

## COMMUNITY INVOLVEMENT IN CORAL REEF RESTORATION PROJECTS IN THE GULF OF THAILAND



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A lesson learned from Mu Koh Chang Coral Reef Demonstration Site, Trat Province, Thailand under UNEP/GEF Project on Reversing Environmental Degradation Trends in South China Sea and Gulf of Thailand during 2005 – 2008 was implementation of a demonstration site for coral reef restoration at Koh Mapling. The project worked in collaboration with local fishermen of Klong Son village, Association of Marine Biodiversity Conservation and Education (AMBCE), an NGO conservation group led by marine scientists, and certain volunteer groups in Trat Province. The demonstration site for coral reef restoration was carried out in a limited area where it can be easily controlled and managed for the benefits of ecotourism, education, raising public awareness, ecosystem restoration and research. It showed significant improvement of coordination among local communities, NGOs, private sector and government agencies to work actively in the planning and implementation processes. The AMBCE played a major role in providing scientific knowledge for coral reef restoration. A long-term cooperation mechanism between local communities and volunteer scientists was developed to ensure sustainable uses of coral reefs in the Gulf of Thailand. Several demonstration sites for coral reef restoration were established by local administrative offices, government agencies, NGOs, local communities and private sector. They participated actively in the planning, implementation processes and monitoring for their direct and indirect benefits from the demonstration sites. Coral fragments on coral reefs were used in order to increase the survival of natural coral fragments that might otherwise have had low survival because they were susceptible to being buried. A low cost coral reef restoration method, additional substrates for coral recruitment and attaching coral fragments by using clusters of designed cement blocks, was selected to show at the demonstration sites. The local administrative office was a key agency to encourage and strengthen collaborative management for long-term benefit at each

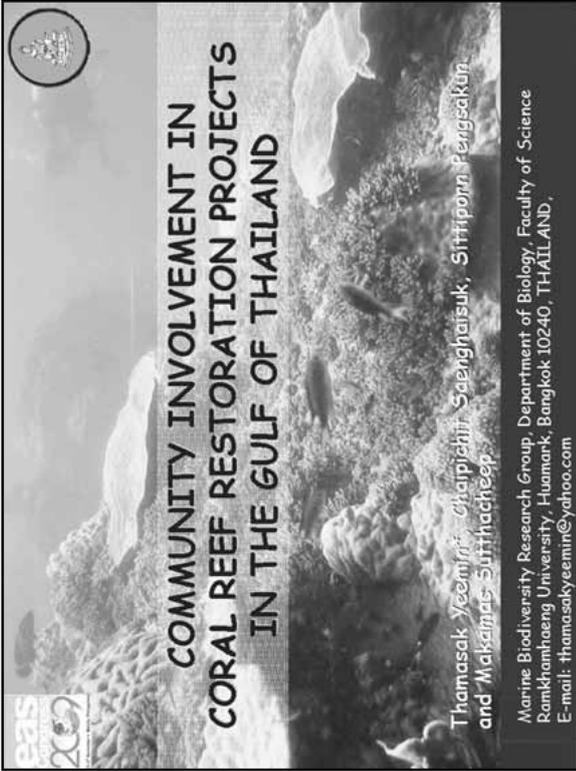
demonstration site. Good practices from demonstration sites for coral reef restoration were applied to establish several coral reef restoration sites in the Gulf of Thailand. A prominent case study was the modification techniques for coral reef restoration of Mu Koh Kood project which were transferred to Ao Mai Rood area to develop a demonstration site for coral reef restoration in coastal area of Trat Province. These activities better coordination among local communities, NGOs, private sector, government agencies and relevant organizations to work actively during the planning and implementation phases for coral reef conservation. A major concern for coral reef restoration projects is that techniques and methods used in the projects should be kept simple and use cheap materials available in local areas.



## COMMUNITY INVOLVEMENT IN CORAL REEF RESTORATION PROJECTS IN THE GULF OF THAILAND

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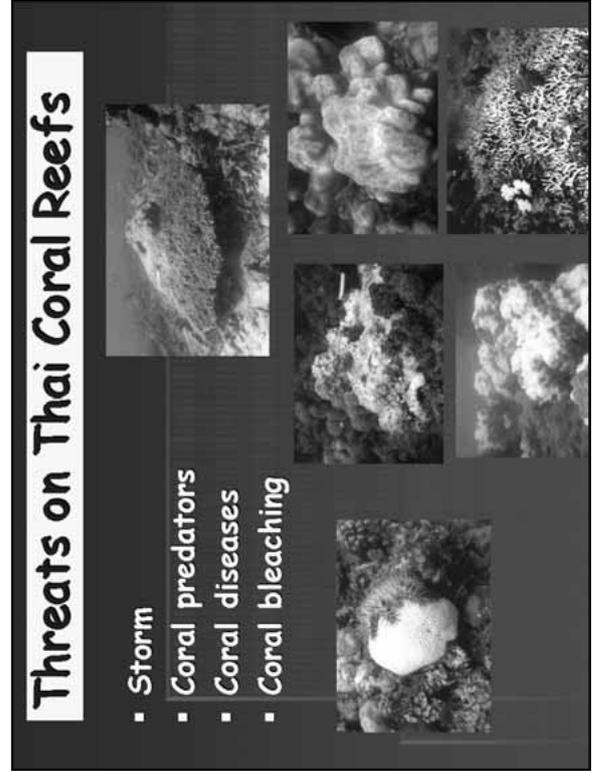
## Threats on Thai Coral Reefs

- sedimentation from infrastructure development
- impacts from expansion of tourism business
- unskilled divers
- illegal fishing



## Threats on Thai Coral Reefs

- Storm
- Coral predators
- Coral diseases
- Coral bleaching



## A Case Study

### Demonstration Site for Coral Reef Restoration at Mu Koh Chang, Thailand



Mu Koh Chang Coral Reef Demonstration Site  
UNEP/GEF Project on Reversing Environmental Degradation Trends  
in the South China Sea and Gulf of Thailand

### Demonstration project of coral reef restoration

- Benefit for ecotourism, education, raising public awareness, ecosystem restoration and research.
- Involvement of local communities, government agencies, private sector and NGOs.
- Natural coral fragments were used in order to increase the survival of natural coral fragments.
- Providing artificial substrates for coral recruitment.



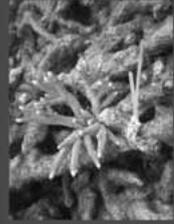
### Demonstration Projects of Coral Reef Restoration

- i) additional substrate for coral recruitment by using clusters of cylindrical concretes lay in triangle model;
- ii) attaching branching *Acropora* spp. with screws to designed PVC pipe frames in the coral nursery area;



### Demonstration Projects of Coral Reef Restoration

- iii) additional substrate for coral recruitment and attaching coral fragments by using clusters of concrete blocks fused in horizontal and vertical directions;
- iv) attaching branching fragments to dead branching corals by means of plastic straps.



### Coordination among government and private agencies:-

- Department of Marine and Coastal Resources
- Mu Koh Chang National Park
- Ramkhamhaeng University
- Ramkhamhaeng University
- Bangkok Technical Campus, Rajamankala Institute Technology
- Association of Marine Biodiversity Conservation and Education
- Kon Rak Bangbao Conservation Group
- Marine Science Activities and Conservation Foundation
- Koh Wai Pakarang Resort



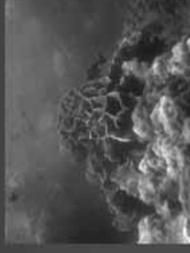
## Demonstration Site for Coral Reef Restoration at Koh Mapling

Association of Marine Biodiversity Conservation and Education (AMBCE), an NGO conservation group led by marine scientists, and certain volunteer groups in Trat Province, supported scientific knowledge to local communities.



## Demonstration Site for Coral Reef Restoration at Koh Mapling

- The demonstration site for coral reef restoration was carried out in a limited area
- It can be easily controlled and managed for the benefits of ecotourism, education, raising public awareness, ecosystem restoration and research.



## A Case Study at Koh Kood, Trat Province

### Development of coral reef restoration project

- Koh Kood Local Administrative Office
- Koh Kood Local Communities
- Local Volunteer Groups for Coastal Resource Conservation
- Association of Marine Biodiversity Conservation and Education (AMBCE)
- Supporting Agencies/Organizations
  - Local Schools
  - Tourism Business Companies
  - Office of Natural Resources and Environment of Trat Province
  - Department of Marine and Coastal Resources
  - Universities
  - Non-Government Organization for Coastal Conservation

AMBCE worked in collaboration with local communities, NGOs, private sector and government agencies



## Local people learned coral restoration methods from the AMBCE



## Lessons Learned

- The project showed significant improvement of coordination among local communities, NGOs, private sector and government agencies to work actively in the planning and implementation processes.
- The AMBCE played a major role in providing scientific knowledge for coral reef restoration.
- A long-term cooperation mechanism between local communities and volunteer scientists is needed to ensure sustainable uses of coral reefs in Thailand.



