



Building a Blue Economy: Strategy, Opportunities and Partnerships in the Seas of East Asia

9-13 July



SUBTHEME 2

Accelerating Blue Innovations in Support of an Ocean-based Blue Economy

WORKSHOP 1

Enabling an Ocean-based Blue Economy at the Local Level through Innovative Technologies and Applications

CO-CONVENING AGENCY:



First Institute of Oceanography (FIO),
State Oceanic Administration, China

Chair: **Mr. Fangli Qiao**
The First Institute of Oceanography, State Oceanic Administration

Co-chair: **Dr. Luky Adrianto**
Bogor Agricultural University



Global Environment Facility



United Nations Development Programme



United Nations Office for Project Services



Partnerships in Environmental Management for the Seas of East Asia



Ministry of Land, Transport and Maritime Affairs



City Government of Changwon, RO Korea

The East Asian Seas Congress 2012
Building a Blue Economy:
Strategy, Opportunities and Partnerships in the Seas of East Asia
Changwon City, RO Korea, 9–13 July 2012

Theme 2:
Accelerating Blue Innovations in Support of an Ocean-based
Blue Economy

Workshop 1:
Enabling an Ocean-based Blue Economy at the Local Level through
Innovative Technologies and Applications

Date: 9 July 2012
Time: 2:00 p.m. – 6:30 p.m.

Co-convening Agency:
First Institute of Oceanography (FIO),
State Oceanic Administration, China

Chair:
Mr. Sun Yongfu, Deputy Director General, The First Institute of Oceanography, State
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Co-chair:
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1.0 INTRODUCTION AND KEYNOTE PRESENTATION

- 1.1 The Fourth East Asian Seas (EAS) Congress, co-organized by the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), the Ministry of Land, Transport and Maritime Affairs (MLTM) and the City Government of Changwon, was held at the Changwon Exhibition Convention Center in Changwon City, RO Korea, from 9 to 13 July 2012. Carrying the theme, “Building a Blue Economy: Strategy, Opportunities and Partnerships in the Seas of East Asia,” the EAS Congress 2012 addressed the new opportunities for the ocean economy of East Asia, the range of partnerships that have developed and are required to realize the full potential of a blue economy and the progress and achievements in governance of regional/subregional seas within the framework of the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA).
- 1.2 The EAS Congress 2012 featured the Fourth Ministerial Forum, the International Conference on Sustainable Coastal and Ocean Development, the annual meeting of the PEMSEA Network of Local Governments (PNLGs) for Sustainable Development, an exhibition, the Third EAS Youth Forum and other activities. There were more than 1,200 stakeholders — policymakers, resource and

- economic managers, business professionals, scientists, members of the academe, local and international nongovernmental organizations (NGOs), youth and community representatives and other members of civil society from within and outside the East Asian Seas region — who participated in the Congress.
- 1.3 Five major subthemes comprised the international conference. These themes were: (1) Nurturing Coastal and Ocean-based Blue Economies at the Local Level: Opportunities and Challenges; (2) Accelerating Blue Innovations in Support of an Ocean-based Blue Economy; (3) Securing Ecosystem Services through Integrated Coastal Management (ICM); (4) Good Governance, Good Business; and (5) Meeting Institutional and Individual Skills and Capacities for Integrated Coastal and Ocean Governance.
 - 1.4 The workshop was able to present examples of innovative technologies and approaches for maintaining and restoring ecosystem services and integration of the technologies into government programs through development plans and master plans. The discussions also highlighted the importance of using science in a meaningful way to guide local management decisions and actions for the protection of ecosystem services, developing the social capital, ensuring involvement of people, knowledge-sharing and learning from good practices as well as failures.
 - 1.5 Following the introduction by the Workshop Chair, Mr. Sun Yongfu, Deputy Director General of the First Institute of Oceanography, State Oceanic Administration (SOA), PR China, Prof. Quan Wen, professor at the National Marine Environment Monitoring Center, gave an overall presentation on the development of marine science and technology and the application to coastal and marine management and the economy in China. Dr. Wen emphasized marine science and technology that is supportive to decisionmaking, integration with national policy and plans and mechanisms for application of science and technology at the local level.
 - 1.6 Dr. Wen began his presentation by discussing the development trend and increasing importance of China's marine economy. With more than half of its population in coastal areas, he explained that China's marine industry output has doubled in 10 years from more than 20 marine industries, particularly oil and mariculture. He noted that China's marine economy has been increasing by an average of 20 percent annually and in 2010, its total contribution to national GDP was 9.7 percent valued at RMB 3,843.9 billion (about USD 627 billion). He added that coastal tourism and shipping and transportation industries have the greatest output while there is increasing focus on developing multi-resource exportation and high-technology industries.
 - 1.7 Dr. Wen explained that multilevel and integrated marine management, from regional, national to local and from sector — field and industry — can address the poor condition of China's marine environment. Marine science and technology is poised to play a bigger role in marine management as there is a growing trend of mega-science projects with high-tech support and joint and large-scale research. Technological advancements have improved marine survey and observation and operational oceanography that translates into better productivity for marine industries.

