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PROCEEDINGS OF THE
THIRD TWINNING WORKSHOP ON
ECOSYSTEM-BASED MANAGEMENT
OF INTERRELATED RIVER BASINS,
ESTUARIES AND COASTAL SEAS

Policy Reform, Sustainable
Financing and Investment for
Pollution Reduction in the
East Asian Seas

Tianjin, People's Republic of China
17–19 October 2007



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A. INTRODUCTION

- i. The theme of the Third Twinning Workshop on Ecosystem-based Management of Interrelated River Basins, Estuaries and Coastal Seas was “Policy Reform, Sustainable Financing and Investment for Pollution Reduction in the East Asian Seas.” It aimed to help participants formulate and implement innovative policies and programs targeting sustainable financing and investment for pollution reduction.
- ii. The workshop was held at the New World Astor Hotel, Tianjin, PR China, from 17 to 19 October 2007. The State Oceanic Administration of PR China hosted the Workshop.
- iii. The Workshop included participants from Cambodia, Democratic People's Republic of Korea, Indonesia, Japan, People's Republic of China, Philippines, Republic of Korea, Vietnam and the USA.
- iv. The PEMSEA Regional Programme Office served as the Secretariat.
- v. The full list of participants is attached as Annex 1.

B. OPENING CEREMONY

- i. On behalf of the PEMSEA Resource Facility, Mr. S. Adrian Ross, Acting Interim Executive Director, welcomed the participants to the workshop. He recalled that the previous two workshops under the twinning theme had focused on scientific issues and institutional challenges of ecosystem-based management. The outputs of the two workshops have provided useful input to management programs in Bohai Sea and Manila Bay, particularly with regard to forging new partnership arrangements of programs among coastal managers and managers of watershed areas. He noted that the theme of the current workshop was the next logical step in the process — that of addressing a common issue across the sites, pollution from land-based activities. Mr. Ross expressed PEMSEA's appreciation to participants from Seto Inland Sea, Chesapeake Bay, Masan-Chinhae Bay, the Han River Estuary, Sihanoukville, and the private sector, Greentech Seraphin of Vietnam for joining the workshop. He thanked PR China's State Oceanic Administration (SOA) and RO Korea's Ministry of Maritime Affairs and Fisheries (MOMAF) and Korea Maritime Institute (KMI) for their continuing support to PEMSEA and to the twinning workshop, and wished everyone a successful meeting.

- ii. On behalf of the SOA, Prof. Li Wenhai welcomed old and new friends and noted that PEMSEA has helped many countries. He then recounted the signing of the SDS-SEA in 2003 and the signing of the Haikou Partnership Agreement and Partnership Operating Arrangements for the Implementation of the SDS-SEA in 2006. He hoped that each site could choose a site to focus on for the coming third phase of PEMSEA on the implementation of the SDS-SEA.
- iii. On behalf of the Republic of Korea, Dr. Chul-Hwan Koh of Seoul National University expressed appreciation to the SOA and PEMSEA for organizing the workshop. He noted PEMSEA's efforts in assisting ecosystem-based management and integrated coastal management (ICM) in East Asia. He thanked KMI for facilitating support for the workshop. He was glad to see participants from DPR Korea and those from other countries, including Japan and the USA. He wished for success of twinning relationships.

C. ORGANIZATIONAL MATTERS

- i. Mr. Ross and Dr. Koh served as co-chairs of the workshop.
- ii. Mr. Ross introduced the program of activities (Annex 2) and briefed the meeting on general organizational arrangements.

D. OBJECTIVES OF THE WORKSHOP

- i. Mr. Ross discussed the objectives of the workshop, the approaches and expected outputs. He also linked the importance of the workshop to the third phase of PEMSEA. The specific objectives of the workshops were:
 - to share experiences and good practices for developing and implementing work programmes under the next phase of PEMSEA;
 - to identify opportunities and benefits for establishing twinning arrangements among sites and programs that are developing and implementing ecosystem-based management programs in coastal areas and adjoining watersheds; and
 - to identify the future programs/direction for a twinning network in the region, and how it can support on-the-ground implementation efforts at the various sites.
- ii. Mr. Ross explained that the next phase of PEMSEA is the first 3 years of a planned 10-year transition to sustainability. The project aims to develop a sustainable functional regional mechanism to implement the SDS-SEA, to scale up ICM, and to pilot integrated river basin and coastal area management, with and through the support of strengthened national policy, strategic partnership arrangements, enhanced intellectual capital, investment and financing, and corporate social responsibility. This workshop would provide insights on the piloting of integrated river basin and coastal area management as part of the proposed project.

1.0 SESSION 1: POLICY REFORM IN MANAGING IMPACTS FROM RIVER BASINS TO COASTAL SEAS

- 1.1 The first session discussed the development of policies to manage the effects of river basins on the coasts, in particular, partnerships with other institutions, and the setting of water quality and pollution input standards.

Case studies on developing partnerships between Xiamen, Zhangzhou and Longyan Municipalities in managing Jiulongjiang River Basin

- 1.2 Dr. Zhou Quilin of the Third Institute of Oceanography, State Oceanic Administration, PR China, described a City Alliance formed in 2004 between Xiamen, Zhangzhou and Quanzhou Municipalities and the province of Fujian, joined by Longyan Municipality in 2006, to manage Xiamen Bay and Jiulongjiang River Basin. Xiamen considers this as an expansion of its ICM program since some coastal pollution comes from outside Xiamen. Jiulongjiang River supplies Xiamen with 80 percent of its freshwater, as well as 75 percent of runoff pollutants. Non-point source pollutants from livestock, agriculture, industries and urban development are the primary management challenges.

The City Alliance coordinates six areas of activity namely: (1) city planning and construction; (2) regional road system development; (3) harbor development and distribution of coastline utilization; (4) regional infrastructure construction; (5) ecological conservation and environmental protection; and (6) tourism development. Xiamen contributes 20 million RMB while the upstream areas each contribute 40 million RMB to the program implementation. Areas compensate each other according to their performance relative to targets set each year. Xiamen considers investing in decreasing pollution upstream a good tradeoff for cleaning up downstream. This program has resulted in improvements in water quality.

Integrated River Basin and Coastal Area Management: The Manila Bay Initiative

- 1.3 Dr. Vicente Tuddao, Jr. of the River Basin Control Office, Department of Environment and Natural Resources, Philippines, provided an overview of and issues concerning Philippine river basins (soil erosion, reduced groundwater, floods, pollution of surface water and groundwater, indiscriminate land use, overlapping jurisdictions) and coasts (overexploitation of living resources, use conflicts, pollution, inadequate institutional arrangements). He described how the Operational Plan for the Manila Bay Coastal Strategy integrates water resource management, watershed management, flood mitigation, and wetland and coastal management. Three Presidential Executive Orders have been enacted from March 2006 to March 2007: E.O. 510 creating the River Basin Control Office; E.O. 533 adopting Integrated Coastal Management as the national policy for coastal sustainable development; and E.O. 612 creating the Commission on Maritime and Ocean Affairs. All these Executive Orders direct government agencies to coordinate with each other. A multisector coordinating committee that includes coastal and non-coastal local governments, and civil society participation have been useful in the Manila Bay Area.

The collaboration aims, among others, to reduce pollution in the catchment area through centralized sewage treatment facilities, integrated solid waste management facilities, facilities for integrated toxic and hazardous waste management, and/or

treatment, recycling and disposal facilities for agricultural and aquacultural wastes. Involvement of nongovernment entities in the investment and/or operation of the infrastructure and services is the preferred approach.

