

# Tropical Coasts

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## **PEMSEA Experiences in the Evolution of Coastal Management**



# ICM Practices: A Decade of Trial and Error

Jihyun Lee

Issue Editor

This and the December 2004 issue of *Tropical Coasts* synthesizes the experiences and lessons learned from a decade's worth of integrated coastal management (ICM) practices at PEMSEA sites in East Asia. The stories in this issue show how the ICM programmes were developed and applied in various localities, each with its own unique ecological, socioeconomic, political and cultural aspects. The articles also show how ICM has transformed and evolved into a dynamic and functional mechanism for addressing multiple-use conflicts in coastal lands and seas.

Bringing the theory of integrated management into practice is not an easy task. It involves daunting challenges, such as forging perception changes, raising management confidence, building capacity, initiating policy and institutional reforms, and mobilizing various stakeholders, especially in the communities, toward achieving a common or shared vision.

Chua's article (page 4) on ICM in transformation sends an important message that, despite more than three decades of ICM practices around the world and in Southeast Asia in particular, ICM practices are still in the realm of art rather than science. After spending more than 20 years in ICM, Chua concludes and highlights the complexities of coastal governance, particularly in areas where economic development priorities outweigh the value of environmental conservation and in places where coastal inhabitants are still living in poverty.

Chua's article also highlights the value of demonstration projects. Through PEMSEA's efforts, it is clearly shown that ICM is the way to go. This is very much backed up by the article by Corpuz (page 12) who not only described the successes of Xiamen Municipality in PR China, in the implementation of ICM, but also the socioeconomic benefits arising from a decade of ICM practices that brought about policy integration and institutional reforms, ensuring interagency coordination and the effective enforcement of functional sea-use zoning schemes.

The Xiamen story is very much matched by similar active and dynamic processes in the ICM programme of Danang City, Vietnam, as seen in the article by Minh and Bermas-Atrigenio (page 18). With a relatively shorter timeframe, Danang City was able to mainstream environmental concerns into its economic development program. In addition, Danang was able to heighten public awareness and has since benefited from having an informed public.

While the centralized political system in China might have favored the implementation of ICM in Xiamen, the achievements in Batangas Bay in the Philippines, as described in Estigoy and Guintu's article (page 24) confirmed the

viability of the ICM approach though the process might take longer and the effectiveness of the management framework might need stronger stakeholder involvement. On the other hand, the persistent involvement of the business sector and civil society through the Batangas Bay Region Environmental Protection Council ensures that the multi-sectoral consultative process is in place.

Organizational and legal reforms would not be effective unless they are supported by people's beliefs, ethics and value systems. Sudji's article (page 32) on ICM in Bali, Indonesia, describes how the traditional Balinese belief on the *Tri Hita Karana* has penetrated into the ICM process, and thereby contributing to the development of the Bali Coastal Strategy, which various local stakeholders can claim ownership and place value on. The *Tri Hita Karana* also guides local stakeholders in formulating an integrated coastal-use zoning plan and in promoting sustainable tourism practices among tourism operators.

The issues concerning larger bodies of water, such as Manila Bay in the Philippines and the Bohai Sea in PR China, are more complicated as they involve management interventions across administrative or judiciary boundaries of provinces and municipalities. An appropriate database is essential to foster understanding on the ecosystems and the common benefits they generate for stakeholders across the boundaries. The article by Ebarvia, et al. (page 42), describes how the risk assessment for Manila Bay has transformed monitoring and survey data, once scattered throughout different agencies, into organized and meaningful information for decision making. The risk assessment process also facilitated the sharing of information among various agencies and institutions, and created a cooperative framework for scientists and managers manifested in the endorsement of the Manila Bay Coastal Strategy.

Using similar approaches, the Bohai Sea, which is the only inland sea of China, Zheng, et al., (page 52) describe the Chinese efforts in the development of the Bohai Sea Coastal Strategy, which builds upon the expression of political commitment through the Bohai Declaration for the management of the various governors of the provinces bordering the inland sea. A bill on the integrated management of the Bohai Sea is now in the People's Congress. Once passed, the integrated management of the Bohai Sea will have legal basis and authority. This will be a major achievement indeed.

Any ICM initiative story brings with it a unique history of capacity and confidence building as well as knowledge gained by those involved, be it scientists, economic and environmental managers, policymakers, business communities or members of the civil society. The knowledge, expertise and practical experiences embodied become the foundation of intellectual wealth in coastal governance, and thereby contribute to the replication of ICM efforts in other coastal areas. Chua and Lee's article (page 60) puts emphasis on applying effective knowledge management strategies to promote the sharing of practical knowledge for the scaling up of ICM practices.

The stories on PEMSEA ICM initiatives and those of many others are essentially histories in progress. There is a beginning but the process of governance does not end. ■

# Tropical Coasts

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**Chua Thia-Eng**  
Executive Editor

**S. Adrian Ross**  
Editor

**Jihyun Lee**  
Issue Editor

**Leo Rex Cayaban**  
Assistant Editor

**Jonel P. Dulay**  
**Anna Rita G. Cano**  
Design/Illustration/DTF

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Research

**Nancy Bermas-Atrigenio**  
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**Renato Cruz**

**Maria Corazon M. Ebarvia**  
**Evelyn Estigoy**  
**Alexander Guinto**

**Maria Teresita G. Lacerna**  
**Jihyun Lee**

**Nong Thi Ngoc Minh**  
**Cristine Ingrid Narcise**

**Zheng Shuying**  
**Iz. Ni Wayan Sudji**

**Li Wenhai**  
Contributors

The Global Environment Facility/United Nations Development Programme/International Maritime Organization Regional Programme on Partnerships in Environmental Management for the Seas of East Asia (GEF/UNDP/IMO PEMSEA), Sida Marine Science Programme, and the Coastal Management Center (CMC) publish *Tropical Coasts Magazine* biannually. This publication is geared towards stimulating an exchange of information and sharing of experiences and ideas with respect to environmental protection and the management of coastal and marine areas. Readers are strongly encouraged to send their contributions to:

### Executive Editor

P.O. Box 2502,  
Quezon City 1165,  
Metro Manila, Philippines

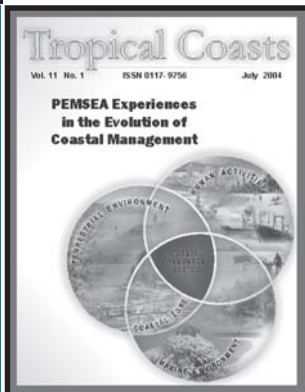
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Coastal management has evolved in the East Asian region over the last 25 years. In this issue of *Tropical Coasts*, the theme is sharing the lessons learned with more policymakers and stakeholders to achieve the common goal of sustainable development for our oceans and coasts.



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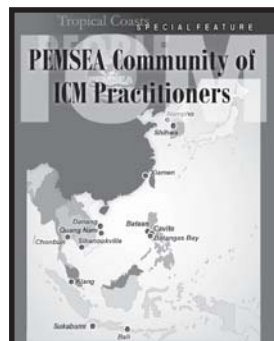
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### 35 PEMSEA Community of ICM Practitioners

Meet the men and women behind the ICM programmes featured in this issue who, through their steadfast commitment, have enabled the success of ICM in their localities by mobilizing stakeholders toward the common goal of sustainable ocean and coastal development.





## Introduction

Nowadays a first time visitor to Xiamen would have difficulty imagining it as a drab and dingy city formerly known as Amoy. Xiamen means "gateway" or "entrance," and, historically, it has always been an international center of trade. This scenic port city currently links over 60 ports in 40 countries. The succession of strife it has been involved in, however, interrupted its growth. Prosperity returned in the early 1980s when Xiamen was designated one of the four Special Economic Zones (SEZs) along with Shenzhen, Zhuhai and Shantou.

# Return to the Yellow Brick Road: Xiamen, Revisited

*"The road to the City of Emeralds is paved with yellow brick," said the Witch, "so you cannot miss it. When you get to Oz do not be afraid of him, but tell your story and ask him to help you."*

— L. Frank Baum, *The Wonderful Wizard of Oz*



**Xiamen has come a long way from its humble beginnings as the city formerly known as Amoy. ICM has helped tremendously in the preservation of the city's cultural and architectural heritage.**

Created as a means for testing market mechanisms, the SEZs were selected for their small size, geographical location and comparative isolation from the rest

of the Chinese economy. For its part, Xiamen had the potential to be successful due to its accessible transportation routes, connections to overseas Chinese and proximity to

Taiwan, Hong Kong and Macau. Their subsequent success in attracting foreign investments and development as an export-oriented economy contributed to the opening up of practically the entire country. Hence, Xiamen has played an important role in determining the shape of the Chinese economy.

## The Cyclone

Once it became an SEZ, Xiamen's economy skyrocketed. The city's gross domestic product grew at an average annual rate of nearly twenty percent for the past 20 years and it became a preferred destination of investors. While the growth rates have begun to decline recently, they remain impressive. By the end of 2003, US\$20.79 billion of foreign direct investments had been pledged to Xiamen with US\$13.39 billion actually being invested in the

Table 1. Key Socioeconomic Indicators of Xiamen	Value
Population (in million)*	1.26
Gross domestic product (in 100 million RMB)	760.12
Per capita net income of urban residents (in RMB)	12,915.00
Imports (in US\$100 million)	81.57
Exports (in US\$100 million)	105.54
Green space (m <sup>2</sup> /capita)**	9.70
Industrial solid waste (in tons)**	44,330.00
City wastewater (in million tons)**	
• Industrial	29.51
• Municipal	126.47
Urban Sewage Treatment (in %)*	60.86

Sources: [www.fdi-xiamen-cn.com](http://www.fdi-xiamen-cn.com)  
Xiamen Environmental Protection Bureau, 2001.

\*2002 figures

\*\*2001 figures

**Back in 1990, Xiamen was less than pristine. Her streets and sidewalks were covered with litter, and a film of black coal soot coated much of our town, and our lungs as well. Mary Poppins might see romance in coal-black, but it's a different kettle of soot in real life. But someone must have heard that "Cleanliness is next to Godliness," because by the mid '90s, Beijing had recognized Xiamen as the cleanest city in China, with the purest air. Xiamen has received awards like "National Sanitary City," "National Garden City" and "Model City for Environmental Protection."**

— Bill Brown, *Amoy Magic*  
[www.amoymagic.com](http://www.amoymagic.com)

city's 6,088 currently running projects (*Xiamen Investment Guide*, 2004).

With the unprecedented industrialization and urbanization, population also swelled (mostly due to migrant workers), which put pressure not only on Xiamen's but generally on China's coastal zone. While the national and local government authorities recognized the need to protect its coastal and marine resources and environment, the fragmented administrative set-up hampered their effective management. To address these problems, the National People's Congress granted environmental legislative rights to Xiamen in 1994, which led the city's People's Congress to promulgate a set of laws and regulations related to marine resources development and protection (Li, 1999). These became essential in the establishment and

operationalization of integrated coastal management (ICM).

The gradual, albeit limited, reforms in the political, administrative and economic decision-making in the country eventually facilitated the adaptation of the ICM framework. Thus, when Xiamen was tapped to be a national ICM demonstration site of the GEF/UNDP/IMO Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas (MPP-EAS) things began falling into place.

## The Road through the Sea

Today, Xiamen is acknowledged as a prime example of effective ICM implementation. It has managed to achieve socioeconomic progress, with minimal negative impacts on the natural environment, as one of the benefits of its ICM program.

# The success of ICM in Xiamen owes much to the organizational framework established. The program is sanctioned by a coordinating committee involving all concerned sectors and is directly under the leadership of the mayor.

The success of ICM in Xiamen owes much to the organizational framework established. The program is sanctioned by a coordinating committee involving all concerned sectors and is directly under the leadership of the mayor. Similarly, the municipal government emphasized the interaction between the policymakers and the scientific community. One of the significant

achievements emanating from the program is a functional sea-use zoning scheme, which helped in minimizing conflicts among users. Through extensive collaboration, monitoring networks have also been optimized.

Typically, the change in leadership and ensuing reorganization created some rough

patches for programs. Fortunately, the gains under ICM swung the balance towards its favor. These achievements are discussed in Box 1.

The impressive growth of Xiamen still has consequences on its urban environment, which are not adequately addressed. For example, the city continues to receive waste from Jiulongjiang River, the second largest river in Fujian Province. The estuary falls within the administrative jurisdiction of the cities of Longyan, Zhangzhou and Xiamen. As Xiamen is located at the mouth of the river, its water quality and prevailing environmental problems have a significant effect on the condition of the Xiamen sea area and its management. The river receives over 200 million tons of industrial and domestic sewage each year, mostly untreated (Castensson, 2003). A large amount of wastewater from the animal husbandry sector is likewise discharged. Thus, as a major freshwater resource for Xiamen and its neighbors, the pollution may compromise the city's progress and achievements, both in economic and environmental arenas. Recognizing this, a comprehensive river basin planning approach is being developed.

According to the Xiamen Environmental Protection Bureau (2001), considering the continuous growth in the city's population and economic activity, there is a need to



**The road towards an integrated management of the environment may be a long way for some but with a shared vision by the local government and the stakeholders ICM becomes a realistic target.**

remain vigilant against all types of pollution and other damages to the environment. Monitoring of industrial discharges has been enhanced. It is expected that the current efforts such as rehabilitation of the stagnant mainland-facing western seawaters, public green space expansion, construction of wastewater treatment facilities, public transportation and automobile emissions improvements, and conversion to liquefied natural gas would further enhance Xiamen's environmental quality.

Chua and Gorre (2000) likewise noted the need for consolidation of the measures adopted for ICM during its pilot phase to ensure sustainable development of Xiamen. Established coordinating mechanism must be strengthened to ensure long term viability. Similarly, capacity and consensus-building activities must continue to ensure adequate and effective support for coastal and marine management. Other measures that need to be undertaken include the consolidation of land- and sea-use plans, the adoption of precautionary measures to respond to hazards relating to port activities and navigation, and the consolidation of financing mechanisms for sustainable management of Xiamen waters.

### Box 1: Key Achievements in the Xiamen ICM Program (Wang, 2002; Hong and Xue, 2003)

- **Coordinating mechanism for ICM**

The Xiamen Marine Management and Coordination Committee was put up to provide policy advice, coordinate the various marine uses and review progress of the activities. Meanwhile, the Xiamen Ocean and Fisheries Bureau was established to be the operational arm of the interagency committee. The formation of an integrated law enforcement group had been instrumental in closing industrial establishments that have not complied with discharge standards.

- **Scientific and technical support**

An advisory group composed of multi-disciplinary experts was organized to incorporate scientific tools to the decision-making process. The integrated environmental impact assessment was introduced to address cumulative effects of various planned developments, such as infrastructure projects.

- **Yuandang Lagoon cleanup**

The once biologically dead Yuandang Lagoon was rehabilitated and transformed into a prime business center. The estimated cost for the clean-up project, which is as much as US\$135.5 million (Hao and Peng, 1998), is far outweighed by the long-term benefits primarily due to the appreciation of property values in the adjacent waterfront.

- **Marine functional zonation scheme**

The scheme served as a means to maximize the utilization of the sea area without compromising the functional integrity of the ecosystems. Four major development zones, catering to shipping and port; tourism; aquaculture; and, habitat protection, were established. Part of the zoning was a nature reserve for rare and endangered species such as the Chinese white dolphins, lancelets and egrets.

- **Enactment and enforcement of legislation**

The various environmental management initiatives were amply backed up by the enactment of local regulations. At the same time, the integrated law enforcement group helped in resolving a number of coastal-use conflicts.

- **Enhanced public awareness and participation**

Public participation in the environmental protection of Xiamen was improved through awareness programs, starting in 1994 with the publication of *We Own the Sea*, a compilation of Xiamen's public awareness articles on the marine environment. A marine educational program for all ages was later developed.

- **Capacity building**

The establishment of the International Training Center for Coastal Sustainable Development (ITC-CSD) at Xiamen University as a PEMSEA Regional ICM Training Center serves a pivotal role in propagating ICM.

# The experience demonstrates the positive value of investing in a clean and sustainable environment for further economic development. Its Environmental Protection Plan forecasts that by 2005, investment in environmental protection will reach three percent (3%) of the gross domestic product.

Xiamen is not about to sit upon its laurels. As the city makes efforts to scale up its ICM program, new activities are being developed intended to consolidate its achievements and broaden applications. Box 2 lists some of the recommendations distilled from the Xiamen experience, which is also applicable to others as they scale up

their ICM programs. New endeavors are being launched to complement previous successes. These include the strengthening of capacity-building efforts of the International Training Center for Coastal Sustainable Development (ITC-CSD); establishment of an environmental investment project applying the Public-Private

Partnership framework for the rehabilitation of Maluan Bay in the West Sea area; initiating ISO 14001 for the municipal government; and, development of a Jiulongjiang Estuary management framework in collaboration with neighboring cities.

## The Guardian of the Gates

Sustaining the positive gains from a project can be tricky, as shown by countless projects which had auspicious beginnings but lost steam in the end. The Xiamen project started out with multilateral support from GEF/UNDP/IMO under the MPP-EAS with counterpart funding from the local government but through the years the share of the latter has been steadily growing.

One of the benefits arising from the city's decision to improve the environment was the increased real estate values and the city's clean environment reputation attracting foreign investors. This strategy has been working for them especially since Xiamen cannot solely rely on its status as an SEZ since the incentives offered have been replicated throughout the country. The experience demonstrates the positive values of investing in a clean and sustainable environment for further economic development. Its Environmental

### BOX 2: Recommendations Towards a Broader Application of ICM (MPP-EAS, 1996; Hong and Xue, 2003)

1. Sustain the ICM program at the demonstration site;
2. Evaluate achievements against set objectives and goals;
3. Consolidate experience, knowledge, approaches, methodologies and skills acquired from the demonstration project;
4. Assess impacts of activities undertaken;
5. Distill lessons learned and reassess operational strategies and methods;
6. Improve ICM approaches and methodologies;
7. Sustain and strengthen political commitments;
8. Adjust plans and management arrangements;
9. Identify and introduce new activities to improve management of sectoral development, including those at the grassroots level;
10. Implement a refined ICM program; and
11. Promote the adoption of ICM in other coastal areas.



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Protection Plan forecasts that by 2005, investment in environmental protection will reach three percent (3%) of the gross domestic product.

The city's comparative political and financial autonomy has been instrumental in fostering progressive attitudes among the municipal leaders. Though political support is never easy to acquire, it is essential to ensure the success of pollution control and prevention programs. The Xiamen leaders were wise to recognize that poor environment would be hurting business. As part of its investment policy, proposed investment projects need to undertake an environmental impact assessment. Projects that use outdated technologies, waste resources and create heavy pollution would not be approved. In a way it was also fortunate that the flood of incoming foreign investments allowed for selectivity in approving new projects. Hence, the strong political commitment and determination shaped what Xiamen is like at present.

The story of Xiamen can be assessed in terms of the four capacity elements or the "four pillars" used in the Managing Shared Waters Conference as cited in Daley and Dowdeswell (2002). These are:

- **Knowledge** — capacity to educate, train and raise



**Long-term benefits of coastal clean-ups far outweigh the costs incurred during a given project like the rehabilitation of the once biologically dead Yuandang Lagoon which became a prime business center.**

awareness through fostering of knowledge and understanding and the development of practical skills and expertise;

- **Science** — capacity to measure and understand coastal ecosystems through monitoring, research and technology development;
- **Management** — capacity to legislate, regulate and achieve compliance through effective institutional and participatory frameworks leading to community acceptance; and
- **Services** — capacity to provide appropriate, affordable water services, infrastructure and products through sustained investment and management by both public agencies and private enterprises.

While Xiamen ICM remains a work in progress, its achievements as discussed earlier speak for themselves. First, in terms of

environmental knowledge, the increasing involvement of the residents and business in urban management decision-making as a result of heightened awareness and better understanding is seen and felt. Likewise, the ITC-CSD, under Xiamen University, is being developed as a training base for ICM. Not only is knowledge of ICM being sustained at the national level but even internationally. The willingness of those involved in the city's ICM program to share their experience is evident particularly in their active participation in the Regional Network of Local Governments Implementing Integrated Coastal Management (RNLG), whose goal is to facilitate the sharing of information on implementing ICM programs. Second, the utilization of scientific and technical support through Xiamen's Marine Experts Group contributed to sound management decision-making. Third, the ICM legislative efforts incorporate market-based instruments and enforcement have been successful.

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**Dr. Nong Thi Ngoc Minh**  
Vice Chairperson  
People's Committee of Danang City  
Danang City, Vietnam

and

**Nancy Bermas-Atrigenio**  
Technical Officer  
PEMSEA  
Quezon City, Philippines

## Introduction

For those privileged enough to visit Danang regularly over the past five years, one can see and experience its remarkable transformation into a prime city of Central Vietnam. The city has been undergoing rapid urbanization and industrialization earning it present status as one of the most important economic growth centers of the country. More importantly, the dynamism of ICM is transforming the city into one of the best ICM showcases in Vietnam where efforts are stepped up to balance rapid economic and industrial development with environmental protection.

# Charting a Course for ICM in Danang, Vietnam: A Convergence of Political Will, Stakeholder Support and Mobilization



**Schoolchildren are taught to be aware of environmental protection through their participation in environmental cleanups.**

On-the-ground positive results have opened up new opportunities that provided Danang the right motivation towards laying the foundations for a model Asian city. The city for instance was recently selected as one of the role models

for efficiency in urban planning through the auspices of the Asian Urban Information Center of Kobe, Japan (*Danang City News*, 2004). This recent development, which aims to improve the welfare and quality of life of the population by integrating

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population, reproductive health and gender issues into urban planning, perfectly complements the goals of ICM. Taken in combination, these developments would provide a momentum for Danang to push its coastal management agenda to new heights.