## The modified techniques for coral reef restoration of Mu Koh Kood project was transferred to Ao Mai Rood area



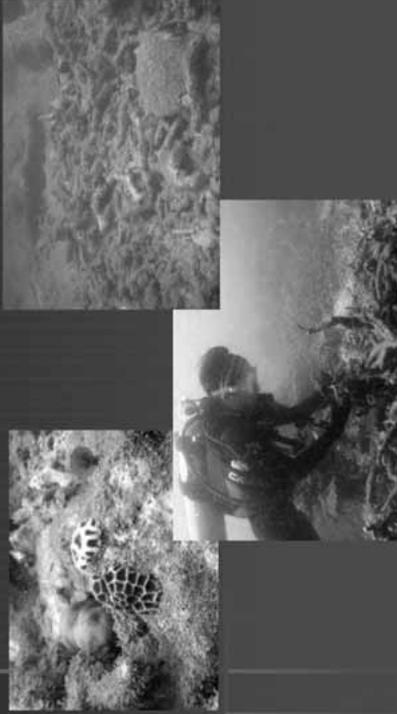
## Raising public awareness on coral reef conservation

Prevention and mitigation of coral reef degradation are more important than development of coral reef restoration projects.



### Scientific Data for Planning of Coral Reef Restoration Projects

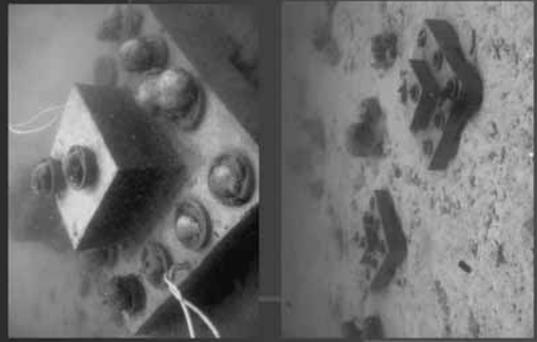
Basic data on coral biology are required for planning of coral reef restoration projects in order to select the best method for a local situation.



Local communities participated actively in the planning and implementation processes



### Demonstration Site of Coral Reef Restoration for Local Schools and Tourists



### Future Management Plans for Coral Reef Restoration in Thailand

- Develop a decision flow chart for coral reef restoration
- Determine priority sites for coral reef restoration
- Develop a management plan
  - ↳ Tourism management
  - ↳ Wastewater treatment
  - ↳ Reduction of sediment from coastal development
  - ↳ Management of reef based fisheries

Thank you for your attention

See You in Phuket !!!!

## 2nd Asia Pacific Coral Reef Symposium

June 20 - 24, 2010, Phuket, Thailand

<http://www.thaicoralreef.in.th/2ndAPCRS>

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## EVALUATION OF ARTIFICIAL REEFS IN WEST COAST, PENINSULAR MALAYSIA



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The use of artificial reefs in Malaysia is relatively new and if properly constructed, artificial reefs (ARs) can enhance fish habitat and easier access to quality fishing grounds and improved quality of catch will benefit fishermen and coastal communities. The first ARs were built in year 1975 by Department of Fisheries Malaysia and now there are more than 250 ARs were built in Malaysia. This paper examines the economic return of artificial reefs on the fishermen and the industry in West Coast (states of Kedah, Perak and Melaka), Malaysia which are to asses the influence of these ARs on the fisheries and the impact of income changes on the socioeconomics conditions of fisher-folk fishing at ARs. In the middle of 2007 and early 2008, a survey has been carried out to evaluate artificial reefs in the states within a period of 10 months (from April 2007 until January 2008) and with a sample size of 7 boats in Kedah, 20 boats in Perak and 7 boats in Melaka. This survey involved two types of survey books which are the blue books and the red books. All the information regarding ARs and fishing operations were stated in the books by days and months. To analyze the collected data, the descriptive analyses which have been applied are monthly catch analysis, monthly operation cost, profitability operation analysis and cost-benefit analysis; to describe the information of the quantity of catch, value of catch, cost of catch, profitability and the income of the fishermen. From the results, Perak has the highest fish landing which is 30,819.35 kg, followed by Melaka (11,252.23 kg) and Kedah (11,190.50 kg). The income of the three states are between RM700-RM1,900 per month (increased by 20% to 700%) and the state that gained highest income is Perak. While the profitability percentage of the states are between 125.8% to 1400% which is lead by Melaka. The percentage of operation cost is referring to the difference between profitability and the income of the fishermen. The overall findings suggest that the deployment of ARs is

one of an effective way in helping the fishermen's income and their profitability.

**Keywords:** Artificial reefs (ARs), quantity of catch, value of catch, cost of catch, profitability, income of fishermen and fish landing

# Evaluation of Artificial Reefs in West Coast, Peninsular Malaysia

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## Introduction

- ◆ The deployment of ARs in Malaysia was started by small scale fishers in the East Coast, Peninsular Malaysia (Kelantan and Terengganu). Later in 1975, more advance ARs was undertaken by the Fisheries Research Institute, Penang. Since then, ARs was deployed all around Malaysia and these ARs had been placed in both non-protected and protected marine areas (Malaysian Nature Society, 2006).
- ◆ Now there are more than 250 ARs were built in Malaysia.
- ◆ By middle of 2007 and early 2008, the Fisheries Development Authority of Malaysia (LKIM) has carried out a survey to evaluate ARs in West Coast, Peninsular Malaysia.



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## The objectives of this study are:

- 1) To assess the impact of such ARs on the livelihood of traditional fishers in West Coast, Peninsular Malaysia;
- 2) To evaluate the benefit cost of ARs



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## Methodology

- This study involved two types of survey books which are the blue books and the red books.
- The red book contained weekdays data of total catch and the information about the operation cost while the blue book contained monthly data of total catch, monthly income and expenses and comparisons before and after application of ARs.
- Overall for each of the boats involved, will have 1 blue book and 10 red books for 10 months survey.



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## Methodology

Based on all the data that contained in both books, below are the analyses which have been applied:

- 1) *Annual catch analysis* (quantity) by states;
- 2) *Annual operation cost*;
- 3) *Profitability operation analysis* which covers net return to operation, return on capital and return on labor;
- 4) *Cost-benefit analysis* (Net Present Value, Benefit Cost Ratio and Internal Rate of Return)



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## Results

Table 1: Total average of catch, frequency catch and catch per trip by states (kg)

State	Catch	Frequency	Catch per Trip
Kedah	228.38	6	45.47
Perak	154.10	11	14.25
Melaka	167.99	8	26.42
<b>West Coast</b>	<b>183.49</b>	<b>8</b>	<b>28.71</b>

Table 2: Total average of catch, frequency catch and catch per trip by states (MYR)

State	Catch	Frequency	Catch per Trip
Kedah	2,984.06	6	607.79
Perak	1,887.30	11	179.75
Melaka	1,067.38	8	149.07
<b>West Coast</b>	<b>1,979.58</b>	<b>8</b>	<b>312.21</b>

MYR = Malaysia Ringgit

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## Results

Table 3: Total average of cost, frequency cost and cost per trip by states (MYR)

State	Operation Cost	Frequency	Cost per Trip
Kedah	1,148.32	6	202.01
Perak	494.59	11	43.45
Melaka	229.56	6	37.26
<b>West Coast</b>	<b>624.16</b>	<b>8</b>	<b>94.24</b>

Table 4: Total average of catch per trip, operation cost per trip and revenue per trip by states (MYR)

State	Catch per Trip	Operation Cost per Trip	Revenue per Trip
Kedah	607.79	202.01	405.79
Perak	179.75	43.45	136.31
Melaka	149.07	37.26	111.81
<b>West Coast</b>	<b>312.21</b>	<b>94.24</b>	<b>217.97</b>

MYR = Malaysia Ringgit

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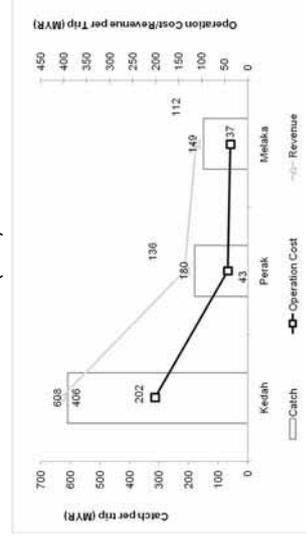
Figure 1



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## Results

Figure 1: Catch per trip, operation cost per trip and revenue per trip by states (MYR)



MYR = Malaysia Ringgit

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next



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## Results

Table 5: Cost Benefit Analyses: Evaluating the Net Economic Impact of Artificial Reefs in West Coast, Peninsular Malaysia

Details	Unit
Investment (MYR)	169,5000
Average of monthly revenue per boat (MYR)	1,244
Months of operation	10
Total of boats	34
Average of annually revenue (MYR)	423,023
Discount rate (%)	5
Benefit Cost Ratio (MYR)	30.62
Net Present Value (MYR)	13,150.6
Internal Rate of Return (%)	35.05

MYR = Malaysia Ringgit



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## Conclusions

From this study, it is suggested that the ARs needs to be stringently managed and monitored to ensure sustainable harvests. Severely regulations and enforcement must be in position and be practical to avoid any destructive fishing practices that can harm the resource in the long run as this project do grant profitability to the fishers not only by income but also to an increase in catch volume which is to 'big believe' where it may swathe the demand of fish in Malaysia.

**“SALAMAT / THANK YOU”**



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## COMMUNITY-BASED MANAGEMENT APPROACH AT WORK IN THE MUAN WETLAND PROTECTION AREA: CHANGING PERCEPTION, CHANGING PRACTICE AND CHANGING POLICY



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The Marine Protected Area (MPA) policy of the Republic of Korea has rapidly evolved since 1999, when was enacted the Wetland Protection Law, the first MPA supporting legal arrangement. The first coastal Wetland Protection Area (WPA) then was established in 2001 along the tidal-flat of Muan. Although the designation process was taken under the consent of local stakeholders, the management of the area has received little attention of local communities and governments until recently. Like all other later-designated MPAs, the area faced challenges such as a low policy priority by local government (thus, insufficient budget and political support), lack of stakeholders' understanding of MPA, and lack of managers which resulted in poor management status even after the designation as a protected area.

