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## Note from the Director

Recent attack of Typhoon Haiyan in Philippines has raised a fundamental question again of whether the global community has adequately worked together to prevent serious environmental problems such as climate change. Although there have been serious efforts in building global, regional and national institutions to cope with these challenges, they apparently are not sufficient, if not useless. Here, another question arises: how to enhance the effectiveness of international efforts to address the issues of climate change and sustainable development. One of the possible answers to this question will be to securitize the issues including climate change so that we can better mobilize global recourses to fight against those environmental challenges.

Furthermore, it is time for the global society to develop effective global governance in areas such as climate change and other environmental issues in order to better address those challenges. In case of climate change, past discussions at the global level have focused mainly on issues related to United Nations Convention on Climate Change. However, considering the limited results of the efforts made during the past two decades of UNFCCC regime as well as creations of new global organizations such as Global Green Growth Institute and Green Climate Fund, more attention should be given to enhance coordination among the relevant organizations and institutions.

In particular, those which emphasize the role of markets and technologies, such as the Major Economies Forum, will need to be better incorporated into the framework of global climate change governance since market-based approaches has become increasingly important as a way of tackling global climate change and other environmental matters. Moreover, the addressing of other issues such as climate-induced migration in dealing with climate change and sustainable development should be integrated into the process of building an effective climate change regime.

In the context of building strong governance regarding issues of climate

change and sustainable development, a so-called bottom-up approach is gaining more and more importance. As the global society is still fragmented, there are limitations in implementing policies at the local level as well as securing resources to deal with new challenges. In this sense, it is worth noting that how to engage various stakeholders during the process of addressing global warming and other environmental issues have become inevitable.

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# **Analysis of Stakeholders' Evaluation of the Community Based Management Model in Muan Tidal Flats for Biodiversity Conservation in the Yellow Sea Eco-region<sup>\*)</sup>**

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## **Abstract**

The Yellow Sea is a semi-enclosed body of water which is bordered with Korea and China and has rich biodiversity. However, the Yellow Sea faces serious environmental problems due to rapid development and the high population. In order to conserve the Yellow Sea, Yellow Sea Eco-region Support Project (YSESP) has been carried out by implementing practical conservation activities at regional level. Two demonstration activities in Muan, Korea and in the estuary of the Apruk (Yalu) River, China have been implemented from 2010 to 2013. To conserve Muan tidal flat and promote public participation, the 'Community Based Management (CBM)' approach have been applied. Since the project is in its final stages, this paper tries to

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identify the achievement of the Muan demonstration activities and analyses stakeholders' perception of YSESP by interviewing the involved stakeholders in order to evaluate the demonstration site project in Muan Tidal Flats. The study identifies whether the respondents actively participate in Muan activities and the project could create a local network and also raise public awareness. In addition, the study highlights some implications and suggestions for future marine protected area (MPA) management. As a result, more participation and strategy development not only on the educational sector but also on other various fields are needed. Involvement of the general public including local residents is still encouraged. To increase local income and revitalize the local community, economy-linked strategy is necessary. More importantly, a longer term of management plan should be jointly developed by the local community for the project continuity and achievement of visible marine conservation results in Muan.

**Key words:**

Yellow Sea Eco-region Support Project, Biodiversity, Community Based Management, Muan, Tidal flat, Marine Protected Area



# Introduction

The Yellow Sea is a semi-enclosed body of water which is bordered with Korea and China. It has rich biodiversity and its wetlands are ideal stopover sites for migratory shorebirds.<sup>1)</sup> However, it is one of the most intensively exploited areas in the world.<sup>2)</sup> Due to the high population and rapid development of surrounding countries, the Yellow Sea faces serious environmental problems.<sup>3)</sup>