## How did it all start?

Four years ago, Danang was selected as one of the national ICM demonstration sites of the GEF/UNDP/IMO Regional Programme on Partnerships in Environmental Management for the Seas of East Asia (PEMSEA). Complexities of environmental and management issues, interest and preparedness to undertake an ICM project, level of public awareness on marine environment issues and protection, presence of research/academic institutions and availability and level of competence of a potential coordinating agency are some of the key considerations for its selection. Political will to undertake the project was another important factor that was considered since the chances of achieving success also rest significantly with the political environment.

The ICM Project was officially launched after the Memorandum of Agreement was signed in June 2000 between the People's Committee (PC) of Danang City and PEMSEA. The Department of Science and Technology (formerly the

# More importantly, the dynamism of ICM is transforming the city into one of the best ICM showcases in Vietnam where efforts are stepped up to balance rapid economic and industrial development with environmental protection.

Department of Science, Technology and Environment) was assigned as the coordinating agency to implement the project. The Project Coordinating Committee (PCC), an interagency and multi-sectoral coordinating mechanism, and Project Management Office (PMO) were established in July and August 2000, respectively.

Danang has consistently adopted and implemented the ICM framework and process. Each step taken was wrought with challenges, not only because ICM was relatively new in Vietnam but also because a number of barriers were encountered such as weak local capacity in planning and management and limited technical know-how. Notwithstanding these challenges, it is going through and is almost in the process of completing the full ICM cycle, which was previously pilot-tested in Batangas, Philippines and Xiamen, China (Chua, 1998, 2000). After four years of implementation, Danang is gaining a new reputation as the emerging pacesetter of ICM in Vietnam as it holds some of the proven successes of ICM (Thang, et al., 2003).

## How was this achieved?

### Elements of Success

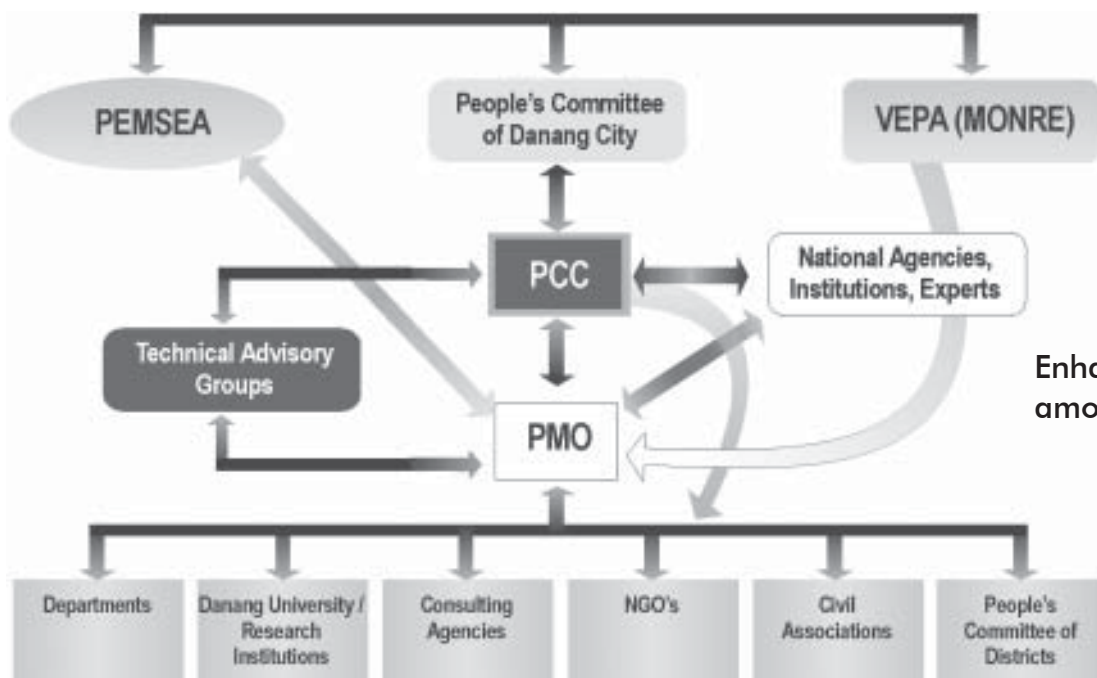
The key to Danang's success can be attributed to a number of factors. Foremost is the strong political support and commitment afforded to the project. Second is the promotion and the strengthening of coordination and cooperation among the different sectors, the local government and other stakeholders, through the establishment of the PCC. The third factor is the much-needed leadership provided by the PCC Chair and the PMO Director by jointly steering the project efficiently through the ICM process. Fourth is the keen stakeholder support that enabled community mobilization efforts to become an easy task to accomplish.

### Gaining Political Support

From the start, Danang PC was very supportive, which created a favorable environment for project implementation. The realization that the ICM approach is one of the best

# The ICM project had provided Danang a participatory framework where stakeholders take active roles during public consultations. A sense of ownership, facilitating their active participation, is therefore instilled.

**Figure 1. Interagency and multi-sectoral coordinating mechanism.**



as chair (Table 1). The PCC carries out its functions effectively with the assistance of several multidisciplinary groups such as the Technical Working Group (TWG) and the Core Group of Communicators (CGC). The TWG provides technical and scientific advice to the PCC regarding project implementation while the CGC provides assistance in raising public awareness and mobilizing stakeholder involvement

in various activities of the project. Through these bodies, the quality of project outputs is not only ensured but the participation of various sectors in project activities is enhanced.

## Enhancing Collaboration among Sectors

The regular consultation process among the PCC members and stakeholders, which is coordinated by the

solutions not only in forging cooperation and collaboration among the different sectors and agencies but also in addressing multiple-use conflicts and priority concerns, strengthening capacity and enhancing stakeholder involvement, provided a compelling reason for the local government to bestow its genuine support and commitment to the project.

Danang PC established the PCC through Decision No. 7997/QD-UB on

5 July 2000. The PCC is the highest interagency and multi-sectoral coordinating body in Danang, which is tasked to provide guidance and advice on project implementation and operation and forge greater partnerships and collaboration among the various sectors and agencies involved in ICM (Figure 1). The PCC is a 25-member strong body consisting of leaders from related sectors, organizations, local government units and civil society, with the chairman of the PC serving

PMO, has provided a venue conducive to uniting the different sectors, agencies/ organizations, the local government units and other stakeholders to agree on certain issues, identify appropriate management interventions and share experiences, information and knowledge on ICM implementation. The members and stakeholders are updated on the project's progress; are requested to assess project results and outputs including the environmental profile, coastal strategy, initial risk assessment, integrated information management



system, coastal-use zoning, coastal strategy implementation plan, environmental monitoring, etc.; collectively discuss problems on project implementation and identify solutions for recommendations to Danang PC. This process, which is carried out in a very transparent manner, has gained the confidence and enthusiasm of each of the members. In turn, they are able to effectively diffuse their knowledge about the project's achievements and needs to their respective constituents and eventually to the public at large.

With the PC's strong support, the PCC's able leadership and PEMSEA's technical assistance, solutions to address difficulties in project implementation were identified through consultations and consensus building.

## Keeping the Public Well-Informed and Involved

The public awareness activities, through the leadership of the Core Group of Communicators in consultation with the PCC, have also contributed significantly to the success of the site in implementing ICM. Public awareness initiatives were undertaken on a regular basis with the involvement of various civil society groups including the Women's Association, Farmer's Association, Danang Youth Union, etc. A diversity of approaches was utilized including distribution of flyers, posters, newsletters,

**The realization that the ICM approach is one of the best solutions not only in forging cooperation and collaboration among the different sectors and agencies but also in addressing multiple-use conflict and priority concerns, strengthening capacity and enhancing stakeholder involvement, provided a compelling reason for the local government to bestow its genuine support and commitment to the project.**

**Table 1: Membership of the Project Coordinating Committee**

NAME	AGENCY/ORGANIZATION
Dr. Nong Thi Ngoc Minh	Vice Chairperson of Danang People's Committee
Mr. Pham Kim Son	Director, Department of Science and Technology
Mr. Phung Tan Viet	Director, Department of Planning and Investment
Mr. Tran Van Hao	Deputy Chief, Danang People's Committee Office
Mr. Luong Minh Sam	Director, Department of Tourism
Mr. Phan Van Chuong	Director, Department of Transportation
Mr. Nguyen Thanh Canh	Deputy Director, Department of Land Administration
Mr. Nguyen Ngoc Tuan	Director, Institution of Urban and Rural Constructive Planning
Mr. Nguyen Van Liem	Deputy Director, Department of Industry
Mr. Ho Pho	Deputy Director, Department of Fishery, Agriculture and Forestry
Mr. Nguyen Thanh Sang	Deputy Director, Department of Finance
Mr. Nguyen Dinh Thu	Vice Chairman, People's Committee of Ngu Hanh Son District
Mr. Nguyen Thuong	Vice Chairman, People's Committee of Thanh Khe District
Mr. Kieu Van Toan	Vice Chairman, People's Committee of Hai Chau District
Mr. Le Cong Ho	Vice Chairman, People's Committee of Son Tra District
Mr. Dam Quang Hung	Vice Chairman, People's Committee of Lien Chieu District
Mr. Huynh Minh Nhon	Chairman, People's Committee of Hoa Vang District
Mr. Dang Cong Thang	Vice Chairman, Association of Farmers
Mr. Pham Thanh Mai	Chief, Science and Technology Division, Military Unit of Region 5
Mr. Nguyen Van Bieu	Navy Department of Region 3
Mr. Duong De Dung	Chief of Staff, Border Defense Army of Danang City
Mr. Vu Trong Can	Deputy Director, Department of Port Authority
Mr. Nguyen Thi Thanh Minh	Vice Chairman, Women's Association
Mr. Nguyen Thanh Quang	Undersecretary, Youth Association
Mr. Hua Chien Thang	Head, Integrated Coastal Zone Division, Ministry of Environment and Natural Resources

**A recent survey showed that at least 85 percent of households located in 30 communes in Danang are committed to protecting the environment (*Danang City News, 2004*). The active involvement of Women's Association in attaining this figure is commendable.**

**Box 1: Some of the on-the-ground public awareness activities in Danang City.**

- Conducted a series of training programs on public awareness for the development of a communication plan in 2001, with participants from the different sectors, agencies and civil society.
- Held an artistic festival and competition with the theme, "Let's keep Danang beaches clean and beautiful," which involved 19 teams from the coastal communes.
- Conducted a competition among the youth with the theme, "For the coastal and sustainable development of Danang City," which involved over 500 members from 56 Youth Unions, in the third quarter of 2001.
- Organized a competition on public awareness on green production and environmental protection, in coordination with the Green Production Program in the third quarter of 2002.
- Compiled and disseminated training materials on public awareness and participation in the ICM project, enhancing public awareness and communication, waste segregation, beach cleanup, updates on the environmental status of Danang City, green production and environmental protection of Danang City, and ISO 14000, since mid-2001.
- Disseminated posters and flyers on ISO 14000, waste segregation and beach cleanup.
- Aired an environmental program on Danang TV and radio.
- Published and disseminated a newsletter on the ICM Project on a quarterly basis.
- Conducted seminars on waste segregation and beach cleanup, which involved leaders of relevant departments and communes in selected pilot sites.
- Conducted 15 talk shows on community-based waste segregation and beach cleanup in pilot communes from 2001 to 2003.
- Conducted training courses and seminars on ISO 14000 for workers and leaders of selected industrial establishments.

organizing artistic festivals and competitions, incorporating environment-related themes into school activities and conducting interviews and talk shows (Box 1). This process has resulted in a chain of positive reactions, which can be best seen during public consultations where the people are very keen to be seen and heard. The ICM project provided Danang a participatory framework where stakeholders take active roles during public consultations. A sense of ownership, facilitating their active participation, is therefore instilled.

## Forging a Shared Vision

One of the key outputs of the ICM process is the coastal strategy. Its development is a result of a long consultation process with different stakeholders including heads of line agencies, resource and environmental managers, scientists, representatives of local government units and other entities to address priority environmental and management issues. The consultation process is essential in forging a shared vision among the stakeholders on the present and future uses of the coast. Thus, it can be considered as a people's strategy because it reflects the common aspirations of the local community.

Through the initiatives of the PCC, Danang PC adopted the coastal strategy in December 2001. Forty-four action programs were drawn up to address priority concerns related to multiple-use conflicts, improving environmental quality, preserving biodiversity,

promoting environment-friendly economic development and creating environmental investment opportunities. The Danang Coastal Strategy Declaration signed in June 2002 demonstrated the commitment of the local government and stakeholders for its effective implementation. Danang is currently developing the coastal strategy implementation plan where the problems and opportunity areas identified in the strategy are prioritized and earmarked for implementation over short, medium and long terms.

## Positive Impacts

### Perception Change

As project implementation progressed, some of the more significant impacts that catalyzed concrete changes included the gradual transformation in the mindset of the people on how they regard the environment and its resources. In the past, majority of the



**The Women's Association is one of the many stakeholder organizations active in Danang.**

stakeholders had low level of awareness on the values of the coastal and marine resources and environment and their linkage to the sustainable development of the city. The current scenario shows that a greater proportion of the population, including local policymakers, recognize the value of the coasts and oceans and the threats associated with resource exploitation and degradation. There is also some degree of appreciation of the ICM approach involving all sectors, i.e., policymakers, scientists, civil society and the communities, which was catalyzed through consultations and

Women's Association in attaining this figure is commendable. Some concrete on-the-ground examples of public awareness initiatives and outputs are enumerated in Box 2.

### Replicating Danang's Success

Danang's success in implementing the ICM programme at the local level has been well recognized and was cited as a good example for other coastal provinces and cities in Vietnam to follow. The interagency partnerships and collaboration created through the PCC in particular is now being looked up at the national level as a good model for adoption by other potential ICM projects in the country (Thang et al., 2003). Danang has been the site of exposure trips for other potential ICM sites in Vietnam. Encouraged by Danang's success, the Ministry of Natural Resources and Environment requested the Regional Programme to consider Quang Nam Province to become part of PEMSEA's network of ICM parallel sites. Quang

public awareness activities (Minh, 2002). A recent survey showed that at least 85 percent of households located in 30 communes in Danang are committed to protecting the environment (*Danang City News*, 2004). The active involvement of



**Seaside beautification projects are among the recent results of ICM in Danang.**

*continued on page 67...*

**Evelyn L. Estigoy**  
Department Head  
Provincial Government – Environment  
and Natural Resources Office  
Batangas City, Philippines

and

**Alexander Guintu**  
Technical Assistant  
PEMSEA  
Quezon City, Philippines

## Introduction

Partnership can be likened to an old Filipino tradition called *bayanihan*, pronounced “buy-uh-nee-hun,” which means cooperative undertaking or concerted effort. *Bayanihan* has been featured in paintings of the olden days where friends and neighbors help a family relocate by literally carrying the house made of *nipa*, on their shoulders. The house posts are dug out and bamboo poles are run crisscrossed under the house, and then in complete unison, the men place the poles on their shoulders, and suddenly the house moves – on its way to its new neighborhood.

# Batangas, Philippines: Rekindling an Old Tradition through ICM

*“To work through partnership is to work from the outside – in. It is to connect, not delineate. It is to create opportunities, not define turf. It is to seek alignment with the external rather than to segment from within.”*

— Bruce Jenks, Director of the Bureau for Resources and Strategic Partnerships, United Nations Development Programme



***Bayanihan*, the Filipino tradition where friends, neighbors and family show cooperation, is very much alive in Batangas through the partnerships between and among stakeholders, the private sector, and the local government.**

Nowadays, most houses in the Philippines of course have sturdier foundations to withstand strong typhoons and earthquakes and thus may no longer, if ever, be moved as easily as the old nipa hut — the *bayanihan* may have become a thing of the past. Or so it seems.

This same *bayanihan* spirit has found its way to the various sectors that have decided to be partners in the adoption of an integrated coastal management (ICM) framework, including its sustenance and replication, in the Province of Batangas in the Philippines.



## ICM in the Province of Batangas

As a holistic planning, coordinating and management mechanism, ICM has been implemented in the province for the past ten years. These efforts started with the selection of the Batangas Bay Region (BBR) as an ICM demonstration site in 1994. BBR is composed of 11 municipalities and 2 cities with catchment areas draining into Batangas Bay. Over the years, BBR has experienced economic and industrial growth due to the aggressive implementation of the CALABARZON (Provinces of Cavite, Laguna, Batangas, Rizal, Quezon) master plan that aims to cascade development in the surrounding areas of the National Capital Region (NCR), as well as decongest the highly urbanized NCR. Under the CALABARZON master plan, Batangas, specifically the BBR, is envisioned to become one of the centers for industrial growth and expansion as well as a major shipping hub. It was against this backdrop that made the BBR an ideal demonstration site for the application of the ICM framework to resolve multidimensional management issues characteristic of coastal areas — especially one that is slated for major industrial growth and port development — to focus on the preventive aspects of ICM.

To date, the Batangas Bay Demonstration Project continues to address the effects and potential consequences of socioeconomic



Louie Mencias

**Marine turtles, locally known as *pawikan*, are welcome residents of the coasts in Batangas where divers contribute to their protection through the charging of user-fees when diving.**

activities in the bay region, especially in coastal and marine pollution. This project is fueled by the momentum and experiences gained over the years and draws from the strength of the partnerships formed among the various sectors that have a stake in Batangas Bay. Their similar experiences and knowledge also serves as valuable lessons learned for the other sites applying ICM in the Philippines and in the East Asian Seas region.

### Digging up the Posts

**Everything has a beginning.** In 1994, the Global Environment Facility (GEF)/United Nations Development Programme (UNDP)/International Maritime Organization (IMO) Regional Programme for the Prevention and

Management of Marine Pollution in the East Asian Seas (MPP-EAS)\* selected Batangas Bay as a pilot ICM demonstration site. The signing of the Memorandum of Understanding (MOU) for the implementation of ICM in the Province of Batangas as a demonstration site in the East Asian Seas region on 28 April 1994 marked the beginning of the bayanihan efforts through ICM in Batangas Bay. The MOU also marked the major partnership-in-the-making among the various sectors, undertaken by UNDP, IMO, the Department of Environment and Natural Resources (DENR) with the Provincial Government of Batangas, the City Government of Batangas, the Municipal Governments of Bauan, Mabini, San Pascual, and the Batangas Coastal Resources Management Foundation, Inc. (BCRMF), an association of industries operating in

\* The MPP-EAS was implemented from 1994-1999 and is the pilot phase of the GEF/UNDP/IMO Regional Programme on Partnerships in Environmental Management for the Seas of East Asia (PEMSEA).

# The Council serves as a forum where stakeholders can meet regularly, and discuss and decide on various issues related to activities affecting Batangas Bay. The Council consists of the Governor of the Province of Batangas, who sits in as chair, the mayors of the coastal municipalities, representatives from government agencies, the private sector, and civil society.

the Batangas Bay coastal area. The MOU defined the roles and responsibilities of the parties involved for the successful implementation of ICM in Batangas Bay. The move was operationalized with the establishment of a Project Management Office (PMO) and the creation of a multi-sectoral Project Coordinating Committee (PCC).

## Crisscrossing the Bamboo Poles

**Laying down the foundation.** With the implementation of the Philippine Local Government Code, the Batangas Provincial Government – Environment and Natural Resources Office (PG-ENRO) was eventually established through local legislation *Sangguniang Panlalawigan* (SP) Resolution No. 136, Series of 1995 and SP Resolution No. 292 –

Appropriation Ordinance No. AO-003, Series of 1995. PG-ENRO took on the devolved functions, concerning forest management and mines and local geosciences development, from the DENR. PG-ENRO also became the host of the PMO for the implementation of ICM in Batangas Bay and the implementing agency of the Batangas Bay Demonstration Project (BBDP) by facilitating and coordinating its various activities and studies.

Further, to address the concerns of the various sectors in the BBR, the Batangas Bay Region Environmental Protection Council or BBR-EPC (Figure 1) evolved from the PCC, created by the Provincial Government through SP Resolution No. 276, Series of 1996. The Council serves as a forum where stakeholders can meet regularly, and discuss and decide on various issues

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related to activities affecting Batangas Bay. The Council consists of the Governor of the Province of Batangas, who sits in as chair, the mayors of the coastal municipalities, representatives from government agencies, the private sector and civil society.

BBR-EPC coordinates the stakeholders, initiates legislation, adopts environmental management plans, promotes public awareness, and monitors compliance with national and local laws. It has become a “legitimized multi-sectoral partnership” with the PG-ENRO standing as technical secretariat. Together, the BBR-EPC and the PG-ENRO address the varying and overlapping interest- and sector-led efforts and conflicts in management, coordinate responses, and responsibilities among the various stakeholders in Batangas Bay and facilitate the integration of existing and planned actions from conceptualization to implementation of environmental policies and programs.