Efforts and future plans in managing water quality of the Taedong River Basin, DPR Korea

- 1.4 Mr. Ri Ki Ho of the Land Planning Institute, Ministry of Land and Environmental Protection, DPR Korea stressed the importance of the Taedong River, which flows through Pyongyang, for industrial uses, agricultural irrigation, and hydroelectric power. Mr. Ri clarified that the river has many dikes and these dikes are used to manage water flow. The river is affected by these uses as well as by domestic and agricultural wastes that are directly discharged into the river, oil and land runoff. Many government agencies are involved, but the Ministry of Land and Environmental Protection, specifically its River and Streams Department and Ocean Management Department, is the lead agency for river basin and coastal management. Using inputs from central and local agencies, a scientific team provided recommendations to the Cabinet, which were used to develop a master plan for pollution reduction. State Environmental Protection Standards were set in 2000. The scaling up of the Nampho ICM project to include the Taedong River was identified as a priority for national SDS-SEA implementation. The lack of electrical power, experts and investments in water and environmental management hinders implementation of the master plan.

Development of a Nutrient Reduction Scheme for Bohai Sea

- 1.5 Prof. Wen Quan of the National Marine Environmental Monitoring Center, State Oceanic Administration, provided an overview of the importance of Bohai Sea as the marine economic center of north China. Bohai Sea is divided into four zones (Bohai Bay, Laizhou Bay, Liaodong Bay, and the middle of Bohai Sea). Prof. Wen depicted the levels of pollution in each zone. The major pollutants are DIN, DIP, oil and heavy metals (e.g., Pb, Hg, etc). Water quality improved in the year 2000 but pollution has been rising again in recent years. Seawater quality, marine organism quality and marine sediment quality standards were set for seven functional zones based on their use, e.g., tourism, fishery, ports, mining, etc. Tidal current models of Bohai Sea show that Bohai Sea has very limited water exchange with the Yellow Sea so pollutants generally remain for a long time within Bohai. Based upon the target water quality, the pollution input (COD, DIN and oil) and the current model, the permitted pollution input was calculated. Prof. Wen pointed out that these estimates (189,000 tons for COD, 22,994 tons for DIN and 4,882 tons for oil) are even less than the Bohai Blue Sea Action Program (2005) targets and will probably have to be met through gradual reduction (every five years) of permitted pollution. The government routinely enforces regulations including those involving the dumping of wastes into the sea. Prof. Wen proposed an Integrated Environmental Protection Plan, which included coordination mechanisms, improving capacity, updating pollution control, control of non-point source agricultural pollution, and environmental projects. He identified the following environmental projects: sewage treatment, domestic garbage collection and treatment, control of industrial pollution, wetland, shelterbelt and aquatic ecosystem conservation and rehabilitation.

Science-based Management Initiatives in Gwangyang Bay

- 1.6 Dr. Yoon Kwan Kim of E&WIS Inc., RO Korea, introduced the Coastal Environmental Management Areas Information System project (2004–2011) that aims to develop a decision-support system for public consensus building. The project is to develop information systems for nine coastal areas including Masan Bay and the pilot area Gwangyang Bay. A GIS-aided River Assessment Model and QUAL2E model (GARAMQUAL) predicts and maps water quality from information on sources of pollution (land use map, population, industries, livestock, farms), pollutant treatment practices, and a Digital Elevation Model of the watershed. The movement of phytoplankton, zooplankton, particulate organic carbon, dissolved organic carbon, organic, phosphate, DIN, DO and COD were simulated using a 3-D flow model of the marine environment. Both river and marine models were calibrated using 10 years of monitoring data. Results of the river model were then used as the inputs of the marine model. The linked models predict the effect of pollutants in the watershed on seawater quality. Dr. Kim stated that the strategy to apply the model to management will be developed by the end of 2007. A minimum of six months of monitoring data would be needed to apply the model to another area.

Panel Discussion and Open Forum

- 1.7 The following panelists provided reviews of the presentations: Dr. Chen Shang, State Oceanic Administration, PR China; Ms. Heni Agustina, Ministry of Environment, Indonesia; Dr. Chan Won Lee, Kyung Nam University, RO Korea; Dr. David Nemazie, University of Maryland, USA. These reviews and discussions during the open forum are summarized below:
- a. A checklist for Ecosystem-based Management was introduced to systematically identify areas for attention: (a) vision for the entire bay ecosystem; (b) both land and coastal water use management; (c) activity of NGOs; (d) investment in wastewater treatment facilities and sewer lines; (e) collaboration of private sectors not merely for their income; (f) institutional process for stakeholders' involvement in decisionmaking; (g) public recognition; (h) resolution of development pressures; and (i) monitoring and information.
 - b. The importance of identifying driving forces to motivate change (including awareness of political leaders and the public), adequate institutional arrangements, and sharing benefits and responsibilities was noted.
 - c. Actual practice of dynamic management, wherein models are updated and money and staff are moved to where they are needed to respond to dynamically changing situations, remains a challenge.
 - d. Scientific models must be focused on interventions and can be useful for developing more precise standards and plans but we must not wait for all the science before we act.
 - e. Sediments from past pollution that continue to release heavy metals are currently too expensive to treat.
 - f. Climate change, especially sea-level rise, must be considered in planning for restoration.
 - g. Selecting an area of manageable size for project implementation as these will later be models for replication.
 - h. The possibility of using competition in choosing sites or during implementation.

- i. Twinning is helpful to motivate change (e.g., jumpstarting Ecosystem-based Management) but further assistance may be needed to help sites adapt efforts of other countries to target site characteristics.
- j. Site visits would be useful.
- k. Fifty-nine sewage treatment plants have been built in the Bohai Sea area in the last five years.
- l. The added value of twinning to the more advanced sites has to be clarified.

Summary

1.8 In summary, the session noted the importance of the following:

- a. Institutional arrangements (e.g. upstream and downstream areas sharing costs, multi-sectoral bodies for stakeholders' involvement in decision making);
- b. Using available information to set water quality and pollution targets and keeping development within those targets; and
- c. Driving forces for change (including political and public awareness of the issues). It was also noted that financing for pollution reduction should be a priority.

1.9 Moreover the session noted that there was existing capacity and ongoing efforts in Bohai Sea and RO Korea but that the added value of twinning to the more advanced sites has to be clarified. Some issues (such as polluted first rain, contaminated sediments from past pollution, climate change and sea level rise) still pose a challenge even for advanced sites; and twinning, and especially study visits, is helpful to jumpstart or motivate change.

2.0 **SESSION 2: RESTRUCTURING PUBLIC WASTE MANAGEMENT MECHANISMS AND SERVICES IN RESPONSE TO THE CHALLENGES OF WATER POLLUTION REDUCTION**

2.1 This session discussed government reforms to facilitate involvement of the private sector in waste management.

Public and private sector partnerships for water pollution reduction: Rationale, framework, process and stakeholder participation

2.2 Mr. S. Adrian Ross, PEMSEA, emphasized that developing and implementing public-private partnerships is a process wherein government remains responsible but is able to share risks and benefits. The private sector can be held accountable for risks that are within its control. It enables governments with limited financial, technical and managerial capacity to secure and regulate (as opposed to directly operating) more effective and efficient pollution reduction services. The process must be clear and orderly to encourage the participation of local officials, private companies, civil society, and other interested parties and stakeholders in the formulation of the project, the assessment of technical and financial options, and the determination of affordability and social acceptability. There must be firm commitment to follow it through.

PPP projects are more common where there are: (a) strong and effective legal institutions; (b) the legal code protects investors' rights; (c) transparency in

transactions; (d) consistent enforcement of policies and laws; (e) control of corruption; and (f) a level playing field and rule of law. PPP depends critically on the regulatory environment which in turn is shaped by the quality of governance. Two case studies (Sihanoukville and Puerto Galera) cited by Mr. Ross are discussed in detail in Session 3.

Mr. Ross clarified that there are small to medium-sized PPP projects that do not necessarily involve multinational companies. He also clarified that there is significant interest from the private sector, but the challenge has often been on the government's side, such as ensuring transparent procurement processes and passing necessary regulations to support the project.

