The East Asian Seas Congress 2009

Partnerships At Work: Local Implementation And Good Practices

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PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON SUSTAINABLE COASTAL AND OCEAN DEVELOPMENT

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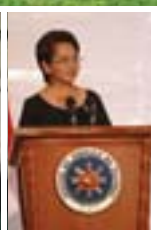



Theme 1

COASTAL AND OCEAN GOVERNANCE

EAS Congress/WP/2010/01

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Theme 1

Coastal and Ocean Governance

WORKSHOP 1: COASTAL/OCEAN POLICY AND LEGISLATION: IMPLEMENTATION AND NEW INITIATIVES

OPRF Ocean Policy Research Foundation

OPINEAR Ocean Policy Institutes Network of the East Asian Region

Chair: **Mr. Hiroshi Terashima**
Executive Director, OPRF

Co-Chair: **Dr. Chua Thia-Eng**
Chair, East Asian Seas Partnership Council
PEMSEA

The East Asian Seas Congress 2009

"Partnerships at Work: Local Implementation and Good Practices"

Manila, Philippines
23–27 November 2009

The East Asian Seas Congress 2009
"Partnerships at Work: Local Implementation and Good Practices"
Manila, Philippines, 23-27 November 2009

Theme 1: Coastal and Ocean Governance
Workshop 1: Coastal/Ocean Policy and Legislation: Implementation and New Initiatives

24 November 2009

Co-convening Agencies:
Ocean Policy Research Foundation (OPRF) and the Ocean Policy Institutes Network of the East Asian Region (OPINEAR)

Chair: Mr. Hiroshi Terashima, Executive Director, OPRF
Co-Chair: Dr. Chua Thia-Eng, Chair, East Asian Seas Partnership Council, PEMSEA

This workshop highlights the importance of coasts and oceans and discusses the various initiatives and efforts at central and local level in developing and implementing ocean and coastal policies and legislation. The three sessions provided lessons from the practical implementation related to coastal and ocean governance.

INTRODUCTION

Mr. Masahiro Akiyama, President of OPRF, welcomed the participants to the Workshop on Coastal and Ocean Policy and Legislation. He encouraged the participants to take advantage of the opportunity to benefit from the exchange of views, opinions and experiences in policymaking.

The Workshop Chair, Mr. Hiroshi Terashima, gave a brief introduction of the workshop and session 1. He said that oceans should be managed through a common framework. Countries are encouraged to adopt a national policy that addresses ocean and maritime issues in an integrated manner anchored on UNCLOS and Agenda 21. Developing and implementing a national ocean and coastal policy is not an easy task hence, the workshop aims to learn from the experiences and good practices of other countries.

SESSION 1. NATIONAL OCEAN POLICY: IMPLEMENTATION AND NEW INITIATIVES

Session 1 focuses on the national initiatives, both successes and failures, in developing national coastal/ocean policies, strategies and legislation. The session looks into the experiences and lessons learned in implementing national policies and strategies. The seven presentors in Session 1 presented their country's own experiences in national policy development and implementation although at different stages.

The New Initiative on Comprehensive Ocean Policy and the Basic Act on Ocean Policy of Japan

In his presentation, Mr. Terashima underscored the need for an ocean policy for Japan following the entry into force of UNCLOS and the adoption of Agenda 21 and WSSD. He stressed the important role played by a research institution, the Ocean Policy Research Foundation, in promoting and supporting the development of national coastal/ocean policy in Japan.

The new ocean governance regime established by UNCLOS entrusts to coastal countries the management of a vast ocean space of up to 200 nautical miles from the shoreline. He noted that Japan, consequently, is given the management of the world's 6th largest Exclusive Economic Zone and Continental Shelf. While Agenda 21 and WSSD emphasize the importance of a policy framework for ocean governance, Japan had not taken action until 2005, prompted by the initiative of OPRF.

OPRF developed and later, proposed the adoption of Japan's ocean policy and the enactment of an oceans law, which included 35 concrete measures in managing the expanded ocean space. In response, politicians and experts considering the importance of ocean issues formed the Ocean Law Study Group in 2006, which led to the enactment of the Basic Act on Ocean Policy in July 2007. The Act established a policy framework and mechanism for comprehensive ocean management. The headquarters is established within a high level of office – that of the Prime Minister, who acts as the head, with all the other ministers as members.

The First Basic Plan on Ocean Policy (Plan), adopted in March 2008, lists measures to be implemented by the Government, including the submission to CLCS of Japan's extended continental shelf. Thus far, laws have been enacted relating to seafarers and piracy, and a plan has been established relating to marine energy.

To conclude, Mr. Terashima noted: (1) institutional arrangements, including the creation of legislation, take vital role to establish and implement an comprehensive and integrated ocean/coastal policy; (2) the development and maintenance of political will is crucial to consolidate formerly separate section-based initiatives into a comprehensive and integrated ocean/coastal policy; (3) ICM is an important part of a comprehensive and integrated ocean/coastal policy as well as local government programs for coastal management.

Experiences and Lessons Learned from the Implementation of the Coastal Zones and Small Islands Management Act (2007) of Indonesia

Prof. Dr. Hasjim Djalal, highlighted the importance of having a strong high level support and endorsement for the sustainable development of coasts and small islands. National support and commitment are expressed in various legal issuances as well as in the government's proactive role in environment-related regional and international arrangements.

Indonesia is specifically concerned with the management of coastal zones and small islands due to increasing environmental destruction and threats of climate change. Scientists calculate that by 2010, Indonesia could lose some 7,408 km^2 of land from sea level rise of 0.4 m within the last several years; 30,120 km^2 by 2050 due to sea level rise of

0.56 m and up to 90,260 km^2 of land in coastal areas and low-lying small islands by 2100 with a sea level rise of 1.1 m. Other causes of concern include lack of attention to the interests and tradition of the coastal population and failure to integrate coastal zone and small islands management into a national planning system.

The national government enacted Law No. 27 in July 2007, which promotes the sustainable utilization of coastal and marine resources. Utilization must not exceed rate of regeneration and must not affect the needs of the next generation. The Minister of Marine Affairs and Fisheries issued a number of regulations relating to the conservation, management and utilization of coastal zones and small islands, management accreditation schemes, and local participation and empowerment. The government is in the process of developing laws concerning coordination and rehabilitation of coastal zones and small islands, delimitation of coastal boundaries, reclamation and disaster mitigation.

Dr. Djalal mentioned that in international forums, Indonesia is playing a proactive role. Indonesia is actively involved in the Arafura and Timor Sea Experts Forum, Sulu-Sulawesi Marine Eco-Region, as well as in various regional fisheries management organizations, such as the Indian Ocean Tuna Commission and Commission for the Conservation of Southern Bluefin Tuna. In May 2008, the Indonesian Parliament also ratified the UN Fishstock Agreement of 1995.

In sum, Dr. Djalal noted that the experiences of Indonesia highlight the importance of: (1) highest level endorsement of initiatives; (2) regional and international cooperation; (3) supporting developing states, particularly those vulnerable to climate change; (4) cooperation of stakeholders; and (5) exploring and exploiting ocean energy (waves, current, solar, etc.) to reduce the use of fossil fuels.

China's Recent Ocean Policy Initiatives and Implications

Dr. Huming Yu of the China Institute of Maritime Affairs gave an overview of the status of coastal and ocean governance in China. He noted in particular that the negative impact of rapid urbanization on China's ecosystem health deserves serious attention. He advanced that sustainable development and urbanization must consider the protection of the ecosystem. Loss of habitat and natural resources may lead to serious consequences impacting long-term socioeconomic progress.

Coastal economies in China contribute to 62% of the country's GDP while using less energy in comparison with economies in the rest of the country. China, however, has been undergoing rapid urbanization at the rate of 35.04 since 1949. There is much concern that continuous economic and infrastructure development without regard for ecosystems, may cause habitat and resource loss.

China has passed Ocean Agenda 21 and other legal and policy reforms to promote sustainable coastal and marine development and coordination of marine affairs. The Sea Area Use Law covers China's internal and territorial waters and adopts management schemes such as zoning, rights management and user-fees. The National Marine Functional Zonation (2002) divides water areas that include the contiguous zone, the Exclusive Economic Zone and the Continental Shelf into zones and ensures that ecosystem health will be considered in development projects. China's national five-year economic and social development programme of 2006 included a section on "marine resource protection and development." In the same year, the State Ocean Development Programme 2010-

2020 was launched. It adopted the watershed/catchment management principle, requiring upstream activities on land to consider their impacts on the downstream environmental carrying capacity in adjacent seas. Other features include the development and implementation of water rights-based management, market-based management and ecosystem-based management.

Dr. Yu reported that various ocean policy initiatives have been effective in reducing multiple coastal use conflicts, but not in regulating coastal reclamation activities. In some areas, coastal reclamation is being undertaken at the expense of coastal ecosystem health. In some localities, habitat protection is fighting a losing battle against the proposed reclamation projects.

Dr. Yu recommends the application of ICM as a first step for land-sea interface and ecosystem-based management. Even amid wide local implementation, ICM has yet to be adopted in national policies and programmes. Coastal Management still needs to develop a high level cross-sector ocean policy coordination and review mechanisms for coastal development projects.

Adoption of the ICM Concepts for Management of Coastal Areas in Singapore

Dr. Nigel Goh of the National Parks Board of Singapore recounted that as early as the mid-1980s, academics from the National University of Singapore had started groundwork to promote ICM in Singapore. However, misconceptions and lack of full understanding of the concept were some of the reasons that had not allowed ICM to take off, even though Singapore had implemented projects that demonstrated many basic components of ICM, like the cleanup of the Singapore River. It was only in 2008 when ICM was recognized as an imperative for Singapore.

Dr. Goh identified the following lessons from Singapore's experience in its road toward implementation of ICM: (1) preparation is crucial and early involvement and engagement of key stakeholders is essential to build stakeholder ownership and buy-in; (2) establish partnership and avoid partisanship; (3) need for persistence and follow through; and (4) trust is built when promise is delivered. Certain misconceptions on ICM include: (1) ICM involves creation of new super sector that will erode influence of existing sector; and (2) ICM is a cure for all sustainable management issues.

Dr. Goh also noted the growing regional popularity of ICM as a viable approach to coastal management. There is increasing understanding and implementation of ICM across the region, with significant contributions by PEMSEA. Dr. Goh also stressed the usefulness of the SDCA framework of PEMSEA, which he said, gave Singapore a structure on which it, and other countries can overlay their experiences and achievements, as well as identify gaps in coastal management.

Implementation of the Ocean Korea 21, Korea Coastal Zone Management Act and Basic Law on Marine and Fishery Development

Dr. Kim Sung Gwi of the Korean Maritime Institute related the recent reforms in ocean governance in the Republic of Korea. Earlier, Korea had established the Ministry of Maritime and Fisheries (MOMAF) for integrated ocean governance and passed the Coastal Zone Management Act (CZMA) and the Basic Act on Marine and Fishery Development (BAMFD). The new administration, however, integrated the Ministry of Construction and

Transportation and MOMAF to form the Ministry of Land, Transportation and Maritime Affairs. Fishery functions were transferred to the Ministry of Food, Agriculture, Forestry and Fishery.

Dr. Kim noted that the change necessitated institutional and legal reforms. He said that the revised BAMFD deleted matters on fisheries and became the basic law for marine-related matters. The National Ocean and Fishery Development Plan (OK 21) provides direction to National Ocean Policy. The first OK 21 contributed to progress in ocean industry and resource development. The second OK 21 (2011-2020) will reflect emerging environmental issues particularly global climate change and consequences of sea level rise and warming of sea waters. OK 21 will also include strategies that will support Korea's goal of becoming an ocean G7 country by 2020. To achieve this, Korea will undertake extension of ocean activity areas, redirect ocean industries and establish a sustainable ocean management system.

The CZMA of 1999 classified coastal areas into 5 zones, and 63 out of 76 local government units prepared their plans accordingly. It was revised, however, to conform to the emerging trends and issues. The revised CZMA introduced coastal waters use system which harmonized coastal lands and waters. It also seeks to prevent the radical change of natural landscape and natural scenery due to sea level rise, coastal erosion, etc., and to preserve it in the future through coastal maintenance projects.

National Policy of Vietnam for Coastal and Marine Development

Dr. Nguyen Chu Hoi of the Vietnam Administration of Seas and Islands presented an overview of the value of coastal and marine areas to Vietnam and its people. Industrial activities, tourism, aquaculture, agriculture, port and shipping, and urban expansion in Vietnam are generally concentrated in the coastal areas. Coastal and marine economy significantly contributes to the country's GDP but escalating economic activities have also resulted in overexploitation of resources. The IPCC Report also identified Vietnam as one of the countries most vulnerable to sea level rise and climate change.

Dr. Chu Hoi reported the policy responses of Vietnam. The government adopts integrated coastal management and tasked the Vietnam Administration of Seas and Islands (VASI) under Ministry of Natural Resources and Environment (MONRE) as implementing agency. Currently, Vietnam is yet to develop its integrated national coastal and marine policy. The laws on sea-related activities remain fragmented, sectoral, and not reflective of the country's international commitments to sustainable coastal and marine development.

The government has approved and enacted ICM-related policies and laws. Its first integrated governance policy in the field of coasts, seas and islands is Governmental Decree No.25/2009/ND-CP on Integrated Marine Resources Management and Environmental Protection, which became effective in May 2009. The Decree guides ICM implementation including coastal function zoning and marine spatial planning. In 2007, the Government enacted National Strategy on Vietnam's Seas towards 2020 that focuses on marine economic development in relation to other sectors. Vietnam entered into cooperation agreements to promote ICM including projects with The Netherlands, United States and the WorldFish Center. Vietnam is developing a National Strategy on Sustainable Development of Marine Resources and Environmental Protection as its contribution to the implementation of the Sustainable Development Strategy for the Seas of East Asia following the PEMSEA framework.

A National Ocean Policy for Malaysia: Rationale and Proposed Components

Ms. Cheryl Rita Kaur of the Maritime Institute of Malaysia presented the status of the development of Malaysia's National Ocean Policy. Recognizing that Malaysia's maritime sector is multifaceted, interlinked and is influenced by internal as well as external factors, she emphasized the need to develop an overarching policy that will balance the need to continue or perpetuate the provision of goods and services from the sea while promoting development and economic activities. Balanced development cannot be achieved in a fragmented or sectoral management approach.

At present, Ms. Kaur said that maritime affairs in Malaysia are generally managed in a sectoral manner based on a tiered system structured around the federal and state government, ministries and agencies and to a lesser extent, the local authorities. The management system depends on each tier of governance to perform planning and coordination, implementation, enforcement, and developmental roles within the confines of their jurisdiction. The fragmented approach, while reasonably covering sectoral issues, gives rise to multiple use conflicts.

Integrating ocean management in Malaysia will require a comprehensive oceans policy addressing sectoral as well as inter-sectoral or cross-sectoral issues. It should state clear objectives and priorities and policy responses to alleviate pressures on marine environment and resolve multiple use conflicts. Other components that need to be incorporated include conflicts resolution mechanism, effective institutional arrangements, maritime economy and new economic opportunities, human resource development, delimitation of maritime boundaries, and marine scientific research.

Session 1 Summary

Dr. Chua Thia-Eng recognized the dynamic initiatives of countries, and the region as whole, in developing and implementing coastal/ocean policy as well as steering transformation towards integration. National policies may be vital in giving common and strategic framework and guidance, implementation at the local level is crucial. The road towards sustainable development is still a long way and how to sustain current efforts remains a challenge. Mr. Terashima, in addition, emphasized that political will is the driver of ocean policy.

SESSION 2: ENABLING ENVIRONMENT FOR ICM IMPLEMENTATION

Session 2 examines how the planning and management framework of ICM could be effectively applied in an integrated manner for addressing the issues of climate change, marine pollution, biodiversity conservation, food security and freshwater resources depletion. The seven presenters shared their experiences in applying ICM tools that have been effective in promoting environmental changes in coasts and oceans.

What is ICM?

Dr. Chua Thia-Eng, Chair of the East Asian Seas Partnership Council of PEMSEA, commenced session 2 with a brief overview of ICM and proceeded to discuss PEMSEA's process-oriented framework for Sustainable Development of Coastal Areas through ICM Implementation (SDCA). He briefly explained the elements of governance as well as the different aspects of sustainable development. He related the SDCA framework to the ICM cycle for the implementation of ICM.

A Review of National and Local Initiatives in Promoting, Implementing and Scaling Up ICM Practices in the Philippines in Implementation of EO 533

The Philippines has adopted Integrated Coastal Management through Executive Order 533 (EO 533) as a national strategy to ensure the sustainable development of the country's coastal and marine resources. Director Carlo Custodio of the Coastal Marine Management Office of the Philippines Department of Environment and Natural Resources shared the status of the implementation of EO 533.

The Philippine archipelago is made up of 7,107 islands occupying a total land area of 300,000 km^2 with a coastline extending to about 36,289 km. It is rich in diversity of marine resources and where the "center of the center of marine shore fish diversity" is found. Around 54% or 1,541 of municipalities in the Philippines are coastal and where 62% of the population also lives. However, the marine and coastal environment is under increasing pressure from overexploitation, unsustainable fishing methods, aquarium and souvenir trade, invasive alien species, water pollution, reclamation, conversion to fishponds, coastal development, and human pressure due to population. The consequences of these pressures are declining fisheries productivity, loss of marine biodiversity and degradation of the coastal environment. EO 533 was adopted to reverse the trend.

Following EO 533, the DENR spearheaded the development of ICM programmes, with LGUs at the forefront. ICM coordinating mechanisms have been created in almost all LGUs. LGUs were given capacity-building training on development of coastal strategies and Marine Protected Area Plans, mangrove management, environmental monitoring, and information management. Public awareness campaigns have been mounted for a better understanding of stakeholders' shared responsibility and appreciation of coastal and marine resources.

Challenges in the implementation include conflicts in local priorities. Some LGUs refuse to allocate funds for ICM implementation. Some also have no capacity to handle information resulting in loss of important data. There is also a need to address social concerns. Land-based activities need to be developed to prevent or limit extraction and dependency on marine resources.

Involvement of the Judiciary in the Rehabilitation of Manila Bay

Atty. Antonio A. Oposa, a distinguished Environmental Lawyer, gave an overview of the value of the natural resources of Manila Bay and noted the important role of lawyers and the judiciary in environmental advocacy. The severe water pollution in Manila Bay prompted Atty. Oposa to resort to the judiciary to seek environmental justice for Manila Bay. There is reluctance on the relevant agencies to act on the problem due to short-term or shortsighted vision that their efforts would not be continued by the next administration. He said that the seeming lack of political will and action on the part of the government agencies would need to be supplanted by the will, force and power of law. The law makes it the duty of government agencies concerned to clean up a dirty body of water, like Manila Bay.

On the unprecedented act, Atty. Oposa reported that he filed a case in court in 1999 to compel the Department of Environment and Natural Resources (DENR) and relevant agencies to draw up a plan of action to clean up Manila Bay. As the case dragged on, the DENR, with the assistance of PEMSEA, prepared the Manila Bay Strategy and Manila Bay Operational Plan. In 2009, the Supreme Court finally resolved the case requiring government agencies to implement the Manila Bay Operational Plan and to report their actions every 90 days to an Advisory Committee established for the purpose of monitoring compliance, composed of Supreme Court Justice Velasco as chair, other environmental advocates and the UP-Marine Science Institute.

Workshop Co-chair, Dr. Chua Thia-Eng stated that Atty. Oposa's presentation shows an interesting case reflective of the concern and action of stakeholders in helping the government effect policy and environmental changes. On the question of dealing with various LGUs around Manila Bay, Atty. Oposa replied that the Department of Interior and Local Government exercises supervisory authority and monitors their compliance.

Nested Approach for ICM Implementation in Europe

Dr. Yves Henocque, Visiting Fellow from OPRF, presented the nested approach to ICM in Europe.

The first stage of ICM development within the EU started under the guidance of the Environment Directorate General (DG) and its ICM demonstration programme (1995-2000) which ended up with an EU ICM Recommendation in 2002. While member states and maritime regions developed their own ICM policies, the international debate went more and more "offshore" with regard to oceans conservation and maritime activities development. In 2006, the Fisheries DG merged with the Maritime Affairs DG to become the "DG Mare" which soon started preparing a green book for an EU integrated maritime policy. This is considered to be the second stage of ICM development in Europe where ICM is not any more considered in isolation but as part of national maritime policies. In its Progress Report on the EU's integrated maritime policy (2009), the Commission considers six strategic directions where:

i. integrated maritime governance must be further enhanced through more intense dialogue between the EU, Member State's Governments and coastal regions;
ii. cross-cutting tools like maritime spatial planning are considered of utmost importance to enhance economic development;
iii. definition of the boundaries of sustainability in the framework of the Marine

Strategy Framework Directive;

iv. sea-basin strategies based on cooperation with and among Member States and regions sharing a sea basin or sub-basins;
v. Europe commits to play a leading role in improving global maritime governance as in matters of piracy or destructive fishing practices; and
vi. a renewed focus on sustainable economic growth, employment and innovation.

ICM had also been put to proper perspective by integrating Water Basin to Maritime Basin. In regard to the different approaches at work, integrated water resource management (IWRM) initiatives should be organically linked to integrated coastal management (ICM) and further offshore to a form of integrated regional seas and ocean management (*yama-kawa-umi*) from national to regional and finally global levels, all underpinned by the ecosystem-based management approach

Finally, Dr. Henocque noted the important role of regional conventions in Europe, particularly, OSPAR, HELCOM and Barcelona Conventions.

Integrated Implementation of Relevant International Conventions Using ICM Planning and Management Framework

Prof. Raphael P.M. Lotilla, Executive Director of PEMSEA introduced the importance of ICM in implementing international conventions. Ms. Stella Regina Bernad of PEMSEA presented the SDCA framework and gave an overview on how the implementation of ICM through the framework will result in implementation of certain obligations under various international instruments relating to marine environment and maritime affairs. Some international instruments that intersect the SDCA framework include: (1) International Convention for the Prevention of Pollution from Ships 73/78); (2) International Convention on Civil Liability for Oil Pollution Damage; (3) International Convention on the Establishment of an International Oil Pollution Compensation Fund; (4) International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea; and (5) International Convention on Oil Pollution Preparedness, Response and Cooperation. Environmental instruments include: (1) Convention on Biological Diversity; (2) Convention on International Trade in Endangered Species; (3) Ramsar Convention on Wetlands; (4) Convention on the Conservation of Migratory Species of Wild Animals; and (5) Convention Concerning the Protection of the World Cultural and Natural Heritage.

Information Management for ICM Policy, Planning and Decision-Making

PEMSEA recognizes that access to sound information is the primary concern of policymakers. Organizations, thus, should establish an effective management information system to ensure provision of accurate, timely, reliable and quality information to support informed policy, planning and decisionmaking for sustainable development of coasts and oceans as stated in Agenda 21. Quality and useful information is important for policymakers in ensuring sound assessment of environmental issues, and evaluation and selection of options. In coastal and marine management, information is critical in reducing uncertainties, mitigating risks and avoiding environmental damages that may sometimes be irreversible. Information, to be effective, should be visible and instrumental in bringing about beneficial policy changes.

Information management involves data collection and organization, processing and transformation, and communication. Technology is a key strategic tool in all aspects of information management. Ms. Bresilda Gervacio discussed the Integrated Information Management System for Coastal and Marine Environments (IIMS) of PEMSEA, which is one of its comparative advantages. PEMSEA developed IIMS to provide a decision-support system to supply the necessary data needs. IIMS stores, retrieves and maintains a computerized database so that applications can be supported, including bridging data gaps in ocean and coastal governance. Data/information are then analyzed and packaged to formats that are understood by the users. Based on PEMSEA's framework information are packaged into various reports, which are communicated to users such as managers, policy makers and the stakeholders, in general. Among these reports are the environmental profiles and atlases, environmental risk assessments, state of the coasts, natural resource damage assessments, integrated environmental monitoring and others. These reports are important inputs in the development of coastal and river basin strategies and integrated land- and sea-use zoning.

Ms. Gervacio traced the steps and experiences on how PEMSEA's proactive approach to information management has made the invisible information visible in the light of the policy changes in Manila Bay and other ICM sites in the Philippines. As a result of earlier studies, Manila Bay came up with the Manila Bay Declaration, Coastal Strategy, the Manila Bay Operational Plan and integrated land-and sea-use zoning plan of Bataan. The activities also contributed to the issuance of Executive Order 533. The case of Manila Bay supports the view that quality and relevant information, if processed into useful materials for policymakers, will help shape policies to support ICM implementation.

Promoting Marine Education in Japanese Elementary and Middle Schools

Mr. Manabu Tamura of Japan's Ministry of Education shared the efforts of Japan to improve its education system. He said that Japan promotes marine education, even to children as early as elementary and middle schools, to ensure that citizens will have better understanding of, and deeper interests in the oceans, UNCLOS and other international agreements for the sustainable development and use of the oceans. In particular, the Basic Plan on Ocean Policy (Basic Plan) requires states to promote interdisciplinary education in universities to enhance human resources and build their capacity and knowledge to address issues regarding oceans.

School curriculum in Japan contains marine-related subjects including Fisheries. The Basic Plan requires improvement of the Fisheries curriculum to include practical education through on-site practices. More training vessels need be equipped and improved at high schools. To improve marine education, Mr. Tamura cited several proposals that included revision of marine curriculum, improving learning environments as well as outside support systems, promoting research and developing leadership capacity.

LEGISLATORS' DIALOGUE

The Legislators' Dialogue provided a venue for exchange of ideas among legislators and policymakers. The heart of the dialogue is the next legislative or policy action agenda that will contribute to the enabling environment for coastal and ocean policy development and implementation as well as wider application of the ICM approach for integrated implementation of relevant international conventions.

Philippine Senator Pia Cayetano facilitated the dialogue with PEMSEA Executive Director, Prof. Lotilla, co-facilitating. Participating in the dialogue are Senator Mean Som An from Cambodia, former Senator Je Jong Geel of the Republic of Korea and Hon. Nguyen Van Cu of Vietnam Administration of Seas and Islands.