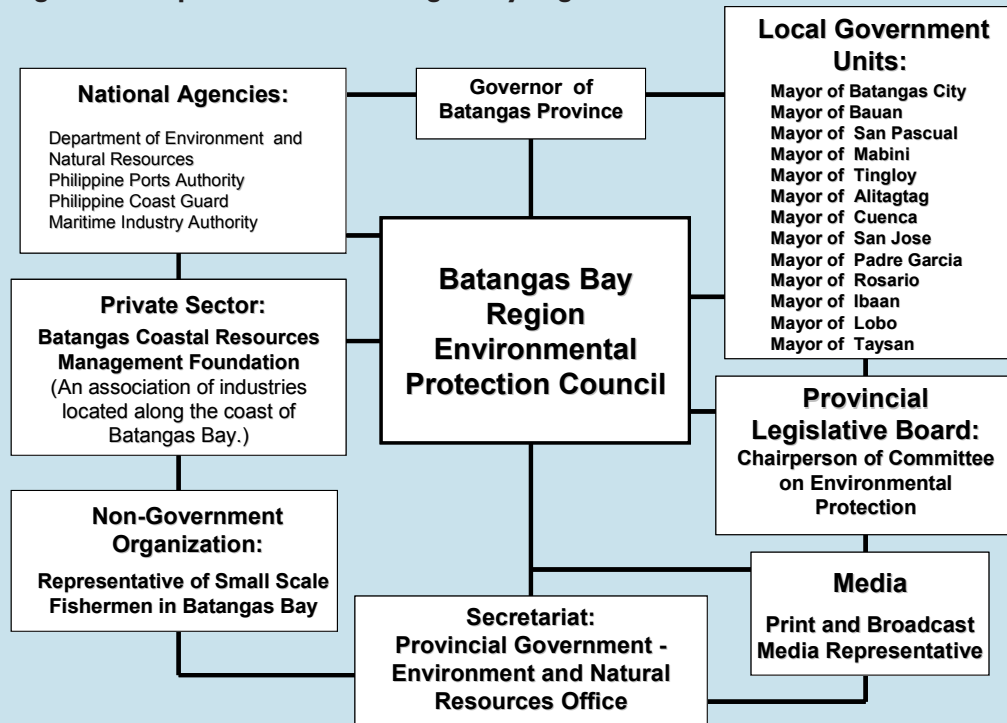
## Moving the House

Within the context of the strong local government commitment and political leadership and support, active private sector and multi-stakeholder participation — complemented with both financial and manpower mobilization — the program activities have been successfully implemented and sustained through the various mechanisms put into place and honed over the years.

## Integrated Policy and Planning Systems

A suitable policy and planning environment was created for the implementation of major environmental interventions. First, a multi-disciplinary team of experts developed a Coastal Environmental Profile, which is a comprehensive technical document describing and assessing the bay region within the ICM framework. Second, a Strategic Environmental Management Plan (SEMP) was formulated for the BBR by the multi-sectoral Strategic Planning Committee to serve as the blueprint in prescribing the manner by which development and ICM endeavors should proceed without compromising the environment. Third, an Integrated Waste Management Action Plan (IWMAP) was also developed in collaboration with the BCRMF and through intensive consultation with stakeholders. The IWMAP was implemented in four phases that included preparation, mobilization, implementation and development. Implementation activities include waste identification and characterization, signing and enforcing voluntary agreements, and waste minimization through pollution management appraisals. Long-term options emphasized the construction of appropriate waste management facilities.

**Figure 1. Composition of the Batangas Bay Region Environmental Protection Council**



**Decision-making based on coordination, stakeholder consultation and participation greatly improves the likelihood that participants will sustain their activities and continue to derive benefits from the technical and financial inputs of the programme.**

## Management Actions under the ICM Programme

Functional zoning, geographic information systems (GIS) and environmental monitoring have been utilized to backstop the ICM activities. These management tools, coupled with the institutional changes promoting coordination, facilitated the management of the coastal environment.

A seawater-use zonation scheme was developed that delineated water-use zones for Batangas Bay into restricted-use zone, exclusive-use zone and multiple-use zone. The developed zonation scheme is currently

undergoing revision for future incorporation into the existing land-use plan.

A GIS for Batangas was developed to enhance local capability in integrated planning and management and to establish a spatial database system for storage and analysis of spatial and non-spatial data, as collected and updated over time. This particular database served as the foundation for the preparation of sensitivity maps of Batangas Bay.

An environment monitoring and assessment program was also developed to assess the state and trends of marine pollution in

## The key is to build a core of local experts capable of training other local staff, who can also be tapped for related activities in the future, such as the replication of ICM in other sites in the province.

Batangas Bay and to ascertain the effectiveness of pollution management strategies and interventions. An analytical laboratory, limited mainly to marine water quality analysis, was established, with quarterly water sampling being done at designated sampling stations in the bay (Figure 2). To ensure sustainability of this activity, appropriate institutional arrangements were put up, which initially required multi-sectoral involvement. Participation in the monitoring program included local and national government agencies, private companies and academic institutions. The laboratory has been recently upgraded to cater to the analysis of other parameters, including air quality and noise pollution monitoring through funding from the National Government.

In continuing support to the management efforts, BCRMF, as one of the partners and stakeholders in the BBR, on its own and in collaboration with other stakeholders, also undertook and supported environmental projects

geared towards protecting and conserving marine resources in Batangas Bay, such as the establishment of artificial coral reefs and intensive information, education, and communication (IEC) campaigns.

### Improvement of Information Base

Using GIS, a spatial database system was established and eventually this led to the development and publication of an Environmental Management Atlas and a CD-ROM. The interactive CD-ROM enables the user to access, annotate and print digital maps from the spatial database. Various institutions using spatial database were duly trained and given copies of the CD-ROM. Recently, the Integrated Information Management System (IIMS), a relational database management system developed during the current phase of PEMSEA was introduced for application in the BBR. Efforts are being made to update the spatial database system and link it with the IIMS. This will maximize the use of the database

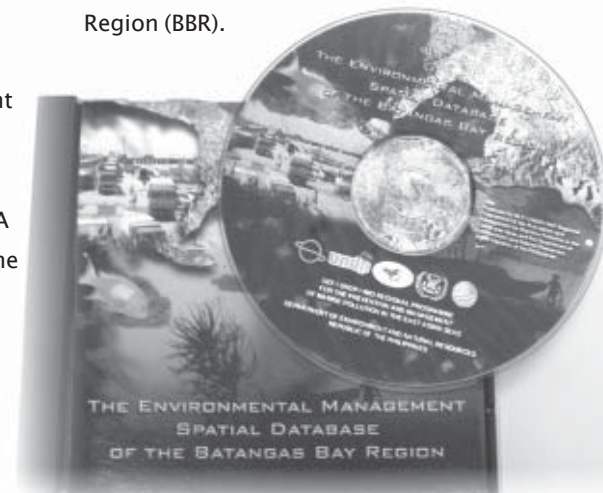
for planning, management and decision-making.

Modeling of the bay's circulation was also done to determine the hydrodynamic variables that affect the transport of pollutants in the bay. Results showed that tidal currents are not strong enough to flush waters in the northern part of the bay.

A fisheries assessment study was likewise undertaken which showed that the potential annual yield of pelagic fishes has been exceeded in Batangas Bay.

Navigational information was generated through a vessel traffic routing study that illustrated the different vessel routes under the current vessel traffic separation scheme. In anticipation of increased maritime traffic, the need for an updated routing system was highlighted.

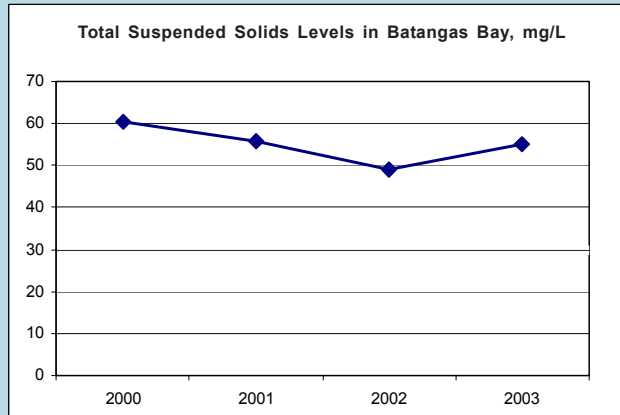
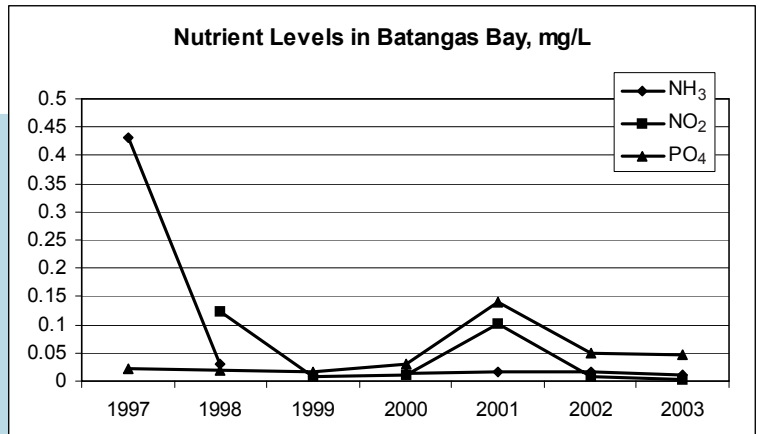
An initial risk assessment from pesticide use was conducted and it was noted that the first signal of warning is already evident in the Batangas Bay Region (BBR).



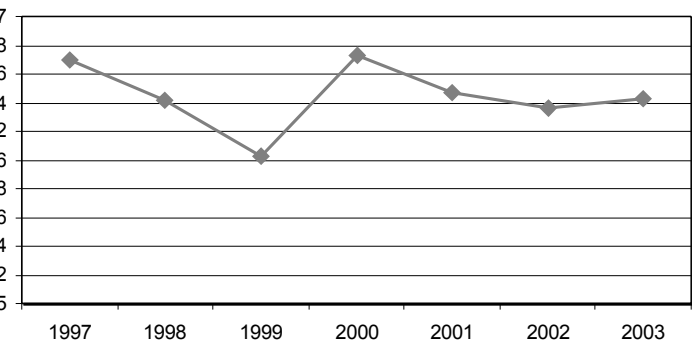


**Figure 2.**  
**The State and Trends of Marine Pollution in Batangas Bay**

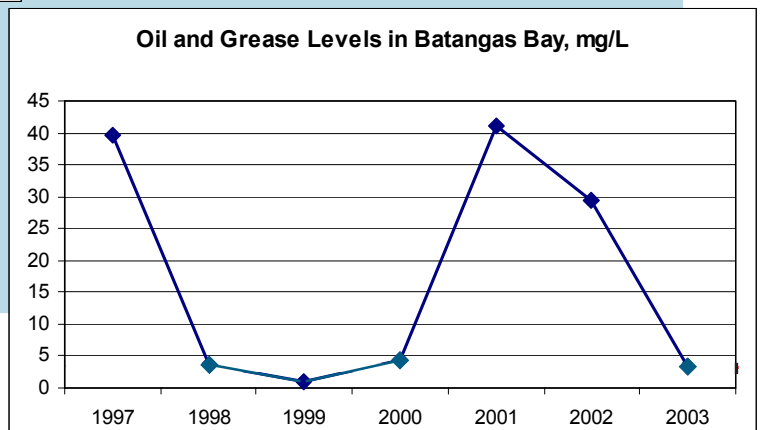
Monitoring results show that, despite the rapid rate of urbanization in the Batangas Bay Region and the accompanying increase in population, the quality of the bay has not changed much. Nutrient levels such as ammonia ( $\text{NH}_3$ ), nitrite ( $\text{NO}_2$ ) and phosphate ( $\text{PO}_4$ ) show a



**Dissolved Oxygen Levels in Batangas Bay, mg/L**



averages or available data from the Batangas Environmental Laboratory under the PG-ENRO).





**Concerns related to maritime traffic, the Batangas port being an international port, are being addressed through navigational information generated through a vessel traffic routing study.**

**Capacity Building**

Management and technical skills were provided to key actors and stakeholders in the BBR through training, study tours and staff exchanges. Staff and key stakeholders have participated in

various trainings, seminars, and workshops organized under the programme. Concerned PG-ENRO staff and selected stakeholder representatives have attended various local and regional trainings, seminars, workshops, and conferences — all of which were aimed at equipping the participants with the appropriate knowledge and skills relevant to ICM. The majority of the trainings were conducted or organized corresponding to a project component or activity. The trainings try to ensure that the trainees are able to translate what has been learned to actual applications. Development and submission of action plans is an essential component of each training programme. The key is to build a core of local experts capable of training other local staff, who can also be tapped for related activities in the future, such as the replication of ICM in other sites in the province.

**Public Awareness, Information and Education**

To disseminate information on the activities and directions of ICM in Batangas, various modes were adopted which included the cleanest village contest, the formation of the Batangas Bay Watch and the use of print and broadcast media.

Efforts to share experiences and lessons learned in implementing ICM in the province, and linking the province with other sites implementing ICM through the Internet was established through the <http://batangascoastalink.net>, a website dedicated to the implementation of ICM in Batangas. Key staff have undergone training in web development, management, and maintenance. The website will be launched in October 2004, together with other websites developed by other PEMSEA ICM and hotspot demonstration sites.

**Sustainable Financing**

Under the sustainable financing component, an environmental cooperative was organized in the BBR to address the problem of marketing waste recyclables. Junkshop operators were organized to form the Batangas Bay Region Environmental Cooperative (BBREC), trained, and empowered in anticipation of their critical role in waste management in



**Batangas Bay ICM experiences and lessons are presented at the Batangas Coastalink website at <http://batangascoastalink.net>.**

the province. This was accomplished by the Provincial Government of Batangas, with WASTE —The Netherlands, through collaboration with the MPP–EAS. BBREC also tapped the industries through BCRMF for the collection and reuse of solid waste materials, such as paper, generated by the member–industries.

## Replicating ICM in Other Bays of the Province

A logical consequence of the Batangas Bay experience is the replication of ICM in the other bays of the province, namely in Balayan Bay, Pagapas Bay, Talin Bay, and Nasugbu Bay which are located southwest and west of the province. The undertaking is being implemented by building the capacity of the staff and the facilities already present, with donor and technical support from the World Wildlife Fund – Philippines (WWF–Phils.).

In contrast with the BBR, which is undergoing rapid industrialization and slowly becoming a shipping center, the watershed and coastal areas in Balayan, Pagapas, Talin, and Nasugbu Bays are still basically agricultural and abounding in coastal resources, with some portions devoted to ecotourism.

# The key environmental issues include poverty, threatened biodiversity and coastal/marine productivity, and uncoordinated and ineffective governance.

The key environmental issues include poverty, threatened biodiversity and coastal/marine productivity, and uncoordinated and ineffective governance.

Thus, through a provincial level multi–sectoral technical working group, in close collaboration with established municipal ICM councils and extensive consultations with stakeholders, the issues are being addressed through the development and implementation of an ICM plan at the provincial level.

## The Way Ahead

To date, the BBR SEMP is set to be updated — to make it innovatively relevant by sustaining the partnerships thus far made. Eventually, it is envisioned that a Batangas ICM Council, incorporating the management councils for all the bays and coastlines of the province, will be formed. With an updated blueprint, it is hoped that the *Batangueños* can and will attain sustainable development.

The road ahead may be bumpy but it surely leads to somewhere

promising, and as long as the partners are there, the value of sustaining the partnerships will always remain.

Stakeholders in Batangas get things done better when in partnership with each other. They think, plan, decide, and act together — knowing what is best for them — a better Batangas in the offing. In the Province of Batangas the spirit of *bayanihan* lives on through ICM and the established partnerships. ■

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**Ir. Ni Wayan Sudji**  
Director  
Project Management Office  
Bali National ICM Demonstration Project

Head  
BAPEDALDA Environmental Impact  
Management Agency of Bali Province

Bali, Indonesia

## Introduction

People have always used the ocean as a source of food and minerals, a medium for transportation, a venue for recreation and a waste disposal site. In some areas, such as in India or in Bali, many of the Hindu's ritual activities are conducted in the ocean or coastal areas. Since the ocean is vast, the effects of these conflicting uses were not evident until recently. The cumulative and increasing nature of our impacts have resulted in a significant alteration of ocean and coastal environment and ecosystems. This has undoubtedly caused some of the catastrophes such as oil spills, fish kills or red tides and will inevitably lead to more.

# *Tri Hita Karana*, a Guiding Philosophy for Coastal Strategy Development in Bali, Indonesia



**Purification ceremonies, such as *Melasti* and *Memukur*, are some of the rituals honoring the ocean that are part of Balinese culture.**

Concern for the marine environment is not an entirely new phenomenon. In the *Dewa Ruci* story of the Hindu philosophy, *Bima*, the second son of *Kunti* and a man with very strong character, once tried to find out what was in the deepest part of the ocean. He discovered that the god of the ocean is the ocean itself. Hence, if the ocean becomes polluted, it will be

hard to identify the god residing in the marine waters. Ritual activities such as *Melasti* and *Memukur* (purification ceremonies) also symbolize how important the ocean is.

To the Balinese, the culture of the ocean has been related to many stories of holy people. In the past, *Empu Kuturan*, the holy man who



taught the Hindu religion to the Balinese came to Bali from the sea. He explained the Hindu philosophy to the people living in coastal areas. *Dahyang Nirartha*, another holy man, also built a lot of temples close to the beach. Therefore, the Balinese have long believed that the ocean and its surrounding areas are holy spaces that should be honored.

Concern for ocean pollution is becoming widespread. However, the economic interests of inhabitants reduce their care for the ocean. In Bali, the construction of a tourism resort often needs a large plot of land in the coastal area. Conflicts with the local communities in the area regarding the use of land for tourism purposes have become regular news in the media. For example, the Bali Turtle Island Development (BTID) Project, which resulted in Serangan Island increasing four times its original size through reclamation activities, is still a problem up to this time. Other examples include a project close to the Tanah Lot Temple, the development of the Ngurah Rai Airport, the Bali Benoa Marina in the Benoa region and the Glen Marina at Tuban, among others.

Balinese people understand that the above developments will increase their chances of improving their socioeconomic status, but they are also concerned about losing their local traditions and distinctiveness. Hence, they hope that the developments will reach a



**Minister of Environment congratulates Bali stakeholders at the signing ceremony of the Bali Declaration for the Implementation of the Bali Coastal Strategy in June 2002.**

balance between economic benefits and cultural and environmental preservation. The question, however, is how to make such developments lead to the fulfillment of the goal of the Balinese. *Tri Hita Karana*, which balances spiritual development, economic growth, cultural preservation and environmental protection, was found to be effective in addressing the identified concern of the Balinese. Thus, this traditional philosophy of the Balinese served as a guiding principle in the development of the coastal strategy for Bali.

### **The *Tri Hita Karana* Philosophy**

The value system of the *Tri Hita Karana* philosophy emphasizes the harmonious relationships between human beings and God, called

*Parahyangan*; between human beings and society, called *Pawongan*; and between human beings and the environment, called *Palemahan*. This concept is based on Hindu philosophy (Brahma Sutra:I.1.2; Chandogya Upanisad VI.2.1; Rg Veda III.55.1; Bhagavad-Gita III.10). In terms of land use, the *Tri Hita Karana* philosophy is also related to another concept called the *Tri Mandala*, which is composed of: *Utama Mandala*, the most sacred area; *Madya Mandala*, the space for human living; and *Kanista Mandala*, the space for activities. Another term for this concept is *Tri Angga*, which may be interpreted as a division of space into three categories. The first *Angga* is a holy space, such as temples where Balinese pray to God, and beaches where they perform purification rituals. The second *Angga* is a space for human inhabitants, such as residential areas and public buildings including the marine resort.

**Balinese people understand that the above developments will increase their chances of improving their socioeconomic status, but they are also concerned about losing their local traditions and distinctiveness. Hence, they hope that the developments will reach a balance between economic benefits and cultural and environmental preservation.**

The third *Angga* is a space for nature, such as beaches, parks and ricefields.

In their pursuit for sustainable development, the Balinese expect that the developments in their area could achieve *Mokshartam Jagathita ya caiti Dharma* as the goal of life in Hindu philosophy. Developments in the Bali coastal areas based on the *Tri Hita Karana* philosophy could help improve both the standard of living and the quality of life at *skala* (real world) and *niskala* (heaven).

## Implementation of *Tri Hita Karana* in Bali

### The *Pawongan* Aspect

Human life is inseparable from problems arising out of interaction with fellow human beings and the natural environment. The wish for harmonious life, therefore, forms

the basic part to attain perfection, achieved only through cooperation with other human beings.

The need to cooperate springs from uncertainty, limitations and rarity of resources available within human reach. Humans tend to maintain, nurture and develop relationships through social unity in a certain place, thereby forming a community group in vast and limited scales.

The community that is vast in scale is united through a nation, while the limited one, through villages or neighborhood.

Traditional Balinese villages comprise such elements as *parahyangan*, which denotes the spiritual and religious environment; *pawongan*, individuals and human resources; and *palemahan*, the physical form. The *parahyangan* element is called *kahyangan tiga* and is represented by three territorial temples.

The application of *Tri Hita Karana* in the development of the environment is highly dictated by the management of the *pawongan* element to use natural and environmental resources. Humans, as both subject and object, are the most capable agents to generate change. These changes are often questioned whether they adhere to the concept of environmental sustainability or would only cause more exploitations of the natural resources. In this case, humans play a decisive role in any development activity.