Amid the raising dissatisfaction of local communities against the government and their enervated expectations on having an MPA in their own villages, a community-based approach was introduced as a remediation. This approach aimed at two purposes: first, for empowering and benefiting local communities in the MPA management regime and second, for demonstrating the community-based management approach as an effective and successful way for managing protected areas in the national context.

The activities so far focused on changing local communities' attitudes towards nature and MPA policy. Instead of formal biodiversity education programs, a cultural approach that local people make their own lives at the tidal-flat as a folk play was adopted. Their work was presented at a number of art festivals, and eventually not only the site won a nation-wide recognition but also the local participants' pride and valuation of the nature and their living as fishermen were elevated. Successively, the foundation of a village cooperative enabled collective actions and active participation of local communities to various management issues. Other multiple activities such as meetings, seminars and surveys were carried simultaneously with local participation and contributed for

disabusing people of misunderstanding about conservation and MPA.

All these activities for three years made a prominent progress not only for changing people's conception, but are evaluated to affect their behaviors too, which could be seen from the emergence of local people's voluntary actions of patrolling, biodiversity status reporting, and suggestions of management ideas to governments. Meanwhile, these changes at a corner of the MPA affected the local governments' attitudes and behavior as well that the management of Muan tidal-flat has now higher policy priority and is given better institutional and political support.

In the Republic of Korea, where the community-based management approach has not been properly understood as a form of policy, the success case of Muan tidal-flat opens a new way for the improvement of MPA policy. It demonstrates that the local participation should be guaranteed for sustainable MPA management and that a targeted community-unit approach could be effective although those covering larger areas and larger number of people seem more relevant in general. Also the political willingness of local governments, who hold legal MPA management duties, could be gained from bottom, and eventually contribute to the better management of MPA.

# Community-Based Management Approach at Work in the Muan Tidal Flat Wetland Protection Area

*Changing Perception, Changing Practice and Changing Policy*

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 Young Rae Choi (Korea Ocean Research & Development Institute) yrchoi@kordi.re.kr

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- Social Background & Ecosystem Status of Muan WPA
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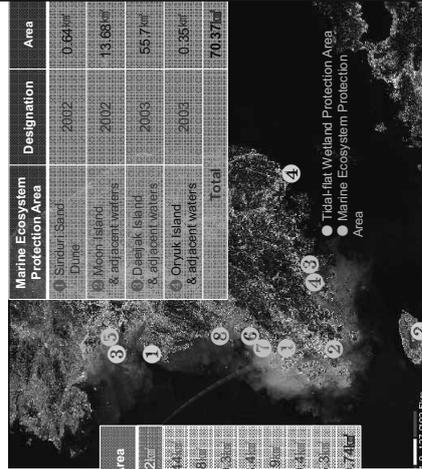


## Current Status of Korean MPA Designation

### Major Types of Marine Protection Areas (MPA) in Korea

- 1) Tidal-flat Wetland Protection Area (WPA)
- 2) Marine Ecosystem Protection Area (MEPA)

Tidal-flat Wetland Protection Area	Designation	Area
1) Muan	2001	42 km <sup>2</sup>
2) Jindo	2002	1.4 km <sup>2</sup>
3) Suncheon Bay	2003	28 km <sup>2</sup>
4) Boseong-Beolgyo	2003	10.3 km <sup>2</sup>
5) Ongjin-Langbongdo	2003	68.4 km <sup>2</sup>
6) Buan-Julpo Bay	2006	4.9 km <sup>2</sup>
7) Gochang	2007	10.4 km <sup>2</sup>
8) Seocheon	2008	15.3 km <sup>2</sup>
<b>Total</b>		<b>180.7 km<sup>2</sup></b>



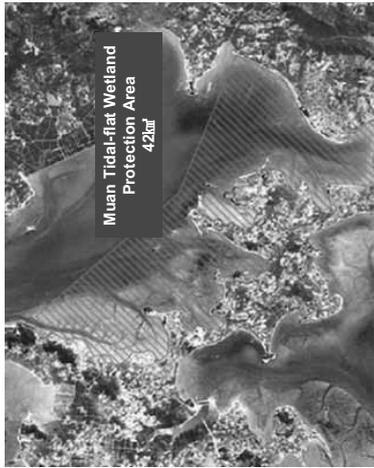
Marine Ecosystem Protection Area	Designation	Area
1) Seodang Island & adjacent waters	2002	0.64 km <sup>2</sup>
2) Moon Island & adjacent waters	2002	13.68 km <sup>2</sup>
3) Daedeak Island & adjacent waters	2003	55.7 km <sup>2</sup>
4) Oryuk Island & adjacent waters	2003	0.35 km <sup>2</sup>
<b>Total</b>		<b>70.37 km<sup>2</sup></b>

## Social Background of Muan WPA Designation

- 1997: Ramsar Membership of Korea & MPA Policy Initiative**
  - Importance of Korean tidal-flats, especially as waterbird habitat, was recognized
  - Raised awareness initiated tidal-flat conservation policy, incl. MPA policy
- 1998: 4th Stage Youngsan River Reclamation Project Cancelled**
  - Large-scale agriculture-purpose reclamation of 390 km<sup>2</sup> was planned in 1979 Project was cancelled after strong opposition of local communities and NGOs
- 1999: Establishment of Wetland Conservation Act**
  - Enactment of the Wetland Conservation Act provided legal foundation for MPA designation and support
- 2001: Muan Tidal-flat, Korea's First WPA Designation**
  - Value of the site was recognized both by the government and communities
  - Muan Tidal-flat was further designated as a Ramsar Site in 2008

## Current Status of Ecosystem of Muan WPA

Macro Benthos 208 species, Birds 47 sp., Fish 22 sp.,  
Halophyte 45sp. are found in Muan WPA