Practice of Area-wide Total Pollution Control System in Japan

- 2.3 Mr. Jiro Eiho, Hyogo Prefectural Institute of Public Health and Environment Science, Japan, summarized Seto Inland Sea's area-wide total pollution control, calculation of standards, and financing scheme. Seto Inland Sea Conservation Law was enacted in 1973 to respond to the rapid increase of pollutants from industrial and domestic sources in the Seto Inland Sea. The law's amendment in 1978 to promote water quality conservation provided a basis for the implementation of a total pollution control system. The system called for the reduction of total industrial COD by half and the adoption of a permitting system for specified facilities.

Under the area-wide total control system, the Ministry of Environment issues the basic policy, including the quantitative reduction target. The Prefectures develop the Area-wide Pollution Reduction Plan containing the pollutant reduction targets for each source and means for achieving the targets. The plan also contains regulation standards for factories, guidance for small-scale and non-controlled industries and project implementation such as improvement of sewerage, household wastewater treatment and others. As a result of the control system, total COD load, nitrogen and phosphorus have decreased steadily from 1979 to 2004.

Allowable pollutant load is industry specific. The standards for newer facilities are also more stringent than for older facilities. Private enterprise can avail of low rate loans from various financing corporations for environmental projects. The costs of sewerage systems are shared among the national government which provides subsidy (50 percent), municipalities, through bonds (45 percent), and beneficiaries, through user fees, (5 percent). Mr. Eiho clarified that strong political will and governance overcame initial opposition by industries.

Cost-sharing system for environmental management in Han River Estuary of RO Korea

- 2.4 Dr. Kyeong Doo Cho, Incheon Development Institute, RO Korea described the reclamation of an ecologically important tideland and increasing pollution of seawater due to the development of the Incheon Coastal Region and the Han River Estuary as a marine hub in East Asia. Pollution comes from three sources: direct discharge from land, Han River and Shihwa Reservoir. Since the BOD load from Han River and Shihwa Reservoir accounts for 65 percent and 25 percent respectively of the total load, it is imperative to manage the pollution from Seoul, Incheon and Gyung-gi, which eventually discharge to Han River.

A case study on the sharing of expenditures for the control of floating and submerged marine litter was described. Various weights were assigned for various principles: polluter pays, beneficiary pays, and ability to pay. It was estimated that the total expenditure for litter disposal in the Incheon Coastal Region and Han River Estuary was 25 billion won (about US\$250 million) from 2002 to 2006. Cost-sharing rate for the litter disposal project was agreed at: 22.8% for Seoul, 50.2% for Incheon, and 27% for Gyung-gi.

The cost-sharing agreement for improvement in the Incheon Coastal Region established in 2001 by local governments (Seoul, Incheon and Gyung-gi) expired in 2006. The local governments agreed to extend the agreement to 2011, and research for a more reasonable cost-sharing rate is ongoing. This research is expected to determine the dominant factors causing seawater contamination in the Incheon Coastal Region by investigating pollution sources and estimating the loads as a basis for adjusting the cost-sharing rate for improvement of seawater quality.

Panel Discussion and Open Forum

2.5 The following panelists provided reviews of the presentations: Dr. Daesok Kang, Pukyong University, RO Korea; Dr. Vicente Tuddao, Jr., Department of Environment and Natural Resources, Philippines; and Mr. Handy Bambang Legowo, Public Works Department, Indonesia. The reviews and discussions during the open forum are summarized below:

- a. The extent of private investments in environmental infrastructure depends on the political will to create an attractive environment for private investments through supportive laws, building capacities, access to lower interest rates for loans, subsidies that local governments can compete for, and long-term stability to ensure return on investments which usually takes years. The private sector must be able to recover its investments but the public burden must not be too much.
- b. Sharing the costs (between polluters and beneficiaries, upstream and downstream areas) makes the environmental investments more possible.
- c. Ecological engineering technologies may be cheaper than high technology infrastructure.
- d. Investing in environmental infrastructure is a way of practicing corporate social responsibility.
- e. Effective awareness campaigns and incentives such as cleanest village awards are useful especially for community-based sanitation and waste management approaches. Communities may have to be clustered to afford environmental infrastructure.

Summary

2.6 In summary, the session noted that:

- a. Attracting quality private investments in environmental infrastructure and services is dependent upon political will (e.g., payments for environmental services and strict regulation of industries and new developments even when it may prove to be unpopular come elections) and the quality of governance (e.g., transparency and the rule of law), and

- b. National government, local government, and users (polluters and beneficiaries, even communities clustered together) can share the load but there must be a good basis for determining the cost-sharing scheme.

3.0 SESSION 3: ENHANCEMENT OF LOCAL GOVERNMENT CAPACITY IN FINANCING AND REVENUE GENERATION FOR POLLUTION REDUCTION

- 3.1 The third session discussed various ways by which resources were put together and used to reduce pollution.

Development of an Environmental Users Fee System in Puerto Galera, Philippines

- 3.2 Mr. S. Adrian Ross, PEMSEA, presented how the environmental users fee system was developed in Puerto Galera. Puerto Galera is one of the world's most important diving havens and reportedly receives around one million tourists each year. Due to the lack of proper sewage management and a growing tourism industry, fecal coliform levels in Puerto Galera waters are alarming and pose threats to health, the environment, tourism and fisheries. To address this situation, Puerto Galera collaborated with PEMSEA to develop a proposal to collect (through interceptors and collectors) and treat sewage in three tourist hotspots. Three sources are to be used to support the PhP210 million capital investment and PhP25 million annual operating costs namely: (a) the local government's regular budget; (b) household and commercial users of the sewerage system; and (c) tourists through a PhP50 Environmental Users Fee (EUF) system. The PhP50 EUF is based upon a willingness-to-pay survey. Two hundred eighty thousand visitors per year would be sufficient to finance the construction of the first of three sewerage systems. Double that number of visitors per year would be sufficient to construct all three systems in 10 years. There would be uncertainty of the revenue because of the uncertainty of the number of tourists. A trust fund will be set up to receive the EUF. The fund will be managed by the Mayor upon the approval of a multisectoral body.

Establishing Various Funding Mechanisms to Enhance Restoration of Chesapeake Bay

- 3.3 Dr. David Nemazie, University of Maryland, USA, recounted that three states and the federal government began working together to restore Chesapeake Bay in 1983 and targeted in 1987, a 40 percent reduction in nitrogen and phosphorus by 2000. Despite significant progress, the target was not achieved in 2000. Dissolved oxygen is low and harmful algal blooms occur because of increasing population and sprawl (increasing developed area used per person). Analysis show that despite a large funding gap, 80 percent of the nutrient goal can be achieved with 20 percent of the cost. A report card rating water quality where people live helped increase public awareness. Areas could not accept new development if they could not ensure that their water could be cleaned adequately. Maryland began charging each household \$30, from which it raises \$58 million per year that can be bonded to support over \$800 million in capital projects. This will be used to upgrade the 66 largest wastewater treatment plants to reduce nitrogen and phosphorus. Support for cover crops further reduces nutrients. Dr. Nemazie emphasized that the total cost to restore Chesapeake Bay is high but economic analysis helps establish priorities.

The interest and leadership of the Governor of Maryland is also important to resolve conflicts and mobilize pollution reduction. Interestingly, the environment sector wants to protect farmland and government is shifting from subsidies for agriculture to green funds to help farmers meet environmental obligations.