Therefore, the Yellow Sea Eco-region Conservation Project was initiated to conserve the habitat and biodiversity in the region, inform the importance and the value of the Yellow Sea, and promote its environment activities and understanding of conservation. In detail, the Yellow Sea Eco-region Planning Programme (YSEPP) was firstly carried out focusing on the biological assessment and the selection of potential priority areas. The Yellow Sea Eco-region Support Project (YSESP) has been carried out from 2007 to 2014 by implementing practical conservation activities at regional level. During those three years from 2010 to 2013, two demonstration activities in Muan tidal flats in Jeollanam-do Province in Korea and the estuary of the Aproc(Yalu) River, on the border between North Korea and China have been carried out, aiming to establish the best management practice models both in Korea and China.<sup>4)</sup> [Table 1] Panasonic Corporation supports the project financially. World Wide Fund for Nature (WWF) Japan serves as the overall project manager. Korea Institute of Ocean Science and Technology (KIOST) and WWF China manage the demo projects in Korea and China respectively. Eco-Horizon Institute (EHI) and Liaoning Ocean Fisheries Science Research Institute (LOFSRI) conduct the demonstration activities in Muan tidal flats and the Yalu River Estuary.

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1) YSESP, Promise for the Conservation of Biodiversity in the Yellow Sea(2012), pp 2

2) UNDP/GEF YSLME project, Introduction, <http://www.yslme.org>, (visited on July 15, 2013)

3) Yellow Sea Large Marine Ecosystem project defines the the region faces 9 environmental problems; pollution and contaminants; eutrophication; harmful Algal blooms (HABs), fishing effort exceeding 'Ecosystem Carrying Capacity', mariculture facing unsustainable problems; habitat loss and degradation; change in ecosystem structure; jellyfish blooms; and climate change-related issues(UNDP/GEF YSLME project, Strategic Action Programme for the Yellow Sea Large Marine Ecosystem(2009), pp. v)

4) YSESP, Promise for the Conservation of Biodiversity in the Yellow Sea(2012), pp 6

Muan<sup>5)</sup>tidal flat was selected as the YSESP demonstration site in Korea. Originally, there was a reclamation plan such as the Yeongsan River 4 stage reclamation project. However, local residents in Muan implacably opposed to the plan and caused it be cancelled in 1998. Afterwards, the tidal flats were designated as ‘the first Coastal Wetland Protected Area’ in 2001, ‘Ramsar site’ and also ‘Tidal Flat Provincial Park’ in 2008<sup>6)</sup>, in order to preserve the tidal flat by promoting understandings of local residents in Muan. From Oct. 2007 to Sept. 2008, EHI had conducted a one-year research titled, ‘Promoting Civil Participation in Coastal Conservation Utilizing the ‘Muan Tidal Flat Visitors’ Center’ with the support of the Yellow Sea Large Marine Ecosystem (YSLME) project<sup>7)</sup>.<sup>8)</sup> Since then, the efforts have been continued by selecting YSESP as a small grant recipient in 2008 and 2009, then as a three-year long demonstration site project from 2010 to 2013 and ‘Community Based Management (CBM)<sup>9)</sup>’ approach was tried in the area.

From 2013, YSESP starts the 3rd stage which is a magnification period to disseminate the achievement and result of the demonstration site project during the 2nd stage [Table 2]. Therefore, to identify the achievement and stakeholders’ perception of YSESP and evaluate the demonstration site project in Muan Tidal Flats, interviews from the involved participants were conducted. As a result, this paper introduces the stakeholders’ understanding of the project in Muan, analyses the survey, and highlights some implications and suggestions for the better Marine Protected Area (MPA) management in the future.