- 1.8 Dr. Wen noted that the bridging of marine economy and governance with science and technology is to be facilitated by the Framework Plan of Promoting Marine Economic Development Depending on Progress of Marine Science and Technology (2008–2015). Through national guidelines, local action plans and projects from central and local government and implementation by private and academic sectors, the plan seeks to promote and drive the development and application of science and technology, “hi-tech” industries, information products, data services and service platforms to improve marine economy and marine management. These objectives will be achieved through the support of another plan, the 12th Five-year Development Plan of the National Marine Science and Technology (2011–2015) that seek to develop both technological and human resources to improve China’s marine economy through science and technology.
- 1.9 Dr. Wen concluded that in the new era of marine economy, science and technology will play an important role in facilitating productivity and innovation that is seen to reduce environmental damage and social problems.

2.0 PART 1: TECHNOLOGY DEVELOPMENTS AND ADVANCEMENTS IN SUPPORT OF SUSTAINABLE MARINE AND COASTAL DEVELOPMENT

- 2.1 The first set of presentations focused on technological developments and advancements that support sustainable marine and coastal development.
- 2.2 Dr. Klaus Schmitt, Chief Technical Advisor of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), stressed the importance of mangroves in maintaining a dynamic coastline, improving resilience to climate change and sustaining commercial fisheries. He explained that in order to protect and ensure sustainable use of coastal wetlands for the benefit of the local population, there must be effective mangrove management, rehabilitation and protection.
- 2.3 Dr. Schmitt talked about innovative approaches for mangrove rehabilitation applied in Soc Trang Province, Vietnam, including mimicking natural regeneration in sites with high wave energy, hydrodynamic modeling to design barriers to reduce wave energy and erosion and promote sedimentation and using bamboo wave breakers in erosion sites as a pre-condition for mangrove rehabilitation. In addition, he stressed that mangrove rehabilitation is not just about planting mangroves, but also protecting the mangroves through involvement of local communities using the co-management approach. By ensuring the resource user group the rights to utilize natural resources on state-owned land, it also gives them the responsibility to sustainably manage and protect these resources. He claimed that there has been an increase of natural regeneration, an increase in income from the collection of aquatic resources and better collaboration between the local people and local authorities.
- 2.4 Dr. Schmitt concluded that mangrove rehabilitation and management, supported by innovative approaches for mangrove rehabilitation, co-management and payment for ecosystem services, are vital to the integrated management of coastal areas.