Financing Sustainable Environment Project via Public-Private Partnership

- 3.4 Dr. Hoang Viet Cuong, TASCOCO Environment Project, Vietnam, described the partnership between Greentech Seraphin and the Urban Environment Limited Company (URENCO in Son Tay municipality, Ha Tay province) to reduce municipal solid waste (and leaching) in landfills. Ha Tay URENCO, a state-owned company, provides a lease of land, assists the private joint-stock company in getting a loan, collects the waste, and pays the private company the same amount they would if they were to put the waste into a landfill. Greentech Seraphin composts the organics into biofertilizer and recycles plastic into pellets, both of which it sells. The remaining 10 percent of the waste is put into a landfill. Dr. Hoang Viet Cuong emphasized that using local and appropriate technology was important. The Return on Investment was low but the total investment could be recovered in 6.8 years, and even less if it could sell carbon credits. He also stressed that the governmental partner's will to support waste segregation would greatly increase efficiency. He pointed out that it is essential for both the government and private sector to communicate and collaborate in order to develop a PPP on environmental issues. TASCOCO is a joint venture that bought the technology from Seraphin to replicate the model.

Innovative Investment Policy for the Improvement of Shihwa and Tando Lakes

- 3.5 Dr. Suk-Jae Kwon of the Korea Ocean Research and Development Institute, RO Korea, presented efforts to improve the environment and water quality of Shihwa and Tando Lakes after the construction of a 12.6-km dike which converted a marine area into a freshwater lake. The lake was to supply water to farmlands and industries but COD rapidly increased after the dike was built. Shihwa's Comprehensive Management Plan (2001–2006) aimed to manage water quality, ecosystems, coastal use, and strengthen management systems. Evaluation in 2006 showed that: (a) only 55 percent of the US\$952M planned investment was spent due to large changes in the plan; (b) the plan overemphasized water quality management (99 percent of the budget); (c) there was no system that allowed managers to track adjustments made to the plan; and (d) managers were unable to adjust investment priorities during implementation. Based on the evaluation, the 2nd Comprehensive Management Plan (2007–2011) was designed to address the broader environment beyond water quality and, based on annual evaluations, to be able to adjust the Plan's approach to more adaptively meet its goals. To meet Shihwa Lake's original objective of providing agricultural water, a smaller dike was built within Shihwa Lake to form Tando Lake. Wastewater treatment plants and artificial wetlands were constructed to improve water quality.

Mobilizing Stakeholder Support for Waste Management and Financing

- 3.6 Mr. Prak Visal, Provincial Government of Sihanoukville, Cambodia, described how solid wastes used to be disposed indiscriminately in a village within Sangkat 4 Commune of Sihanoukville. Through education on the benefits of waste management, the commune council now manages the primary collection of wastes in

the village, and households now pay fees for the collection and disposal of wastes to a proper location. The community takes 60 percent of the total income, and the private company which provides a secondary collection and disposal service, takes 40 percent of the income. Mr. Prak Visal mentioned that in addition to organizing the community for waste management, a fund was set up from which the community could borrow money for constructing toilets. He also stressed that training can change people's attitudes if done in an appropriate way and with adequate explanation, which is easy for locals to understand. He also mentioned that regular community cleanup activities helped educate and strengthen the community.

Ciliwung River Basin Management

- 3.7 Ms. Heni Augustina, Marine Environmental Rehabilitation Division, Ministry of Environment, Indonesia, explained the issues of water quality and water quantity affecting Ciliwung River Basin. Water quality has deteriorated because of increasing land use, population, industry and agriculture. At the same time, water quantity has been decreasing due to increased water extraction and decreasing recharge area. Rehabilitation of small lakes, forest and land is being undertaken. Furthermore, the Presidential Decree for river water quality is now under development. The Presidential Decree will divide the River into five segments and establish the water class, water pollution reduction and rehabilitation targets of Ciliwung River. It is also expected that the presidential decree will promote cooperation among various national and local government agencies in solving the problems in the Ciliwung River.

Panel Discussion and Open Forum

- 3.8 The following panelists provided reviews of the presentations: Mr. Han Yong, Liaoning Provincial Oceanic and Fisheries Department, PR China; Mr. Yusiono Anwar Supalan, Environmental Management Agency, Indonesia; Mr. Jiro Eiho, Hyogo Prefectural Institute of Public Health and Environment Science, Japan; Dr. Chang Hee Lee, Myung Ji University, RO Korea; Mr. Rogelio Trinidad, Department of Environment and Natural Resources, Philippines. The reviews and discussions during the open forum are summarized below:
- a. A driving force to reduce pollution must be identified and recognized by upstream and downstream users and beneficiaries.
 - b. There must be good communication between the government and investors. There must also be good communication between the government and organized stakeholders through their representatives.
 - c. Using various sources of financing is important to developing sustainable financing for pollution reduction. Fees proportional to the use of the service must be balanced with the ability to pay.
 - d. Government policies can encourage environmental investment and businesses through direct and indirect support (e.g., land, subsidies, insurance).
 - e. It is important for decision-makers to understand that deterioration of the environment is bad for economic development. Development projects can be restricted if the environment has not been adequately addressed.
 - f. It is also important to make people know the risks and costs of doing nothing about sewage pollution. Civil society can also be empowered to help themselves and to advocate for national and local government to improve the situation.

- g. To develop PPP in pollution reduction and other environmental activities, government and the private sector must share both risks and profits. The private sector is dependent upon a market for the product and profits cannot be restricted too much otherwise it will not attract investors.
- h. Using funding from other government agencies (e.g., Ministry of Energy funds for dams) for the environment is one good way to obtain financing.
- i. Downstream areas providing funds to upstream areas to reduce pollution is one way to share costs and responsibilities. Upstream areas provide both freshwater and flood control. Tree planting or forest rehabilitation can help.
- j. Pooling together the resources of several small municipalities makes it possible to construct better facilities to reduce pollution. Similarly, directives for cooperation among government agencies and initiatives for cooperation between the government and other stakeholders help.
- k. Good planning including more consultations and dialogues can help prevent mistakes later.
- l. Enforcement is an important factor.
- m. When plans of the government get bigger than the needs of the people, then there is a problem.

Summary

3.9 In summary, the session noted the importance of:

- a. Creativity in finding and putting together resources (not necessarily cash, e.g., time, land, CDM, 80 percent of the goal with 20 percent of the cost, bonds to raise capital, green funds for farmers, using government financing from non-environmental sectors, selling recycled wastes, sharing of responsibilities);
- b. Communicating with the public and public participation in decision-making and supporting/motivating government action (e.g., willingness-to-pay survey, report card rating water quality, community education programs, concern for red tide, TASC0 joint venture, stakeholders must be organized for there to be communication with their legitimate representatives, government plans must not get bigger than people's needs); and
- c. Linking the environment with economic development and enforcing the relationship (e.g., enforcing restrictions on development if the environment has not been adequately addressed).

4.0 TWINNING ARRANGEMENTS AND NETWORKING

4.1 Dr. Andre Jon Uychiaoco and Ms. Kazumi Wakita of PEMSEA presented a proposed work programme for the twinning participants to collaborate on in the coming three years (Annex 3). The proposed work programme for 2008–2010 aims to: (1) build capacity in ecosystem-based management; (2) establish and operationalize the Twinning Secretariat; and (3) develop and implement investment plans for pollution (nutrient) reduction in selected river basins (including improving the climate for investment). The first year will focus on identifying priority rivers within three hotspot sites, namely Bohai Sea, Manila Bay and Jakarta Bay, for pollution reduction to address. The second year will focus on developing and promoting investment plans for pollution reduction in the priority areas. The third year will focus on documenting

and promoting the development, implementation and results of pollution reduction for replication.

The Terms of Reference of the Twinning Secretariat was also presented: (1) organize regular workshops; (2) serve as central node to facilitate twinning arrangements; (3) foster knowledge management and sharing (through website, newsletters); (4) coordinate working visits between sites for upgrading capacity; (5) prepare and maintain a list of institutions and experts on Ecosystem-based Management, and (6) inform members of relevant activities/events. The themes of the annual workshops are to complement the appropriate stages of progress of the identified priority sites (Bohai Sea, Manila Bay, Jakarta Bay, Masan-Chinhae Bay) with respect to the proposed work programme.

