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PROCEEDINGS OF THE FIFTH REGIONAL TWINNING WORKSHOP ON INTEGRATED RIVER BASIN AND COASTAL AREA MANAGEMENT:

Meeting Challenges of Pollution Reduction in River Basins and Coastal Areas

Jakarta, Indonesia
17–19 March 2010

GEF UNDP UNOPS PEMSEA

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A. INTRODUCTION

1. The 5th Regional Twinning Workshop on Integrated River Basin and Coastal Area Management (IRBCAM) with the theme "Meeting Challenges of Pollution Reduction in River Basins and Coastal Areas" was held at the Ibis Hotel, Jakarta, Indonesia, from 17 to 19 March 2010. The workshop was co-organized by Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), PEMSEA Twinning Secretariat/Korea Maritime Institute (KMI), Ministry of Land, Transport and Maritime Affairs (MLTM) of Republic of Korea (RO Korea) and Ministry of Environment (MOE) of Indonesia.

2. The participants were largely officials from the national and local government levels of Indonesia. The resource persons for the workshop were from various organizations and agencies from Indonesia, Philippines, RO Korea, the United States of America (USA), international and national nongovernmental organizations (NGOs), the private sector and donor agencies, including, the World Bank and Japan International Cooperation Agency (JICA).

3. The workshop aimed to share experiences, good practices and lessons learned in planning, developing and implementing pollution reduction investments in Manila Bay (Philippines) and Jakarta Bay (Indonesia) within the context of IRBCAM.

4. The list of participants and the workshop program are attached as Annexes 1 and 2 respectively.

B. OPENING CEREMONY

5. On behalf of PEMSEA, Mr. Stephen Adrian Ross, Chief Technical Officer, PEMSEA Resource Facility welcomed all the representatives and participants to the workshop. He expressed his appreciation to Mrs. Hillman and the staff of the Ministry of Environment (MOE) of Indonesia for their commitment in hosting and co-organizing the workshop. He also recognized the continuing support of MLTM and KMI for the series of regional Twinning Workshops. He discussed the recent transformation of PEMSEA, having obtained international organization status in November 2009 with the signing of an agreement recognizing PEMSEA's legal personality by eight countries. He pointed out the importance of the role of partners of PEMSEA and their proactive initiatives in planning, coordinating and implementing activities to achieve sustainable development targets as identified in the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA). He stressed that the workshop was a good example on how partnerships can be developed. He continued that the workshop should bring about discussions between the attending policymakers,

managers and technical personnel from Jakarta Bay/Ciliwung River (Indonesia), Manila Bay/Pasig River/Laguna de Lake (Philippines), and Taedong River (DPR Korea), not only relating to progress and success stories, but also to failures and shortfalls in their programs. This would allow sites to better appreciate the strategies of improving the planning and implementation of their respective programs. Mr. Ross expressed appreciation to the representatives from Masan Bay (RO Korea) and Chesapeake Bay (USA), two developed and mature programs; Manila Water Company, Inc., of the private sector; Global Water Partnership; JICA; Balifokus Foundation; the Korea Marine Environment Management Corporation; and The World Bank for their willingness to share policies, perspectives and experiences on how pollution reduction/wastewater treatment projects may be developed, implemented and financed in a sustainable and affordable manner. He ended his remarks by wishing the participants a successful workshop and the start of new partnerships among them.

6. Dr. Jon-Deog Kim, Head of PEMSEA Twinning Secretariat/KMI, delivered the remark of Mr. Choi Joon-Wook, Director, Marine Environment Policy Division, Marine Policy Bureau, MLTM of RO Korea. The Twinning Network, including the series of planned workshops, would play an important role to conserve the marine environment and to build a sustainable cooperation network in the region. In addition, it was expected that fruitful discussions and valuable recommendations shared during the workshop would serve as a foundation for promoting further development of the Twinning Network. Finally, Dr. Kim announced that RO Korea would host the 4th East Asian Seas (EAS) Congress and Expo 2012 Yeosu Korea under the theme, "The Living Ocean and Coast." The two are expected to generate synergy for both RO Korea and PEMSEA, thus, PEMSEA and Twinning Network partners were encouraged to support and participate in both the 4th EAS Congress and Yeosu Expo in 2012.

7. On behalf of MOE of Indonesia, Dra. Masnellyarti Hillman, Deputy Minister for Nature Conservation Enhancement and Environmental Degradation Control, welcomed all the participants and expressed her sincere gratitude to PEMSEA and the PEMSEA Twinning Secretariat/KMI for organizing the workshop in Jakarta. She viewed the workshop as an opportunity to enhance the capacity of the national and local governments in supporting the implementation of sustainable development of marine and coastal areas. She urged the participants to forge partnerships to implement the SDS-SEA through integrated coastal management (ICM) which was reiterated by the countries through the signing of the "Manila Declaration on Strengthening the Implementation of Integrated Coastal Management for Sustainable Development and Climate Change Adaptation in the Seas of East Asia." She congratulated PEMSEA in obtaining a legal personality and confirmed the commitment of the MOE of Indonesia to the Global Environment Facility/United Nations Development Programme/ PEMSEA (GEF/UNDP/PEMSEA) Implementation of the SDS-SEA. She officially opened the workshop inviting all the participants to share creative and innovative ideas in the discussions throughout the workshop.

8. The Remarks are attached as Annex 3.

C. TWINNING WORKSHOP BACKGROUND, OBJECTIVES AND EXPECTATIONS

9. Dr. Kim presented the Twinning Workshop background, objectives, and expectations. He related the overview of the Twinning Arrangement on IRBCAM in the framework of the SDS-SEA, including progress made since 2005. Dr. Kim highlighted the last Regional Twinning Workshop on TMDL in 2009. He detailed the expectations of each session of the workshop with an overall expectation of the workshop to develop a climate of Public-Private Partnerships in promoting pollution reduction investment in three pollution hotspots, namely, Jakarta Bay, Manila Bay and Bohai Sea.

SESSION 1: APPLICATION OF TOTAL MAXIMUM DAILY LOAD FOR POLLUTION REDUCTION ANALYSIS

10. In Session 1, which was chaired by Ir. Nana M. Arifjaya of Bogor Agricultural University, Indonesia, the progress and achievements in pollution reduction and application of Total Maximum Daily Load (TMDL) in Jakarta Bay and Ciliwung River in Indonesia, Laguna de Bay in the Philippines, and Masan Bay in RO Korea, were presented.

Pollution Reduction and Rehabilitation of Jakarta Bay and Ciliwung River

11. The status and progress of pollution reduction efforts in Jakarta Bay and Ciliwung River were presented by Mr. Antung Deddy Radiansyah, Assistant Deputy for River and Lake Degradation Control of the MOE of Indonesia, Mrs. SPM Budisusanti, Head of the Chemical Industry Division of the Deputy for Pollution Control of the MOE of Indonesia, and Ir. Peni Susanti, Head of the Environmental Management Board of Jakarta Province.

12. Mr. Radiansyah provided an overview of the status of Ciliwung River, one of the major rivers flowing into Jakarta Bay, and the master plan for the rehabilitation of the river, which is in the process of review for approval and adoption through a Presidential Decree. Ciliwung River, which traverses the provinces of West Java and Jakarta, is threatened by wastes from domestic, agricultural, livestock and industrial sources, erosion, sedimentation, and land use changes. These have consequently contributed to flooding in the low-lying areas near the river. Water quality, in four of the six segments of the river, fall under Class IV (for gardening; and with Class I being the highest rating) while two downstream segments near the river mouth are unclassified, failing even Class IV levels. The master plan for the rehabilitation of Ciliwung River is targeting to upgrade the water quality categories in Segment 1 (most upstream segment) to Class I for drinking water, recreation, fishery, livestock and agriculture. Segments 2 to 5 will be upgraded to Class II for recreation, fishery, livestock and agriculture. And finally, Segment 6 (downstream) will be upgraded to Class III for fishery, livestock and agriculture. The timeframe of the upgrade will take place within the next 20 years through various programs on water pollution control, environmental degradation control, spatial planning, law enforcement and community empowerment. The water pollution program is targeting to set up communal wastewater treatment facilities and improve the sewerage system for 1,831,600 households and install 5,340 units of biogas production tanks for livestock wastes, while not discounting the application of better technologies in the future. Various

techniques to improve water recharge in the watershed area such as artificial recharge wells were also shown. Implementation of the master plan is estimated to cost around Rp 5,776,300,100,000 (more than US$ 600 million). The investment program for the implementation of the master plan will be developed through the collaboration of the ministries of Environment, Public Works, Agriculture, Forestry and National Development Planning and the provincial and regency governments.