Climate Change Challenges and National Response

Senator Cayetano's first question related to climate changes and policy and legislative responses. Senator Som An replied that Cambodia has adopted legislations with sanctions such as laws on environment, protected area, water resource management, forestry and biosafety. Senator Som An admitted however that the legislative cannot do controlling on its own but would need the support of all stakeholders. Local government agencies should coordinate with national agencies. Cambodia is also intensifying information dissemination to increase people's awareness. Consultation with the public is usually undertaken to ensure that all their concerns are being addressed.

RO Korea, on the other hand, noted that there is yet no legislation specifically on climate change although there are various laws that address climate change such as the Ocean Law and Coastal Zone Management Act. Its Ocean Policy, though, is shifting from development to conservation. Due to the increasing loss of its wetlands and natural coastlines because of reclamation activities, RO Korea passed the Wetland Conservation Act.

Vietnam is one of the countries most vulnerable to climate change. Thus, coastal/ocean policies play an important role. Administrator Van Cu said that the Prime Minister recently approved the program to assess the impact of climate change, promote science and technology, and identify solutions. Specifically, the program will develop scenarios of climate change and sea level rise, look into international cooperation, and develop an action plan within the framework of national strategy program.

The Philippines, on the other hand, related that the President has just signed into Law Republic Act 9729 or the Climate Change Act, which tasked the development of a framework strategy and the creation of the Climate Change Commission. Other legislative responses to Climate Change include the establishment of the Inter-Agency Committee on Climate Change, and the issuance of Executive Order 533 on ICM. Geographically, there may be difficulty addressing the particular needs of 7,107 islands.

ICM Agency and Role of Local Government

Agencies that are in charge of ICM vary in each country, but local implementation is generally given to the local government units (LGUs). In Cambodia, the Ministry of Environment is the lead agency, but the local authority has the mandate to protect and conserve the environment and to directly respond to the issues of climate change.

Cambodia created the Committee on Climate Change composed of nine agencies, and a technical subcommittee. The same is true in RO Korea, where the Ministry of Land Transportation and Marine Affairs is the lead agency but LGU implements at the local level. About 60 out of the 76 LGUs in RO Korea implement ICM. There is difficulty, however, in the coordination between central and local government.

Financial Mechanisms

Funding is important in the implementation of policies, plans and programs. Vietnam, RO Korea, Philippines and Cambodia all provide specific budget allocation for their environmental activities. However, in all cases, government budget is not sufficient. For Cambodia, the limited budget results in the prioritization of activities. Philippines tap the private sector to participate in environmental activities. A good example is that industries like the Ayala Group of Companies are committed to Sustainable Development as part of their social responsibility to adopt environmental projects through the public-private partnership.

Policy and Legal Support

In law development and policymaking, there is a need for further support from stakeholders to ensure that all concerns are addressed. One of the challenges raised is how to involve the scientists. Senator Cayetano said that there is a bill to protect the interest of scientists and their royalties. She also said that the private sector should also be involved. RO Korea cited its experience in the establishment of Marine Protected Areas. The central government called on the local government, particularly the mayors, to engage the local community in the planning of activities.

CONCLUSION

Countries in the region are developing and/or implementing their respective national ocean/coastal policies based on UNCLOS, although there may be variations in terms of coverage. National ocean/coastal policy should address emerging issues, such as climate change, integrated management of land and sea, and economic development.

ICM is also an important part of an integrated ocean/coastal policy and coastal management programs, particularly of local governments. Sustainability of ICM programs must be addressed. Strong political will is important to be able to integrate sectoral initiatives into a national ocean/coastal policy. It should be materialized into institutional arrangements, and legislation.

While national ocean/coastal policies vary, they also have similar features and commonalities based on the international character of oceans. Thus, exchange of information and knowledge among countries is important. Communication and knowledge sharing between policymakers, stakeholders and scientists are important in ocean/coastal policy and ICM development and implementation. Marine education in schools and public outreach play an important role in raising awareness on ocean/coastal policy.

RECOMMENDATIONS

The workshop made the following recommendations:

1. Facilitate, through the PEMSEA cooperative mechanism, exchange of information, knowledge and experience among countries on the development and implementing of national ocean/coastal policies;
2. Nest ICM in an integrated ocean/coastal policy;
3. Enhance political will, through the efforts of ocean society, in order to expand the circle of politicians who understand the importance of comprehensive and integrated ocean/coastal policy and to encourage materialization of this political will into institutional arrangements and legislation;
4. Incorporate in national ocean/coastal policy such measures that address emerging issues, such as climate change, integrated management of land and sea, and economic development;
5. Implement ICM within a framework for funding to be more accessible;
6. Enhance communication and knowledge sharing between policymakers, stakeholders and scientists;
7. Promote marine education at schools and public outreach;
8. Harmonize ICM policy and implementation in national and local governments.

EAS Congress/WP/2010/02

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Theme 1

Coastal and Ocean Governance

WORKSHOP 2: CONTRIBUTIONS OF MARINE ECONOMIC SECTORS TO REGIONAL AND NATIONAL GDP IN AN UNCERTAIN CLIMATE

Partnerships in Environmental Management for the Seas of East Asia

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Theme 1: Coastal and Ocean Governance
Workshop 2: Contributions of Marine Economic Sectors to Regional and National GDP in an Uncertain Climate

23 November 2009

Convening Agency:
PEMSEA

Chair:
Dr. Cielito Habito, Professor and Director, Ateneo Center for Economic Research and Development, Ateneo De Manila University, Philippines

Co-Chair:
Mr. Sam Baird, former National Oceans Advisor, Fisheries and Oceans Canada

Facilitator and Report author:
Dr. Alistair McIlgorm, Project consultant, PEMSEA

INTRODUCTION BY THE WORKSHOP CHAIR

The economic contribution of marine activities is considered to be an increasingly important part of the economy and international trade within and across East Asian Seas (EAS) countries.

Given the archipelagic nature of the South East Asian economies and the rapid development of coastal and marine areas in the EAS economies, it appears that the approaches to most of the national economic and development plans are still land-based.

How will these marine economic sectors continue to contribute sustainably to regional and national GDPs at these levels, as the impacts of climate change shape the economics of the region in the coming century?

With countries forecasting further development of their marine sectors, the challenging question is not only how countries will achieve their planned objectives, but also how they can ensure that such development will serve as an enabling vehicle for sustainable development, uplifting of the quality of life, addressing the current issues of mitigation and adaptation policies and strategies in response to climate change, and the movement of populations from rural hinterlands to the coasts.

Keynote address:
The Challenges and Benefits of Measuring the Contribution of the Marine Economy in an Uncertain Climate
Dr. Charles Colgan, University of Southern Maine, USA

Dr. Colgan delivered a keynote address by Video. The address was specially prepared for the session and covered the past work on measuring marine economies, particularly the approaches used by the National Ocean Economic Program (NOEP www.oceaneconomics.org) and the challenges of economic uncertainty and climate change impacts on the coastal economy.

SESSION 1: CONTRIBUTION OF THE MARINE SECTORS IN EAST AND SOUTHEAST ASIAN ECONOMIES

The following presentations were made by Congress participants who had contributed to the recent edition of *Tropical Coasts* on *The Marine Economy in Times of Change.*

- **Malaysia:** Dr. Nazery Khalid, Center for Marine Economics and Industry
  This presentation focused on the changes in the South Asia maritime industries sector and their implications for measuring the marine economy.

- **Philippines:** Dr. Romulo A. Virola, Secretary General, National Statistical Coordination Board
  The presentation outlined the data available in the Philippines and some of the features, such as a high number of overseas workers in marine industries, which are unique to the Philippines marine economy. Dr Virola could see a core role for national Statistical Agencies in compiling marine economic data and the need for this to be recognised and resourced.

- **RO Korea:** Dr. Chul-Oh Shin, Korea Maritime Institute
  Dr. Shin illustrated the usefulness of an Input /output modelling approach to revealing the marine economy and its linkages. Linkage estimates indicate the connectedness of marine industries with land based industries and quantify the benefits of investment in the marine industries for the whole economy.

- **Japan:** Dr. Hiroyuki Nakahara, Research Institute for Ocean Economics, Yokohama National University, Japan
  Dr. Nakahara illustrated the Japanese approach to marine category issues and outlined the previous Japanese studies of the marine economy as part of a decade long ocean planning process.

- **PR China:** Prof. Liu Rongzi, China Institute of Marine Affairs, State Oceanic Administration
  The presentation displayed a short overview of the comprehensive studies undertaken by the China Marine Statistical Division which have completed national measurement of the marine economy as part of their national planning during the past 10 years.

- **Indonesia**: Dr. Agus Heri Purnomo, Center of Marine and Fisheries Social Economic Research, Ministry of Maritime Affairs and Fisheries (MOMAF), Indonesia

  This study illustrated how an Input/ Output model could estimate the size of the marine economy and its component sectors in Indonesia.

The following presenters were unable to attend the EAS Congress workshop:

- **Thailand:** Dr. Cherdchinda Chotiyaputta, Department of Marine and Coastal Resources, Ministry of Natural Resources and Environment (MONRE), Thailand.

- **Vietnam:** Mr. Nguyen Khac Duc, Vietnam Administration of Seas and Islands.

Facilitated discussion

Since the speakers had prepared formal marine economic reviews, which have been published in the recent edition *of Tropical Coasts*, July 2009, the short PowerPoint presentations were to set the scene for a discussion across the session participants on some important issues, which the facilitator has identified from the work of the participants.

What have the studies got in Common?

Discussions indicated that the information for oil and gas, fisheries and aquaculture and shipping/marine transport are generally available in most economies. However additional data on government expenditure and services, construction and marine tourism are less consistent in their availability and composition.

What are the challenges in defining and measuring the marine sector contribution?

Discussions indicated that the availability of data and the communication of what is included, or not included, in estimates should be made much clearer. It takes time to determine many of these data consistency issues. Malaysia indicated that the problem in ports and shipping information, for example, lies in the definition of throughput and destination of ships. The tourism is another sector where disaggregation to marine-related sub-categories needs further work. Similarly information on marine construction in China cannot be obtained from their national accounts directly.

Mr. Sam Baird confirmed that recent Canadian studies have sought to identify category composition, assessment of data quality, and which categories are included and excluded. He also recommended other possible sources of data: industry surveys, environmental impact assessments and other supporting sources. Japan and Indonesia cited the usefulness of input-output (I-O) tables to avoid double counting. However, Mr. Baird briefly discussed the limitations which arise from I-O tables being static for a particular year, and usually only updated every five years or so.

Who are the users of this information?

Policymakers, planners and managers at the national and sectoral levels need this information for direction to guide the actions and management interventions that need to be taken: to further develop the marine sectors or continue supporting them; to plan and implement measures to mitigate environmental impacts (loss of habitats; health costs, etc.) resulting from these sectors; to plan and implement climate change mitigation and adaptation measures.

SESSION 2: TOWARDS A COMMON FRAMEWORK FOR MEASURING THE MARINE ECONOMY

Presentation

The APEC Framework for Measuring the Marine Economy**,** Prof. Alistair Mcllgorm, PEMSEA

This presentation briefly outlined the origin of the need to develop a series of consistent categories for measuring marine economies. A report was followed by the APEC Marine Resource Conservation Working Group, Marine Economy project and the Easter Island Workshop of economic experts in 2004. From the workshop the participants agreed on nine categories of industry activity that should be a guideline for future studies in the APEC economies.

Facilitated discussion

Question - How does each national study compare to the APEC profile?

The APEC marine economy category profile was pre-circulated to speakers/participants as a guide for the development of their *Tropical Coasts* article. Major categories, such as fisheries and aquaculture, had most in common. Some issues were raised about oil and gas (extraction value versus input manufacturing), ports and shipping (marine transport and own account issues). Marine tourism was noted to vary and manufacturing and marine construction had potential differences.

Question - How can the marine economy profiles be more complete?

The APEC categories provide a common framework, but there are different issues that need to be clarified within these headings. Comparisons of more detailed category and national account codes would be useful.

Question - What steps are needed to standardize marine economic profiling across the region?

It would take time to examine each category and national account codes, but could be done as a collaborative project. Initially the large-scale categories as proposed by APEC could be used and adapted. For example: Mr. Baird proposed that a reduced set of categories may capture the majority of the economic benefits generated by the marine sector. It is better to refine the methodology to have good quality information for the key sectors than to spread oneself too thin in covering too many sectors with poor data quality. One should remain mindful that the following five sectors probably account for greater than 90% of the total value in most nations: Fisheries and Aquaculture; Marine Transportation; Marine Tourism; Offshore Oil and Gas; and Government Services [Including National Defence].

SESSION 3: HOW CAN MARINE ECONOMIC VALUATION CONTRIBUTE TO NATIONAL POLICY?

Presentations

How Has Measuring the Marine Economy Helped Canada?

Mr. Sam Baird, Formerly with Fisheries and Oceans, Canada

The presentation outlines the past studies made by Canadian researchers at a national level and alluded to a significant number of past sub-national studies. The latest national study in 2008 has revealed the need for estimates of sector values to stipulate the quality of data and estimate the degree of unreported data. This issue of what we are measuring and what is not being measured is critical for policymaking.

The Marine Economy and Environmental Values

Ms. Maria Corazon Ebarvia, PEMSEA

This study examined market and non-market economic values in the marine arena. A range of different values can be estimated. Past research on environment and natural resource accounting as part of the national income accounts (GDP) in the Philippines and Indonesia, and the economic and environmental values associated with habitats and marine areas in the Malacca Straits and Manila Bay Area were presented. The approach used by PEMSEA to value marine economies can be expanded to further include environmental values. Applications include integrated land- and sea-use plan and zoning; investment plans; contingency plans for oil spills and other disasters; climate change mitigation and climate-proofing and adaptation measures.

How Can Valuing the Marine Economy Contribute to Policy and Managing National Wealth in Uncertain Times?

Prof. Alistair McIlgorm, PEMSEA

The challenges of evaluating the impacts of the global financial crisis on the marine economy were illustrated. Impacts range from reduction in sales of high-priced seafood, alteration of marine tourism and reduction in capital investment (marine tourism property and capital goods). Climate change will impact the coasts, resource locations and reveal economic vulnerability as the key part of impact analysis (e.g., a power station, or petroleum refinery on low coastal land). The Marine Economy framework can be used to appraise economic vulnerability. It can also be used in a disaggregated county level framework to assess coastal community impacts (see NOEP and the Manila Bay study).

Facilitated Discussion

Question - How will marine economic valuation contribute to the sustainable development of the marine sectors, climate change mitigation and adaptation, and the protection of marine environment and resources?

The presentations illustrated that the marine economic framework is a useful background for more site specific environmental valuation issues. Moreover, they provide the rationale and basis for national strategy to address the protection of marine environment and resources and sustainable development of marine sectors – which contribute a significant part of the national and local economy – in the face of critical issues, such as the income gap in coastal areas, financial crisis and climate change.

Question - Is there a national and regional need for future project development to improve framework and methodologies? Who are the potential development partners that can provide support for this project?

The role of PEMSEA in producing the recent *Tropical Coast* edition was acknowledged as a significant initiative. The East Asian Seas framework with PEMSEA was seen as providing the platform with funding sought from international and regional organizations. The program then moved to discuss future steps.

INTRODUCTION AND REVIEW OF PROJECT PROPOSAL FOR FUTURE STUDY/PROJECT DEVELOPMENT TO IMPROVE FRAMEWORK AND METHODOLOGY

The following two overheads were presented for discussion. The Objectives

Objectives of a future project proposal

1. To develop a regionally consistent marine economy profile for each SE Asian economy; (see next slide on regional progress so far)
2. Pilot the use of Marine Economic data in marine planning;
3. Measure the coastal economy of each nation in a regionally consistent way; and
4. Demonstrate the use of marine valuation in assessing economic growth, sustainability and climate change impacts.

The following slide illustrated the progress to date in the region.

Regional progress

1. Complete marine sector estimate (% GDP) – Japan, PR China, Indonesia and the RO Korea. (Vietnam*) (4-5)
2. Industry Category level – Philippines and Singapore* (2) Malaysia (ext.), Thailand (ext.)
3. No involvement yet – Cambodia, DPR Korea, Laos PDR, and Timor-Leste
4. Chinese Taipei and Russia are unknown?

The four proposed project areas presented were discussed and there was general agreement that these were significant issues for the future.

- The discussion in the session showed support for having a regionally consistent profiling framework.
- Discussion then focussed on adaption of the APEC framework to either more intensive analysis of sectoral needs (shipping) OR to appraising whether a profile with less categories could achieve the same political outcome? Thus fewer categories could be studied in more depth.
- This discussion overshadowed the identification of the coastal economy for an analogous study program to the ocean economy, however often participants were referring to the coastal economy. Estimating the coastal economy is a logical addition to existing marine economic work and appraising impacts on coastal industries.
- There was acknowledgement of the benefit of examining the use of marine economic data in the policy areas. This has yet to be addressed in most economies. Demonstrating the usefulness of marine valuation in assessing economic growth, sustainability and climate change impacts was again seen as being desirable, examples having been provided in the session.

- Most participants were occupied with the initial measurement issues and the policy and change measurement issues were taken as a logical use of the information.

Workshop Conclusion/Summary

At the time of the session the following information needs were stated:

- Current and potential contributions of the marine economic sector to national GDPs;

- Approaches, methodologies and experiences in defining the marine sectors in the various economies across the region;

- Developing a common framework and approach to marine economic valuation
  Is there a need for a common methodology? (Or should we start with developing criteria for selecting the categories/sectors and subsectors? Once we have selected the sectors to be included (from the APEC list), we can assess data availability and quality of data e.g., complete, good, underestimated, etc.);

- Contribution of marine economic valuation to national policy and actions for the sustainable development of the marine sectors, protection of the marine environment and resources, and climate proofing of marine sector projects.
  - Who are the users of the data?
  - What information is needed for policymaking, planning and management action?
  - What are the important applications of the information on marine economic and environmental values?

Workshop outcomes and proposed projects

It is recommended that future projects are in the following areas:

1. Encourage the completion of national marine economic profiles in each of the East Asian economies;

2. Demonstrate how marine economic studies can improve marine-related policymaking;

3. Evaluate what marine economic information is required to address environmental adaptation measures.

SUMMARY OF THE WORKSHOP FOR THE EAS CONGRESS REPORTING PURPOSES

After the workshop concluded, the following three overheads were submitted for inclusion in the EASC feedback sessions.

Description of the Workshop

- Presentations of research by regional PEMSEA member states into the economic value of their marine-related activities;
- The APEC framework assured regional consistency; and
- Consideration of future national capacity to value marine environmental services and resulting impacts on national marine economies in uncertain times.

Conclusions

- We are underestimating the size of the marine economy due to several problems
  - Difficulty in sourcing data; estimation approaches
  - Criteria needed for selection of sectors/categories and subsectors
  - Home production and informal sector not accounted for
  - Valuation of nonmarket values and damages not included
- Improve understanding of the needs of the final users of the information
  - The purpose is to inform and support marine-related policymaking and decisionmaking through identifying the economic and environmental linkages.
- Assess if standardization of methodology is the required approach at the moment (given the different approaches in estimating GDP across the countries).
  - We can start with selecting the categories/sub-sectors and assess data completeness – more useful for policymakers.

Recommendations

- Encourage the completion of national marine economic profiles in each of the East Asian economies
  - Select the categories/sectors and subsectors to be included.
- Demonstrate how marine economic studies can improve marine-related policymaking and planning
  - Current and potential contributions of the marine economic sector to national GDPs
  - Contribution of economic valuation of coastal and marine resources, environmental damages and potential impacts of climate change to policy, planning and action taking
- Evaluate what marine economic information is required to address sustainable development of marine areas/sectors, and support environmental management interventions and climate change mitigation and adaptation measures.
  - What information would be useful for policymaking and planning – to improve quality of life.

eas Congress 2009

Theme 1

Coastal and Ocean Governance

WORKSHOP 3: CONTINENTAL SHELF: POST-MAY 2009 PERSPECTIVES

23 November 2009

Partnerships in Environmental Management for the Seas of East Asia

Chair: **Mr. Galo Carrera**
Commission on the Limits of the Continental Shelf

Co-Chair: **Ms. Valentina Germani**
United Nations Office of Legal Affairs/Division for Ocean Affairs and the Laws of the Sea (DOALOS)

Prof. Raphael P.M. Lotilla
Executive Director
PEMSEA Resource Facility
PEMSEA

The East Asian Seas Congress 2009

"Partnerships at Work: Local Implementation and Good Practices"

Manila, Philippines
23–27 November 2009

The East Asian Seas Congress 2009
"Partnerships at Work: Local Implementation and Good Practices"
Manila, Philippines, 23-27 November 2009

Theme 1: Coastal and Ocean Governance
Workshop 3: Continental Shelf: Post-May 2009 Perspectives

23 November 2009

Convening Agency:
PEMSEA

Chair:
Dr. Galo Carrera, Commission on the Limits of the Continental Shelf

Co-Chairs:
Ms. Valentina Germani, United Nations Office of Legal Affairs/
Division for Ocean Affairs and the Laws of the Sea (DOALOS)

Prof. Raphael P.M. Lotilla, Executive Director,
PEMSEA Resource Facility, PEMSEA

INTRODUCTION

This workshop on the national submissions of continental shelf extensions is one of the most important features of the East Asian Seas Congress. In many instances in the past, disputes over land territory pose threats to peace and stability. Quieting of opposing claims and settlement of maritime boundaries will promote regional peace and stability, which is a prerequisite to cooperation in the region to achieve any objective.

The United Nations Convention on the Law of the Sea (UNCLOS), which entered into force in 1994, established a new order in the regime of seas. Article 76 of the Convention requires coastal states to establish the outer limits of their continental margin where the margin extends beyond 200 nautical miles from its baselines from which the breadth of the territorial sea is measured. The UN's Commission on the Limits of the Continental Shelf (Commission) is mandated to investigate the impact of Article 76 and to facilitate its implementation. So far, the Commission has received 51 submissions and 44 preliminary information notes.

The workshop looks at the impacts of national submissions from the perspectives of the academe and ocean policy experts. Discussion on issues of maritime boundaries is a necessary academic exercise because undeniably, these may impact peace and stability, and future cooperation in the Seas of East Asia. Mr. Galo Carrera, a member of the

Commission, chairs the workshop with Ms. Valentina Germani from the UN DOALOS, as co-chair.

SESSION 1. COUNTRY SUBMISSIONS ON THE CONTINENTAL SHELF LIMITS AND PROSPECTS FOR COOPERATIVE ARRANGEMENTS IN THE EAST ASIAN SEAS

Japan's Submission to the CLCS

Mr. Masahiro Akiyama of OPRF presented the status of Japan's submission to the CLCS. Japan, an ocean state with a total land area of 380,000 km^2, has the world's 6th longest coastline of about 35,000 km and the 6th largest combined territorial sea and EEZ area of 4,470,000 km^2. In 1996, Japan ratified the UNCLOS and was subject to the May 2009 deadline for submissions of the limits of its continental shelf. After conducting survey and analysis, Japan submitted its extended continental shelf limits to the Commission in November 2008.

Japan's submission identified seven (7) regions of its continental shelf, which covers around 740,000 km^2. Its claim is based on its exercise of sovereignty over Okinotori Shima. The submission has potential overlap on relevant maritime delimitations with the United States of America and the Republic of Palau. *Note Verbales* have been exchanged between the Peoples' Republic of China and the Republic of Korea and Japan.

Two important points were raised in the ensuing discussion. First, there is a need for Japan to support its stand that Okinotori Shima has vegetation before it carried out reclamation. Otherwise, it was raised that as a submerged rock, Okinatori Shima may not be used as basis to generate entitlement to continental shelf. The second point is that, considering the potential overlaps with U.S. and Palau, Japan is currently discussing with their governments for possible cooperation.

Continental Shelf Claims in the South China Sea: A Critique

Jay L. Batongbacal of the University of the Philippines - Asian Center presented the overlapping claims in the South China Sea. He showed graphically the extent of Philippine claims that have possible overlaps with the claims of other countries in the South China Sea.

In May 2009, Vietnam and Malaysia filed with the Commission their respective submissions of their extended continental shelf in the South China Sea. The submissions prompted responses from PR China and the Philippines, which were duly rejoined. The submissions for extended continental shelf in the South China Sea, as expected, have introduced some complications to the South China Sea issues among the littoral ASEAN States and China.

In his presentation, Mr. Batongbacal examined the sequence of events and official statements made by the relevant countries and offered some commentaries and critique of their wider implications, especially as they relate to the resolution of the long-standing issues in the South China Sea. In sum, he noted that though technically plausible, the Philippine submission for South China Sea is presently hindered by internal political issues particularly about PD 1596, lack of political will, and lack of understanding and/or

misconceptions about UNCLOS, international law, and municipal law. He stressed that the non-settlement of the North Borneo issue poses a serious obstacle between the Philippines and Malaysia.

The Vietnamese/Malaysian Joint Submission is less provocative and more open to international cooperation; it regards islands in the South China Sea as not projecting their own EEZ/CS. The technical exercise of delineation at least clarifies some aspects of jurisdictional issues, assuming there is no change in status of South China Sea islands in the future. The submissions may be a missed opportunity for greater cooperation among SEA neighbors because of the Philippines' adverse stance vis-à-vis Vietnam and Malaysia. China's "historic war claim" forges deadlock between Extended Continental Shelf claims.

Coastal States in the South China Sea and the Submission of the Outer Limits of the Continental Shelves

Dr. Nguyen Hong Thao of the National University of Hanoi provided a background of the Extended Continental Shelf Submission of Vietnam. He stated that under the Rules of Procedure on the submission of the outer limits of continental shelf, coastal states may make final (full), partial or joint Submission of the outer limits of their continental shelves to the United Nations. With the preliminary information on the outer limits of their continental shelves, coastal states are asked to indicate if there are objections or disputes in the area of submission.

Dr. Thao outlined the procedures for the determination of the outer limits of continental shelf of coastal states. Quoting Article 76, paragraph 8 of the 1982 UNCLOS, Dr. Thao said that coastal states may conduct scientific surveys and collect data, which may be the basis of their Submission. The Commission will consider the scientific merits of the Submission and make its recommendations. The coastal states and the Commission would then cooperate to incorporate the recommendations into the Submission. Finally, the data and maps of the agreed outer limits of the continental shelves will have to be deposited by the coastal states to the Secretary General of the United Nations for registration.

