POTENTIAL OF URBAN WETLAND AS A TARGET OF HABITAT RESTORATION AND MANAGEMENT

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To restore the coastal habitat, surrounding dynamic coastal ecosystem (wetland system) also needs to be restored. Nevertheless, coastal wetlands are decreasing in alarming rate. It is unable to reverse the tendency unless changing fundamental causes such as uncontrolled economical development, excess use of resources, and lack of public interest. Nevertheless, it should not be a choice of "this or that". One way to implement breakthrough measures can be the restoration of wetlands in urban area using sound ecological engineering to incorporate the restoration and the development. Now Japan is trying to implement such an "urban wetland" solution by both top-down and bottom-up approach.

The top-down approach: The Tokyo bay renaissance promotion conference has enacted a mid-term action plan (ten years since 2003). The plan put a target as "restore the beautiful coastal environment for enabling pleasant use and sustaining biodiversity as a wealth of capital". The restoration of coastal wetland as a habitat is one of a prioritized action in the plan. The urban wetlands to be restored or managed have been listed up as "appeal points". The appeal point is monitoring point for assessing the achievement of the target. These structures of the target setting to assessing the plan enable to facilitate an adaptive management for the urban wetland implementation. These kinds of action plans have been set not only Tokyo Bay but also Osaka, Ise-mikawa, and Hiroshima Bays as a part of the national bay renaissance project.

For example, the "Shibaura-island's habitat creation project" has been implemented as a collaborative practice with local governments, researcher, and NPO to make an urban wetland for entertaining local residences in Tokyo Bay. The project has been supported by estuarine system research surrounding environment and structural consideration to sustain the suitable habitat quality. In Osaka Bay, the other practice has been ongoing. That is a collaborative research project at constructed wetland in the appeal point in Osaka Bay renaissance project. The targets of the research were habitat structural design in detail, and material selection for the rich biodiversity in the habitat.

Both urban wetlands have given good practice of adaptive management.

The bottom-up approach: Under these circumstances, situation understanding, target setting, research and development, and systemizing have been discussed and implemented for coastal habitat restoration by different sectors and organizations.

For example, a new terrace type wetland constructed by a governmental construction office in Yokohama. A public participate monitoring and maintenance practice is ongoing. An urban wetland park was planned by private development sector in Yokohama MM21. A NPO has designed management plan for the urban park with local residences, and organized a series of participatory classes. In Odaiba marine park in Tokyo, constructed by Tokyo metropolitan government, a primary school is operating environmental education program incorporate with a consortium of parents, NPO, government, and local fishermen. These wetland restorations have given chance to various sectors for participation.

POTENTIAL OF URBAN WETLNAD

AS A TARGET OF HABITAT RESTORATION AND MANAGEMENT

National Institute for Land and Infrastructure Management

Keita Furukawa, NILIM, Japan

Bay Renaissance Project

東京湾環境情報センター Tokyo Bay Environmental Information Center

東亜建設工業 TOA CORPORATION

鹿島

PENTA-OCEAN CONSTRUCTION CO.,LTD.

東洋建設

若築建設

鐵鋼スラグ協会 Nippon Slag Association

TAIHEIYO CEMENT

Tanaka

お台場環境教育推進協議会 umibay.cocolog-nifty.com

Odaiba Environmental Education Promotion Committee

UR都市機構

東京港埠頭株式会社

MLIT Ministry of Land, Infrastructure, Transport and Tourism

Tokyo Gyoren

Koyo Elementary School

東京都

港区 MINATO CITY

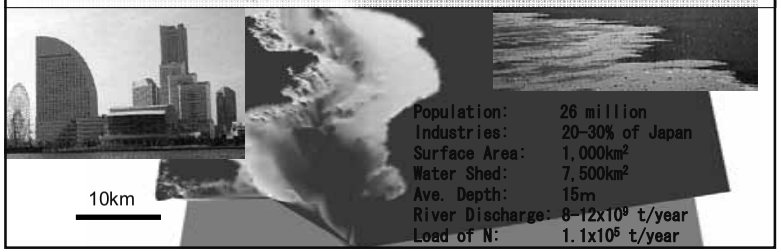
Association for Shore Environment Creation

Association of Banzu Satoumi

Urban Area: Mixture of Use

It should implement 'Wise use' concept in a balance of environmental conservation and development.

It can be an urban type "*Sato umi*"



Population:	26 million
Industries:	20-30% of Japan
Surface Area:	1,000km^2
Water Shed:	7,500km^2
Ave. Depth:	15m
River Discharge:	8-12x10^9 t/year
Load of N:	1.1x10^5 t/year

The top-down approach for Urban Wetland Restoration

Action Plans for Tokyo Bay Renaissance

Bay Renaissance Project

The Committee (Decision Maker)

Represented by Bureau Managers of Related Ministries and Local Governments (30)

Secretariat of the Committee (Decision Making Process)

Represented by Section Chief of Related Bureau (30)

Goal: Restore the beautiful coastal environment for enabling pleasant use and sustaining biodiversity as a wealth of capital.

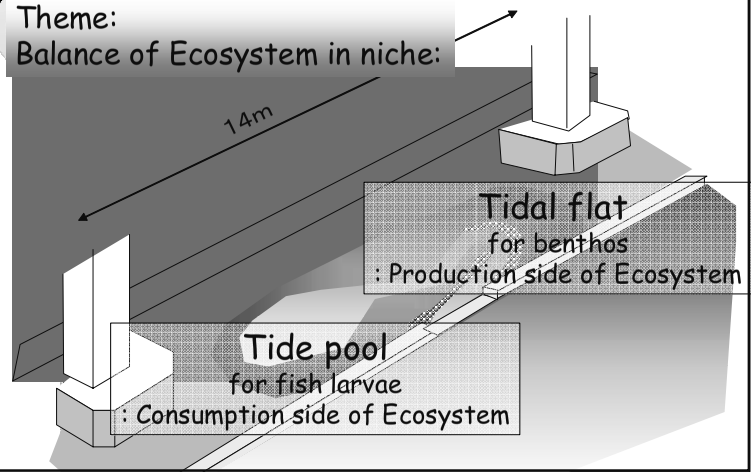
WG2: Sea

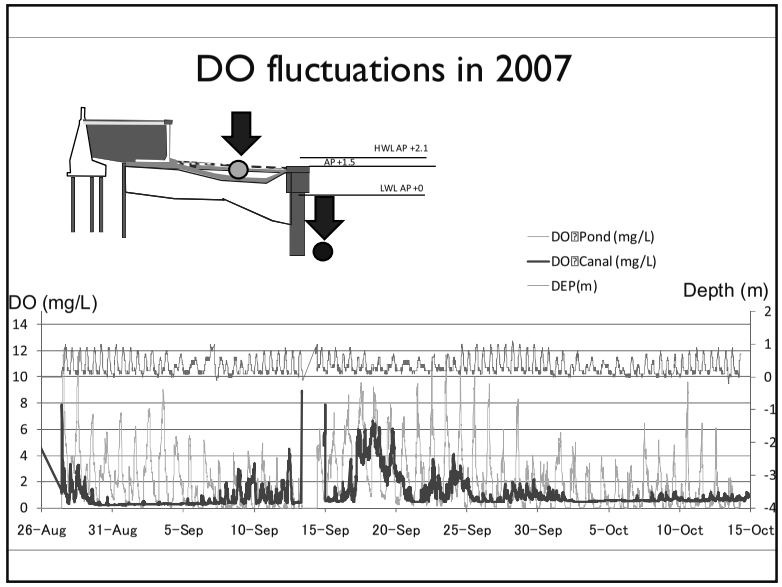
WG3: Monitoring

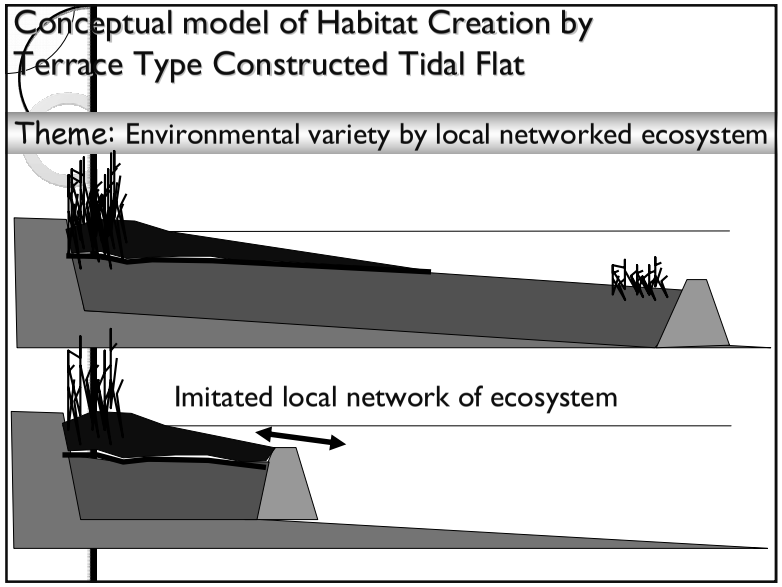
Tokyo Bay Renaissance Project, 28th March 2003 : 10 years action plan

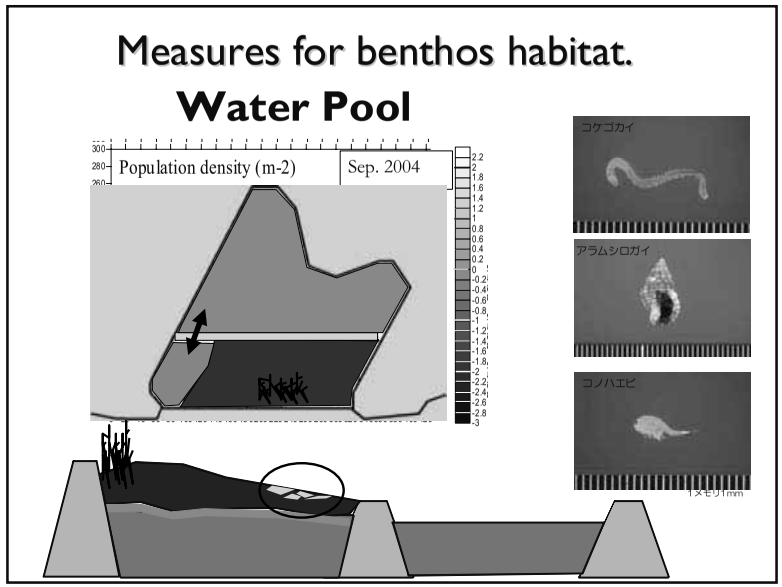
Conceptual model of Habitat Creation on Seawall

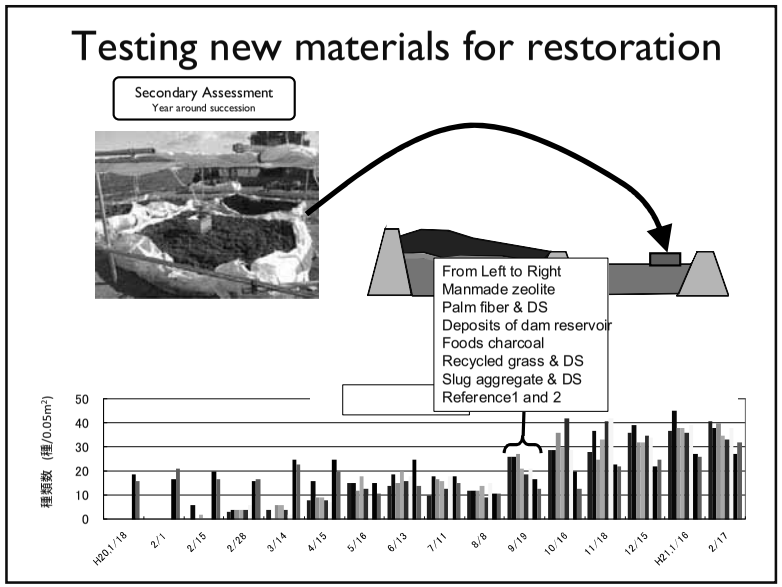
Theme:
Balance of Ecosystem in niche:




DO fluctuations in 2007
HWL AP +2.1
AP+1.5
LWL AP +0
DO（Pond (mg/L)
DO（Canal (mg/L)
DEP(m)
Depth (m)
DO (mg/L)
14
12
10
8
6
4
2
0
2
1
0
-1
-2
-3
-4
26-Aug
31-Aug
5-Sep
10-Sep
15-Sep
20-Sep
25-Sep
30-Sep
5-Oct
10-Oct
15-Oct