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5) Muan is located in Jeollanam-do and its population is 76,206. The area is 448.95 km<sup>2</sup>(3.7% of Jeollanam-do) and consists of agricultural lands(43%), forestry and woodlands(36%), and others(21%). Muan is characterized as a flatland area with a higher ratio of agricultural land than the provincial average (27%). (as of 2012)(Muan gun, about muan, [http://www.muan.go.kr/open\\_content/administrative/status/history](http://www.muan.go.kr/open_content/administrative/status/history), (visited on July 15, 2013))

6) YSESP, Promise for the Conservation of Biodiversity in the Yellow Sea(2012), pp 8

7) To conserve Yellow Sea region and sustainable development, YSLME project initiated from 2005 with support of Global Environment Facility (GEF). The project is in line with YSESP on biodiversity part of the Strategic Action Programme(SAP)(Kwangtae Kim, et al., The Yellow sea eco-region conservation project; the present situation and its implications(2012), pp 346)

8) UNDP/GEF YSLME project, Small Grants Programme 2007 Final Reports(2009), pp 3

9) A general term for any management that is primary driven by, or occurring at, the community level (Coral Triangle Support Partnership, Principle for Best Practice for Community Based Resource Management in Solomon Islands(2011), pp iv)

1997	'Global 200 Eco–regions' are selected and announced to prevent the extinction of animal and plants and conserve the habitats (WWF)
2002~2006	Yellow Sea Eco–region Planning Program(YSEPP) selects '23 Potential Priority Areas' in the Yellow Sea Eco–region
2005	YSEPP(WWF, KIOST, KEI) and YSLME Project(UNDP/GEF) sign a memorandum of understanding
2007~2009	YSESP – 1st stage: Small grant programmes(5 in Korea and 10 in China)
2010	YSESP(WWF, KIOST, EHI) and Jeonnam Muan-Gun sign a memorandum of understanding
2010~2013	YSESP – 2nd stage: Demonstration site program(1 in Korea and 1 in China)

[Table 1. Chronology of Yellow Sea Eco-region Conservation Project]<sup>10)</sup>

1 <sup>st</sup> stage Small grant period	2 <sup>nd</sup> Stage Demonstration site period	3 <sup>rd</sup> Stage Magnification period
2007.7~2010.3 (2years)	2010.1~2013.3 (3years)	2013.4~2014.9 (2years)
-Raise public awareness of Yellow Sea Eco-region's potential priority areas by the local community -Start small grant programme	-Choose 1 site/country from the 1st stage -Support demonstration site	-Magnify conservation model internationally -Bring international recognition to the demo sites as models of effective MPAs
JPY 54,652,000	JPY 79,197,000	JPY 36,720,000

[Table 2. Management Structure of YSESP]

## Overview of Survey

### 1) Survey methodology

To evaluate the Muan project and analyse the stakeholders' perception, questionnaire survey was conducted in May 2013. Face to face and email interviews were applied to the survey. Considering the three strategies of Muan project including

10) YSESP, Promise for the Conservation of Biodiversity in the Yellow Sea(2012), pp 7

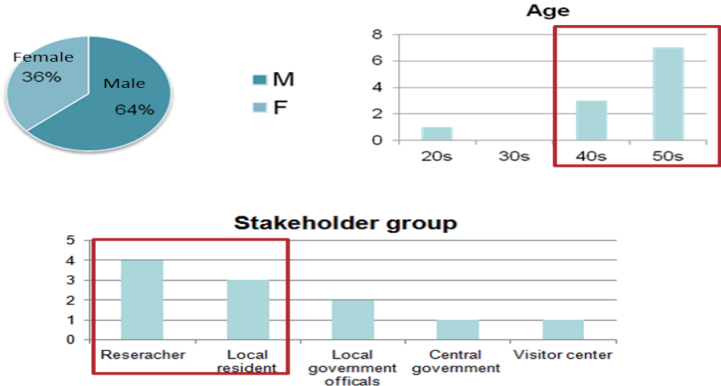
biodiversity management, governance management, and sustainable use management, 3 or 4 respondents who are familiar with the three categories were selected as interviewees (in total 11).

