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# **Application of a Suitability Assessment for Coastal Spatial Planning and Management in Korea**

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# Marine and Coastal Features

## ● Geographic features

- Coastline : 14,963km (natural 66%('13), loss gradually)
- Tidal flats : 2,487km<sup>2</sup> (2.5% of land, 2,550km<sup>2</sup>(03))
- No. of islands : 3,358(2,876 uninhabited)

## ● Coastal Population

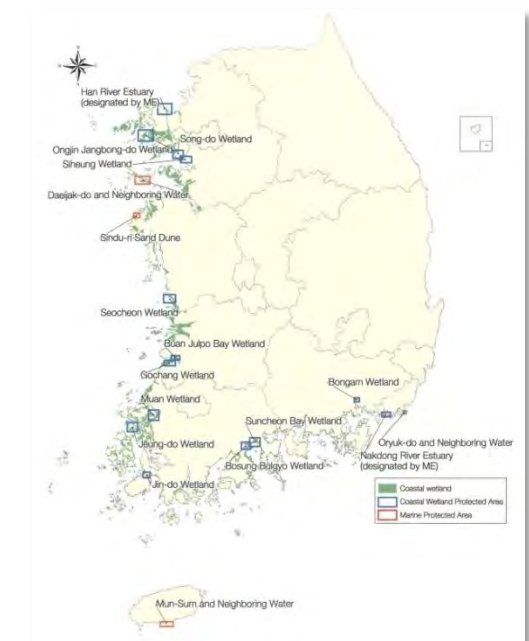
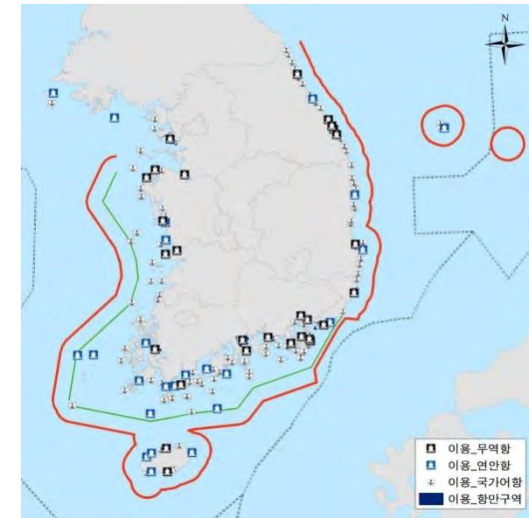
- 13.7 mil. (27% of total population, decrease in rural area)
- Density : 427 persons/km<sup>2</sup>

## ● Socio-economic activities

- 347 Fishing port (1,309 small scale fishing port)
- 2.61 mil. M/T fishery production
- 57 ports / 1.08 bil. M/T & 14 mil TEU
- 35 nat'l industrial complex (85% of nat'l industrial complex)

## ● Protected Areas in Coastal and Marine areas

- National Parks : 2,681km<sup>2</sup> (No. 4)
- Marine Protected Areas : 70km<sup>2</sup> (No. 4)
- Wetland Protected Areas : 219 km<sup>2</sup> (No. 12)
- Coastal Environment Conservation Areas : 949 km<sup>2</sup> (No. 4)



# Development of Institutional Mechanisms

- 1996 – 1998 1<sup>st</sup> National Coast Survey
- 1999** Enactment of **Coastal Management Act**
- 2000 Establishment of **National Integrated Coastal Management Plan**
- Since 2002 Establishment of Local Coastal Management Plans
- 2009** Revision of **Coastal Management Act**
- **Coastal waters use/functional zoning mechanism (legally binding)**
    - ✓ Coastal (waters and lands) use zoning mechanism (not legally binding), 2000
  - Target-based management for natural coastline protection
  - **Coastal waters suitability assessment**
    - ✓ Guideline for Coastal waters suitability assessment (2012)
- 2009 2<sup>nd</sup> National Coast Survey
- 2011** Establishment of 2<sup>nd</sup> National Integrated Coastal Management Plan
- 2012 Establishing 2<sup>nd</sup> Local Coastal Management Plans