Dr. Thao traced in the maps the extent of the Submissions of the Outer Limits of Continental Shelves by various coastal States in the South China Sea. Brunei, Indonesia, Philippines, Vietnam, and the joint Submission of Vietnam, Malaysia and China are among the submissions relating to the South China Sea. Dr. Thao clarified, though, that the Commission has no competence to resolve the disputed areas. He recommended that concerned states should follow the UNCLOS. Specifically, he encouraged parties to have serious discussions about the island status in Art. 121 (3) of UNCLOS and the outer limit of the Extended Continental Shelf beyond 200 nautical miles as well as clarify their claim limits in accordance with the UNCLOS's scientific and neutral criteria. Dr. Thao stressed the importance of partnership — talking and listening to partners —– and working together on the basis of respect for equal and mutual interests, and for peace and security in the region.

SESSION 2

Session 2 pertains to cooperative arrangements and collaboration of states particularly with opposing claims. Dr. Galo Carrera made a presentation on Annex I of the Rules of Procedures of the Commission. Participating in the discussion are experts and representatives of the academe, namely, Prof. Merlin Magallona of the University of the Philippines, Dr. Hasjim Djalal of the Indonesia International Studies Institute, Dr. Kuen-chen Fu, of the Shanghai Jiao Tong University Law School, Prof. Robert Beckman from the University of Singapore, and Dr. Kwon Suk Jae of the Korea Ocean Research and Development Institute.

Annex I of the Rules of Procedure of Commission on the Limits of the Continental Shelf (Commission) and Its Implementation by States

Dr. Galo Carrera stated at the first instance that his presentation is based on his personal views and do not necessarily reflect the views of the Commission. Dr. Carrera traced the development of the Rules of Procedure of the Commission until its adoption on 17 April 2008. The focus of his presentation is Annex 1 of the Rules of Procedures relating to dispute resolution between states with opposing or adjacent claims and other cases of unresolved land or maritime disputes. Dr. Carrera stressed, however, that under UNCLOS, the actions of the Commission do not prejudice matters relating to delimitation of boundaries between States with opposite or adjacent coasts.

Annex I finds support from Rule 46 of the Rules of Procedure of the Commission. Coastal States are directed to submit disputes in accordance with Annex I. Dr. Carrera said that Annex I recognizes that states have the competence with respect to disputes that may arise in connection with the establishment of the outer limits of their continental shelf. Coastal states may submit a portion of its continental shelf or a joint or separate submission. In making the submissions, states should inform the Commission of the actual or potential disputes or make an assurance that the submission will not prejudice matters relating to the delimitation of boundaries between States. If a dispute exists, the Commission will not consider and qualify a submission made by any State that is relevant to the dispute. However, the Commission may consider one or more submissions in the areas under dispute provided; prior consent is given by all States that are parties to such dispute.

Dr. Carrera reported that the Commission received a total of 48 submissions, of which 28 are partial Submissions while five are joint Submissions. Annex 1 contemplates only undelimited cases where there is a land and/or maritime dispute. Article 76 applies when there are no disputes. However, requests for postponement of consideration of Submission as well as disagreement concerning interpretation of one or more provisions in the Convention are outside the scope of Annex I.

Because of the numerous *Notes Verbale* received, the Commission has decided to defer further consideration of the Submissions and the *Notes Verbale*. States may wish to take advantage of available means, including practical arrangements as contained in Annex I to its Rules of Procedures and take account of developments throughout the intervening period. Dr. Carrera reiterated that resolution of territorial disputes rests on States alone. He enjoined States to tone down their *Notes Verbale* by stating specific objections. States should be open to opportunities for discussion in order to resolve disputes.

Discussions

The discussants, Prof. Robert Beckman, Dr. Hasjim Djalal, Dr. Kuen-chen Fu, Dr. Kwon Suk Jae, and Prof. Merlin Magallona, gave their comments after the presentation of Mr. Galo-Carrera. They all agree that maritime boundary issues are critical in the South China Sea and in achieving peace and stability in the Seas of East Asia region. Likewise, they conceded that the resolution of boundary disputes is really within the competence of the States and not the Commission. Prof. Magallona, however, said that the findings and recommendations of the Commission may serve as basis for resolving disputes. The submission of continental shelf extension presents an opportunity for countries to sit down and resolve their boundary disputes in a spirit of cooperation and regionalization.

MAJOR CONCLUSIONS AND RECOMMENDATIONS

The submissions of continental shelf extensions that involve issues of maritime boundaries and overlapping claims will impact on the Seas of East Asia region. States are encouraged to find beneficial arrangements and greater cooperation for sustainable development of their shared marine areas.

- Peace and stability are prerequisites to any objectives of cooperation.
- Only the states can resolve their boundary disputes.
- Submissions brought to the front controversies in the Seas of East Asia region, particularly, the South China Sea.
- Resulting boundary disputes should be used as opportunity for renewed dialogue between neighboring states.
- Technical work on submissions may assist in clarifying various state positions that can be opportunity for step forward in the political process.
- Explore possibilities for joint cooperation zones for undisputed islands through inclusive dialogue.
- Promote continued dialogues and discussion and minimize the tone of discussion among states.

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Theme 1

Coastal and Ocean Governance

WORKSHOP 4: ADDRESSING TRANSBOUNDARY ISSUES THROUGH REGIONAL/ SUBREGIONAL SEAS COOPERATION: INITIATIVES IN EAST ASIA

23 November 2009

Conservation International – Philippines

United Nations Environment Programme (UNEP) – Coordinating Body on the Seas of East Asia (COBSEA)

United Nations Development Programme (UNDP) Bangkok

Chair: **Mr. Ivan Zadavsky**
Senior Water Resources Management Specialist
Global Environment facility

The East Asian Seas Congress 2009

"Partnerships at Work: Local Implementation and Good Practices"

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Manila, Philippines, 23-27 November 2009

Theme 1: Coastal and Ocean Governance
Workshop 4: Addressing Transboundary Issues through Regional/Subregional Seas Cooperation: Initiatives in East Asia

23 November 2009

Co-Convening Agencies:
Conservation International - Philippines; Coordinating Body on the Seas of East Asia; United Nations Development Programme, Bangkok

Chair:
Mr. Ivan Zavadsky,
Senior Water Resources Management Specialist,
Global Environment Facility

INTRODUCTION

In the East Asia Seas (EAS) region, a number of regional and subregional transboundary projects on marine and coastal environmental management have been progressing or initiated recently, each with a goal of developing a subregional Strategic Action Plan (SAP), led by concerned countries, donor agencies, UN organizations, international NGOs, etc.

In reviewing these initiatives and projects, the EAS Partnership Council of PEMSEA noted the need for collaboration between these initiatives and projects/programs for creating synergies and sharing knowledge in order to reduce possible duplication of effort, inefficient use of resources, and limited sharing of knowledge, experience, skills and tools. The need for an effective coordination mechanism for the region among the various projects/programmes and implementing agencies/organizations has also noted by the Council.

With this realization, a workshop was convened during the EAS Congress 2009 to discuss on various transboundary environmental issues and their implementing mechanisms, good practices and areas of collaboration among the programmes and stakeholders involved.

In the workshop, a number of regional, subregional and international organizations including UNDP and UNEP and initiatives including South China Sea, Yellow Sea, COBSEA, NOWPAP, PEMSEA, Conservation International Philippines, Sulu-Sulawesi Seas, Arafura-Timor Seas, Coral Triangle Initiative and Mangroves for the

Future presented their works, discussed barriers and opportunities, and identified ways to move forward.

Overview of Regional Transboundary Initiatives, Projects and Programmes
Dr. Anna Tengberg, UNDP Regional Centre in Bangkok

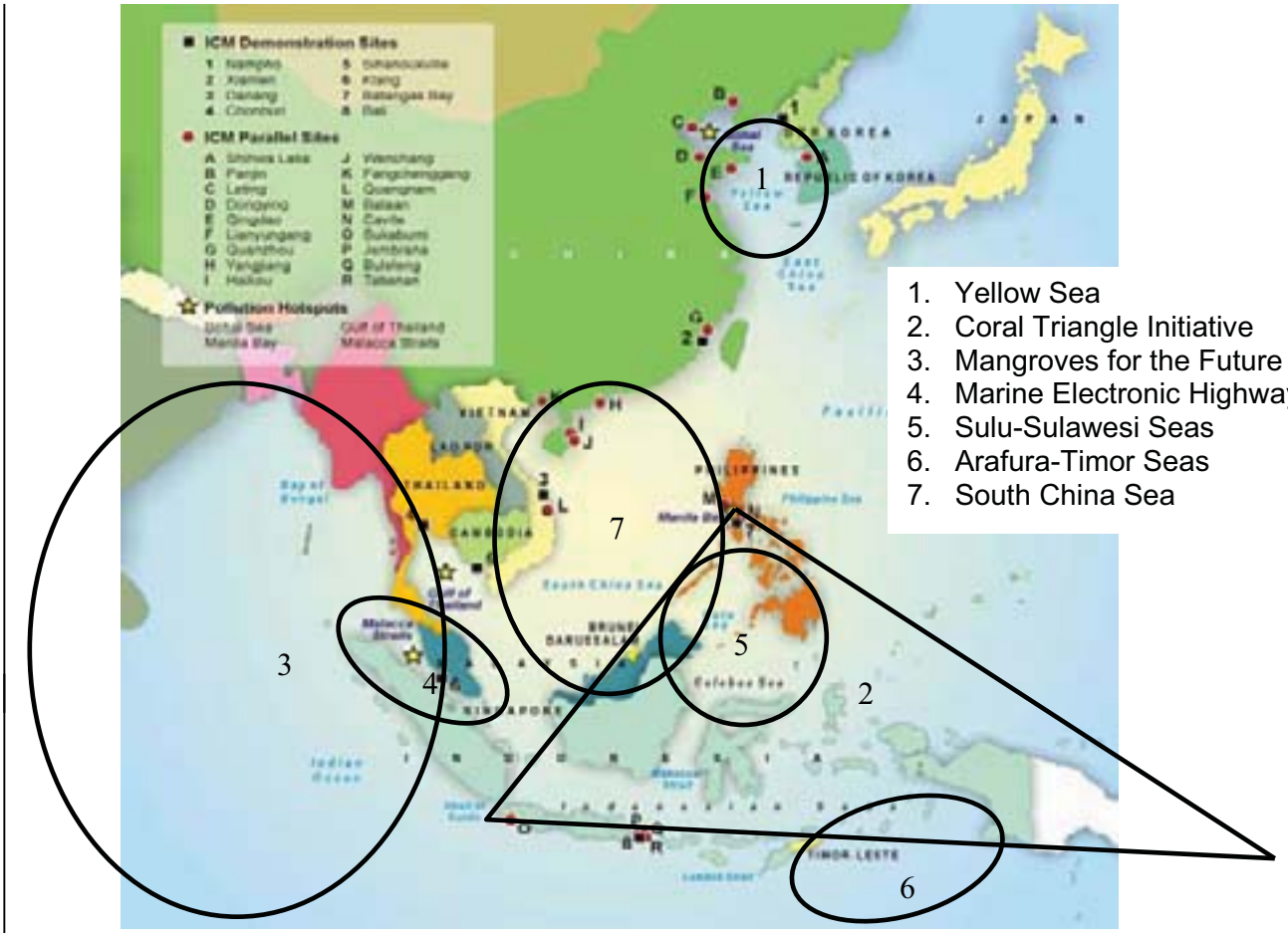
The seas of East Asia comprise six subregional seas, namely: Yellow Sea, East China Sea, South China Sea, Sulu-Celebes Seas and Indonesian Seas. These seas become centers of environmental challenges such as: coastal ocean pollution and nutrient over-enrichment, habitat degradation (e.g., seagrasses, corals and mangroves), overfishing (e.g., IUU fishing), biodiversity loss, and climate change. Hence, the seas over the past few decades have been the focus of numerous regional and transboundary initiatives (see Figure 1).

The regional initiatives include PEMSEA, Coordinating Body for the Seas of East Asia (COBSEA), Northwest Pacific Action Plan (NOWPAP), Global Programme of Action or the Protection of the Marine Environment from Land-Based Activities (GPA), Coral Triangle Initiative (CTI), Mangroves for the Future (MFF) and sub-regional initiatives/projects include South China Sea and Gulf of Thailand, Yellow Sea Large Marine Ecosystem (YSLME), Arafura-Timor Seas Ecosystem, Coastal and Marine Resource Management in the CTI, West Pacific East Asia Fisheries Management Project and Strategies for Fisheries Bycatch Management.

The management frameworks used by these initiatives include integrated coastal management (PEMSEA, etc.), transboundary diagnostic analysis (TDA) and strategic action programme (TDA/SAP) (all LME projects), Fisheries Refugia (COBSEA), and Marine Protected Areas. ICM starts at the local level and gradually builds regional impact while TDA/SAP tends to start at the regional level before initiating action at the local level through demonstration projects. There is complex overlap of mandates and geographical coverage between different initiatives at the regional level in the region. Hence, there is urgent need for East Asian Seas countries to come together and agree on a common platform at the regional level for collaboration on marine and coastal management in order to maximize impacts and avoid duplication of efforts among programmes and projects.

The total funding to the region during the last decade was estimated at about US$100 million a year due to accelerated financial flow. However, additional annual investments to be mobilized to cover the cost of adaptation to climate change would reach to US$11 billion globally (UNFCCC, IPCC). Given that the EAS region is significantly under-funded, at least US$100 million to US$1 billion would be required. Possible financing mechanisms for the realization of funding increase may include: economic instruments such as emission charges/fees/taxes, user charges, carbon markets; and climate change adaptation funds such as the Special Climate Change Fund (SCCF) and Least Developed Country Fund (LDCF). The stakeholders are encouraged to access new and innovative sources of funding to upscale investments in the East Asian Seas.

Figure 1. Geographic map of the Seas of East Asia with some existing transboundary initiatives, programmes and projects.



VARIOUS CASE STUDIES OF REGIONAL PROGRAMMES AND INITIATIVES

The following is summary of activities and key areas of work of some of regional and sub-regional initiatives.

Sulu-Sulawesi: Subregional Sea Governance and Good Practices

Ms. Theresa Mundita S. Lim, Director, Protected Area and Wildlife Bureau (PAWB), Department of Environment and Natural Resources (DENR) Philippines

The Sulu-Sulawesi Marine Ecoregion (SSME) covers the world's center of marine biodiversity which is of global economic importance in fisheries, tourism and marine transportation thanks to its productive coastal and marine ecosystems. For the protection of this valuable ecosystem, the SSME Tri-National Initiative was launched in 2001 with the agreement between the three participating countries: Indonesia, Malaysia and Philippines.

The governing body of the SSME, the Tri-National Committee (TNC) has three sub-committees on: threatened, charismatic and migratory species; sustainable fisheries; and marine protected area and networks, each having its own TOR and work plan. The first GEF project within the SSME, Sulu-Celebes Sea Sustainable Fisheries Project (2009 to 2013, about US$ 6.2 million), is launching this year.

The TNC has various good practices in governance including: legal personality, consensus-building approaches (practiced in ASEAN), multistakeholder engagement, member country ownership and partnering with various supporting organizations including GTZ, ASEAN, the World Bank, Asian Development Bank, USAID, and European Union. The TNC endeavors to maintain relevance of SSME to regional actions by linking with regional programs and initiatives for complementation; and respects political sensitivities of each participating country. In this way, the SSME has become the first seascape recognized in the CTI regional plan of action.

Successful Examples in Addressing Transboundary Marine Environmental Problems in the Yellow Sea

Mr. Yihang Jiang, Programme Manager, UNDP/GEF YSLME

Fishery has been one of the major sectors in the Yellow Sea providing billions for food and livelihood. Confronted with various challenges such as frequent harmful algal and jellyfish blooms and water pollution, captured biomass has declined significantly, for example, more than 40% reduction between 1960s and 1980s. Mean size and age at capture also showed sign of significant stress to fish species in the Yellow Sea.

Protecting fish stocks in Yellow Sea is a daunting task with difficulties in forecasting fish stocks and requiring an ecosystem-based management approach. As such, rebuilding fish stocks is a component of the YSLME Strategic Action Programs (SAP) which aims at 30% reduction in fishing effort in the Yellow Sea. However, reduction in capture fisheries will lead to significant shortage of food coming from the sea. To solve this shortage and reduce environmental impact of aquaculture which is mainly caused by excessive feeding of fish food, the concept of Integrated Multi-Trophic Aquaculture (IMTA) has been developed in the Yellow Sea area.

The IMTA breeds various cultured species such as fish, filter feeder, echinoderm (sea cucumber, etc.) and seaweed in a system and physically arranges these cultured species in a way that species will utilize the feed fully in order to minimize fish food waste. Also, another technique called the heterotrophic shrimp culture, which requires no water exchange and less fishmeal and in turn produces high yield of disease-free shrimp, has been developed. These innovative techniques in aquaculture are in operation at demonstration sites. Results are yet to be released.

Through the development of SAPs, the YSLME was able to identify and address sensitive issues on fisheries in the Yellow Sea by conducting two joint cruises and recommend innovative solutions.

Addressing the Transboundary Challenge of Marine Litter in East Asia by Two UNEP Regional Seas Programmes
Dr. Ellik Adler, Coordinator, COBSEA and Dr. Alexander Tkalin, Coordinator, NOWPAP

Marine litter (ML) is a multisectoral and transboundary problem and known as the most exposed problem to the wide public. ML is usually composed of fishing nets and ropes, Styrofoam floats, plastic containers and life articles. Hundred million tons of plastics are gathered in the mid-Pacific Ocean area in the form of trash vortex/gyre. ML causes kills of more than 100,000 marine mammals every year, acts as platform for invasive species and requires a large cost for clean up. Despite its increasing trend, management of marine litter has been staggered by the lack of: scientific data, international instruments, implementation and enforcement of existing regulations, and awareness.

Recognizing the seriousness of the problem, UNEP set out the Global Initiative on Marine Litter. Mandated by a General Assembly decision, the initiative developed 12 regional action plans on ML and published the UNEP Global Review, UNEP/FAO Report on Abandoned and Lost Fishing Gear, UNEP/IOC Global Guidelines on Survey and Monitoring of ML and two studies with Asia Pacific Economic Cooperation (APEC) and Institute for European Environmental Policy (IEEP) on the use of economic and market-based instruments. Main challenges identified for the Global Initiative include sustainability of the initiative and cooperation with global partners such as the International Maritime Organization (IMO), Food and Agriculture Organization (FAO), Intergovernmental Oceanographic Commission (IOC), UNEP Division of Technology, Industry and Economics (DTIE), and Basel. In this line, setting out a GEF project with focus on lost fishing gear, economic instruments and global monitoring will be necessary.

For the EAS region, UNEP's two regional organizations, i.e., COBSEA and NOWPAP, have been actively implementing the ML programs covering the organization of workshops, meetings and International Coastal Cleanup campaigns, establishing data bases, developing monitoring guidelines and producing publications such as regional overviews on ML, posters and brochures. Through the implementation of regional action plans on marine litter (RAP MALI), the two regional organizations are hoping to contribute to solving the global problem of ML.

The Coral Triangle Initiative Summit and World Ocean Conference with Highlights on the Arafura and Timor Seas Ecosystem Actions
Dr. Tonny Wagey, Indonesia

The World Ocean Conference (WOC) culminated in the Manado Ocean Declaration which stresses the importance of the ocean to climate change adaptation. The Coral Triangle Initiative (CTI) Summit on coral reefs, fisheries and food security was attended by all six Heads of States of participating countries. The main purpose of WOC is to discuss problems that the CTI region is facing including: overfishing, blast fishing, cyanide fishing, population growth and habitat conversion, temperature stress by changing climate causing coral bleaching. To arrest these detrimental trends, CTI has set five primary goals including: (i) priority seascapes designate and effectively managed; (ii) ecosystem approach to management of fisheries and other marine resources fully applied; (iii) marine protected areas established and effectively managed; (iv) climate change adaptation measures achieved; and (v) threatened species status improving.

Under the umbrella of CTI, there are a number of subregional projects developed or under development including: Coastal and Marine Resources Management – Pacific (ADB-led, $25.8 million), Coastal and Marine Resources Management – Southeast Asia (ADB-led, $88 million), Sulu-Sulawesi Sea Large Marine Ecosystem and Adjacent area Sustainable Fisheries Management (UNDP-led, $6.8 million), Arafura and Timor Seas Ecosystem Action Program (UNDP-led, $8.7 million), and West Pacific-East Asia Oceanic Fisheries Management Project (UNDP-led, $3.3 million).

The Arafura-Timor Seas Ecosystem Action (ATSEA) Project has been developed to overcome threats and problems in the Arafura-Timor Seas, including inadequate scientific knowledge and understanding, weak institutional framework for regional governance and management of biodiversity values and threats. The ATSEA project has five components: TDA and SAP; Pilot Project; Regional Cooperation Mechanism; and Project Coordination and Management. For the successful implementation of ATSEA project, the CTI will need to be linked to other subregional programs and countries are encouraged to develop and implement their national programs taking into consideration the transboundary nature of the issues. Also, subregional programs will benefit from the existing programs and all relevant stakeholders should be involved for effective implementation and sustainable financing resources.

The UNEP/GEF South China Sea Project: Initiatives for Regional Cooperation
Dr. Vo Si Tuan and Dr. John Pernetta

The UNEP/GEF South China Sea (SCS) Project was implemented from 2002 to 2008 on four major areas: habitat loss and degradation, overexploitation of fisheries, land-based pollution, and regional coordination. Having seven participating countries (Cambodia, China, Indonesia, Malaysia, Philippines, Thailand, and Vietnam), the project produced a number of successful demonstration sites and major documents. As one of main key lessons from the project implementation, separation of scientific and technical issues from political decisionmaking is important and that individuals are playing key roles in the success or failure of inter-Ministry Committees at the national level. Also, ownership by participating countries and strong participation of national and regional experts in implementation of project tasks are identified as important.

The SCS project established 18 habitats as priority sites out of 136 identified sites. Selection of sites has been conducted in a transparent process utilizing various indicators and statistical methods. Hence, cooperation at the local level through the demonstration site network was encouraged. The project also linked habitat and fisheries management for developing fisheries refugia network. Concept of fisheries refugia was well-formulated through stakeholder consultations, developing guidelines and information portal and conducting regional training on refugia science and management.

Sharing data through developing regional database and establishment of long-term management framework for marine environment of the SCS were also important outcomes of the project. Key elements of the framework include: MOU by environment ministers of participating countries, SAP, subregional and bi-lateral agreements, and National Action Plans. The framework will be founded on sound science, appropriate economic valuations, knowledge-based decisionmaking, and adaptive management, among others.

PEMSEA: From a Regional Programme to a Sustainable Mechanism
Prof. Tony La Viña, Philippines

PEMSEA has been operational in the region for more than 14 years as a regional project of GEF, implemented by UNDP. It has evolved from its first phase of GEF/UNDP/IMO Regional Programme on the Prevention and Management of Marine Pollution in the East Asian (MPP-EAS, 1994-1999) and second phase of UNDP/GEF/IMO Regional Programme on Building Partnerships in Environmental Management for the Seas of East Asia (PEMSEA, 1999-2009) to a regional coordinating mechanism in the current phase (2008-2011). Major milestones for the transformation from a project to a regional coordinating mechanism include: (i) establishing partnership (1999-2007); (ii) securing regional commitment and cooperation (2003); (iii) organization of regional mechanism (2006); and (iv) recognition of legal personality (2009).

From 1994 to 2007, as a regional project, PEMSEA established partnership with participating countries practicing and developing ICM as a management framework for marine pollution and sustainable development. During this period, a number of demonstration and parallel sites for ICM implementation have been established, with major successes in Xiamen (PR China) and Batangas (Philippines). In 2003, the countries of the East Asian Sea region adopted a regional marine strategy, the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA) which acts as the platform for regional collaboration. In 2006, the countries of the region committed to implement the SDS-SEA by launching a regional mechanism, known as PEMSEA, which has four major operating arms: EAS Partnership Council, EAS Congress, PEMSEA Resource Facility, and Regional Partnership Fund.

As an imperative step towards a self-sustaining regional mechanism, legal personality has been pursued and recognized in 2009 during the EAS Congress 2009. Acquiring legal personality of an organization is a policy trend, supported by the UN and other donor agencies, and is to overcome difficulties in funding programs that do not have a legal basis. Now that PEMSEA has become an international organization with recognized legal personality, it is possible to contract, receive funds and other contributions, own and manage resources. The legal personality will uplift the regional mechanism to a different level for effective coordination within the region.

UNDP/GEF/SOA Project on Biodiversity Management in the Coastal Area of China's South Sea
Prof. Zhou Quilin and Mr. Yang Shengyun, China

UNDP/GEF/SOA Project on Biodiversity Management in the Coastal Area of China's South Sea (SCCBD) is a joint project of UNDP, GEF, State Oceanic Administration (SOA), National Oceanic and Atmospheric Administration (NOAA) and local governments. Having completed its first phase (2005-2009) with GEF support (US$3.7 million), the project is now moving into its second phase with China's own funding focusing on the dissemination of best practices and models in coastal areas of China. With the objective of conserving and sustainable use of coastal and marine biological diversity in four sites along China's coastline, China is expecting stakeholders to apply innovative and adaptive marine protected area (MPA) and integrated coastal management (ICM) practices to mitigate and prevent threats to coastal ecosystem integrity, upon successful completion of the project.

The project has four demonstration sites: Nanji, Guangxi, Dongshao-Nan'an and Sanya. In Nanji Site, the development of MPA and integrated coastal zone management are well incorporated into the township socioeconomic planning. In Guangxi Site, regional ecosystem-based and community-based management approaches have been encouraged. In Dongshao-Nan'an Site, a new model for inter-provincial cooperation on ICM and biodiversity conservation has been built with the signing of an inter-provincial action plan by leaders of the two provinces. In Sanya Site, by increasing investment to sewage treatment, the development of co-management with local tourism industries, pooling funding from various channels such as from the industries and the government agencies and the transplantation of coral reefs have been conducted.