Conceptual model of Habitat Creation by
Terrace Type Constructed Tidal Flat
Theme: Environmental variety by local networked ecosystem
Imitated local network of ecosystem

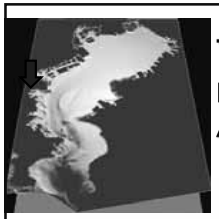

Measures for benthos habitat.
Water Pool
Population density (m-2)
Sep. 2004
コケゴカイ
アラムシロガイ
コノハエビ


Testing new materials for restoration
Secondary Assessment
Year around succession
From Left to Right
Manmade zeolite
Palm fiber & DS
Deposits of dam reservoir
Foods charcoal
Recycled grass & DS
Slug aggregate & DS
Reference1 and 2
種類数（種/0.05m²）
50
40
30
20
10
0
H20.1/18
2/1
2/15
2/28
3/14
4/15
5/16
6/13
7/11
8/8
9/19
10/16
11/18
12/15
H21.1/16
2/17

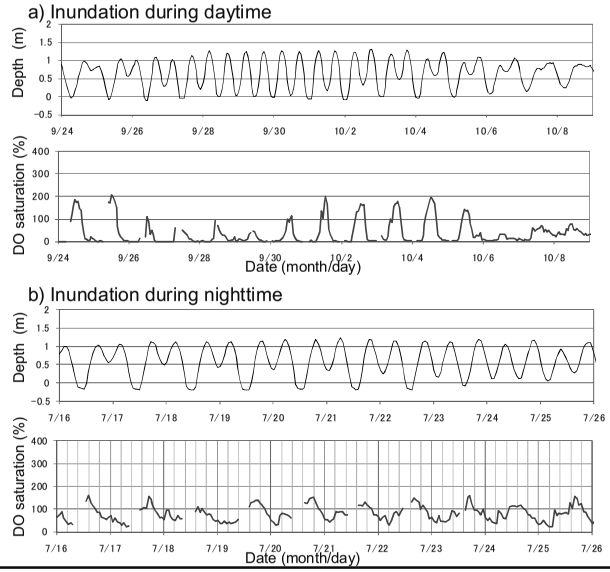
The bottom-up approach for Urban Wetland Restoration

Terrace Type Tidal Flat

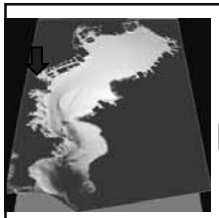
BENTHIC HABITAT RESTORATION ALONG SEAWALL



Yokohama Port and Airport Technology Investigation Office

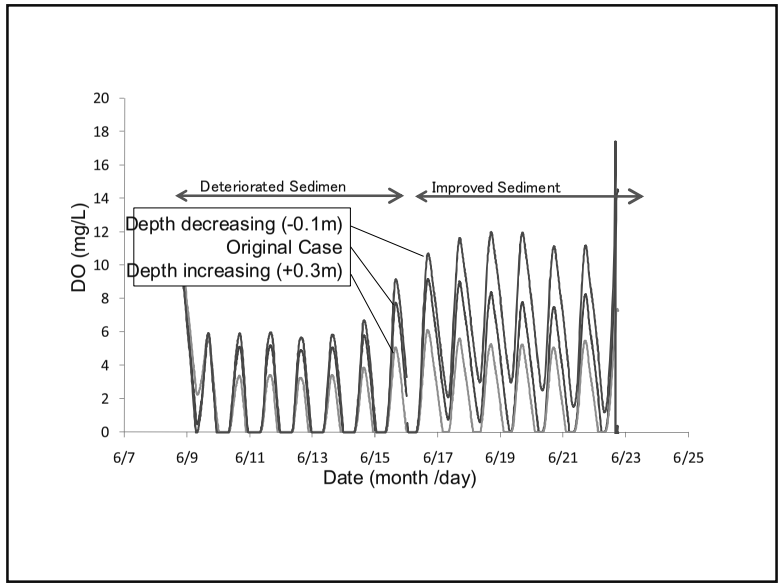


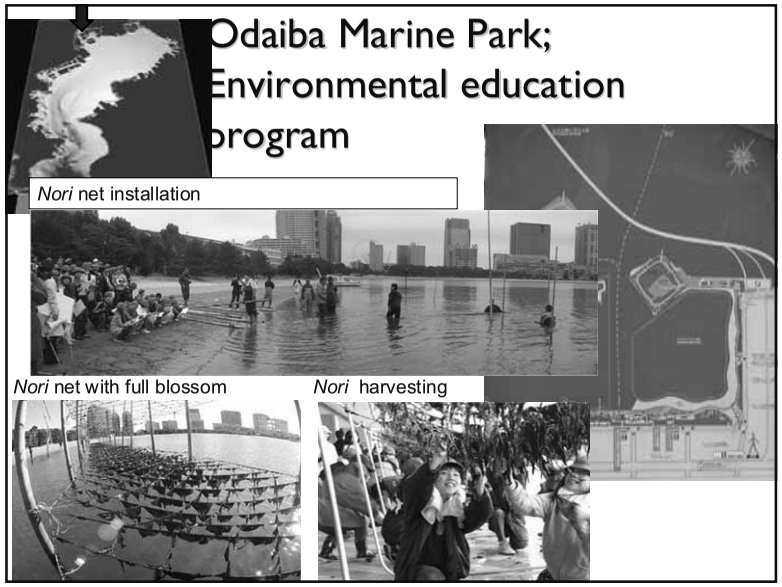
New Park Planning at Katabira River (帷子川) Mouth with Public Participation

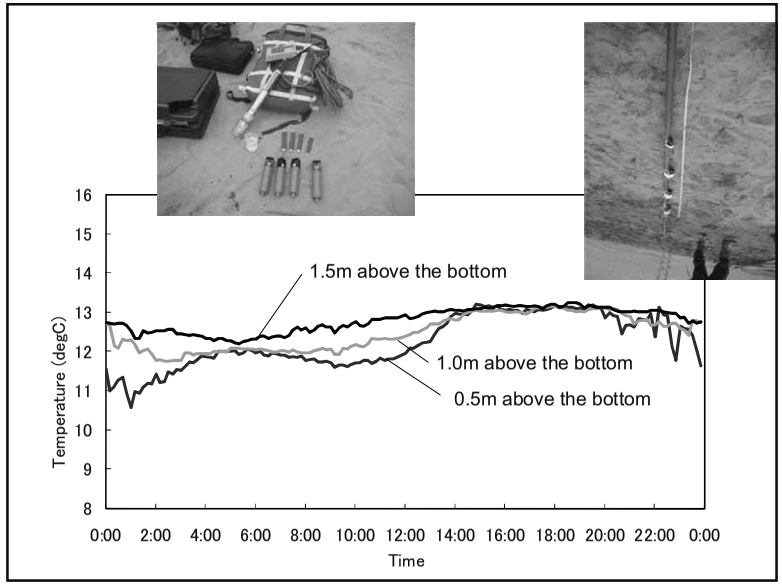


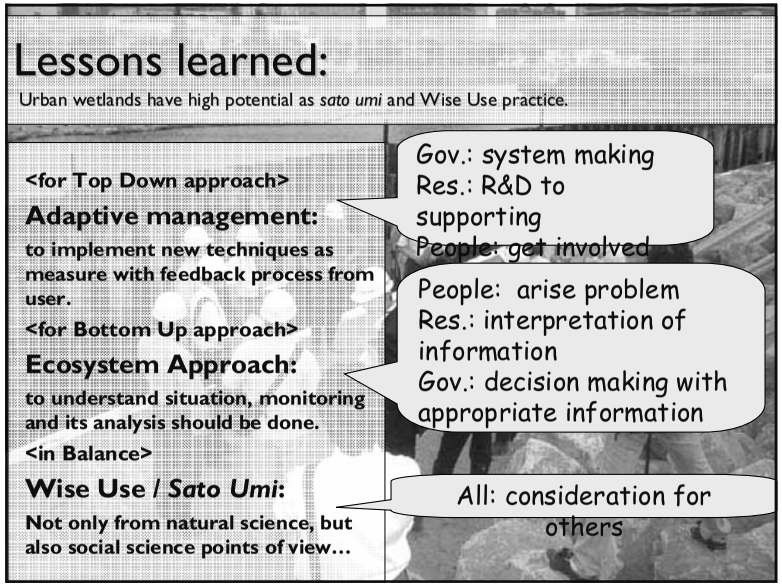
High Tide

Close up view of Terrace and Tide Pool


Deteriorated Sedimen
Improved Sediment
Depth decreasing (-0.1m)
Original Case
Depth increasing (+0.3m)
DO (mg/L)
Date (month /day)
20
18
16
14
12
10
8
6
4
2
0
6/7
6/9
6/11
6/13
6/15
6/17
6/19
6/21
6/23
6/25


Odaiba Marine Park;
Environmental education
program
Nori net installation
Nori net with full blossom
Nori harvesting


1.5m above the bottom
1.0m above the bottom
0.5m above the bottom
Temperature (degC)
Time
16
15
14
13
12
11
10
9
8
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
0:00


Lessons learned:
Urban wetlands have high potential as sato umi and Wise Use practice.
<for Top Down approach>
Adaptive management:
to implement new techniques as measure with feedback process from user.
<for Bottom Up approach>
Ecosystem Approach:
to understand situation, monitoring and its analysis should be done.
<in Balance>
Wise Use / Sato Umi:
Not only from natural science, but also social science points of view…
Gov.: system making
Res.: R&D to supporting
People: get involved
People: arise problem
Res.: interpretation of information
Gov.: decision making with appropriate information
All: consideration for others

COMMUNITY-BASED SEA GRASS BED RESTORATION AND MANAGEMENT IN SETO INLAND SEA: CASE OF AKOU COAST IN JAPAN

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Akou Coast located in the westernmost part of Hyogo Prefecture, Japan is one of representative sites for environmental restoration in Seto Inland Sea based on the concept of Sato-umi which is a currently topical term referring to coastal ecosystems with harmonized human interaction under community-based management. Since variety of activities on the environmental restoration and education has been developed in this area, local people and varieties of stakeholders joined the community-based or co-management activities. Among variety of activities, an activity on the conservation of Chikusa River watershed and an activity on sea grass bed restoration by marine divers are typical examples. Recently, these activities are integrated as a part of Sato-umi project in Akou Coast which Ministry of the Environment as central government, local government of Hyogo Prefecture as well as the municipality of Akou City supported.

Major targets of this Sato-umi project in Akou Coast are restoration of the deteriorated eel grass bed and unique shore vegetation along the coast. Restoration of decreased resource level of short-neck clam and promotion of environmental education are also important parts of the project. Among many related activities, achievement attained by Misaki elementary school is one of the highlights in which school children raised seedlings of eel grass and planted them in the targeted area after the frequent observation of the environment and ecosystem of Akou Coast.

During the progress of the Sato-umi project, many regional meetings were held in order to share the basic idea of the restoration based on the concept of Sato-umi. On the occasion of Sato-umi Symposium in Akou held in March, 2009, many people of community-based activity groups assembled at Akou City Hall, and discussed about future plan. This indicated the strong involvement of a variety of relevant persons, group and others in Sato-umi project. With a view to materializing future plans, the establishment of an Akou Coast Sato-umi Committee for co-management centered on Akou area is now within reach.

Historically, Akou Coast was well known for traditional salt making industry and local people had made a good use of shallow coastal area. A part of the old salt pan is converted to the public Seashore Park by the prefectural government, in which the Salt Industry Museum was founded. Since the Seashore Park is one of the activity center for the local people, combined activity of Sato-umi project with the Seashore Park is also expected.