# Coastal Waters Zoning Mechanism

Coastal Waters Zoning pre-determines the uses and functions of coastal waters according to its characteristics for its effective conservation, use and development

zone	definition	Functional Zones
Use (exploitation)	<ul style="list-style-type: none"> <li>- Coastal waters with planned or expected development or use with minimum marine environmental impacts</li> </ul>	Port zone, navigation zone, harbor zone, leisure & tourism zone, beach zone, mineral resource zone, underwater cultural facility zone
Special management	<ul style="list-style-type: none"> <li>- Coastal waters which requires special management for the protection of military facilities or other facilities with national importance</li> <li>- Coastal waters which requires special management due to marine environmental /ecological destruction or possible destruction</li> </ul>	Water quality management zone, marine survey zone, disaster management zone, military facility zone, industrial zone, marine environmental restoration zone
Conservation	<ul style="list-style-type: none"> <li>- Coastal waters which requires management for the protection of coastal environment, resources, and culture</li> </ul>	Fishery resources protection zone, marine ecosystem protection zone, landscape protection zone, park zone, aquaculture zone, marine cultural resource conservation zone
Multi-purpose	<ul style="list-style-type: none"> <li>- Coastal waters excluded from the above categories</li> <li>- Coastal waters which belongs to more than two categories among the above</li> </ul>	

- **Purpose**

- : Assess the suitability of coastal waters concerning the characteristics, location, possibility of utilization, etc.

- : Very simple supporting tool to determine coastal waters zoning.

- **Criteria for assessment by Coastal Management Act 2009**

- : natural environment, socio-economic activities(present use), availability(future demands for use)

- **Target areas**

- : Coastal waters which belongs to more than two zone

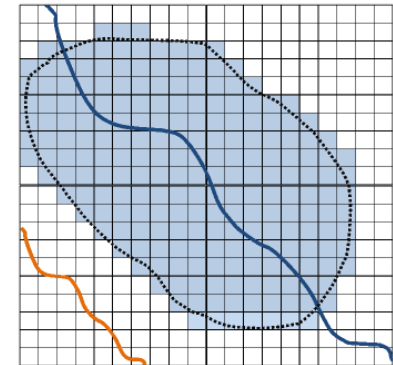
- : Coastal waters which excluded from any zone

- **Application of assessment result**

- : Determine a priority for use(exploitation) or conservation in coastal waters

# Assessment Procedure

<b>Select target area and set a specific range</b>	
<b>Set up assessment unit (Grid)</b>	<ul style="list-style-type: none"> <li>- Grid size : 500m×500m</li> <li>➤ near the land : 100m×100m(the cadastral line~1km)</li> </ul>
<b>Collect data for parameters</b>	<ul style="list-style-type: none"> <li>- Natural environment : 5 parameters</li> <li>- Socio-economic activities(present use) : 1 parameter</li> <li>- Availability : 2 parameters</li> </ul>
<b>Input value of parameters and standardize</b>	<ul style="list-style-type: none"> <li>- 1(conservation), 0, -1(use)</li> </ul>
<b>Assess the suitability</b>	<ul style="list-style-type: none"> <li>- Conservation or use(development)</li> </ul>