13. Mrs. Budisusanti highlighted the significant contribution of industrial point sources to the pollution of Ciliwung River, especially with regard to biochemical oxygen demand (BOD) and chemical oxygen demand (COD), and the various regulations governing water pollution control in Indonesia. A Ministerial Decree on effluent standards for various sources, enacted in January 2010, provides: (a) guidelines for water pollution control for national, provincial and district levels; (b) identification and mapping of water pollution sources; (c) estimation of TMDL and its application for the development of a permit system to regulate concentration and maximum load of effluent discharge; (d) policy development; and (e) implementation of monitoring and enforcement activities. She informed the participants that several programs on emission load reduction and compliance improvement are ongoing. PROPER or the Program for Pollution Evaluation and Performance Rating, which covers aspects of water pollution, marine and coastal pollution, air pollution and hazardous waste management, deals with point-source companies having significant impacts on the environment, particularly those which are export product-oriented. These companies are given a rating of black, red or blue (blue being the highest), based on their end-of-pipe compliance to effluent standards. The PROKASIH (Clean River Program) is an integrated water pollution control mechanism that: (a) promotes compliance improvement and emission load reduction from various sources, (particularly institutional sources, small- and medium-scale enterprises and domestic sources); (b) strengthens local government capacities on pollution control; and (c) improves stakeholder participation in water pollution control. Pollutant contributions of participating institutional point sources/companies are identified and mapped, targets for emission load reduction are established, and representatives of the companies sign a commitment to continuously improve environmental performance, with the approval of the provincial and municipal governments and the MOE. The program offers incentives for compliance as well as disincentives for non-compliance to the participating companies. Together with the programs that focus on air pollution control and hazardous management, the PROKASIH constitutes the SUPERKELOLA Programme where 18 industries in Jakarta Bay (in Jakarta Province) are participating. Mrs. Budisusanti also recognized that current efforts are mostly focused on compliance measures. She highlighted the need to: (a) determine the necessary pollution load reduction; (b) establish a permit system for pollutant discharge based on the carrying capacity of Ciliwung River; (c) conduct regular monitoring and inspection; (d) strengthen law enforcement; and (e) build the capacity of local government officials on water pollution control.

14. Mrs. Susanti shared the efforts of the Provincial Government of Jakarta in addressing pollution in Ciliwung River in collaboration with other government agencies, the private sector, communities and other stakeholders. Jakarta has a three-year work plan for the reduction/elimination of garbage in Ciliwung River. This includes: (a) community-based awareness and capacity-building campaigns; (b) stronger law enforcement; (c) provision of facilities for solid waste sorting and composting; (d) domestic wastewater treatment; (e) dredging of the river; (f)

construction of flood canals; (g) cleaning of water gates; (h) setting up of garbage screens; and (i) resettlement of illegal settlers along the river banks. Open dump sites in several locations will also be closed, and counseling of communities and the river cleanup campaign program will be intensified. Coca-Cola Amatil, Indonesia, and various NGOs are actively collaborating with the provincial government in the river cleanup program, engaging community participation in education, capacity building, planting, composting and other activities. Various restoration efforts are also ongoing in Jakarta Bay, including: a) spatial planning of the coastal area; b) strategic environmental assessment for coastal reclamation and revitalization; c) rehabilitation of the mangrove forest/green belt; and d) coastal cleanup campaigns through collaboration between the central government, local government, fishers, students, the academe, nongovernmental organizations (NGOs) and the private sector. Despite current efforts, Mrs. Susanti underscored that much more still needs to be done including: a) implementation of an integrated management approach for Jakarta Bay and the various tributary rivers; b) the further strengthening of coordination among stakeholders; and c) development of stronger collaboration between central and local governments in identifying environmental projects and programs that could be supported through corporate social responsibility (CSR).

Pollution Loading in Laguna de Bay, Philippines

15. Ms. Carolane Gonzales, Technical Staff for the Waste Load Model of the Laguna Lake Development Authority (LLDA), Philippines, presented on the establishment of the LLDA and the estimation of pollution load in Laguna de Bay. Laguna de Bay is the largest lake in the Philippines with a total surface area of 900 km^2. Its shoreline length is around 285 km and its watershed area is approximately 2,920 km^2. The lake, which cradles a region encompassing 6 provinces, 12 cities and 49 municipalities, has around 100 streams draining into it but has only Pasig River as its outlet. Water uses in the bay include drinking water supply, fisheries and habitat for various species, irrigation, recreation, navigation, power generation and industrial cooling, among others. These uses are threatened by garbage dumping and water pollution, shoreland reclamation/encroachment, quarrying, forest denudation, rapid siltation, air pollution, loss of biodiversity and flooding. The LLDA was established through Republic Act 1850 in 1966 in order to promote and accelerate the growth of the bay area with due regard to environmental management. In 1975, Presidential Decree 813 expanded the mandate of the LLDA to address environmental protection including the power to issue permits for the use of surface waters. In 1983, through Executive Order (EO) 927, LLDA was classified as a Class A Corporation with authority to modify its organization and with water rights over Laguna de Bay and other water bodies within the region. It was also granted power to control and abate water pollution within the region and authorized to collect fees for the use of the lake's water. In 1993, LLDA was placed under the administrative supervision and policy coordination of the Department of Environment and Natural Resources (DENR) through EO 149, and in 1996, the Laguna de Bay Master Plan was adopted and implemented through EO 349. To support decisionmaking based on a comprehensive assessment, the LLDA uses a decision-support system consisting of databases, geographic information system (GIS), hydrology, hydrodynamics, waste load, sediment transport, water quality and ecology simulation models, stakeholder analysis, environmental impact assessment, and socioeconomic assessment. The waste load model, in particular, can generate waste load projections and necessary percentage values of waste reduction using different scenarios (including

development activities and pollution reduction activities). The water quality module calculates the concentrations of a number of substances relevant for water quality throughout the entire lake as influenced by water movement and by physical, chemical and/or biological processes.

16. Water quality monitoring is conducted: a) monthly for most parameters including primary productivity parameters; b) quarterly for selected trace metals within the bay; and c) in some Pasig River backflow stations every April to July. The Water Mondriaan, a schematic representation of water quality through color-coded maps and figures, is used to present to stakeholders water classification at specific monitoring stations in the lake and in the rivers at different times of the year. Among the parameters, BOD is used by the LLDA to charge industrial and commercial establishments in the Laguna de Bay catchment per unit of BOD5 load in the wastewater. BOD loading computations from domestic effluents, industrial effluents, agricultural wastes, solid wastes, forest lands and fisheries amounted to 67,134 mT in 2008, which puts the bay within the criterion for Class C waters for fishery. The LLDA employs the watershed approach linking upland and downstream activities with programs and projects on: (a) environmental management (including water quality monitoring and an environmental user fee or EUF); (b) watershed development (including reforestation, tree planting and river rehabilitation); (c) fisheries development (including aquaculture operation and establishment of the Fisheries and Aquatic Resource Management Council); (d) shoreland development (including the approval of Policy Guidelines on the Use/Occupancy of Shoreland Areas in Laguna de Bay and Implementing Guidelines Governing the Lease of the Laguna de Bay Shoreland Areas); (e) community carbon finance; and f) the Laguna de Bay Institutional Strengthening and Community Participation (LISCOP) project (including flood control, river stabilization, drainage construction, ecotourism projects, wastewater treatment facilities and material recovery facilities with composting projects). For 2010, it was projected that there would be a 0.67 percent BOD loading reduction and a 43 percent solid waste reduction with the operation of some LISCOP projects in 14 municipalities. LLDA also actively engages in various information drives from the barangay (village) level to national media, including dissemination of river and lake status in the LLDA webpage and providing platforms for stakeholder feedback and compliance assistance.

Water Quality Trading in the Context of TMDL for Industries in the San Cristobal Sub-Basin, Laguna de Bay, Philippines

17. Mr. Ronilo Dg Samiano, Head of the Hydrology Model Team of the LLDA, discussed the development of a pilot water quality trading (WQT) system in the 140-km^2 San Cristobal sub-basin of Laguna de Bay, which has a cluster of 135 industries in the mid-stream area. The WQT system basically involves a “seller” that transfers unutilized effluent discharge rights to a “buyer” that lacks sufficient discharge rights to meet its business operation/manufacturing needs. Tradable pollutants were selected based on their impact in the water quality of Laguna de Bay, their significance in inland waters, possibility of TMDL establishment for the pollutant, capability of the LLDA laboratory to monitor the pollutant in the lake, tributary and effluent, availability of water quality data on the pollutant, and its being part of the regulated pollutant in the effluent standard (Department Administrative Order No. 35 of the DENR). Potential tradable pollutants include phosphorus and nitrogen, sediments, COD, oil and grease, BOD and heavy metals. A COD-TMDL value of

7,318 kg/day, BOD-TMDL value of 3,648 kg/day, and oil and grease-TMDL value of 1,045 kg/day were allocated among various discharge sources as individual caps. The viability of trading in the TMDL context, however, depends on a market structured within the current regulatory framework, voluntary participation and public inputs, suitability of pollutant, and sufficient differences in control costs among sources. Various factors may also influence the success in watershed scale trading markets including the cost of pollutant control for individual dischargers, the mechanisms used to facilitate trading, and the ability and willingness of stakeholders to embrace and participate in trading. A six-step process for pollutant suitability analysis was presented, which involved a series of questions to evaluate whether potential trading partners will be able to establish a tradable commodity. Potential participants in the WQT system which was introduced in 2008 included industry (initial focus), owners of establishment, local government units (LGUs), land owners and fishpen/fish cage owners. The irony, however, was that there were no takers yet especially since there were no willing 'sellers" and the present EUF system had a softer requirement of 50 mg/L effluent over the more stringent WQT requirement of 7-10 mg/L WQT. Efforts are being exerted to entice the industry sector in accepting the WQT in the context of TMDL as an applicable tool in improving water quality in the water system, promoting an applicable market structure for WQT, and extending the concept of WQT not only to accredited pollution officers but to decisionmakers as well.