The East Asian Seas Congress 2009
Partnerships at Work: Local Implementation and Good Practices
T3:2-Indigeneous Approaches to Habitat Protection and Restoration:
Experiences in *Sato Umi* and Community Initiatives

Community-based sea grass bed restoration and management in Seto Inland Sea: Case of Akou coast in Japan

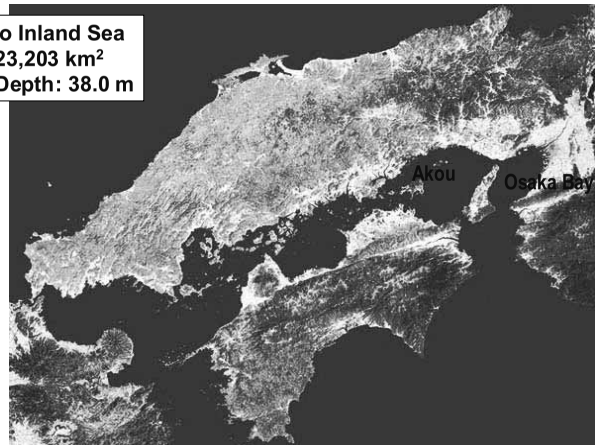
Osamu MATSUDA
Hiroshima University (Professor Emeritus)
Nov. 24, 2009, Manila, Philippines

Outline

- The Seto Inland Sea: brief history
- Why *Sato-Umi* now?
- Legal frame of *Sato-Umi*
- *Sato-Umi* activity in Akou area
- Towards new type of ICM: possibility of combined management of *Sato-Yama* and *Sato-Umi*

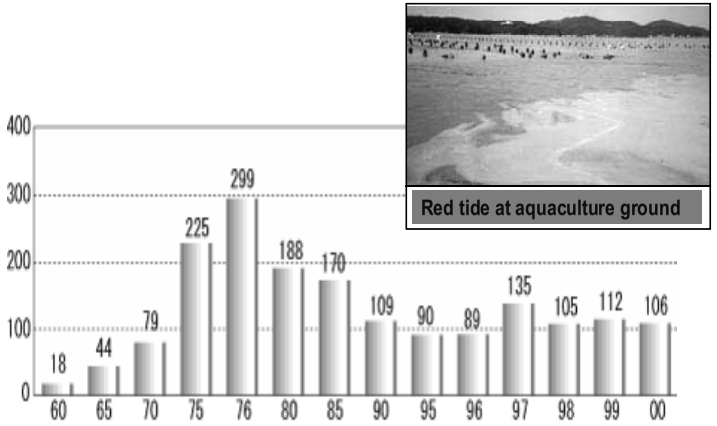
The Seto Inland Sea as the largest enclosed coastal sea in Japan

The Seto Inland Sea
Area: 23,203 km^2
Mean Depth: 38.0 m

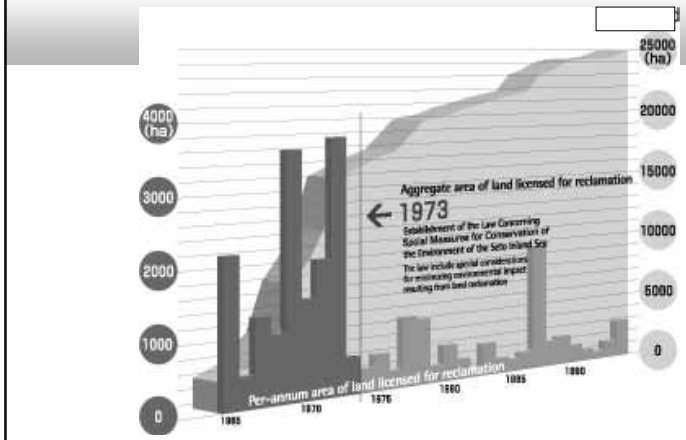


Seto Inland Sea suffered from serious water pollution since mid 1960s

Mass mortality of yellow tail by red tide in aquaculture ground

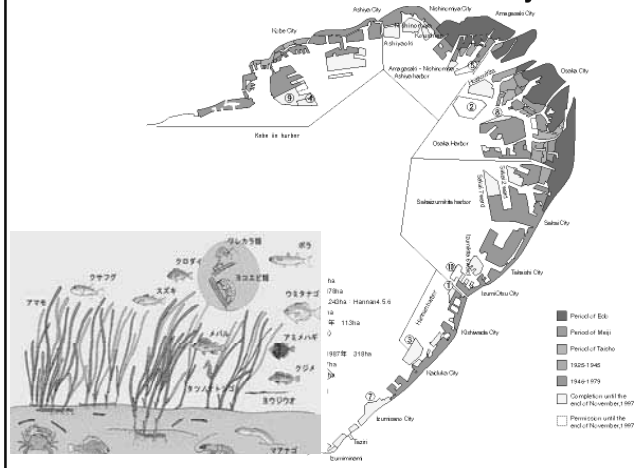


Number of occurrence of red tide observed in the Seto Inland Sea decreased after mid 70s mainly due to TPLC

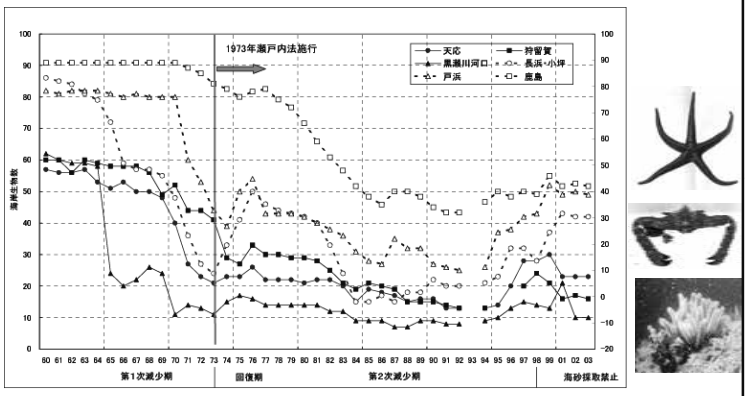


The areas for which land reclamation have been authorized in the Seto Inland Sea is still increasing

Result of land reclamation in Osaka Bay area



Actually, no natural coastline and shallow area at all !

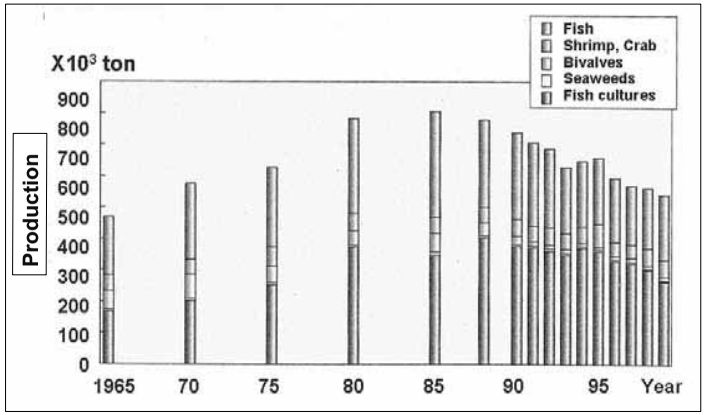


Changes in species number of seashore animals along the coast of Kure area in the Seto Inland Sea

(Yuasa)

Fishery production in the Seto Inland Sea

(SECA, 2001)



Brief History of the Seto Inland Sea

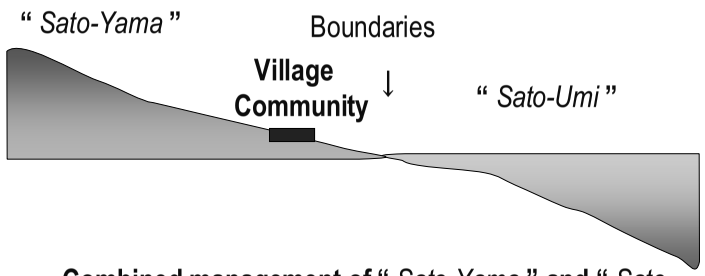
The Seto Inland Sea has long history in which many kinds of ecosystem services have been provided. However, serious water pollution and deterioration of ecosystem occurred during the rapid economic growth of mid-1960s to mid-70s.

Among many countermeasures, area wide total pollution load control (TPLC) system in terms of COD, TN and TP has played an important role on the improvement of water quality.

However, deterioration of habitat and living resources have not yet been recovered.

And therefore, environmental management of the Seto Inland Sea has gradually sifted recently from water pollution control to the wider goal such as creation of *Sato-Umi* which includes the restoration of habitat and well balanced nutrient cycle between land and sea, conservation of biodiversity and biological productivity.

Conceptual view of " *Sato-Yama* " and " *Sato-Umi* "



Combined management of " *Sato-Yama* " and " *Sato-Umi* " is more effective from the view point of material flow and integrated coastal management (ICM)

Historical evidence on the communication between *Sato-Yama* and *Sato-Umi* in Japan

Legend of *Umi-hiko* and *Yama-hiko*

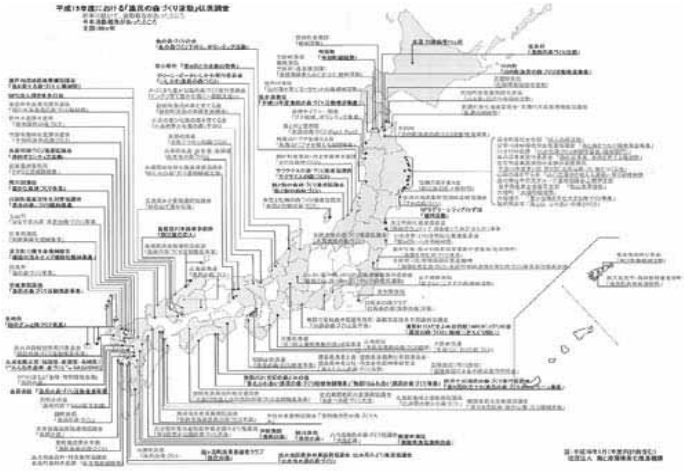
- Communication between marine-people and mountain-
- people. They exchanged their products each other.

- *Uo-tsuki-rin* (Fish-Breeding Forest)
- Literal meaning: forest associated with fish, forest which
- attracts fish. Forest along the coast has been historically
- protected by the local people in order to conserve coastal
- marine environment and living resources. The law on the
- conservation of *Uo-tsuki-rin* was established more than
- 100 years ago (in 1897).

Signboard of *Uo-tsuki-rin* on the coast of near Akou

In this *Uo-tsuki-rin* (Fish-Breeding Forest), forest is highly protected

"Reforestation by fisherman" is very active in Japan



Existing boundaries between *Sato-Yama* and *Sato-Umi*

- ■Legal boundary
- ■Administrative boundary
- ■Geographical boundary
  - Community boundary
  - Historical boundary
  - Occupation boundary (ex. forestry vs fisheries)
  - Traditional boundary
  - Psychological boundary
  - Academic boundary

ICM has been proposed but little progress so far

Recent change in legal and institutional frame

- ICM has been officially introduced very recently:
  Basic Ocean Law in 2007
  Basic Ocean Plan in 2008 with includes the concept of *Sato-Umi*
  These include comprehensive management of watershed and coastal waters beyond the border of administrative sectors. Basic Ocean Plan is promoting the implementation of *Sato-Umi* .
- However, implementation of ICM is making little progress mainly due to strong bureaucratic sectionalism.
- *Sato-Umi* as a part of national strategy (2007)
  Ministry of the Environment is promoting creation of *Sato-Umi*
- There are some many local activities combining *Sato-Umi* and *Sato-Yama* beyond existing boundaries.