500m×500m      평가대상범위  
 100m×100m      평가대상해역  
 1000m×1000m

$$S_i = \sum_{n=1}^8 P_i$$

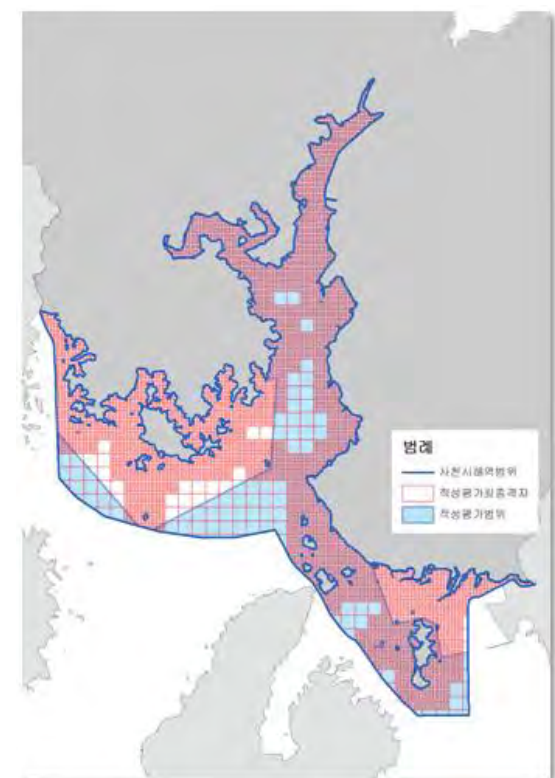
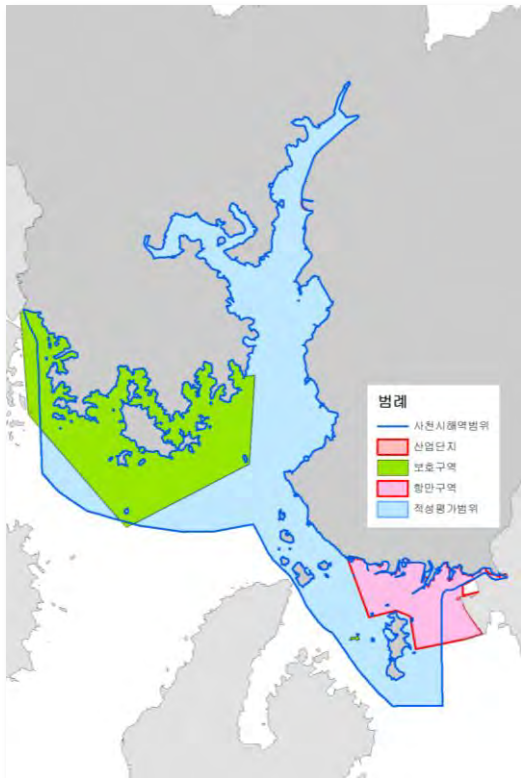
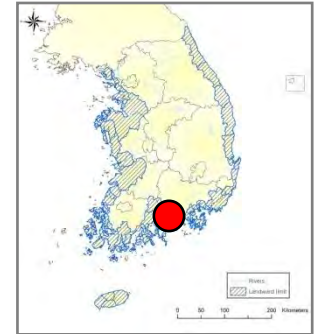
$$Z_i = \frac{S_i - \bar{S}}{\sigma}$$

## Parameters and suitability value

Assessment Parameters		Score at each grid		
		1	0	-1
		Conservation ←-----→ Exploitation		
<b>Natural Environment</b>	Legally protected species	< 500m	> 500 m	
	Water quality	1st	> 2nd	
	Tidal flats (portion in area)	> 50%	1~50%	
	1 <sup>st</sup> grade landscapes	< 500m	> 500 m	
	Distance from estuaries	< 1,000 m	> 1,000 m	
<b>Present Uses</b>	Public waters uses		No use	use
<b>Availability (Future demand for use)</b>	Distance from Protected areas		< 1,000 m	> 1,000 m
	Distance from development areas on plans and under planning		> 1,000 m	< 1,000 m

## Case Study

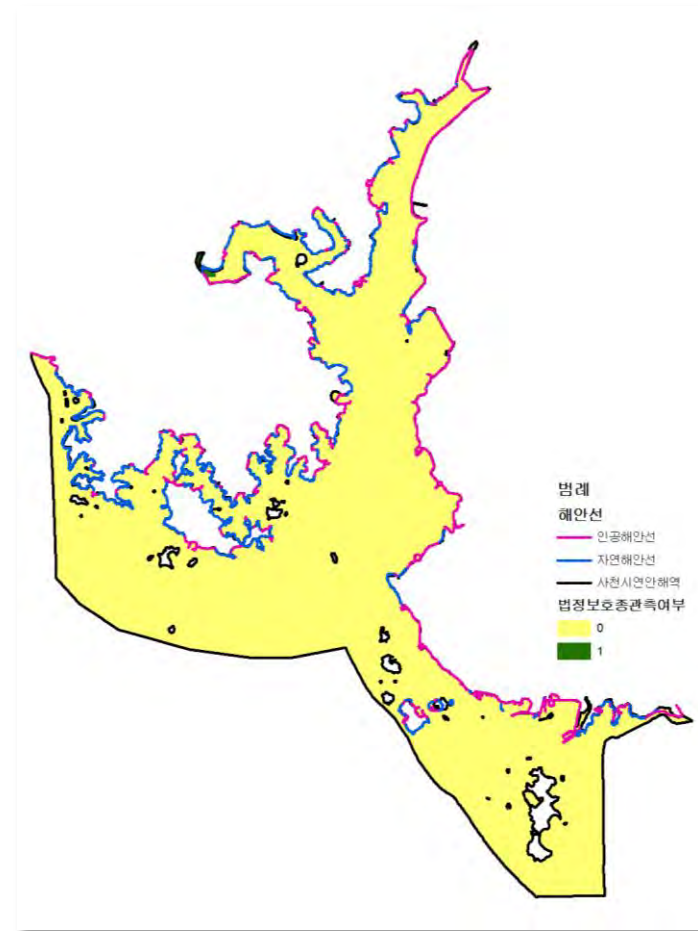
- ❖ Select target area and set up assessment unit (grid)