## 2) Characteristics of respondents

Most of respondents were in their 40's and 50's. Only 1 respondent was in his 20's. Researchers and local residents were dominant stakeholder groups. 4 of them were researchers, 3 were local residents, 2 were local government officials, and 1 was a central government manager in the visitor center, respectively. 64 percent of respondents were male and the rest of them were female. [Figure 1]

## 3) Contents of the Survey

The questionnaire was prepared to analyse the following items; participated activity, frequency of participation, important stakeholders, reasons of participation, appropriateness of Muan activities, activeness of involved participants, individual changes after involvement in the project, network establishment, requirements for future Muan tidal flat management, intention of re-participation, and improvements and suggestions.



[Figure 1. Characteristics of respondents (n=11)]

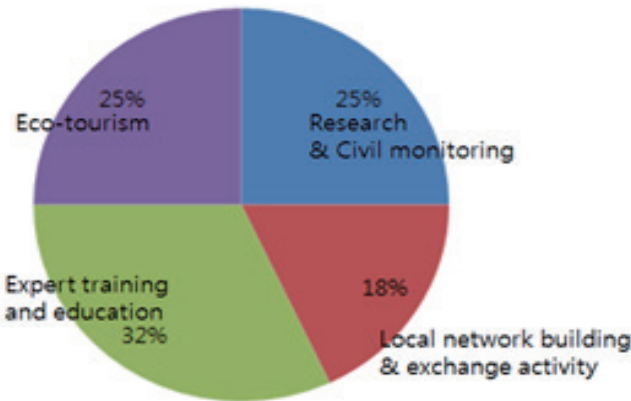
# Survey Results

## 1) Activities

The respondents have participated in various activities. 32% of respondents were involved in expert training<sup>11)</sup> and education, 25 % in eco-tourism and research and civil monitoring, and lastly, 18 % in local network building and exchange. Multiple answers were allowed. [Figure 2]

## 2) Frequency of participation

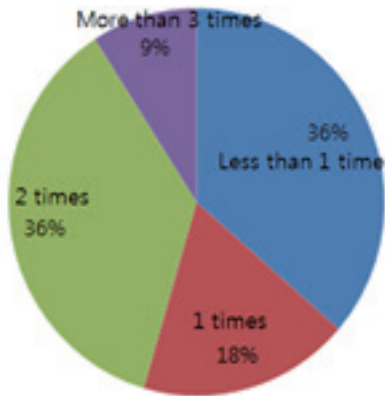
Frequency of participation during the three years(2010~2013) of the project was also analyzed in monthly basis. 36 % of respondents worked between 1 and 2 times. 18 % worked once a month. 9% worked more than 2 times. 64 % of residents involved the project at least once a month. [Figure 3]



[Figure 2. Participated Activities (n=11)]

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11) The project has provided educational programmes for local residents and then, the local people became professional tidal flat guides and eco-tour guides.



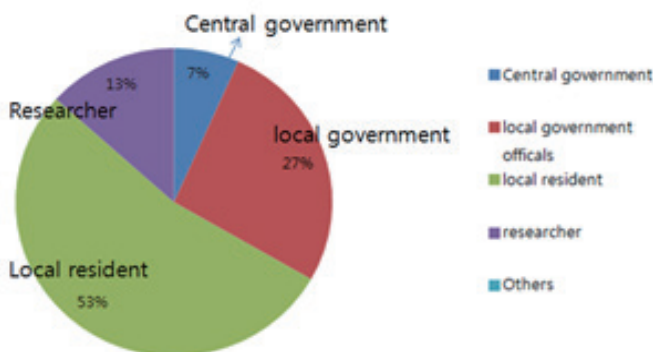
[Figure 3. Frequency of participation (Monthly basis, n=11)]