Activity on the Creation of *Sato-Umi* in Western Harima Area

Coordination by: Special Committee
Supported by: MOE, Hyogo prefecture, Akou & Aioi city
Site: Western coast of Harima-Nada area, Hyogo prefecture

Restoration of coastal area as *Sato-Umi*

Time table
Before FY2007: Variety of individual local activities
FY2007: Special Committee by specialists, field survey
FY2008: Local meeting, symposium
FY2009: Local organization by variety of stakeholders

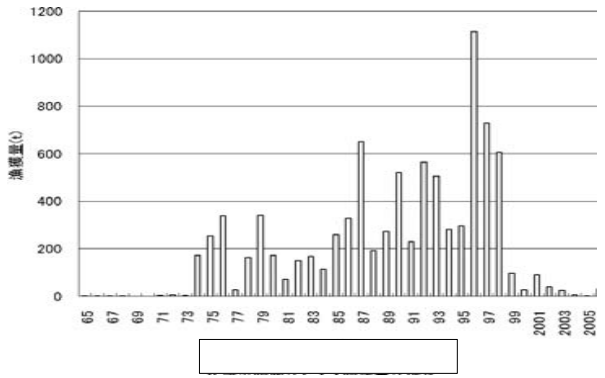
Restoration of artificial coastline (Sakoshi)

Recreation by local people

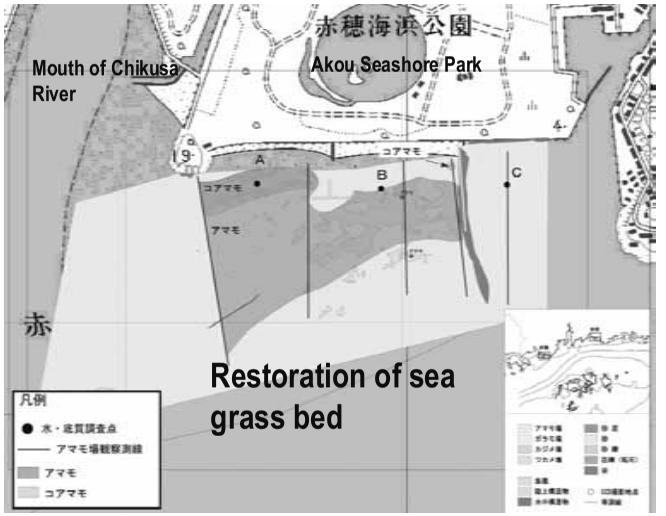
Combined activities of Akou coast and Chikusa River watershed restoration (collaboration among variety of stakeholders)

1. Restoration of sea grass bed:
   Umikko (Seaborn Child) Club, Misaki Elementary School, Ozaki Elementary School, Seed Bank of Eel Grass
2. Restoration of Chikusa River watershed:
   Committee on Clean Chikusa River Watershed
3. Supported by Ministry of the Environment, Hyogo prefecture, Akou City

Catch of Manila clam at Karasen tidal flat in Akou coast



(Hyogo prefecture)



Restoration of sea grass bed




図5.6.4　アマモ増殖活動

Participatory activities of school children to restore sea grass bed in *Sato-umi* project which is connected with conservation of Chikusa river watershed

図5.6.5千種川河口干潟

Community-based activities connecting rivers and coastal areas

図5.6.6千種川中流域

Performance by the school children of Misaki Elementary School on *Sato-Umi*

Field experiences in Chikusa River

Management of deteriorated forest is also included in this project

Conclusive Remarks

During the age of recent 40 years, shallow areas, in particular of tidal flat and sea grass bed have been drastically lost in the Seto Inland Sea mainly by land-based human impact. Therefore, combined restoration of watershed and coastal area is essential for coastal management. Community-based activities of *Sato-Umi* and *Sato-Yama* exemplified by Akou coast and Chikusa River watershed can play an important role on habitat protection, restoration and management in this area.

Thank you for your attention

SUPPORTING ACTIVITIES FOR THE CREATION OF SATO-UMI IN JAPAN

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In Japan, Total Pollutant Load Control System of COD_{Mn} has been implemented in enclosed coastal seas since 1978 and nitrogen and phosphorus have become controlled substances since 2000. Due to improved waste water equipment and control standards applied to factories, serious pollution has gradually been reduced. However, new environmental problems such as the deterioration of ecosystems, including marine resources, have occurred. Additionally, the public's unconcern, especially in urban areas, with its marine environment and impoverishment of fishing communities managing coastal sea areas also exists. Therefore, the creation of Sato-umi was designated in "Becoming a Leading National Environmental Strategy in the 21st Century (MOE, June 2007)" which should be started over the next one or two years, as a national policy.

Sato-umi has long been important in supporting fisheries, transport and culture, while helping to integrate management of land and coastal sea areas and preserve high productivity and biodiversity in the wake of the human interaction.

Sato-umi has become rooted in Japan since "Becoming a Leading National Environmental Strategy in the 21st Century" and "The National Biodiversity Strategy of Japan" made it national policy. "The Basic Plan on Ocean Policy (CO, March, 2008)" describes the embodiment of the concept of Sato-umi in the conservation and management of fishery resources. Therefore, the MOE began supporting Sato-umi activities in 2008.

The MOE promotes Sato-umi in order to achieve public consensus for marine environmental conservation and preserve high productivity and biodiversity in coastal sea areas. We conduct the following support projects with respect to Sato-umi:

1) We support model activities addressing environmental conservation and human coexistence within coastal sea areas in partnership with local governments. One such example is an Ishikawa Prefecture project in 2008, in which a steering committee with various members was established to promote the creation of

Sato-umi for Nanao Bay. Workshops and symposiums with diverse participants discussed water environment conditions, regional resources, environment education and a survey of Sato-umi, thus increasing awareness of Nanao Bay as Sato-umi. Four projects for 2008 and six for 2009 have been selected so far.

2) We classify Sato-umi activities into six types: Integrated River Basin Activities, Mitigation Activities, Urban Activities, and so on.（Fig.1）We also prescribe plans for Sato-umi creation for each type of activity.
3) We produce manuals for Sato-umi creation based on support activities, which describe the preliminary notes, essential activities and prospective achievements of Sato-umi.
4) We select advanced Sato-umi activities that are of help to others and we introduce them using the tools described in 5) and 6) below.
5) We collect information and data of domestic and overseas activities for preservation of coastal sea environments and have created a Sato-umi website.
6) We distribute pamphlets and leaflets on Sato-umi.

Consequently, The International Sato-umi Workshop in COP10 in November 2010 will take place in Nagoya, where we will explain Sato-umi further.

We aim to promote Sato-umi and preserve high productivity and biodiversity in coastal sea areas by gaining public consensus. We also aim to raise interest in environmental preservation of coastal areas in East Asia by spreading know-how related to Sato-umi.

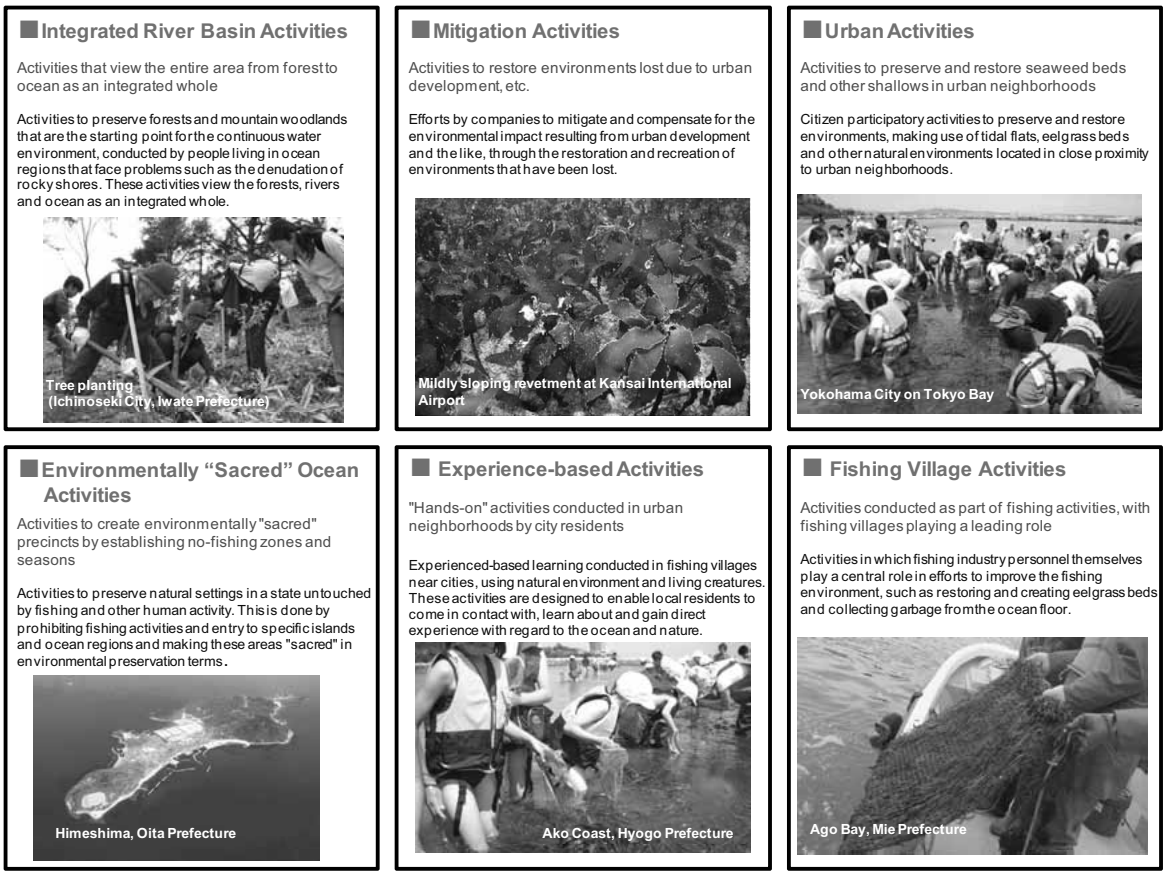


Fig 1. Classification of Sato-umi activities

Office of Environmental Management of Enclosed Coastal Seas,
Water Environment Department, Environmental Management Bureau,
Ministry of the Environment, JAPAN

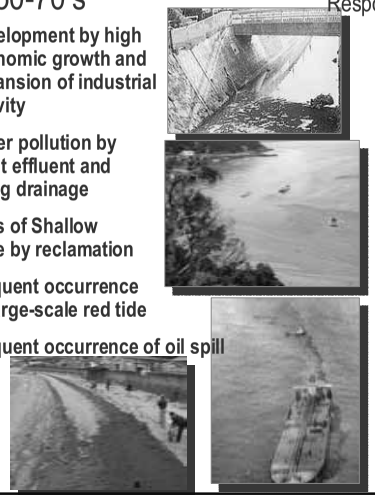
YASUHIRO Muroishi

1

Environmental Policies of Enclosed Coastal Seas in JAPAN

1950-70's

- **Development by high economic growth and expansion of industrial activity**
- **Water pollution by plant effluent and living drainage**
- **Loss of Shallow zone by reclamation**
- **Frequent occurrence of large-scale red tide**
- **Frequent occurrence of oil spill**



Response of environmental administration

- Restrict laws were enacted
- 1967 Basic Law for Environmental Pollution Control
- 1970 Water Pollution Control Law
- 1971 Environment Agency was established
- 1972 Nature Conservation Law
- 1973 Interim Law for Conservation of the Environment of the Seto Inland Sea
  → reduced by half COD from industrial drainage
- 1978 Total pollutant load control (TPLC) was adopted for COD

2

Environmental Policies of Enclosed Coastal Seas in JAPAN

1980-90's

- **Continuous occurrence of red tide**
- **Generation of anoxic water**
- **Occurrence of large-scale oil spill**
- **Collection of sea gravel**

1990's-

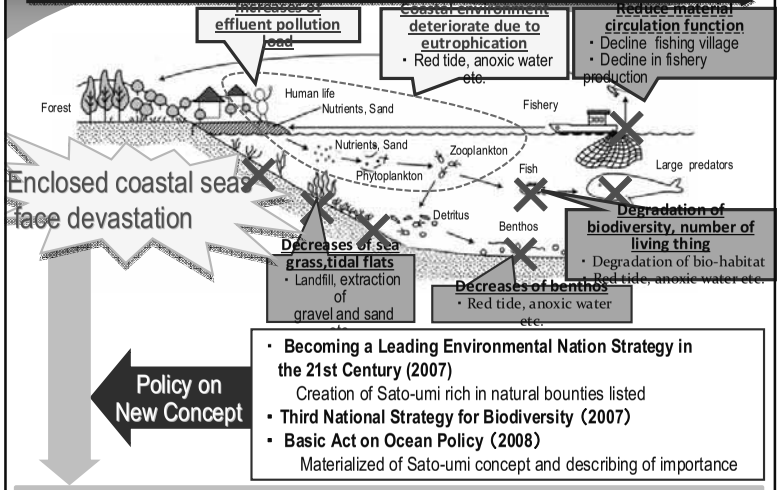
- **Creation of environments to pass on to future**
- **International contributions**

Response of environmental administration

- 1993 Basic Environmental Law
- 1993 Nitrogen and Phosphorus were added to the effluent standard
- 1994 NOWPAP was established
- 2000 EMECS was established
- 2000 Basic Plan for Conservation of the Environment of the Seto Inland Sea
  → prohibition of sea gravel collection
- 2001 Reorganized as Environment Ministry
- 2001 Nitrogen and Phosphorus were added to TPLC
- 2004 WEPA was established

3

Introduction of New Concept 'Creation of SATO-UMI'



Policy on New Concept

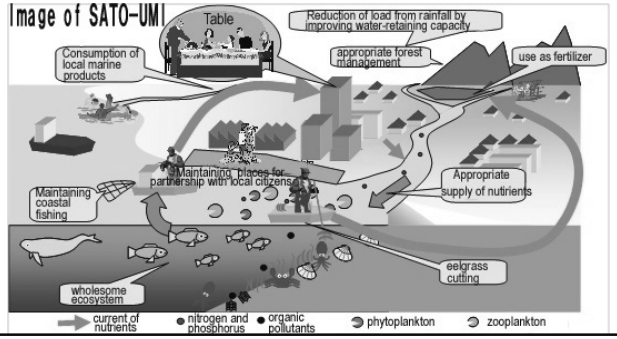
- **Becoming a Leading Environmental Nation Strategy in the 21st Century (2007)**
  Creation of Sato-umi rich in natural bounties listed
- **Third National Strategy for Biodiversity (2007)**
- **Basic Act on Ocean Policy (2008)**
  Materialized of Sato-umi concept and describing of importance

The activities begin under 'Creation of SATO-UMI'

4

Concept & Image of Sato-umi

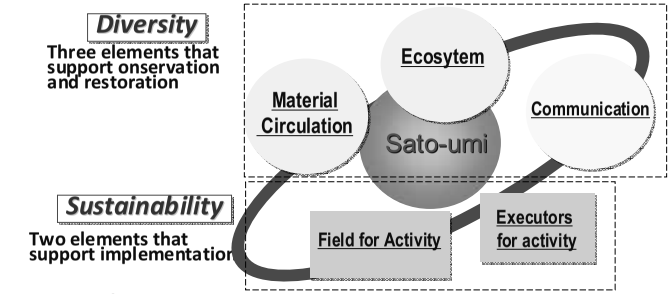
Coastal zone where land and coastal zone are managed in an integrated and comprehensive manner by human hands, with the result that material circulation functions are appropriately maintained and both high productivity and biodiversity are preserved.