- 4.2 To contribute to the discussion on how twinning can help sites, Dr. David Nemazie presented information on a study tour program involving Chesapeake Bay (USA), Laguna de Bay (Philippines) and Thachin River (Thailand) from 2002–2005. The program aimed to strengthen capabilities and share best practices in linking citizens and government towards pollution prevention, watershed protection, and restoration. Each site had to host study tours and send delegates to every tour. The ten study tours culminated in a governance study tour involving relevant politicians from the sites. Having a single and consistent coordinator per site throughout the program was important for continuity and for constantly following up on the progress of each other.

The budget was optimized by providing for food, travel and lodging without individual per diem, arranging for 2-3 back-to-back tours at a time, and staying in modest hotels. Each tour cost from US\$5,000 to US\$10,000 but generated around a few hundred thousand dollars in associated projects.

- 4.3 Discussions during the open forum are summarized below:

- a. It would be desirable to have the investment plan ready sooner than the end of 2009 but time will be required to secure stakeholder buy-in.
- b. Study tours among twinning sites will be desirable if there is sufficient budget but will nevertheless be incorporated in the annual workshops.
- c. The twinning secretariat will be established by April 2008 and twinning mechanisms will be arranged in at least two sites by 2009.
- d. Political leaders will be involved and the program will be evaluated in 2010.
- e. The selection of demonstration sites within the hotspot sites will be necessary for further development of the twinning program although perhaps more than one site per hotspot may be accommodated if local governments provide suitable counterpart.
- f. We must act even if we don't have all the information (e.g., total allowable load). Technical issues (e.g., modeling, progress monitoring and evaluation) will be discussed but governance (e.g., using success stories in other sites to mobilize political leaders and the public to participate, institutional arrangements, investment, etc.) will be emphasized. Economic analysis is a part of the investment plan.
- g. Other components of the GEF Project on the Implementation of the SDS-SEA that focus on partnerships with donors (e.g., the involvement of World Bank and other donors in the workshops); development of comprehensive plans (by the

first quarter of 2008); expansion to other sites; and State of the Coasts reporting will help address some of the concerns of the twinning workshop.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The Workshop identified the following good practices (see Annex 4):

- 5.1 Forging alliances (or partnerships) among local governments and stakeholders in coastal areas with their counterparts in the upland areas of associated watersheds entails identifying the respective social, economic and/or environmental drivers for an integrated management approach.
- 5.2 The combination of polluter pays and beneficiary pays policies provides a means for sharing financial burdens associated with pollution reduction facilities and services among governments, communities, and other users of coastal and marine resources. The appropriate balance for burden sharing varies from location to location, and changes over time.
- 5.3 Successful outcomes are more likely to be achieved when projects are initiated at manageable and affordable scales. The resulting experience and ownership derived from successful outcomes are the foundation upon which larger scale projects and programs can be established and financed.
- 5.4 Twinning arrangements between nations can expand the use of environmental best management practices by building relationships through shared learning between developing and developed nations. Study tours can be effectively used to facilitate the use of best practices by bringing together experts, stakeholders, ministry officials, and political leadership around priority topics.

The Workshop noted, with appreciation:

- 5.5 Seto Inland Sea's willingness to provide information as available to the twinning program;
- 5.6 University of Maryland's willingness to work with the twinning program and offer to look for additional funding in support of the agreed programs;
- 5.7 RO Korea's hosting of the secretariat, which will be established by April 2008, as providing one step to sustainability; and
- 5.8 The acceptance of Indonesia to host the next twinning workshop in 2008. RO Korea will provide financial and technical support.

The Workshop noted, on the value of twinning, that:

- 5.9 Information and experiences shared through twinning is useful and that even more advanced sites can validate whether they are on the right path. Funding and the means to interact with donors and the private sector are also incentives. In addition to workshops, study tours are and will be very helpful.

The Workshop noted, for the success of twinning, that:

- 5.10 Common issues must be identified so that there will be transferability of lessons learned and an incentive for other sites to join the twinning arrangement. Pollution reduction is an important aspect of Ecosystem-based Management that is common to all the sites. Good practices from other sites will be tested at pilot sites.
- 5.11 Continuity of site coordinators and the twinning relationship beyond the project is difficult but must be looked into.

The Workshop recommended that:

- 5.12 Participants identify other good practices for sharing to other sites, such as through the twinning website;
- 5.13 Comments on the work programme be solicited by the Secretariat, and the revised programme be circulated;
- 5.14 Themes of the workshops be circulated and finalized based on inputs;
- 5.15 Twinning mechanisms be arranged in at least two sites by 2009; and
- 5.16 Benefits and budget source be identified for study tours.

6.0 CLOSING

- 6.1 On behalf of the Ministry of Maritime Affairs and Fisheries of RO Korea, Mr. Kil Hong Seok expressed his appreciation to the participants and especially to the host, the State Oceanic Administration. He also reiterated MOMAF and RO Korea's support to further strengthen cooperation and collaboration on the environmental and socioeconomic issues of the coastal area in the region.
- 6.2 On behalf of PEMSEA, Mr. S. Adrian Ross thanked SOA for their generosity in hosting the workshop, MOMAF and KMI of RO Korea for their sponsorship and commitment to sustaining twinning, Japan and USA for sharing their experience, the new sites for their significant contribution, and Dr. Koh for co-chairing the workshop. He also expressed his hope for strong collaboration for the three-year work programme. He officially closed the ceremony by inviting everyone to next year's workshop hosted by Indonesia.

ANNEX 1
List of Participants

**Proceedings of the Third Twinning Workshop on
Ecosystem-based Management of
Interrelated River Basins, Estuaries and Coastal Seas
Tianjin, People's Republic of China
17–19 October 2007**

LIST OF PARTICIPANTS

CAMBODIA

Mr. Prak Visal
Project Manager,
ICM National Demonstration Site,
Sihanoukville ICM Demonstration Project
Sihanoukville, Cambodia
Email: pmo@camintel.com

Marine Environmental Protection Division
Liaoning Provincial Oceanic and Fisheries
Department
Liaoning, PR China
Tel: +86 24 23448518
Email: hanyong@iit.edu

Mr. Liu Xusheng
Programme Officer
Hebei Provincial Oceanic Department
Hebei, PR China
Tel: +86 311 83026684

PR CHINA

Bohai Sea

Mr. Li Wenhai
Project Director
Bohai Sea Environmental Management
Project Office,
International Cooperation Department,
State Oceanic Administration
Beijing, PR China
Tel: +86 10 68048051
Email: bsemp@tom.com

Mr. Zhou Liang
Programme Officer
Tianjin Municipal Oceanic Department
Tianjin, PR China
Tel: +86 22 25289065

Dr. Chen Shang
Research Fellow
First Institute of Oceanography, SOA
Tel: +86 532 88967476
Email: qdcs@163.com

Mr. Li Shuangjian
Deputy-Director
Scientific and Technological Division
National Marine Data and Information
Service, SOA
Tianjin, PR China
Tel: +86 22 24010821

Dr. Zhang Zhaohui
Research Fellow
First Institute of Oceanography, SOA
Tel: +86 532 88967476

Ms. Kang Yuexia
Research Fellow
National Marine Data and Information
Service, SOA
Tianjin, PR China
Tel: +86 22 24010822

Prof. Zhao Xucai
Assistant Director-General,
National Marine Data and Information
Service, SOA, Tianjin, PR China
Tel: +86 22 24010820
Email: zhaoxc@mail.nmdis.gov.cn

Mr. Han Yong
Deputy-Director

Prof. Wen Quan
National Marine Environmental Monitoring
Center
State Oceanic Administration
Dalian, PR China

Tel: +86 411 84782522
Email: qwen@nmmemc.gov.cn

Prof. Ma Zhihua
Research Fellow
National Marine Data and Information
Service, SOA
Tianjin, PR China
Tel: +86 22 24010845

Ms. Lin Xianghong
Programme Officer
National Marine Data and Information
Service, SOA
Tianjin, PR China
Tel: +86 22 24010820