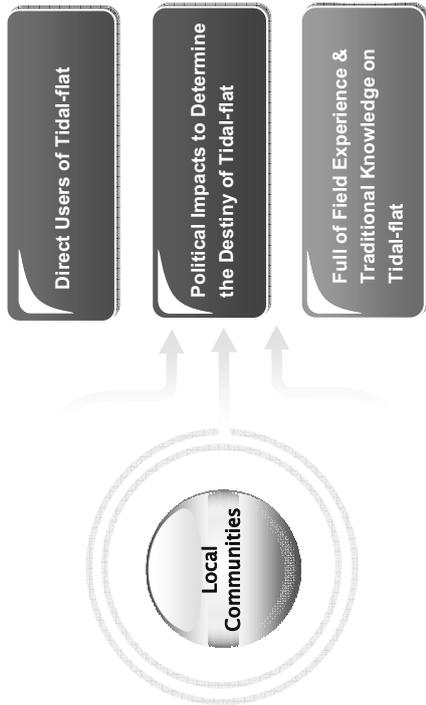


## Current Status of Ecosystem of Muan WPA(2)

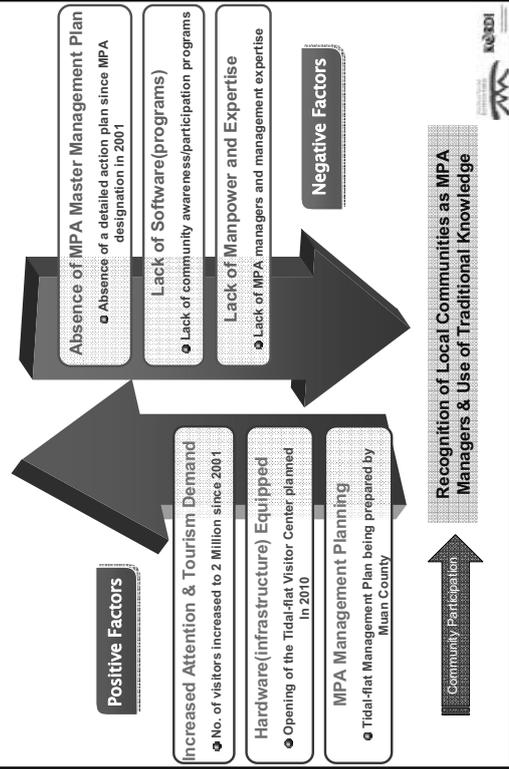
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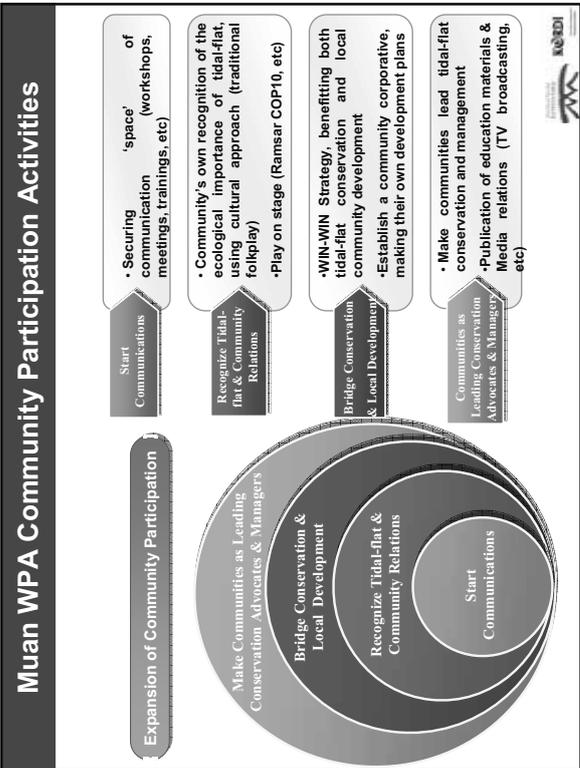
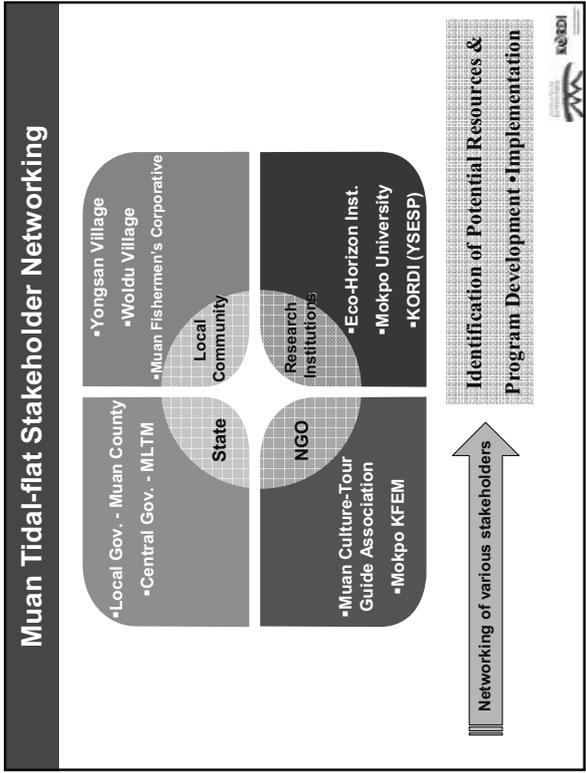
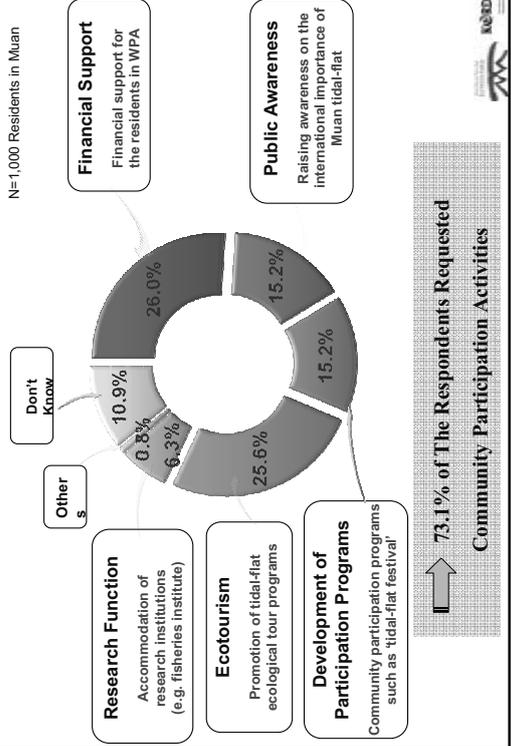
## Why is the local community participation important?



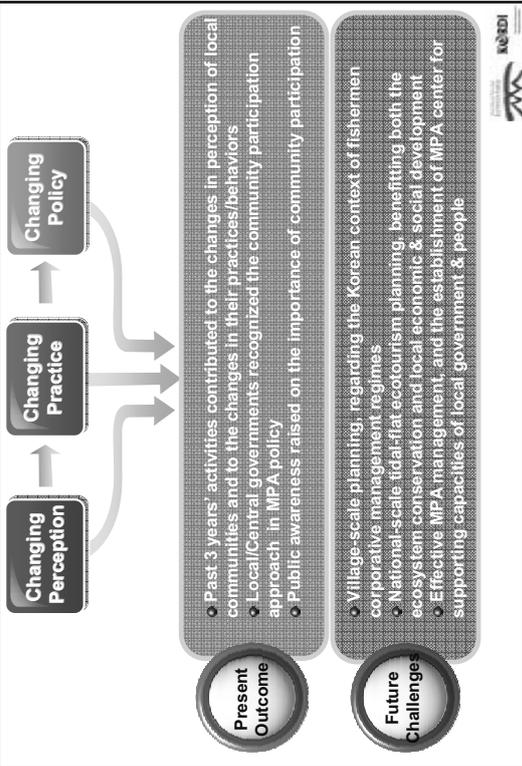
## Background of Community Participation Project



# Local Communities Say 'The Most Necessary Support Is...'



## Implications on MPA management & Future Challenges



Thank You for Your Attention!



**WHEN THE CRADLE FALLS:  
A CASE OF MANAGEMENT FAILURE IN A COMMUNITY  
MARINE RESERVE IN SOUTHERN PHILIPPINES**



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The Baliangao Marine Sanctuary (BMS) in Danao Bay in Southern Philippines is an example of upscaling an NGO-driven, community-managed marine protected area (MPA) into a National Integrated Protected Areas System (NIPAS) site. The BMS is a 74-ha marine reserve complex composed of a shallow lagoon core area, extensive reef flats, and a narrow fore reef zone. The BMS was established in 1991 by the Pipuli Foundation which organized the Danao Bay Resource Management Organization (DB-REMO), a federation of people's organizations around the bay. In preparation for its exit the Pipuli Foundation empowered the DB-REMO to implement a community-based coastal resource management program around the MPA and the entire Danao Bay from 1998 to 2002 with only nominal support from the local government. The BMS was declared a NIPAS site in November 2000 and a Protected Area Management Board (PAMB) organized in 2002 took over its management. The abrupt change in institutional arrangements, perception of "losing ownership" of the project, and lack of representation to the PAMB had discouraged community stakeholders from active participation in the sanctuary management. Weakened law enforcement from lack of community participation gave way to massive fishing violations inside the MPA in early 2005.

Underwater assessment in August 2005 showed a reduction in hard coral cover, fish species diversity, and fish biomass from their 2001 levels. Average hard coral cover declined from 46.8% in 2001 to 31.2% in 2005. Fish diversity was reduced (by 30%) from 135 species to 94 species inside the sanctuary core area, while that in the reef slope had been reduced by as much as 70% from 93 to 23 species in 2005. Overall fish abundance inside the sanctuary core declined by 54% while the population of target food fish in the reef slopes of the MPA drastically declined by almost 80%. The most convincing proof of degradation in fish communities was the significant reduction in biomass of the target food fish from 35.86 kg 1000m<sup>-2</sup> to 7.14 kg 1000m<sup>-2</sup> inside the core area, and from 3.12 kg 1000m<sup>-2</sup> to 0.06 kg 1000m<sup>-2</sup>.

The sad consequences of events leading to this management failure awakened the

PAMB and the municipal government of Baliangao to strengthen efforts on law enforcement around the MPA. The DB-REMO has become active again in guarding the sanctuary. Recent assessments in December 2006 and January 2008 showed that both hard coral cover and overall fish standing stock inside the MPA have improved since 2005, however, this development is still precarious and the MPA management has to remain militant in order to prevent future collapse in management.

These ecological impacts of management failure imply that upscaling a community-managed MPA to a NIPAS site does not always result in improved management and environmental governance. Many of the sites placed under NIPAS are small community reserves that are being effectively managed by people's organizations with support from NGOs and the local government. An evaluation of the NIPAS policy on MPAs in the Philippines is highly recommended.

## When The Cradle Falls: A Case of Management Failure in a Community Marine Reserve In Southern Philippines

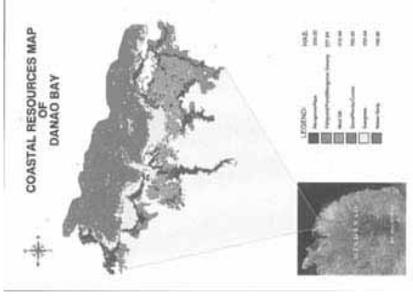
**Asuncion Biña-de Guzman**  
Mindanao State University at Naawan



*The East Asian Seas Congress 2009, 23-27 November 2009  
Phil. International Convention Center, Manila, Philippines*

## Journey of the Baliangao Marine Sanctuary to NIPAS

- 74-hectare mangrove-seagrass-coral reef marine reserve complex
- Located in Danao Bay in the northern shore of Misamis Occidental



Source: NAMRIA Landsat map

## • Brief history & Timeline

- Established as a 74-ha Baliangao Marine Sanctuary in 1991 by the Pipuli Foundation
- Renamed the Baliangao Wetland Park in 1994 with inclusion of 7-ha mangrove forest
- Declaration as NIPAS site in December 22, 2000, renamed the Baliangao Protected Landscape and Seascape (BPLS)
- Creation of a Protected Area Management Board (PAMB) on October

## Changing Hands

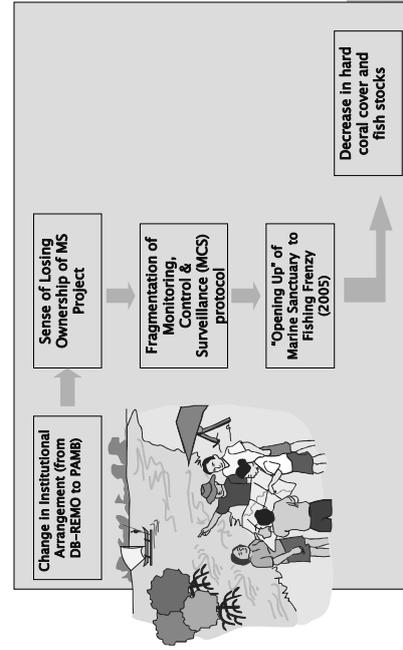
- Change in institutional arrangements
  - Began as NGO-initiated project with municipal support
  - NGO-driven Danao Bay CBCRM program with national/inter'l funding (FPE, SND, VSO, ICCO)
  - Empowerment of the Resource Mgmt Org. (DB-REMO) to undertake mgt after Pipuli exited in 2002