### 3) Important Stakeholders

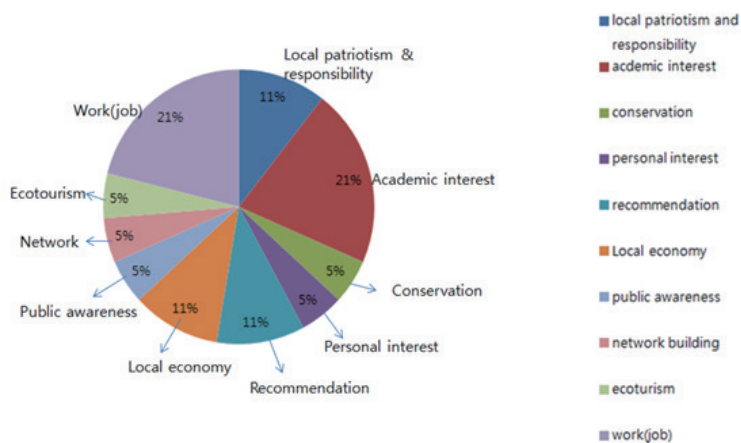
Variety of stakeholder groups have involved in the project. The survey analyses which group of stakeholder the most important group for conservation of the Muan tidal flat is. The respondents were allowed to check multiple answers. 53% of respondents answered are local resident, 27 % are local government officials, 13 % are researchers, and lastly, 7 % are central government. [Figure 4]

### 4) Reason of participation

The research tried to identify the reasons of participation. The reasons are diverse. Firstly, academic interest and duplication of their works was 21 %. Secondly, 11 % of respondents answered local patriotism and responsibility for the local society made them to get involved in the project. In addition, recommendations from other participants and revitalization of local economy also have the same percentage. Other reasons including to conserve the Yellow Sea, raise public awareness, personal interest, network, eco-tourism was 5 %, respectively. [Figure 5]



[Figure 4. Important stakeholders (n=11)]



[Figure 5. Reason of participation (n=11)]

## 5) Appropriateness of Muan activities

The Appropriateness of Muan activities was also analysed. Under the biodiversity management, efforts to set up a sustainable civil monitoring system have been placed

as a form of workshops and field trips. During three years of monitoring, around 200 people participated in benthic species and birds monitoring. Civil monitoring report was published, rare species such as a small snail *Ellobium chinense*<sup>12)</sup> were discovered and 'Inventory of benthos' including 229 species was made.

Secondly, under the strategy of governance management, activities related to capacity building of the tidal flat centre and setting its role and function have been implemented. 9 ecological education programmes<sup>13)</sup> and materials<sup>14)</sup> have been developed and implemented for elementary and middle school students. In 2011, 118 schools and 8,796 students from Kindergarten to University participated in the education programmes. Several educational programme workshops with Korea-Wadden Sea<sup>15)</sup> have been held to exchange tidal flat educational information and seek for the future cooperation.

Thirdly and lastly, under the sustainable use management, the project has developed local community-led eco-tourism and promotes local residents participation to set up an ideal model for sustainable use. As of 2012, total 13 times of eco-tour programmes have been conducted and approximately 635 people participated. In addition, the first Muan tidal flat festival<sup>16)</sup> was held in 2012 [Figure 6] and 54 km-long Muan tidal flat

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12) Designated the 2nd grade of endangered species by Ministry of Environment

13) Explanatory programs for Muan tidal flat center displays, Formation and evolution of the tidal flat, Tidal flat benthos species; Looking for hidden tidal flat species and their habitat, Waterbirds and the tidal flat, Tidal flat plant investigation; The story of plants, Tidal flats and culture; The tidal life, Our manner in tidal flat, Learning tidal flats through games, and Tidal flats and the games

14) 1 Promotional material for tidal flat education, 5 Education worksheets (Formation of tidal flat/Benthos/Waterbirds/Plants/Culture), and 3 Educational photo cards

15) The Wadden Sea is a part of the Dutch or German North Sea coast and added to the World Heritage List in June 2009. It is one of the largest coastal wetlands in the world. More than 10,000 species of plants and animals live in the Wadden Sea, from microscopic organisms to fish, birds and mammals. It is a critical station for the 10 to 12 million migrating birds that spend a short or longer period of time in the region. (Wadden Sea World Heritage, <http://www.waddensea-worldheritage.org> (visited on July 20, 2013))