5

Viewpoint of Sato-umi Creation

Viewpoint of Sato-umi Creation＝Component of Sato-umi Creation



Feature of Sato-umi Creation Activity

- Sato-umi is not only a spatial concept but also a concept generated among the human activities.
- Sato-umi is able to possess sustainability by being combined with lifestyle habits etc.
- Activity for creation of Sato-umi is a participation-and-cooperation type tool which is applicable to the comprehensive management of coastal area.

6

Projects to Support Sato-umi Creation by MOE

(2008-2010)

(1) Support for Sato-umi Creation Activities (Model Project)

(2) Preparation of Standard Sato-umi Creation Plans for Each Type of Activities

(3) Establishment of Sato-umi Creation Manual

(4) Selection of Examples of Advanced Sato-umi Creation Activities

(5) Construction of a Sato-umi Website & Datanetwork

(6) Publicity Activities (Pamphlet, Leaflet, Sympsium).

(7) Provision of Information Overseas

7

(1) Support for Sato-umi Creation Activities (Model Project)

MOE support model activities addressing environmental conservation and human coexistence within coastal sea areas in partnership with local governments.

8

Model Projects to Support Sato-umi Creation (FY 2008)

Omura Bay (Nagasaki Prefecture)

●**Activities**
- ➢Environmental education (Indian porpoise watching)
- ➢Holding of a seminar on the approach to local partnerships


[Indian porpoise watching]

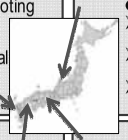
●**Results**
- ➢Determination of issues involved in promoting environmental education and obtaining necessary support
- ➢Enhanced cooperation on the part of local residents, environmental groups and the local government

Nanao Bay (Ishikawa Prefecture)

●**Activities**
- ➢Establishment of a steering committee
- ➢Survey of local resident opinion for Nanao bay
- ➢Listing, collection and organization of existing information on Nanao Bay
- ➢Start of Sato-umi monitoring
- ➢Holding of Hands-on activities, workshops and seminars


Hands-on learning

●**Results**
- ➢Preservation and restoration of water environments and ecosystems of Nanao.
- ➢Regional development and personnel training by local residents, etc.
- ➢Guidance in the creation of Sato-umi as a modern-day standard



Nakatsu Mudflat (Oita Prefecture)

●**Activities**
- ➢Survey of bottom sediment around *sasahibi*.
- ➢Holding of monitoring sessions to commune with the ocean.
- ➢Pamphlet prepared

●**Results**
- ➢water quality environmental standards for rivers, lakes and ocean regions based organisms beginning in FY 2009 . (As the project increased interest in biodiversity.)


[Survey of "*sasahibi*"]

Ako Coast (Hyogo Prefecture)

●**Activities**
- ➢Establishment and operation of specialist committee
- ➢ Holding of discussions with relevant local entities
- ➢Study of water quality at the site and marine life habitation status

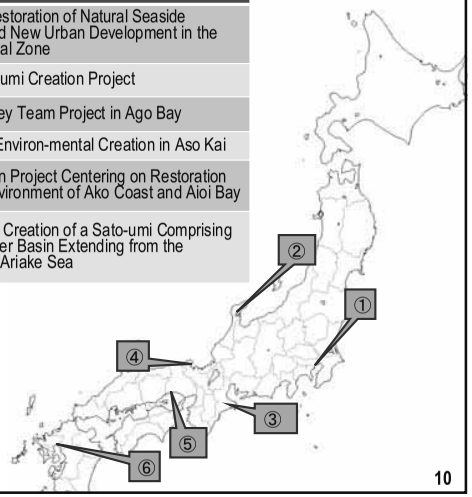
●**Results**
- ➢Determination of eelgrass habitation through an in-depth study
- ➢Formation of a central organization (council) to promote Sato-umi creation


[Local discussion meeting]

9

Model Projects to Support Sato-umi Creation (FY2009)

Implementing Entity	Model Project
Yokohama City (Kanagawa Pref.)	Project for the Restoration of Natural Seaside Environments and New Urban Development in the Yokohama Coastal Zone
Ishikawa Prefecture	Nanao Bay Sato-umi Creation Project
Shima City (Mie Pref.)	Natural Life Survey Team Project in Ago Bay
Kyoto Prefecture	Joint Project for Environ-mental Creation in Aso Kai
Hyogo Prefecture	Sato-umi Creation Project Centering on Restoration of the Natural Environment of Ako Coast and Aioi Bay
Saga Prefecture	Model Project for Creation of a Sato-umi Comprising an Integrated River Basin Extending from the Mountains to the Ariake Sea



10

(2) Preparation of Standard Sato-umi Creation Plans for Each Type of Activities

The purpose is to enable Sato-umi creation activities to be initiated easily by selecting the category to which the target activities belong.

11

Standard Sato-umi Creation Plan for Each Type of Activities

Integrated River Basin Activities

Activities that view the entire area from forest to ocean as an integrated whole

Activities to preserve forests and mountain woodlands that are the starting point for the continuous water environment, conducted by people living in ocean regions that face problems such as the denudation of rocky shores. These activities view the forests, rivers and ocean as an integrated whole.


Tree planting (Ichinoseki City, Iwate Prefecture)

Mitigation Activities

Activities to restore environments lost due to urban development, etc.

Efforts by companies to mitigate and compensate for the environmental impact resulting from urban development and the like, through the restoration and recreation of environments that have been lost.


Mildly sloping revetment at Kansai International Airport

Urban Activities

Activities to preserve and restore seaweed beds and other shallows in urban neighborhoods

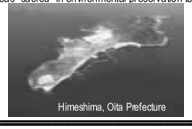
Citizen participatory activities to preserve and restore environments, making use of tidal flats, eelgrass beds and other natural environments located in close proximity to urban neighborhoods.


Yokohama City on Tokyo Bay

Environmentally "Sacred" Ocean Activities

Activities to create environmentally "sacred" precincts by establishing no-fishing zones and seasons

Activities to preserve natural settings in a state untouched by fishing and other human activity. This is done by prohibiting fishing activities and entry to specific islands and ocean regions and making these areas "sacred" in environmental preservation terms.


Himeshima, Oita Prefecture

Experience-based Activities

"Hands-on" activities conducted in urban neighborhoods by city residents

Experienced-based learning conducted in fishing villages near cities, using natural environment and living creatures. These activities are designed to enable local residents to come in contact with, learn about and gain direct experience with regard to the ocean and nature.


Ako Coast, Hyogo Prefecture

Fishing Village Activities

Activities conducted as part of fishing activities, with fishing villages playing a leading role

Activities in which fishing industry personnel themselves play a central role in efforts to improve the fishing environment, such as restoring and creating eelgrass beds and collecting garbage from the ocean floor.


Ago Bay, Mie Prefecture

12

(3) Establishment of Sato-umi Creation Manual

The Manual will consist of

- matters that should be considered in advance,
- efforts that should be implemented,
- desirable results and other information that has been collected.

It will prove useful when new Sato-umi creation activities are conducted in the future by local governments, citizen's groups, etc.

13

Framework for Sato-umi Creation Manual

Chapter 1 **: Introduction**
Background to preparation of Sato-umi Creation Manual, role of manual, overview of content

Chapter 2 **: What is a Sato-umi?**
2.1 Connections between ocean, mountains and rivers and connections to people
2.2 How should we relate to the ocean?
2.3 What is a Sato-umi?
2.4 Protecting ocean environments and the need for restoration

Chapter 3 **: Sato-umi Creation Activities**
Describes the type of activities that constitute Sato-umi creation.

Chapter 4 **: Advance Preparations Before Initiating Sato-umi Creation**

- Study the range for Sato-umi creation activities
- Determine the relevant government agencies, organizations etc. for Sato-umi creation
- Participation of numerous entities
- Implementation of preliminary survey
- Organization of issues

Chapter 5 **: Approach to Sato-umi Creation: Establishment of Sato-umi Creation Plan**

- Establish objectives
- Select activities
- Study promotion organization
- Train groups and volunteers to be involved in activities

Chapter 6 **: Evaluation and Review of Sato-umi Creation Activities**

- Evaluation of nature (monitoring)
- Evaluation by society
- Review of activities

14

(4) Selection of Examples of Advanced Sato-umi Creation Activities

- MOE select advanced Sato-umi activities that are of help to others.

15

Selection of Advanced Examples of Sato-umi Creation Activities

Urban Activities in Tokyo Bay

Experiment to purify water by cultivating oysters, conducted with the participation of the general public.

It is expected that the number of organisms that ingest the nutrients discharged will increase and purification functions will be regenerated.

Activities at Fishing Village in Ise Bay

To achieve a balance between environmental preservation and pearl production by creating tidal flats and marine forests.

To improve natural purifying functions and establish a system of cultivation based on forecasts of water quality.

Effect of these activities
-Shima City plans to set up an 'Ago Bay Nature Restoration Council' to enable effective utilization of the achievements of this project.
-Based on the achievements of the project, Mie Prefecture initiated an Enclosed Coastal Sea restoration Program in 2007.

Integrated River Basin Activities in Suo-Nada

In the Fushino River, activities are being promoted in which, based on a plan, the whole river basin is to be integrated by various participants.

History of implementation
- 2003: Plan established.
- 2004: Nature Restoration Council established.
- 2005: Overall plan for the restoration of nature in the tidal flats of the Fushino River estuary established.

Effect of these activities
- Increased biodiversity and population of bivalves in the tidal flats etc. of the Fushino River
- Expanded Zosteraceae beds

Activity at a Fishing Village in Iyo-Nada

The creation of forests is being promoted, together with coastal clean-ups performed by local fishermen and NPOs with the participation of the general public.

It is expected to promote wide ranging awareness and education relating to the sea environment.

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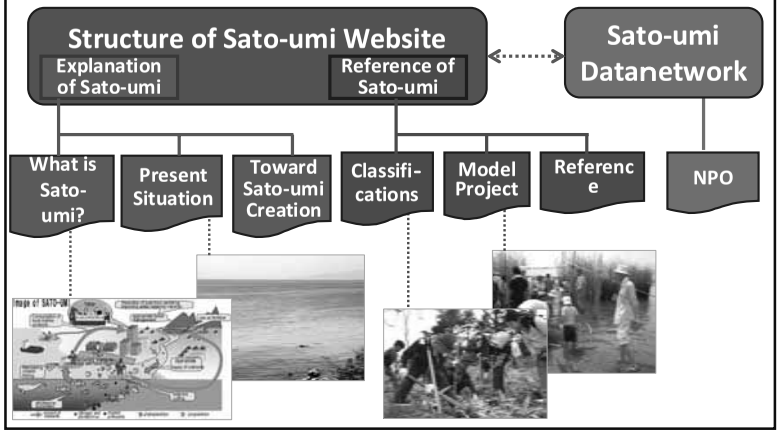
(5) Construction of a Sato-umi Website & Datanetwork

In order to make information on Sato-umi widely available to Internet users in Japan and other countries, Sato-umi website and datanetwork will be created.

17

Construction of a Sato-umi Website & Datanetwork



(6) Publicity Activities (Pamphlet, Leaflet, Symposium)

Pamphlets, leaflets and symposium relating to Sato-umi creation

Those efforts will be made

- to publicize the Sato-umi concept,
- to educate the general public regarding Sato-umi creation,
- to provide information both at home and abroad.