- Changing community perception
  - Sense of 'losing ownership' of the project → growing disinterest → decrease in enforcement
- Small Voice: lack of representation of the community to the PAMB
  - dominated by LGU officials
  - 7 PO's but only one representative to the PAMB

## Management Failure

- By early 2005 law enforcement & guarding the sanctuary became fragmented
- Lack of LGU support & security of sanctuary guards
- In March 2005, a "fishing frenzy" by some 300 fishers and gleaners
- PAMB and DB-REMO unable to stop these violations

## When the cradle falls...



## Decline in habitat and resource quality

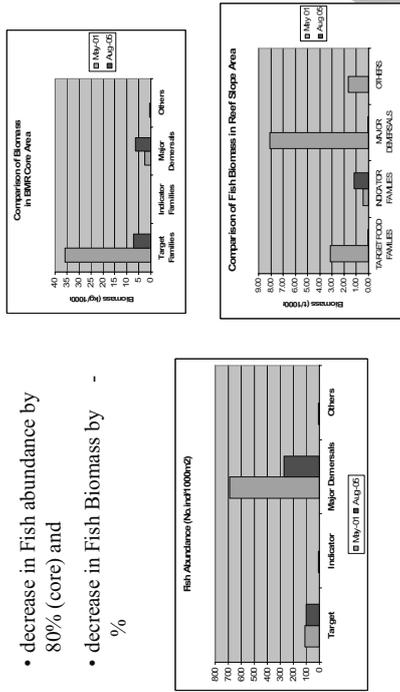


- Decrease in coral cover
- Decrease in fish diversity, abundance & biomass

Disappearance of large predators (*Lutjanus spp*)

## Decline in Bio-physical Quality

- decrease in Fish abundance by 80% (core) and
- decrease in Fish Biomass by - %

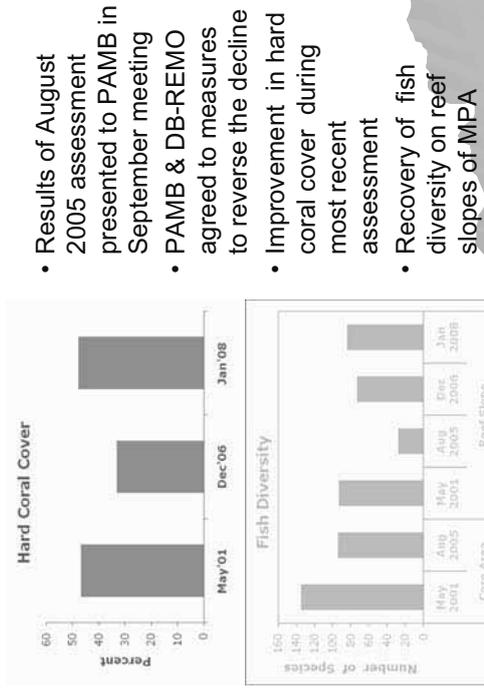


What this adds up to...

- Upscaling of community-managed MPA to a national (NIPAS) site has not been beneficial
- Has not improved management & environmental governance
- 'Partnership' between PAMB and community has not translated into co-management of project

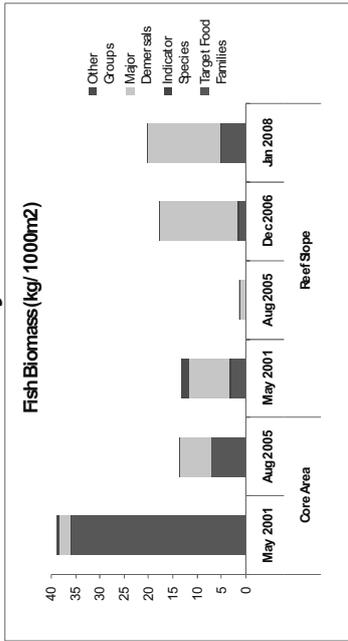
- 'Top-bottom' approach "silenced" the community voice and extinguished their enthusiasm
- PAMB also lacks funds to pursue mgt rigorously - has placed enforcement of MPA regulations on the PO
- The PO, having no active support from the LGU, their security continually threatened by violators, became ineffectual in enforcement

## A recent attempt to bounce back



- Results of August 2005 assessment presented to PAMB in September meeting
- PAMB & DB-REMO agreed to measures to reverse the decline
- Improvement in hard coral cover during most recent assessment
- Recovery of fish diversity on reef slopes of MPA

## Toward recovery?



- Fish biomass recovered after 2005, but dominated by small demersal fish (Pomacentridae, Labridae)
- Target food fish showed increase after 2006.

## Still...the NIPAS Issues persist

- Integrated protected area fund (IPAF) remains 'inaccessible' by the local MPA management
  - Past revenues earned by the BMS part of IPAF; 75% for local MPA mgt but rarely accessed
  - Apo Island - generates millions of revenues each year but only a tiny fraction goes back to MPA mgt due to bureaucracy
- Many small, locally managed MPAs proclaimed as NIPAS sites wish to be

## Hard-earned Lessons

- Communities or POs have demonstrated ability to effectively manage their MPAs
- What they need is support from LGU, NGAs, academe, NGOs, etc., capacity building and empowerment
- Upscaling well-managed LGU- or community MPAs to NIPAS level is not necessary in certain cases (e.g. Baliangao MS, Apo Is. MR)
- Moral of the story: *"Do not mend what is not torn, nor fix what is not damaged"*



## CONCEPTUAL FRAMEWORK OF ORGANIZING COMMUNITIES FOR EFFECTIVE MANGROVE MANAGEMENT



Josephine P. SAVARIS, Rosalie JOVEN,  
Rodney GOLBEQUE and Edison  
ADVINCULA  
Zoological Society of London Muzon San  
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Philippines

Our country today is facing the critical issue of sustainable fishery. Many factors have contributed to the grim situation. What makes the scenario worst is the destruction of the habitat, i.e., coral reefs, seagrass and mangroves.

The loss of mangrove forests to human development projects is a direct threat to fisheries-derived food resources and the health of the environment. Mangrove forests support natural fish production in near shore waters, provide an important nursery habitat for fish, prawns and crabs which are vital food and income sources for coastal communities, and trap sediment from the upland which would suffocate the coral reefs and seagrass beds. Loss of mangroves is a serious concern to people living along the coastline dependent on mangroves for food and economic livelihood. Coastal erosion has made coastal communities vulnerable to losing properties and lives.

The role of organized communities in mangrove management therefore cannot be discounted. Organized groups or People's Organization (POs) provide the formal structure within communities on which decisions and project implementation and sustainability depend upon.

An organizing framework which is being developed by the Zoological Society of London (ZSL) revolves around the Community-Based Forest Management Agreement (CBFMA) will be put to test for the duration of the Community-Based Mangrove Rehabilitation Project in the Philippines. The framework is expected to provide guidance to groups which would embark on similar projects. Likewise the framework is hoped to influence policy makers, NGOs and agencies of the government.

Supported by the ZSL, the 4-year project covers the 4 provinces in Western Visayas, i.e., Iloilo, Aklan, Capiz and Guimaras. ZSL will work closely with the DENR in securing CBFMA for the project sites. The CBFMA is a tenurial instrument which gives communities the right to manage a certain area of mangrove for a period of 25 years.

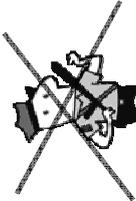


**ZSL** **CO Framework for mangroves**

Identifying mangrove issues and problems



Gathering for firewood



Weak law enforcement



No security of tenure



Conversion to fishponds




**ZSL**

Identifying mangrove issues and problems



Mangroves destroyed for development projects (Iloilo Flood Control project)



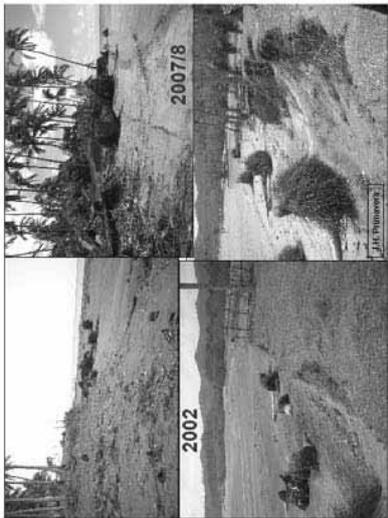
Illegal settlers




**ZSL**

Identifying mangrove issues and problems

Coastal erosion





**ZSL**

Identifying issues and problems

- abandoned fishponds not reverted back to mangroves
- families need cash for survival
- poor appreciation for mangroves economic value
- powerless communities




## CO Framework for mangroves

- Defining strategic interventions
  - Rehabilitation
  - Community led
  - Organization and strengthening of POs
  - Livelihood supplementation
  - Partnership

## CO process

### • Phase 1 – 8 to 12 months

Preliminary – team convergence and site selection

#### Socio-eco

- project orientation, MOA signing, Local Research Assistants PRA training/ data gathering, community socio-eco profile, PO formation and registration, organizational diagnosis, cross site visits, CBFMA orientation, clarifying FLA status, IEC

