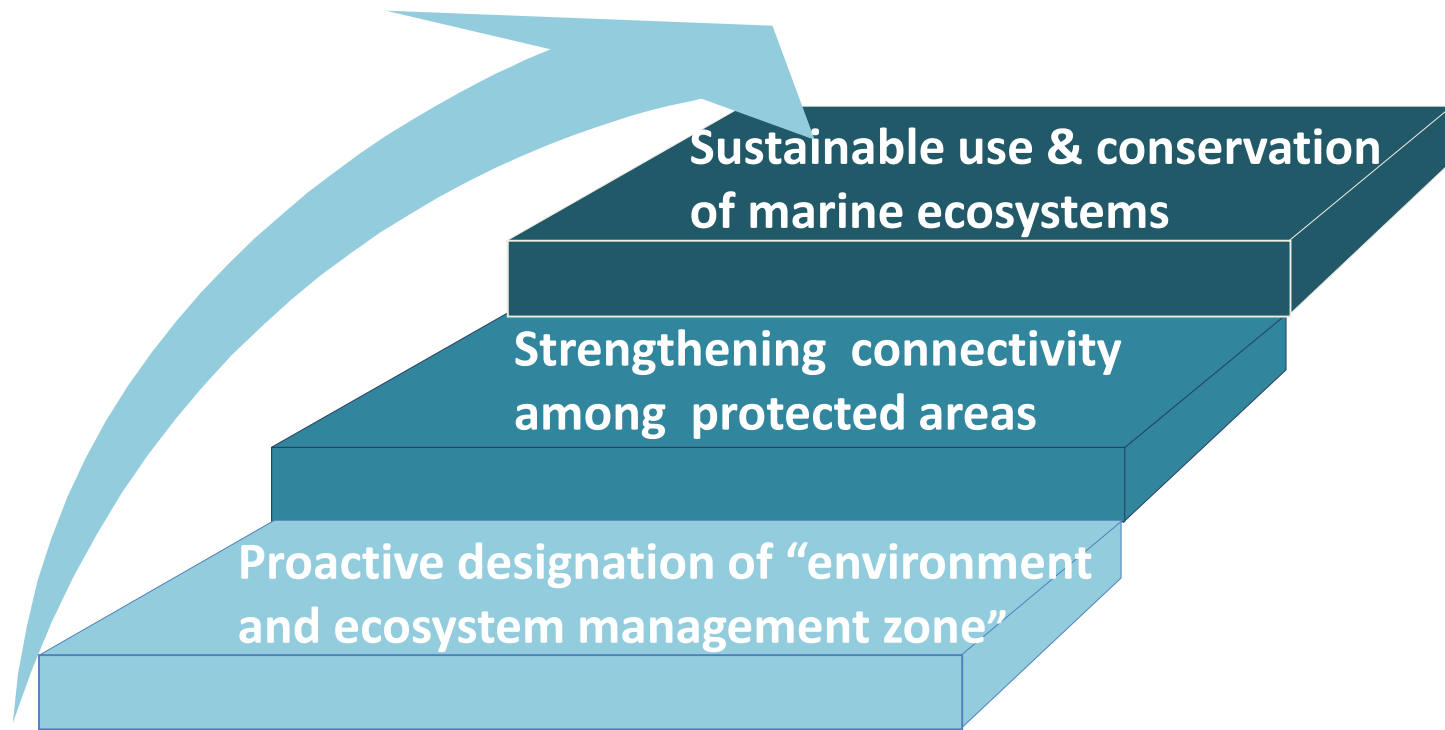
Public notice

- Fisheries protection area
- Energy development area
- Marine tourism area
- Military area
- Aggregate and mineral resource development area
- Environment and ecosystem management area