### The *Palemahan* Aspect

*Palemahan* is derived from the word *lemah*, which means land (*tanah*), yard (*tanah pekarangan*) or settlement (*wilayah pemukiman*). In general *palemahan* is related to the physical aspects of the environment (environmental linkages). To implement *Tri Hita Karana* in hotels, some criteria need to be considered. Since one of the major attractions for tourists is the Balinese culture, business companies are responsible for upholding it.

For example, in building a hotel, styles and concepts of Balinese architecture need to be adopted, including *Tri Mandala* and *Tri Angga* (upper, middle and lower body). It is recommended that Balinese terms for buildings, restaurants, meeting rooms, halls, child care centers and other facilities be used in naming establishments.

There should be a commitment from the operating company to improve the quality of the environment. It needs to set up an environmental management system which contains the laws, customs or local values for compliance. The company's commitment should be spelled out in its action plans which are to be implemented through programs within and outside the hotel.

The company should save energy, limit the use of natural resources (such as land and water), and properly handle sewage, garbage and toxic wastes. These include the capability in reusing, reducing and recycling wastes. Support for conservation programs could also be extended, such as habitat protection and legal and professional captive breeding. Adopting organic farming or perm culture concepts is also recommended as long as they are in line with the Balinese culture.

## The Coastal Strategy Development as Guided by *Tri Hita Karana*

The *Coastal Strategy for the Southeastern Coast of Bali*, a comprehensive environmental management framework, has been developed, with technical support from GEF/UNDP/IMO Regional Programme on Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), and adopted by various stakeholders. This document was developed through a series of consultations among government, non-government organizations, the private sector and civil society groups. Although the consultation process was lengthy, it instilled a sense of ownership among the stakeholders and reduced potential resistance to its full implementation.

*continued on page 67...*

# PEMSEA Community of ICM Practitioners



The words "holistic," "interactive," and "dynamic" have been extensively used to describe the virtues of applying an integrated coastal management approach in dealing with complex management issues in coastal areas.

But what does it truly take to integrate all the necessary components of (ICM into a systematic mechanism?

In this issue, we endeavor to answer this question by focusing on the key ingredient in this innovative process — **People**.

Meet the men and women who, with their robust intellect, vision and heart, have toiled to propel the ICM program across the region. From diverse backgrounds and multitudes of experiences, they are the prime movers of PEMSEA's ICM Sites, whose names have remained faceless but whose resounding voices made others hear the call for the management of the Seas of East Asia while being armed only with the power of their actions.

Through their steadfast commitment and notable accomplishments, may we gain inspiration to pursue the painstaking albeit rewarding efforts of weaving our common future. Because after all, ICM is about bringing people together and fighting for a common cause. ICM programs, therefore, highly resonate implementers' technical expertise as well as their personal commitment to create lasting change in coastal management.





**Ir. Ni Wayan Sudji, DR. HC**

Head,  
BAPEDALDA  
Environmental Impact Management  
Agency of Bali Province

Bali PMO Director

“...different sectors have different interests in project implementation, which became more pronounced in developing a coastal-use zoning scheme. We had to overcome such challenges through continuous consensus-building efforts.”

The most difficult challenge in the implementation of the ICM program was the lack of information and data, which limited the implementers' capacity to design specific projects in their localities. This became even worse with the limited information sharing between and among the different government agencies. Geography also played a crucial role in information sharing in that differences in location hampered effective communication.

Furthermore, different sectors have different interests in project implementation, which became more pronounced in developing a coastal-use zoning scheme. We had to overcome such challenges through continuous consensus-building efforts.

Through my experiences in ICM, I am now more concerned with utilizing data/information in management. I also learned that there are significant benefits in project implementation that can be gained from improved linkages and networks.



**Ir. I Ketut Sudiarta, M.Si.**

Lecturer and Researcher  
Fisheries Department,  
Warmadewa University

Technical Advisor to Bali  
ICM Programme

“ICM is an art, which involves problem solving through power-sharing and consensus building.”

The implementation of the ICM programme is highly influenced by politics and the system of governance. The governance system in Indonesia, particularly in Bali, is characterized by high delegation of authority and information sharing on a 'vertical' level while interagency (horizontal) coordination is very weak.

The Bali ICM program was paralleled with the start of the local autonomy. The implementation of delegated local authority was, however, constrained by the limited local capacity.

ICM program as an approach can also be applied in other fields. I realized through ICM that there is a need to address several problems comprehensively and on a holistic level. ICM is an art, which involves problem solving through power-sharing and consensus building. ICM also taught me to be more aware of the importance of data/information as a tool for management and to form better linkages and networks.





**Ms. Zulhasni**

Head, Sub-Division for Marine Potential Resources and The Impacts, Ministry of Environment  
Technical Advisor to Bali ICM Programme

“...it entails the creation of a framework for people to share their skills and resources and work for their common vision. Only then can results be seen.”

As we all know, ICM involves the management of people from different cultural backgrounds, with different interest, perspectives, behaviors, and education. We need to bring them all together to implement the ICM programme. This was a very difficult task in Bali. We had to communicate with different individuals to inform them of the various aspects of the ICM's progress and activities. With various concerns, interests and approaches of people, it was difficult to call people's attention and encourage them to participate in the programme. Some people also wanted to see the immediate results of ICM. Implementation of ICM programme, however, is different from the construction of a building. Rather, it entails the creation of a framework for people to share their skills and resources and work for their common vision. Only then can results be seen. The implementation depends on local capacity and resources — both human and financial.

Leadership is very important in implementing the ICM programme. Strong leadership is needed to ensure that the people would be able to implement their commitments, such as those indicated in the coastal strategy. It is also important to integrate the action plan with their local and national plans for ICM implementation.

**Ms. Evelyn L. Estigoy**

Department Head,  
Provincial Government – Environment  
and Natural Resources Office  
Batangas PMO Director

“The establishment of legal and institutional mechanisms to support ICM should also be made at the early stages of project implementation.”

On the development of ICM, the most difficult challenges were on the preparation and lobbying for the passage of pertinent ordinances and resolutions; budget defense; prioritization of training activities and the personnel management.

Since the appointment for an Environment and Natural Resources Officer (ENRO) is also optional under the Local Government Code, not all municipalities and cities of the province were able to institutionalize their respective ENROs which could have facilitated the implementation of ICM at the lowest level of governance. In the implementation of specific ICM components, especially in putting-up a centralized facility for solid waste management, the not-in-my-backyard type of attitude and uncertainties in financing schemes proved to be difficult challenges in exploring alternative approaches. Replicating ICM strategies in other coastal areas, grassroots integration, and sustaining financial resources through trust funds to support specific activities at the community level are also remarkable challenges.

Our experiences on ICM development, implementation and replication proved that challenges could be overcome. Innovations should be made and efficient coordination should be pursued at the start of the project and should be properly sustained. The establishment of legal and institutional mechanisms to support ICM should also be made at the early stages of project implementation. Other specific requirements include appropriate experiences and positive/optimistic attitudes of the ICM leaders and movers; information, education and public awareness campaigns should be systematically accomplished. Transparency and feedback mechanisms should also be upheld and promoted. ICM has real and direct benefits such as the conservation of natural resources (e.g., water quality maintenance, preservation/improvement of fragile marine resources, etc.); utilization of financial resources at optimal levels through collaboration with different institutions; and community mobilization and participation in ICM activities.





**Dr. Corazon L. Abansi**

Dean, Graduate School, De La Salle Lipa

Former Project Officer for Batangas Bay during the pilot phase of PENSEA, then the Regional Programme on the Prevention and Management of Marine Pollution in the East Asian Seas or MPP-EAS.

**“The benefits of stakeholder wisdom and empowerment can be brought to the fore by shifting the mindset of implementers from “telling” or “teaching” to one of knowledge-sharing, influencing wise decisions and facilitating the identification of problems as well as their solutions.”**

The development and implementation of the ICM programme in Batangas were met with challenges which somehow put my competence as an ICM practitioner under test. Obtaining agreement and commitment from a diverse range of stakeholders with multiple views is a long and arduous process. Apathy, varying work practices and attitudes also caused delays in carrying-out project activities, and prevented the full integration of ICM initiatives in existing government programs. Stakeholders expected immediate results and tangible impacts and benefits of the project.

I have learned that to succeed in implementing ICM, we must be able to synthesize the requirements of varied stakeholders into a cohesive vision. The benefits of stakeholder wisdom and empowerment can be brought to the fore by shifting the mindset from one of “telling” or “teaching” to one of sharing knowledge, influencing wise decisions and facilitating the identification of problems as well as their solutions. Through this process, a sense of ownership increases the likelihood of cooperation and participation. Project participants must also be made to understand the internal dynamics of the projects, the successes and failures and that for every two steps forward, we have to take a step backward. The ICM process should also build on the existing capacity of different stakeholders.



**Mr. Li Wenhai**

Director  
National Project Management Office  
Bohai Sea Environmental Management Project

**“Decision-makers should take into consideration the different interests and present needs of the people with that of the long-term interests and needs of future generations.”**

The most difficult challenge in ICM implementation, for me, is the establishment of a management and coordination mechanism among different departments involved in ocean and coastal affairs. Since ICM is implemented by government departments in charge of ocean and coastal management, it is very important that decision-makers and people involved in the programme be familiar with the different concepts of ICM.

One of the goals of the Bohai Sea Environmental Management Program is the promotion of ICM among the provinces and municipalities surrounding it so that they would be able to protect and manage their marine and coastal resources more effectively. In ICM implementation, proper decision-making should be based on scientific data. Decision-makers should take into consideration the different interests and present needs of the people with that of the long-term interests and needs of future generations. Democratic decision-making should also be observed at all times. Public education and awareness on ICM is also important for people to understand government decisions and for them to participate effectively in ICM activities.





**Dr. Nong Thi Ngoc Minh**

Vice Chairman,  
Danang People's Committee  
Former Danang PMO Director

"I learned how to properly coordinate the inter-disciplinary and multi-sectoral group of experts to work for the ICM programme."

At the beginning of the ICM Programme, I had difficulties in organizing the project activities because of my limited understanding of the technical aspect of the project. In the course of implementation, I gained more insights on working more systematically in different activities with various experts. Now I am very interested in the ICM technical tools because of their usefulness in management. I am now more confident in the development and implementation of this program.

Through the ICM Project implementation in Danang, I learned how to properly coordinate the inter-disciplinary and multi-sectoral group of experts to work for the ICM programme. I realized that the most important thing is to create a good working environment while closely following the objectives for each ICM programme activity.



**Dr. Nguyen Minh Son**

Deputy-Director  
Center for Marine Environment Survey,  
Research and Consultation  
Hanoi  
Technical Advisor to Danang  
ICM Programme

"Now, I have a deeper appreciation of the planning and monitoring activities which were not so much recognized in many agencies and organizations."

I had rare opportunities of working with local officials and experts, especially on such a broad and relatively new field like ICM. At first, it was difficult for me to work in a new environment especially with limited knowledge and skills on such a topic. Now, I am happy not only because I am more comfortable in working with different people for the implementation of ICM in Danang and other sites but also because I learned a lot from them.

Through ICM practices, I have learned the effective ways of using ICM approaches and tools. Now, I have a deeper appreciation of the planning and monitoring activities, which were not so much recognized in many agencies and organizations.





**Renato Cruz**  
 Officer-in-Charge, Chief  
 Environmental Quality Division  
 Environmental Management Bureau  
 Department of Environment and  
 Natural Resources

“The Manila Bay Coastal Strategy is a very good start to identify what a sector can do, including setting expectations and tasks applied to ICM. I have also come to recognize the challenges and long-term benefits of the integrated and inter-sectoral approach in ICM.”

Initially, it was difficult for us to convince the stakeholders to participate in the discussions without immediate and foreseeable gains. Convincing them to commit/invest in ICM even with minimal funding support from the government and persuading them to enter into partnerships, which may be thought of as between government and industry/private enterprises and not of the public, were among the challenges. It was also a challenge to sustain stakeholder interest; to establish consensus on the ICM scope, strategy, and commitments; to harmonize the sectoral efforts; and to upgrade the capacity of LGUs to address ICM concerns.

I realized that the burden of organizing and implementing ICM is on LGUs, in addition to other devolved functions; learning to face challenges with meager resources; understanding that technical assistance is mainly for initializing, though continued collaboration between and among NGOs, LGUs, communities, the private and industry sectors remains essential. The Manila Bay Coastal Strategy is a very good start to identify what a sector can do, including setting expectations and tasks applied to ICM. I have also come to recognize the challenges and long-term benefits of the integrated and inter-sectoral approach in ICM.



**Joseph Y. Aricheta, M.D., M.P.H.**  
 Chairman, Resource Valuation –  
 Technical Working Group  
 Manila Bay Environmental  
 Management Project

“With ICM implementation in Manila Bay, I have learned that we have to protect our environment. Whatever waste we throw will eventually adversely affect our health and our lives as well.”

The entire implementation of the Manila Bay environmental management programme is a challenge, particularly controlling and reducing pollution in the bay. Controlling and monitoring the production of coliform bacteria and reducing the disposal of heavy metals like lead and mercury are concerns that need to be addressed, as shown in *Manila Bay: Refined Risk Assessment*, to ensure that fish and mussels from the bay are fit for human consumption.

With ICM implementation in Manila Bay, I have learned that we have to protect our environment. Whatever waste we throw will eventually adversely affect our health and our lives as well. When I was a kid, I used to swim at the beach beside Roxas Boulevard, but, at present, swimming is banned in the area due to pollution. Such is the impact of human activities on the environment. What a price we pay for progress!







**Mr. Wang Chunsheng**

Deputy-Director General,  
Xiamen Ocean and Fisheries Bureau  
Xiamen Municipal Government  
Xiamen PMO Director

“At present, we are actively promoting coastal ecology-economic development through ICM not only in China but throughout the region.”

I would say that the most challenging task for me was in establishing a rational and appropriate project management set-up. Choosing the right team members or project personnel and maintaining the good team performance is difficult, as eventually, some of them would leave. I also realized that in order to streamline work processes and improve efficiency, there is a need to harness available resources (i.e., staff skills, knowledge and capabilities) by clearly delineating the responsibilities among the team members and collaborating with concerned agencies

For the past years that ICM has been implemented in Xiamen, we have coordinated the establishment of a multi-sectoral coordinating mechanism, which is now institutionalized at the municipal government level. This came about as a result of a decision-making process backed-up by scientific and technical support. Through this, a functional sea-use zonation scheme, which enabled the resolution of conflicts among the various stakeholders, was developed and implemented. At present, we are actively promoting coastal ecology-economic development through ICM not only in China but throughout the region.



**Prof. Huasheng Hong**

Director, Center for Oceans Policy and Law  
Professor, College of Oceanography & Environmental Science,  
Environmental Science Research Center  
Xiamen University

Executive Vice-President,  
Xiamen International Training Center for Coastal Sustainable Development

“I realized that ICM is an applicable management strategy towards sustainable coastal development, and that successful ICM requires sound scientific and technological basis. On the practical side, I learned how to provide scientific concepts, information and technology and their applications to the decision-makers...”

The most difficult challenge that I had to overcome to develop and implement the ICM programme was on education and enhancement of public awareness, especially for the decision-makers and the managers.

The past experiences and practices, such as partnership building and the public education system, through the top-down and bottom-up approaches have been effective in improving public awareness. There was a marked change in the attitudes and behaviors of the managers in utilizing science and technology in decision-making processes. The ICM skills of coastal managers were also enhanced and the contribution of scientific support in ICM implementation is explored and broadened.

As a scientist trained in the field of oceanography, I was once just concerned about the basic research and had no interest on the management aspect. However, I am glad that I was involved in the Xiamen ICM programme and that I was able to share my knowledge and contribute to its success. I realized that ICM is an applicable management strategy towards sustainable coastal development, and that successful ICM requires a sound scientific and technological basis. On the practical side, I learned how to provide scientific concepts, information and technology and their applications to the decision-makers; to enhance the public awareness and participation; to prioritize the management issues and to help in solving the problems. I think that it is my responsibility as a scientist to address society's needs. In return, my learnings also helped me in improving the design of my research projects and in educating my students.



**Maria Corazon M. Ebarvia**  
Technical Officer  
PEMSEA

**Cristine Ingrid Narcise**  
Senior Technical Assistant  
PEMSEA

and

**Renato Cruz**  
Officer-in-Charge, Chief  
Environmental Quality Division  
Environment Management Bureau  
Department of Environment and  
Natural Resources

Quezon City, Philippines

# Hope for the Flowers: Assessing and Addressing Risks in Manila Bay



## Introduction

Manila Bay, which is known the world over for its beautiful sunset and is among the best natural harbors, is a living testimony of key turning points in Philippine history and its struggle for a better quality of life. It is important not only to the people living around the bay but also to the whole country in terms of its natural and socio-cultural heritage. Being strategically located, it has been a trading center since pre-Hispanic times, the focal point of the Manila-Acapulco Galleon Trade and a scene of many naval battles. The walled city of Intramuros, the ruined barracks and artilleries in Corregidor, Bataan and Cavite as well as old churches, museums and archeological sites are the distinguishing marks of its historical, political and economic importance.



**Manila began as a tribal settlement on the banks of the Pasig River near the mouth of Manila Bay. It took its name from a white-flowered mangrove plant – the *nilad* – that used to grow in abundance in the area. *Maynilad*, or “where the nilad grows, was a fairly prosperous community that became the seat of political power and the center of trade and commerce during the Spanish colonial period until the present.**

The Bay is a semi-enclosed estuary facing the South China Sea, and covers 17,000 km<sup>2</sup> of watershed and about 1,800 km<sup>2</sup> of bay surface area (Figure 1). It is bordered by five coastal cities and municipalities of Metro Manila or the National Capital Region (NCR) and the four coastal provinces of Bulacan, Pampanga, Bataan in Region 3, and Cavite in Region 4. Also within the watershed of Manila Bay are the eleven non-

coastal cities and municipalities of NCR and the three provinces of Nueva Ecija, Rizal and Laguna. Currently, the Manila Bay area contributes 55 percent to the country's gross domestic product (GDP). It is bustling with economic activity, being a major fishing ground and host to the nation's financial center, special economic zones, biggest shipping port, ferry terminals and fish port. Indeed, Manila Bay is the international gateway to the country.

The pressures of industrialization and population growth, however, have taken its toll on the Manila Bay environment. The Manila Bay watershed is home to 30 percent of the country's population, or roughly around 23 million people as of 2001. Of this number, 42 percent live within the coastal areas while the rest are within the vicinity or along the Pasig and Pampanga rivers, the Bay's major tributaries. The activities of this huge concentration of people and that of manufacturing, commercial and business establishments as well as the agricultural, forestry and fisheries sectors affect the long-term sustainability of Manila Bay. The current state of the bay, rivers, habitats and resources as reported in the *Manila Bay: Refined Risk Assessment* raises a sounding alarm.

## Risk Assessment

### Where Have All the Flowers Gone?

Manila originated from the Tagalog name *Maynilad*, which in turn was derived from *nilad* (*Scyphiphora hydrophyllacea*) — the white-flowering mangroves that used to be abundant around the bay. Sad to say, mangrove areas have declined from approximately 54,000 hectares in 1890 to 794 hectares in 1995 due to mangrove clearing for various development activities. The same trend has been found for mudflats,

beaches, coral reefs, seagrass beds, seaweeds and soft-bottom communities, which provide vital support to fisheries in the bay. The continuous degradation and conversion of mangroves and other coastal habitats have resulted in the loss of shoreline protection and important ecological, functional benefits, which eventually affect human life.

Overexploitation of resources has led to the decline in fisheries and shellfisheries, loss of some species and change in the species composition in the bay. The windowpane oyster that was once copious in the bay has disappeared. Catch per unit effort (CPUE) for fisheries declined from 46 kg/hr in 1947 to only 10 kg/hr in 1993. Exploitation of demersal fisheries

has already exceeded the bay's maximum sustainable yield (MSY) since the late 1970s.

### Fishing for Trouble

Aside from overfishing and illegal fishing activities, the contamination of fish and shellfish is a major cause for concern. Human health risks associated with consumption of seafood contaminated with fecal coliform, certain heavy metals (lead and mercury, cadmium, copper and zinc), and pesticides (heptachlor and aldrin, endosulfan sulfate, endosulfan I and endrin) currently exist.

Moreover, the levels of nutrients (phosphate), heptachlor,

**Figure 1: Administrative Boundaries in the Manila Bay Watershed**



oil and grease and organic matter in the water column and heavy metals (mercury and copper) and pesticides in the sediments pose ecological risks.

Episodic harmful algal blooms create ecological as well

as human health risks. Levels of nutrients, which favor algal blooms, are high in the bay. Morbidity and mortality cases due to paralytic shellfish poisoning related to toxic algae blooms have been reported in the past.

Solid wastes that enter the bay via the river and drainage systems result in loss of aesthetic and amenity values, impacts on marine turtles and aquatic life, and are carriers of pathogens. Various plastic materials make up more than 70 percent of the wastes collected in various coastal cleanup activities.

Extensive aquaculture activities in the bay may also present ecological problems arising from the self-polluting characteristics of intensive ponds and the chemical and biological products applied in the ponds. Nitrogen loading from the aquaculture farms may also stimulate eutrophication, contributing to the increasing incidents of fish kills.

## Changing Shorelines

Manila Bay used to be a major destination for family gatherings and picnics. Along its 190-km coastline are beaches, resorts, yachting marina and natural parks, which makes it a tourism and recreational hub. The daily discharges of untreated and inadequately treated domestic and industrial wastewaters and solid wastes into the bay and tributary rivers, however, have made the bay unfit for primary contact recreation. There are human health risks associated with bathing in fecal coliform-contaminated coastal waters and rivers.