#### Biophysical

- Survey/ mapping of planting areas, water quality baseline data/ mangrove community structure, mangrove biology/ecology training, establishment of community nurseries, direct planting, rehabilitation planning



Mangrove ecology training



Delineating planting area



Cross site visit



MOA signing

## CO process

### • Phase 2 – 10 to 24 months

#### Socio-eco

- leadership training, PO systems & policies, CBFMA preparation and submission to DENR, survey of existing economic activities/ pilot testing for feasibility, project proposal development/ resource mobilization, orientation/training on gender and family planning, IEC, lobbying/passage of mangrove policies

#### Biophysical

- nursery maintenance, community planting, monitoring plant growth and survival, tagging, monitoring water and soil quality, rehabilitation plan review



Bagging



Planting with students



Nursery establishment



## CO process

### • Phase 3 – 20 to 36 months

#### Socio-eco

- PO meetings, lobby and advocacy, affiliation with other groups, mainstreaming PO agenda with LGU, DENR awarding of CBFMA, Community Resource Management Framework (CRMF) and Annual Work Plan development, livelihoods skills training/actual implementation, resource mobilization, benefit sharing scheme, Bantay Kalikasan training, IEC

#### Biophysical

- continue nursery, planting and monitoring with active community involvement, feed back water and soil quality data, rehabilitation plan review, community documentation of species/area planted, survival



## CO process

### • Phase 4 – 30 months onward

#### Socio-eco

- phase-out planning, PO projects evaluation/assessment, start yearly review of CRMF and AWP with DENR, PIME training, continue conduct of PO meetings, lobby and advocacy work, forum on PO best practices and learnings, IEC

#### Biophysical

- community review of rehabilitation plan, establishment of community system on monitoring and recording, continue community planting activities with various groups involvement



## Challenges

- Need for community to sustain rehabilitation activities/ advocacy
- Abandoned pond- mangrove reversion process
- Securing tenurial instrument
- Sharing responsibility with LGU
- Improving socio-economic conditions
- Mitigating climate change



Thank you!



Century old mangroves in Ibañay

**INDIGENOUS APPROACHES TO ACCESS, CONTROL AND  
PROTECTION OF COASTAL RESOURCES:  
A REVIEW OF SOME PHILIPPINE EXPERIENCES**



Elmer FERRER

University of the Philippines, College of  
Social Work and Community Development  
(UP-CSWCD)

This paper will review several indigenous practices among traditional fishing communities in the Philippines in using, controlling and protecting the coastal resources.

The review will examine how traditional fishing communities in Batanes, northern Philippines and in Palawan, southern Philippines try to live in harmony with nature by a) harnessing the ecological knowledge of fishers, b) observance of taboos and the performance of rituals, c) observing economic arrangements to protect environment and the implementation of organizational rules formulated by the association of users.

The paper will also highlight the challenge faced by indigenous practices and institutions in a fast modernizing world.

## Indigenous Approaches to Access, Control and Protect Coastal Resources: A Review of a Philippine Experience

Elmer Ferrer  
Professor  
University of the Philippines, College of Social Work  
and Community Development (UP-CSWCD)

## Introduction

This paper will review indigenous practices in a traditional fishing community in northern Philippines in using, controlling and protecting its coastal resources – the “*vanua*” (Mangahas 1994).

The review will examine how a “*mataw*” fishing association in Batanes, northern Philippines try to live in harmony with nature by a) harnessing the ecological knowledge of fishers; b) observance of taboos and the performance of rituals; c) observing economic arrangements to protect environment and the implementation of organizational rules formulated by the association of users.

## Project Site

- The site of this study is in the municipalities of Mahatao and Basco, Batan Island, Batanes. The Batanes Islands is composed of ten small islands found in the northernmost part of the Philippines.
- It is bounded by the South China Sea to the west and by the Philippine Sea and Pacific Ocean to the east.

- This brief review describes the beliefs and practices of fishermen in the Batanes Islands known as “*mataws*” who are engaged in the capture of seasonal flying fish.

- Mataw fishing is an indigenous fishing tradition - “a particular way of deriving a living from the sea” that integrates i) harnessing the ecological knowledge of fishers; ii) observance of taboos and the performance of rituals; iii) observance of economic arrangements to protect environment and the iv) implementation of organizational rules formulated by the association.

## **Harnessing the ecological knowledge of fishers**

- Local knowledge system of organizing perception of the nature of the relationship between humans and the environment and among members of the community;
  - High respect for the environment
  - Communal cooperation
  - Belief in the sacredness of relationships

## **Observance of taboos and the performance of rituals**

- The rights to fish and use the “*vanua*” safely are gained by conducting an exchange through ritual sacrifices with the anitu or invisible spirit beings;
- The *vanua* becomes a sacred area for the duration of the fishing season and fishing success is explained within a framework of purity and pollution;

## **Rituals as tools for resource management**

- While natural resources are God’s gift, the indigenous peoples consider deities as well as environmental and ancestral spirits as owners of the natural resources. Because of this, users need to consult them.
- Consultations take the form of rituals, which may include chanting, singing, dancing, praying, killing of animals e.g., chickens and pigs, wine drinking, and food sharing during communal meals.

- One result of rituals is the declaration of an area as a sacred site. As a result, sacred places become “de facto” protected areas.
- Rituals as symbolic expressions of the relationships between human beings and nature bring people and nature (land, water, wind, moon, stars, etc) into personalized relationships.

- Through this process, nature take on human characteristics which bring about a sense of familiarity and certainty over natural resources that otherwise would be nameless, unfamiliar, impersonal and difficult to work with.

### **Observing economic arrangements to protect environment**

- Reciprocity and mutual help arrangements are the traditional base of Ivatan economy. This is partly because cash is scarce in Batanes.
- A person might give a mataw onions or a sack of rice at the onset of the fishing season which the mataw will try to reciprocate at the end of the season.

- The seasonal mataw fishing activity is closely integrated with farming which is a year round activity. Mataws, who are also farmers, contract with individuals to watch over their cattle or livestock and fields to enable them to concentrate on fishing during summer.

## rules formulated by the association

- Mataw organizations regulate access and exploitation of resources within the vanua and traditional fishing grounds, under the leadership of the ideal fisherman who makes the first fishing trip for the season and who has the power to ritually set precedents for the season.

- The main objective of the vanua organization "is to protect the mataw fishing endeavor- to have a good season of fishing with as few accidents as possible.

- Mataws must organize to prepare the vanua for the fishing season, to perform communal rituals for the benefit of the entire group, to assist one another in case of emergency, and to resolve conflict among members.

- One important function of the vanua group is to formulate rules and regulations for fishing. The rules concern the behavior of the mataws, many spell out taboos and penalties for violations.
- The responsibilities of members of vanua associations include participation in meetings. If a mataw will be absent for urgent reasons he must send his wife or some other person to proxy for him.
- Mataws are bound to help one another in case of accidents like capsizing, and in bringing their boats ashore.

- Mataws who break taboos has to provide the sacrificial animal to be used in "cleaning" the vanua.

## Summary

- In summary, in order to access, control and protect its fishing ground, “*mataw*” fishing an indigenous fishing practice integrates 1) tapping/harnessing the ecological knowledge of fishers; 2) observance of taboos and the performance of rituals; 3) observance of economic arrangements to protect environment and the 4) implementation of organizational rules formulated by the association.



**Part 3: Institutionalizing community-based efforts in habitat protection, restoration and management within an ICM framework**



## 8. Panel Discussion Summary

Part 3, together with the Chair, Prof. Matsuda (Hiroshima University) and panelists, Prof. Yanagi (Kyushu University), Dir. Anne McDonald (UNU-IAS OUIK) and Prof. Elmer Ferrer (University of the Philippines) composed as the members of the interactive session wrap-up exploring institutionalizing community-based efforts within an ICM framework.

Before proceeding to the main topic of discussion, the Chair requested Prof. Yanagi, for comments and to the participants, for questions that they may have in the oral presentations during the morning and afternoon sessions.

Prof. Yanagi recalled that during his presentation, a question on any conclusive result of combining indigenous local wisdom in Japan was asked. Two examples were given based on Prof. Yanagi's experience working with the fishermen on clam culture and the seagrass rehabilitation. Examples wherein the cooperation of fishermen and scientists was very visible. Partnerships with fishermen, scientists and government for the success of the rehabilitation/restoration activities were highlighted

Specific example was given, in the central part of Japan. The local action of the fishermen union developing the clam culture system of juveniles with the technical assistance from the scientists was cited. Scientists provided technical knowledge on the procedures and proper way to do clam culture. As the fishermen and scientists worked together, clam culture system was established in the area. With the acquired knowledge, the fishermen union can do the culture by themselves. The fishermen union coordinated with Ministry of Transportation of Japan to provide them with dredged sand which they can use and spread in their tidal flats where they cultured clams. The success of the clam culture created jobs and increased of income of the fishermen. As a result, this gave inspiration to young generations of the fishing communities to return to their villages, hence, outmigration problem in the village was also addressed. The cooperation of fishermen and scientists in the area just show that both can work together to increase the clam harvest, increase income and get rid of outmigration of young generations in the village.

The restoration/rehabilitation of seagrass beds done by both the fishermen and scientists was the 2nd example. The Seto Inland Sea seagrass/eel grass beds declined drastically in the past years. With the decline of the seagrass beds, fishermen also observed decrease in fish catch. The above problem, made the fishermen union very eager to do the seagrass restoration and cooperate with the scientists who provided technical advice on the proper way on how to do it. After 10 years, fishermen noted the success of the restoration activities with the assistance from the scientists. There was

an increase in set net collected fish like red sea bream. Increased swimming crabs, and squids also were observed by the fishermen.