Xiamen

Prof. Zhou Qiulin
Third Institute of Oceanography,
State Oceanic Administration
No. 178, Daxue Road, Xiamen, PR China,
361005
Phone: +138 060 32019
Email: zhou@public.xm.fj.cn

DPR KOREA

Mr. Hong Chol Ho
Director, Land Planning Department,
Ministry of Land and Environmental
Protection (MLEP)
Pyongyang, DPR Korea
Mr. Kim Su Hong
Senior Programme Officer
General Bureau of Cooperation with
International Organizations
Pyongyang, DPR Korea

Mr. Ri Ki Ho
Section Chief, Land Planning Institute,
Ministry of Land and Environmental
Protection (MLEP)
Pyongyang, DPR Korea

Mr. Ri Jong Sik
Section Chief, Ocean Biology,
West Sea Oceanographic Research
Institute

Nampho, DPR Korea
Mr. Kang Tae Song
Teacher
National ICM Training Center, Department
of Global Environmental Science,
Kim Il Sung University
Pyongyang, DPR Korea

INDONESIA

Mr. Yusiono Anwar Supalan
Head of Water Pollution Control,
Environmental Management Agency
DKI Jakarta Jl. Casablanca Kav. 1
Kuningan
Jakarta Selatan, Indonesia
Phone: +62 21 5209651,
Fax: +62 21 529938

Mr. Handy B. Legowo
Head of Wastewater Development, Dit.
Pengembangan Penyehatan Lingkungan
Pemukiman, Public Works Department
Jl. Pattimura No. 20 Kebayoran Baru -
Jakarta 12110
Tel: +62 21 72797175
Fax: +62 21 72797175
Email: handybl@yahoo.com

Ms. Heni Agustina
Head of Marine Environmental
Rehabilitation Division, Assistant Deputy
for Coastal and Marine Degradation
Control, Ministry of Environment.
Building A, 5th Floor
Jl. D.I Pandjaitan No. 24
Jakarta Timur 13410, Indonesia
Tel: +62 21 85905638
Fax: +62 21 85904929
Email: heni.agustina@menlh.go.id

JAPAN

Mr. Jiro Eiho
Hyogo Prefectural Institute of Public
Health and Environment Science
Japan
Email: Jirou_Eiho@pref.hyogo.jp

PHILIPPINES

Dr. Vicente Tudao, Jr. Executive
Director
River Basin Control Office, Department of
Environment and Natural Resources
Visayas Ave., Quezon City, Philippines
Tel: +632 924 2540
Email: vbtuddaojr@yahoo.com

Mr. Rogelio Trinidad
Regional Technical Director for
Protected Areas, Wildlife and Coastal
Zone Management Service,
Region 3, Department of Environment and
Natural Resources
Jomafer Bldg., San Agustin
San Fernando City, Pampanga,
Philippines
Tel: +634 596 34652

RO KOREA

Dr. Chul Hwan Koh
Seoul National University
RO Korea
Email: kohch@snu.ac.kr

Dr. Kyeong Doo Cho
Incheon Development Institute
RO Korea
Email: kdcho@idi.re.kr

Dr. Chang Hee Lee
Myung Ji University
RO Korea
Email: changhee@mju.ac.kr

Dr. Daeseok Kang
Pukyong University
RO Korea
Email: dskang@pknu.ac.kr

Dr. Chan Won Lee
Kyung Nam University
RO Korea
Email: water@kyungnam.ac.kr

Dr. Jong Deog Kim
Korea Maritime Institute (KMI)

RO Korea
Email: jdkim65@kmi.re.kr

Ms. Gusung Lee
Korea Maritime Institute (KMI)
RO Korea
Email: jessie@kmi.re.kr

Dr. Yoon Kwan Kim
E&WISRO Korea
Email: cto@enwis.com

Dr. Suk-Jae Kwon
Korea Ocean Research and Development
Institute
RO Korea
Email: sjkwon@kordi.re.kr

Mr. Gi Gab Ha
Korea Environmental Science and
Technology Institute
RO Korea
Email: ggaha@kesti.co.kr

Mr. Kil Hong Seok
Ministry of Marine Affairs and Fisheries
RO Korea
Email: dasima@momaf.go.kr

VIETNAM

Dr. Hoang Viet Cuong
Director
TASCO Environment Project
Hanoi, Vietnam
Tel/Fax : 84.4.6413463
Mobile phone: 84.913513370
Email: cuonghv@tasco.com.vn;
hv_cuong@yahoo.com

UNITED STATES OF AMERICA

Chesapeake Bay

Dr. David Nemazie
University of Maryland
United States of America
Email: nemazie@umces.edu

PEMSEA SECRETARIAT

Mr. S. Adrian Ross
Acting Regional Programme Director,
PEMSEA and
Acting Interim Executive Director,
PEMSEA Resource Facility
Tel: +632 929 2992
Fax: +632 926 9712
Email: saross@pemsea.org

Ms. Kazumi Wakita
Programme Officer
Tel: +632 929 2992
Fax: +632 926 9712
Email: kwakita@pemsea.org

Ms. Bresilda M. Gervacio
Technical Officer
Tel: +632 929 2992
Fax: +632 926 9712
Email: bgervacio@pemsea.org

Dr. Andre Jon Uychiaoco
Consultant
Tel: +632 929 2992
Fax: +632 926 9712
Email: ajuychiaoco@pemsea.org

Regional Programme Office

Visiting Address:

Regional Programme on Building
Partnerships in Environmental
Management for the Seas of East Asia
DENR Compound, Visayas Avenue,
Diliman, Quezon City
Philippines

Mailing Address: P.O. Box 2502,
Quezon City 1165, Philippines

Email: info@pemsea.org

Website: www.pemsea.org

ANNEX 2
Workshop Programme

**THIRD TWINNING WORKSHOP ON
ECOSYSTEM-BASED MANAGEMENT OF INTERRELATED RIVER BASINS,
ESTUARIES AND COASTAL SEAS:
Policy Reform, Sustainable Financing and Investment
for Pollution Reduction in the East Asian Seas**
17–19 October, 2007
Thames Hall, New World Astor Hotel
Tianjin, PR China

Programme of Activities

Co-Chairs: Mr. S. Adrian Ross, Acting Interim Executive Director, PEMSEA Resource Facility and Acting Regional Programme Director, PEMSEA

Dr. Chul Hwan Koh, Professor, Seoul National University, RO Korea

Date/Time	Activities/Topics
16 October	Registration
	Welcome Dinner, hosted by the State Oceanic Administration
17 October	
0830–930	Opening Ceremony Messages: Mr. S. Adrian Ross Acting Interim Executive Director, PEMSEA Resource Facility and Acting Regional Programme Director, PEMSEA Mr. Li Wenhai Director, Bohai Sea Environmental Management Project International Cooperation Department, SOA, PR China Dr. Chul Hwan Koh, Professor, Seoul National University, RO Korea Group photo Break Introduction to the Workshop Mr. S. Adrian Ross PEMSEA
Session 1: Policy reform in managing impacts from river basins to coastal seas	
Panelists: Dr. Chen Shang, First Institute of Oceanography, SOA, China Ms. Heni Agustina, Ministry of Environment, Indonesia Dr. Chan Won Lee, Kyung Nam University, ROK Dr. David Nemazie, University of Maryland, USA	
0930–1000	Case studies on developing partnerships among Xiamen, Zhangzhou & Longyan Municipalities in managing Jiulongjiang River Basin, Prof. Zhou Qiulin, Third Institute of Oceanography, Xiamen, China and Zhou Luming, Xiamen Marine and Fisheries Bureau.
1000–1030	Development and implementation of integrated river basin and coastal area management in Manila Bay, Dr. Vicente Tuddao, Jr., River Basin Control Office, Department of Environment and Natural Resources, Philippines