16) To promote ecological value and importance of Muan tidal flat and raise public awareness the festival was held on 19-20 May, 2012 support with Muan government. Participants were approximately 1,000. Programs consist of cultural festival, food festival and Muan tidal flat tour and small market and exhibition booths were operate. (KIOST, YSESP technical progress report(2012), pp 4)



trail<sup>17)</sup> was created. Korea-Japan tidal flat eco-region exchange workshops<sup>18)</sup> were held 2 times.<sup>19)</sup>

In this context, the survey asked appropriateness of relevant activities. The question was ‘Do you think the relevant activities were appropriate to conserve the tidal flat, build a network and make local residents participate for sustainable use?’ 64 % of respondents answered ‘Strongly agree’ and 36 % did ‘Agree’.

## 6) Activeness of participants

Level of participation, in other words, activeness of participants was also evaluated. The question was ‘Do you think local residents have actively participated in the Muan activities?’ 55 % of local residents said ‘Agree’ and 27 % said ‘Strongly agree’. 18 % of the respondents chose ‘Neutral’. [Figure 7] The survey asked the reason behind the active and in inactive participation. Each had different and diverse reasons to participate. Both active and inactive reasons for participation are listed in the table. [Table 3]

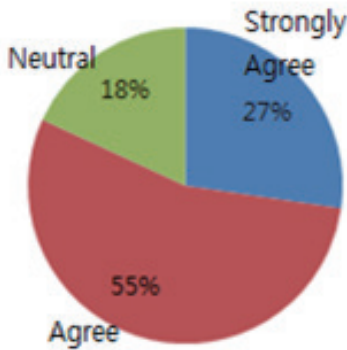


[Figure 6. Muan festival in 2012] (Source: EHI)

17) The item was selected by Ministry of Culture, Sports and Tourism. Total 54km section near Hamhae-bay and Tando-bay coast is the proposed sector of the trail. As of 2013, the basic plan for Muan pedestrian roads will be soon implemented. Finding out local special resource for the route selection and GPS data construction are still going on. (EHI, YSESP final report(2013), pp 7)

18) To establish a community network between Muan, Korea and Kashima and Okinawa, Japan, the exchange workshops were held in 2011 and 2012. (Ibid, pp 6)

19) YSESP, 6th Advisory Group meeting of the Yellow Sea Eco-region Action Programme(2013), pp 45-51



[Figure 7. Activeness of participants (n=11)]

Reason behind the active participation	<ul style="list-style-type: none"> <li>- To revive the local economy</li> <li>- Local residents' ownership and affection to local community</li> <li>- Academic interest and curiosity</li> <li>- Talent and knowledge donation</li> <li>- Recognition of natural resource and value of related activities</li> <li>- Job creation</li> </ul>
Reason behind the inactive participation	<ul style="list-style-type: none"> <li>- Work for living is the first priority to local people</li> <li>- Unexpressiveness</li> <li>- Lack of interest and knowledge</li> </ul>

[Table 3. Reason behind the active and inactive participation]

## 7) Changes in individual thought or behavior

The research asked any changes of individual thought or behavior by taking part in the relevant activity. Respondents realized the importance of marine conservation activity, community participation, and even international cooperation. Also, the answer included that activities have affected local government system and administration.