Toward Cost Effectiveness and Value Addition: TPLMS Application for Masan Bay Revitalization

18. Dr. Jungho Nam, Director/Associate Research Fellow of the Marine Environment and Climate Change Research Department of the KMI, presented: a) the background, development process and application of total pollution load management system (TPLMS) in Masan Bay in RO Korea; b) the evolution of ICM and marine environmental management toward an integrated and ecosystem-based approach; and c) the designation of the Masan Bay Special Management Area (SMA). The Masan Bay SMA has a coastline of 8.5 km, a width of 5 km and an average depth of 10-15 m. Its watershed area covers 48 percent of the total area of three cities, with a population density of 2,682/km^2. Massive environmental reclamation and pollution in the 1970s has led to the designation of Masan Bay as an SMA in the early 1980s and the implementation of various management measures, including: a) the construction of a treatment plant; b) dredging operations; c) monitoring; and d) the conduct of surveys and public awareness activities until the late 1990s. In 2000, the SMA was extended to the watershed area while in 2004, a strategic plan for the MB-SMA was developed. The next year, in 2005, the Total Pollution Load Management System (TPLMS) was introduced. Development of the TPLMS was driven by the low dissolved oxygen (DO) concentration in bottom waters, the occurrence of hypoxia in some areas, frequent occurrences of harmful algal blooms, and high COD levels in the Bay. TPLMS development was supported by the ongoing shift from a land-oriented and top-down approach to environmental management to a multi-dimensional integrated regime involving spatial, vertical and horizontal integration and incorporation of scientific processes in decisionmaking. The institutional framework for TPLMS implementation in the MB-SMA consists of a multisectoral Management Council, Civil Advisory Committee and Technical Review Committee working in coordination with the Marine Environmental Policy Division of the MLTM. The strategies for developing the TPLMS framework include: a) ensuring incremental

and sustainable management, based on management priorities (in terms of pollutants, sub-management areas and investments); b) application of the precautionary approach and establishment of an integrated watershed management system (including introduction and implementation of TPLMS and formation of a management council for MB-SMA); c) establishment of firm scientific platform to support the decisionmaking process (including development of a marine ecosystem model for determining maximum allowable load, pollution load reduction target, and allocation per municipality. These were inputted in the development of the 1st National TPLMS Plan and in municipal pollution reduction action plans); and d) encouraging participation of and cooperation with local stakeholders. Environmental monitoring in 17 rivers and the bay is carried out to verify implementation of policy and management options to improve water quality, as well as to calibrate and verify the results of the ecosystem model. For COD, for instance, a TPLMS target of 2.5 mg/L in bay waters, equivalent to a maximum allowable load of 17,642 kg/day in 2011, and allocation of the load per municipality were negotiated between stakeholders, reviewed by the Scientific Advisory Committee, decided by the Community Advisory Council, and approved by the Management Council. In the development of municipal action plans, each municipality decides on all reduction programs in compliance with the national plan. The national government, on the other hand, focuses on: a) strengthening permit requirements for discharges from sewage treatment plants; and (b) the reallocation of relevant budgets for upgrading of the plants. Finally, both national and local governments develop necessary programs to improve the ecological health of the rivers and the Bay. A mechanism for yearly reporting by local governments on TPLMS implementation is already in place. Future tasks with regard to TPLMS include:

a. Incorporating phosphorus in the system after 2011;
b. Further improving the modeling system;
c. Building capacity at the local level;
d. Raising public awareness;
e. Encouraging more private sector participation;
f. Strengthening political will of the new government; and
g. Improving the integration of the action plans of the three cities.

19. Stakeholder consultations and various awareness and education campaigns played a significant role in the development and implementation of TPLMS in Masan Bay.

Panel Discussion and Open Forum

20. Following the presentations, a discussion on future actions particularly with regard to capacity needs for scaling up pollution reduction in watersheds and coastal areas was facilitated by Mr. Ross with Mr. David Nemazie, Associate Vice President for External Affairs of the University of Maryland Center for Environmental Science, USA, and Dr. Nam as discussants.

21. Based on the presentations, Mr. Nemazie noted and highlighted the following points:

a. There are fairly enough scientific data to identify problems, potential solutions and make decisions. Scientific uncertainty, however, is expected and needs to be addressed truthfully and transparently.

b. With regard to political will and support, this can come and go, such that when it is present, environmental scientists should take advantage and work with the leadership to make right decisions and to move forward.
c. With the limited coverage of waste treatment facilities in Jakarta and Manila, management of human wastes is a big problem. Addressing this would need political will and investment in environmental infrastructure, without which it would be difficult to achieve BOD reduction even while working with the industries on pollution reduction.
d. For pollution hotspots, an integrated approach in water resource and wastewater management needs to be considered, including, for example, coordinated installation of drinking water pipes and wastewater pipes.
e. WQT may make economic sense and may be cost-effective in pollution reduction. However, this is a challenge even in Chesapeake Bay, with buyers but no sellers. Its appropriateness as a strategy for the region still needs to be considered further, including its effectiveness for non-point sources.
f. TMDL can be a good enforcement and regulatory process as long as it is incorporated into the permit system and enforced, and as long as noncompliance is properly penalized (e.g., by shutting down noncompliant establishments).

22. Dr. Nam also further expounded on the concept and application of the TPLMS or TMDL, as follows:

a. TPLMS/TMDL is a social approach or framework for managing human activities in the river basin and coastal area rather than just focusing on the technical aspects. It incorporates technical, social and economic considerations into one framework, and is a useful tool to analyze and consolidate much information to provide more understandable data for decisionmaking, particularly at the local level.
b. With regard to the TPLMS implementation scheme, there is a need to incorporate check and balances by involving diverse agencies, sectors and stakeholders, with various roles in implementing TPLMS. In RO Korea, for instance, the KMI serves as a facilitator to translate scientific data into policy and management measures/regulations.
c. It is better to start TPLMS implementation simply by using a pilot case to establish the initial stage. Masan Bay, for instance is a small case/pilot study, which started with TPLMS for a priority parameter such as COD (instead of covering a full range of parameters). The pilot case is useful for people to understand what is important, what can be incorporated into the process, and what it will be used for.
d. There is also a need to combine the environmental management policy into spatial management schemes/regimes to better realize the outcomes of management efforts.

23. Mr. Ross highlighted the need to focus on water quality and the changes that people want to see instead of focusing on the pollutants and abstract technical information, such as BOD, which people cannot see and, therefore, may not appreciate. In Chesapeake Bay, looking at ecosystem health is the primary measure in determining goals and communicating with the regulating community what needs to be achieved. Mr. Ross emphasized that a particular advantage of TMDL over effluent standards is

that it allows people to see what is happening in the environment thus, they can then adjust loads accordingly. For example, in cases where industries may all be compliant but environmental targets are still not being met, appropriate loading adjustments can be determined to achieve targets.

24. During the open discussion, the following issues were also highlighted: Communicating scientific information to policymakers and making local people see the long-term benefits of environmental/resource protection over the short-term benefits of resource utilization is a challenge that local governments commonly face. There is a need to identify people who have good communication skills, or who are natural communicators, and to train them to work with politicians. For the local people, use of symbols/pictures may be more useful than heavy text. Enforcement is also a challenge, including the development of a permit system in relation to carrying capacity, enforcement of the permit system, penalizing non-compliance, implementing administrative/criminal sanctions, and enhancing political will and commitment to enforce laws. In this regard, it is important to strengthen the court system to adequately address environmental cases, including training and possible certification of judges for environmental cases and strengthening the capacity of inspectors. A training of trainers for environmental inspectors and information sharing with other countries, which was started in Indonesia with the support of the Environment Protection Agency of the United States but was not continued, can hopefully be revitalized.

25. To conclude the session, Mr. Ross highlighted the following points from the presentations and discussions:

    a. Even with the large amount of effort put into TMDL, there will always be questions on scientific uncertainty and lack of information. Thus, there is a need to be honest in presenting TMDL results to the public and decisionmakers.
    b. There is a need to be careful on the use of TMDL, particularly in determining when the TMDL estimation ends and results start being used as input for other processes, such as the preparation of pollution reduction implementation plans.
    c. With regard to WQT, there is a need to see where it applies, how it can be effectively used, and whether the region is ready for it, with only around 3-4 percent coverage of wastewater treatment facilities and less industries complying with standards.
    d. TMDL is a good approach/framework for integrating environmental, social, and economic aspects in the development of a pollution reduction program. It relies on numerous data and statistical applications. However, it is better to start simple and not to get sophisticated until it is clear how TMDL can be applied, and until enough knowledge is gained through demonstration. Only then should scaling up be done.
    e. Communication is an important part of the TMDL process in order to gain stakeholder support, which is very critical. There is a need for a communication program in support of TMDL development and application in order to build understanding among the public on what TMDL means, what is happening in the water, and how TMDL can be used to set and achieve targets in pollution reduction.

f. While law enforcement or command and control measures are important, it should not be considered as a single solution. There is a need to build up the concerned public and decisionmakers to help address problems, and provide support in enforcement of regulations/legislations. ICM development and implementation provides a framework and process for stakeholder mobilization.

SESSION 2: POLLUTION REDUCTION STRATEGIES FOR DOMESTIC SEWAGE: CENTRALIZED, COMMUNITY-BASED AND ON-SITE SEWAGE TREATMENT AND DISPOSAL

26. In Session 2, which was chaired by Mrs. Kati Andraini, Functional Officer for Development of Settlement Sanitation, Ministry of Public Works, Indonesia, the pollution reduction strategies for domestic sewage were presented from Manila, Bali and JICA.