Date/Time	Activities/Topics
1030–1100	Efforts and future plans in managing water quality of the Taedong River Basin, Mr. Ri Ki Ho, Land Planning Institute, MLEP, DPR Korea
1100–1130	Development of a Nutrient Reduction Scheme for Bohai Sea, Prof. Wen Quan, SOA, PR China
1130–1200	Science-based management initiatives in Gwang Yang Bay, Dr. Yoon Kwan Kim, E&WIS, RO Korea
1200–1330	Lunch, Marco Polo Restaurant
1330–1430	Comments by the Panelists and General Discussion
1430–1445	Session 1 wrap-up
1445–1500	Tea break
<p>Session 2: Restructuring public waste management mechanisms and services in response to the challenges of water pollution reduction</p> <p>Panelists: Mr. Handy B. Legowo, Public Works Department, Indonesia Dr. Vicente Tuddao, Jr., Department of Environment and Natural Resources, Philippines Dr. Daeseok Kang, Pukyong University, ROK</p>	
1500–1530	Public and private sector partnerships for water pollution reduction: rationale, framework, process and stakeholder participation, Mr. S. Adrian Ross, PEMSEA
1530–1600	Practice on Area-wide Total Pollution Control System in Japan, Mr. Jiro Eiho, Hyogo Prefectural Institute of Public Health and Environment Science, Japan
1600–1630	Cost-sharing system for environmental management in Han River Estuary of RO Korea, Dr. Kyeong Doo Cho, Incheon Development Institute, RO Korea
1630–1730	Comments by the Panelists and General Discussion
1730–1745	Session 2 wrap-up
1800	Dinner, hosted by Korea Maritime Institute
<p>18 October</p> <p>Session 3: Enhancement of local government capacity in financing and revenue generation for pollution reduction</p> <p>Panelists: Mr. Han Yong, Liaoning Provincial Oceanic and Fisheries Department, China Mr. Yusiono Anwar Supalan, Environmental Management Agency, Indonesia Mr. Jiro Eiho, Hyogo Prefectural Institute of Public Health and Environment Science, Japan Dr. Chang Hee Lee, Myung Ji University, RO Korea Mr. Rogelio Trinidad, Department of Environment and Natural Resources, Philippines</p>	
0900–0930	Assessing policy and institutional framework to support investments in pollution reduction: developing environmental users fee system in Puerto Galera, Philippines, Mr. S. Adrian Ross, PEMSEA

Date/Time	Activities/Topics
0930–1000	Establishing Various Funding Mechanisms to Enhance Restoration of the Chesapeake Bay, Dr. David Nemazie, University of Maryland, USA
1000–1030	Corporate sector perspective for reforming public policy and services in waste management: experience in Vietnam, Dr. Hoang Viet Cuong, TASCO Environment Project, Vietnam
1030–1045	Tea break
1045–1145	Panel discussion
1145–1200	Wrap-up
1200–1330	Lunch, Marco Polo Restaurant
1330–1400	Innovative investment policy for the improvement of Shihwa and Tando Lake management, Dr. Suk-Jae Kwon, KORDI, RO Korea
1400–1430	Mobilizing Stakeholder Support for Waste Management and Financing, Mr. Prak Visal, Sihanoukville, Cambodia
1430–1500	Ciliwung River Basin Management, Ms. Heni Agustina, Environmental Management Agency, Indonesia
1500–1515	Tea break
1615–1630	Comments by the Panelists and General Discussion
1630–1700	Session 3 wrap-up
Open Forum: Twinning Arrangements and Networking, Conclusions and Recommendations	
19 October	
0900–0930	Presentation of a discussion paper on twinning arrangements Dr. Andre Jon Uychiaoco, PEMSEA Ms. Kazumi Wakita, PEMSEA
0930–1030	Discussion on twinning arrangements
1030–1045	Coffee break
1045–1200	Conclusions and Recommendations
1200–1300	Lunch, Marco Polo Restaurant
Field Trip	
1300–1430	TEDA Capital Environmental Protection Company Limited, Tianjin, China
1600	Dinner, hosted by PEMSEA

ANNEX 3

**Concept Paper on Collaboration in the Ecosystem-based Management of Coastal
Areas and River Basins in East Asia
(Revised to incorporate suggestions during the workshop)**

CONCEPT PAPER ON COLLABORATION IN THE ECOSYSTEM-BASED MANAGEMENT OF COASTAL AREAS AND RIVER BASINS IN EAST ASIA

Abstract

The integration of coastal management and river basin management can help us better achieve sustainable environmental, social and economic benefits. Moreover, cooperation between more experienced sites and developing sites can help facilitate more effective and more efficient reduction of pollution. A collaboration for: (1) capacity building in integrated coastal area and river basin management, including through twinning, and (2) development and implementation of investments in pollution reduction is proposed. It is further proposed that pollution-reduction priorities and options be developed by 2008, investment options and proposals be prepared by the East Asian Seas Congress in 2009, and experiences be documented and shared by 2010. Finally, it is proposed that a secretariat be established and recognized to support these activities.

Rationale

The Sustainable Development Strategy for the Seas of East Asia (SDS-SEA) adopted by the Ministerial Forum of the East Asian Seas Congress 2003 highlighted the need for “ecosystem-based management approaches...to ensure sustainable development of coastal and marine areas” (SDS-SEA General Principle No.13). Specifically, the SDS-SEA calls for adoption of “a holistic approach to managing the impacts of land-based activities by...incorporating actions...within the framework of integrated coastal and watershed management, including the protection of rivers and tributaries, and promotion of ‘good practices’ in land and water uses” (SDS-SEA, PROTECT, Objective 2, Action Programme 3). To this end, the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) has begun an initiative to develop the capacity of countries and other stakeholders of the region in ecosystem-based management through integrated management of river basins and coasts.

In 2004, PEMSEA’s 10th Programme Steering Committee Meeting adopted a Programme of Activities for the Implementation of the SDS-SEA that includes two interrelated components:

- development and implementation of integrated management programme using ecosystem-based approach and other tools, in Bohai Sea, Jakarta Bay, Manila Bay and Masan-Chinhae Bay; and
- forging networking/twinning arrangements to share knowledge and experience in good practices and lessons learned in ecosystem-based management among the above-mentioned sites and Seto Inland Sea and Chesapeake Bay.

In 2005, national and project coordinators from Bohai Sea, Jakarta Bay, Masan-Chinhae Bay, Manila Bay and Seto Inland Sea participated in the first Workshop on Ecosystem Based Management of Interrelated River Basins, Estuaries and Coastal Seas. The Workshop considered “ecosystem-based management” as a systematic approach to addressing a set of management issues arising from their interactions governed by ecosystem attributes and related socioeconomic consequences. The Workshop recommended capability-building activities, standardized approaches and indicators for multidisciplinary research, multisector/multidisciplinary/interagency mechanisms, and participatory activities. The Workshop also recommended Bohai Sea, Jakarta Bay, Manila Bay, Masan-Chinhae Bay, Chesapeake bay as core sites, development of twinning

arrangements between (bilateral) and among (multilateral) the sites and various sectors (including local governments and civil society), and the establishment of a twinning secretariat to facilitate and coordinate these activities.

The second workshop on Ecosystem Based Management of Interrelated River Basins, Estuaries and Coastal Seas, conducted as part of the East Asian Seas (EAS) Congress 2006, focused on implementation approaches. The workshop concluded that:

- ecosystem-based management can be a useful framework to help achieve sustainable development,
- a scientific foundation is useful but must be accessible,
- there is a need to communicate the problems and solutions to the public,
- the lack of resources should not stop ecosystem-based management initiatives as the efforts should facilitate the inflow of funds,
- twinning arrangements can help share experiences and lessons,
- there must be an appropriate match between twinning partners, and
- both developed and developing sites can benefit from twinning.

The workshop requested PEMSEA to help develop a Secretariat to serve as a central node to foster knowledge exchange, promote staff exchanges, facilitate working visits and study tours between sites, and establish a website.