It was noted that strong political will of local governments and good partnership between local government and funding institutions through forming National Project Steering Committee are the key to the success of the project. Also, the establishment of China's Training and Education Center for Marine Biodiversity Conservation and Ecosystem Management has formed an important window for the development of regional training and education and the dissemination of lessons learnt and demonstration models from the project.

VIEWS OF EXPERTS AND PLENARY

Invited experts and workshop participants discussed and provided their views on the regional collaboration following the workshop guide questions: (i) creating synergies and complementarities among the regional and subregional organizations and initiatives; (ii) replicating good practices; (iii) enhancing regional coordination among programmes and initiatives; and (iv) areas of collaboration.

Panelists:

- Prof. Huasheng Hong, Xiamen University, PR China
- Dr. Jihyun Lee, Convention on Biological Diversity Secretariat
- Mrs. Wahyu Indraningsih, Ministry of environment, Indonesia

It was noted that there is a need to demonstrate good practices on coordination among regional initiatives within the region through developing such mechanisms. At the same time, regional and subregional initiatives of the EAS region need to strengthen their bottom-up or top-down coordination approaches in order to implement their programs and projects efficiently. Cooperation among the initiatives on the management methodologies such as ICM, ICARM and SAP is also an important activity to promote.

Other view on the regional coordination is that regional and subregional programs should be helpful to the region before thinking about coordination between programs. As an important basis for judging whether the programs of initiatives are helpful in the region, a framework of systematic gap analysis which will provide useful information of actions and inactions by the regional and subregional initiatives will need to be developed. PEMSEA has already initiated this approach but receiving responses from other initiatives and programmes is difficult.

For efficient sharing of information, each regional initiative may participate in meetings of other initiatives to facilitate exchange of information on best practices, avoid duplication of efforts, and explore areas of cooperation. Also, any organization in the region may organize a one day meeting to discuss commonalities and complementarities among regional programmes each year taking the example of FAO which convened a meeting to discuss the link between fishery and conservation of habitat. It was also noted that all GEF-funded projects are required to have a platform for exchange of information.

The countries of the region should pursue the regional benefits and common goals rather than national benefits and should not rely sorely on international funding, rather pursue innovative ways of finding and mobilize resources to finance regional cooperation. In this sense, coordination is not an option but an imperative to mobilize resources globally and use effectively in the region.

The role of participating national government is crucial. Strengthening coordination capacity at the national and local levels in order to support the achievement of regional targets and for the replication of best practices in coastal management will be necessary. Country coordination sometimes is significantly hindered by the difference in focal agencies within a country as these varied focal points for different regional initiatives incline to work independently from each other. Hence, these focal agencies will need to be coordinated with each other to avoid duplication and complement activities.

A key consideration for the future endeavor of the regional and subregional initiatives is climate change adaptation issues as they are closely related to coastal resource management. Identifying gaps on addressing climate change impacts to marine and coastal biodiversity is also important.

CONCLUSIONS

Through the paper presentation, panel and plenary discussions, the workshop participants drew the following conclusions:

- Coordination is necessary for efficient use of available resources among initiatives and there is a need for a good platform for collaboration in a structured and coherent way, bearing in mind that countries are the key stakeholders;

- Methodological approaches vary: top down vs. bottom up: TDA and SAP, MPAs, Fisheries Refugia, ICM, Ecosystem-based Management, etc. Information on those and lessons learned are not sufficiently organized for optimal cooperation and for ease of use by countries and other stakeholders;

- Commitments from the governments should be recognized and reflected in the regional and sub-regional programmes and initiatives – what countries want to do to address the transboundary issues, with clear goals to be transformed to national implementation plans of action;

- The Sustainable Development Strategy for the Seas of East Asia (SDS-SEA) can serve as an umbrella document for regional collaboration. Ongoing and new

programmes may revisit it in order to identify new challenges and gaps so that programmes can be accounted towards the SDS-SEA;

- Climate change considerations and its impacts need to be incorporated into plans, actions and activities of the regional initiatives;

- Inter-sectoral and inter-ministerial coordination within the countries (e.g., fisheries and environment departments) is critically important for coherence between ICM and sustainable fisheries management and habitat protection;

- Ownership of the initiatives by the country is critically important.

RECOMMENDATIONS

- Sharing of information and experience through an organized, structured and cohesive information management mechanism for identifying the needs of countries and initiatives aiming at improving coordination and efficient use of resources should be developed and promoted;

- To start this process a review of all ongoing initiatives and programs to be conducted as soon as possible, utilizing PEMSEA exercises which are underway, and other similar exercises;

- Develop and promote better mechanisms for identification and replication of best practices from pilots and demonstration sites and for dissemination of lessons learned;

- Consolidate and organize existing distribution channels of good practices and lessons learned such as through GEF IW:LEARN;

- Consider the use of SDS-SEA as a platform for collaboration within the region. Promote ICM including fisheries and habitat management at national and local levels as the operational tool of the SDS-SEA;

- Mutual invitations and cross-participations in regional events could be used for coordination and information exchange;

- All partners are encouraged to strive for a better compatibility of data; standard methodologies for monitoring and assessment and common format for data exchange should be promoted aiming at data harmonization for better coordination of interventions;

- Stronger mobilization of government resources is needed and countries are encouraged to increasingly provide resources for cooperating with each other.

Annex 1

THEME 1 WORKSHOP 4 (23 November 2009)

ADDRESSING TRANSBOUNDARY ISSUES THROUGH REGIONAL/SUBREGIONAL SEAS COOPERATION: INITIATIVES IN EAST ASIA

Co-conveners: CI Philippines, COBSEA, UNDP Regional Center in Bangkok

Workshop Chair: Mr. Ivan Zavadsky, GEF

PROVISIONAL PROGRAMME

TIME	ACTIVITY/ PRESENTATION
14:00 – 14:10	Opening Remarks • Mr. Ivan Zavadsky, GEF, Workshop Chair
14:10 – 14:30	Theme Paper Presentation: Overview on Regional Transboundary Initiatives, Projects, and Programmes (status and funding opportunities) • Dr. Anna Tengberg, UNDP Regional Centre in Bangkok
Part 1: Case Studies: regional governance for addressing transboundary issues	
14:30 – 14:50	Sulu-Sulawesi: Subregional Sea Governance and Good Practices • Director Mundita Lim, PAWB, DENR
14:50 – 15:10	Successful Examples in Addressing Transboundary Marine Environmental Problems in the Yellow Sea • Mr. Yihang Jiang, YSLME
15:10 – 15:30	Addressing the Transboundary Challenge of Marine Litter in East Asia by two UNEP Regional Seas Programmes • Dr. Ellik Adler, COBSEA and Dr. Alexander Tkalin, NOWPAP
15:30 – 15:50	The Coral Triangle Initiative Summit and World Ocean Conference With Highlights on the Arafura and Timor Seas Ecosystem Actions • Dr. Tonny Wagey, Indonesia
15:50 – 16:10	Coffee Break
16:10 – 16:30	The UNEP/GEF South China Sea Project: Initiatives for Regional Cooperation • Dr. Vo Si Tuan, Vietnam
16:30 – 16:50	PEMSEA: From a Regional Programme to a Sustainable Mechanism • Prof. Tony La Viña, Philippines
16:50 – 17:10	UNDP/GEF/SOA Project on Biodiversity Management in the Coastal Area of China's South Sea • Prof. Zhou Quilin and Mr. Yang Shengyun, China
Part 2: Panel Discussion and Open Forum	
17:10 – 18:00	Panel Discussion and Open Discussion • Facilitator: Mr. Ivan Zavadsky • suggested questions: ○ Creating synergies and complementarities among

	the regional organizations and initiatives; ○ Replication of good practices; ○ Enhancing regional coordination among programmes and initiatives; and ○ Areas of collaboration • Panelist: ○ Prof. Huasheng Hong, COMI, Xiamen Univ. ○ Mrs. Wahyu Indraningsih, MOE, Indonesia ○ Dr. Jihyun Lee, CBD Secretariat
18:00 – 18:30	Recommendation and Wrap up • Facilitators: Mr. Ivan Zavadsky • Workshop Chair and participants will prepare a summary of the workshop and culminate in 2 to 3 key recommendations of the workshop, to be reported to the Ministers

eas Congress 2009

Theme 1

Coastal and Ocean Governance

WORKSHOP 5:
THE SCIENCE IN ECOSYSTEM-BASED MANAGEMENT

25 November 2009

Coastal and Ocean Management Institute
Xiamen University

Plymouth Marine Laboratory (PML)

Chairs: **Prof. Stephen de Mora**
Chief Executive
Plymouth Marine Laboratory (PML), UK

Prof. Huasheng Hong
Xiamen University, China

Co-Chairs: **Prof. Xiongzhi Xue**
Vice President
Coastal and Ocean Management Institute
Xiamen University

Mr. Michael Kendall
Senior Scientist, PML, UK

Prof. Trevor Platt
Executive Director, POGO Secretariat, PML, UK

The East Asian Seas Congress 2009

"Partnerships at Work: Local Implementation and Good Practices"

Manila, Philippines
23–27 November 2009

The East Asian Seas Congress 2009
"Partnerships at Work: Local Implementation and Good Practices"
Manila, Philippines, 23-27 November 2009

Theme 1: Coastal and Ocean Governance
Workshop 5: The Science in Ecosystem-based Management

25 November 2009

Co-Convening Agencies:
Coastal and Ocean Management Institute, Xiamen University; and
Plymouth Marine Laboratory

Chairs:
Professor Stephen de Mora, Chief Executive, Plymouth Marine Laboratory (PML), UK;
Professor Huasheng Hong, Professor, Xiamen University, China;
Professor Gil S. Jacinto, Professor, Marine Science Institute, University of the Philippines

Co-Chairs:
Professor Xiongzhi Xue, Vice President, Coastal and Ocean Management Institute, Xiamen University;
Mr. Michael Kendall, Senior Scientist, PML, UK; Professor Trevor Platt, Executive Director, POGO Secretariat, PML, UK

ADOPTING AN INTEGRATED, ECOSYSTEM-BASED MANAGEMENT APPROACH TO ADDRESSING CHALLENGES IN MARINE ECOSYSTEMS

The coastal and marine environment of East Asia is confronted with similar, if not more complex, management challenges as many other regions in the world. Ecosystem-based management (EBM) is widely advocated as a way of coping with multiple simultaneous pressures that are causing a decline in the state of the marine ecosystems. EBM requires a *sound science* supporting an adaptive management framework, undertakes *integrated assessments* to inform management decisions and to regulate multiple human pressures and *coordinate and integrate* national and international monitoring programs.

Management efforts in the region should be, therefore, geared toward the adoption of an integrated, EBM approach and capitalize on the availability of scientific knowledge and technological advances from within and outside the region, including experiences in engaging wider participation of stakeholders in the scientific process.

This report presents the highlights of the papers presented in the Workshop on the Science in Ecosystem-based Management, including the conclusions and recommendations

drawn from the discussions. It covers, in particular, the key initiatives and experiences in integrating science into policy and management decisions. It also discusses innovative approaches to monitor ecosystem changes due to human interventions, identify effective strategies for knowledge transfer, packaging and communicating scientific information to support policy formulation. It also illustrates how various programs that adopt an ecosystem-based approach, which takes into account ecosystem knowledge and uncertainties, transboundary influences and balancing societal and environmental objectives, have contributed to promoting interdisciplinary research, which is essential for sustainable development of coastal seas.

PART 1: INTEGRATING SCIENCE INTO POLICY AND MANAGEMENT DECISIONS

There is growing global consensus, that responsible stewardship of the oceans and coastal ecosystems should have an ecosystem basis and that system integrity should be maintained. EBM requires knowledge base, implying the need for both *in situ* and remotely-sensed observations. A suite of ecological indicators that can be applied to serially detect changes in the ecosystem are required to aid EBM. Such indicators can be used to provide an objective, concise and cost-effective description of ecosystem status. The ideal characteristics of ecological indicators for the pelagic ecosystem are presented in Box 1.

Box 1. Ideal characteristics of pelagic indicators (Platt and Sathyendranath, 2008).

1. Represent a well-understood and widely-accepted ecosystem property.
2. Quantifiable unambiguously in standard units.
3. Measurable rapidly at low incremental cost.
4. Repeat frequency compatible with intrinsic time scale of properties under study.
5. Measurable at a variety of scales.
6. Possibility to create long (multi-decadal) time series.

The Partnership for Observation of the Global Oceans (POGO) contributes to the requirements for EBM observations by promoting reliable and sustained ocean observations to describe the state of the oceans, understand how they function and how they might respond to global changes and to help predict their future states. Remote sensing, which meets the requirements of speed, resolution, repeat frequency and cost-effectiveness was presented as an important tool to develop ecological indicators of the pelagic system that are useful for EBM. For instance, some ecological indicators that can be developed from remotely-sensed data on ocean color deal with the seasonal cycle of phytoplankton biomass, production and loss terms, annual production, new production, ratio of production to respiration, spatial variances in phytoplankton biomass and production, spatial distribution of phytoplankton functional types, delineation of ecological provinces and phytoplankton size structure (Platt and Sathyendranath, 2008).

In contrast to monitoring ecosystem changes at the global scale, community-based monitoring (CBM) has been advocated in Thailand through the Tsunami Impacts in Laem Son Project. The CBM was advocated as a low-cost alternative to monitor and protect the environment since high quality and high resolution scientific monitoring

Box 2. To be useful community-based monitoring needs:

1. Clear purpose and integration with policy drivers;
2. Scientific validation;
3. Formal process for training, data collection, synthesis and feedback;
4. Awareness at government level of its limitations; and
5. Recognition that it does not replace scientific monitoring.

may be costly at the national and local levels. The project aimed to determine the extent of recovery from the 2004 tsunami in terms of biodiversity and ecosystem function by training local scientists and communities to measure changes in intertidal biological assemblages. Box 2 presents some elements that need to be considered for CBM to be effective. The study suggested that the value of CBM can be maximized if it is linked to existing data, data is collected by government employees and the academe, with national or regional scale data centers, and that routine scientific monitoring be conducted in areas where disturbance is greatest. It was also mentioned that government buy-in is needed to establish continuity and enthusiasm.

The integrated concept of humans-in-nature called social-ecological systems, where interactions occur at multiple temporal and spatial scales within a given ecosystem, is applied in the river-coastal stream of Siak River Basin in Indonesia, a 300-km long river that traverses five municipalities in Riau Province and drains into Malacca Straits. The river-coastal stream is ecologically connected and changes to this connectivity would affect the adaptability of the social agents related to the ecosystem. Siak River is impacted by pollution and other forms of environmental degradation, which have influence on the social system, particularly in terms of livelihood development of fishers along the area. The study provided examples on the capacity of the fisher communities in the Siak River Basin in adapting to the changes in the social-ecological system. Identification of best policy options that are designed to achieve sustainability of the Siak River Basin is the ultimate goal of the initiative as well as understanding the need for integration in the context of integrated coastal management (ICM).

The complementarities and divergence of two management approaches and frameworks, EBM and ICM, in terms of concept, limitations and application with special reference to the experiences in East Asia were explored. ICM and EBM complement each other in terms of operational modality where both adopt an integrated and ecosystem-based management approach to managing the living resources and protecting ecosystem functions and services. They differ, on the other hand, in terms of priority, focus,

Box 3. ICM implementation in Xiamen, China.

1. First cycle: new legislation, strategic environmental management plan, pollution reduction
2. Second cycle: sea use zoning, habitat restoration
3. Third cycle: transboundary issues including upstream pollution
4. Effective involvement of scientific expert group
5. Demonstration site for 10 additional ICM sites in China

outcome and area coverage. For instance, EBM focuses on ecosystem protection and management by taking the entire ecosystem such as the management of large marine ecosystems. ICM on the other hand may start with a small geographical scale within the administrative boundary of a local government and gradually scale up to cover a wider geographic area or ecosystem. Regardless of these differences, the application of these management approaches is necessary to ensure a comprehensive approach in addressing environmental (including ecosystem) concerns at the local level as well as in large bays, gulfs and coastal seas. The experiences of Xiamen, PR China, illustrated the application of ICM in the first and second cycles and moving towards EBM on the third cycle (Box 3). The role of national policy in ensuring that integration of local ICM programs with national and regional EBM programs was highlighted.

The following are the conclusions and recommendations drawn from the discussions.

Conclusions

- Ecological indicators are an essential component for developing ecosystem-based approach to environmental management.
- Community-based monitoring can be a useful, cost-effective means for collecting data, but needs to be scientifically validated, have statistically rigorous design and harmonized methodologies.
- Lack of long-term, systematically obtained data and scientific capacity hampers implementation of EBM in East Asia.

Recommendations

- Advocate the universal adoption of environmental indicators readily derived from satellite-based earth observations.
- Promote community-based monitoring programs using harmonized methodologies in order to create national and regional networks.
- Request national governments to incorporate specific ecosystem based goals and targets into ICM through national strategy and action programs to provide a basis for pragmatic policy implementation.

PART 2: INNOVATIVE APPROACHES AND METHODOLOGIES

A range of tools, innovative approaches and methodologies are available to facilitate detection of ecosystem changes, identify the causative agents and assess whether the management interventions are effective.

A critical review was conducted on the advantages and disadvantages of using various biomarkers/ bioindicators in environmental management in Hong Kong. Emphasis was made that many biological indicators have been successfully used in a cost-effective way in North America, Europe, Australia and New Zealand. Applications of biomonitoring in Asia, however, was said to be extremely limited. The experience of Hong Kong in developing 13 biomarkers/bioindicators that can be readily used in practical monitoring was highlighted (Box 4). It was proposed that countries in the Asian region should accord high national priorities to adopt and validate some of these biomarkers/bioindicators for use in their monitoring programs, so as to improve their cost-effectiveness and relevance to environmental management.

Box 4. Application of biomarkers for different management purposes.

I. Identify exposure to certain chemicals
- EROD, (Ethoxyresourufin-O-deethylase) in fish liver

II. Monitor spatial and temporal changes in pollution
- Body burden of metals and trace organics in barnacles and mussels

III. Provide early warning to environmental deterioration
- Fin erosion of fish
- Epidermal hyperplasia/papilloma of fish
- Condition Factor (CF) of fish
- Hepatosomatic Index (HSI) of fish
- Gonadosomatic Index (GSI) of fish
- Lysosomal integrity of mussels
- Imposex of gastropods

IV. Indicate occurrence of adverse ecological consequences
- Diversity indices
- Log normal distribution
- ABC (Abundance Biomass Comparison)
- Multivariate statistics of species composition

- Identify exposure to certain chemicals
- Monitor spatial and temporal changes in pollution
- Provide early warning to environmental deterioration
- Indicate occurrence of adverse ecological consequences.

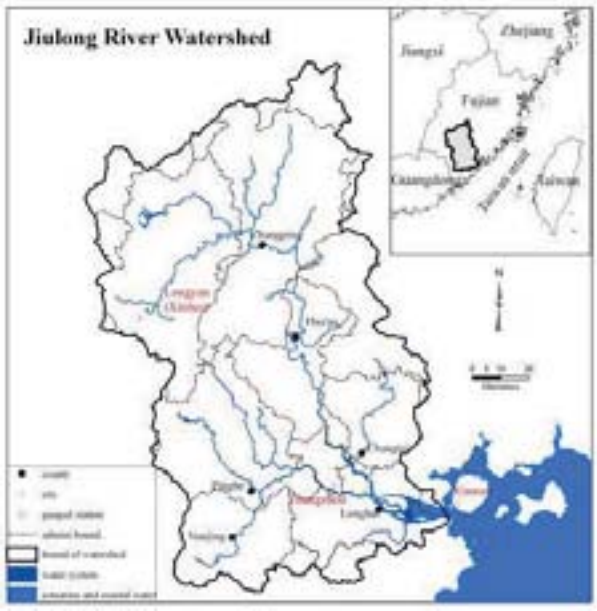
In Singapore, coastline modifications over the last 40 years have resulted in the reduction of its many coastal habitats. The remaining ones are situated within intensively-used waters that support one of the world's busiest ports and one of the largest oil refineries. The need to monitor Singapore's coastal resources is therefore very critical. Monitoring of Singapore's coastal environment has shifted from traditional monitoring of reef condition to biocriteria monitoring. Monitoring reef conditions considers the status of corals; whether they are improving or declining. Biocriteria monitoring on the other hand examines whether the environment is improving or declining above or below acceptable levels. Singapore's effort was highlighted in developing more robust, scientific monitoring tools that are designed to improve management responses to pressures. Current directions in biocriteria monitoring in the country looks at a variety of tools in the monitoring toolbox framework to determine limits of various coastal receptors, such as corals, for instance, to a variety of stressors (Box 5). The requirements of a scientifically sound monitoring program were

Box 5. Scale of impact classification currently adopted for projects in Singapore.

- **No impact:** No change to the quality or functionality of the receptor will occur
- **Slight impact:** Changes may be recoverable once the stress factor has been removed
- **Minor impact:** Changes unlikely to have any secondary consequences
- **Moderate impact:** Changes are expected to be locally significant
- **Major impact:** Changes are likely to have secondary influences on other ecosystems

emphasized. Future direction is focused on improving biocriteria development through primary research and expanding it to other coastal habitats.

A study in Xiamen, PR China, showed the benefits of conducting an integrated analysis of nitrogen pollution and eutrophication using long-term data to illustrate how human activities have influenced the river-estuary-coastal system. The study aimed to quantify the nitrogen sources including riverine input, atmospheric deposition, urban runoff and manure/sewage discharge to the Jiulong River watershed-Xiamen Bay, and to analyze the nitrogen spatiotemporal patterns and associated mechanisms. The Jiulong River watershed is an important source of water for drinking, agricultural and industrial uses. The study employed monitoring, modeling and application of GIS in estimating the nitrogen flux from various sources. The study showed that riverine input from Jiulong River watershed, is about 30% of total input, and dominated the nitrogen sources in the estuary-coastal system. The study also considered the relationships between nutrient loadings and occurrence of harmful algal blooms as well as the influence of climate-induced variations in hydrology. The results of the study recommended targeted management in specific spatial and temporal scales under an integrated river basin and coastal area management framework.



The following are the conclusions and recommendations drawn from the discussions.

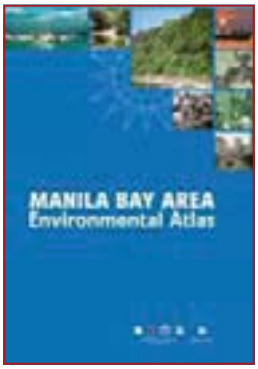
Conclusions

- Holistic monitoring programs should include biomonitoring (biomarkers, biocriteria), together with physical and chemical parameters.
- There are already clear signs of the impacts of global change on tropical ecosystems.
- Eutrophication due to nutrients derived from the watershed is a serious problem in the coastal zone of the East Asian Seas.

Recommendations

- Incorporate biological monitoring and, where appropriate, the use of biomarkers and biocriteria in environmental monitoring programs.
- Indicators should be adaptable and appropriate to changing climates.
- Recognize the need to integrate watershed and coastal monitoring programs and environmental management practices.
- A mechanism for regular inter-calibration and inter-comparison exercises needs to be considered at both national and regional scales.

PART 3: KNOWLEDGE TRANSFER AND COMMUNICATION



Making information visible means providing accurate and quality information to stakeholders in a timely manner and format that is understandable by the end users.

The impacts of the *Manila Bay Area Environmental Atlas* (Philippines) in terms of serving its purpose of providing quality information to stakeholders in the Bay area and facilitate attainment of their shared vision were reviewed. The environmental atlas has been a useful source of information for enhancing the awareness of stakeholders on the natural resources, and engineered structures, and the status of the environment of the Manila Bay Area. Aside from the textual information provided, the map-based information has been very useful in enhancing the appreciation and understanding of the stakeholders on the existing natural, social and economic features as well as threats in the area. The Atlas has also contributed in improving the performance of the various agencies and local governments in policy formulation, planning, decisionmaking and monitoring. Box 6 presents some examples on how the information in the Atlas was utilized for improved planning and policy formulation including identification of programs and projects that are designed to contribute to the overall management of the Bay. The mechanisms to sustain the Atlas in terms of updating the data and facilities as well as strengthening the Manila Bay Information Network responsible for developing the Atlas were discussed.

Box 6. Applications of Manila Bay Area Environmental Atlas.

- Integrating land and water in the planning process;
- Integrating climate change, and natural and anthropogenic hazards in planning and management;
- Developing various projects to implement the Manila Bay Coastal Strategy;
- Cleanup operations of illegally established structures in the Manila Bay;
- Strengthening the environmental impact assessment process by mapping environmentally critical areas; and
- Suitability assessment for establishing mangrove plantations.

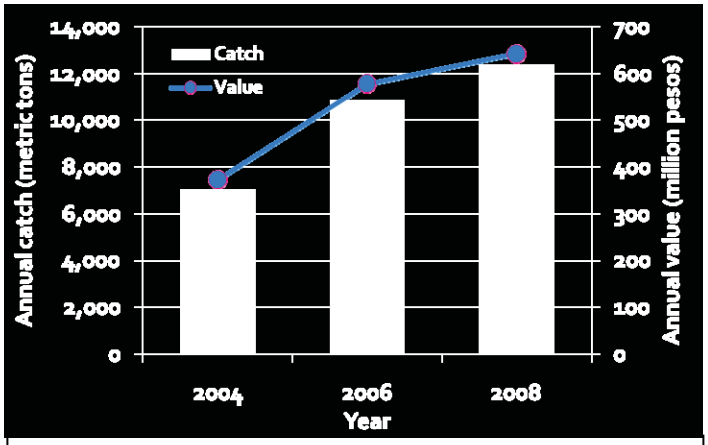
In addition to the Manila Bay Area Environmental Atlas, another key document that facilitates the protection and management of Manila Bay is the Operational Plan for the Manila Bay Coastal Strategy. To aid in measuring the progress and outcomes of implementing the operational plan, an integrated environmental monitoring program (IEMP) was developed by an inter-agency technical working group. The monitoring tasks were grouped into two main areas: biological-ecological parameters, which address the structure and functions of Manila Bay as an ecosystem (species and populations involved) and physico-chemical parameters, which characterize the physical and chemical conditions of the bay. The working group prepared a plan that is cross-sectoral, addressing major impact areas, uncertainties and data gaps as identified in the Manila Bay Refined Risk Assessment developed in 2002, and building on existing

Box 7. Characteristics of the Manila Bay Integrated Environmental Monitoring Program

- Inter-agency
- Cost sharing
- Data sharing
- Multidisciplinary
- Cross-sectoral
- Inter-linked with other initiatives
- Includes the resources and its physico-chemical environment
- Five-year implementation, review and assessment process
- Addresses special concerns

monitoring efforts of the different agencies (Box 7). The process of developing the plan, its components and the highlights of the pilot study to field test and refine the IEMP was described including lessons learned, challenges and future directions.