### Box 1: A Dynamic Prioritization Mechanism (PEMSEA and DENR, 2001; PEMSEA and MBEMP TWG-RRA, 2004)

In view of the increasing difficulty in addressing environmental problems in Manila Bay and the limited resources available for environmental protection and management, a concerted effort, through the Manila Bay Environmental Management Project (MBEMP), was undertaken by a Technical Working Group (TWG) involving multi-disciplinary scientists, academicians and government personnel to assess and integrate available information, and determine priorities for management actions using environmental risk assessment (ERA). The prioritization of concerns using ERA is based on scientific evaluation of the likely consequences on ecological and human targets of various factors arising from human activities.

A tiered approach to ERA was undertaken involving the conduct of an initial risk assessment (IRA), a simplified evaluation that clearly identified the major as well as minor concerns in the bay, and the refined risk assessment (RRA), a more detailed assessment focused on the concerns and data gaps identified in the IRA.

Risks arising from exposure to contaminants were estimated using the risk quotient (RQ) approach in the *prospective* risk assessment, while resources and habitats at risk and significant causes of risk were identified in the *retrospective* risk assessment.

The RRA also includes recommendations to address priority human health and ecological risks:

- a. The results of the prospective risk assessment highlight the urgent need for decisive steps to reduce the disturbing levels of fecal coliform in the bay which have also contaminated shellfishes. Among the heavy metals, mercury and lead in fish and shellfish should be monitored, considering their relative toxicity. Efforts in monitoring pesticides and toxic algae are also deemed necessary. The sources of these contaminants in the water column and sediments, which eventually work their way to fish and shellfish and ultimately to man, should be controlled more effectively.
- b. The overall state of the resources and habitats in Manila Bay, based on the retrospective risk assessment, point to the urgent need for improved management of these resources, long-term planning and an integrated land- and sea-use zoning scheme that can ensure sustainable development. A stronger implementation of regulations and laws is called for to avert the inevitable consequences of over-exploitation, coastal reclamation and destruction of these valuable resources and habitats.



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Shoreline changes associated with coastal development activities affect the natural process of sediment transport in the bay and lead to either land gain or coastal erosion. These have impacts on coastal wetlands, salt marshes, and property, including historical and cultural markers and archaeological sites in the coastal area. Sea level rise, attributed to increased rates of groundwater withdrawal, further aggravates the flooding problem in low-lying areas.

Moreover, there are transboundary issues related to the relative distribution of environmental risks and sources of risk that vary across the bay. The dynamic nature of water bodies allow damages to occur or effects to be felt at significant distances from the source of the problem, such that a problem in one municipality or city is a threat to the entire bay area. Conflicting uses of the bay further complicate the problem and point to the pressing need for concerted action to sustainably manage the Manila Bay area at an inter-regional scale.

## Lessons Learned and Current Initiatives

**In dreams begin responsibility.**

— William Butler Yeats

Numerous studies and various government and non-government efforts to rehabilitate the bay have

**Manila Bay used to be a major destination for family gatherings and picnics. Along its 190-km coastline are beaches, resorts, yachting marina and natural parks, which makes it a tourism and recreational hub. The daily discharges of untreated and inadequately treated domestic and industrial wastewaters and solid waste into the bay and tributary rivers, however, have made the bay unfit for primary contact recreation. There are human health risks associated with bathing in fecal coliform-contaminated coastal waters and rivers.**

been ineffective, demonstrating the increasing complexity of the problems, the futility of independent actions, and the need for multi-agency and cross-sectoral management programs that will have significant impacts on the environment and resources of the bay. In the past, an estimated 115 research papers, technical reports and developmental programs and projects on Manila Bay have been completed, with a total budget for these projects estimated to be PhP3 billion, including grants from donor agencies amounting

to US\$22 million. With all of the technical and scientific effort and expenditures, one might assume that a comprehensive profile and far-reaching management program for Manila Bay exists. Yet, this is not the case.

The GEF/UNDP/IMO Regional Programme on Building Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) has identified Manila Bay as one of three subregional sea areas/pollution hotspots in the region. Since 2000, PEMSEA spearheaded the Manila Bay Environmental Management Project

# Forming partnerships, pooling resources and integrating efforts are needed to effectively ensure economic development while conserving resources and habitats and addressing environmental threats that are not within the capacity of a single agency, community, group or individual.

(MBEMP), which is being implemented with various local and national government agencies, academic institutions, the private sector, and civil society groups, with the Department of Environment and Natural Resources (DENR) as the lead agency.

The Risk Assessment/Risk Management (RA/RM) framework being employed by the MBEMP is

aimed at developing an effective and sustainable inter-sectoral management mechanism for Manila Bay. Fundamental to the RA/RM framework is the prioritization of environmental concerns through the risk assessment process, systematic development of measures to address identified concerns, mobilization of various stakeholders, and putting in place necessary institutional arrangements to effectively

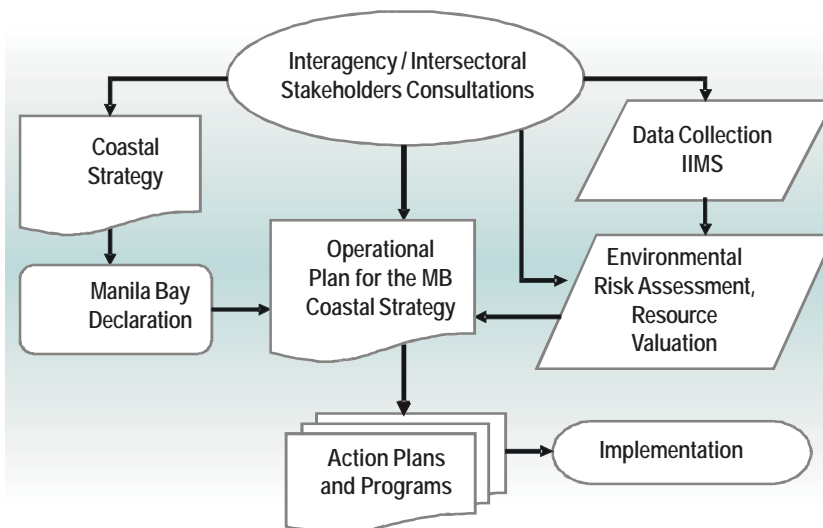
implement and sustain plans and programs geared toward the management and sustainable development of Manila Bay, and its coastal and watershed areas.

## Manila Bay Coastal Strategy and Operational Plan

### Well-begun Is Half-done

Recognizing that the complexity of problems in Manila Bay cannot be addressed by the government alone or by local government units acting separately, the Manila Bay Coastal Strategy was formulated to serve as a common framework for all concerned stakeholders to address environmental problems, achieve a balanced and sustainable economic development in the bay area, and improve the quality of life. The development of the Coastal Strategy took more than one year and involved massive stakeholder consultations at the municipal, provincial, regional and national levels, dealing with the importance of the bay, the natural, historical, cultural and socioeconomic values in the coastal and inland/watershed areas, the threats faced by the natural environment and people, and the significant changes that stakeholders desire for the bay region. This led to the formulation of a shared vision of the bay and corresponding mission and strategies to realize this vision. The participatory approach applied was important not

**Figure 2. Development and Implementation of the Manila Bay Coastal Strategy.**



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only for obtaining necessary information, but also for mobilizing stakeholder participation and building consensus. Figure 2 traces the development and planned implementation of the Manila Bay Coastal Strategy.

The commitment to pursue this shared vision for Manila Bay was affirmed by over a hundred representatives from the government, private sector, financing institutions and other stakeholder groups through the Manila Bay Declaration signed on October 24, 2001. The Declaration spells out the roles and responsibilities of the stakeholders in the implementation of the action programs in the Coastal Strategy. Forming partnerships, pooling resources and integrating efforts are needed to effectively ensure economic development while conserving resources and habitats and addressing environmental threats that are not within the capacity of a single agency, community, group or individual.

## **A Goal Is a Dream with a Deadline**

The risk assessment provided confirmation, from a technical perspective, to the human and ecological threats as perceived by Manila Bay stakeholders. By identifying the priority environmental concerns in a logical and transparent manner, the risk

assessment for Manila Bay has provided the criteria for prioritizing specific programs and activities. Being a dynamic process, risk assessment can also be further enhanced or refined as new information becomes available, and could therefore be used as a tool for monitoring changes in the levels of environmental risks and streamlining existing management programs as necessary and appropriate.

The Operational Plan, which is currently being developed by an interagency and intersectoral Technical Working Group (TWG), is the translation of the Coastal Strategy into actions and specific projects that will address the priority environmental risks and concerns, with the end view of attaining defined goals and, ultimately, the shared vision of the stakeholders for Manila Bay. Short-, medium- and long-term targets for each priority issue are being clearly delineated, with greater focus on doable activities.

The Operational Plan is intended to capture the interest and mobilize the support of decision-makers, environmental managers, financial institutions, and other stakeholders for the sustainable development and management of Manila Bay. Hence, it is envisioned to be a concise and comprehensive plan that will present clear priorities, targets, programs and activities with corresponding timeframes, budget and financing strategies, responsible institutions and directions for implementation. It

focuses on improving and maintaining water quality, conserving key habitats and resources, addressing erosion, land subsidence and shoreline changes, and activating partnerships and governance. Specific action plans and projects are being identified for implementation within the short and medium term, such as setting up an integrated watershed and coastal area management system in seven major river systems within the Manila Bay watershed; establishing necessary institutional arrangements; developing an information network; developing mangrove protected areas and sanctuaries for fishes, birds, turtles and other wildlife; establishing solid waste management systems; and developing a pilot project on a sewerage system, among others. Crafting the Operational Plan, however, is just the first step. Indeed, it may take thousand steps more to make the hope and vision for Manila Bay come true.

## **Making a Difference**

To accomplish great things, we must not only act, but also dream.

Not only plan, but also believe.

— Anatole France (1844-1924)

Concurrent with the development of the Operational Plan, other activities are currently being implemented by the MBEMP. Figure 3 shows how these activities, which are important components of



"When the pilgrims from the south stumbled upon the entrance to Manila Bay, what came about was the history not just of a city, but of a nation."

— Nick Joaquin,  
*Manila, My Manila*

*Along the flyways of migratory birds...  
and breeding grounds of marine turtles...*

## *Manila Bay...*

### A d d r e s s i n g   R i s k s



From coastal cleanups...



to integrated solid waste management...



the management of sea-based pollution...



and mangrove rehabilitation



Curbing illegal and overfishing through alternative livelihood programs



Rousing...  
running...  
racing...  
to save Manila Bay.

Takbo Para sa Kalikasan  
(Run for Nature)

a sustainable environmental management program for Manila Bay, are related to the risk assessment, coastal strategy and operational plan. The component activities of MBEMP are being undertaken through interagency and intersectoral collaboration. In the process, collective efforts and partnerships among the different institutions and sectors are being developed. We are reaping benefits in terms of consensus on action, decisions or policies to be made on top of breaking barriers for the sharing of views, data and experiences.

All data collected will be encoded and stored into the integrated information management system (IIMS), which is a comprehensive relational database, with geographic information system (GIS) linkage.

An integrated environmental monitoring program is currently being pilot-tested, focusing on priority parameters, contaminants, habitats and resources as well as data gaps and sources of uncertainty in the RRA. Such an integrated approach to monitoring will streamline and coordinate the activities of various government agencies, academic institutions and private sector, thereby avoiding overlapping functions, reducing costs while enhancing the sharing of information and providing support to decision-making.

Likewise, economic valuation will be applied to priority habitats and



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resources as well as to the impacts of environmental degradation to show the economic losses if pollution, over-exploitation of resources and habitat destruction are not abated. Valuing resources in monetary terms provide the rationale to protect and conserve key habitats and the environment, and promote to policymakers the need to balance economic and development plans with environmental management. Resource valuation also defines benefits and costs of one action vs. another or action vs. inaction. Thus, policy makers will have access to information on the contribution provided by a particular resource, and how management decisions on the use of that resource will affect society.

Moreover, the results of risk assessment, environmental and resource valuation and environmental monitoring will be used as inputs to the oil spill contingency plan for Manila Bay. Key habitats, resources and species, which are at risk from oil spills are being identified, and sensitivity mapping and response strategies are being developed. Concerned national government agencies, local government units (LGUs) and the private sector (ports, shipping and petroleum industries) are working on this contingency plan, with the Philippine Coast Guard taking the lead. In this way, preparedness and cooperation are being instilled.

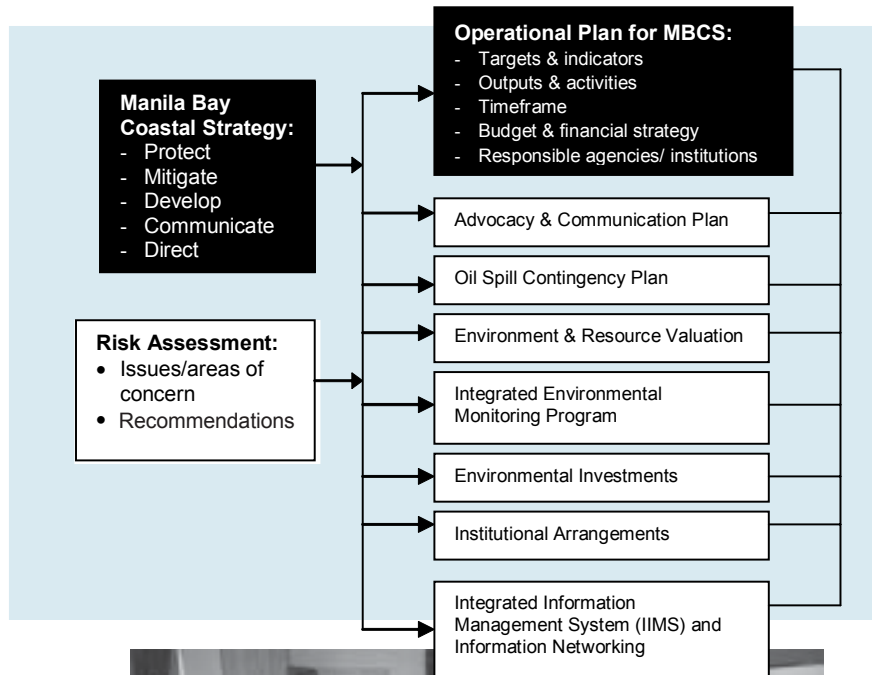
## Such an integrated approach to monitoring will streamline and coordinate the activities of various government agencies, academic institutions and private sector, thereby avoiding overlapping functions, reducing costs while enhancing the sharing of information and providing support to decision-making.

Public-Private Partnerships (PPPs) are being adopted as an alternative delivery mechanism in the development and implementation of investments in environmental facilities and services, particularly those identified in the coastal strategy and operational plan. Through PPPs, the LGUs, which have the mandate but not the technical and financial capacity; the private sector, which has the capital, technology and business expertise; and the communities, which need the service, are brought together to tackle the challenges of having essential facilities that are technically viable, environmentally sound, financially feasible, affordable and socially acceptable. The Province of Bataan and the City of San Fernando in the Province of Pampanga are also developing integrated solid waste management systems for their respective sites, using the PPP approach.

The coastal province of Bataan is implementing the integrated coastal management (ICM) programme as a PEMSEA ICM parallel

sites, wherein the operational and financing requirements are shared by the LGUs and partners from the private sector in collaboration with the civil society groups and other local stakeholders, and with PEMSEA providing technical assistance. The Bataan ICM site started with the participation in the International Cleanup Day in September 1999, and since the Memorandum of Agreement (MOA) signing with PEMSEA, Petron Foundation, DENR, National Economic and Development Authority (NEDA) and UNDP in February 2000, has established a Project Management Office and Project Coordinating Committee. Funding obligations are shared by the provincial government and the Bataan Coastal Care Foundation, which was formed by 18 major industries located in Bataan. The stakeholders of Bataan have drafted and adopted the Bataan Coastal Strategy and the Manila Bay Coastal Strategy, participated in the risk assessment of Manila Bay, and are currently involved in all the MBEMP component activities.

**Figure 3. Component Activities of the Manila Bay Environmental Management Project**



**Technical Working Group for Risk Assessment: Multi-disciplinary and interagency efforts — in action**



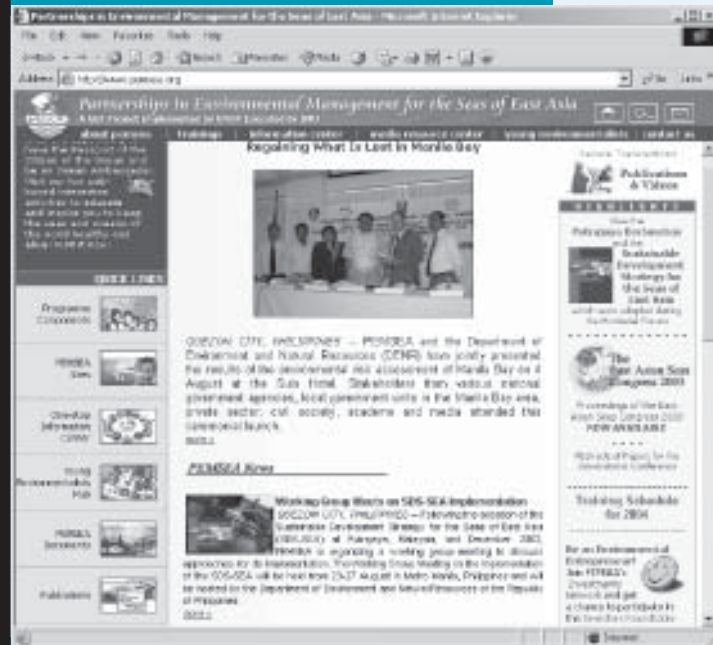
**Instilling governance: Stakeholders drafting the Manila Bay Coastal Strategy**

With ecosystem protection in mind, alternative livelihood programs for the rural communities have been set up, such as mussel culture and mudcrab fattening. The small/soft loan program for mussel culture has been successful, with the fisherfolk-beneficiaries paying off their loans after each harvest. Related activities like mangrove reforestation and the establishment of fish and marine turtle sanctuaries have also aided the livelihood programs. The mangrove propagules showed an 80–90 percent survival rate, and mussel harvest is better in areas with good mangrove cover, thereby encouraging the LGUs and the communities that these are indeed worthwhile activities. Cavite is emulating the model set by the Bataan ICM site and has signed an MOA with PEMSEA in March 2004, becoming its fourth ICM parallel site.

Another key component of the MBEMP is the information, communication, education (IEC) drive to increase awareness among the government, the communities and the public, in general, about the risks, the current state of the ecosystems and the environment, and the corresponding ecological and socioeconomic consequences. Creating public awareness through participation is being carried out in the course of mobilizing various stakeholders in activities such as coastal cleanup, mangrove reforestation, bird counting and tree

planting. Through the various IEC activities, people's consciousness concerning the interconnectivity among ecosystems and with human activities, as well as the need for active participation and collaborative efforts to solve multiple-use conflicts and to address the lack of policy and functional integration in the management of the bay and the adjacent coastal and watershed areas, is being raised.

“Save Manila Bay” has been the theme several art painting, marathon and dragonboat racing contests. “Bahagi ka ng Obra” (“You are part of the Masterpiece”) is the battle cry in promoting actions to restore Manila Bay back to its former glory. Like a jigsaw puzzle, the pieces are falling into place — through shared actions and partnerships. The risks and the challenges are known, and it's time to do something. Everyone is a stakeholder — each one must be part of the work and must realize that whatever happens to Manila Bay, the nation will follow. ■



Get the latest news and information on marine and coastal environmental management in the East Asian Seas region online @ [www.pemsea.org](http://www.pemsea.org)

The countries in the region included are: Brunei Darussalam, Cambodia, China, DPR Korea, Indonesia, Japan, Malaysia, Philippines, RO Korea, Singapore, Thailand and Vietnam.

The website contains information on the various programme components of PEMSEA:

- integrated coastal management;
- managing subregional sea areas and pollution hotspots;
- capacity building;
- environmental management and investments;
- scientific research;
- integrated information management systems;
- civil society;
- coastal and marine policy; and
- regional mechanism.

Now with more links, the PEMSEA website presents a wider array of references and databases particularly regarding the practice of two environmental management approaches — integrated coastal management, and risk assessment and risk management.

Also, lists of relevant and timely publications and trainings are featured. Plus a lot more.

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**Zheng Shuying**

Senior Engineer,  
Environment and Resources Office  
China Institute for Marine Affairs  
P. R. China

**Li Wenhai**

Director  
National Project Management Office  
Bohai Sea Environmental Management Project  
P. R. China

**Maria Teresita G. Lacerna**

Legal Officer  
PEMSEA  
Quezon City, Philippines

# The Sustainable Development Strategy for Bohai Sea: Sharing a Vision

## Introduction

Bohai Sea, covering an area of 77,284 km<sup>2</sup>, is the only semi-enclosed inland sea of China. It has a coastline of 3,784 km and an average water depth of about 18 m. Its unique geography and diversity of resources, as well as its rich culture and history, have given Bohai Sea justifiable mileage. Since ages past, Bohai Sea has been an important source of food and livelihood and has continuously provided support to China's economy. It functions as an important maritime outlet for China's landlocked Great West and its Northeast provinces as well as Euro-Asian links.