- Research and education area
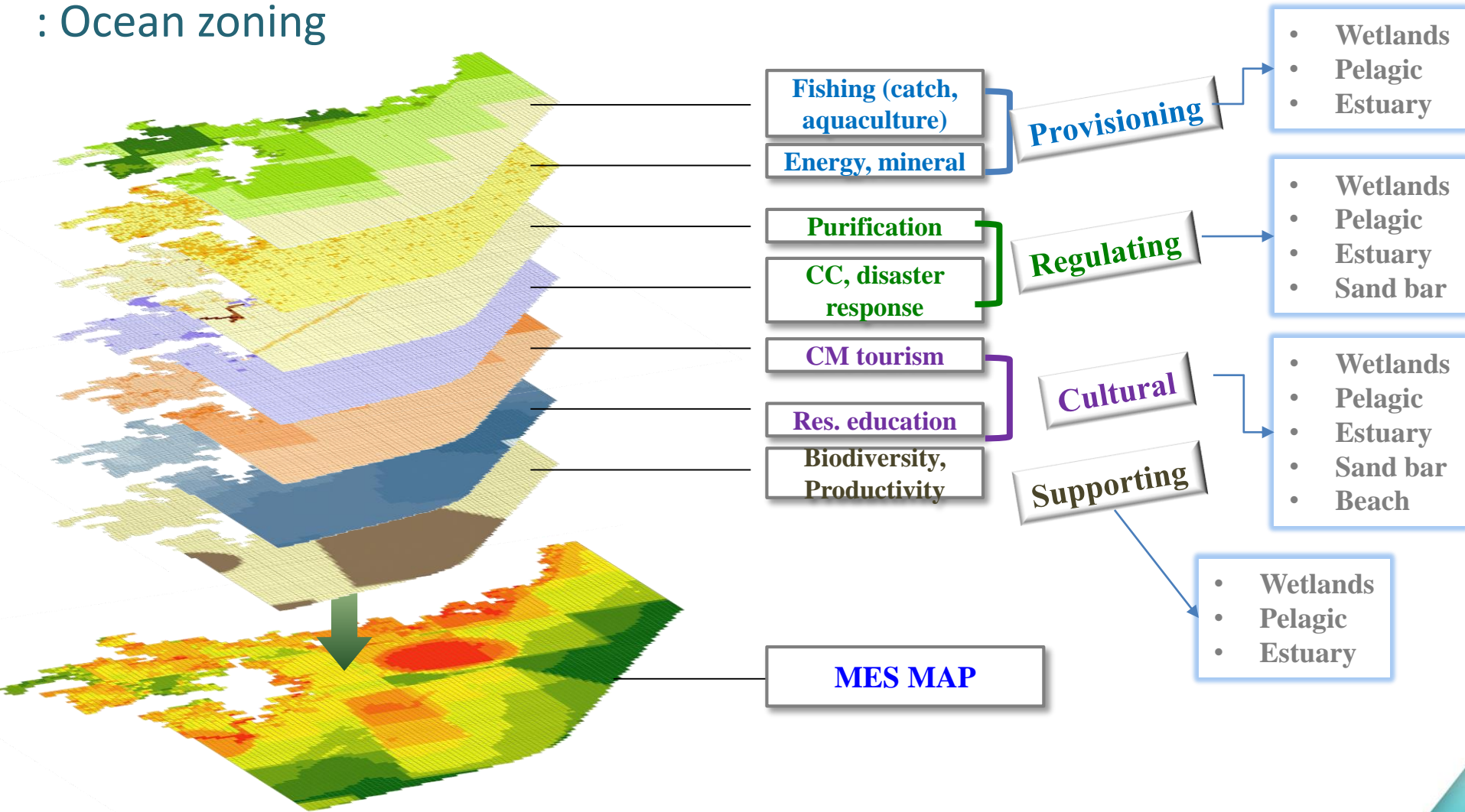- Harbor and navigation area
- Safety management area

경남부산해양용도구역(안)
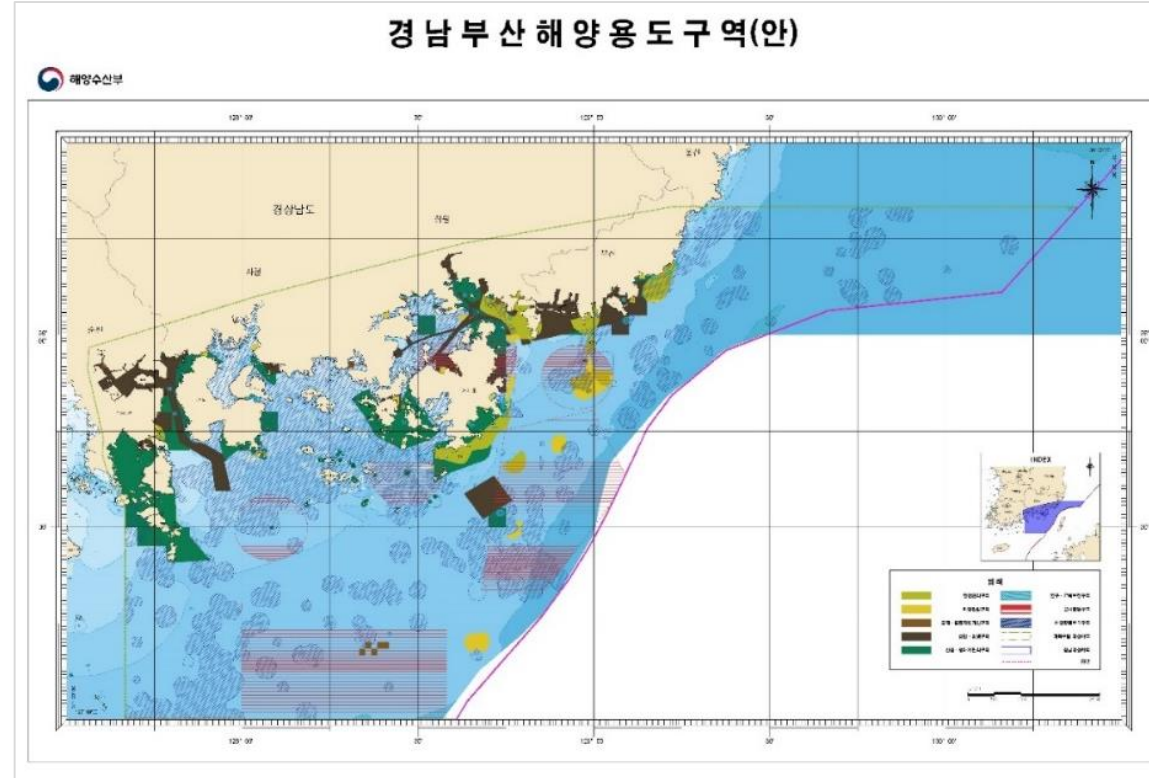
Challenges & Recommendation *for*
Moving forward with ecosystem–based planning