In terms of fisheries management in the Philippines, the technical support provided by the Fisheries Improved for Sustainable Harvests (FISH) Project in Danajon Bank (Philippines) to local governments and a broad base of stakeholders in developing and implementing ecosystem-based fishery management (EBFM) through capacity building, constituency building, and policy improvement was presented. Control mechanisms that were put in place to bring about changes in the exploitation patterns among resources users include, among others: establishment of marine protected areas (MPA) that will form a network of MPAs, species-specific management (spatial and temporal close season), gear restrictions and size limits, registration and licensing, zoning of fishing and water use activities, and cross-cutting activities in information, education, communication (IEC); policy improvement; and fisheries law enforcement. The project is expected to result in an increase in fish stocks by 10% in 2010 over the 2004 base period. The EBFM approach of the project is incremental and interventions were initially focused on four municipalities and currently being expanded to cover the rest of the seventeen municipalities constituting the Danajon Bank Double Barrier Reef system. One key aspect, which is considered crucial in the success of the EBFM initiative, is matching the spatial range of the ecosystem with the governance system.



Volume and value of catch
- 7,037 mT (2004) – 12,370 mT (2008): increase by 76%
- 690 (2004)- 1,600 (2008) kg/fisher/yr
- Equivalent to an increase of 19% per annum

The importance of using numerical modeling to determine the changes in the hydrodynamic conditions of Xiamen Bay covering the period 1938-2007 and how it provides information to management, particularly those related to optimizing restoration projects in the coastal areas, was shown. The cumulative impacts of reclamation activities in Xiamen Bay were presented using available information for 1938, 1984 and 2007. It was shown that the average tidal velocity and tidal flow capacity decreased by about 40% and 20% in the Western and Eastern Seas, respectively, if compared to 1938 data. This was attributed to the large-scale reclamation and dyke constructions, which started in the 1950s to cater to transportation, agriculture, harbor and airport and real state development. Based on the model, it was predicted that the hydrodynamic conditions in both seas could recover to the conditions in 1972 after completion of several environmental restoration projects in 2011 (Box 8).

Box 8. Proposed environmental restoration projects in Xiamen for completion in 2011

- Open the Gaoji dyke with an 800 meters bridge
- Open Maluan dyke, Xinglin dyke and Dongkeng dyke by 200, 250 and 700 meters, respectively.
- Dredge the deposited mud in Western and Eastern seas to the level of low slack tidal

The following are the conclusions and recommendations drawn from the discussions:

Conclusions

- Stakeholder involvement is essential for collecting fisheries data.
- Measuring and communicating the gains from intervention projects needs to translate scientific information into financial and economic terms.
- Long-term data sets are essential in defining changes due to human activities and climate change.

Recommendations

- Include socioeconomic data in monitoring assessment procedure.
- Communicate outputs from scientific research (data, assessment reports, publications) to stakeholders (policymakers, civil society, educators, etc.) in appropriate user-friendly language and formats, including public access by Internet.

Workshop on the Science in Ecosystem-based Management

Chairs:

- **Prof. Stephen de Mora, Chief Executive, Plymouth Marine Laboratory (PML), UK**
- **Prof. Huasheng Hong, Professor, Xiamen University, China**
- **Prof. Gil S. Jacinto, Professor, Marine Science Institute, University of the Philippines**

Co-Chairs:

- **Prof. Xiongzhi Xue, Vice President, Coastal and Ocean Management Institute, Xiamen University**
- **Mr. Michael Kendall, Senior Scientist, PML, UK**
- **Prof. Trevor Platt, Executive Director, POGO Secretariat, PML, UK**

Presentations:

Session 1: Integrating Science into Policy and Management Decisions

Introduction to the Science in Ecosystem-based Management
Prof. Stephen de Mora, Chief Executive, Plymouth Marine Laboratory, UK

Ecosystem-based management and the requirements for a knowledge base of observations
Prof. Trevor Platt, Executive Director, Partnership for Observation of the Global Oceans (POGO) Secretariat, PML, UK

The impact of tsunami on marine ecosystems on the coast of Thailand: some implications for coastal zone management
Mr. Michael A.Kendall, Plymouth Marine Laboratory, UK

Ecosystem-based management (EBM) and integrated coastal management (ICM): Divergence and complementarity
Prof. Xiongzhi Xue, Coastal and Ocean Management Institute (COMI), Xiamen University, China

Linking socio-ecological adaptability in the context of integrated river basin, coastal and ocean management: the case of Siak Riau Basin, Riau Province, Indonesia
Mr. Luky Adrianto, Center for Coastal and Marine Resource Studies, Bogor Agricultural University, Indonesia

Session 2: Innovative Approaches and Methodologies

The use of biomarkers and indicators for marine environmental management
Ms. Doris W.T. Au, Department of Biology and Chemistry, City University of Hong Kong

Leveraging on science to manage and monitor Singapore's living coastal resources
Ms. Karenne Tun, Department of Biological Sciences, National University of Singapore

Nitrogen pollution and eutrophication problem in the Jiulong River Watershed – Xiamen Bay: Management Implications
Ms. Chen Nengwang, COMI, Environmental Science Research Center, Xiamen University, China.

Session 3: Knowledge transfer and communication

Making invisible information visible: Impacts of the Manila Bay Environmental Atlas
Ms.Bresilda M. Gervacio, PEMSEA

Promoting interdiciplinary reseach: Integrated environmental monitoring program of Manila Bay
Ms. Elvira Z. Sombrito, Philippine Nuclear Research Institute, Philippines

Towards ecosystem based fisheries management: The Danajon Bank story
Mr. Nygiel Armada, FISH Project, Philippines

Hydrodynamic changes of Xiamen Bay (1983-present) and management implications
Prof. Huasheng Hong, State Key Laboratory of Marine Environmental Science, Xiamen University, China

EAS Congress/WP/2010/06

eas Congress 2009

Theme 1

Coastal and Ocean Governance

WORKSHOP 6: LAND AND SEA USE ZONING: CHALLENGES AND OPPORTUNITIES

23 November 2009

PEMSEA Network of Local Governments for Sustainable Coastal Development (PNLG)

Chair: Dr. Kem Lowry
Department of Urban and Regional Planning
University of Hawaii, Manoa, USA

The East Asian Seas Congress 2009

"Partnerships at Work: Local Implementation and Good Practices"

Manila, Philippines
23–27 November 2009

The East Asian Seas Congress 2009
"Partnerships at Work: Local Implementation and Good Practices"
Manila, Philippines, 23-27 November 2009

Theme 1: Coastal and Ocean Governance
Workshop 6: Land and Sea Use Zoning: Challenges and Opportunities

23 November 2009

Co-Convening Agency:
PEMSEA Network of Local Governments
for Sustainable Coastal Development (PNLG)

Chair:
Dr. Kem Lowry,
Department of Urban and Regional Planning,
University of Hawaii, Manoa, USA

BACKGROUND

The East Asian Region is undergoing rapid change – economic expansion in the last decade has resulted to various challenges such as multiple use conflicts, massive coastal reclamation and the consequent degradation of the productive capacity of coastal and marine resources.

Historically, cities and urban areas are largely concentrated along waterways and coastal areas as rivers and coasts provide cheaper means of transportation and promote agricultural production necessary for survival.

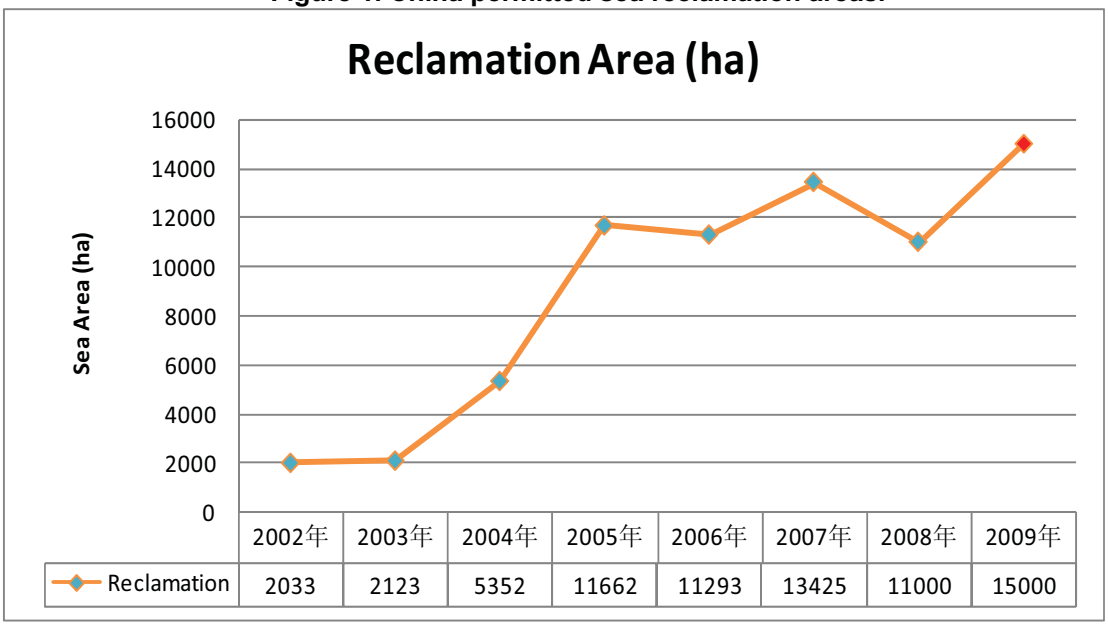
With the increase of population over the years, coastal and river areas have become highly urbanized. Urban spatial expansion can be considered as a process of continually occupying the spatial resource suitable to urban development for social economic development (Tao Lin). Nowhere is this more pronounced than in China. China's rapid urbanization led to the total sea reclamation of about 12000 km^2 or an average of 200 km^2 per year since the 1950s. Coastal reclamation projects in China were driven by various factors such as the salt industry in the 1950s, expansion of farm lands in the 1960s to the 1970s and the increased demand for aquaculture products in 1980s-1990s and comprehensive uses in late 1990s to now.

Reclamation in PR China[1] is permitted, with different government agencies responsible for granting permits. However reclamation has its impacts and ecosystem valuation resulted to an estimated loss of US$15.947 million/$km^2$.

[1] There were three presentations which discussed sea reclamation in China, including its impacts and challenges. (1) Impacts of Sea Reclamation on the Coastal Ecosystem, Dr. Zhang Zhaohui, First Institute of Oceanography, State

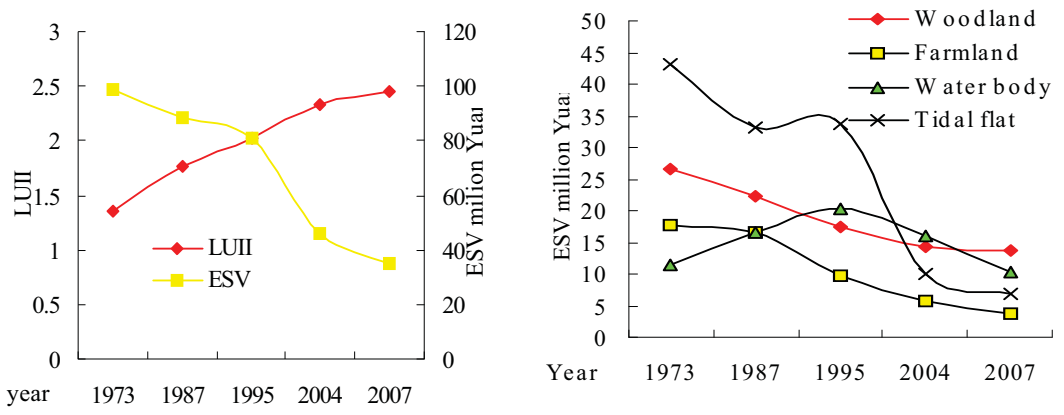
An example of a developing area in PR China is Xiamen. Since its establishment in 1980s as a Special Economic Zone, Xiamen has undergone rapid urbanization with its urban population reaching 0.94 million in 2008. Land and coastal area utilization patterns in Xiamen are indicated in Figure 1.

Figure 1. China permitted sea reclamation areas.



Source: Sea Area Management Bulletin, 2002-2008; Expected 2009.

Figure 2. Dynamic changes of land use intensity index and ecosystem service of Xiamen Island during 1973-2007.



Oceanic Administration of PR China; Su Weixiao, Environment Science and Technology School, Ocean University of China; Wang Zongling, First Institute of Oceanography, SOA; (2) Monetary Evaluation on Depletion of Coastal Ecosystem Services, Ms. Xuan Wang, Dr. Weiqi Chen, Prof. Luoping Zhang, Coastal and Ocean Management/Environmental Science; (3) Urban Spatial Expansion and its Effects on Island Ecosystem: A Case Study of the Island City of Xiamen, Southeast China, Dr. Lin Tao, Zhao Qianjun, Cui Shenghui, Shi Longya, Gao Lijie, Institute of Urban Environment, Chinese Academy, Xiamen, China.

Extensive reclamation and land conversion patterns in Xiamen put pressure on the productivity of the island ecosystem. To determine the impact of these pressures, several ecosystem valuation models below are used to determine the impact of urbanization and reclamation to the ecosystem:

- Ecosystem service evaluation
- Stress of urban expansion on ecological landscape
- Natural ecosystem eroded index (NEEI)
- Landscape isolation index (LII)

There are different concepts and methods used to determine the impact of coastal reclamation. But many of the existing ecosystem valuation methods do not factor in the real 'value' of ecosystem services. This results to the underestimation on the true cost of ecosystem services, resulting to a lower 'price tag' of ecosystem services when computing for the real cost of reclamation. The actual losses may be greater due to the limitations of methods and data. For instance, user fee for sea reclamation in Tong'an bay is RMB 7.5 m-2 – RMB 22.5 m-2 — which is too low to reflect the external cost of reclamation. Such a low fee cannot deter excessive sea reclamation and protect the coastal environment.

While there are varying methods to valuate the loss in ecosystem services, the massive reclamation has tremendous impact on the capacity of the coastal ecosystem to provide services. The integrity of the coastal ecosystem can only be retained by effective coastal use zoning.

Zoning for coastal and marine management is seen as a strategy and a tool to effectively and efficiently appropriate scarce resources among various stakeholders. Similarly, reclamation remains to be a major challenge in the effective implementation of zoning schemes.

While a recognized tool for effective coastal resource management, a quick survey of sites in the East Asian region point to common challenges that impede effective implementation of the zoning schemes. Issues range from governance concerns to technical process and details of the zoning process itself (EAS Congress Pre-Workshop, 2009).

Many local governments in the region have limited capacity to prepare effective zoning schemes. This difficulty stems from the limited capacity among local agencies to determine scientific basis for zoning such as technical guidelines for specific areas. For some sites which have developed their zoning schemes, there are inconsistencies on local and national policies, institutional arrangements, and enforcement strategies, information, public awareness and stakeholder coordination.

In local governments where zoning is being implemented, the process of reviewing and evaluating zoning schemes through time is also a challenge among local governments. Incorporating climate change concerns into zoning plans should also be a major consideration in the review of zoning plans.

For many sites and countries which need to relocate stakeholders, user rights, compensation schemes and alternative livelihoods for families/individuals affected by zoning are only some of the difficulties.

Apart from PR China which developed a marine functional zoning scheme, the countries in the region are at different stages of zoning development and implementation. While zoning is recognized to be an important management tool for coastal and marine resources, countries in the region are still challenged by various technical, legal and institutional concerns in the implementation process.

The session at the International Conference aimed to facilitate a sharing of ideas and strategies on how existing zoning plans can be strengthened and effectively enforced at the local level. It aimed to answer the following:

- How can local governments zone for climate change?
- Can land and sea-use zoning scheme be used as a market-based instrument for managing coastal and marine areas?
- How are local governments effectively implementing land and sea-use zoning?

CONCEPTS OF ZONING

Ecological Zoning as a Policy Tool for Sustainable Development

Dr. Candido Cabrido, Dean, School of Urban and Regional Planning, University of the Philippines Diliman

Zoning is commonly employed as a land and water use planning and regulatory tool to guide and direct the type of development most favorable or advantageous to the growth and development of an area considering its ecological constraints and socioeconomic objectives. In the Philippines, the zoning of land is a requirement by the government among local government units at the city and municipal levels to regulate the uses of their lands according to their most suitable and best uses from the perspectives of economics, social and environmental sustainability.

Hence, urban areas are zoned into residential, commercial, industrial, and institutional uses while non-urban lands are broadly zoned into agriculture, forest and coastal uses. However, there are now new initiatives to zone forest and coastal areas into more specific classes based on their ecological characteristics and sustainable uses. Several coastal municipalities have prepared the zoning of their coastal waters, which extends to 15 km offshore from the shoreline but the challenge remains in the implementation of the allowable uses of their coastal areas.

Aside from the standard zoning requirement, three types of ecological zoning have also been developed and applied in the Philippines at the ecosystem and local level.

Agroecological Zoning (AEZ), which was patterned after the UN FAO's Agroecological Zoning model that was developed for application at the global scale in the early 1980s. The AEZ model was applied at the provincial level using Palawan

Province as a case study. This model was used to delineate and map agricultural lands according to their level of edaphic and climatic suitabilities to various crops and also predicted their potential yield based on a mix of technology inputs. Because of the limited copies of the maps and reports and the absence of a program to disseminate the results of the AEZ study at the local level, very few planners and farmers have actually used and benefitted from it.

Protected Areas Zoning was developed by the Protected Areas and Wildlife Bureau (PAWB) of the Department of Environment and Natural Resources (DENR) with technical assistance from the consultants commissioned by the European Communities in the early 1990s.

Areas declared as Protected Areas (PAs) are zoned based on their present use, ecological conditions and level of biodiversity importance. Zoning categories for terrestrial ecosystems include: (1) Strict Protection Zone; (2) Sustainable use zone; (3) Restoration zone; (4) Habitat Management Zone; (5) Multiple use zone; (6) Buffer zone; (7) Cultural zone; (8) Recreational zone; and (9) Special use zone. PA zoning is a regulatory instrument that is applied at the ecosystem level such as forest and coastal marine ecosystems and habitats that usually comprise two or more provinces or several municipalities within a province or several provinces. The enforcement of the zoning regulations remain inadequate because of the low priority they receive in the allotment of government funds.

Environmentally-critical areas network (ECAN) Zoning was developed for application to the Palawan Province, which is considered as the last remaining frontier in the Philippines. ECAN Zoning is mandated in the Strategic Environmental Plan (SEP) law or Republic Act 7611 that was enacted in 1992, and how it should be carried out is also fully described in this law. ECAN zoning relates terrestrial and aquatic resources planning in a landscape and seascape continuum and regulates the uses and management of the natural environment of the Province. ECAN zoning categories are almost similar to the PA zoning except for some categories that are distinct from PA zoning. The zoning categories of ECAN for the terrestrial component are: (1) Core zone; (2) Buffer use zone; and (3) Multiple use zone.

The zoning categories for coastal and marine components comprise the following: (1) Coastal/Marine Core Zone; (2) Coastal/Marine Multiple Use Zone; and (3) Ancestral Coastal/Marine Waters.

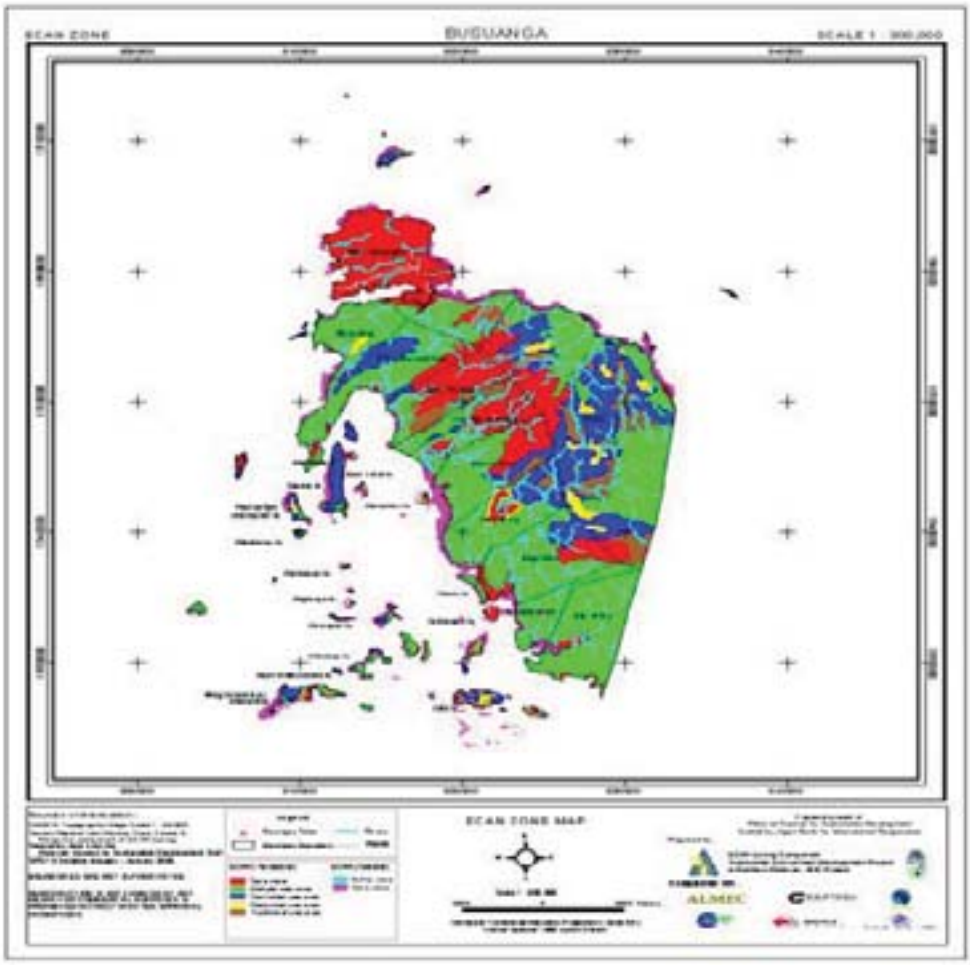
Ecological zoning is the process of assessing, delineating and marking areas based on their biophysical or natural and anthropogenic attributes to regulate land uses and natural resources development in accordance with their ecological integrity and carrying capacity. In discussing this, Dean Cabrido provided an overview on the characteristics and criteria for Ecological Area Network (ECAN) Zoning and how it was applied in Palawan, Philippines.

The presentation covered (1) legal basis for the ECAN zoning done in Palawan (2) description of the terrestrial and coastal/marine component part of the zonal classification (3) ECAN zoning criteria.

The Environmental Management Plan (EMP) provides the policies, strategies, actions, institutions and funding to implement the ECAN Zones Management Guidelines.

The zoning ordinance was then developed and became the basis for the formulation of the EMP.

The ECAN Zoning prepared for Palawan is shown in Figure below.



There are several factors that contribute to successful implementation and enforcement of the ECAN zoning in Palawan. These include:

- The presence of a legal mandate and framework
- Local participation in enforcement
- Shared governance and partnership
- Dedicated IEC and advocacy campaigns
- Peer pressure and incentive system
- Skills training and alternative sustainable livelihood
- Investment in human capital development
- Ensuring sustainable financing
- Promoting property rights and usufructuary rights

CASE STUDIES

Moreton Bay Marine Park Zoning Plan Review: Strategies and lessons

Mr. Mark Simmons, Queensland Environmental Protection Agency

An example of a zoning plan done in Moreton Bay was presented by Mr. Mark Simmons of the Queensland Environmental Protection Agency. The presentation focused on the review of the Moreton Bay marine park zoning since it expired in September 1, 2008.

Moreton Bay Marine Park's significant economic contribution to Australia can be shown in the revenue generation of the following sectors:

- Tourism: ~$500 million per annum (2006)
- Commercial fishing: ~$24 million per annum (2006) value of landed catch
- Recreational fishing: ~$194 million per annum (2000-2001) total associated expenditure
- Aquaculture: ~$15 million per annum (2005-2006)

To maintain the resources brought by the park, the review takes into consideration the changes in patterns and the levels of use over the past 10 years. Mr. Simmons described the previous zoning plans and the process undertaken as shown in Figure 3.

Figure 3. Timeline for the review.

Mr. Simmons identified the key factors that led to successful review:

- Political support, as it had the backing of major national and local politicians;
- Decisions had strong scientific basis;
- Extensive and well-planned communication and consultation. Stakeholders were involved; and
- Clear process.

The new zoning plan resulted to commitments of the Queensland Government in the financing and monitoring program, including a commitment to review the program over five years through a partnership approach to assess the ecological and social effectiveness of the zoning. The QLD has also allocated $14 million in structural

adjustment package to minimize the cost of zoning to the commercial fishing sector and a $1 million allocation for the artificial reef program.

Fisheries Use Zoning: A FISH Project Initiative to Enhance Fisheries Resource Management Interventions
Nygiel Armada, FISH Project

Mr. Armada described the fisheries use zoning applied in the FISH project which was guided by the application of marine spatial planning (MSP) in the Great Barrier Reef, but modified in consideration to a smaller geographical scale, related initiatives in the site, technical staff, and available financial resources. Experiences from other tropical areas in the East Asian region were also considered such as those applied in the Tun Sakaran Marine Park, Semporna Islands, Sabah, Malaysia; Wakatobi and Komodo National Parks, Indonesia, Integrated Coastal zone management (ICZM) zoning scheme for Xiamen, China; the Integrated Land, Coastal, and Sea Use Zoning of Batangas Bay and Bataan Province, Philippines.