Bohai Sea's major impact areas are the three provinces of Liaoning, Hebei and Shandong, the city of Beijing, and Tianjin municipality, which comprise the Wide Bohai Sea Area (WBSA). The WBSA is expected to rise as China's important economic bastion in the new millennium. It bustles with economic activities supporting a population of 445 million. In 2002, its GDP rose to 2,418 billion yuan, accounting for 23 percent of the national GDP. Some 40 percent of China's seafood, 70 percent of China's sea salt and 19 percent of offshore oil and gas are produced in the WBSA.



The rapid development in the WBSA and the concomitant activities that ensued put heavy pressure on the environment. The continued unregulated activities and the stakeholders' irresponsible and abusive use of coastal and marine resources contributed to the deterioration of the environment. At present, Bohai Sea has become a pollution hotspot, with the health of its ecosystem severely damaged. Water quality in some 40 percent of Bohai Sea area is unfit for swimming and sea farming. Wastewater discharges into Bohai Sea reached about 2.8 billion metric tons in 1995, accounting for 30 percent of

the nation's total discharges. Since the 1980s, red tides have struck Bohai Sea more than 40 times causing economic losses worth billions of yuan (Yu, et al., 2001). Most recently, in the first week of June 2004, two red tide occurrences of toxic algae were found near Tianjin, affecting 3,200 km<sup>2</sup>, and near the mouth of the Yellow River, affecting an area of 1,850 km<sup>2</sup> (People's Daily Online, 2004). Oil fields along the coasts, particularly in Shengli, Dagang and Liaohe, have been responsible for oil spill events on an average of two per year, resulting in the increased mortality of birds and marine species.



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Habitats have been destroyed and fishery resources depleted. The size of the fish, the diversity of fish species and the volume of catch are decreasing at an alarming rate. Multiple-use conflicts among sectors and other stakeholders are the more serious burdens in the already problem-laden coastal and marine management task. The response has remained mostly sectoral with policies and regulations adopted largely on a single-sector basis. With the absence of a comprehensive framework to balance resource-use and manage conflicts, achieving the goal of sustainable development will be far-fetched.

## Setting the Stage for Cooperative Action

Despite management efforts, continuous deterioration of environmental quality has been observed in Bohai Sea, undermining its resource and economic values. This trend must be arrested if the Bohai Sea is to meet the needs of the present and future generations. It is high time for stakeholders to pool their efforts for the sustainable development of Bohai Sea under a common framework and in a spirit of partnership and cooperation.

Partnership is not a novel undertaking in Bohai Sea. In July 2000, the Government of the People's Republic of China, through the State Oceanic Administration (SOA), and the GEF/UNDP/IMO Regional Programme on Building Partnerships in Environmental Management for the

**The coastal strategy is envisioned to establish viable working partnerships, where each stakeholder would play a role in the sustainable environmental management of Bohai Sea. It is also expected to promote sharing of responsibilities through sustainable management of resource use.**

Seas of East Asia (PEMSEA) signed a Memorandum of Agreement to establish the Bohai Sea Environmental Management Project (BSEMP). The project's aims were to foster collaboration among adjacent provinces and municipalities for the sustainable management of Bohai Sea and, specifically, to develop a working model to manage pollution

across legal and administrative boundaries and reduce waste discharges. A National Project Management Office, with provincial project satellite offices, was established to ensure the achievement of the objectives of the BSEMP. The BSEMP plays an important role in the implementation of the five-year national Bohai Sea



**The endorsement of the Bohai Declaration on 25 July 2000 by the SOA Administrator and the Deputy Governors of the local governments of the provinces of Shandong, Hebei and Liaoning, and Tianjin municipality became a manifesto of government support and commitment for the environmental protection of Bohai Sea.**

### Box 1. Bohai Sea Vision:

**A clean blue sea with beautiful coasts and healthy and vigorous ecosystems;**

**The center for marine and coastal ecotourism, with well-protected historical and cultural heritage, well-conserved marine and coastal biodiversity, and unique natural habitats;**

**The center for socioeconomic development with modern international ports, and large-scale petroleum production base; and a rationally managed pattern of resource uses that support the people's high standard of living.**

Source: Sustainable Development Strategy for Bohai Sea

Environmental Improvement and Management Project. Its initial activity is to establish a partnership between the national government and the local governments to forge efforts and resources to uplift the condition of the Bohai Sea.

The BSEMP was instrumental in facilitating the signing of the Bohai Declaration of Environmental Protection in Bohai Sea (Bohai Declaration). On 25 July 2000, the SOA Administrator and the Deputy Governors of the local governments of the provinces of Shandong, Hebei and Liaoning, and Tianjin municipality endorsed the Bohai Declaration, which became a manifesto of government support and commitment. The local and national governments, through this document, have vowed to cooperate and promote the sustainable management of Bohai Sea, in particular, to develop an arrangement for the integrated management of Bohai Sea, a Bohai

Sea Management Law, a scheme for implementing waste reduction targets, and a Blue Fund to safeguard the Bohai Sea. This Bohai Declaration has since served as the springboard for further collaborative actions.

The State Environmental Protection Administration and the SOA embarked on two projects, billed the Clean-Blue-Sea Action Program and the Bohai Sea Integrated Restoration Program. Although such programs are aimed at specific issues, such as the treatment of land-based pollutants and capacity building and are not as comprehensive to cover the sustainable development of the entire Bohai Sea, the success of these programs will provide the necessary motivation for government agencies, commercial and industrial sectors, communities and other stakeholders in the region to adopt more effective management approaches.

The value of the Bohai Declaration and the above programs

lies in ushering an era of partnerships and cooperation to change the course for the Bohai Sea. These interventions have definitely set the stage and laid the foundation for stakeholder cooperation on a much bigger scale — the development of a comprehensive Sustainable Development Strategy for Bohai Sea.

## Developing a Common Framework

One of the major efforts made by the BSEMP is the development of an integrated management strategy for the Bohai Sea aimed at harnessing all stakeholder efforts under a common framework. The coastal strategy is envisioned to establish viable working partnerships, where each stakeholder would play a role in the sustainable environmental management of the Bohai Sea. It is also expected to promote sharing of responsibilities through sustainable management of resource use.

The project on the development of a coastal strategy was initiated by the BSEMP in 2001, with technical support and assistance by the China Institute for Marine Affairs (CIMA). The process entailed gathering and evaluation of data, plus the able support of the stakeholders. A series of consultations with relevant agencies, local governments and other stakeholders were conducted to provide a broad-range of perspectives and to validate information. PEMSEA also provided technical expertise and information, particularly on the integrated management approach.

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The draft strategy was presented to stakeholders in a two-day consultation meeting held in Beijing from 27–28 October 2003. The meeting was attended by officials of the oceanic administrative departments of Tianjin, Dalian and the provinces of Shandong, Hebei and Liaoning. In addition, experts in different fields from CIMA and other concerned departments of SOA, including the General Office, and the Marine Environment Protection Department, Sea Area Management Department, Department of Science and Technology and the Department of International Cooperation attended.

Upon reviewing the draft strategy, the participants discussed and reached a consensus on the identification of the environmental problems of Bohai Sea and the underlying causes and the threats. The description and basic facts of the Bohai Sea were strengthened and its values highlighted. The oceanic administrative agencies of the local governments offered more local data. To be more responsive, it was also agreed that the data and statistics, particularly those relating to the environment and economics, had to be updated to at least the year 2002. A consensus was also reached that the strategy should be in line with the national plans such as the Blue Sea Action Plan, and the management plans of the various oceanic administrative and other concerned agencies. The consultation helped define the issues from all



**The unique natural habitats of Bohai Sea is home to various birds whose survival and protection is ensured under the vision for the Bohai Sea through the Bohai Declaration and the Sustainable Development Strategy for the Bohai Sea.**

perspectives and provided inputs, particularly from the local experience, for a more comprehensive treatment of the strategy (BSEMP, 2003).

## The Sustainable Development Strategy for the Bohai Sea

After undergoing a three-year rigorous process and series of revisions and modification, the hard work of the BSEMP has paid off. The Sustainable Development Strategy for Bohai Sea (SDS) has finally evolved and has given new hope to China. It paints a picture of a glorious Bohai Sea in the new millennium as envisioned by the stakeholders.

The SDS provides a long-term, comprehensive and directional framework for environmental and

resource management with concrete action plans to make this vision a reality. More importantly, it is a declaration of a firm political will and commitment to the sustainable management of Bohai Sea. The identified key to realizing the shared vision is the establishment of partnerships among stakeholders including the experts in relevant fields.

## Essential Features

The SDS is the first comprehensive management plan for the Bohai Sea, addressing linkages between economic development and environmental management and managing issues across administrative and sectoral boundaries. It adopts multi-level, multi-sectoral and integrated ecological management approaches, which emphasizes cooperation and

# The SDS provides a long-term, comprehensive and directional framework for environmental and resource management with concrete action plans to make this vision a reality. More importantly, it is a declaration of a firm political will and commitment to the sustainable management of Bohai Sea.

partnerships among governments, management agencies and other stakeholders as well as establishment of the systematic and integrated model of environmental management. The wider scope of the SDS makes it different from the other plans. Its coverage includes the Bohai Sea and its river systems, the Tianjin municipality and the provinces of Liaoning, Hebei and Shandong. It incorporates the regional and provincial socioeconomic development plans into one common environmental and resource management framework.

The SDS further defines the major roles of the various social sectors, including the agencies of the central government and the local governments, private sector, social organizations, research institutions, the local communities, as well the United Nations and other international financing agencies, and the bilateral and the multilateral financial organizations. The SDS pushes programs, such as public

awareness campaigns, sharing and exchange of information and capability building, to promote meaningful participation of stakeholders.

One other distinctive feature of the SDS is the active role given to the private sector. The SDS introduced an innovative financing mechanism, where the private and public sectors will form partnerships in environmental investment. This mechanism veers away from the traditional setting up of facilities and infrastructures using government funds solely.

## Strategies and Action Plans

The SDS zeroes in on five main strategies.

**Inform and Communicate.** Grounded on the principle that social capital is the foundation for economic development and effective

management and governance, the SDS embarks on a campaign to inform the public and communicate relevant information to develop capacities and enhance the public's environmental awareness. More importantly, this strategy will create in the public a sense of responsibility as stewards of the environment demonstrated in a changed behavior. The programs include early environmental advocacy, in textbooks for middle schools, disseminating public awareness materials, and maintaining information links through the Internet and other media. It also seeks to introduce mechanisms to facilitate open public discussion down to the ground level.

**Preserve and Restore.** The State is mandated to protect its natural resources and ecosystems, particularly its coastal and marine areas, which are vital to China's economic development. The strategy seeks to preserve and restore the functionalities of the ecosystems, and the integrity and biodiversity of biological communities and habitats in the marine and coastal areas, including their historical and cultural values. It will intensify ecosystem monitoring, research and investigation, adopt functional zoning and management plans, and designate and strengthen management of marine protected areas and sanctuaries. In this endeavor, local governments, particularly at the prefecture and city levels, will play a greater management role. Remediation activities will be conducted on damaged critical



habitats and resources to restore ecological health and salvage major tourism, historical and cultural sites.

**Mitigate and Prevent.** A sound and healthy natural environment is essential for human health and welfare. The action plans under this strategy seek to address the land- and sea-based human activities and to prevent or mitigate their negative impacts on the coastal and marine environment, particularly marine pollution. To this end, the government will enforce a system of total control of discharge of land-based pollutants with the imposition of fines or closure of enterprises for every violation. The strategy will promote cleaner production in an effort to control pollution at source. Recycling, sewage treatment, waste segregation and other waste management systems will also be established at the city level to achieve the aim of "zero discharge." To demonstrate effectiveness, this strategy will set up ecology villages and parks. Communities will be encouraged to change their lifestyles and carry out green-consumption activities, which prohibit the sale and use of detergents and other chemicals that are harmful to the environment. The government will also promote water conservation measures.

To control sea-based pollution, the government will equip all ports with upgraded emergency response equipment, and monitor and address oil spills, as rapidly as possible. The main activities contemplated in this strategy are the establishment of

infrastructure and facilities for receiving and treatment of pollutants from ships, intensification of monitoring and surveillance of dumping activities at sea, and assessment of the extent of the usability of dumping areas. This strategy will also establish a prediction and pre-warning system for marine hazards, including pollution, sea ice, red tides, storm surges and hazardous cyclones in the Bohai Sea. A three-dimensional monitoring and prevention system for sea level rise in Bohai Sea and saltwater intrusion will also be developed.

The role of the public is given emphasis in the monitoring effort. A grassroots-monitoring network is essential and information support facilities for a transmission network and databank will be established.

**Develop and Protect.** Since a balance between economic development and environmental protection is vital, development activities should consider the carrying capacity of the coastal and marine environment and resources. The SDS adheres to the precautionary principle as it reinforces the use of the environmental impact assessment system for major development plan/activities to avoid great risks to the environment and irreversible impacts. Its envisioned clearance procedure for major development projects ensures consistent execution of the development plan and policies thereby avoiding resource-use conflicts. Conflicts that result from the use of these resources should be resolved in a manner that will maximize its value yet cause the least damage to the environment.



**To monitor and address oil spill as rapidly as possible, the government will equip all ports with upgraded emergency response equipment.**

# The challenge of sustainable development is not just about good strategies; much more than that, it is a race against time, against irreversible impacts.

This strategy proposes an integrated land–sea development plan, which also integrates socioeconomic and environmental concerns. It seeks to strengthen the economic contribution of the coastal and marine environment by developing policies that enhance the investment climate in the WBSA and create livelihood opportunities.

## **Manage and Direct.**

Management is the power to regulate the utilization of economic resources to achieve an established objective in a socially acceptable and economically efficient manner. Environmental policies should focus on environmental protection and sustainable utilization of resources as well as the interests of those people who depend on these resources. Effective management, therefore, is essential to protect and preserve the coastal and marine environment for the benefit of the people. It requires a delicate balancing of all interests.

Integrated coastal management (ICM) will be applied in the Bohai Sea region, which crosses administrative and jurisdictional boundaries. For this purpose, an integrated

management body will be established to coordinate activities relating to inter–provincial marine environmental protection and resources development and utilization, and ensure harmony of development plans at all levels. Policies and activities operating in an ICM framework will build partnerships among stakeholders, particularly among the industries and between the public and private sectors, encouraging more responsible behavior towards the environment. Communities, scientists and experts in relevant fields will be engaged in providing scientific inputs and traditional knowledge to serve as basis for decision–making and management.

The SDS also highlights the roles of NGOs, communities and marginalized groups as partners in the sustainable development of the Bohai Sea. For instance, the strategy proposes a mechanism to involve the NGOs in the process of planning, development and management of the Bohai Sea, particularly in the fields of education, capacity building, poverty alleviation, environmental protection and resources restoration. The community will

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also be mobilized to participate in ensuring the implementation of the SDS.

Pluralistic, socialized and multi–channel investment and financing mechanisms will be established to support the SDS, and ensure protracted and effective implementation of the Strategy. The government will develop a system, and increase the allocation for the Bohai Sea environmental management. National and regional policies favorable to industries related to environmental protection will be put in place to encourage stakeholders, individuals and private enterprises to invest in marine environmental management. Other financing schemes, such as the Public–Private Partnership (PPP) investment and financing mechanism, will be promoted, including project financing to attract social funds. If needed, the strategy allows for exploration of international cooperation and loans and grants from funding agencies. A special investment fund will be set up in the nature of a green fund to sustain development of the Bohai Sea.

Contributions are expected to come mainly from:

- State financial investments for Bohai Sea management/environmental protection;
- User–fees (use of the sea area, use of the facilities, etc.);
- Fees charged from pollutants discharged;
- Compensation for ecological loss;
- Levied taxes and fines;
- Favorable loans from domestic banks; and

- International loans, funds and contributions.

## Role of the BSEMP

The BSEMP continues performing its role as a catalyst to ensure the take off and continued implementation of the SDS. In essence, the BSEMP will be there to provide the necessary momentum for action. It has prepared the groundwork on which to build the activities of the SDS. In anticipation of the SDS, the BSEMP has initiated the development of a legal framework for an integrated management mechanism for Bohai Sea. Establishing the institutional arrangements will jumpstart the SDS implementation, bridging the lag time between the adoption and the actual implementation of the SDS. It has also set up a database for marine environmental data and information, specifically the environmental status of the Bohai Sea and the attendant threats and risks. This will cut research time and efforts needed to implement an activity.

The BSEMP has also embarked on other worthwhile projects. There are ongoing projects on the development of a risk management plan, a Bohai Sea environmental monitoring, integrated waste assessment and management improvement measures, an integrated land- and sea-use zoning scheme, and a wastewater discharge reduction plan for Bohai Sea. It has

also initiated demonstration projects in the WBSA, specifically in Chanxingdao (West Coast of Dalian), Panjin (Liaoning), Qinhuangdao (Hebei), Haihe Estuary (Tianjin) and Laizhou Bay (Shandong).

## Challenges Ahead

The adoption of the SDS is not an end in itself; it is the start of a long journey. One major challenge is the incorporation of the SDS into the development plans of government agencies at all levels. Government support is vital to the success of the SDS implementation. The Chinese government has taken the initial steps to see through the implementation of the SDS. It has committed to invest over 20 billion yuan (US\$2.5 billion) in pollution reduction and capacity-building activities in the application of integrated management approaches for the sustainable development of the Bohai Sea.

However, as the rate of environmental degradation in the Bohai Sea outpaces management efforts, the swift implementation of a two-pronged strategy is needed. As an effective enforcement mechanism to reverse the course is applied, the cooperation of stakeholders is crucial in slowing down the pace of environmental degradation. There is thus an urgency to intensify public awareness of the approaches and actions contained in the SDS. Building capacities of the implementers will also take a toll on the SDS

implementation. Sustainable financing is needed to initiate as well as to sustain the activities over a period of time.

The challenge of sustainable development is not just about good strategies; much more than that, it is a race against time, against irreversible impacts. Time will also judge the effectiveness of the SDS. The improvement of the water quality, the teeming of marine resources, and the increased contribution of the region to China's GNP are indicators of success. The ultimate measure and challenge, however, is when real benefits trickle down to the people and improve the quality of their lives and only then is the shared vision completely realized. ■

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Chua, Thia- Eng  
Regional Programme Director

and

Jihyun Lee  
Senior Programme Officer

PEMSEA  
Quezon City, Philippines

## Introduction

Over the past decade, the GEF/UNDP/IMO Regional Programme on Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) has generated a substantial quantity of data, information, lessons, contacts, processes, practical experiences, and expertise in the implementation of integrated coastal and ocean management at local, national and regional levels.

# Sharing Intellectual Wealth in Coastal and Ocean Governance



**The Regional Network of Local Governments Implementing ICM (RNLG) is one of the avenues open for the mutual sharing and exchange of methodologies, approaches, lessons and experiences.**

The knowledge produced by PEMSEA not only involves explicit knowledge but also tacit knowledge, social relationships and commitments developed at different levels.

Specifically, PEMSEA's intellectual wealth includes technical knowledge on understanding complex ecosystems, political knowledge on securing commitment from regional and local leaders, social knowledge on engaging local

communities through stakeholder consultations, cultural knowledge on adapting the ICM framework to different contexts, religious knowledge on mobilizing religious tenets, and financial knowledge on securing commitment for public-private partnerships in environmental investment. In this process, numerous lessons have been learned and PEMSEA has played a vital role in sharing this distinctive knowledge (Jashapara, 2003).



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## PEMSEA's Knowledge Management Strategies and Practices

Knowledge management is not the management of knowledge. What can be managed is not knowledge but the space and the enabling environment in which the processes of knowledge creation, sharing and application take place, (World Bank, 2004). While Knowledge Management (KM) is not an explicit mandate of the Regional Programme, PEMSEA activities are essentially designed and implemented within the context of capacity building involving in many ways the generation, packaging and use of knowledge in achieving the sustainable development goal of the Programme. PEMSEA's knowledge management strategy is thus characterized as people-led, tacit knowledge-oriented, and innovative. Knowledge sharing, mentoring and the use of creative and analytical skills are key elements of PEMSEA's approach, focusing on capacity building and the creation of enabling environment (Jashapara, 2003).

Specifically, PEMSEA's practices in knowledge management involves:

1. Creating an enabling environment at subnational, national and regional levels to plan and manage coastal and marine areas such as the ICM framework and processes at the local level and the

**PEMSEA's knowledge management strategy is thus characterized as people-led, tacit knowledge-oriented, and innovative. Knowledge sharing, mentoring and the use of creative and analytical skills are key elements of PEMSEA's approach, focusing on capacity building and the creation of enabling environment (Jashapara, 2003).**

*Sustainable Development Strategy for the Seas of East Asia* at the regional level;

2. Generating, sharing and applying diversified knowledge for integrated policy and management interventions directed towards sustainable development such as technical reports, guidelines, publications, and manuals;
3. Networking of stakeholders at subnational, national, and regional levels such as the Regional Network of Local Governments Implementing ICM (RNLG) and the linking of public and private sectors in environmental investment through the Public-Private Partnership (PPP) approach;
4. Imparting knowledge through capacity-building activities such as ICM Study Tours, short-term regional courses

and Learning-by-Doing through internship and fellowship arrangements; and

5. Applying mass communication tools and technologies such as intranet, Internet facilities and media as well as the Integrated Information Management Systems (IIMS) to facilitate knowledge sharing and dissemination at institutional, national and global levels.