Wastewater Management in Metro Manila, Manila Water Story

27. Mr. Ronald R. Muaña, Project Manager, Manila Water Company, Inc, Philippines (Manila Water), made a presentation on the wastewater management in Metro Manila. Manila Water is one of the concessionaires in Metro Manila having three service obligations, including: (a) water supply; (b) sewerage and sanitation; and (c) customer service. Manila Water has achieved the water supply service coverage of 99 percent of East Metro Manila, providing 6 million customers service for 24 hours at 7 days a week, as of 2009. This is significant progress considering that only 26 percent (3.1 million customers) were serviced with limited service time in 1997. Building on the sound success of water supply service, Manila Water has been tackling wastewater management in Metro Manila. Many problems in the water environment exist in Metro Manila rivers. Some include huge amounts of solid waste and poor water quality which can cause waterborne diseases and economic losses in fishing, tourism and health. The major pollutant load flowing into Manila Bay comes from households rather than industries. For improving the water environment, households have much to do, including the regular and adequate desludging of septic tanks. In order to enable an effective management of the septage treatment system, Manila Water has deployed 90 fleets of vacuum desludging trucks. It is important to structure the wastewater treatment projects in a way which would benefit the community in order to get the support from the people. Manila Water has both a separate sewer system and a combined sewer system with consideration of the merits and demerits of each system. Manila Water applies a holistic approach of water supply and wastewater management, including the reuse of treated wastewater, transforming wastewater sludge into biosolids, and power generation from methane, making use of carbon crediting. Building on the successful water supply and wastewater management in Metro Manila, Manila Water has expanded its business areas to Boracay and Laguna in the Philippines, Ho Chi Minh in Vietnam and Tripur in India.

Improving Access to Sanitation through Community-based Approaches: Case Study from Bali, Indonesia

28. Mrs. Yuyun Ismawati, Director of BALIFOKUS Foundation, Indonesia, presented the case study on Bali on community-based approaches for improving access to

sanitation. In Indonesia, the lack of basic sanitation infrastructure endangers public health, especially of women and children in poor urban settlements. At the same time, the public sanitation utility providers found it difficult to supply sanitation services to poor settlements due to social and economic barriers. Regarding water supply and environmental sanitation services, there are three types: (a) Institutional-based/top-down approach managed by Perusahaan Daerah Air Minum (PDAMs), Local Government Owned Water Utilities, etc.; (b) Community-based/bottom-up approach managed by community committees whereas infrastructure is provided by the government; and (c) Jointly-based approach managed by PDAMs at the city level and by communities at the neighborhood level. Jointly-based approach, such as Community-based Sanitation (CBS SANIMAS), is an effective approach which fills the gaps between conventional sewerage systems and on-site sanitation systems. It provides more choices of sanitation system for the residents. The CBS SANIMAS has been scaled up and replicated in 17 provinces, 65 cities/regencies, and 97 locations from 2003 to 2009 coinciding with the decentralization of government authorities and operations. As of 2009, 19,200 households, including 111,073 people, benefited from CBS SANIMAS, where 8,279 m^3 of wastewater is treated per day. The CBS SANIMAS is funded by multiple sources: 54 percent by the local government, 30 percent by the Ministry of Public Works, 12 percent by the Bremen Overseas Research and Development Agency of Germany (BORDA), 4 percent by the community, and 1 percent by the Provincial Government. As one of the outcomes of the CBS SANIMAS, the health impact assessment (HIA) index has improved to up to 20 percent. The importance of continuous monitoring by the SANIMAS community-based organization was highlighted to ensure the quality of technical, institutional and financing aspects of the sanitation system. In terms of maintenance, minor maintenance activities were conducted by the community, whereas major maintenance activities such as desludging service and effluent and BOD loading monitoring were conducted by the relevant agency. BALIFOKUS is targeting “open defecation free” status through the provision of 5 percent sewerage system, 5 percent communal sanitation system, and 90 percent septic tanks from 2010 to 2014. In order to meet the target and maintain effective operation, enhancement of the law and regulation, enforcement and local political will needs to be strengthened. Furthermore, it is provisioned that CBS SANIMAS would be replicated in other countries, such as Philippines, India and Zambia.

Centralized Sewage Management: From Construction to Management

29. Mr. Kazuya Suzuki, Director, Global Environment Division of JICA, made a presentation on the approach and examples of JICA on wastewater treatment. In light of the importance of environmental issues in developing countries, JICA carries out cooperation based on the following three priority targets to address environmental issues such as water pollution: (a) support for formulating adequate environmental policy and environmental planning; (b) support for strengthening systems responding to environmental issues; and (c) support for the improvement of technology for adequate environmental management. JICA takes a comprehensive approach to support wastewater treatment using four steps: (a) preparation of a Master Plan and Feasibility Study; (b) institutional development; (c) plant construction; and (d) operation and management (O&M). JICA has implemented Water Environmental Management Projects in South East Asia including Thailand, Vietnam, Philippines and Indonesia. Among others, the JICA Program on Vietnam Urban Water Environment Management was introduced as one of the examples. The

program consists of three project components: (a) capacity building of staff/personnel in administrative institutions in charge of overall water environment management, that is, Ministry of Natural Resources and Environment (MONRE) and Department of Natural Resources and Environment (DONRE); (b) capacity building of staff/personnel in research institutions; and (c) capacity building in drainage and wastewater infrastructure and management. The ODA loan agreements were signed in Hanoi, Ho Chi Minh, Hai Phong, Hue, and Binh Duong Provinces totaling about US$150 million. It was explained that the critical aspects for financing wastewater treatment projects include: (a) technical aspect: environmental benefits and technical level of O&M; (b) financial aspect: the size of capital investment, allocation of budget and O&M cost affordable to cover by tariff and subsidy; and (c) institutional aspect: management capacity of construction, O&M and tariff setting and its collection system. Future challenges of JICA programs on wastewater treatment are: (a) cost sharing of connection to each household; (b) special consideration for the poor in urban areas; (c) support for on-site wastewater treatment in rural areas; and (d) support to develop better cost performance and sustainable technology suitable to local conditions.

Panel Discussion and Open Forum

30. A discussion on the assessment of pollution reduction options and facing challenges was facilitated by Mr. Nemazie with three presenters from Session 2 as discussants.

31. In reply to the question from the floor, Mr. Muaña further explained the structure of the funding sources of Manila Water. With no subsidy from the government, Manila Water minimizes its impacts of tariff to services. That is, tariff impact is minimized and fixed income is set by extending repayment terms for investments. The total amount of income from tariff is returned to investments. The initiative of Manila Water, such as a clear target through a master plan and its CSR commitment, was commended by Dr. Vicente B. Tuddao Jr., Executive Director of the River Basin Control Office, DENR, Philippines. He reiterated that strong political will from the DENR and the Office of the President is one of the driving forces to promote wastewater treatment in line with the Supreme Court decision to clean up Manila Bay. Furthermore, he pointed out that the strategy of Manila Water in developing septage treatment facilities in combination with the centralized treatment facility could be replicable in other countries.

32. Mr. Suzuki stated that the enhancement of public awareness on environmental protection is the first priority in promoting pollution reduction. Although it would be ideal to integrate the collection of the fee for both water supply and sanitation, public water supply companies do not want to collect wastewater fees, since the poor households are not willing to pay for the wastewater treatment. He said that they could achieve more payment for wastewater treatment by increasing water supply.

33. Mrs. Ismawati explained the situation of CBS SANIMAS, where the wastewater treatment is handled by the Ministry of Public Works, whereas water supply is handled by a state-owned corporation/agency. Combined water and wastewater charges for houses served by the sewerage system are implemented in some cities. As of now, the collection of the charges for water supply and sanitation in Indonesia is case by case.

34. Mr. Nemazie wrapped up the Open Forum of Session 2 with the following points:
    a. Good drinking water supply is the entry point for better wastewater treatment and sanitation services.
    b. The combination of septage management and centralized wastewater treatment is a good example and has the potential to be replicated.
    c. Reuse of the treated wastewater is another way to save money on purchasing expensive potable water.
    d. Although progress has been made, programs on wastewater treatment and pollution reduction are not implemented fast enough to improve the water environment.
    e. In order to construct and operate a conventional wastewater treatment facility, it should be recognized that significant amounts of loan money is necessary in many cases.