[Table 4]

Changes of individual thought or behavior by taking part in the relevant activity
<ul style="list-style-type: none"> <li>- Realize the importance of conservation activities</li> <li>- Change in the attitude to marine litter and dumping</li> <li>- Conservation of the tidal flat should be based on community participation</li> <li>- Local residents and the administrative system have been changing gradually.</li> <li>- Became proud of Muan and easier to approach and communicate with tourists and visitors as an eco-guide.</li> <li>- Yellow sea region needs to conserve its environment by ‘Ecosystem Based Approach’ and - international cooperation not just one site specified activity or project</li> </ul>

[Table 4. Changes of individual thought or behavior by taking part in the relevant activity]

## **8) Network establishment , application in other areas and intention of re-participation**

Futhermore, more, the study asked whether a local network established. Network composed of local residents can continuously play a key role in the local area and implement marine conservation activities in a sustainable way. 100 % of the respondents chose ‘Yes’.

The study also asked ‘If this kind of activities applies in other area, do you think it can give positive impacts in the region?’ As the same with above question, 100 % of the respondents chose ‘Yes’. The respondents think these kinds of marine conservation activities can give positive effects to other areas.

In addition, intention of re-participation was also surveyed. 91 % people answered positively. 9 % said if the activity is the same with existing or implemented one, they would not participate again.

## **9) Requirements for future management**

The research clarifies requirements for the future management of Muan tidal

flat and ecosystem conservation. Most of them mentioned following projects are needed after YSESP since three years of demonstration site project in local area was not enough. It could be the stepping stone for the future works. Considering the continuity and building sustainability for conservation action and network in local society, respondents answered that certain types of follow up or supplementary programmes are needed. Not only that, continuous cooperative system and expansion of network with China, Japan, even Hong Kong, and the Wadden Sea are required. In addition, publishing YSESP comprehensive report, more educational programmes and promotion activities are also mentioned for future management. Some local residents replied that building restaurants and accommodation facilities is urgent to attract tourists and revitalize the fishing village.

## **10) Others; Improvements and suggestions**

A respondent asked implementing agencies need to visit Muan more often and communicate with local residents since it can make local people acknowledge that the agencies are doubtlessly conducting the activities. Moreover, the respondents want to know more about different cases in other countries' and hold sustainable and various future activities and financial supports. They also want to have a certain form of workshop or forum to discuss with local government, especially the Muan governor. The reason is that the local government should support continuously to provide follow up projects after some revision and improvement in both financial and administrative perspective. Furthermore, a research which can show the relationship between 'health of tidal flat' and 'increase of fisheries products by effective MPA management' is required as a follow up project.

## **Implications and Limitations of CommunityBased Management in Korea**

Based on the result of survey, the research could draw out some implications.

Firstly, the respondents participated in various activities. However, the three-year Muan demonstration project is still in its early stage to achieve its goals. Therefore, expert training and education was the main activity for the people to be involved. In addition, the research discovers that respondents have also been involved in several activities at the same time. That implies those activities are all linked and it can have synergy effects.

Regarding the frequency of participation, 63 % of respondents involve the Muan activities at least more than 1 time per month. Since some respondents are government officials in marine conservation division or MPA managers, their frequency of participation was high. Therefore, a strategy which can promote other stakeholders' participation like local residents and general public is more needed.

80 % of respondents chose the local based stakeholder including local resident and government official is the more important groups compared to other stakeholder groups. That means the involved participants have already recognized the importance of local based stakeholder and CBM.

Reasons of participation are also diverse. Academic interest and duplication of their works are the most frequent answer from respondents. That shows if the activity links closely to stakeholders' job and living, the project can draw out more active participation.

The project pursues 3 management plans on biodiversity, governance, and sustainable use and there are relevant activities under all 3 plans. All the participants who answered the activities were appropriate to conserve the marine environment. That implies respondents are satisfied with the implemented activities and they expect their participation and activities can contribute to the marine environment.

82 % of respondents answered that the participants to Muan activities were active. However, there are 18 % neutral answers. Both active and inactive reasons include economic issues. Especially, economic issues are closely linked to local residents. They want to be involved in marine conservation activities since they expect the activities can contribute local economy and revitalize the fishing village. However, they have to take care of their own living in the reality. In short, local residents cannot put their time and efforts in as they wish to at this current moment in time.