- 2.5 Dr. Ronald Villanueva, Deputy Director of the Bolinao Marine Laboratory of the University of the Philippines, presented examples of different methods of reef restoration applied in the Philippines. He started his presentation by highlighting the state of Philippine reefs with 90 percent considered to be in fair to very poor conditions. He explained the importance of ecological restoration in assisting the recovery of degraded or destroyed ecosystems.
- 2.6 Dr. Villanueva then discussed various initiatives on coral restoration in the Philippines, including physical methods, such as artificial reefs and substrate stabilization, and biological techniques, such as coral transplantation, seeding of coral larvae and seeding of coral juveniles. He also shared efforts on transferring knowledge to and involving communities in coral restoration efforts. This included the distribution of information, education and communication materials and provision of trainings to equip locals with necessary knowledge and skills to protect, restore and monitor their reefs.
- 2.7 Dr. Maripaz L. Perez, Regional Director for Asia of the WorldFish Center, shared current efforts and processes in the Philippines for bringing research results to the ground and transferring knowledge to aquaculture fish farmers. She explained the Consultancy for Agricultural Productivity Enhancement (CAPE) program as one of these efforts that seeks to improve the productivity of resource-limited small aquaculture operators who are pressured by changing market demands.
- 2.8 Dr. Perez discussed the CAPE program process, which included facilitating customized technical advisory services for enhancing productivity and sustained production efficiency directly to target farmer and fisher beneficiaries, while allowing the experts to understand and appreciate problems in the field that need technical support. She added that technology must be introduced gradually until farmers increase productivity and they themselves are committed to applying this technology. Commitment of beneficiaries, along with availability of support services and interested network of experts, is one of the challenges and opportunities that can hamper or aid scaling up this process.
- 2.9 Mr. Guofeng Yue, Deputy Director of the Ocean-based Silicon Valley Core Area Administration, discussed the development of an Ocean-based Silicon Valley in Qingdao, PR China, which will serve as a marine technology and education center that will provide support for developing the blue economy in Qingdao and other areas in China. He explained that because of the increasing pressure on land-based resources, there is increasing focus on the ocean to provide for the needs of the growing human population. An improving understanding of the ocean, along with technological innovations, has enabled more marine resources to be discovered.
- 2.10 Mr. Yue further explained that Qingdao has comparative advantages to become an ocean-based research and development hub that can lead the development of marine economy because of its favorable location and presence of ocean-based scientific institutions, industries and professionals. Qingdao's planned research and development area, which will be a dynamic environment for marine resources innovation that is in harmony with the environment, is targeted for completion in 2020 with the establishment of ocean-focused institutions, such as

the National Deep-sea Base, Shandong University Qingdao Campus and Qingdao Ocean Science and Technology National Laboratory.

3.0 PART 2: APPROACHES AND STRATEGIES FOR INTEGRATED APPLICATION OF INNOVATIVE TECHNOLOGIES

- 3.1 Dr. Praparsiri Barnette, Head of the Department of Aquatic Science, Burapha University, Thailand, talked about how ICM is facilitating the implementation of innovative technologies and approaches for marine habitat restoration, commercial species conservation, solid waste management and carbon footprint reduction, through integration into local development plans and master plans in Chonburi, Thailand.
- 3.2 Dr. Barnette provided an overview of the Chonburi Province and its coastal strategy, the history of ICM development, implementation and scaling up in the province and the national laws and major policies that comprise the framework that governs marine and coastal resources in Thailand. She discussed how the ICM program and approaches can be used as an operational tool for blue economy development at the local level and the use of the coastal strategy and its implementation plan as a common framework and guide among governments and stakeholders for developing joint and/or complementary initiatives, including innovative technologies and approaches that contribute to sustainable coastal development.
- 3.3 Prof. Osamu Matsuda, Professor Emeritus of Hiroshima University and the International Environmental Management of Enclosed Coastal Seas (EMECS) Center, shared the application of *sato-umi*, which he defined as maintaining a well-balanced ecosystem through prolonged and harmonious interaction between humans and nature. He cited the restoration of Ago Bay as an example, where biological productivity was adversely affected by reclamation. He provided scientific evidence that illustrated how the macro fauna in Ago Bay had significantly improved after the tidal flat restoration project where the opening of the floodgates allowed water exchange between the sea and fallow field.
- 3.4 Professor Matsuda highlighted the importance of public involvement in the restoration activities through ecotourism, environmental education and ecosystem restoration projects. He noted the integration of *sato-umi* into the master plan and ICM plan of Shima City that has led to the concept being put into action as a community-based participatory approach for ICM and blue economy development at the local level.
- 3.5 Mr. Byeon Jaehyeok, Director of Fisheries Division, discussed the sustainable development initiatives of Changwon City, particularly the policies, strategies and actions for developing the city into the environmental capital of Korea. Some initiatives to reduce greenhouse gas emissions were highlighted including the promotion of bicycles for public transportation by providing 4,500 units for rent at accessible terminal points. This particular initiative received recognition from the United Nations Environment Programme (UNEP) in 2010 through the International Award for Liveable Communities. Aside from this, Changwon City also seeks to foster environmental cooperation with the world by hosting various international environmental conferences and events. In line with its vision of