In line with the above, one component of the proposed GEF Project “Implementation of the Sustainable Development Strategy for the Seas of East Asia” aims to establish south-south (among developing sites) and north-south (between more advanced and developing) twinning arrangements for integrated management of watersheds, estuaries and adjacent coastal seas, promoting knowledge and experience sharing and collaboration. Specifically, by the end of the Project, the following are expected:

- Integrated river basin and coastal area management programs employing an ecosystem-based approach and other tools as appropriate in the Bohai Sea, Jakarta Bay, Manila Bay, Masan-Chinhae Bay, and other areas;
- Investment/replication plans for pollution reduction facilities and services developed and adopted for selected river basins in Bohai Sea, Manila Bay and Jakarta Bay;
- Twinning and networking arrangements involving South-South and North-South collaborations negotiated and signed in at least two priority watershed sites;
- Twinning Secretariat established and fully operational, organizing and conducting annual workshops, site visits and other knowledge transfer events among a regional network of river basin and coastal area management projects and programs.

Objective and Approach

The proposed collaboration aims to facilitate the integration of coastal area management and river basin management for sustainable environmental, social and economic benefits. This we hope to accomplish by:

- Enhancing capacities at individual, institutional and system levels in the programme sites in ecosystem-based management across legal and administrative boundaries for sustainable development, especially through twinning arrangements;
- Facilitating mobilization of resources and development of sustainable financing mechanisms and options, through public and private partnerships and other means, for the implementation of ecosystem-based management.

- Documenting, showcasing and sharing operational modalities of ecosystem-based management—specifically reduction of nutrients—for replication by other coasts and river basins.

At the end of 3 years, the collaboration expects the following outcomes:

- Capacity built in ecosystem-based management
- Twinning secretariat established and operationalized
- Investment plans for pollution (nutrient) reduction in selected river basins developed and implemented
- Experiences and lessons learned in ecosystem-based management in East Asia documented and shared

Work Programme 2008–2010

To achieve the above objectives, the following work programme is proposed:

In 2008,

- Select appropriate river basin/coastal sites
- Identify and/or develop institutional mechanisms for project implementation
- Establish twinning secretariat
- Build capability in pollution reduction
 - total allowable pollution loads
 - development of investment plan
- Identify priorities for pollution reduction
- Select most viable priority per river-coast site
- Convene to (1) discuss progress and lessons and (2) compare and contrast context and factors that encourage or hinder financing for nutrient reduction programs in East Asian Seas hotspots to facilitate transferability of good practices during our 4th workshop in Jakarta. (3) This will also include a study tour of an integrated river basin and coastal management program in Jakarta Bay.

In 2009,

- Twinning collaboration signed in at least 2 priority sites (if these have not yet been incorporated in institutional mechanisms for project implementation in 2008)
- Build capability in pollution reduction
 - sustainable financing options for pollution reduction
 - good policies & practices in financing & procurement
 - public utilities learning from good corporate practices
 - identifying and partnering with investors
- Prepare investment proposals for nutrient reduction at selected sites
- Convene an investors roundtable at our 5th workshop at the EAS Congress in Manila in November 2009. This will include a study tour of an integrated river basin and coastal management program in Manila Bay.

In 2010,

- Secure involvement of political leaders for 2010 activities
- Prepare case studies on sustainable financing of pollution reduction
- Document lessons learned
- Program evaluation

- Identify and promote replication opportunities for scaling up
- Share with other interested coasts and river basin managers experiences and lessons in ecosystem-based pollution reduction through our 6th workshop. This will include a study tour of an integrated river basin and coastal management program.

Establishment of a Secretariat

The group encourages the management of one of its ecosystem-based management sites to volunteer to take on the role of the secretariat for the collaboration. The activities of the secretariat include:

- Organizing regular workshops and other meetings to provide policy and technical advice for the implementation of the ecosystem-based management programmes, as well as the twinning arrangements;
- Serving as the central node of the network to promote and facilitate development and implementation of the twinning arrangements between the network members on ecosystem-based management;
- Fostering knowledge management and sharing between the Network members in addressing upstream and downstream impacts of economic development in a given water body and its adjacent region, through website links, newsletters, and other means;
- Coordinating working visits and study tours between the network members, for upgrading ecosystem management capacity;
- Preparing and maintaining a list of institutions and experts on ecosystem-based management in the Seas of East Asia region to facilitate interaction and cooperation on ecosystem based management; and
- Informing network members of relevant activities, events, and opportunities.

Conclusion and Recommendations

In view of the above, we recommend the coordination of the management of river basins and coastal areas to better manage pollution and achieve benefits. It is recommended that the sites represented here incorporate within each of our respective work programmes the general three-year work programme of multi-stakeholder systematic priority identification, proposal development, pollution reduction investment, and sharing of lessons learned. Finally, it is recommended that we recognize the offer of RO Korea to host the twinning secretariat to help us share knowledge and lessons in pollution reduction with each other through twinning for the improvement of our shared waters.

ANNEX 4
Summary of Good Practices

**Third Twinning Workshop on Ecosystem-based Management
of Interrelated River Basins, Estuaries and Coastal Seas
Policy Reform, Sustainable Financing and Investment
for Pollution Reduction in the East Asian Seas**

Summary of Good Practices

Good Practice #1: Forging alliances (or partnerships) among local governments and stakeholders in coastal areas with their counterparts in the upland areas of associated watersheds entails identifying the respective social, economic and/or environmental drivers for an integrated management approach.

For example: In the case of Xiamen, the City Alliance forged between the coastal city and the upland cities/province was based on the need to protect a potable water supply (Xiamen), and the requirement to meet water pollution regulations (upland areas). These drivers, although different, were the basis for an integrated management program, including a compensation scheme among the parties, which supports the development of pollution reduction facilities and services in the upland area.

Good Practice #2: The combination of polluter pays and beneficiary pay policies provides a means for sharing financial burdens associated with pollution reduction facilities and services among governments, communities, and other users of coastal and marine resources. The appropriate balance for burden sharing varies from location to location, and changes over time.

For example: In the case of the Han River and Puerto Galera, revenue generation schemes were developed and negotiated among stakeholder groups on the basis of pollutant sources and loadings, the benefits derived, and the capacity (and willingness) to pay. Pollution reduction can (needs to) be presented within the framework of sustainable development in order to validate the potential overall benefits to a community and coastal area.

Good Practice #3: Successful outcomes are more likely to be achieved when projects are initiated at manageable and affordable scales. The resulting experience and ownership derived from successful outcomes are the foundation upon which larger scale projects and programs can be established and financed.

For example: The solid waste management project undertaken by the Seraphin Green Environment Company, a private enterprise, in partnership with Hay Tay URENCO, a State-owned enterprise, and the Sihanoukville community-based solid waste collection system project, provide examples of significant environmental and social challenges being addressed through innovation and the use of local skills and resources (public and/or private), with positive results. These projects are now being scaled up.

For example: In the case of Chesapeake Bay, emphasis is placed on managing small tributaries and sub-basins within the watershed area, thereby creating ownership and stewardship of those sub-basins by the local communities. With growing populations and increasing land development occurring throughout the watershed area, local stewardship of sub-basins is key to maintaining and improving the health of this complex ecosystem.

Good Practice #4: Twinning arrangements between nations can expand the use of environmental best management practices by building relationships through shared learning between developing and developed nations. Study tours can be effectively used to facilitate the use of best practices by bringing together experts, citizens, ministry officials, and political leadership around priority topics.

For example: A successful Twinning relationship was established between Laguna de Bay, Thachin River, and Chesapeake Bay that enhanced citizen based environmental management, which led to the use of several new best management practices at the community level. Additionally, strong relationships have been built between the watersheds which continue today, long after the funding has lasted. Twinning relationships can be strongest if there is one clear point of contact in each country which then assists facilitating the entire process and their watershed's participation.