SESSION 3: ACCESSING AVAILABLE SOURCES OF FINANCING FOR POLLUTION REDUCTION PROJECTS AT THE SUB-NATIONAL LEVEL

World Bank/GEF Partnership Investment Fund for Pollution Reduction in the Large Marine Ecosystems of East Asia

35. Dr. Jiang Ru, Acting GEF Coordinator, East Asia and Pacific Sustainable Development Department of The World Bank, presented the overview of the World Bank/GEF Partnership Investment Fund for Pollution Reduction in Large Marine Ecosystems of East Asia. The Investment Fund was set up to leverage investments to reduce land-based pollution through the removal of technical, institutional, and financial barriers and assist SDS-SEA implementation. GEF planned a US$80 million investment in three tranches beginning in 2005. The status and objectives of the seven projects of the first tranche were introduced. The Ningbo Water Environment Project in China has been implemented to introduce new technology for tertiary treatment for expanded industrial areas. With the project objective of demonstrating cost-effective and innovative solutions for municipal wastewater treatment and non-point source pollution control, biodiversity protection, and environmental education, a wetland for tertiary wastewater treatment was constructed and is now in operation. In addition, an enhanced natural wetland for non-point pollution treatment has been completed. This has brought with it an increase in bird population. The site is scheduled to be opened to the public in October 2010. The second example introduced was Shandong II Environment Project in China. The project was developed to improve environmental conditions through upgrading and development of facilities for wastewater collection and treatment to address the issue of unmanaged and not functioning septic tank systems. At present, drafts of policy development, financial model and technical manuals have been completed. The GIS-based management system was also developed and tested. The Manila Third Sewerage Project in the Philippines is a project of joint sewage and septic treatment. To address deteriorating water quality due to high population growth, rapid urbanization and industrialization, the project aims to remove institutional, financial and technical barriers that limit investment in pollution control, thereby promote new, efficient investments to reduce land-based pollution. The national government partnership agreement signing is now underway. Seven local government partnership agreements were signed, whereas three are underway. Local projects to support the national government wastewater master plan have been identified. The fourth example was the Liaoning Medium Cities in China which is in the development

stage of its Terms of Reference. The project aims to improve service levels in water, wastewater, and solid waste management through provisions in infrastructure and enhancement of utility performance to reduce land-based pollution, mainly contributed by the industry. The planned activities include institutional development for: (a) Public Utility Improvement Program; (b) Solid Waste Master Planning; and (c) Water Pollution Control Planning. Replication and dissemination of the project is also included. The Coastal Cities Environment and Sanitation Project in Vietnam aims to improve health and habitat conditions along Vietnam's coastline. The project includes the piloting and promoting of the replication of a new and more efficient wastewater treatment technology to meet significant investment needs for urban sanitation. The construction of a chemically enhanced primary treatment plant is part of the plan. The IBRD loan implementation is on schedule with the initiation of GEF procurement.

36. Two projects in China that were still in the preparation stage were briefly introduced, namely, the Shanghai Non-point Pollution Reduction Project and Huai River Marine Pollution Reduction Project. In another development, as second tranche projects, it was pointed out that pipeline discussions on Manila Bay operations were initiated, covering: (a) establishment of an effective Management System and Inter-Institutional Operational Framework for improving the water quality of the Laguna de Bay, Pasig River and Manila Bay and restoring its intrinsic value to society; (b) support of GED for institutions, instruments and monitoring system; and (c) support of IBRD loan for investment activities. Finally, the necessity to explore wastewater treatment projects in Vietnam and Indonesia were mentioned.

Concept of Infrastructure Development for River Pollution Reduction in Urban Areas

37. Ir. Mr. Handy Bambang Legowo, Directorate of Environmental Sanitation Development and Directorate General of Human Settlements, Ministry of Public Works, Indonesia, presented on infrastructure development for river pollution reduction in urban areas. Two approaches for pollution reduction for the river were identified, the first being immediate while the other, long-term. Immediate development includes: (a) cleaning the waste of the river; (b) improving water quality downstream of trash-rack; and (c) bioremediation using microorganisms. Long-term development includes: (a) planning and conducting waste management of the river catchment area starting from the sources through community-based programs, for example, the community-based sanitation program SANIMAS and solid waste management; (b) conducting periodic evaluation for further development; and (c) ensuring the availability of an operating institution. A model of water quality improvement through the ecodrain concept was introduced. The ecodrain concept is the combination of: a trash-rack, remediation through bio-simulation and bio-augmentation, sewerage system, SANIMAS and solid waste management including the 3Rs. The behavior of the community has been changed through the development and implementation of SANIMAS. As one of the benefits of SANIMAS, biogas has been utilized and has improved the quality of life of the people, such as by providing cooking gas. In Indonesia, `11 wastewater treatment plants were constructed in the 11 metropolitan cities. In Denpasar, 26 percent of the population was covered by the sewerage treatment. In the JICA Master Plan, an area has been identified as urgent and necessary for expansion in Phase II of the project (2009-2014). Although much has been done for pollution reduction, it was emphasized that immediate actions by

all stakeholders, including policymakers, national and local governments, the academe, community groups and citizens, were necessary to make changes in pollution reduction and to improve the quality of rivers in the urban areas of Indonesia.

Facilitating Environmental Investments through ICM

38. Mr. Ross presented on how ICM could help facilitate environmental investments using the Framework for Sustainable Development of Coastal Areas. He cited examples of achievements in several PEMSEA sites. Mr. Ross detailed some reasons why local governments face challenges in providing environmental infrastructure/services, including: (a) an increase in local populations which leads to an increase in demands for services; (b) existing infrastructures are overloaded or, in others, non-existent; (c) an absence of knowledge about the benefits of services of particular infrastructure; (d) an unwillingness of consumers to pay for inadequate services; and (e) an inability to develop bankable projects. Considering the constraints above, awareness building and mobilization of stakeholders, political will and public support needs to be enhanced. Mr. Ross highlighted the need to have a comprehensive, systematic approach to sustainable development which is replicable among local governments. He continued to say that it was important to identify champions from the public and private sectors to promote and lobby for the cause in environmental investment and management.

39. The capacity to develop bankable projects that are affordable/acceptable to users/consumers should be developed. ICM is a tool which targets sustainable development of coastal areas through: (a) reducing/resolving multiple use conflicts; (b) maintaining ecosystem functions and services; (c) addressing local concerns; (d) enabling local stakeholders; (e) strengthening partnerships; (f) strengthening local governance; (g) improving interagency and multisectoral coordination; and (h) promoting policy and functional integration. Some examples of successful efforts using the ICM approach include: (a) private sector participation in coastal management, such as the Bataan Coastal Care Foundation, Inc., Batangas Coastal Resources Management Foundation, Inc., and Cavite CSR, at the three demonstration sites in the Philippines; (b) wastewater recycling in Bali (Indonesia) and Xiamen (China) and water supply in Nampho (DPR Korea); (c) waste management in the Garbage Bank in Chonburi (Thailand) and community-based waste management effort in Sihanoukville (Cambodia); and (d) industrial wastewater treatment in Danang (Vietnam) and water supply and sewerage facility with beachfront enhancements in Puerto Galera (Philippines). Characteristics of ICM driving forces which catalyzes change for enabling environmental investments include: (a) a shared vision of stakeholders on the value, threats and sustainable use of marine and coastal resources; (b) a working platform to enable convergence of sectoral objectives and proposals, promotion and guidance of actions, catalyzing processes and decisions, and development of required capacities; and (c) awareness building aimed at drawing attention, creating advocacies, spearheading social mobilization and driving capacity development.

Panel Discussion and Open Forum

40. Following the presentations, Dr. Neviaty P. Zamani from Bogor Agricultural University, Indonesia, facilitated a discussion on challenges in accessing financing

for pollution reduction at the local government level with the three presenters in Session 3 as discussants.

41. Dr. Ru mentioned to the floor that The World Bank is interested in pollution reduction projects at the local government level. He introduced Ms. Ina Pranoto, GEF Focal Point from the Jakarta Office of The World Bank, as the contact person for further information on procedures and criteria for accessing financing for pollution reduction and wastewater treatment facilities. He expressed his willingness to explore opportunities to work with local governments to promote pollution reduction in the second tranche of World Bank projects in coordination with the GEF Focal Point.

42. Mr. Legowo stressed the importance of a long-term campaign for enhancing the awareness of public, executives, and decisionmakers to successfully develop the pollution reduction programs amounting to Rp 14 trillion (Indonesian Rupiah) for the next five years. He said that the Governor of Jakarta agreed to have big projects more than Rp 300 million for sewerage. He stressed the importance of letting governors and mayors buy into sanitation/sewerage programs through lobbying with networks of various ministries and agencies, the academe, NGOs and other groups.

43. In order to demonstrate that a pollution reduction project can address current issues, Mr. Ross suggested starting with a particular subdistrict in Jakarta which has a coastline and a share of pollutant discharge. People need to learn from hands-on activities/experiences to witness and realize the value of a pollution reduction project and environmental investment. PEMSEA's philosophy is not to go against development, which helps to improve lives, but to make it sustainable. PEMSEA primarily suggests a management framework for the different countries and local governments; it then shows how stakeholders can work with governments to achieve their own targets collectively. In addition, PEMSEA works with local governments to address problems, including accessing financing. For example, in the case of The World Bank, which works at the national, and not at the local, government level, PEMSEA would support the local government to get on the radar screen of the national government so that projects of local governments can appear in national discussions with donor agencies. Mr. Ross also emphasized the importance of developing the capacity of local governments so that they will be able to access financing from the private sector by developing its credibility as good borrowers.

44. Dr. Zamani concluded the session by summarizing the major points on accessing funding in pollution reduction. These are as follows:

    a. Developing good programs will make inevitable funding by donor agencies;
    b. Lobbying top level executives is important to push the pollution reduction program forward;
    c. Integrating various sectoral plans is important to enable pollution reduction and wastewater treatment facility investment. One vision and one target for Jakarta Bay is necessary;
    d. Networking and communicating among different agencies, national and local governments, NGOs and communities are inevitable in a successful pollution reduction and development of a wastewater treatment facility; and

e. Learning good practices and lessons on how to access financing for pollution reduction is important in developing good programs.