From the analysis of any changes of individual thought or behavior, the research proves that raising public awareness on marine conservation is the most remarkable change. Even respondents acquired professional knowledge like the concept of 'Ecosystem Based Approach'<sup>20)</sup> and realized the importance of international efforts to conserve local area.

Respondents answered the local network established through the Muan demonstration site activities and this system can continuously contribute. In addition, all of them mentioned that the knowledge and lesson learned can be applied in other areas and most of them want to participate in this kind of marine conservation activity again. That means the demo project in Muan was effective in providing some fundamental human resources and knowledge to conserve Muan.

Lastly, the respondents strongly insist that follow up projects, more educational programmes, and communication among the stakeholders are needed. That implies that long-term strategy or plan should be provided to conserve the marine environment, raise public understanding and awareness, and utilize the invested physical and human resources (network).

In sum, a plan to draw out more participation from not only the educational sector but all sectors is vital for the future and long term Muan tidal flat management. In addition, involvement of the general public including local residents is still encouraged. A strategy directly that is linked with the increase of local income and revitalization of local economy should be provided. Since three years of demonstration site project in Muan contributed mainly for raising public awareness, longer term of management plan and YSESP follow up project are needed to achieve more visible and practical results of marine conservation.

However, there are some limitations in the research. The number of respondents is insufficient since the study chose respondents who already know the overall project background and procedure. Moreover, the respondents do not represent each group of stakeholder. They only express their personal opinion in the project, especially the

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20) 'Ecosystem Based Approach' or 'Ecosystem Approach' is defined 'a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way' (Convention on Biological Diversity, about the Ecosystem Approach, <https://www.cbd.int/ecosystem>, (visited on August 20, 2013))

activities they are involved in.

## Conclusion

The research tried to ascertain the stakeholders' understanding of the project analysing participated activity, frequency of participation, important stakeholders, reason of participation, appropriation of activities, activeness of participants, changes of individual thought or behaviour, establishing network, application in other areas and intention of re-participation and requirements for the future management. From the analysis, the study could notice the respondents actively participate in various Muan activities on regular basis and the project could create a local stakeholder network which can play a key role in the future continuously and raise public awareness.

With this analysis, the study highlights some implications and suggestions for future MPA management. More participation and strategy development not only on the educational sector but also on other various fields are needed. Involvement of the general public including local residents is encouraged. To increase local income and revitalize the local community, economy-linked strategy is necessary. More importantly, a longer term of management plan should be jointly developed by the local community, local government and academic experts for the project's continuity and achievement of visible marine conservation results in Muan.

The efforts made in Muan were highly evaluated by Korea Tourism Organization. As a result, 'Yongsan Association'<sup>21)</sup> won the 'Excellence Prize' from the Korea Tourism Organization in 2012. In addition, the maritime-fisheries affairs division at Muan local government received a 'President prize' on World Wetlands Day in 2012.<sup>22)</sup> These two positive evaluations by third parties demonstrate the usefulness of the community based conservation approach.

Moreover, the project raised public awareness for various stakeholders like

21) The association established in 2009 to promote sustainable use of tidal flat and develop local economy. (EHI, Establishment of Yongsan Association and its foundation ceremony, [http://www.ecoin.or.kr/research/river/view.php?no=2347&c\\_sstring=용산&c\\_soption=title&source\\_url=&cat=&start\\_record=0&start\\_record=0](http://www.ecoin.or.kr/research/river/view.php?no=2347&c_sstring=용산&c_soption=title&source_url=&cat=&start_record=0&start_record=0), ((visited on August 20, 2013))

22) KIOST, YSESP technical progress report(2012), pp 3-4

local residents, researchers, central and local government officials and others. It also gradually improved the marine conservation system in Muan. With the mentioned implications and stakeholders' suggestions, the project can handle Yellow Sea related problems in more suitable and improved ways and Muan can have its own capacity to conserve the tidal flat in the future.



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