The fisheries-use zoning was done to change the management patterns for fisheries and in effect, increasing fishcatch by 10%. This target was based on a simulation model to project potential scenarios if either management or business as usual management is employed.

The zoning process was followed:

- orientation and objective setting;
- mapping of current fisheries and other water uses;
- determining and evaluating interaction among the various uses to identify possible multiple use conflicts and use and habitat incompatibilities;
- mapping of current and future uses taking into consideration resolution of conflicts;
- field validation with stakeholders and representatives of resource users;
- consultation with local government executives and legislators;
- finalization of fisheries use zoning maps;
- consultation with a broad base of stakeholders and resource users; and
- legitimizing zoning plans through legislation or other kinds of policy instruments.

MSP, in general, or fisheries use zoning, in particular, linked the various fisheries resource management initiatives. It enhances the objectives for doing registration and licensing. It further puts spatial perspective to species-specific and fishing gear-specific management interventions. It rationalizes enforcement efforts and sets the ground for the still on-going project activity to limit fishing effort and in implementing an appropriate fishing effort configuration for each particular unit of marine ecosystem shared by various users.

Choosing Boundaries to Marine Protected Areas and Zoning the MPAs for Restricted Use and Management

Dr. Hugh Kirkman, Marine Science and Ecology, Australia

The South Australian Government has established a carefully designed network of 19 multi-use MPAs. A key milestone in the process was the delineation and proclamation of the outer boundaries of this network of MPAs. These boundaries were developed by the South Australian Government with assistance and advice from a range of State Government agencies, ministerial advisory groups and scientific experts. The boundaries were selected through a rigorous process of technical assessment and were refined through consultation process.

The boundaries represent the outcome of applying chosen Design Principles to build a robust network that meets the objectives of the Marine Parks Act 2007 and reflect the world's best practice in marine parks design.

Fourteen biophysical design principles were adopted by the South Australian Department for Environment and Heritage to guide the development of South Australia's marine park boundaries:

1. Use of precautionary or anticipatory approach
2. Ensure comprehensiveness
3. Ensure adequacy
4. Ensure representativeness
5. Ensure connectivity and linkages
6. Ensure resilience and vulnerability
7. Account for ecological importance
8. Complement and synergize with existing protected areas
9. Accompany other conservation practices and agreements
10. Consider all marine uses
11. Consider indigenous interests and culture
12. Consider cultural heritage
13. Facilitate identification and compliance and enforcement
14. Facilitate education, appreciation and recreation.

He noted that the first four are the overarching biophysical principles that guide the boundary of the MPA as a whole. The secondary biophysical design principles serve to focus on key/irreplaceable areas within a region. The last seven are related to the socioeconomic principles that recognize varied users of the marine environment and seek to align marine parks so that those uses continue and are sustained in the future.

With the delineation of the boundaries, the MPA zoning then took place. The general zones include:

- General Managed Use;
- Habitat Protection;
- Sanctuary Use;
- Restricted Access; and
- Special Purpose Areas.

The same 14 design principles will be applied but others may be invoked to assist with demonstrating a scientific approach to zoning, e.g., buffering or having more restrictive zones within less restrictive zones; complementarity or considering surrounding terrestrial and marine uses; commitment to a monitoring and evaluation process, cost-effective and co-operative operation of parks, and developing indicators to simplify monitoring; and a principle seeking to meet international obligations.

Dr. Kirkman emphasized the importance of community consultation throughout the zoning process. He said that the selection of the South Australian marine parks has taken five years of scientific deliberations, community, government, institutional and international experts' participation to ensure the support of various stakeholders and to generate the necessary data to support the zoning process.

Public-Private Sector Partnership Participation in the Development and Implementation of Coastal Land and Sea-Use Zoning Plan in Bataan
Engr. Alexander Baluyot, Bataan Integrated Coastal Management Program, Bataan Province, Philippines

The Bataan land and sea-use zoning was developed as a mechanism to resolve five major problems including:

- Pollution from land- and sea-based activity
- Illegal and destructive fishing methods
- Siltation and Sedimentation
- Proliferation of informal settlers
- Habitat degradation.

Apart from these issues, multiple use conflicts are the primary reasons for zoning. Conflicts arose:

- Between shipping and port zone with fishing and aquaculture activities;
- Due to reclamation activities within mangroves and mudflat protection areas;
- Due to various land development in agriculture and fishpond areas; and
- Due to proliferation of informal settlers within tourism areas, mangroves zones and even in the river banks, among other areas.

Zoning is seen as a tool that will lessen the impact of problems and will harmonize conflicts. The Coastal Land- and Sea-use Zoning Plan had been formulated to define the uses of the different zones in the Bataan Coastal Area and municipal water. These zones are being classified and designated based on the level of development, utilization and/or resources available in the area.

There are two pilot sites — Abucay and Balanga. These municipalities are implementing zoning by ensuring that activities within designated zones are observed. The role of the private sector is in the implementation of zoning, i.e., providing support to municipalities and communities in implementing appropriate projects on the ground. Some of these activities include providing livelihood projects consistent with permitted activities in the zone. Information and public awareness campaigns are also some of the activities supported by the private sector.

Local Climate Change Adaptation Measures in Hawaii
Dr. Kem Lowry, University of Hawaii, Manoa, USA

Dr. Lowry's presentation focused on sea level rise in Hawaii and the importance of zoning in planning coastal area uses. In Hawaii, sea level rise is estimated at 0.24 m by 2050 and 1 m by 2100. Based on the 2007 State of Hawaii Multi-Hazard Mitigation Plan, 2007 erosion multiplier of 150 would result in beach retreat of 36 m.

Erosion and retreat has already led to a loss of 4 miles of beaches over the last 50 years. Twenty-five percent of sandy beaches on island of Oahu have been lost or narrowed because of shoreline hardening.

In order to manage these, several tools are used such as:

- **Beach nourishment**. Beach nourishment is a costly process. In the case of Waikiki, the cost has been more than $25 million over five years.
- **Shoreline setbacks**. The shoreline setback entails a minimum of 40' setback line required by state law in Hawaii. Variable setback lines were established on Maui and Kauai in consideration to the life expectancy of structures which is generally 70-100 years multiplied by the erosion rate (adjusted for sea level rise). Permanent structures are not allowed within setback area.
- **Special Management Area [ICM].** This is applied to coastal zone management area extending a minimum of 300 ft. landward from shoreline. Land use requires a special management area permit from the county which is subject to coastal policies.

Coastal policies require adequate shoreline access, consistency with county land use plans, no substantial adverse environmental impacts, minimal alteration of landforms, no alteration of beach size etc.

- Urban zoning is helpful as it defines multiple categories of land use including residential, commercial, industrial, public facilities — and hazard and open space. It provides control over location, density, building height and lot siting. It also creates presumption of right to build.
- Tsunami zones have been designated on all islands.
- Flood zone designation establishes areas within which flood insurance is required.

Possible adaptation initiatives in Hawaii include:

- Stricter enforcement of illegal seawalls regulations;
- More beach protection plans with increased community involvement;
- Stricter building code requirements in flood-prone areas;
- Reduced insurance subsidies for new or re-built structures in most flood-prone areas; and
- Identification of potential 75-100-year sea level rise "impact zones" on each island.

There are key assumptions about longer term inundation scenarios. Many of the questions associated with sea level rise are primarily technical. However, identifying some of the impacts of sea level rise and designing strategies to address them will create economic winners and losers — and is likely to be intensely political. Dr. Lowry emphasized the importance of developing solutions that are regarded as both effective and legitimate. This requires both technical analysis and transparent deliberative processes involving experts, managers, politicians and citizens.

In selecting the best intervention, the following criteria could be used:

- Construction and maintenance costs
- Community risk – Is the strategy appropriate for anticipated sea level rise?
- Economic efficiency – Is the benefit greater than the resources applied to other approaches
- Equity – who benefits and who pays in direct costs and dislocations?
- Institutional feasibility – Is it acceptable to the public? Does it require new institutions to implement?

Distributional Range of Mangroves in Catanduanes Island, Philippines: Inputs to Biobelting and Biosheltering Program for Typhoons, Tidal Surges and Tsunamis

Dr. Jimmy T. Masagca and Manrico T. Masagca, De La Salle University-Dasmarinas, Cavite, Philippines; College of Business and Economics, De La Salle University-Manila, Taft Avenue, Manila, Philippines

As one of the measures on climate change adaptation, the presentation focused on the role of mangroves and how this can be improved to be effective in biobelting and biosheltering under the Sustainable Resource Management for Mangrove Biodiversity Conservation (SURMABIOCON).

Initial research conducted in the site served as input in reforestation efforts in Palnab-Pajo and Magnesia del Sur in the Municipality of Virac, Catanduanes. These sites focus on mangrove habitat restoration that considers anthropogenic degradation and restoration following natural disturbances.

Some of the following methods are being adopted in Catanduanes Island, Philippines:

- structural manipulation *(trees, land and water)*:
- planting trees and hydrological engineering; and
- compositional manipulation *(species diversity and habitat recovery):* seeding and planting multiple species to increase productivity.

Dr. Masagca articulated that while the communities have moved forward in mangrove reforestation, there are some specific needs of the project that should be considered such as:

a. specific tools for land and sea-use zoning, tools of ICM (integrated coastal management) and ecosystem-based management (EBM) concepts;
b. the information [e.g., existing stressors or resistant areas] on managing mangroves for resilience to climate change; and
c. designs and strategies in presenting to the local coastal dwelling communities *vis-a-vis* sea level rise, typhoons, tidal or storm surges and tsunamis.

He also identified some of the obstacles that impede the reforestation initiatives:

- inappropriate political intervention at the municipal/provincial levels;
- lack of knowledge, expertise and baseline data about the biophysical conditions of the mangrove areas under study; and
- diverse intents on the mangrove resources leading to communication gaps.

OPEN FORUM AND DISCUSSION

Among the clarifications made were as follows:

Dr. Kem Lowry's Presentation: Is the general trend in Hawaii letting nature take its course or building infrastructures to cope with climate change?

Dr. Lowry replied that Hawaii is 'letting nature take its course' in some areas and adopting several measures to prevent potential impacts of climate change in others.

On ecosystem valuation on coastal reclamation (Wen): What are the bases in selecting the models and variables in the recommended models for ecosystem valuation?

Ms. Wen replied that the models and parameters are based on various considerations. Ms. Wen said that it would be difficult for her to explain due to language problem.

Suffice to say that there is a need to adjust user fee standards for sea reclamation, taking into consideration the different ecosystem services and economic potential of the reclaimed area. This would help regulate the level of reclamation and safeguard sustainable development of the coastal zone.

A participant commented that the technical aspect of zoning may be easy but the commitment of the national and local governments to implement zoning is one of the challenges in the region. This was seconded by a participant in the Philippines saying that local-national delineation and functions on implementation and enforcement are major concerns.

ANALYSIS, CONCLUSIONS AND RECOMMENDATIONS

Zoning is generally recognized as an important tool for sustainable management of land and sea areas. The level of technical zoning done by countries and sites ranges from specific habitats to broader zoning for sea and coastal areas. Despite its importance in the sustainable allocation of uses and resources, countries in the EAS region have yet to fully implement land and sea-use zoning schemes due to various challenges in administrative and local capacity. Meanwhile, in some countries which developed comprehensive land and sea use zoning schemes, enforcement and policy support continues to be among the major issues.

As emphasized in the land and sea-use training prior to the EAS Congress workshop, there is a need to distinguish zoning as a technical exercise and zonation as a legal instrument (Serote). Zonation can only be effective if governments are able to provide the necessary legal mechanisms at the national and local levels to enforce and implement regulations and policies. Developing and harmonizing national and local guidelines based on national and international standards

The implementation of these guidelines also depends on technical skills of local and national implementers. Capacity development for local institutions on technical and legal aspects of zonation should be continually pursued in countries if zoning schemes are to be implemented effectively.

Since zoning cuts across various sectors and geographic boundaries, there is a need to have an institutional mechanism for inter-agency decisionmaking regarding resources in shared jurisdictions.

As a market-based instrument for managing coastal and marine areas and resources, creating the right incentives for the private sector to comply with the zoning schemes and regulations should also be considered.

In terms of the technical aspect, there is a need to:

a. Develop a set of criteria [e.g., elevation, spatial extent of resource] for designating boundaries of zones to guide the local planners in the process.
b. Match governmental management activities with the degree of risks and uncertainty associated with climate change.
c. Insure that the designated size of marine protected areas reflects community management capacity and resource characteristics.
d. Insure that zoning schemes are implemented equitably.

There is general agreement that case studies on the implementation of zoning are needed by countries to guide them in the implementation process. However, such case studies would need to be contextualized or understood in a broader political and legal framework and will have to be understood in specific political and social contexts.

There is a need to determine management objectives and clearly define the dominant uses (both current and future) of land and sea areas. One of the major problems in the zoning is the uncertainty of resource use and coastal-area allocation over time, making it almost impossible to 'predict' resource use patterns over time. Hence, effective land and sea-use plans need to carefully consider development plans and resource patterns in the site.

Furthermore, there needs to be a clear reconciliation of the priority uses and the management objectives of the areas being zoned (e.g. zoning for conservation areas).

PRESENTATIONS AND SOURCES

Impacts of Sea Reclamation on the Coastal Ecosystem
Dr. Zhang Zhaohui, First Institute of Oceanography, State Oceanic Administration of China, Su Weixiao, Environment Science and Technology School, Ocean University of China, Wang Zongling, First Institute of Oceanography, SOA

Monetary Evaluation on Depletion of Coastal Ecosystem Services
Ms. Xuan Wang, Dr. Weiqi Chen, Prof. Luoping Zhang, Coastal and Ocean Management/Environmental Science

Urban Spatial Expansion and its Effects on Island Ecosystem: A Case Study of the Island City of Xiamen, Southeast China
Dr. Lin Tao, Zhao Qianjun, Cui Shenghui, Shi Longya, Gao Lijie, Institute of Urban Environment, Chinese Academy, Xiamen, China

Ecological Zoning as a Policy Tool for Sustainable Development
Dr. Candido Cabrido, Dean, School of Urban and Regional Planning, UP Diliman

Moreton Bay Marine Park Zoning Plan Review: Strategies and lessons
Mr. Mark Simmons, Queensland Environmental Protection Agency

Fisheries Use Zoning: A FISH Project Initiative to Enhance Fisheries Resource Management Interventions
Nygiel Armada, FISH Project

Choosing Boundaries to Marine Protected Areas and Zoning the MPAs for Restricted Use and Management
Dr. Hugh Kirkman, Marine Science and Ecology, Australia

Public-Private Sector Partnership Participation in the Development and Implementation of Coastal Land and Sea-Use Zoning Plan in Bataan
Engr. Alexander Baluyot, Bataan Integrated Coastal Management Program, Philippines

Local Climate Change Adaptation Measures in Hawaii
Dr. Kem Lowry, University of Hawaii

Distributional Range of Mangroves in Catanduanes Island, Philippines: Inputs to Biobelting and Biosheltering Program for Typhoons, tidal surges and tsunamis
Dr. Jimmy T. Masagca and Manrico T. Masagca, De La Salle University-Dasmarinas, Cavite 4115, Philippines; College of Business and Economics, De La Salle University-Manila, Taft Avenue, Manila, Philippines

eas Congress 2009

Theme 1

Coastal and Ocean Governance

WORKSHOP 7:
MAKING MAINSTREAMING WORK: DRIVING NATIONAL ACTION TO ADDRESS MARINE AND COASTAL CHALLENGES

25 November 2009

UNEP GPA

UNEP Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA)

Chair: **Mr**. David Osborne
Coordinator, UNEP GPA

Co-Chair: **Mr.** Anjan Datta
UNEP GPA

The East Asian Seas Congress 2009

"Partnerships at Work: Local Implementation and Good Practices"

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Theme 1: Coastal and Ocean Governance
Workshop 7: Making Mainstreaming Work: Driving National Action to Address Marine and Coastal Challenges

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INTRODUCTION

During the Second Intergovernmental Review of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA), held in Beijing in October 2006 the Governments asked the UNEP/GPA Coordination Office to provide assistance to countries in assessing how the conservation of marine and coastal ecosystems contributes to poverty alleviation and the achievement of the Millennium Development Goals (MDGs). The UNEP/GPA Coordination Office was also requested to support countries in mainstreaming the sustainable development of oceans and coasts into international development frameworks and national planning and budgetary processes.

In response to this call, the UNEP/GPA Coordination Office has developed an Analytical Framework, Guidelines and Checklist for the Mainstreaming of Marine and Coastal Issues into National Planning and Budgetary Processes, and organized a series of regional meetings to promote this approach.

The workshop was held during the East Asian Seas (EAS) Congress 2009, on 25 November, and aimed to contribute to the understanding of how to reconcile development pressures with protection objectives. The sharing of experiences will seek to provide answers to a number of questions namely; what a policy should contain, what policy choices a nation can afford and how to foster collaboration with various organs of the government and other non-state stakeholders to ensure sustainable management of our coastal and marine ecosystems as a contribution to poverty alleviation and the achievement of the MDGs.

During the workshop, speakers from Asia, Africa and Wider Caribbean explored the links between the management of coastal and marine resources, poverty reduction and economic growth, based on their country experiences, with a particular focus on policy development and

implementation processes. Countries that have embarked on the development of a coherent policy framework to address these challenges shared their mainstreaming experiences.

The Chair, Mr. David Osborn, facilitated open interactions among presenters and the audience to seek clarity and promote dialogues to identify and highlight critical success factors for effective mainstreaming in the context of different political and governance systems, and to develop a plan of action to assist countries in their efforts on mainstreaming coastal and marine issues into national planning and budgetary processes.

SESSION 1: POLICY AND INSTITUTIONAL DEVELOPMENT PROCESSES FOR PLANNING AND SUPPORTING SUSTAINABLE MANAGEMENT OF COASTAL RESOURCES.

Mainstreaming marine environmental concerns is about integrating the value of the marine and coastal environment into a policy process and resulting in targeted policy measures. This normally targets specific policy processes such as a national development plan or sector strategy. The focus of mainstreaming efforts can include regional organizations as well as national and local governments.

In this session, delegates from various countries highlighted in their presentations the key policy processes for the integration of marine/coastal concerns, and how institutions are organized to ensure effective coordination to achieve mainstreaming. They also identified some institutional challenges, as well as policy tools for mainstreaming. The speakers for this session included senior government officials from Seychelles, South Africa, Indonesia, Mauritius and Kenya.

Policy and Institutional Development Processes in the Seychelles

Mr. Cliff J.J. Gonzalves, Director Programme Management, Seychelles' Department of Environment provided an overview of Seychelles, its unique terrestrial and marine biodiversity and that its economy is highly dependent on the coastal zone, with fishing and tourism as the major industry. He described Seychelles as a country composed of 115 islands with a total population of 86,300 people. He further stated that its islands were separated from the African continent 120 million years ago, and remains isolated today. It is because of this that the islands have a large collection of endemic amphibians and reptiles, including the *Seychlleptus seychellarum*, the largest millipede, and coco de mer (*Lodoceia maldivica*), the largest seed in the world.

The national government has always given high priority to environmental management as such mainstreaming and linkages among sectors easily achieved under its National Environmental Plan of Seychelles (EMPS) which is implemented under a multisectoral National Steering Committee. The EMPS serves as the national strategy and action plan in mainstreaming environmental management in the national development for the next ten years, thus serving as the blueprint for all development projects. Implementation of projects has been effective with a strong partnership with the private sector coupled with an effective environmental education and awareness program jointly undertaken with nongovernmental organizations (NGOs) and the scientific community. However, to sustain interest, an incentive and disincentive plan must be considered for better and effective implementation of projects in the future.

Mainstreaming of Marine and Coastal Issues into National Planning and Budgetary Processes: MPA Management as an Example

Ms. Risha Sewmangal Persad, Integrated Coastal Management, Department of Environmental Affairs and Tourism, Republic of South Africa focused on the management of Marine Protected Areas (MPAs) as an example for national planning. South Africa's Department of Environmental Affairs, Branch Marine and Coastal Management is responsible for the protection of marine and coastal biodiversity and ecological processes. It takes charge of regulating activities through permitting system and monitors compliance. Its key mandates are promoting conservation and sustainable utilization of natural resources to enhance economic growth and alleviate poverty.

South Africa is uniquely situated at the crossroads of two oceans, with a long coastline and high marine biodiversity. The estimated value of coastal goods and services is about R168 billion annually constituting 35% of national annual GDP. MPA management is one way of protecting the marine ecosystem, contributing to biodiversity conservation, climate change resilience, rural livelihood, and local economic development. So far, the country has 20 MPAs covering 20% of coastline protection proclaimed under the Marine Living Resources Act (18 of 1998). The key focus areas for MPA management include protection of marine biodiversity and identifying socioeconomic development opportunities.

In 2008, the National Protected Area Expansion Strategy was adopted to increase coverage of MPAs to include marine, wetlands, terrestrial, estuarine and riverine ecosystems. The targets for expansion (15% no-take and 25% partial protection) cover 88 km inshore, 52, 500 km² offshore and 23,300 km² offshore Prince Edward island EEZ (South Africa's territory). Operational partnership contracts are now in place for 19 of the 20 MPAs, with managing agencies. The MPA managing agencies, national government and WHS authorities are tasked to develop and implement expansion plans. Continuing research is being undertaken on the identified gaps. Current strategies put in place are the following:

1. Setting fishing conditions such as bag limits, closed seasons for certain species, daylight fishing, catch inspection;
2. Promotion of non-consumptive economic activities;
3. Recognition of Blue Flag beaches — cleanliness and environmental management;
4. Regulating white shark cage diving through permitting and code of conduct;
5. Regulating and permitting for Scuba or recreational diving; and
6. Sightseeing tours including boat-based whale watching; restricting people to approach whales closer than 300 m.

NPA on Protecting Coastal and Marine Environment from Land-based Activities: **Policy and Institutional Development Processes**

Ms. Wahyu Indraningsih, Assistant Deputy Minister for Coastal and Marine Destruction Control of Indonesia's Ministry of Environment described the framework for the development of Indonesia's National Plan of Action (NPA) in protecting its coastal and marine environment. The NPA was developed and is being implemented through a multisectoral approach with the participation of various stakeholders such as various sectoral agencies and community groups

that included NGOs, private partners, the scientific community, watershed and coastal community, local government, women community, and media.

NPA focuses on integrated river basin management and coastal and marine management and strengthening institutions. The NPA will develop a task force for variability and climate change monitoring and enhance community institutions by ensuring that poor people will have access to information and participate in formal decisionmaking processes. National and regional networking will be enhanced to establish partnerships in eradicating poverty.

The NPA also promotes pro-environment, pro-job, and pro-poor programs that address the short, medium and long terms need of the communities. Funding comes from the national and local budget, and funds based on polluters pay principles. The government also promotes CSR and cost-sharing mechanisms for watershed management and receives funding from international donors and communities. The NPA reduces socioeconomic impact of coastal degradation on the community by creating employment, livelihood opportunities, as well as social insurance and social support mechanisms. It also builds local capacity in mariculture, silvofishery, and fisheries capture technology.

To continuously mainstream the NPA, there is a need to adopt strategic communication particularly at the levels of planners and decisionmakers. Collaboration with key persons from major political groups and research institutions and universities should be strengthened.

Integrated Coastal Zone Management – A Framework and Tool for Planning and Supporting Sustainable Management of Coastal Resources: The Mauritian Experience

Mr. Jogeeswar Seewoobaduth, Director, Ministry of Environment and National Development Unit of Mauritius, gave a profile of Mauritius and highlighted the importance of its coastal zones and the challenges in management. Mauritius is composed of the main island of Mauritius and Rodrigues and a number of small islands found in its 1.9 million km^2 EEZ.

The coastal and marine environment is greatly affected by past uncontrolled development and human activities such as sand mining, illegal backfilling of wetlands, unsustainable fishing and land practices, soil erosion, and eutrophication. It is also greatly affected by cyclones, tidal surges and the impact of climate change. The water quality has deteriorated in certain areas, with potential loss of biodiversity and decrease in fish catch.

Integrated coastal zone management (ICZM) is a "system management" to achieve sustainability. It requires knowledge and understanding of various subsystems, their interlinkages and how they interact. Political will is a prerequisite to an effective ICZM plan. The plan should consider various policy and planning

Key ICZM Policies

- Setting architectural and building guidelines
- Requiring provision of wastewater treatment plant for hotels of more than 30 rooms
- Prohibiting cutting of mangroves
- Banning coral and sand extraction from lagoons
- Banning development on environmentally sensitive areas
- Promoting integrated development
- Composting of green wastes
- Reuse of treated wastewater
- Control of industrial/domestic pollution
- Use of ecosystem approach at concept stage
- Provision of Drainage systems
- Provision of Solid waste disposal
- Setting conservation guidelines for heritage sites
- Use of economic instruments

tools, and establish regulatory and institutional frameworks, develop human resource, identify financial resources, undertake public outreach programme and adopt mechanisms for monitoring and evaluation. Mauritius has adopted Key Policy Documents that enshrine principles of ICZM. Some of the ICZM tools that have been established are environmental impact assessment (EIA), land plans, zoning and biotyping, water quality index, coastal resource inventory, wastewater audit, coastal/beach erosion survey, and ballast water monitoring. Implementation of ICZM is facing challenges such as adaptation to climate change, overlapping legislations and inadequate funding and skills of human resources of implementing agencies.