SESSION 4: FACILITATING UPSTREAM DOWNSTREAM AGREEMENTS AND ENGAGING COMMUNITIES AND THE PRIVATE SECTOR IN PROJECTS

Addressing Upstream Taedong River Environment Management Issues through ICM Scaling up, DPR Korea

45. Mr. Choe Rim, Director, General Bureau for Cooperation International Organizations of DPR Korea, presented the Nampho ICM Demonstration Project and the Taedong Environment Management. Nampho is one of the economic development areas in DPR Korea and provides livelihood opportunities in fishery production, trade services, ports, and ecotourism. Taedong River estuary provides important habitats and livelihood. The Nampho ICM Demonstration Project has been developed and implemented to address: (a) the lack of a national coastal strategy; (b) no land- and sea-use plans; (c) no institution for integrated management; (d) the lack of coordination in project implementation; (e) limited laws and rules on coastal management and poor enforcement; (f) limited knowledge of coastal communities on the management of coastal resources; (g) limited awareness of social and environmental services; (h) limited data and data management systems on the coastal environment; (i) insufficient funding for environmental projects by the government; (j) limited capacity in coastal management; and (k) the lack of human resources in ICM. The major achievements of the Nampho Coastal Management Project are: (a) an Interagency, cross-sectoral coordinating committee established; (b) an Integrated Information Management System established; (c) the Nampho Coastal Strategy developed and published; (d) the National ICM Training Center established and functional; and (e) the Integrated Coastal Use Zoning Plan developed. Following the summary of the Nampho ICM Demonstration Project, the Taedong Environment Management was introduced. Taedong River Basin is an important area for socioeconomic development of the country. The upstream of the river basin is designated as a protected area. At the national forum on the successful implementation of SDS-SEA (August 2006, Pyongyang, DPRK), a Project of Nampho ICM scaling up to Taedong River basin was adopted as one of the priority projects. Achievements of the Taedong Environment Management included: (a) Taedong River Basin Management was set as priority issue within the government; (b) Taedong River Environment Management Plan was developed; and (c) Initial Water Quality Management Plan was drafted. The following five components will be included in the project for pollution reduction in Taedong River basin through ICM scaling up: (a) institutional arrangements; (b) total pollution load assessment; (c) pollution reduction target and prefeasibility study; (d) financing for pollution reduction; and (e) capacity development.

Responsible Waste Management System in the Nakdong River Basin

46. Mr. Han Kwang Hee of Korea Marine Environment Management Corporation, RO Korea, presented on the responsible management system in Nakdong River Basin specifically on solid waste treatment. Nakdong River is about 510-km long, with more than 100 small streams flowing into it. RO Korea is influenced by a monsoon climate, and the rainy season continues from June to October with occasional typhoons and floods. During this rainy season, a lot of wastes pass through the river and causes

waste management problems for the local government in the downstream areas. These wastes eventually enter into the sea. To address the problem by sharing the cost of waste management among concerned stakeholders, a research project was implemented. The project consisted of: (a) prior survey of the river basin; (b) the origins, status and measurement of the marine litters; and (c) establishment of the cost-sharing plan. The research was conducted by three government-affiliated research institutions, a university and municipal research institutes from each local community. The rate for cost-sharing among stakeholders based on the actual sampling of the solid waste in the river basin and estimation was discussed. The fundamental principles included: (a) burden-sharing principle; (b) polluter pays principle; (c) beneficiary pays principle; and (d) ability to pay principle were deployed to the cost-sharing scheme. Considerations in the cost-sharing rate are as follows: (a) sharing rate of central and local governments was determined as 50 percent each; (b) sharing rate of polluters and beneficiaries was determined as 59.6 percent and 40.4 percent, respectively; (c) The amount of debris, population, financial independence of each local government were considered in determining the sharing rate among polluters and beneficiaries; and (d) final sharing rate of each party was determined as Central Government at 50 percent, Busan at 25.5 percent, Daegu at 6.2 percent, Kyeonnam at 9.7 percent, and Kyeonbuk at 8.7 percent. In April 2009, a Memorandum of Understanding on responsible management of solid waste in Nakdong River Basin was signed between the national and local governments. The Memorandum of Understanding is effective for four years and will be reviewed and revised as appropriate.

Cooperation among States along Chesapeake Bay for Pollution Reduction

47. Mr. Nemazie presented the history, progress and challenges of pollution reduction in Chesapeake Bay focusing on the cooperation among states along the Bay. Since 1983, over 25 years have been spent for Chesapeake Bay management; and still all stakeholders face various problems which still need to be addressed, such as loss of key habitats including seagrass and oyster, reduction of filter feeders, population growth and land development, global climate change and nutrient over-enrichment. In 1983, the States surrounding Chesapeake Bay agreed to work together to restore the Bay, strengthening the bonds among the States. In 1987, the Parties signed the agreement to reduce nutrients by 40 percent by 2000. Although nutrient reduction showed progress, the goal was not met. In 2000, a new Chesapeake Bay Agreement with multiple restoration efforts including ten-year goals was established. Certain progress was made in some areas; however, few goals were achieved partly because of setting too many. Based on the lessons learned in 2009, the Two-Year Milestones, refocusing on nutrients, were newly set. The short-term milestones were introduced in order for current politicians to be accountable for the milestones. Mr. Nemazie emphasized the importance of political will to enable pollution reduction and environmental improvement using the example of monthly BayStat Meetings chaired by the Governor of Maryland State. He concluded the presentation as follows: (a) Chesapeake Bay has changed drastically over the last 100 years; (b) restoring the Bay must be considered in the context of climate change; (c) governments must continue to work together; (d) to achieve full recovery, it will take nutrient reduction actions from all sectors; (e) Adaptive Management must be employed based on ecosystem health; (f) despite 3.5 million more people over 25 years, the Bay is improving, albeit slowly; and (g) the Bay is resilient but requires action to reduce pollution.

Making Wastewater an Asset

48. Mr. Djoko Sasongko, Regional Programme Coordinator of Global Water Partnership (GWP) presented the scope and programs of GWP and introduced its policy paper on wastewater. The GWP, established in 1996, is a growing international network. It now comprises 13 Regional Water Partnerships and 73 Country Water Partnerships around the world. In Southeast Asia, Country Water Partnerships include Myanmar, Lao People's Democratic Republic, Thailand, Cambodia, Vietnam, Malaysia, Philippines, Singapore and Indonesia. The GWP's vision is for a water-secure world. Its mission is to support the sustainable development and management of water resources at all levels. The GWP aims to achieve: (a) sufficient clean water for all life for human society and for the ecosystems of which we are part; (b) security for all the economic sectors which consume or harness water, such as, agriculture, energy, industry, domestic water supply, and tourism; (c) security from droughts, floods, landslides, waterborne diseases, that is, all the negative aspects of water; and (d) improved quality of life, health and wellbeing for the most vulnerable groups in society, especially women and children. Water stress, both in quantity and quality, occurs when the demand for water exceeds the available amount during a certain period or when poor quality restricts its use. Water pollution, caused by lack of sanitation and untreated wastewater, is a life and death issue. GWP has been working on IWRM based on the understanding that water stress is a cross-cutting issue requiring an integrated, adaptive response. He presented the concept of making wastewater an asset by considering it as a potential resource in the overall water budget as well as incorporating wastewater reclamation and reuse in IWRM strategies. In light of the current environmental condition of Ciliwung River and 12 other rivers in Jakarta, he urged all stakeholders to take immediate action to change the situation. He stressed the importance of developing: (a) an enabling environment through policies, legislative framework and financing structures; (b) institutional roles by building organizational frameworks and institutional capacity; and (c) management instruments, such as technical and social change instruments, conflict resolution, regulatory instruments and economic instruments. In closing his presentation, he introduced the GWP ToolBox as a useful resource for learning and sharing information on IWRM which comprises an organized collection of case studies, reference documents, external web sites and other supporting materials in water resources management. The GWP Toolbox is accessible at www.gwptoolbox.org.

Corporate Social Responsibility for Better Environment: Jakarta Water Ways Project

49. Mrs. Deva Rahman, National Corporate Affairs Manager, Coca-Cola Amatil, Indonesia, gave her presentation on the Jakarta Water Ways Project. She described the Green Camp Program, its main program, which aims to create awareness to the community of Jakarta about garbage and the Jakarta Water Way. It does this by collecting and researching garbage samples and disseminating the information gathered to the community and local government. The program supports Jakarta Administration's "Clean River Campaign" program and creates job opportunities for ten persons in the local community. Green Camp Waste Management deals with: (a) organic waste; (b) non-organic waste; and (c) water quality. Organic waste is not only recorded but made to compost by working with communities and NGOs. Coca-Cola Amatil expects that the Green Camp will be: (a) an education place for the

community; (b) a research facility for the community; and (c) an information center for media to create awareness and help change community behavior in waste management. Green Camp targets elementary school, junior high school, universities, communities, government agencies, media and NGOs as program participants.