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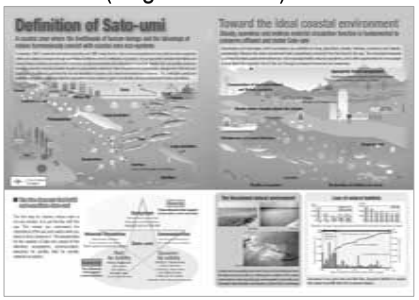
Sato-umi Pamphlet ,Symposium

Draft images of Sato-umi leaflet
(English version)



Sato-umi Symposium in each area

(7) Provision of Information Overseas

An International Sato-umi Workshop are planned to be held at the 10th Conference of the Parties to the Convention on Biological Diversity (COP 10) at Nagoya, Japan in November 2010.

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Provision of Information Overseas

Arrangement for the 'International Sato-umi workshop' as a side-event on COP10, which will be held at Nagoya in 2010, is in progress.

The 10th Conference of the Parties to the Convention on Biological Diversity

- **Period: October 18- 29, 2010**
  (October 27-29, 2010: Ministerial-level meeting)
- **Place: Nagoya International Conference Arena**
  (Nagoya city in Aichi prefecture)
- **Participants: About 10,000 participants, including about 190 contracting countries, international organizations and observers, are expected.**
- **Host country and host: Japan(Minister of the Environment)**

22

Future Unfolding

JAPAN

Output of the Project to Support Sato-umi Creation

- Sato-umi Creation Manual
- Standard Sato-umi Creation Plan
- Example of advanced Sato-umi Creation
- Pamphlet & Leaflet
- Sato-umi Website & Sato-umi Data Network
- International Workshop

Countries in the World

Needs & Problems of Creation of SATO-UMI

Sato-umi Information Sharing

Preservation & restoration of environment of seas all over the world

23

Part 2: Indigenous knowledge and community based approaches in protecting, restoring and managing key habitats

6. Part 2 Summary

Integrated coastal management has often focused on the scientific. Referred to as a 'pioneering and daring' workshop, Sato-umi Workshop Part 2 took up where Part 1 left off with discussions challenging the often scientifically driven top-down status quo when designing and implementing integrated coastal management (ICM) initiatives. Chaired by A. McDonald and co-chaired by Dr. T. Yanagi, discussions explored how Asian communities can potentially work together to more effectively integrate science with local indigenous/traditional ecological knowledge as necessary elements of sustainable community based approaches in protecting, restoring and managing key habitats. Indigenous knowledge has often been absent in the scientifically driven ICM discourse. Science, many participants agreed, is but one key element. How to effectively integrate cultural elements with science in developing ICM initiatives throughout Asia, may in fact be the key to achieving sustainability.

Part 2 explored both the potentials and current limitations of community based approaches in Asia. Building on discussions initiated by the sato-umi concept and its application in Japan, Part 2 discussed the duality of diversity and universality of culture, history and nature views that influence, both directly and indirectly, resource use and management throughout Asian coastal communities. Discussions explored how shared experiences drawn from the wealth of diverse Asian cultures that have evolved over centuries of human interactions with nature, can further contribute to developing more holistic approaches in future Asian-led ICM initiatives. Part 2 also indirectly challenged participants to consider and discuss the role Asian community based approaches can potentially play in contributing to global discussions of culturally integrative science within the context of ICM discourse.

The following is an overview of Part 2 paper presentations. The papers reflect the diversity, width and depth of experiences from across Asia. Drawing on the successes and challenges of efforts in Thailand, Indonesia, Vietnam, Malaysia, Korea and the Philippines, the following nine papers were selected:

1. Implementing an ecosystems approach to coastal management through community-based organizations: An example from Andaman coast at Thailand
   This paper by J. Soonthornnawaphat and J. Silva, IUCN, Thailand Programme set the tone for Part 2 with the bottom-up community based organization's successes, highlighting their activities of marginalized community involvement. By involving

stateless indigenous coastal communities in a multi-stakeholder driven 'reef to ridge' ecosystem approach, indigenous knowledge was incorporated into watershed management. This has lead to empowerment among the communities, increasing their capacities to become sustainable managers of resources within the management framework.

2. Implementation of Tri Hita Karana, a local wisdom of Bali to maintain agricultural resources

   D. N. Suprapta, Director School of Postgraduate Udayana University drew on the cultural beliefs embodied in Tri Hita Karana practiced in Balinese Hindu communities as the foundation of resource conservation. Insight into how local wisdom such as Tri Hita Karana guides collective resource use and management and capacity building in communities were described. Tri Hita Karana, it was explained, emphasizes man and nature's harmonious relationship among the three elements of man, nature and God. Man's rules do not supersede those of nature in this relationship and morality and ethics as critical elements of resource use based on collectivism were also discussed.

3. Developing a mechanism of mobilization of various human and material resources in planting, taking care and protecting urban green trees in Danang City

   T. C. Hai, from the Danang Department of Natural Resource and Environment in Vietnam described the challenges of implementing government initiated community-based restoration projects in his talk about re-greening urban coastal communities where large-scale degradation such as Danang has occurred. Tree planting activities in coastal areas as capacity building for community based resource management drew parallels to uotsukirin practices among coastal communities in Japan.

4. Community Involvement in Coral Reef Restoration Projects in the Gulf of Thailand

   The Marine Biodiversity Research Group's paper from Ramkhamhaeng University introduced NGOs initiatives to involve local fishing communities and volunteer groups for low-cost coral reef restoration activities which have grown into multiple benefit community led ecotourism, environmental education and ecosystem research activities among all stakeholders. Short, mid and long-term planning mechanisms were also identified as key components in ensuring sustainable partnerships among the collective whole.

5. Evaluation of Artificial Reefs (ARs) in West Coast, Peninsular Malaysia

I. Ismail led the presentation by Institutional of Agricultural Food Policy Studies team at Universiti Putra Malaysia. Though results are yet conclusive, the team of researchers discussed their efforts to work with impoverished fishing communities facing depletion of fish stocks and marine resources. This project to build and monitor the effectiveness of artificial reefs (AR) has resulted in a moratorium on AR deployment in the area until AR guidelines are designed as potential long-term environmental concerns have been identified by the studies.

6. Community-based management approach at work in the Muan Wetland Protection Area: Changing perception, changing practice and changing policy

J.Y. Jang and Y.R. Choi of Eco-Horizon Institute discussed efforts in Korea to involve coastal communities as active players in marine protection areas (MPA) establishment and management. Project leaders noted that by involving communities from the beginning contributes to community empowerment and sense of ownership towards the project; thus increasing their commitment to the project and sense of responsibility as sustainable resource managers.

7. When the cradle falls: a case of management failure in community marine reserve in southern Philippines

A. B. Guzman from Mindanao State University of Naawan gave an insightful talk on lessons learnt from a community-based NGO-led initiative gone wrong when re-organization of administrative roles and responsibilities by central government lead to a sense of loss of ownership and involvement by the local communities who initiated the marine sanctuary project. Changes in administrative organization also led to a break down in marine resource management structures in the community and degradation of resources in the intended protection sanctuary have been observed. Re-involving the community as sanctuary guardians and re-assessment of the current management structure were recommended.

8. Conceptual framework of organizing communities for effective mangrove management

J.P. Savaris of the Zoological Society of London, Philippines spoke of her teams efforts to re-establish green belts in coastal communities. Their innovative approach involves integrating the scientific and indigenous knowledge. Though researchers admit that collecting oral histories from elders is a race against time, the knowledge about mangrove management practices among indigenous communities is noted as

critical knowledge in guiding scientists developing mangrove restoration projects based on community inputs and involvement.

9. Indigenous approaches to access, control and protection of coastal resources: a review of some Philippine experiences

E. Ferrer from the University of the Philippines closed Part 2 with a thoughtful discussion about how indigenous knowledge can be applied to resource management practices but also have the potential to be integrated into scientific approaches to community-based climate change adaptation strategies. Ferrer focused on the traditional fishing communities in Batang where ecological knowledge is rich. Harnessing the ecological knowledge of the fishing people and recording the observance of taboos and their performance rituals have added insight into indigenous approaches to resource management and use. Ferrer commented that traditional ritual as symbolic expression of the relationship between human beings and nature bring people and nature together, adding that this 'humanizing of nature, naturalizing of humans' learnt from indigenous knowledge, as proposed by Sato-umi, is critical to future community-based coastal management initiatives.

Chair of Part 2
Anne MCDONALD
Director, UNU-IAS Operating Unit Ishikawa/Kanazawa, Japan

7. Par 2 Oral Presentation

IMPLEMENTING AN ECOSYSTEM APPROACH TO COASTAL MANAGEMENT THROUGH COMMUNITY BASED ORGANIZATIONS: AN EXAMPLE FROM THE ANDAMAN COAST OF THAILAND

Somsak SOONTHORNNAWAPHAT and
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Coastal ecosystems throughout the world are under significant pressure from a multitude of factors. Good coastal planning and management are an important element to maintaining and improving the health of coastal ecosystems. However, the effects poor planning and management are evident in many parts of the world and finding practical solutions that take into account the ground realties are needed.

This paper describes the learning from our work along a coastal stretch within Ranong and Phang Nga Provinces, Thailand. Assessments conducted identified human induced activities as one of the major drivers for change to the ecosystem. However, the legal mechanisms to implement an integrated approach are weak as the regulatory framework is complex and confusing, with overlapping jurisdictions.

To accommodate the situation, we have used an approach based upon a “reef to ridge” concept that encapsulates the ecosystem based approach which has been applied to coastal rehabilitation and management using a bottom up process that focused on local stakeholders with special emphasis on community based organizations.

By building upon the extensive base of community based organizations (CBO’s) within the area, who have already demonstrated a commitment to managing their environment we anticipate that the long term sustainability on the interventions are more likely to be achieved.

A framework for action was developed through an extensive participatory process that involved engaging with stakeholders at multiple levels ranging from the village to national levels who have been involved at the three stages of participatory assessment, planning and implementation using local stakeholders.

The approach also builds on the existing strengths of the institutions within the landscapes that are strongest to deliver the ecosystem approach and also focuses secondarily on institutions that show interest but may not have the full technical capacity to implement. We demonstrate how action can be taken within complex

systems where the ability to set up institutional mechanisms at a landscape level can be challenging and how a more decentralized approach can work to achieve similar results.

This approach has lead to the building of a network of stakeholders who work cooperatively in a manner that takes into consideration the needs and capacity of the individual stakeholders. The paper will present the case of two CBO's a forest and river conservation group on how communities are managing and taking action to protect important ecosystems within the watershed.

Implementing an Ecosystem Approach to Coastal Management with Community Based Organizations: An example from Thailand

Somsak Soonthornawaphat and Janaka de Silva

Demonstrating an integrated approach to managing ecosystems

Major Threats to Coastal & Marine Ecosystems direct drivers of change

Habitat loss & conversion

- coastal development
- conversion to aquaculture ponds
- coastal deforestation
- reclamation
- mining

Habitat Degradation

- eutrophication
- pollution
- alien species invasion
- erosion & siltation
- disease
- destructive fishing practices
- salinization (estuaries & lagoons)

Overexploitation

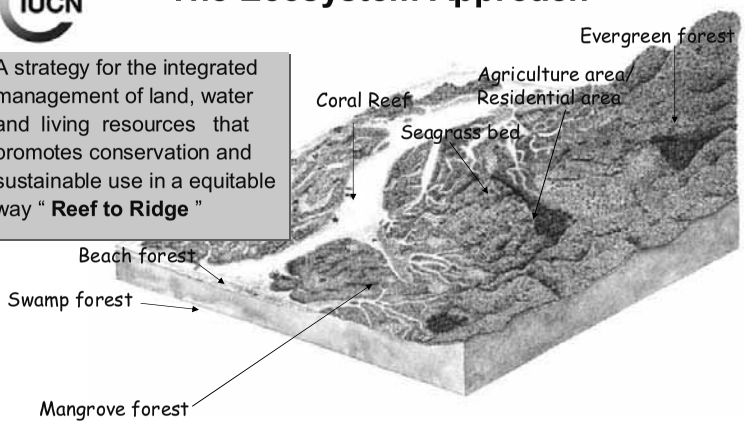
- unsustainable levels of fishing pressure
- incidental take or by-catch

'global warming', climatic changes & sea level rise

Demonstrating an integrated approach to managing ecosystems

The Ecosystem Approach

A strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in a equitable way " **Reef to Ridge** "