Designation of
"environment and ecosystem management zone"

Sustainable use & conservation of marine ecosystems

Strengthening connectivity among protected areas

Proactive designation of "environment and ecosystem management zone"

Incorporating Marine Ecosystem Service into MSP
: Ocean zoning

Fishing (catch, aquaculture)

Energy, mineral

Provisioning

- Wetlands
- Pelagic
- Estuary

Purification

CC, disaster response

Regulating

- Wetlands
- Pelagic
- Estuary
- Sand bar

CM tourism

Res. education

Cultural

- Wetlands
- Pelagic
- Estuary
- Sand bar
- Beach

Biodiversity, Productivity

Supporting

- Wetlands
- Pelagic
- Estuary

MES MAP

Incorporating Marine Ecosystem Service into MSP
: Marine spatial suitability review

Marine spatial suitability review: the heads of central administrative agencies and local municipalities should consult with the MOF on matters related to the suitability of activities on uses of coastal and marine areas
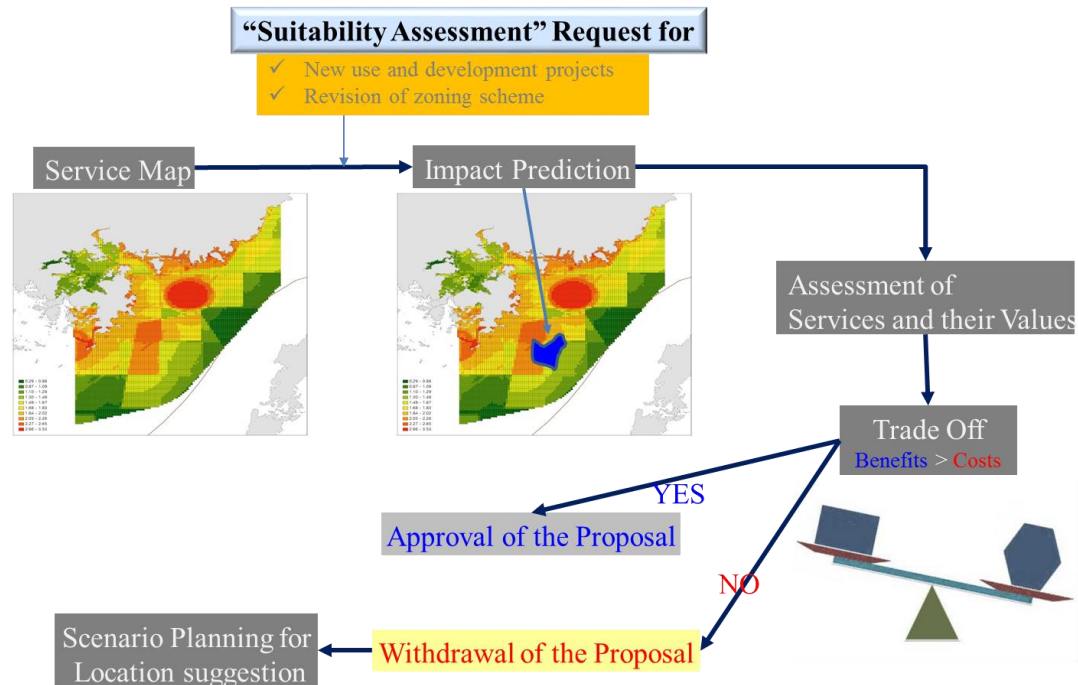
» Preliminary spatial suitability review system

⇨ Addressing pre-occupation issues causing invincible development and excessive competition over using of marine resources

» Analyzing spatial characteristics and planning considering ecosystem values

⇨ Sustainable use and conservation of ocean

Scenario ACTOR Concept

Thank you for listening

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