Panel Discussion and Open Forum

50. Following the presentations, the panel discussion and open forum was facilitated by Dr. Henry Bastaman, Deputy Minister for Communication and Community Participation, MOE, Indonesia. The lessons and experiences learned on how to create a conducive climate for "partnerships" among communities, the private sector and various entities and how to maximize political will were discussed and summarized as follows:

    a. The initiative of the private sector on caring for the environment such as the Jakarta Water Way Project exists and can be mobilized more effectively if partnerships between private and public sectors were further forged.
    b. In order to promote pollution reduction and the rehabilitation of the Bay, it is important to provide politicians and decisionmakers the appropriate tools and scientific information in an easy and an understandable manner to help guide them in making proper decisions and judgments.
    c. Raising public awareness on environmental issues is important. The public can choose the politicians who have political will to promote environmental programs. In the case of Chesapeake Bay, the governors with good records on environmental initiatives and programs were the only ones reelected.
    d. GWP Philippines has many activities, in cooperation with the University of the Philippines, in water resource management, specifically on strengthening small-scale water providers and supporting community organizations in watershed improvement in its islands in the south. It was suggested that the Manila Bay Cleanup partner with GWP Philippines.
    e. One key for promoting pollution reduction in the long term is public support to the government, and other entities, to help them move towards their goals. In the case of Chesapeake Bay, everyone recognized the importance and difficulty of reducing pollution and rehabilitating the Bay. Part of its management success is that the public of Chesapeake Bay has helped the local government try to achieve its goals.
    f. In order to create or increase the fund for environmental projects and investments, many measures are being taken in different countries. For example, taxes have been raised in the United States for loans for environmental investment; in Indonesia, environmental funds have been established at respective ministries; while in RO Korea, merging sectoral projects into one package to optimize costs was done. However, in many cases, the use of taxes is not normally earmarked for environmental projects. In addition, there is difficulty in securing enough funds for environmental programs and investment in most countries. Therefore mobilizing all resources, skills and knowledge from all stakeholders, including national and local governments, private sector, research

institutes, universities, communities and NGOs, is important to push forward pollution reduction.

SESSION 5: CASE STUDY: IMPLEMENTING THE PASIG RIVER REHABILITATION PROGRAM

51. Session 5, which was chaired by Dr. Tuddao, focused on the sharing of good practices and lessons learned in pollution reduction and river rehabilitation, particularly between Pasig and Ciliwung Rivers.

Reducing Pollution in Pasig River: Targets, Strategies, Good Practices, Achievements and Challenges

52. An overview of the approaches and experiences of the Pasig River Rehabilitation Commission (PRRC) in facilitating pollution reduction efforts in Pasig River was shared by Arch. Deogracias J. Tablan Jr., Executive Director of the PRRC. The 27-km long Pasig River, which receives inputs from Laguna Lake and 4 major and 43 minor tributaries, traverses the entire width of Metro Manila before draining into Manila Bay. Pasig River was once a healthy river and a major transport route that was declared biologically dead in the 1990s. Then, it was characterized with islands of floating garbage, sunken boats and abandoned barges, colonies of makeshift shanties along the river banks, and industries and households directly discharging untreated wastes into the river. Initiatives on the rehabilitation of Pasig River started in 1989 when a feasibility study on the river was conducted by the DENR–River Rehabilitation Secretariat with financial assistance from the Danish International Development Assistance. In 1999, the PRRC was created through Executive Orders 54 and 65 in order to coordinate the rehabilitation of Pasig River. Its vision was of a clean and vibrant Pasig River and a goal of upgrading the water quality to Class C (for waters for fishery, secondary recreation like boating, and water supply for manufacturing processes after treatment). The PRRC, which is under the Office of the President, is chaired by the DENR and co-chaired by the Metropolitan Manila Development Authority (MMDA), with members from various agencies, local governments in Metro Manila, and the private sector including water concessionaires and major multimedia networks in the country.

53. The PRRC had 12 targets for improving the water quality and environmental condition of Pasig River, including: (1) elimination of its offensive odor; (2) reduction of the BOD load from 330 tons/day to 200 tons/day; (3) reduction of solid waste; (4) increasing and controlling the flow of water; (5) reducing floods; (6) enforcing zoning ordinances at the local government level; (7) removing sunken vessels; (8) developing linear parks; (9) relocating informal settlers; (10) establishing a water transport service; (11) bioremediation, aeration and filtration; and (12) phyto-remediation.

54. Committees were established to facilitate the implementation of: (a) housing, resettlement and livelihood; (b) riverbanks, transportation and tourism development; (c) flood control; (d) environmental management; and (e) public information and advocacy. As of 2010: (a) a PhP 5-billion dredging project to remove 2.83 million m^3 of contaminated riverbed sediment was underway; (b) material recovery facilities were established in various areas; (c) more than 9,000 of the over 10,000 informal settler families have been relocated to decent and socialized housing units: (d) more

than 500 river police patrols were deployed to monitor and prevent garbage dumping and the return of illegal settlers; (e) sunken and abandoned vessels were removed; (f) linear parks were constructed in 25 km out of 45 km on both banks of Pasig River; (g) a river ferry service is now operational; (h) garbage traps and aeration/filtration devices were set up in tributary creeks and estuaries; (i) pilot bioremediation and phytoremediation projects have been initiated; and (j) massive public information, advocacy and cleanup campaigns were undertaken. Regular water quality monitoring is conducted to monitor the condition of the river. As of 2009, water quality in Pasig River (based on data that included DO, BOD and total coliform) were still failing all criteria for Class C waters although visually, the condition of the river had greatly improved (e.g., water color has improved from black to brown, the river's offensive odor has been reduced, and floating garbage has been minimized). To progress toward the goal of achieving Class C status, future tasks for the rehabilitation of Pasig River include the construction of wastewater and septage treatment facilities by the water and sanitation concessionaires, greater involvement of the LGUs in the relocation of informal settlers, the construction of Material Recovery Facilities, and establishment of biological treatment stations in individual households, commercial and industrial establishments, and in the 43 minor tributaries.

Relocation and Resettlement of Pasig River: Informal Settler Families

55. Engr. Alan A. Gatpolintan, Deputy Executive Director for Operations of the PRRC, provided further information on the relocation and resettlement project for Pasig River. In 1999, pursuant to Executive Order 54 and 65, the Housing and Resettlement Group of the PRRC was created to formulate the Housing and Resettlement Framework for the relocation of informal settler families (ISFs). The Housing and Resettlement Group, later renamed the Housing and Resettlement Commission (HRC), is chaired by the Housing and Urban Development Coordinating Council, with the National Housing Authority as its implementing arm. Members of the HRC include the MMDA, Office of the Executive Secretary and various concerned government agencies, concerned LGUs, NGOs and people's organizations. The HRC undertakes the relocation and resettlement of ISFs together with its Livelihood Support and Social Services Subcommittees. Target beneficiaries for the project are households occupying areas in environmental preservation areas (that is, 10-meter easement) and those affected by the development of the Urban Renewal Areas or communities within 500 m from the riverbanks. The relocation/resettlement project covered more than 10,000 ISFs in eight LGUs. The HRC was responsible for formulating a Resettlement Action Plan through consultation, coordination and public information, acquiring resettlement sites and housing units for qualified families, developing the resettlement sites into viable communities, conducting pre-relocation activities, coordinating with sending and receiving LGUs, conducting actual relocation of ISFs, and undertaking post-relocation and estate management activities. The PRRC, through the National Housing Authority acquired almost 6,000 housing units in 1999 located in five relocation villages within and outside the city, and developed close to 2,000 more housing units including a medium-rise building at Cardinal Sin Village, Punta, Sta. Ana, Manila. Entitlements of relocated ISFs include the housing unit, rent assistance scheme for 12 months for the poorest families with household income of PhP2,500/month (less than US$50/month), transport assistance to resettlement site, daily shuttle to Metro Manila for 12 months for workers in the city and college

students, assistance in livelihood development including skills training, microcredit assistance, job placement and organization of cooperatives, food assistance for three days from LGUs, and one sack of rice per month for 12 months for eligible low-income families receiving rent assistance and participating in livelihood trainings. Transport assistance to their home province is also provided for those who do not choose to be resettled. Environmental preservation areas, including linear parks and ferry stations, were developed to prevent the reconstruction of illegal settlements along the banks of Pasig River. In the relocation sites, community facilities included school buildings, health centers, multi-purpose hall, day care centers and markets. Resettlement activities were undertaken in collaboration with various central and local government agencies and NGOs.

Panel Discussion and Open Forum

56. The panel discussion and open forum, which was facilitated by Mr. Aboejoewono Aboeprajitno, Director of the Basel Convention Regional Center for South-East Asia, provided further opportunities for representatives from Pasig River and Ciliwung River to share and clarify strategies and approaches in the rehabilitation of the respective river systems, including the following:

    a. The effectiveness of the PRRC in coordinating the rehabilitation of Pasig River is due to its interagency and high level composition, with the DENR Secretary as Chair, Secretaries of other agencies as members, and a Project Management Office headed by an Executive Director in-charge of operations. PRRC has a mandate up to 2015 only.
    b. The PRRC is also under the Office of the Philippine President, which provides advantages with regard to national government support including funding although it also makes it susceptible to changes in leadership, being co-terminus with the Presidency.
    c. PRRC is also dedicated to the rehabilitation of Pasig River only, while other rivers draining into Manila Bay are the responsibility of the River Basin Control Office of the DENR.
    d. In terms of financial responsibilities to clean Pasig River, the national government through the MMDA, is responsible for dredging operations, while the LGUs are responsible for cleaning waterways within municipal boundaries. PRRC, being a Commission, has no authority and budget and only provides guidance, unless it is converted into an Authority like LLDA, or if an authority for Laguna de Bay, Pasig River and Manila Bay is created.
    e. In the development of the linear parks, it was important to look at administrative and legal boundaries and property rights especially with regard to easements/access to the river banks. The local governments, not the PRRC, have access to the river banks.
    f. In developing and implementing a river basin pollution reduction program, it is important to develop a master plan that considers the technical aspects together with economic, legal and social considerations, promotes stakeholders involvement and partnerships with experts and the private sector, and promotes changing of mindsets and lifestyles through on-the-ground activities/campaigns.
    g. National government support is very important, as well as local government commitment, to deliver the necessary services for pollution

prevention and reduction, including support for the implementation of specific programs such as waste reduction, recycling and reuse.

h. In Jakarta, there is a Board chaired by the Assistant Deputy for River and Lake Degradation Control that looks after the rehabilitation of rivers such as Ciliwung and Cisadane. There is also a Council for water bodies composed of the Ministry of Public Works, MOE and local governments; but it is not focused only on Ciliwung River. There is also a coordinating body/secretariat for the Jakarta Bay watershed area (BKSP Jabodetabekjur), and a stakeholders' forum composed of various institutions; but there is no Commission like the PRRC focused on the rehabilitation of a major river system, the Pasig River. The possibilities of establishing such a high level coordinating body for the rehabilitation of Ciliwung River may be considered.
i. For the rehabilitation of Ciliwung River, it is also necessary to have an integrated approach in addressing the problem of illegal settlements, including identifying stakeholders that need to be involved in the relocation program, preparation of a relocation action plan, securing national and local government commitment as well as support from legislators, and identifying local champions.
j. Stakeholder consultation and involvement and the conduct of public awareness and education campaigns are very important in order to facilitate peaceful, orderly and voluntary relocation of informal settlers.
k. In order to prevent informal settlers from returning, it is important to consider and highlight the social and economic benefits as well as the human health aspect of relocation sites (i.e., moving people to safer areas).