Demonstrating an integrated approach to managing ecosystems

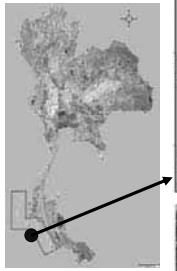
Goals

- To develop management framework incorporating current plans/ strategies, in which everyone has a role & responsibility
- Support establishment of sustainable management partnerships
- Deliver on the ground 'investments'/ interventions in line with priorities
- Further research, learning & knowledge exchange

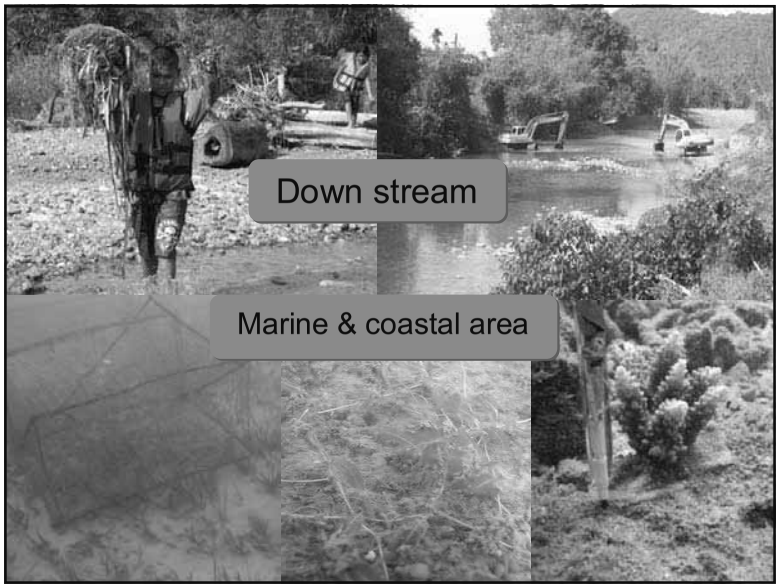
Demonstrating an integrated approach to managing ecosystems

Profile of project site

- 130 km. of coastal stretch
- 3 watershed areas
- focus on 1,800 households
- 6,500 population
- 300 stateless
- 3 National Park
- 1 Wild life Sanctuary
- 1 Ramsar site
- 1 No hunting area



Demonstrating an integrated approach to managing ecosystems

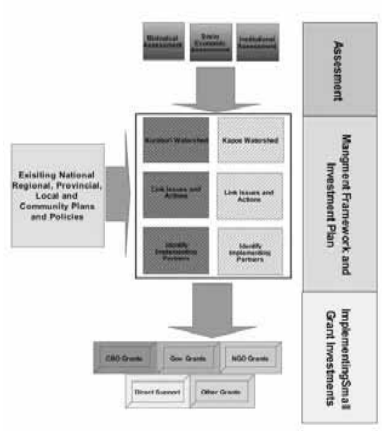


Rationale for Working With CBOs

- Ecosystems include People
- Rapid Changes to System
- Strong Network of Stakeholders
- Weak Law Enforcement
- Capacity of CBO Strengthened after Tsunami

Demonstrating an integrated approach to managing ecosystems

- 20 Govt. Agencies and Experts
- 9 Tambons in 4 Districts
- 32 Villages
- 170 community leaders
- 240 School Kids

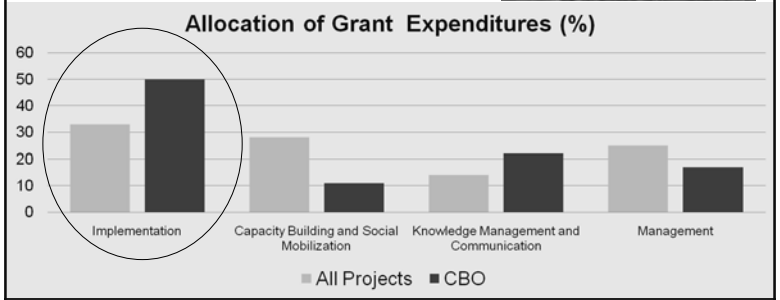


Demonstrating an integrated approach to managing ecosystems

Key Findings

- Have capacity for managing natural resources
- Actions need to fit capacity and needs
- Grantees need capacity building support

Demonstrating an integrated approach to managing ecosystems



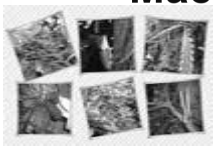
Demonstrating an integrated approach to managing ecosystems

Social Mobilization and Communication

- Promoting links between government and communities essential
- Network within area, in watershed and across the region.
- More Advocacy Support

Demonstrating an integrated approach to managing ecosystems

Mae Nam Khaew



Managing Forests outside Protected areas 35 Square Kilometers

- **Supported reduction of key threats; forest encroachment and hunting**
- **Documented Biodiversity Values**
- **Networking 7 villages to work together**
- **Set up rules and halted forest encroachment**
- **Less success on hunting**
- **Linked to Land Rights Network and sit on Provincial Committee**

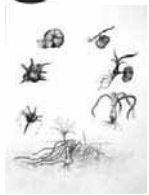
Demonstrating an integrated approach to managing ecosystems

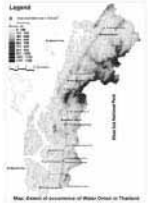
Understanding Ecosystem Function

- Good understanding of ecosystem within their landscape
- Communities possess valuable ecological information and know how to document it

Demonstrating an integrated approach to managing ecosystems

Endemic Species and Local Knowledge





- Local communities helped assess status
- Exchanging Knowledge with other groups has enhanced monitoring skills across the landscape
- Advocacy skills need strengthening

Demonstrating an integrated approach to managing ecosystems

Thung Nam Dam

Monitoring Fauna and Promoting regulations

• Supporting community rules being incorporated into local regulations
•Monitoring and Assessing Orchid and *Melaluca* Forest diversity
•Developing seagrass monitoring protocols that capture local knowledge.

Demonstrating an integrated approach to managing ecosystems

The Conclusions

- CBOs are an effective mechanism to invest in coastal systems.
- Government engagement in participatory processes is good but varies
- Need to give support for advocacy development early
- Developing sustainable financing mechanism to support local conservation are needed

Demonstrating an integrated approach to managing ecosystems

Thank you

(In Thai : Kob-Khun-Khrap)

Demonstrating an integrated approach to managing ecosystems

IMPLEMENTATION OF *TRI HITA KARANA*, A LOCAL WISDOM OF BALI TO MAINTAIN AGRICULTURAL RESOURCES

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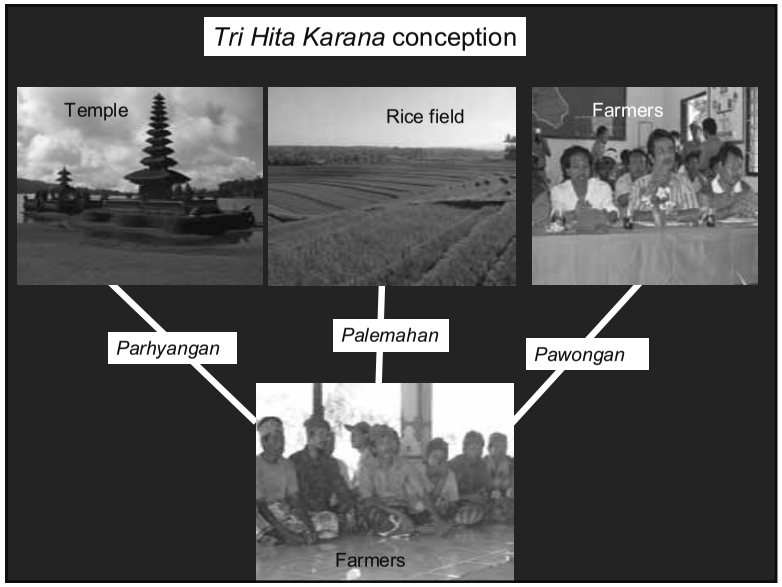
Balinese Hindu community considers that man is part of nature and is the creation of God. The existence and welfare of man are very much determined by his capability of keeping the harmonious relationship with God (**Parhyangan**), harmonious relationship with fellow human being (**Pawongan**), and harmonious relationship with the Nature (**Palemahan**). The key word of this conception is "**harmonious relationship**". Harmonious relationship is relationship developed based on values and rules of each element. The relationship with God is made based on values and rules of religion. Relationship with other human beings is also made based on values and rules of humanity, among others: the value of human right, democracy, equity, justice, and the like. The relationship with nature is also made based on the rules of the nature itself because man is alive and made alive by the surrounding environment. So, to sustain the life of man, nature must function continuously. Nature cannot be managed beyond the scope of its rules, so that nature can have its good cycle. Over-intervention to nature that causes damages or degradation in one or more of its components will be harmful. This coception is called ***Tri Hita Karana***, meaning three harmoniously relationship among related elements bringing welfare and happiness. The three elements are man, nature, and God. In Bali, there is organization which functions to maintain and generate various local wisdoms related to rice field called "**Subak**". Subak, whose members are farmers, has main activities to manage water and land resources for the interest of agriculture to develop it in a sustainable way. This paper describes briefly the implementation of ***Tri Hita Karana*** which constitutes one of the local wisdom in Bali in the field of agriculture to maintain agricultural resources.

Key Words: Local wisdom, Tri Hita Karana, agricultural resources

Implementation of *Tri Hita Karana*, a Local Wisdom of Bali to maintain agricultural Resources

Dewa Ngurah Suprapta

Udayana University, Bali



The key words for the conception :

Harmonious relationship : relationship developed based on values and rules of each element.

1. Relationship with God : based on values and rules of religion (*Parhyangan*)
2. Relationship with other human being is also based on values and rules of humanity, human right, democracy, equity, justice (*Pawongan*)
3. Relationship with nature is based on the rules of nature itself (*Palemahan*)

Implementation of *Parahyangan* in Agriculture :

1. Establishment of temples : place for worship of God
   - *Ulun Danu* temple : built near the lakes in Bali
   - *Ulun Suwi* temple : built at one region or several subaks.
   - *Bedugul* temple : built at dam or division of water
   - *Masceti* temple : built at each subak.
   - *Tugu* shrine : built at each farmer's rice field block.

Implementation of *Parhyangan* :

2. Ceremonies (rituals):

a. Collective/group ceremonies :

- *Magpag Toya*
- *Nyaeb*
- *Ngusaba*
- *Odalan*
- *Nangluk Merana*

b.Individual ceremonies by each farmer : from land preparation, harvest to postharvest , such as : *Ngendagin, Ngurit, Nandur, Biyukukung, Nguntap Sri, Mantenin*

Implementation of *Pawongan* :

Existence of Subak : organization developed by farmers to manage, maintain and preserve the water and land resources and social harmony.

-Subak management : by *Pekaseh* (head of *Subak*)

-Subak rules (*awig-awig*)

-Subak meeting

-Subak activities

Implementation of *Palemahan* :

Basic concept : Man is part of nature, his existence and welfare are very much dependent upon the surrounding environment.

-Appreciation to Plants : *Tumpek Uduh* ceremony dedicated to plant every 210 days.

-Appreciation to animal : *Tumpek kandang* ceremony dedicated to animal: every 210 days

-Regulating water resources

-Regulating planting pattern

-Etc.

Implementation of *Palemahan* :

There are six efforts which must be done to conserve the nature called *Sad Kertih* :

1.Atma Kertih : an effort to conserve and purify the *Atma* (human spirit and soul).

2. *Samudera Kertih* : an effort to conserve the ocean resources that having multifunction in human life.

3. *Wana Kertih* : an effort to conserve the forest along with its biodiversity

4. *Danu Kertih* : an effort to conserve fresh water resources such as spring, lake, river.

5. *Jagat Kertih* : an effort to conserve the harmony of truth-based dynamic and productive social relation.

6. *Jana Kertih* : an effort to develop human inner prosperity and human morality.

Concluding remarks :

- *Tri Hita Karana* : is one of Bali's local wisdom implemented in agriculture to maintain agricultural resources.
-This conception put human being as the part of the whole universe system, in which man should maintain harmonious relationship with God, nature and other people.
-*Subak* is established by farmers to maintain and implement *Tri Hita Karana* in agriculture.

Acknowledgement :

I would like to express my appreciation to the International EMECS Center , Kobe, Japan that kindly support the expences for my participation in this workshop.