Dir. McDonald was given time to continue her presentation on the Sub Global Assessment (SGA) and Sato-umi initiative in Ishikawa. The presentation started with giving the visual words of Satoyama and Sato-umi. A photo showing the very traditional Satoyama in Noto Peninsula with all the landscapes and communities was presented. Below are some points discussed;

1. Three (3) possible ways in defining Satoyama based on Japan SGA, a.) to define Satoyama as traditional landscape which is understood mainly by Japanese; b) to modify the language or definition into a more global audience with emphasis on the socio-ecological production landscapes; or c) whether to expand the concept to include the areas beyond inland water bays.
2. SGA is not only the ecosystems' provisional/regulatory and supporting services, but also cultural services. Lessons from the past which reminds traditional rural societies knowledge, i.e. fishing, farming activities by the coastal communities up to the mountain communities is also an interesting aspect in this undertaking. The mosaic fusion between the traditional ways and approaches and modern science are valuable, while learning the kind of knowledge that was passed on from generation to generation is also important.
3. Satoyama initiative has to preserve old traditional landscapes in environmentally sound manner. The land-based activities and their impacts to the marine ecosystems has to be considered in looking into the interlinkages of Satoyama and Sato-umi. As an example, the Senmaida in Noto Peninsula which is a beautiful rice terraces paddy. Currently experiencing depopulation, abandonment and lack of human intervention. Heavy chemical, fertilizers and pesticides were used to maintain aesthetically the very beautiful terraces as a traditional landscape which is not environmentally sound.
4. Establishing the link between traditional knowledge of forest management and coastal communities. The Sato-umi assessment also looked into how the people in the communities along the Noto Peninsula utilize the marine resources and how they are connected to forest management, with small-scale saltmaking as an example. It currently links with the climate change, as well, considering that traditional knowledge might help develop adaptation policies and approaches to address the impacts of climate change. It was emphasized that integrating science and traditional knowledge from the local communities may provide solutions to that above problems.
5. The last discussion pointed to some initiatives in Hegura Island where the Amasan (women divers) community thrives. Researches on the natural vegetation,

archaeological, land and marine ecosystems was conducted some 50 years ago by Hokkoku Newspaper, a local newspaper in Japan in collaboration with Kanazawa University. A follow up research is currently conducted by Hokkoku Newspaper with the UNU-IAS OUIK, to determine the changes in the environment both the terrestrial and marine ecosystems, and the livelihood of Amasan. The study showed that lives of Amasan haven't change much, emphasizing that although this case is minor and not a mainstream example of fishing communities, this marginalized communities might hold some of the secrets how to combine traditional knowledge and approaches to coastal resources use and management, and modern science, as well.

### **Questions and comments/open forum from the previous sessions;**

1. Seagrass transplantation using the algal mat presented by Prof. Maegawa was the interest of the participant from Philippines who has been doing seagrass transplantation. Prof. Maegawa (Japan) recommended seeding method is the better method to restore seagrass beds.
2. A question on the use of iron and Artificial Reefs (ARs) was asked citing that in the Philippines, the use of iron was discouraged because iron corrodes and the need for ARs to increase fish catch was stressed. Dr. de Guzman (Philippines) made comment that a moratorium was issued discouraging putting in ARs, unless those ARs that are already in place have been well studied. Researches to establish if the impacts on putting in ARs are really more on the positive than on the negative side was pushed by scientists. However, after the issuance of moratorium, there were still some efforts in putting in ARs. In the plenary talk of Dr. Gomez, he mentioned that there are already very established advanced methodologies on coral reef restoration. It was the opinion of Dr. de Guzman that if it comes to a choice between natural coral reef rehabilitation and ARs, she strongly recommended not subscribe to ARs, where it's possible to do coral reef management.
3. On the integration of Satoyama and Sato-umi was asked by Maida (Philippines), citing that in the Philippines, this concept is also known as “ridge to the reef”, “watershed management or catchment management”. Some projects have initiatives in both the Satoyama and Sato-umi but the question was, whether it is safe to say that there is already an “integration” or is there something more than just initiatives of upland and downstream.

Dir. McDonald (Japan) responded to this question referring to the experiences of the Ishikawa Prefecture, who are trying to ensure the linkage and worked with river networks as well. The Satoyama Sato-umi project also worked with the communities and policy makers whose policies impact and/or affect the communities, and

empower stakeholders to be part of the initiative. This ensures integration on the ground while at the same time integrating the policy designing, as well. At present, at the Ishikawa Prefecture, meetings are going on to discuss and formulate Satoyama Sato-umi biodiversity strategy looking closely at ecosystem services fee system, similar to that forest environment tax of the Prefecture. Discussions are going on to explore the possibility of moving beyond not just forest tax by implementing Satoyama Sato-umi tax. This ensures that efforts are moving on that interlinkage and integration from the mountains to the oceans.

4. Reviewing the different ICM approaches in Asia or in the whole world, some principles and approaches in Sato-umi are very much similar to some approaches or traditional practices or community-based approaches in the Philippines. As a follow-up question posed by Maida (Philippines) was whether, the Philippines is already doing Sato-umi but it is just termed differently or whether Sato-umi has a special or unique element that Philippines doesn't have.

The Chair emphasized that the definition of Sato-umi is a big theme in this case, since official definition of Sato-umi is not yet in place. Prof. Yanagi, added that even in Japan, there is no standard definition of the Sato-umi concept citing the differences between Ishikawa and Seto Inland Sea. The situation in Philippines and Japan are also different. Prof. Yanagi further emphasized that the key terminology are twofold, i.e. “high biodiversity” and “high bioproduction”. These two phrases must be included when defining Sato-umi, but concrete definition maybe different from place to place.

#### **Part 1 Session Summary (Prof. Yanagi)**

1. That Sato-umi is defined as coastal sea with high biodiversity and high bioproductivity systems and adequate human interaction.
2. Emphasis on the role of fisherman's union as guardians of the seas and other stakeholders in habitat restoration of tidal flat and seagrass beds, coral reefs and mangrove ecosystems resulted to increased biodiversity, or bio-capacity.
3. Creation of new habitat or biotope or marine biota in the coastal ecosystem is essential to attain high biodiversity and high fish production, and implementation of adequate and indigenous fish resources management have been discussed.

#### **The following were the recommendations of Dr. Yanagi;**

1. ICM is the creation of new marine habitat. Successful ICM can only be possible in a coastal and marine area with good water quality which can only be attained with the implementation of an integrated management of the material flow from the mountain,

- river to the coastal sea; and
2. Only environment-friendly activities should be developed and implemented to be able to realize a comprehensive management of the material flow.

### **Conclusion;**

The “high biodiversity” and “high bio productivity” in Sato-umi result to improved quality of life of the local people. Effective implementation of Sato-umi in East Asia requires science, research and development, and culture. Specifically recognizing the relationship between human and nature, and traditional communities.

### **Part 2 Session Summary (Dir. McDonald)**

1. There is no single answer or locally-based approach or community efforts to protect, restore and manage the key habitat. One important consideration is to look into cultural diversity of the different regions of Asia and determine how cultural foundations contribute to the management of the ecosystem
2. All the presentations brought in the different perspectives of the different approaches that the communities in Asia can share throughout the world. Successes, failures and challenges, balancing with science and technological innovations while maintaining traditional knowledge and local wisdom are some elements for a sustainable model of habitat protection.
3. It is extremely vital to take cultural and biological diversities, and the models and approaches of sustainable resource management and conservation, to the global stage. Sharing the Asian perspectives, approaches and methodologies, and beliefs to the global community was likewise recommended.

### **Comments from Prof. Ferrer**

1. The presentations were pioneering and daring because they are challenging ICM. Pioneering because there is such thing as political economy of knowledge production. Prof. Ferrer stressed that knowing how ideas become dominant or are mainstreamed, therefore, it is important that dominant ideas are challenged and engaged with, so that an effective and more efficient practice is institutionalized.
2. In reference to Prof. Ferrer's comments creating Sato-umi within the discourse of ICM, he reiterated his point that approaches are frameworks. Approaches are paradigms, and not methods nor tools. ICM before was a planning tool to reconcile the conflict between the legal frameworks. In the Philippines for instance, the Bureau of Fisheries and Aquatic Resources (BFAR) wanted to establish more fishponds because of their mandate which is food production BUT, the Department

of Environment and Natural Resources (DENR) wanted to preserve the mangroves. So, because of the conflict of the policy, ICM was instituted to resolve the conflicts. However, in the course of time, ICM became an approach because, for one, it talks about empowerment and the appreciation of local knowledge.

3. To produce a homogenous ICM framework calls for, a.) biological and cultural diversities, b.) diverse frameworks to address diverse situations, and c.) rediscovery of knowledge by utilizing wisdom in the past to build on earlier activities.
4. Sato-umi can be describe as, “humanizing nature and naturalizing humans” based on the framework defined by Prof. Yanagi. This phrase captures what Sato-umi concept is trying to achieve. To protect and conserve our nature, one must fully understand and utilize the biological, natural and cultural/spiritual wisdom
5. Resources management is a healing process and nature heals itself naturally, if given the opportunity. The Sato-umi is a very important concept because it does not separate nature and human beings. Oftentimes, people are blamed as the causes of resources deterioration. In the Sato-umi concept, the process of healing can be addressed bringing in the nature and people, or reconcile the relationship between the people and the environment. So, the nature with human being can self heal or can attain the so-called “self organizing processes”. Sometimes, the healing processes can not be done biologically but can also be stimulated spiritually, therefore, religious wisdom has to be discovered.
6. Prof. Ferrer suggested to continuously discover new paradigms or rediscover some of the wisdom that have been or have declined. This suggestion was the offshoot of Dr. Ukita's talk about the network of ecosystems integration of Satoyama and Sato-umi. His findings show the declined industry in the upland resulted to declining fisheries in the coastal areas. The above basic processes can be called by any other names not just confining to ICM.