## Case Study

❖ Input value of parameter : natural environment (protective species)



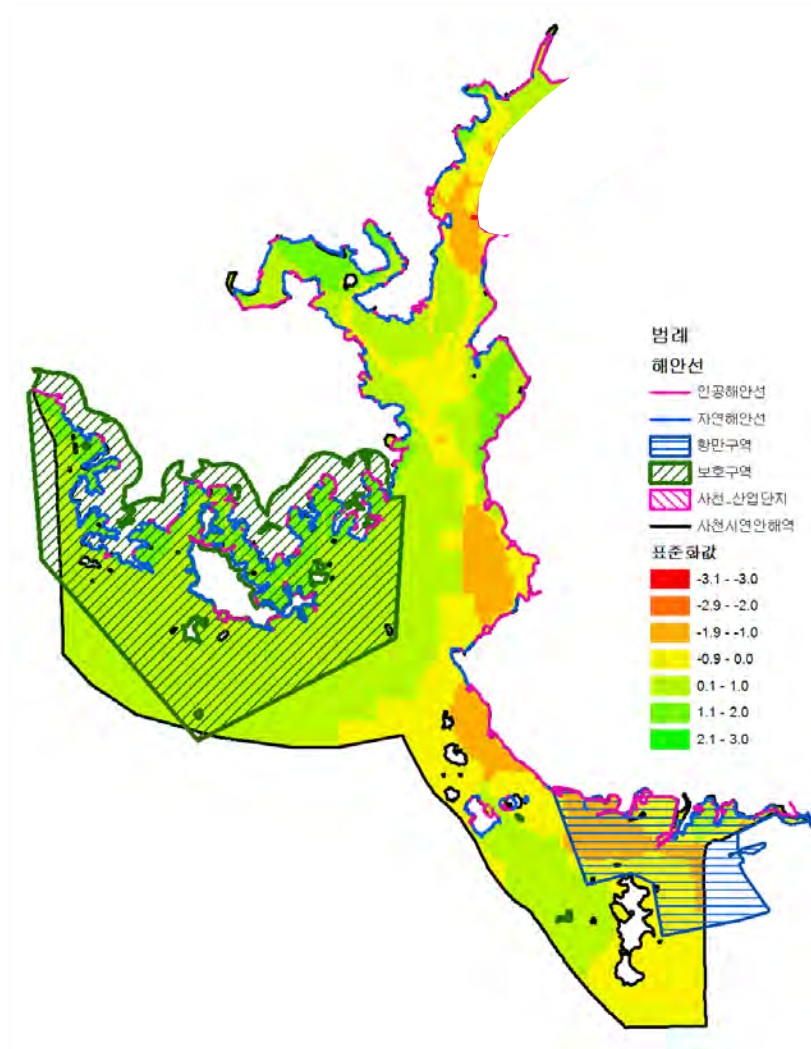
## Case Study

- ❖ Input value of parameter : present use (public waters uses)



## Case Study

## ❖ Result



## Implication and Improvement

- In Korea, ICM is in its development stage.
- A scientific and sophisticated tools for implementing ICM is needed.
- The Coastal Waters Suitability Assessment is a useful tool to determine a priority between use and conservation in coastal area.
- More data should be built up for enhancing the parameters.
- More sophisticated assessment method should be developed.

# Thank you

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