## Creation of an Enabling Environment

The ICM framework and processes enable the local governments and stakeholders to generate, package and apply essential information from the coastal areas for the identification and prioritization of problems and for designing and implementation of management solution. The ICM framework provides an enabling environment and a platform for the various stakeholders

# The ICM framework provides an enabling environment and a platform for the various stakeholders to develop solutions for many of the problems affecting their environment, public health and sustainable use of coastal and marine resources. Local capacity is developed through the learning-by-doing process.

to develop solutions for many of the problems affecting their environment, public health and sustainable use of coastal and marine resources. Local capacity is developed through the learning-by-doing process.

ICM implementation in demonstration sites has generated a useful knowledge base that leverages the establishment of ICM parallel sites. This is seen in the growing number of local governments wanting to be designated as PEMSEA ICM parallel sites. The concerned local governments commit to utilize their own financial resources to implement an ICM programme for an exchange of PEMSEA's support in terms of sharing knowledge and expertise.

The development of a coastal strategy at the local level promotes a more intimate interaction and mutual consultation between stakeholders. This creates an enabling environment wherein

knowledge is shared through working together via consultation meetings and workshops for the analysis of the current situation, prioritization of issues and designing of solutions, application of technical/traditional knowledge and practices in responding to environmental challenges as well as forging common goals and objectives. Through the process of developing the coastal strategy, perception and attitude change occur, commitment strengthens and enthusiasm increases towards achieving a shared vision, which was developed collectively.

The development of the *Sustainable Development Strategy for the Seas of East Asia* also provided a unique opportunity of knowledge sharing among various stakeholders including national governments, regional and international organizations and donor agencies, private sector, and civil society groups, with regard to the regional implementation of

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Agenda 21 and the World Summit on Sustainable Development (WSSD) plan of implementation related to the seas and the coasts. By providing a guiding framework, the Strategy promoted the creation of an enabling environment at national and sub-national levels for developing national and local coastal and marine policies and strategies.

## Generating, Sharing and Applying Diversified Knowledge

The knowledge generated at PEMSEA sites is packaged for sharing and application in the form of mission reports, technical reports, training materials, guidelines, generic proposals, manuals, publications, and other information documents. The frameworks, processes, approaches and tools such as ICM, risk assessment and resource valuation developed during the Regional Programme's Phase I (GEF/UNDP/IMO Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas or MPP-EAS) have been packaged and applied to Phase II programme development and implementation (PEMSEA).

In particular, the integration of risk assessment, response, damage claims, habitat rehabilitation, monitoring and capacity building, which is being applied at sub-regional seas areas/pollution hotspot programmes, is another model of knowledge management fully reflective of the generation, packaging and

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transformation into a knowledge-base and their use for designing responses for field actions, recovery of claims and long-term monitoring of risks.

## Networking

The Regional Network of Local Governments Implementing ICM (RNLG) is a functional network that adopts the integrated management approach. Each participating local government uses the generic framework and processes in developing and implementing ICM programmes. They do differ in terms of capacity and experiences. However, these differences make it conducive for them to form a network, which allows for mutual exchange of methodologies, approaches, lessons and experiences. It also promotes a certain degree of competition amongst them. Such a network therefore creates a learning environment, which enables the full use of knowledge for environmental management interventions. The expansion of the network is promoted by an increase of capacity in the region, which is manifested by the increasing confidence amongst the regional ICM practitioners.

The PEMSEA public and private sector partnership arrangements in the city of San Fernando, Pampanga and the province of Bataan, both in the Philippines, is a working model on how both sectors can work together to improve the environmental quality, increase sustainable development

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opportunities and forge greater commitments amongst the stakeholders. This was achieved through effective use of the political wills of the governor and mayors, optimized corporate responsibility, exchange of knowledge and expertise between public and private sectors, and pooling of financial and human resources in undertaking projects and programmes towards achieving common objectives and a shared vision.

Another model for public and private sector partnership is manifested in Batangas, Philippines. The formation of the Batangas Coastal Resource Management Foundation (BCRMF) initiated by several multinational business firms

operating in the Batangas Bay area promoted the development of a consultation mechanism through the development and operation of the Batangas Bay Region Environmental Protection Council. The Council is made up of representatives from the local government, the industries, the academe and NGOs. It provides a consultative mechanism for addressing activities, which might affect the sustainable development of the bay and a framework and platform for the industries to contribute to the management of the Bay.

Through this process, the expertise and knowledge of the industries could be utilized to support government efforts such as the provision of basic information on

# Linking universities to the ICM project site is another unique characteristic of PEMSEA in building local and national capacity. The approach not only ensures that the academia is exposed to the practical needs in the field but also enables them to appreciate the importance of the integrated management approach which requires interdisciplinary research efforts to generate the appropriate management advice.

industry compliance with government rules and regulations as well as sharing of information on environmental monitoring. The integration of oil spill response contingency plans and exercises is facilitated by such a relationship thereby effectively mobilizing the inputs of the private sector. Through these processes, knowledge from the industries is imparted and exchanged among them, creating a knowledge-learning environment for all sectors.

Linking universities to the ICM project site is another unique characteristic of PEMSEA in building local and national capacity. The approach not only ensures that the academia is exposed to the practical

needs in the field but also enables them to appreciate the importance of the integrated management approach which requires interdisciplinary research efforts to generate the appropriate management advice.

## Capacity-building Practices

Study tours to successful ICM demonstration sites, such as Xiamen, People's Republic of China, promotes perception and attitude change amongst the leaders of central and local governments and confidence in support of the integrated and holistic management approach. The visual and audio transfusion of

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knowledge at the sites creates a comparative mode of thinking and increases the desire to do the same if not better. This is best reflected by the waterfront improvement in Sriracha Municipality in Chonburi, Thailand and the political commitment, which was secured through ICM study tours in Danang, Vietnam; Port Klang, Malaysia; Bataan, Philippines; and Sihanoukville, Cambodia .

The PEMSEA Internship/ Fellowship Programme strengthens individuals in the use of knowledge on integrated management to address a variety of environmental and sustainable development issues. The Programme provides interns/ fellows from the participating countries with hands-on training for them to have practical exposure to environmental issues and to develop the skills, knowledge and expertise on coastal and marine area management. The Internship/ Fellowship Programme also creates a critical mass of practice-oriented experts contributing to the replication of knowledge in other parts of the countries.

PEMSEA's training courses are geared towards the application of knowledge to specific environmental management interventions, thus effectively allowing the application of knowledge learned from specialized training courses and ensuring the participants to use the knowledge acquired in undertaking specific management-related activities.



## Use of Mass Communication Tools and Technologies

The effective use of the intranet in PEMSEA promotes rapid exchange of knowledge, in particular, through sharing of experiences by site and discipline officers pertaining to the project management at different sites. The easy access to various information generated by the office strengthens the sharing of information and promoting conversion of information into useful knowledge. Through this process, institutional learning in programme development and management can be achieved.

PEMSEA has been actively developing and promoting its website as a portal site for information on coastal and ocean governance for the East Asian Seas Region. The inclusion of a media resource center, information center and youth corner have generated a surge in website



**The Integrated Information Management System is a comprehensive relational database useful for decision makers and coastal managers.**



**Participants from Cambodia, DPR Korea, RO Korea and Thailand observe ICM as practiced in Xiamen during a study tour held in July 2004.**

hits from 6,000 in July 2002 to over 235,000 in February 2004. The PEMSEA website provides a source of information for a variety of stakeholders relating to sustainable development of coastal and marine areas of the East Asian Seas region, in particular, information that are of varied interest to policymakers, resource managers, the private

sector, civil society and the academe. Presently, PEMSEA sites are developing their own websites, which will be linked through an e-community network known as Coastalinks.

PEMSEA has developed an Integrated Information Management System (IIMS) as a tool for standardizing, codifying and storing information related to managing the

coastal and marine environment and resources in databases, where it can be accessed and used easily by government agencies, the academe and other stakeholders.

## Challenges Ahead

As recognized during the WSSD, most of the planned activities under the Agenda 21 have not been fully implemented and no appreciable achievement has been made toward the goal of sustainable development for the past decade. This indicates that sustainable development is a long and tedious process and requires substantive knowledge, expertise, and on-the-ground actions before positive impacts become visible. Within the East Asian Seas region, as well as outside of the region, countries are facing serious challenges in terms

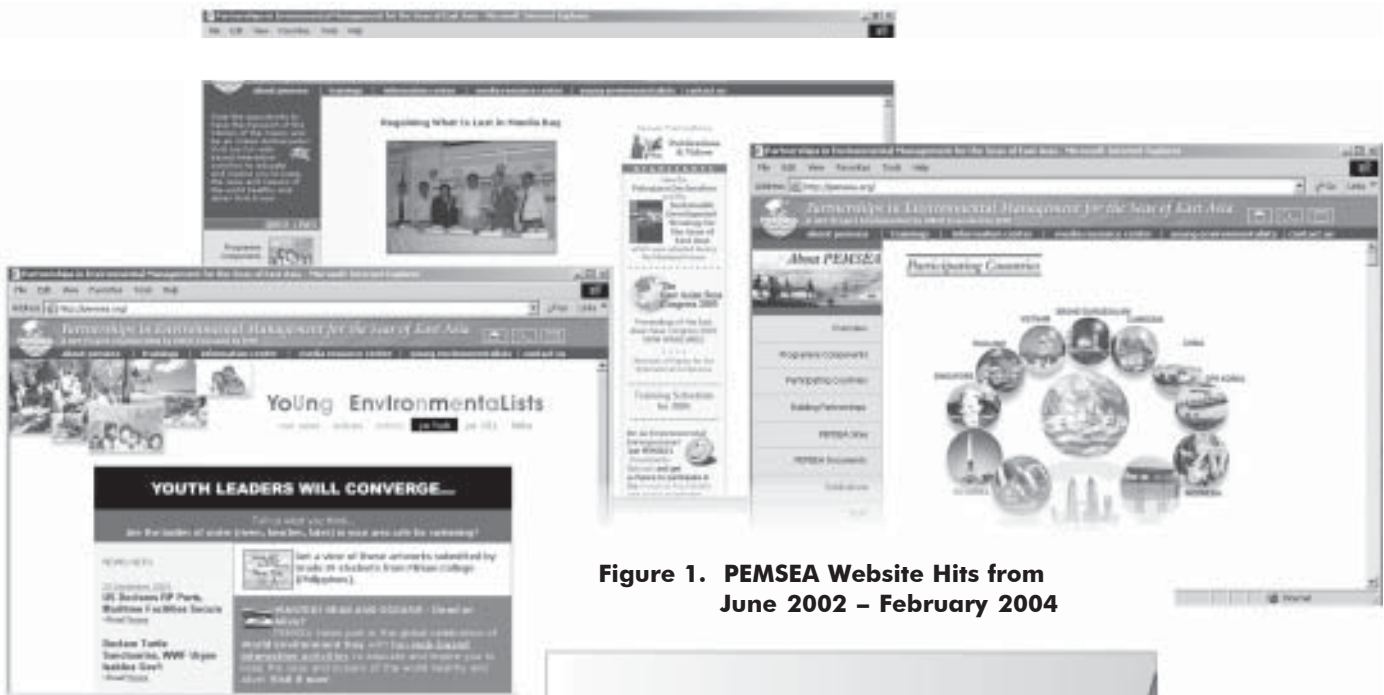
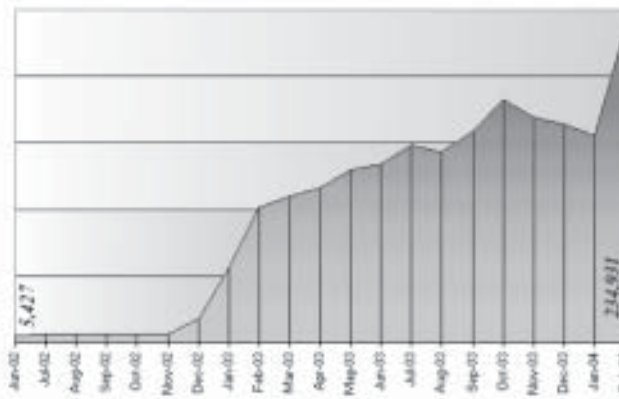


Figure 1. PEMSEA Website Hits from June 2002 – February 2004



of lack of adequate technical and managerial capacities, in making efforts to relieve the pressure on unsustainable exploitation and use of natural resources, prevent further destruction of coastal and marine habitats, and improve living conditions of the urban poor through a more holistic and integrated planning and management approach.

PEMSEA's knowledge can be a useful asset to the existing efforts toward sustainable coastal and ocean development, if effectively capitalized and cultivated. However, the current efforts to package, share, apply and replicate PEMSEA's knowledge are too limited to meet the demand from the region as well as outside of the region. In this regard, Jashapara (2003) addressed a danger of losing the significant

intellectual capital arising from the PEMSEA programme. Concerted efforts are required to cultivate and strengthen the intellectual wealth gained in PEMSEA sites through the application of an effective knowledge management system. Existing methodologies and tools for knowledge packaging, sharing and application need to be further refined to effectively assist countries and various other stakeholders in achieving sustainable coastal and ocean development. ■

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Nam, being historically part of the Quang Nam–Danang Province shares almost the same political and cultural characteristics with Danang including some of the environmental and management issues. A site evaluation mission, which was recently undertaken in Quang Nam Province was able to establish the firm political commitment and support of the local government, the appropriateness of the environmental issues requiring management interventions, the availability of financial resources to initiate the implementation of the program and the presence of a lead agency to undertake the activities of the ICM programme. Given these conditions, Quang Nam Province has been designated as PEMSEA's fifth ICM parallel site. With expressions of interest, commitment and support from the local government and stakeholders to follow Danang's path, the approaches and methodologies applied in Danang can be easily transferred to Quang Nam.

### The Way Forward

ICM implementation in Danang has come a long way, but a journey that was well worth it. As a key step towards attaining project sustainability, concrete measures are being identified on how to institutionalize the PCC into a more permanent coordinating mechanism. Through this effort, country ownership of the project is strengthened and it will also further encourage cooperation among the sectors and find points of convergence that would allow them to work together towards ICM and environmental sustainability. ■

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**The Southeastern Coast of Bali is envisioned to be a prosperous place where people live in harmony with God, one another and the environment.**

*Tri Hita Karana ...*

continued from page 35

In the Coastal Strategy, the Balinese envisioned Bali as a prosperous and peaceful place as guided by the *Tri Hita Karana* philosophy. The strategy contains approaches to be undertaken to realize the vision for the Southeastern Coast of Bali — a prosperous place where people live in harmony with God, one another and the environment.

There are four specific strategies to attain the vision:

1. *COMMUNICATE* with stakeholders to enhance their level of awareness regarding the importance of the coastal environment and resources, and to elicit their active participation in coastal and marine management.

This strategy mostly reflects the Balinese philosophy to live in harmony with one another (*pawongan*). Action programs proposed to promote and facilitate interaction among people or stakeholders include establishing a communication forum in the village and subdistrict levels involving representatives and administrative officers of local communities, NGOs and the private sector which have close linkages with government and multidisciplinary



**The question, however, is how to make such developments lead to the fulfillment of the goal of the Balinese. *Tri Hita Karana*, which balances spiritual development, economic growth, cultural preservation and environmental protection, was found to be effective in addressing the identified concern of the Balinese.**

groups. This activity will allow the participation of people in various aspects of coastal and marine area management.

2. *DEVELOP appropriate institutional and legal regimes to promote effective and integrated management of coastal and marine resources while directing economic activities*

*and programs in suitable areas to promote the economic prosperity of the people.*

As action programs for the DEVELOP strategy, stakeholders proposed widely applying a *Tri Hita Karana* award for tourism and other related business sectors to encourage the

promotion of environment-friendly, responsible and sustainable utilization of marine and coastal resources. Other action programs include empowering local communities and traditional organizations; involving the traditional village authority (*Banjar*) in coastal planning and management as well as environmental monitoring and pollution control programs; and integrating formal marine and coastal environmental regulations with traditional village regulations (*awig-awig*). These action programs aim to maintain a harmonious relationship between humans and their environment (*palemahan*).

3. *PROTECT coastal ecosystems and human population from risks occurring as a consequence of economic development activities.*



**Tourism operators have resumed guardianship of the Balinese culture since it is one of the major attractions for tourists.**

The Balinese are aware of the need to maintain the health of the coastal ecosystem and the marine environment for sustaining their health, culture and welfare. The arrangement based on the *Tri Mandala* concept becomes their consideration to protect their ecosystem and environment. *Utama Mandala* (the space for the most sacred area), *Madya Mandala* (the space for human living) and *Kanista Mandala* (the space for activities) are the bases for developing an integrated land- and sea-use zoning scheme. By applying this



philosophy, the people conserve the sacred areas as well as reduce multiple-use conflicts and uncontrolled development of the coastal space. In addition, regulating issuance of licenses for building structures along the coastal areas, in consultation with traditional organizations; and limiting development of tourism accommodation facilities around the sacred places are also proposed as action programs.

4. *PRESERVE natural resource systems, including coastal and marine habitats and groundwater, religious heritage sites and other sociocultural endowments of outstanding significance for the benefit of present and future generations.*

This strategy emphasizes the relationship between humans and God (*parahyangan*). Specifically, the Balinese proposed action programs, such as preserving heritage sites, structures and traditional activities of sociocultural and religious significance, and enhancing capacity of traditional village communities and the religious leader in management and conservation.

In conclusion, the *Coastal Strategy for the Southeastern Coast of Bali* is seen as an instrument that realizes the Balinese traditional philosophy, cutting across all sectors. It will evolve to provide a platform for:

## In the Coastal Strategy, the Balinese envisioned Bali as a prosperous and peaceful place as guided by the *Tri Hita Karana* philosophy. The strategy contains approaches to be undertaken to realize the vision of the Southeastern Coast of Bali — a prosperous place where people live in harmony with God, one another and the environment.

- Harmonizing relationships between the economy and the environment related to the coastal and marine areas of the Bali Province;
- Forging operational linkages across various policies and programs addressing issues such as poverty alleviation, sustainable livelihood, reduction of vulnerability to natural hazards, economic growth and maintaining the health of human beings, ecosystems and the natural resource base; and
- Promoting inter-sectoral, interagency and intergovernmental partnerships for overcoming constraints to the sustainable development of the area. ■



**The Palemahan Aspect of the *Tri Hita Karana* calls for the proper handling and use of the environment by the Balinese.**

Not only have the enforcers grown in number, there have been improvement in capabilities. Lastly, there has been an increase in investments in public utilities and additional environmental infrastructure services are being constructed or the existing ones are being improved. For example, the urban sewage treatment plants are supplemented by treatment facilities at specific sites. The Xiamen experience would indicate the significance of coordinating the capacity development process. As these four pillars are interconnected, a deficiency in one may impede progress in the remaining three.

## And the Journey Continues

Xiamen, in contrast with other places in China, had the unique experience of being able to harmonize the top-down and bottom-up conservation and development approaches towards sustainable management of its coastal and marine areas. In a centralized economy, the voice of industry and business, non-governmental organizations and other civil society groups is highly dependent on their size and the discretion of the local

authorities. The increase in public consultations in Xiamen puts them ahead over most Chinese cities. Perhaps others should take a cue from the Xiamen experience, which bears semblance of "multi-sectoral" decision-making.

Following the success of ICM in the city that was once haunted by environmental problems, there are plans to implement ICM in other areas along China's vast coastline and extend commitment to marine protection. As for Xiamen, it's not yet the end of the road. The city leaders, with the support of their constituents, are already drawing up plans

that will transform Xiamen into a bay city with seaside satellite towns (Check [www.xmgarden.org](http://www.xmgarden.org) for a preview of what is in store for Xiamen.). Like Dorothy and her companions' journey to Oz, the journey would be challenging. Sometimes the road would be smooth and well-paved then suddenly bricks would be broken or missing altogether. There would be trees and thick branches growing over it so the travelers could not pass but then an axe and other tools can clear a passage. Given its vast experience, Xiamen is undoubtedly more than prepared for what lies ahead. ■

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# NEWS

PROGRAM

## Cavite Is PEMSEA's 4th ICM Parallel Site

**TRECE MARTERES CITY, PHILIPPINES — 8 March 2004** marked a new day for the people of Cavite Province as Governor Erineo S. Maliksi signed a Memorandum of Agreement (MOA) with the Department of Environment and Natural Resources (DENR) and PEMSEA, agreeing to promote, support and work together on the development and implementation of an integrated coastal management (ICM) parallel site in the province.

The agreement, also signed by DENR Undersecretary Rolando L. Metin (representing DENR Secretary Elisea G. Gozun); and PEMSEA Regional Programme Director Dr. Chua Thia-Eng, aims to proactively address Cavite's escalating environmental problems by developing and implementing an ICM programme for the sustainable use, management, preservation, and protection of its coastal and marine resources.

Cavite's fast-growing industrialization and urbanization have undoubtedly posed potential threats to its environment. Pollution and over-exploitation of resources are just some of the critical problems that need to be addressed. With this agreement, the province will be able to implement a Cavite Management Program and uphold the sustainability of its resources through interagency, intergovernmental and multisectoral partnerships.

Dr. Chua expressed that "under this MOA with PEMSEA and DENR, we are sure to promote a long and sustainable environmental protection and conservation program, making our seas more productive and capable of sustaining our growing population."