### **Open forum/discussions**

1. According to Dr. Ukita, in the development of Satoyama Sato-umi it is very important to change the the lifestyle and philosophy as in the Bali experience on the Tri Hita Karana.
2. Prof. Ferrer agreed that change in lifestyle is critical element in resources management and the key in addressing issues. Oftentimes, it has been quoted as “be the change you want to be” therefore the real change should start from every one and all. Prof. Ferrer discussed the case of Mataw fishing in Batanes, Philippines which is an isolated place and perhaps protected because of isolation. However, being connected is also important. The idea of social energy was discussed.

3. Dir. McDonald stressed that standardized monoculture approaches sometimes the cause of the problems. A way forward achieving a sustainable societies is to explore for more diverse approaches and models, and referring to the diversity and framework and approaches from the past. This can be done by integrating the past and the present, and create a harmonized existence between nature and human, or as Prof. Ferrer referred to as “humanizing nature and naturalizing humans”. The Satoyama and Sato-umi concept is trying to bring to the global discourse Japan's local diversity of approaches. The combination of traditional knowledge and approaches that Japan might still have in Satoyama and Sato-umi communities, and modern science will be highlighted. She also mentioned the paper on “When the Cradle Falls” which presented and reflected on to some failures and weaknesses, and limitations in working towards sustainable models.
4. Dr. Dewa of Indonesia reiterated the Tri Hita Karana case to show paradigm change, the way of thinking and the way of life to be able to cope with the problems. Local wisdom or “Tri Hita Karana” is strongly kept and maintained by the local communities. He further explained that Tri Hita Karana is incorporated in the curriculum from elementary to the university levels and several activities related to this concept has been implemented. Dr. Dewa recommended that, to elaborate the scope of Satoyama Sato-umi, an instrument to support this concept should be in placed to make the concept easily understood by everybody. The Chair stressed that, with the environmental education presented, similar curriculum maybe an added point in implementing Satoyama and Sato-umi concept.
5. Prof. Ferrer suggested to use metaphors in defining concepts. For example, the essence of Sato-umi is “humanizing nature and naturalizing humans”. Metaphors may also be used to describe the phases of community organizing, as presented in one of the papers. It was emphasized that, although it's sometimes difficult to define, people have to create their own symbols to use. He recommended not to confine the understanding only to the words used but metaphors/symbols can also be utilized.
6. There was a concern on the possibility to use “maximized diversity and maximized productivity” in the Sato-umi definition, instead of “high biodiversity and high productivity”. The concern came out because there exist Sato-umi in urban areas. The Chair stressed that this concern is an important point to consider in defining Sato-umi.

### **Remarks from the Panelists**

#### **Prof. Yanagi;**

The people who can protect the sea, are people who works in the sea. As a scientist,

helping the fishermen by sharing knowledge is a priority and considered an incentive to Sato-umi. The activities related to Sato-umi has to be continue, not only working on its definition but also identify the necessary activities and technologies to establish Sato-umi. Moreover, Sato-umi will be continuously studied based on the discussions and pointers generated in this Sato-umi session.

**Dir. McDonald;**

Dir McDonald stressed that the keys to the future are really in our past. The Sato-umi session not only looked into what can be learned from the past in order to build for futures, but also tolerance and diversity. She also mentioned CoP10 on the Convention on Biological Diversity will be held in Nagoya, Japan in October 2010. The meeting will address issues and concerns about cultural diversity and how to bring biological and cultural diversities together to build and achieve a sustainable society. In general, the Sato-umi session made some diverse paths that Asia may take to many different venues, discussions and dialogs both locally, regionally and globally.

**Prof. Ferrer;**

Prof. Ferrer emphasized that one important things for us in order learn, is “how we do things”. He cited Dir. McDonald who mentioned that their efforts to do the SGA, things like, where and when you meet are very important details. While some people finds that learning actually takes place faster and more effective in small groups and informal settings. Dr. Ferrer hoped that in the next conference the above pointers to organize things could be taken into consideration. Appreciative inquiry is also important consideration in learning.

**CONCLUSIONS**

The key conclusions derived from the Sato-umi Session are as follows;

1. Part 3 recognizes that in order to attain the objectives of Sato-umi, it is important to understand the concept and process, the options for actions, and the institutional and organizational arrangements. Effective implementation of the Sato-umi concept can only be achieved through a combination of holistic measures including integrated management and planning, environmental education/awareness, training and research, among others. It is important that management should involve the local community, and that coordination among different sectors be given priority.
2. Noting on the discussion on Sato-umi definition, the following are some concerns raised:
  - a. The use of metaphor to define Sato-umi would be an option if the concept can not

be easily describe in words.

- b. The description Sato-umi in urban areas must also be taken into consideration.
  - c. Policy framework or other instrument to support Sato-umi concept must be in placed.
3. The fishermen's union efforts predominantly on rehabilitation and development efforts was noted, as well as the need to increased application of cross-sectoral approaches to coastal planning and management.
  4. It also recognizes the contribution of traditional knowledge to ecosystem management and practices. The knowledge and wisdom have allowed people to live in their natural surroundings throughout the history.

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## **Conclusions and Future Direction**



## 9. Conclusions and Future Direction

Some conclusions of the workshop include the following.

It was recognized that long term cooperation mechanisms among local communities, scientists, private sectors, local and central government are necessary to ensure sustainable use of coastal and marine resources.

The “Sato-umi Workshop” stressed the need to explore diverse community-based approaches in protecting, restoring and managing key habitats which integrate traditional ecological knowledge, local wisdom and cultural beliefs. Combination of modern science and traditional ecological knowledge in coastal communities was identified as critical.

As coastal communities are faced with increasing habitat degradation and loss, “Sato-umi” concept and practices were recognized as providing an opportunity to restore the relationship between human and nature.

The workshop highlighted that participatory and community-based activities to restore and rehabilitate deteriorated ecosystem was an effective mechanism to encourage the community and other stakeholders to take part in the conservation and management to their own resources.

While, recommendations on “Sato-umi” concept, indigenous knowledge and community-based approaches might be as follows.

- Integrating science into management decisions and managing habitats through application of biological information from all available data sources
- Recognizing the importance of ecological networks from forest to sea including human dimension
- A comprehensive management of the material flow from mountain-farm-river to the coastal sea for successful ICM
- Managing coastal habitats by increasing public awareness, adopting appropriate legislation and enforcement,
- Coordinating across sectors to improve governance and efficiency, and addressing transboundary issue

In close relation to “Sato-umi”, ecosystem-based management (EBM) and community-based management (CBM) were also discussed in the EAS-Congress within the framework of ICM. Since “Sato” means community and “Sato-umi” focuses on human-nature relationship, “Sato-umi” can be a type of diversified CBM. “Sato-umi” is also focusing on biodiversity and biological productivity, and therefore, “Sato-umi” can be a part of EBM. Besides, combination of “Sato-yama” and “Sato-umi” can be a type of ICM including both land and sea. Similarities and differences among “Sato-umi”,

CBM, EBM and ICM should be made clear with easy-to-understand manner in near future. Result of Satoyama-Satoumi SGA may support these understandings from the internationally accepted viewpoint of Millennium Ecosystem Assessment (MA) frame.

As a result of “Sato-umi Workshop” of EAS-Congress 2009, understanding of “Sato-umi” deepened in relation to indigenous knowledge and community-based management in Asian countries. Next possible step of “Sato-umi” in the international context might be as follows.

As you know, the year of 2010 is the UN year of biodiversity. In addition, COP10 of the convention of biodiversity (CBD) will be held in Nagoya, Japan in October 2010. Since “Sato-umi” is a concept including conservation and restoration of biodiversity, CBD-COP10 will be a good opportunity to introduce “Sato-umi” and related activities to broader part of society in the world in particular to policy maker and planner of environmental conservation. In order to connect the result of “Sato-umi Workshop” of EAS-Congress 2009 to CBD-COP10, International EMECS Forum will be held on February 10, 2010 in Kobe, Japan with the theme of “Sato-umi and Biodiversity Activities in Asia and Activities in Japan”.

In CBD-COP10, Satoyama-Satoumi SGA report focusing on ecosystem services of “Sato-yama” and “Sato-umi” will be presented in which role of “Sato-yama” and “Sato-umi” on the conservation of biodiversity will be made clear. “Sato-umi” related symposium organized by Ministry of the Environment focusing on conservation and restoration of marine biodiversity is also expected to be held in CBD-COP10.

As perspective after CBD-COP10, in the 9th International EMECS conference which will be held in Baltimore of USA in 2011, it is expected that international status of “Sato-umi” from the viewpoint of natural and social science will be established. In the 4th EAS-Congress which will be held in Yosue, Korea in 2012, results of “Sato-umi” and related activities will be presented in more complete manner from theory, framework to achievement and how effective is “Sato-umi” as a unique management tool in relation to ICM frame. For future perspective of longer time range, expansion of “Sato-umi” concept and its implementation all over the world will be expected.

Chair of the Workshop

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