Mainstreaming of Marine and Coastal Issues into Kenya's National Planning and Budgetary Process

Mr. Baraza Wangwe, Principal Wetlands Officer, Coastal Marine and Freshwater of Kenya's National Environment Management Authority, gave an overview of Kenya's coastal resources. The country's coastal and marine ecosystem are among the most productive and yet highly threatened. They support production, income and livelihood sectors and provide essential ecological services from the region. Coastal economies such as maritime trade, tourism, fisheries, agriculture, mining and other industries contribute around 9.5% of annual GDP. Owing to heavy dependence on natural resources, the rapid growth in population and expansion of various economic sectors at the coast and countrywide have led to overexploitation, environmental degradation and resource use conflicts. The impacts and threats to these ecosystems are complex and demand long term, cross-sectoral, multidisciplinary and broad stakeholder participatory responses in assessment and intervention targeting through structured engagements. There is need to sustain intervention objectives through National Program Action Plans and budgetary back stopping by government and other partners.

Through its strategic policies and programmes, Kenya recognizes the importance of linking conservation and protection of coastal and marine ecosystems to socioeconomic development. Issues that need to be addressed are pollution from land-based activities and resource use conflicts. Strategies must therefore include protection of the environment, engagement of major stakeholders, institutionalizing site-specific base line assessment of resources taken into account, promotion of investment, poverty reduction and socio-equity in a safe health productive environment. More importantly, national development plans and district development plans must be harmonized.

National Priority Areas and Options for Sustained Policy and Institutional Changes

- Legitimizing institutions, enhancing livelihood security, and reinforcing local capacity to embrace wise use principles.
- Enhancing asset expansion, livelihood opportunities and resource base resilience.
- Improving quality of growth and livelihood security in tandem with sustainable development rationale through national programs of actions.
- Reforming procedures for service delivery in response to emerging challenges and circumstances
- Promoting local intervention targeting the vulnerable

Kenya has established a collaborative inter-agency working group consisting of sectoral agencies, local authorities and various community groups. The Kenya Vision 2030 is a new long-term development blueprint for the country with the end goal of becoming a globally competitive and prosperous country with a high quality of life by 2030. It aims for sustainable utilization and conservation of coastal

ecosystems, enforcement of legislation, capacity building, proper municipal waste management system, and integrating indigenous coastal management systems.

SESSION 2: MOBILIZATION OF DOMESTIC AND INTERNATIONAL RESOURCES TO ADDRESS COASTAL AND MARINE PRIORITIES

Natural resources are a major source of wealth and, if properly managed, can generate significant tax revenues in low-income countries. Unfortunately, the revenue potential may remain unrealized due to poor market incentives, inadequate subsidies for natural resource extraction (e.g., low-cost loans for Indonesia's timber industry), artificially low taxes on natural resource use, lack of enforcement and tax evasion on legal or illegal harvests) as well as conflicting government policies. Hence, improved environmental management can be an important source of additional government revenues, which can be directed toward poverty reduction along with other sources of revenues.

The loss of ecosystem services or natural resources may translate into the need for additional public expenditures. Often, the loss of natural resources is treated as having limited impacts, since many of these impacts are not fully priced in the market. Applying economic techniques to quantify non-market values can demonstrate the need for improved environmental management.

This session introduced innovative revenue and related financial mechanisms in various countries to support environmental stewardship by governments at various levels. Presentors identified the problems encountered particularly among stakeholders in appreciating the benefits of such changes. They identified some constraints in raising funds from the national government; and how countries addressed these constraints and challenges of resource mobilization through policy and legislative changes. Country case studies also elaborated how the ICM framework has been used to mobilize resources and institutional support to integrate marine/coastal issues into wider development plans/policies. Senior government officials from Sri Lanka, Philippines and Saint Lucia made presentations on their domestic revenue and related policy measures for mobilization of resources for environmental management.

Mainstreaming ICM Policy in Planning and Financing at the National and Local Systems

Mr. Robert Jara, Executive Director, Coastal and Marine Management Office, Philippines Department of Environment and Natural Resources (DENR), described the overall uses and issues of the Philippine's coastal and marine environment. He identified the following as the major issues, namely: (a) increasing pollution; (b) resource use conflict; (c) Unclear and weak institutional arrangements; (d) overexploitation and destructive fishing; (e) unplanned shoreline development, and (f) natural disasters, particularly typhoons, flooding and landslides.

Executive Order 533 (EO 533), issued by President Gloria Macapagal-Arroyo adopted Integrated Coastal Management (ICM) as the national framework to ensure the sustainable development of the Philippines' coastal marine environment and resources. EO 533 directs the implementation of ICM in all coastal areas, taking into consideration the inter-linkages of coastal areas and associated watersheds, estuaries and wetlands. Local governments play a major role in ICM implementation. In implementing EO 533, the Philippines uses the process framework for sustainable development of river basin and coastal areas developed by PEMSEA, including the ICM project development and implementation cycle being adopted in all PEMSEA ICM sites.

He then described the different funding mechanisms established to finance the implementation of the national ICM program using the following funding sources, namely: national government budget, local government funds, establishment of environmental fees and making use of public-private sector partnership or PPP. He cited the level of funding from the national government, particularly the DENR, the province of Pampanga for local government, the users fee scheme of Puerto Galera and the public-private partnership of the province of Bataan and the Bataan Coastal Care Foundation, Inc.

ICZM– A Framework and Tool for Planning and Supporting Sustainable Management of Coastal Resources: The Saint Lucian Experience

Ms. LaVerne Walker, CZMU Coordinator, Sustainable Development and Environment Section of the Ministry of Physical Development and Environment, Housing, Urban Renewal and Local Government, gave an overview of the coastal resources of Saint Lucia. To protect its resources, St. Lucia adopted ICZM Policy and is working towards the adoption by Cabinet of the ICZM Strategy and Action Plan with the objectives of developing a planning framework for managing coastal resource use, establishing appropriate decision-support systems and securing adequate financial resources.

Vision

A biologically diverse, healthy and productive coastal and marine environment that benefits all Saint Lucians and which is maintained and enhanced through an integrated holistic and multisectoral approach to national and regional planning and development.

The proposed North West Coast Water Quality Project aims to improve recreational water quality through demonstration of ICM best practices. Some of the proposed activities include characterizing hotspots, establish spatial guidelines for recreational water quality standards, establish strategies for remediation and control, undertake costing of solutions, monitoring and evaluation using GEF international waters framework.

The process stressed the importance of a champion, the involvement of cabinet ministers, establishing inter-agency collaboration mechanism, and promoting on-the-ground successes. Adaptive planning is vital to address changing circumstances.

Establishing an Environment Conservation Levy Sri Lanka's experience

Ms. Padmini Batuwitage, Additional Secretary (Environment and Policy) of the Ministry of Environment and Natural Resources of Sri Lanka, shared Sri Lanka's experience on the establishment of the Environment Conservation Levy. Sri Lanka is an island in the Indian Ocean consisting of 65,610 $km^{2.}$ and a long coastline of approximately 1,620 km. It has the richest areas of biodiversity (coral reef, lagoons, mangroves, etc.) Its coastal areas contribute significantly to Sri Lankan Economy. Thus, the country's Constitution mandates the state to protect, preserve and improve the environment for the benefit of the country and makes it the duty of every Sri Lankan to protect nature and conserve its riches.

Environmental management in Sri Lanka operates within legal and institutional structures. The National Environmental Policy was adopted to ensure sound environmental management within a sustainable development framework. Legal instruments have also been

adopted including the National Environmental Act. No 47 of 1980 and related amendments (CEA) and North Western Provincial Environmental Statute No.12 of 1990 as well as the management tools such as the EIA 1993 and EPL 1991.

Sri Lanka has also established the Environment Conservation Levy Act of 2008 Environmental Conservation Levy Act, No. 26 of 2008 which provided for the imposition of an Environmental Conservation Levy on specified items and services that are likely to have a harmful impact on the environment. The revenue accumulating from this levy can be directly utilized for taking corrective action to eliminate or alleviate the hazard. All Levies collected are to be remitted to the "Environmental Conservation Levy Account" of the Consolidated Fund.

The Act is implemented by the Minister of Finance. The items and services and the quantum of the levy will be determined by the Minister in charge of environment and published in the government gazette as an Order made under the Environment Conservation Levy Act. The Order comes into effect on the date specified in the Order. According to the provisions of the Act, every Order made under the Act has to be approved by a resolution of the Parliament as soon as convenient after it is published.

Some of the items identified under the Levy include: (a) motor cars and motorcycles (to be paid by the owners annually); (b) Non-CFL electric bulbs of over 40 watts (to be paid by the importer or local manufacturer); (c) services supplied by cellular phone operators (to be paid each month by the user of the phone); and (d) users of television transmission towers, broadcasting towers and telephone transmitting towers (to be paid by the users of the towers).

However, in respect of the above products, the Levy faced challenges in the form of petition filed by the public with the Supreme Court who claimed that such levy constitute an infringement of their fundamental rights guaranteed under the Constitution of Sri Lanka. The Supreme Court order nullified the levies relating to motor vehicles, non-CFL electric bulbs and transmission towers but upheld the levies for cellular phones. Importantly, however, the judgement stated, "The imposition of further levies would be considered by the executive in consultation with the respective parties". Clearly, therefore, the declaration of more items and services as being liable to the imposition of the Environmental Conservation levy is envisaged.

The government is taking steps to utilize the revenue collected in e-waste management initially. A waste mobile phone collection network with the participation of private sector (Dialog Telekom) has been facilitated by using these funds.

CONCLUSIONS

Chair David Osborn, Coordinator of UNEP/GPA, re-stated the two major issues that the workshop sought to address relative to mainstreaming and implementation of coastal management. The issues are:

1. What is the relationship between coastal and marine environments and national development?

2. How do governments mainstream Integrated Coastal Management into national planning and budgetary processes?

The presentations stressed the importance of coastal and marine ecosystems to national development in many countries given that the environment underpins the economy who in turn underpins the environment. Coastal and marine systems are central to national development in most countries and it is important to establish the economic value of ecosystem services at local scales in coastal and marine areas.

Mainstreaming is about solutions, not problems – it is about building wealth. In order to mainstream coastal management into national development there is a need to build on strengths and promote successes – success builds success. Mainstreaming is a process that takes time and one need not have to do everything at once, but rather start with what is doable.

There is a need to encourage broad stakeholder participation and engage NGOs and private sector both in the development and implementation of national programs to increase transparency and ensure buy-in.

In generating funds to implementation of programs and projects under a national plan, one can make use command and control, market-based instruments and voluntary approaches. Communication is critical and informal communication is as important as formal. An effective communication plan is essential.

One must live with conflicts as it will always be there, between programs or planners and decisionmakers.

RECOMMENDATIONS:

To mainstream marine and coastal issues into national planning and budgetary processes , the workshop agreed that it is important to:

- Identify positive contributions of natural resource management to attainment of national development goals and the achievement of sustainable development
- Identify the lead national agency
- Make use of good science
- Identify goals and targets for marine and coastal sector in relation to national development goals
- Scope out key strategic issues & entry points
- Define a mainstreaming strategy
- Form an inter-agency working group
- Develop an accountability framework

Theme 2

NATURAL AND MAN-MADE HAZARD PREVENTION AND MANAGEMENT





eas Congress 2009

Theme 2

Natural and Manmade Hazard Prevention and Management

WORKSHOP 1: WORKSHOP ON GOVERNMENT/ INDUSTRY PARTNERSHIPS FOR EFFECTIVE AND CONSISTENT PREPAREDNESS AND RESPONSE TO MARINE POLLUTION IN EAST ASIA

24 November 2009

International Maritime Organization (IMO)

International Petroleum Industry Environmental Conservation Association (IPIECA)

Oil Spill Rweasponse

Chair: **Ms. Patricia Charlebois**
Head, Pollution Response Section, Sub-division for Pollution Response and TC Coordination, Marine Environment Division
International Maritime Organization

Co-Chair: **Mr. Richard Sykes**
International Petroleum Industry Environmental Conservation Association

The East Asian Seas Congress 2009

"Partnerships at Work: Local Implementation and Good Practices"

Manila, Philippines
23–27 November 2009

The East Asian Seas Congress 2009
"Partnerships at Work: Local Implementation and Good Practices"
Manila, Philippines, 23-27 November 2009

Theme 2: Natural and Manmade Hazard Prevention and Management
Workshop 1: Workshop on Government/Industry Partnerships for Effective and Consistent, Preparedness and Response to Marine Pollution in East Asia

24 November 2009

Co-Convening Agencies:
International Maritime Organization (IMO), International Petroleum Industry Environmental Conservation Association (IPIECA) and Oil Spill Response

Chair:
Ms. Patricia Charlebois, Head, Pollution Response Section, Sub-division for Pollution Response and TC Coordination, Marine Environment Division, International Maritime Organization

Co-Chair:
Mr. Richard Sykes,
International Petroleum Industry Environmental Conservation Association

INTRODUCTION

The International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC Convention) was adopted in 1990 to minimize the environmental and economic consequences of major oil pollution incidents. Bilateral and multilateral co-operation in preparedness and response and promotion of regional arrangements to prepare for and combat oil pollution incidents were also emphasized in the articles of the Convention.

In East Asia, some of the well-known high-risk areas are the Malacca Straits, the South China Sea and the strait between the Republic of Korea and Japan. Dense traffic of oil tankers and major oil production from Sakhalin and the upper Yellow sea, including the Bohai Sea areas, have resulted in having these areas considered as high risk. Hence, the need to review the status of oil spill risks on a subregional basis, as well as the strategies relating to oil spill response, are imperative to further improve the response capability within the region, particularly through regional co-operation.

With the entry into force of the OPRC Convention in May 1995, several multi- and/or bi-lateral regional agreements have been established, with the aim of increasing regional capacity for preparedness and response to oil spills and developing mutual assistance and/or joint response operations should a major oil spill occur in the region. Government and Industry partnerships in oil spill preparedness and response has been an effective strategy towards enhancing response capability at the global, regional and national levels.

This workshop reviewed major issues currently faced by countries of East Asia regarding preparedness, response and co-operation for combating oil pollution, with a particular emphasis on:

- Regional/sub-regional arrangements for pollution response;

- Challenges in regional government-industry co-operation for spill response;
- Lessons learned from various regional/subregional arrangements;
- Integrated approach to regional, national and local oil spill preparedness and response; and
- Recent developments in Claims and Compensation for Oil Spills.

Framework for Developing OSR Capacities and Accessing Assistance

The OPRC Convention 1990 was adopted to encourage States to develop national and regional capacity to prepare for and respond to oil pollution incidents and facilitate international co-operation and mutual assistance for pollution response. To date, 101 countries have ratified the OPRC Convention 1990. In 2000, the Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances (OPRC-HNS Protocol 2000) was adopted in recognition of the increasing threat of pollution incidents involving chemicals and entered into force on 14 June 2007. Twenty-five (25) countries have ratified the OPRC-HNS Protocol 2000.

Parties to the Convention are required to establish a national system for responding to incidents of oil and HNS pollution which include: a) national contingency plan, b) designated national authorities and 3) an identified national operation focal point (or focal points) . Contracting parties are also mandated to enhance pollution preparedness and response capacity, either individually or through bilateral/ multilateral co-operation through establishment of pre-positioned equipment; implementing a programme of exercises and training of personnel; developing and implementing plans and communication capabilities; and a mechanism for coordinating the response. Rules and provisions for international assistance are also dealt with emphasizing on agreement of countries to provide international assistance to other State parties, and; responsibility of requesting Parties to facilitate the receipt of such assistance in-country and to reimburse the costs incurred of assisting Party.

Underscoring the need for cooperation, the OPRC Convention and OPRC-HNS Protocol specifically call for State parties to endeavor to conclude bilateral or multilateral agreements for oil pollution preparedness and response. The establishment of regional oil spill centers was cited as an effective tool for strengthening and backstopping national and regional capabilities. Such centers also facilitate co-operation and mutual assistance, promote information exchange, and serve as co-ordinating centers for the mobilization of regional and international resources and for regional capacity-building activities.

The “working together approach” has been the basic principle in promoting co-operation involving government, industry and other stakeholders, thus increasing capacities for oil spill preparedness and response. The OPRC 90 provided the effective framework for the significant advances in oil spill preparedness and response around the world and remains to be an important instrument for strengthening government and industry partnerships.

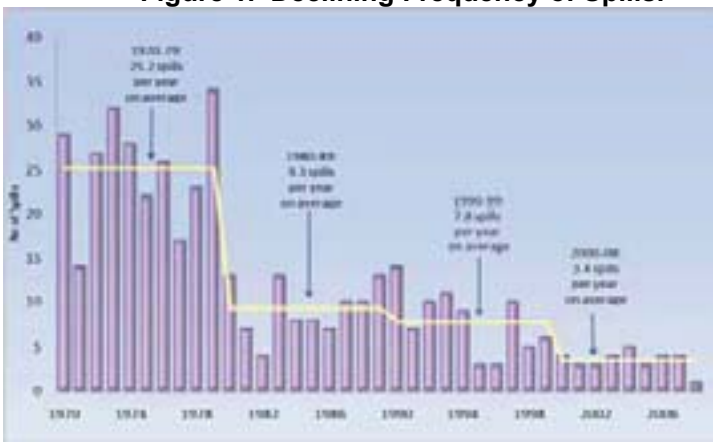
Cooperation between Industry and Government

The Global Initiative is one example of a joint programme between industry and government, and the International Petroleum Industry Environmental Conservation Association (IPIECA) and International Maritime Organization (IMO), in particular, at the global level. The programme aims to improve and sustain the capacity of developing countries to protect their marine and coastal resources at risk from an oil spill incident. Specifically, it encourages and facilitates the development and implementation of oil pollution response capacity and support activities to assist countries in ratifying and implementing the provisions of related international Conventions. The Global Initiative is organized on a regional basis with focal points established for West and Central Africa; the Mediterranean; Caspian and Black Sea and the Caribbean.

The IPIECA Oil Spill Working Group (OSWG) serves as a key international oil industry forum which aims to improve the state of oil spill preparedness and response around the world. IPIECA operates globally and seeks to achieve its vision through the following strategies: (1) developing, sharing and promoting sound practices and solutions; (2) enhancing and communicating knowledge and understanding; (3) engaging members and others in the industry; and (4) working in partnership with key stakeholders. One of the popular works of IPIECA is the publication of its technical report series.

Based on studies, it was evident that the frequency of major spills has declined due to prevention efforts by government and industry. The figure below shows this trend.

Figure 1. Declining Frequency of Spills.



Source: IOPCF 2008

At the regional level, Oil Spill Response, an oil industry tier 3 response organization with a global scope, operates a regional base in Singapore for the Asia-Pacific region and has been an active partner of government entities in the region. For the past eight years, OSR has implemented a proactive advocacy program, assisting relevant government entities in building oil spill response capacities. Oil Spill Response operates on a tiered preparedness and response concept, which is considered as the most efficient and effective way to sustainably meet operational challenges for oil spill response.

In view of the increasing cost of spills (Figure 2), operational integration of both in-country and international response resources held by government and industry is deemed necessary. Major oil spill incidents provide evidences that response resources are more effectively used and deployed when these are operationally integrated.

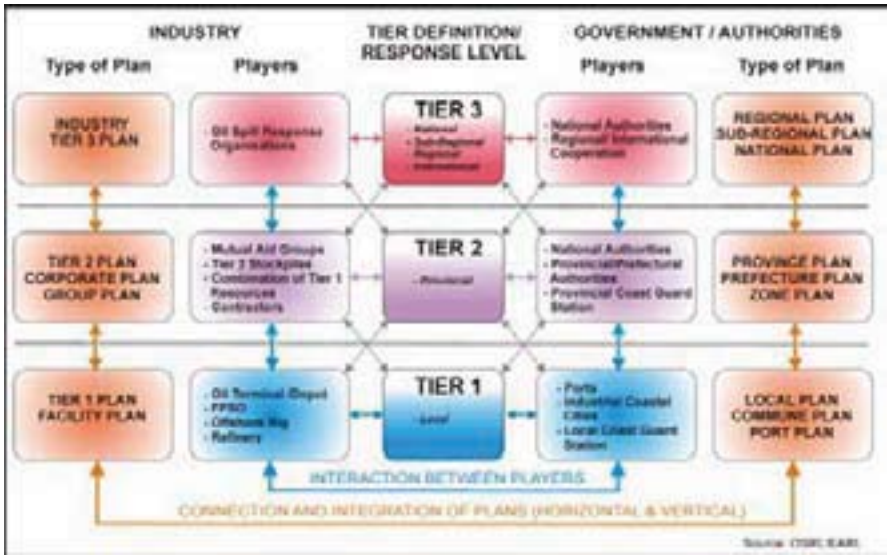
Figure 2. Cost of Spills.

Incident	Year	Oil Spilt tons	Total Cost $	Cost $/ tonne
Hebei Spirit (Korea)	2007	112,000	650,000,000 (?)	$55,000
Prestige (Spain)	2002	63,000	1,443,000,000	$22,904
Erika (France)	1999	19,800	247,500,000	$12,500
Sea Empress (UK)	1996	73,000	55,200,000	$756
Braer (UK)	1993	84,000	78,000,000	$928
Exxon Valdez (USA)	1989	37,000	1,950,000,000	$52,702
Amoco Cadiz (France)	1978	223,000	225,000,000	$1,009

Source: ITOPF.

Figure 3 presents response integration based on the tiered preparedness and response concept. It shows the entry points for industry and government integration and highlights the need for consistency of plans both horizontally (industry and government) and vertically (regional and local level).

Figure 3. Response Integration.



Regional/Subregional Arrangements in Oil Spill Preparedness and Response

MERRAC (is one of four Regional Activities Centers of the Northwest Pacific Action Plan (NOWPAP). MERRAC or the Marine Environmental Emergency Preparedness and Response Regional Activity Centre is established for the development of effective measures for regional cooperation in marine pollution prevention and response in the NOWPAP Region since 2000. MERRAC was originally designated to deal with oil spill preparedness and response. However, the scope of MERRAC activities was expanded in 2005 to include HNS spill, marine litter, ballast water, MARPOL, and Compensation and Liability.

Some of the major oil spill incidents in the NOWPAP region are the Sea Prince incident in 1995, the Nakhodka incident in 1997 and the Hebei Spirit incident in 2007, which resulted in damage to marine environment and huge economic losses. Given these incidents, the need to strengthen regional cooperation is deemed necessary.

The NOWPAP Regional Oil Spill Contingency Plan was adopted in 2003 as technical and operational guidelines for regional co-operation in case of oil spill incident in the NOWPAP Region. The Plan provides a framework under which NOWPAP Members (China, Japan, RO Korea and Russia) can co-operate at the operational level in responding to oil spill incidents. It is also referred to as an operational mechanism for mutual assistance. HNS has been recently added to the existing Plan and its Resolution was adopted in 2008. With this arrangement, the four member states are in a better state of preparedness to respond to oil and HNS spills, as each of them may request assistance from other NOWPAP members in cases of major oil and HNS spill incident.

During the Hebei Spirit incident, the importance of regional cooperation was recognized. Lessons from this incident highlighted the need for regularly conducting communication and tabletop exercises and aim at organizing a joint operational exercise with neighboring countries at least every two years. The need to improve the regional contingency plan and make it a living document was also stressed, particularly on the need to share information on equipment that can

be used for external assistance, national performance standards on the application of non-mechanical methods and information relating to compensation and liability. MERRAC also recognized the need to further enhance its capability for marine pollution prevention, preparedness and response.

At the subregional level, the Joint Statement on Partnerships in Oil Spill Preparedness and Response in the Gulf of Thailand (GOT), which was signed by three countries in January 2006, provided an example of intergovernmental cooperation not covered by a regional convention. The joint statement and framework programme provides a common cooperative platform for enhancing capacities and implementing an effective response system for oil spills at respective countries. It also promotes mutual assistance and international cooperation in oil spill-related programmes and activities, particularly in training, research, exchange of information, among others. The GOT cooperation has a number of achievements which led to increased oil spill preparedness and response capability of participating countries and a better understanding of the system of response in each country. Some of the lessons learned from the subregional cooperation are: (1) integration of stakeholders into an overall system of preparedness and response is imperative; (2) the need to recognize the role of local governments in increasing the level of national preparedness and response; (3) the need to strengthen interconnectivity of oil spill preparedness and response from regional, national to provincial levels; and (4) partnership with the industry increases OSR capability within the region.

Enhancing Local Capacities in Oil Spill Preparedness and Response

Petroleum exploration and production activities are increasing in the region. Vietnam, in particular ranks third in terms of crude oil production after Indonesia and Malaysia. Estimated production in 2009 is 23.8 m tonnes of oil. This has made the country vulnerable to oil spill incidents. In view of this, a national plan to cope with oil spill incidents was approved by the Prime Minister in 2001. Specifically, the plan established 3 regional centers for Oil Spill Response (Northern, Central, Southern) and classified oil spill response into 3 levels: Grassroots or local level, Regional level and National level. Vietnam implemented a comprehensive capacity development program for oil spill preparedness and response including: (1) setting up a comprehensive legal framework; (2) building oil spill response teams; (3) investment in vessel, oil spill response bases and equipment; and (4) setting up a mechanism for oil spill compensation. In addition, Vietnam has initiated the development of oil spill contingency plans in coastal provinces of south Vietnam.

Lessons from Major Oil Spill Incident

In December 2007, the fully laden tanker Hebei Spirit was involved in a collision off the coast of Taean, Republic of Korea. The incident resulted in the largest oil spill in Korean history, during which approximately 10,800 tonnes of crude oil contaminated significant proportions of the country's western coastline and caused wide-scale economic loss, particularly to the fisheries and aquaculture industry. The oil spill response was undertaken on a huge scale and involved cleanup contractors, the local people, the Korean military and thousands of volunteers.

The Hebei Spirit incident challenged both the national system for oil spill preparedness and response in Korea and the effectiveness of the NOWPAP regional arrangement for oil spill response. Some of the issues identified during the incident include the following: (1) failure of initial emergency actions; (2) lack of policies and guidelines for the selection of response technologies; (3) command and control was not unified; (4) lack of a plan for the management of huge numbers of volunteers; (5) lack of understanding of the international compensation and liability regime; and (6) poor mass media relations.

To address the problems faced during the incident, the Korean government carried out a series of comprehensive post-spill follow up measures, including the revision of the national response function and capability, through the establishment of three national strike teams under

the Korean Coast Guard, an overhaul of oil spill training programs and the construction of a specialized oil spill training facility amounting to USD15 million for practical training and to meet the requirements of the OPRC Convention and OPRC-HNS Protocol. In addition, a restoration program for affected areas, based on outcomes of post-oil spill research (oil pollution, ecology monitoring, ecology restoration), is being implemented, which covers the shorelines and island areas of 12 cities in 2 provinces (Total 6,473 km^2).