Other signatories to the agreement were Cavite Coastal Town Mayors Conrado Lindo of Ternate and Monte Andaman of Maragondon; Pollution Control Officer of Jetti Philippines, Engr. Rodolfo Enego; Deputy Administrator of Gateway Business Park, Claro M. Omaña; and Communications Officer, South Luzon Advocacy Group, External Relations Corporate Affairs Office, San Miguel Corporation, Mac C. Dormiendo.

Alongside Shihwa in the Republic of Korea, Sukabumi in Indonesia, and Bataan also in the Philippines, Cavite becomes PEMSEA's fourth ICM parallel site in the region. ■

## Coastalinks: Sharing the ICM Experience

**QUEZON CITY, PHILIPPINES — PEMSEA integrated coastal management (ICM) demonstration sites in Danang, Vietnam; Port Klang, Malaysia; and Bali, Indonesia, and the ICM parallel site in Sukabumi, Indonesia recently held training workshops on Web Development and Networking. The workshops were aimed at helping Danang, Port Klang, Bali and Sukabumi establish their own presence on the Internet and provide the sites with a new means of sharing local lessons and experiences in environmental management to a much wider online audience.**

The Web Development and Networking workshops were held from 14-18 June in Danang, 26-30 July in Port Klang, and from 29 August – 4 September in Bali for Sukabumi and Bali participants. Both events were co-organized by PEMSEA with local partners – the Department of Science and Technology in Danang, the Lembaga Urus Air Selangor (LUAS) in Port Klang and BAPEDALDA in Bali.

The training tackled basic web jargons, effective web content development, web design tips, promotion and marketing of websites and good practices in web development. Web development and application softwares, such as Adobe Photoshop for web designing, MS FrontPage for HTML programming, FTP Voyager for file transfer applications, Macromedia Dreamweaver and Ulead GIF Animator, were also discussed for dynamic page applications.

The workshops are part of a series of on-site training programs being organized by PEMSEA for the creation of ICM websites, referred to as Coastalinks, to be used in strengthening a regional "C2C" (Coast to Coast) networking and parallel knowledge sharing on the East Asian seas. PEMSEA is targeting the simultaneous launching of Coastalink websites during the 10th Programme Steering Committee Meeting in Xiamen, PR China in October 2004. ■

# NEWS

## ICM Capacity Takes Shape in DPRK

**PYONGYANG, DPR KOREA** — A training of trainers on integrated coastal management (ICM) conducted in 11-16 July resulted in a heightened understanding of the ICM concept and process and the development of module plans and action plans necessary for the conduct of a future pilot ICM training workshop in the Democratic People's Republic of Korea.

The participants were trained to understand and explain the basic tools applied in ICM; develop ICM module plans and action plans; and apply these skills through the conduct of an future ICM training course to be given for potential ICM practitioners, national government officials and policymakers.

The training was well-accepted and the open forum that followed saw a high degree of questions raised and discussed by the participants on numerous issues such as the limits of sustainable development, the scientific and technological problems in ICM, the conduct of public awareness in ICM, and on what was the most appropriate organizational structure for implementing ICM.

The training was attended by 15 participants from various national and local government agencies and the academe and was organized by PEMSEA in partnership with the Kim Il Sung University, the Ministry of Land and Environmental Protection, and General Bureau of Cooperation with International Organizations.

With the East Asian region facing numerous challenges in sustaining its coastal and marine areas against concerns such as pollution, habitat destruction and multiple-use conflicts, the use of an integrated coastal and marine management approach like ICM is seen as a viable option to attain coastal and marine sustainability. The training in Pyongyang is thus a part of PEMSEA's efforts, in partnership with local governments throughout the region, to build regional capacity and confidence in ICM. ■

## Quang Nam to Be Designated as the 5th PEMSEA ICM Parallel Site

**QUANG NAM, VIETNAM** — Efforts are now underway to designate Quang Nam as a new PEMSEA integrated coastal management (ICM) parallel site. This after a PEMSEA mission to evaluate the site concluded that the province successfully met PEMSEA's site selection criteria. The mission noted Quang Nam's strong political commitment, the appropriateness of management issues requiring the ICM approach and the financial commitment of the local government in undertaking the activities of an ICM parallel site.

The evaluation mission was conducted in response to the request of the National Focal Point of Vietnam and the Quang Nam Provincial People's Committee. PEMSEA Regional Programme Director Dr. Chua Thia-Eng and PEMSEA Technical Officer Nancy Bermas-Atrigenio visited Quang Nam on 28-29 July to evaluate the suitability of the site by confirming the support and commitment of the local government and stakeholders and identify issues and problems to be addressed by the ICM programme.

The People's Committee stressed its willingness to provide financial support and establish a coordinating mechanism. The People's Committee likewise indicated its willingness to take leadership in the implementation of the ICM project and to sign a Memorandum of Agreement with PEMSEA to officially commit local government resource to the implementation of the ICM programme.

In line with the Vietnamese central government policy to provide support to least developed provinces in Vietnam, Quang Nam was selected as one of the sites for ICM programme development because it is one of the poorest coastal provinces of the country. Located south of Danang City, Quang Nam's main economic activities include tourism, aquaculture/fisheries, forestry and industrial development. Its 125-km coastline is dotted with fine sandy beaches and is able to support tourism, aquaculture and sand mining. The province is facing numerous environmental management concerns such as habitat alteration and pollution from infrastructure development; the lack of a tourism development plan; and the significant reduction of groundwater level and saltwater intrusion due to unregulated aquaculture and shrimp farming.

The mission concluded that ICM can make a positive contribution in providing coordination and management measures to many of the issues identified, especially in the sustainable development of small-scale shrimp farming, sand mining management, beach management and industrial waste management. ■



# NEWS

## Regaining What Is Lost in Manila Bay

**QUEZON CITY, PHILIPPINES** — PEMSEA and the Department of Environment and Natural Resources (DENR) jointly presented the results of the environmental risk assessment of Manila Bay to stakeholders from various national government agencies, local government units in the Manila Bay area, the private sector, civil society, the academe and the media in a ceremonial launch at the Sulo Hotel on 4 August.

The *Manila Bay: Refined Risk Assessment* is a product of concerted efforts of a Technical Working Group composed of scientists, academicians and government personnel from different agencies. A synopsis of the report was presented by Dr. Vicente Tuddao of the DENR, drawing attention to the priority risks and areas of concern in the bay area. The report highlights the urgent need for decisive steps to reduce the disturbing levels of fecal coliform, pesticides and heavy metals, which have contaminated fish and shellfish.

PEMSEA Senior Programme Officer S. Adrian Ross identified some of the priority areas of concern, short-term actions, and goals mentioned in the report, such as to eliminate public health concerns and maintaining water quality to support the aquatic living resources and habitats; to protect and restore habitats that are vital to the survival of priority living resources of the bay and its rivers; to better understand and benefit from the interconnectivity between the bay's important living resources and the health of the entire ecosystem; and to promote collaboration and partnerships among government and non-government stakeholders, and to mobilize individuals and communities to take an active role in the sustainable development and management of the bay's resources. DENR Undersecretary Rolando L. Metin expressed the commitment of DENR to play an active role in addressing the risks and challenges in Manila Bay.

"As agents of sustainable development, we share the view that development can be pursued while conscientiously ensuring that threshold limits are not exceeded, but managed at levels that will promote human health and environmental protection," wrote DENR Secretary Elisea G. Gozun in her message to stakeholders and readers of the *Manila Bay: Refined Risk Assessment*. "The recommendations presented in this document provide a map towards reaching our shared vision, and regaining what was lost to Manila Bay's grandeur." ■

## East Asian Countries Meet on Sustainable Development Strategy Implementation

**MANILA, PHILIPPINES** — Following the adoption of the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA) at Putrajaya, Malaysia, last December 2003, representatives from PEMSEA participating countries and international organizations met in Manila from 23-27 August to develop and recommend a plan on how to implement the SDS-SEA.

Thirty participants and resource persons attended the Working Group Meeting on the Implementation of the SDS-SEA, which was organized by PEMSEA and hosted by the Department of Environment and Natural Resources (DENR) of the Republic of Philippines. Representatives from 10 PEMSEA participating countries (Cambodia, China, DPR Korea, Indonesia, Japan, Malaysia, Philippines, RO Korea, Thailand and Vietnam), the United Nations Development Programme, the World Bank, and the PEMSEA Regional Programme Office attended the meeting.

The working group reviewed and finalized a concept brief on the implementation of the SDS-SEA, which was prepared by PEMSEA secretariat based on the inputs from the preparatory meeting of experts held in Chengdu, PR China, last March. The meeting also discussed approaches to mobilizing commitments and support from participating countries and other stakeholders for implementing the SDS-SEA.

The finalized plan for the SDS-SEA implementation called for a programme of activities, which includes:

- Establishing institutional arrangements for the sustainable implementation of the SDS-SEA;
- Developing national policies and action plans for sustainable coastal and ocean development in at least 70 percent of PEMSEA participating countries by 2015;
- Putting at least 20 percent of coastlines of the region under integrated coastal management (ICM) programmes by 2015;
- Establishing collaborative arrangements between and among research institutions, universities, the private sector, governments, communities and NGOs; and
- Facilitating national and regional pollution reduction investment programmes.

The programme of activities for the implementation of the SDS-SEA will be submitted for consideration to the PEMSEA Programme Steering Committee (PSC) during its 10th meeting in Xiamen, PR China, from 25-29 October 2004.

Initiated and prepared by PEMSEA in consultation with 12 participating governments and other stakeholders of the Seas of East Asia, the SDS-SEA is a package of strategies, principles and action programs for achieving sustainable development for the Seas of East Asia. It represents implementation approaches for the integrated management and the sustainable use of the environment and its resources. ■



# P E M S E A

## 2004 - 2005

### PEMSEA's training initiatives provide unique learning experiences through:

Involvement of multisectoral stakeholders in coastal and marine environmental protection and management

Field studies integrated into training courses, complementing theory with actual practice

Site-specific application of acquired new skills ensuring enhanced capability and confidence

Concrete plans for follow-on actions, encouraging participants to make a difference

Effective environmental management requires trained and skilled people...

*Be one of them!*

25 – 29 October 2004

Tenth PEMSEA Programme Steering Committee Meeting (Xiamen, PR China)

22 November – 10 December 2004

Regional ICM Training Course (Manila, Philippines and Xiamen, PR China)

29 November – 4 December 2004

Training Workshop on IEIA (Hong Kong)

February 2005

1st Meeting of the Drafting Group on Implementing Mechanisms for SDS-SEA

26 – 28 April 2005

4th Forum of the Regional Network of Local Governments Implementing ICM (Bali, Indonesia)

June 2005

2nd Meeting of the Drafting Group on Implementing Mechanisms for the SDS-SEA

July 2005

11th PEMSEA Programme Steering Committee Meeting

*Note: The above schedules are subject to change.*

Get involved... stay involved.

The Alumni Network offers:

- ✓ New and up-to-date information on PEMSEA activities
- ✓ Information on opportunities for professional upgrading and degree programs available on fields relevant to coastal and marine environmental management
- ✓ A chance to be a member of the PEMSEA roster of trainers
- ✓ Information on PEMSEA-related training activities within the region

*To join, visit the PEMSEA website and complete the registration form.*

**KNOW MORE**  
[www.pemsea.org](http://www.pemsea.org)



E V E N T S

# Training Course on Integrated Coastal Management

22 November - 10 December 2004  
Manila, Philippines and Xiamen, PR China

Featured Training Course for This Issue

The course is intended to enhance the participant's knowledge and skills essential in the implementation of integrated coastal management (ICM) projects. The training will cover a wide spectrum of subjects related to coastal and marine area management with practical exposure to the ICM concept, approaches and operational mechanisms.

### Topics covered

- ICM Concept, Principles and Applications
- Data-gathering and Information Management
- Development and Implementation of Coastal Strategy
- Risk Assessment and Management
- Environmental Monitoring
- Coastal-Use Zoning Plan
- Resource and Environmental Accounting
- Institutional and Legislative Requirements
- Economic Analysis
- Marine Legislation

### Who Should Participate?

- Government Planning Officers, Administrators and Technical Staff at National, Provincial and Local Levels
- Resource Managers
- ICM Project Staff
- Trainers and Researchers Involved in Coastal and Marine Environmental Activities



For further information, please contact:

**The Regional Programme Director**  
GEF/UNDP/IMO Regional Programme on  
Partnerships in Environmental Management  
for the Seas of East Asia (PEMSEA)

**Mailing Address:** P.O. Box 2502, Quezon City 1165, Philippines  
**Tel.:** (632) 920 2211 to 14 **Fax:** (632) 926 9712  
**Website:** <http://www.pemsea.org>  
**E-mail:** [info@pemsea.org](mailto:info@pemsea.org)



building capacity



# Coastal Management Initiatives in the East Asian Seas Region

The coasts of the East Asian Seas region are major social and economic development zones, contributing some 40 to 60 percent of the GDP of each country. The region's economic growth, however, has been accompanied by the deterioration of its coastal and marine environment, threatening the very sustainability of the natural resource many of its people depend on.

The region is witnessing an increased globalization of the world economy, an expansion of maritime activities, and unsustainable production and consumption patterns. In light of such hurdles, the need for countries to strive and attain that delicate mix of economic growth and environmental management in its coasts and oceans is serious. But the challenge is significant and the deadline is pressing.

International targets and priorities of action calling for integrated coastal and ocean management, such as Agenda 21, the World Summit on Sustainable Development plan of implementation and the Sustainable Development Strategy for the Seas of East Asia, further reinforce this need.

As countries in the region become steadily aware of the need to sustain its coastal areas and marine environment, coastal management initiatives throughout the region continue to rise. Tropical Coasts acknowledges the programmes striving for the preservation, protection and sustainable development of these shared coastal and marine environments in the region.



LEGEND:  
 • Area-specific Initiative  
 • Inter-provincial Initiative  
 • Nation-wide Initiative

## Brunei Darussalam

- ASEAN-USAID Coastal Resources Project (Integrated Coastal Management Plan)

## Cambodia

- "A Study for Sustainable Management of Marine and Coastal Ecosystems with support from UNDP and Canada"
- PEMSEA – Sihanoukville ICM Demonstration Site
- Targeted Coastal Zone Management in Cambodia (Danida)

## China

- ICZM Capacity Building in the Northern South China Sea (Hailing, Fangchenggang, Xiamen and Qinlan Bay)
- Jiangsu Province Coastal Zone Management Program
- Maritime Area Use Management Program
- National Project of Comprehensive Investigation in the Mainland Coastal Zone
- North China Marine Culture and Coastal Resources Management Project – Bohai Sea (ADB)
- PEMSEA – Bohai Sea Subregional Sea and Pollution Hotspots Demonstration Site
- PEMSEA – Xiamen ICM Demonstration Site
- Provincial Integrated Coastal Management Regulation (Hainan, Liaoning, Jiangsu, Guangxi, Shandong, Guangdong)
- Sustainable Coastal Resource Development Project – Fujian, Jiangsu, Shancong, Liaoning Provinces (IRBD Project)

## Indonesia

- Action Plan for the Sustainable Development of Indonesia's Marine and Coastal Resources
- ASEAN-USAID Coastal Resources Project (Integrate Management Plan for Segara Anak-anak-Cilacap, Central Java)
- Berkah-Simbiling Integrated Coastal Wetlands Project
- Coral Reef Rehabilitation Management Program (COREMAP)
- Indonesia Coastal Environment Management Planning (CEMP)
- Komodo National Park Collaborative Management Initiative
- Marine Resources Evaluation and Planning Project (MREP)
- PEMSEA – Bali ICM Demonstration Site
- PEMSEA – Sukabumi ICM Parallel Site
- Proyek Pesisir (Indonesian Coastal Resources Management Project) – Field programs in Lampung, East Kalimantan, North Sulawesi

## Japan

- Basic Plan for the Conservation of the Environment of the Seto Inland Sea
- Guideline for the Planning Concerning the Comprehensive Utilization of the Coastal Zone

## DPR Korea

- PEMSEA – Nampho ICM Demonstration Site

## Republic of Korea

- National ICM Plan
- PEMSEA – Shihwa ICM Parallel Site

## Malaysia

- ASEAN-USAID Coastal Resources Project – South Johore CR Plan
- Conservation of Biodiversity in the Marine Parks of Peninsula Malaysia
- Malaysia Integrated Coastal Zone Management Project
- Panang Integrated Coastal Zone Management Pilot Project
- PEMSEA – Port Klang ICM Demonstration Site
- Sabah Integrated Coastal Zone Management Project
- Sarawak ICZM Pilot Project

## Philippines

- Anini'y Community-based Coastal Resources Management and Development Project (UNDP-GEF Small Grants) – Antique
- Antique Integrated Area Development (CRM Component)
- Artificial Reef Development Project (Australian International Development Assistance Bureau or AIDAB) – Esperanza, Masbate
- ASEAN-USAID Coastal Resources Project – Lingayen Gulf
- Bagonbanao Marine Resources Replenishment Project (Foundation for Philippine Environment of FPE) – Eastern Samar
- Bais Bay Development (Canadian International Development Agency or CIDA)
- Baliangao Integrated Sea Sanctuary Project (FPE) – Misamis Occidental
- Catanduanes Agricultural Project (EEC)
- Catubig Estuary Integrated Resource Management Project – Laaang, Northern Samar
- Central Visayas Regional Project I – Nearshore Fisheries Component
- Coastal and Marine Biodiversity Conservation in Mindanao
- Coastal Environment Management Plan for Macajalar Bay
- Coastal Rehabilitation and Development Program – Antique
- Coastal Resources Management and Ecotourism: an inter-sectoral approach to localizing sustainable development (Ulugan Bay, Palawan)
- Community Fisheries Resources Management for Economic Development Program (Fisheries Integrated Resources Management for Economic Development of FIRMED) – Batangas, Lemery, Samar
- Community-based Coastal Zone Management of Bolinao (International Development Research Centre or IDRC) – Pangasinan
- Fisherfolk Fisheries Programs (Friedrich Naumann Foundation) – Bohol
- Fisheries Sector Program (ADB)
- Guivan Marine Resources Protection and Management Project (Philippine Business for Social Progress or PBSP) – Southeastern Samar, Mercedes Salcedo, Quinaponda, Giporlos, Laua-an, Balangiga, Guivan
- Integrated Coastal Resources Management – Batangas
- Lingayen Gulf Coastal Area Management (GOP/Office of the President)
- Local Government Cooperation for Coastal Resources Management of Altavos, Batan and New Washington (CIDA) – Aklan
- Mangrove Conservation in Bais Bay (UNDP-GEF Small Grants) – Bais, Negros Oriental
- Marinduque Coastal Area Rehabilitation Project (AIDAB)
- Marine Conservation and Development (Asia Foundation/USAID)
- Marine Conservation Project for San Salvador – Zamboales
- Marine Rehabilitation Project (AIDAB) – Talibon, Bohol
- National Integrated Protected Areas (NIPAS) – Batanes, Zamboales, Sulu
- Northern Bohol Coastal Resources Development and Management Program (FPE) – Bohol
- PAKISAMA (Oxfam-UK) – Palapag, Northern Samar
- PEMSEA – Bataan ICM Parallel Site
- PEMSEA – Batangas Bay ICM Demonstration Site
- PEMSEA – Cavite ICM Parallel Site
- PEMSEA – Manila Bay Subregional Sea and Pollution Hotspots Demonstration Site
- Preparatory and Capability Building for Dinagat Island Community Resource Management Program (FPE) – Dumagat Island, Loreto, Libjo Suriguo Del Norte
- Restoration of Ecology and Economic Advancement of Fishermen (REEF-CORALS) (FPE) – Biluan, Leyte
- Small Islands Agricultural Support Services Programme (EEC) – Cebu, Guimaras, Biliran
- Supplement to the Mindanao Rural Development Project
- Sustainable Coastal Area Development – Malampaya Sound and Taytay Bay; Prieto Diaz, Sorsogon; Butil; Cebu
- Sustainable Development of the Laguna de Bay Environment
- Tripartite Partnership for Marine and Aquatic Resources Management and Rural Development – Baybay, and Inopacan, West Leyte; Alabel, Malapatan
- USAID-Coastal Resources Management Project – Cebu, Negros Oriental, Bohol, Palawan, Davao del Sur
- Western Samar Agricultural Resources Development Program (GOP)

## Singapore

- ASEAN-USAID – Strategies for Urban Coastal Area Management (State program)

## Thailand

- ASEAN-USAID Coastal Resources Project – Dan Bon Bay and Phangnga Bay (Phuket Island Action Plan)
- Eastern Seaboard Project – Pattaya
- Indigenous People and Parks: the Surin Island Project
- PEMSEA – Gulf of Thailand Subregional Sea and Pollution Hotspots Demonstration Site
- PEMSEA – Chonburi ICM Demonstration Site
- Phangnga Bay Co-Management Programme – Phuket, Phangnga, Krabi
- Provincial Integrated Coastal Management Programs – Pak Phanang, Nakon Si Thammarat; Kung Kraben; Chantburi; Trang Province Co-management Project
- Songkhla Lake Basin Project
- URI-CRMP Project – Phuket

## Vietnam

- Assessment and Strengthening of Coastal Zone Management Institutions
- Biodiversity Conservation and Sustainable Use of the Marine Resources at Con Dao National Park
- Coastal Wetlands Protection and Development Project
- PEMSEA – Danang ICM Demonstration Site
- PEMSEA – Quang Nam ICM Parallel Site
- Vietnam Integrated Coastal Zone Management Project

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Note: The information presented here does not exclude various other coastal management initiatives undertaken at different levels – regional, national and sub-national.