creating a safe, clean and lively coastal area by 2020, Changwon City will introduce more environmental policies, such as the application of total pollution load management system in Masan Bay and coastal wetland conservation in Bongam tidal flat.

4.0 OPEN FORUM

4.1 Workshop Co-chair Dr. Luky Adrianto summarized the workshop presentations and highlighted the following:

- The importance of blue innovations in the development of an ocean-based blue economy, such as the use of high technology for the development of marine industries based on sustainability principles in China, guided by national plans for marine development and technology;
- The role of innovative technologies and approaches in ensuring ecosystem health and provision of goods and services especially at the local level, as shown for mangroves, coral reefs, tidal flats and other coastal ecosystems;
- Strengthening implementation of innovative technologies and approaches through internalization within government programs, as shown in the case of the ICM program in Chonburi, Thailand, development of Ocean-based Silicon Valley in Qingdao, China, integration of sato-umi into the master plan of Shima City, Japan, and development of Changwon City as Environmental Capital of RO Korea; and
- Importance of extension programs to connect experts and local fishers/farmers to increase the acceptability of technological innovations to be implemented at the local level.

4.2 An open discussion moderated by Dr. Adrianto highlighted the importance of the following:

- Development of social capital as a key aspect of developing a blue economy especially at the local level;
- Using science in a meaningful way to guide local management decisions and actions;
- Bringing experts and scientists to fishers/farmers and other users of the marine and coastal areas;
- Ensuring involvement of people in conservation and development efforts;
- Considering the manner by which the value of conservation and development efforts are communicated to target beneficiaries;
- Building/Participating in existing networks for sharing innovative practices and lessons learned in their applications;
- Looking at the past, analyzing mistakes and learning from good practices as well as failures;
- Local governments having a clear vision of desired development and framework, strategies and institutional mechanisms for achieving the vision;
- Strengthening of regional initiatives such as large marine ecosystems (LMEs) and national economic development plans on the context of blue economy development.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations were generated from the presentations and open discussions and presented in the Plenary Session for Subtheme 2.

- The ocean and coastal areas and resources are vital for future economic development and need to be utilized based on sustainability principles.
- Scientific and technological developments are available that can support sustainable marine and coastal development at various levels, including high-technology marine industries and local/community level technologies for habitat restoration, resource conservation, fisheries and aquaculture, waste management, etc.
- There is a need to promote scientific and research developments and innovations that support sustainable development of marine and coastal areas and resources.
- Application of blue innovations can be accelerated through the following:
 - Cost-benefit analysis
 - Provision of financial support
 - Monitoring and evaluation of effectiveness
 - Integration into national/local development and action plans
 - Development of supporting national/local policies and guidelines
 - Development of capacity/social capital using appropriate processes
 - Development of information products and knowledge-sharing platforms
 - Implementation by relevant stakeholders (institutes, universities, companies, communities, individuals)

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