DEVELOPING A MECHANISM OF MOBILIZATION OF VARIOUS HUMAN AND MATERIAL RESOUCES IN PLANTING, TAKING CARE AND PROTECTING URBAN GREEN TREES IN DANANG CITY

Truong Cong HAI
Danang Department of Natural Resource and Environment

Danang has been increasing planting urban green trees in recent years. However, its effectiveness is not high yet, the covering rate achieved $2m^2$/person. This reality was in consequence of various causes such as high rate of urbanization, natural disasters. And one of the important reasons is the management of urban green trees in Danang city contains many conflicts such as lacking of interagency coordination, overlaps in management mechanism between agencies, various financial resources are not mobilized while the city's budget is limited, lacking of mechanism for community participation.

According to the orientation of the City, the index for urban greening cover to the year 2015 will be $4m^2$/person, this will be difficult to attain unless there is a change in management mechanism, diversified financial support in urban greening.

Deriving from the reality, the Project of planting, taking care and protecting urban green trees in Danang city was implemented to increase the rate of urban greening, develop pilot models on mobilization of various human resources for urban greening to set background for changing management mechanism of urban greening.

Danang city assigned for Danang Association of Natural and Environment Protection to receive the project. The members of project executive board include the leaders of related departments, sectors, agencies to coordinate all activities of the project. With the above mechanism of project executive board and positive participation of social organizations, enterprises and communities, the project ensures the aim of mobilizing various human resources is to set background for intersectoral management mechanism of urban greening.

Total expenditure of the project is 1,780,150,000VND, in which GEF SGP sponsored 806,150,000VND, the city's budget is 974,000,000VND. Besides, during the implementation of the project, some enterprises, especially the polluters contributed expenditure for the project. This help to ensure sustainable financial resource for urban greening, this financial resource is one way to overcome pollution.

The implemented activities

1. Conduct survey to identify places for pilot models; Design planting models, including the selection of trees that suitable for each pilot places;
2. Conduct public awareness to enhance awareness on the role of urban green trees, regulations on management, the significance of the project, the role of community in green tree management and existing situation of green tree in the city; conduct trainings and guiding skills on planting, taking care and protecting urban green trees; propagandize on the project on mass media;
3. Conduct to plant trees. Forces participating in tree planting consists of pupils, social organizations, armed forces; After planting tree, stakeholders check sign the commitments to maintain taking care and protecting tree;
4. Check and assess the implementation of commitment of pilot places; Compile technical documents, lessons learned to scale up the project.

Actual accomplishments

The project planted more than 17,000 green trees of all kinds at 23 pilot places, remarkably the coastal pilot place of more than 2ha of 850 coconuts. Besides the selected pilot places, in the implementation of the project, Danang Association of Natural and Environment Protection received financial support from some enterprises in the city to plant more than 5,000 trees at 6 other places. This action can be seen as initial achievement of mobilization of various human and material resources.

The project conducted 17 training courses on the role of green trees, awareness on protecting urban green tree, the role of community in urban green tree management and regulations on urban green tree management for more than 3,000 people.

Through participating in the project, some officers mastered a mechanism of various human and material resources in planting and protecting urban green trees, understood the existing situation and expectation of community in planting, taking care and protecting urban green tree.

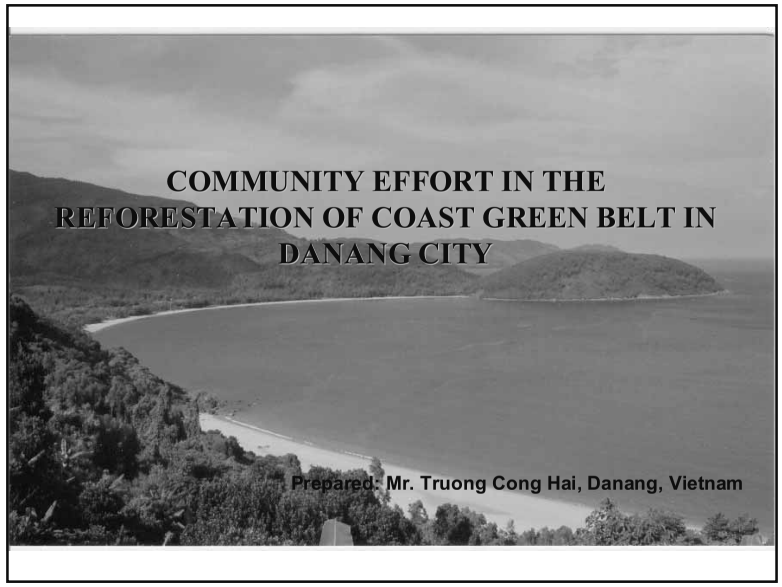
The project was successful in the mobilization of various human and material resources for planting, taking care and protecting urban green tree. Basing on the actual achievements of pilot models the project, Danang People's Committee directed related departments, sectors to develop a project of various human and material resources mobilization for planting, taking care and protecting urban green tree.

Lessons learned

- Consensus of stakeholders is decisive factor of the success of the project;
- Community and social organizations are the nucleus for mobilization of various

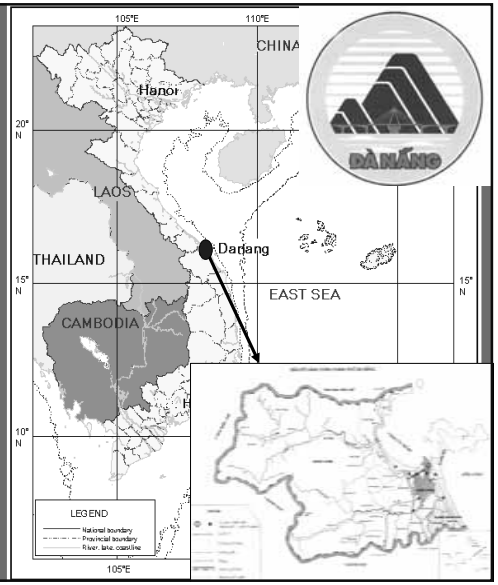
human and material resources;

- The head of the organization plays crucial role in the support and positive participation in the project;
- Propagandized activities need to be integrated with other action plans to be more effective;
- Need to cooperate with local government at all levels to put planting, taking care and protecting of urban green tree as emulated target.



DANANG CITY

- **Location:**
  Central Vietnam
- **Area**
  1,259 km^2
- **Population**
  822,339 people
- **Coastline**:
  92 km
- **Watershed area:**
  954.38 km^2
- **Administrative units**
  6 Districts
  2 Suburbs
- **Website:**
www.danang.egv.org.vn



EXISTING STATE OF GREEN AREA IN DANANG CITY

Danang city has low rate of green area:

- Aproximate 33,000 trees, if combine grass, flower and trees in offices and public centres, the covering rate is about 2m^2 per capita.
- Green trees along the coast was disappeared by urbanization.
- The Coastal Strategy for Danang City identified natural disasters as the factor that endanger the sustainable development of the coast. Increase the green rate and restore the coastal green belt are of the the solutions to cut down affects from typhoon and initiate the related ecosystems restoration.
- The City implemented many programs to increase the green rate but they were not effective. These problems were caused by the following reasons:

EXISTING STATE OF GREEN AREA IN DANANG CITY

The affect of natural disasters:

- Annually, the typhoons affected seriously to the green tree system.
- According to the statistics, on average, there were about 6,000 trees affected directly by typhoon per year. Meanwhile, the city only planted about 7,000 new trees of all kinds.
- Storm No.9 (Ketsana) destroyed 21,000 trees in which 6,000 trees could not be replanted




EXISTING STATE OF GREEN AREA IN DANANG CITY

The management capacity has not met the actual demand:

- There are many departments and authorities which manage green areas but there are lack of collaborating
- Residential roles are not concerned
- Awareness of residents are not good enough

The financial resources for green tree aspect was not mobilized:

- The whole budget invested for green tree aspect is from the city's budget in the context that the city's budget is still limitted
- Mechanism for mobilizing investment from private sectors and NGOs has not established

EXISTING STATE OF GREEN AREA IN DANANG CITY

Lack of space for restoration of green area along the coast:

- The coastal area has convenient condition for economic development
- In land use planning as well as integrated coastal use zoning, the space is reserved for green area is very limitted.

Techniques of planting and taking care trees are not appropriate

- Identify and arrange unsuitable kinds of trees for various sites;
- Trees are planted in a line along the roads, coast thus they are easily collapsed in windy and typhoon

ORIENTATION OF GREEN TREE DEVELOPMENT IN DANANG

- According to Vietnam's regulation for level 1 urban area, it must be ≥ 6 m^2 per capita.
- Increasing the green belt is one of the target to implement the project on environmental city
- In the green tree development plan, to the year 2015 the green cover must reach 4 m^2 per capita. However, it is difficult to reach this target .
- This circumstance requires us to change our management approach in green tree aspect.

SGP The GEF Small Grants Programme

DEVELOPED A PILOT MODEL OF MOBILIZATION OF PUPLIC AND PRIVATE PARTNERSHIP IN PLANTING, TAKING CARE AND PROTECTING URBAN GREEN TREES

HỘI BẢO VỆ THIÊN NHIÊN VÀ MÔI TRƯỜNG VACNE

PROJECT'S OBJECTIVE AND GOALS

Objective:

- Increase rate of green areas in Danang city; Develop a pilot model of public and private partnership for green areas which will be a concrete model for changing the current management structure.

Goals:

- Find the financial and human resources for developing urban green tree
- Create more spaces for tree arrangement
- Build teachniques of planting, taking care and protecting green trees for various sites

EXPENSE AND IMPLEMENTING DURATION

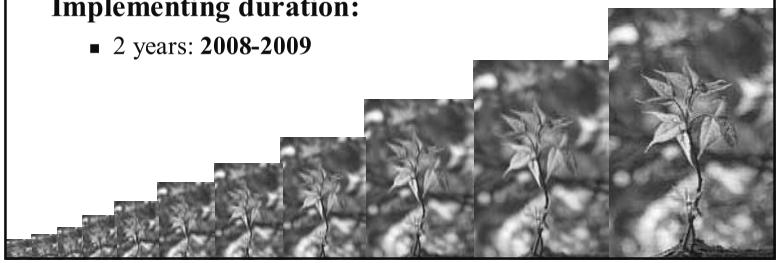
Expense:

Total budget of this project: **110,000** USD

- GEF SGP: **50,000**USD
- Local government: **60,000**USD.

Implementing duration:

- 2 years: **2008-2009**



CONTENTS

Choose the site for implementing pilot model:

- Sites chosen interested to this project and could adapt requirements of the project.
- Study the natural features such as soil, water resource, the capacity to be affected by typhoon… to select suitable tree for each site.
- The native knowledge are applied to select demonstration site
- 23 sites chosen: 7 roads, 7 schools, 6 quarters, 01 factory and 02 beaches.

CONTENTS

Design planting model:

- Selected suitable tree for each site. As for coastal area, we selected trees that are capable of confronting typhoons and salinity
- Due to narrow pavement, we cannot arrange trees in many lines. We encourage the residents and organizations to plant one more parallel line to increase confronting capacity
- We already create a green belt to protect the city

- Planters: students, unions' members, soldiers... With support from experts
- On each site, planters have to plant trees according to technique requirements.
- Stakeholders commit to take care and protect green areas as tecnique requirements.

CONTENTS

Enhance awareness:

- **Roles of green areas and relevant regulations,**
- **Objectives and Goals of this project,**
- **Roles of residents in managing green areas**
- **Technique of planting, taking care and protecting green areas;**

Monitoring and evaluation:

- **Implementation of sites to timely find out issues to overcome**
- **Measure technical parameters, such as diameter, growing ability to update on management software**

RESULTS

- This project planted **17,000** trees, some companies supported to planted more **5,000** trees for 6 different sites, it could be considered as the first step of socialization;
- The number of green tree were not affected seriously in the last typhoon.
- The city reserved 400ha of coastal land for planting green tree
- Identified types of tree and suitable plating techniques

RESULTS

- This project operate **17** training courses, enhance awareness for more **3,000** persons;
- Through project, managers understand the public and private partnership mechanism and protection of green areas
- This project successfully demonstrated pilot models on public and private partnership, Danang PC steered departments and related unions to develop a program of the public and private partnership of green areas.
- Confirmed the green tree development plan of the city can be implemented following public and private partnership the model.
- We are developing the plan to force the enterprises who polluted the environment to plant trees or contribute budget as surmounted budget.

EXPERIENCES

This is a new management approach in greening. Despite the strong support from the PC, specialized organizations still do not have specific legal documents to implement. Agreement among stakeholders decides the success of project;

Residents and unions are core for socialization; during the implementing process, we always attached special importance of the community and social organizations' involvement and their contributing ideas especially their native knowledge

Roles of Leaders play very important for the support and participation of departments in this project.

- **haitruongcong@gmail.com**