On the other hand, the SOLAR 1 incident, which occurred in August 2006, presented various concerns relating to the Philippine governments' system for oil spill preparedness and response, specifically those relating to organizational arrangements, responsiveness of the National Oil Spill Contingency Plan (NOSCP), preparedness of local government units in handling oil spill incidents and the response capability of the Philippine Coast Guard.

Post-spill measures were carried out by the Philippine Coast Guard (PCG) based on their experience with the SOLAR 1 incident to include: (1) revision of the NOSCP; (2) establishment of additional OSR Centers; (3) empowerment of local government units; (4) upgrading of PCG OSR capability; and (5) formulation/ revision of pertinent pollution prevention regulations.

THE WAY FORWARD

The workshop has put forward the following recommendations:

1. Countries that have not yet done so should consider developing their national oil spill contingency plans, with clearly defined responsibilities, that are properly resourced and regularly exercised;
2. Countries to ratify relevant international conventions such as OPRC, CLC, IOPC Funds;
3. Call on international organizations to catalyze OPRC activities/systems at national and regional levels;
4. Identify organizations such as industry, funding agencies (WB, ADB, UNDP, GEF) and donor governments that can provide technical assistance and support to countries at each level (national, regional, international);
5. Identify different elements needed locally through to regional level for oil spill preparedness, response and cooperation, to ensure effective operational response integration;
6. NOWPAP can serve as an excellent working model, which can be adapted by other subregions of East Asia;
7. There is a need to educate the public and raise awareness of the actual reality of oil spill threats, which could be introduced at school level, as well as through national campaigns that could be extended region-wide;
8. There is a need to recognize that currently some countries lack equipment, training and capability to effectively respond to marine pollution incidents;
9. Political will of national governments is essential to paving the way for regional cooperation.
10. The revitalization of ASEAN-OSRAP will require a legal statement from ASEAN (through the Maritime Transport Working Group) as a policy framework to operate and hold its first official meeting;
11. Stress the importance of the role of PEMSEA in advocacy, technical cooperation, promoting and assisting in regional oil spill preparedness, response and cooperation.
12. Appropriate mechanisms should be established by countries in the region to facilitate, as a priority, the transport and movement of response equipment and personnel across international borders (customs issues).

EAS Congress/WP/2010/09

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Theme 2

Natural and Manmade Hazard Prevention and Management

WORKSHOP 2:
MEETING CHALLENGES OF CLIMATE CHANGE AT THE LOCAL LEVEL THROUGH ICM

24 November 2009

United Nations Development Programme (UNDP) – Philippines

Chair: **Dr. Gunnar Kullenberg**
Professor Emeritus, University of Copenhagen
Denmark
Senior Fellow, UNITAR

Co-Chair: **Ms. Amelia Supetran**
UNDP – Philippines

The East Asian Seas Congress 2009

"Partnerships at Work: Local Implementation and Good Practices"

Manila, Philippines
23–27 November 2009

The East Asian Seas Congress 2009
"Partnerships at Work: Local Implementation and Good Practices"
Manila, Philippines, 23-27 November 2009

Theme 2: Natural and Man-made Hazard Prevention and Management
Workshop 2: Meeting Challenges of Climate Change at the Local Level through ICM

24 November 2009

Co-Convening Agency:
United Nations Development Programme (UNDP) - Philippines

Chair:
Dr. Gunnar Kullenberg
Professor Emeritus, University of Copenhagen, Denmark
Senior Fellow, UNITAR

Co-Chair:
Ms. Amelia Supetran
UNDP-Philippines

INTRODUCTION

Climate change is a critical and cross-cutting issue, which can affect various aspects of sustainable development. There is a growing concern over its impacts and potential catastrophic consequences, particularly in East Asia, with its long coastlines, economic activity and population concentration in the coastal areas, and reliance on agriculture and use of natural resources for economic development. This workshop, which consisted of 16 presentations and open discussions, highlighted the diverse challenges posed by climate change to the region, particularly at the local level, the usefulness of the integrated coastal management (ICM) framework and process in dealing with such challenges, and the emerging approaches and needs for climate change adaptation for coastal and marine areas.

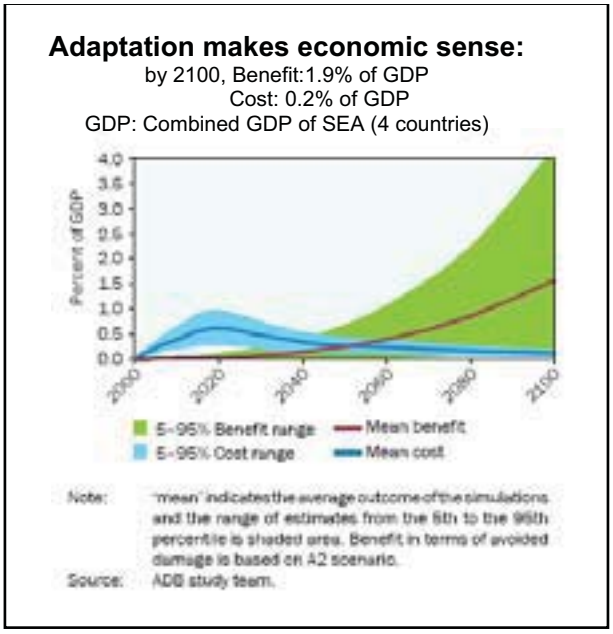
ICM has been recognized as a valuable tool in achieving the broader goals of sustainable development in various international agreements including the Plan of Implementation of the World Summit on Sustainable Development, the Agenda 21, the Convention on Biological Diversity, and the United Nations Framework Convention on Climate Change. In the Manado Ocean Declaration adopted by the World Ocean Conference in Manado, Indonesia in May 2009, ICM was affirmed as a valuable tool in achieving sustainable development and climate change adaptation. This workshop provided examples of ICM implementation at the local level that address various issues related to conservation and sustainable development of the marine and coastal areas including considerations of natural

hazards, climate variability, sea level rise, and erosion, among others. The workshop also highlighted how ICM provides a platform and process for developing institutional mechanisms that support interagency and multisectoral collaboration and facilitate strategic selection of issues and corresponding policy and management measures, including climate change adaptation. Examples of practical adaptation measures were also discussed, along with technical advancements and capacity-building needs for incorporating climate adaptation into existing ICM programs.

VULNERABILITY OF COASTAL AREAS AND MARINE ECOSYSTEMS IN EAST ASIA TO CLIMATE CHANGE

Economic modeling carried out under the Asian Development Bank (ADB) study entitled "The Economics of Climate Change in Southeast Asia: A Regional Review (2009)"[1] confirmed that Southeast Asia is more vulnerable to climate change than the world as a whole. Without further mitigation and adaptation, the four countries included in the study — Indonesia, Philippines, Thailand and Vietnam — were projected to suffer a mean loss of 2.2 percent of GDP by 2100 on an annual basis, if market impact (mainly agriculture and coastal zones) were considered. This is well above the world's 0.6 percent. The mean impact could be dramatically worse, equivalent to 5.7 percent of GDP each year by 2100, if non-market impacts (mainly related to health and ecosystems) were included and 6.7 percent if the chance of catastrophic events was also considered. Again, these are higher than the world's 2.2 percent and 2.6 percent losses, respectively.

Figure 1. Cost and Benefit of Adaptation.



The Southeast Asian region actually has made significant efforts in climate change adaptation, although these have been mostly reactive so far and still inadequate to cope with future challenges particularly more extreme events; hence the need to enhance adaptive capacity in the region. It is estimated that adaptation for the agriculture and coastal zones for the four countries would cost about US$ 5 billion per year on average but that benefits would exceed the cost by 2060. By 2100, the benefits could be 1.9 percent of GDP compared to the cost at 0.2 percent of the GDP. Adaptation, however, also needs to be complemented by mitigation efforts. Southeast Asia contributed 12 percent of the world's greenhouse gas emissions (GHG) in 2000, with 75 percent of emissions coming from the land use change and forestry sector, 15 percent from energy sector, and 8 percent from agriculture. Reducing emissions from deforestation and degradation, implementing win-win mitigation options in the energy sector, and exploring mitigation potential of the agriculture sector were recommended.

In the study entitled "Climate Change Vulnerability Mapping for Southeast Asia (2009)"[2], which covered 530 subnational areas in Cambodia, Indonesia, Lao PDR, Malaysia, Philippines, Thailand and Vietnam, the Economy and Environment Program for Southeast Asia (EEPSEA)

showed that the hotspots or most vulnerable areas in Southeast Asia includes all the regions of the Philippines, the Mekong River Delta in Vietnam, almost all the regions of Cambodia, North and East Lao PDR, the Bangkok region of Thailand, and West Sumatra, South Sumatra, Western Java, and Eastern Java in Indonesia.

The assessment defined vulnerability as a function of exposure, sensitivity, and adaptive capacity. Exposure to five climate hazards, namely, tropical cyclones, floods, landslides, droughts, and sea level rise were measured; population density and extent of protected areas were used as proxies for human sensitivity and ecological sensitivity, respectively; and adaptive capacity was measured based on selected socioeconomic variables, technology, and infrastructure. Indices of vulnerability to climate change were then generated and illustrated through spatial maps, which enables the visualization of vulnerable areas, incorporation of the socioeconomic dimension in vulnerability assessment, and downscaling of vulnerability assessment to subnational levels. The information is expected to help target research and development efforts particularly at the local/subnational levels and most vulnerable areas, facilitate discussions on policy actions, and serve as a tool for decisionmaking, including resource allocation on climate change initiatives. To complement the mapping study, EEPSEA also conducted cross-country adaptation case studies in Vietnam, Thailand and the Philippines to determine the adaptive strategies of households, communities and local government units when confronted with extreme climate events.

Figure 2. GHG Emissions in Southeast Asia (2002).

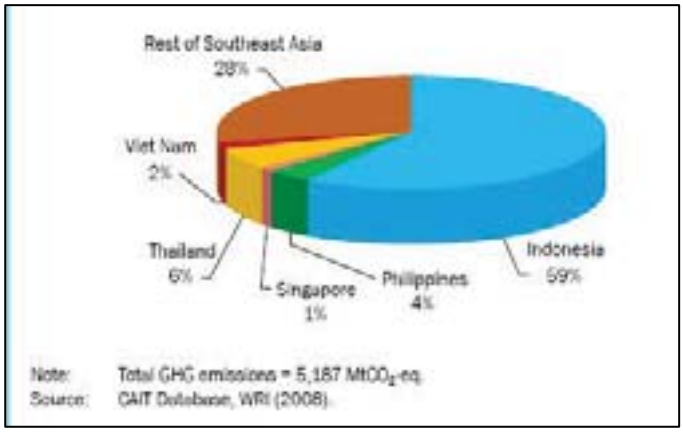
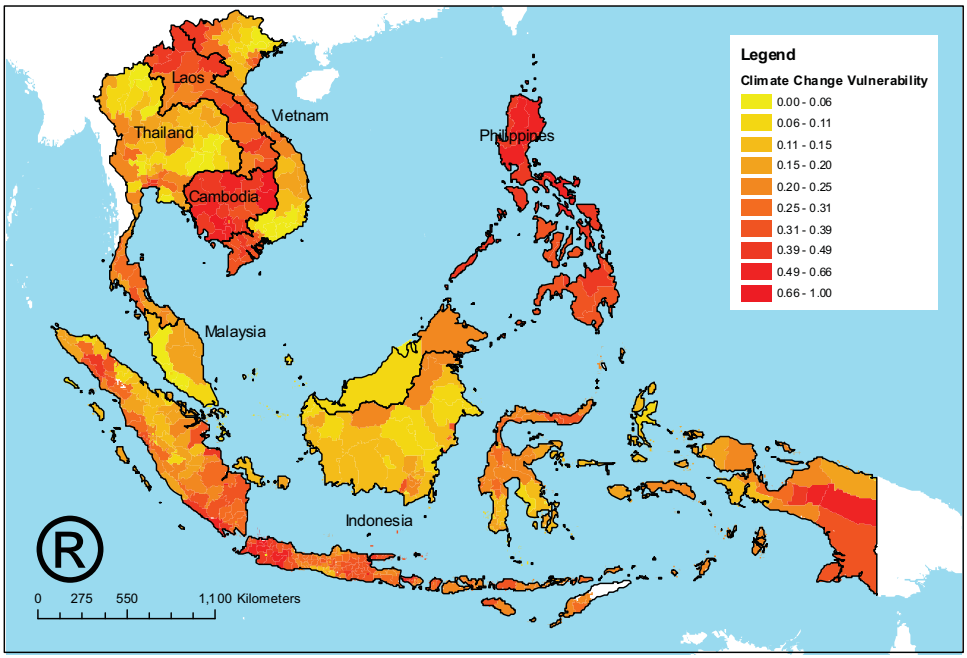


Figure 3. Climate Change Vulnerability in Southeast Asia.



CURRENT APPROACHES, STRATEGIES AND TOOLS FOR CLIMATE CHANGE ADAPTATION IN THE CONTEXT OF INTEGRATED COASTAL MANAGEMENT

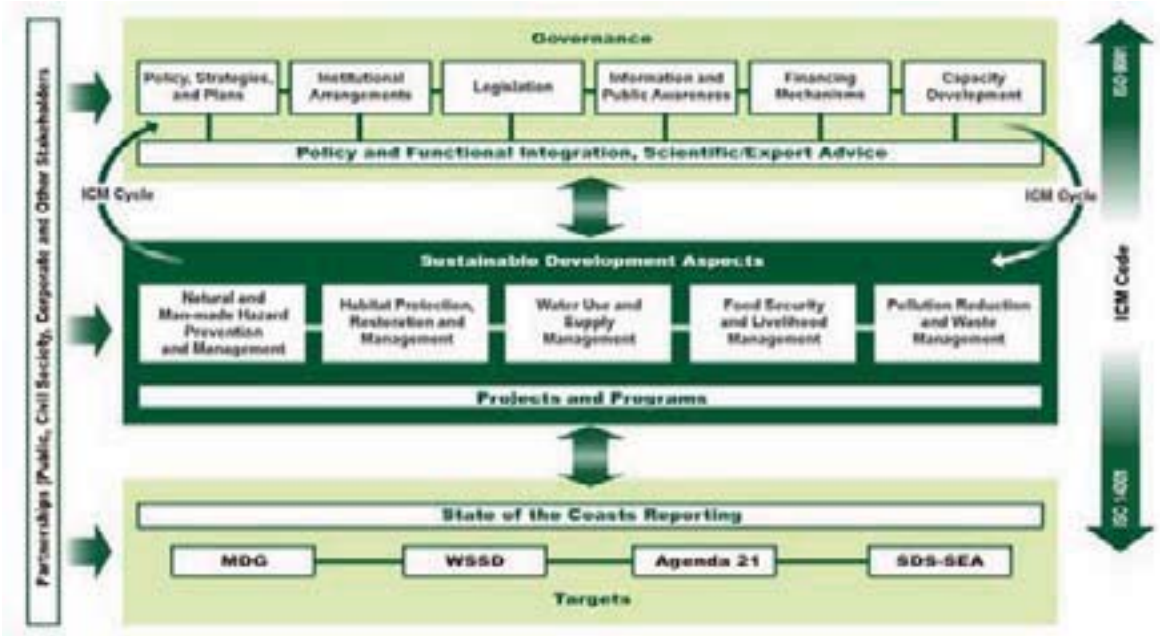
ICM can be a useful tool for addressing specific development challenges and optimizing climate change response at the local level[3]

ICM application for developing and managing marine and coastal areas and resources can advance parallel goals such as reducing poverty, increasing food security, fostering economic growth and protecting ecosystems. It can also more effectively tackle specific issues related to climate change, such as controlling flooding, mitigating the effects of storm surges and sea-level rise, strengthening disaster preparedness and response mechanisms, and improving the resiliency of communities and marine and coastal ecosystems.

Using an ecosystem-based management approach, ICM focuses on maintaining the integrity of ecosystems by managing human activities and their impacts on the ecosystem. ICM also promotes integration and coordination of policies and management actions of relevant sectors within the ICM program, policies and management reforms to facilitate policy and functional integration based on scientific advice, and various inter-sectoral activities. ICM also emphasizes readiness and flexibility to make appropriate management adaptations in response to changing ecological, political and socioeconomic conditions that may hamper the ICM initiative.

Through the development and implementation of an integrated approach to marine and coastal area and resource management under the PEMSEA Regional Programme, 28 local governments in 11 countries across the East Asian Seas region are progressing towards their sustainable development objectives and at the same time, addressing climate change adaptation. Building on the knowledge, skills and lessons from these local initiatives, efforts are underway in the countries to scale up ICM implementation in line with the target adopted by PEMSEA Country Partners through the Haikou Partnership Agreement to implement ICM programmes in at least 20 percent of the region's coastlines and adopt coastal policies in at least 70 percent of the countries by 2015.

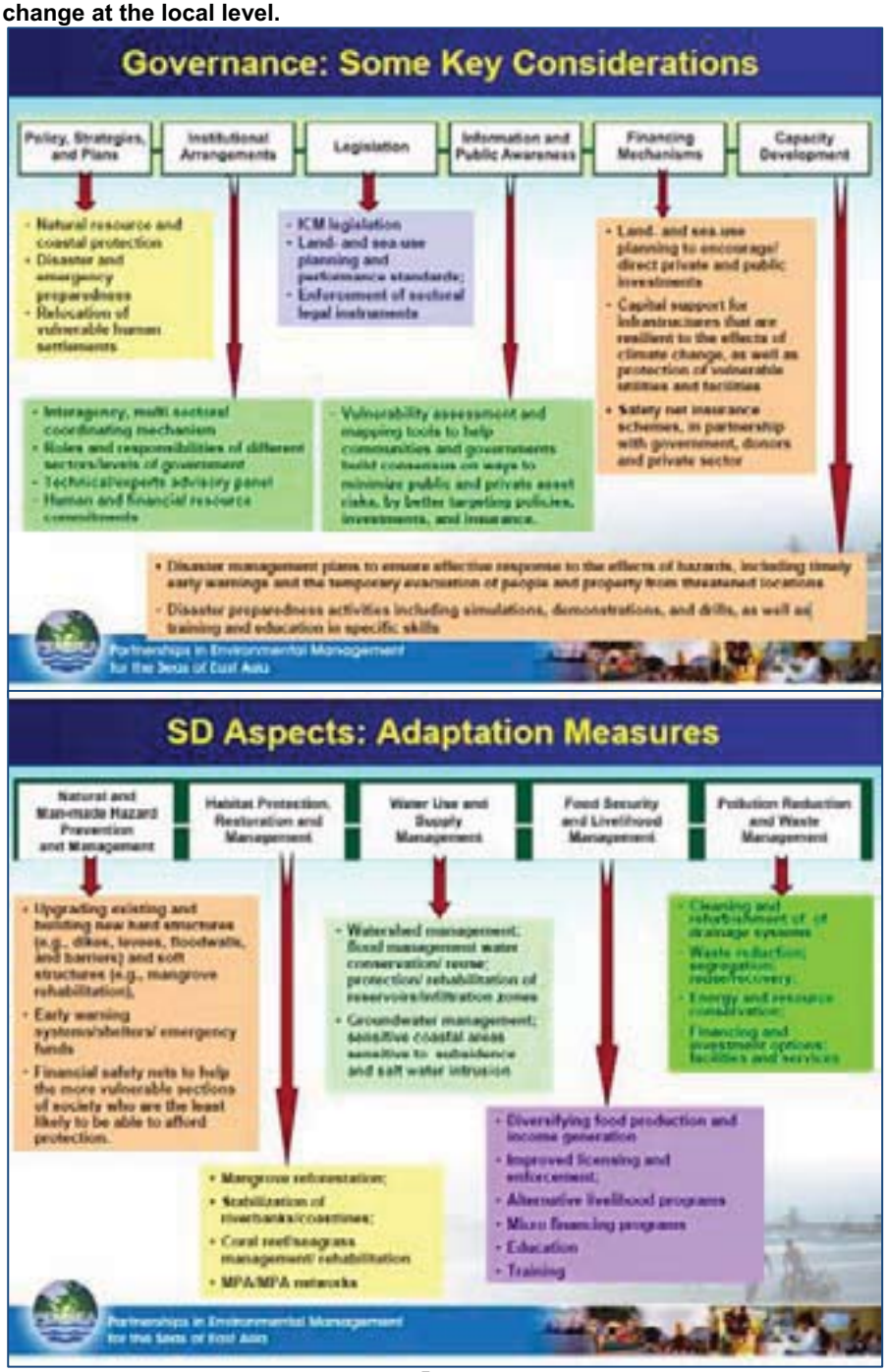
Figure 4. Framework for Sustainable Development of Coastal Areas through ICM Implementation.



The practical experience in the application of ICM in the East Asian region over the past 15 years has led to the development of a common framework for sustainable development of coastal areas, which covers a system of governance as well as several issue-specific management systems critical to achieving the overall goals of sustainable development, including climate change adaptation.

Climate change adaptation is one aspect of sustainable development, and not a separate issue. ICM can be utilized by local governments to optimize responses to climate change at the local level by reinforcing the planning and coordination of actions across and within sectors.

Figure 5. Examples of how ICM can be utilized by local governments to optimize responses to climate change at the local level.



Enhancing multi-sectoral coordination and stakeholder participation for sustainable development and climate change adaptation in Chonburi, Thailand[4]

In Chonburi Province, a major area for coastal tourism, industry, fisheries and port operations in Thailand, ICM implementation facilitated the development and adoption of a common framework for addressing priority threats to the sustainable development of the coastal area. This includes development and adoption of a common vision, strategies, action plans, multisectoral coordinating mechanism, and financing mechanism for marine and coastal management across 26 local governments, and various agencies and sectors. Stakeholder awareness, education and mobilization efforts have also provided opportunities for direct involvement of local people in on-the-ground actions, including waste management, sea turtle and crab protection and conservation, mangrove rehabilitation, seagrass transplantation, beach restoration and restoration, and local oil spill contingency plan development, among others. Collaborations and partnerships have also been established with central government agencies, private sector, academic institutions and technical experts, local, national and international nongovernmental organizations, and international donors for enhancing various aspects of their marine and coastal management. In recent years, issues such as excessive precipitation and flooding, drought and water shortage, coral bleaching, mass mortality of shellfish due to changes in salinity, and coastal erosion, among others, have raised concerns regarding possible linkages with climate change. In response, Chonburi is strengthening the implementation of the Chonburi Action Plan, particularly the action programs related to control of flooding, disaster preparedness and response and other specific actions that tackle climate change-related issues. At the same time, it is gearing up to further strengthen and adapt the existing ICM mechanisms, strategies and actions to meet new challenges and risks associated with the changing climate.

Engaging Stakeholders in Environmental Protection and Resource Conservation in Chonburi

Engaging the Private Sector in ICM Implementation in Bataan, Philippines[5]

In the province of Bataan in the Philippines, private-public sector partnership is an integral and significant aspect of ICM implementation. Seventeen companies including major oil, beverage, realty, shipyard and other corporations as well as a maritime academy compose the Bataan Coastal Care Foundation Inc. (BCCFI), which provides technical support, management expertise and counterpart funding to the Bataan ICM Program to build better coastal governance, increase awareness and promote community participation in coastal and marine environmental and resource management. In cooperation with the provincial government, 11 municipalities and other stakeholders, the BCCFI undertakes and/or supports tree planting activities, mangrove rehabilitation, sea turtle conservation, coral reef rehabilitation, establishment of fishery reserves/sanctuaries, coastal clean up and educational activities in various areas in Bataan. More than 40 ha have been replanted with mangroves by over 5,000 volunteers from different sectors, while more than 80 ha of fish sanctuaries have been established in the municipalities of Orion, Mariveles and Limay. BCCFI and its member companies also are implementing various programs to improve emissions, effluents and waste management, waste reduction and recycling, water management, energy efficiency and environmental compliance. Through varied approaches and entry points, BCCFI serves as a committed partner of the government and a catalyst in addressing concerns in the marine and coastal environment in Bataan and the Manila Bay at large, including the challenges of climate change.

Box 1. The private-public sector partnership in Bataan is an integral element of the Bataan ICM Program. The Bataan Coastal Care Foundation, Inc. consists of the following:

- Ayala Land, Inc.
- Core Maritime Corp
- Grand Asian Shipyard, Inc.
- Herma Shipyard, Inc.
- Limay Grinding Mill Corp.
- Liquigaz Philippines Corporation
- Maritime Academy of Asia and the Pacific
- NPC Alliance Corporation
- Orica Philippines, Inc.
- Petron Corporation
- Petron Foundation, Inc.
- Philippine Resins and Industries, Inc.
- Grand Planters Products
- PNOC- Alternative Fuels Corporation
- San Miguel Corporation
- Total (Philippines), Corp.
- Oilink International

Sustainable tourism development and disaster mitigation within the ICM context in Bali, Indonesia[6]

Bali Island is one of the foremost tourism destinations in Indonesia, with rugged coastlines, white sandy beaches and panoramic hills and mountains providing a picturesque backdrop to a colorful and deeply spiritual culture. Called 'Island of the Gods,' it offers a breadth of opportunities and experience for visitors especially from overseas. The rapid tourism development, however, comes not without a price — waste generation, pollution of coastal waters, decreasing fisheries, deterioration of coral reefs, loss of mangroves, beach erosion, and damage of cultural values, among others, all of which are increasing the island and its people's vulnerability to natural disasters and other potential impacts of climate change.

In Sanur, Denpasar Municipality, one of the focal areas for coastal recreation and tourism in Bali, implementation of a beach conservation program within the framework of the ICM program aimed to rehabilitate the eroded beach, as well as to develop a sustainable tourism destination in the coastal area. With the strong commitment of the local leader of Denpasar Municipality, an interagency and multisectoral coordinating mechanism and a shared vision and long-term coastal management strategy based on ICM principles were adopted, an integrated land and sea use plan was developed and integrated into the Regional