D. RECOMMENDATIONS FOR ACTION

The workshop recommended the following for action:

Session 1: Application of TMDL

57. Although progress was made in Jakarta Bay/Ciliwung River and Manila Bay/Pasig River/Laguna Lake watershed areas, there are a number of actions that may be considered in order to improve the application of TMDL, including:

    a. Extending the scope and coverage of the TMDL to include both point and non-point sources of pollutant loadings in the watershed areas;
    b. Confirming the validity of the TMDL assessments (and management interventions) through the organization and conduct of comprehensive environmental monitoring programs;
    c. Promoting information/data sharing and technical cooperation across jurisdictional boundaries in the watershed areas;
    d. Identifying an institution or organization (e.g., University of Maryland Centre for Environmental Science in Chesapeake Bay) that can serve as a facilitator/honest broker in translating scientific and technical information coming out of the TMDL assessment, into terms and scenarios that can be understood by the polluters, the general public, policymakers and decisionmakers;

e. Developing and utilizing key indicators of ecosystem health that can be used as benchmarks for determining progress in achieving desired water quality conditions and uses (e.g., recovery/return of a species of fish/shellfish, seagrass, etc.);
f. Setting both short-term and long-term targets for the improvement of ecosystem health in the watershed areas. Targets should be measurable and visible (e.g., elimination of solid waste/pollutant discharge in a sub-basin/tributary within three to five years); and
g. Preparing and disseminating regular progress reports on the state of ecosystem health in the watershed areas, including priority actions/conditions for improving ecosystem health.

58. The TMDL should be regarded as an evolutionary process. It is best to start with an application that is straightforward (e.g., pollutant discharges in a sub-basin) and then scale up over time. Hands-on experience will lead to improved understanding of TMDL and its use.

59. There will always be scientific uncertainty associated with the development and use of TMDL. Users of the process must ensure that the process is well documented and transparent in order to build trust and understanding among stakeholders.

Session 2: Pollution Reduction Strategies

60. Pollution reduction strategies in watershed areas need to be integrated with water management plans and strategies. There is an increasing urgency to consider water conservation and reuse in Manila Bay and Jakarta Bay areas where access to safe and available water supply is beginning to emerge as a sustainable development issue. The linkages between water supply, wastewater management and reuse of treated effluents should be assessed. The information should be used in the design and development of water supply/wastewater systems in the two areas.

61. The provision of pollution reduction facilities and services requires cost-effective and innovative development strategies in order to ensure sustainability. Comprehensive feasibility studies for pollution reduction should cover legal, technical, social, financial, economic and environmental issues at a site in order to ensure appropriate solutions and facilitate their ready implementation.

62. Build-out strategies and the use of modular designs in sewage treatment facilities are two good practices that should be employed in order to accelerate the development and implementation of cost-effective pollution reduction programs in Manila Bay and Jakarta Bay areas (e.g., Manila Waters' use of combined sewers to eliminate/reduce discharges of raw/untreated domestic sewage).

63. It is necessary to strengthen the enforcement of laws and regulations, political will and commitment.

Session 3: Accessing Available Sources of Financing

64. The project steering committees for Pasig River, Manila Bay, Ciliwung River and Jakarta Bay projects should consider extending their membership to include

representatives from national government agencies responsible for financing of environmental infrastructure.

65. Initiatives engaging international financing institutions (e.g., WB; Asian Development Bank), donors (e.g., JICA), NGOs (e.g., GWP) and the private sector in the two projects should be strengthened. It is recommended that PEMSEA, working in collaboration with the respective national focal agencies, further develop its collaboration with these organizations with a view to accessing required technical and financial support for the two projects.

66. ICM programs need to be developed and scaled up in Manila Bay and Jakarta Bay areas, for the purpose of enhancing governance of coastal and marine areas, establishing an effective management system for addressing existing conflicts in the use of existing resources, and creating a climate that is conducive for developing, financing and implementing sustainable environmental infrastructure improvement projects.

Session 4: Facilitating Upstream Downstream Agreements

67. There is a need to develop the ability of the facilitators in the respective Bays to work with all sectors including politicians, governments, the private sector, communities and citizens to get their involvement and commitments for effective and concrete implementation on pollution reduction.

68. The ability of the private sector needs to be further mobilized in Manila Bay and Jakarta Bay to utilize their professional skills and resources for promoting pollution reduction. It is important to scale up individual efforts of the corporate entity into an integrated effort by an association of corporate entities along the respective Bays.

69. All stakeholders need to forge partnerships to enhance public awareness which enables the selection of the policymakers who have strong will and commitment for the improvement and rehabilitation of the river basin and coastal areas at respective Bays.

70. It is recommended to engage the GWP towards supporting the efforts on pollution reduction in river basin and coastal areas at the respective Bays.

Session 5: Case Study: Pasig River Rehabilitation Program

71. Raising public awareness and changing lifestyles of the people along rivers and the bays are challenging, yet they are to be pursued through the forging of partnerships among all the sectors.

72. A holistic approach is necessary to improve the environment in river basins and coastal areas including relocation of the inhabitants along the river banks. A comprehensive master plan is necessary to provide suitable options for people who need to be relocated. It is important to identify all stakeholders and to involve them in the relocation program.

73. Law enforcement needs to be strengthened to promote pollution reduction including solid waste management. Illegal settlements must be addressed.

74. It is recommended to consider the possibility of establishing an interagency commission working on the rehabilitation of the river basin in Jakarta Bay, as appropriate.

75. It is recommended for the PEMSEA Resource Facility and PEMSEA Twinning Secretariat to seek to provide opportunities including regular twinning workshops to encourage the co-learning and sharing of lessons and experiences learned for the rehabilitation of freshwater resources such as Pasig River and Manila Bay, and Ciliwung River and Jakarta Bay.

E. CLOSING

76. On behalf of Indonesia, Mrs. Wahyu Indraningsih, Assistant Deputy for Marine and Coastal Degradation Control, MOE of Indonesia, officially closed the workshop. She hoped that there would be further sharing and learning among the sites on pollution reduction in IRBCAM and hoped for continued progress of the wastewater treatment program in Jakarta Bay in Indonesia.

77. Ms. Cristine Ingrid Narcise, Country Programme Manager of the PEMSEA Resource Facility, delivered the remarks of Mr. Ross. Appreciation to the MLTM of RO Korea, PEMSEA Twinning Secretariat in KMI and MOE of Indonesia were recognized for the conduct of a successful workshop.

***

ANNEX 1

List of Participants

5th Regional Twinning Workshop
on Integrated River Basin and Coastal Area Management (IRBCAM)

17-19 March 2010
Jakarta, Indonesia

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ANNEX 2

Workshop Programme
(Revised to reflect the actual Workshop programme convened.)

5th Regional Twinning Workshop
on Integrated River Basin and Coastal Area Management (IRBCAM)

Theme: Meeting the Challenges of Pollution Reduction in River Basins and Coastal Areas

Date: 17-19 March 2010
Venue: Hotel Ibis Jakarta Mangga Dua Hotel and Apartment
(Address: Jalan Pangeran Jayakarta 73 – 10730, Jakarta, Indonesia)

17March	
Opening	
0830–0845	**Opening Ceremony** **Remarks** Mr. Stephen Adrian Ross, Chief Technical Officer, PEMSEA **Remarks** Mr. Choi Joon-Wook, Director, Marine Environment Policy Division Marine Policy Bureau, Ministry of Land, Transport and Maritime Affairs, Republic of Korea (RO Korea) **Opening Remarks** Mrs. Masnellyarti Hillman, Deputy Minister for Nature Conservation Enhancement and Environmental Degradation Control, Ministry of Environment (MOE), Indonesia
Twinning Workshop Background, Objectives and Expectations	
0845–0900	**Twinning Workshop Background, Objectives and Expectations** Dr. Jong-Deog Kim, Head, PEMSEA Twinning Secretariat
0900–0930	Group Photo and Coffee Break
Session 1: Application of Total Maximum Daily Load for Pollution Reduction Analysis Chair: Ir. Nana M. Arifjaya, Bogor Agriculture University, Indonesia	
0930–1030	**Pollution Reduction and Rehabilitation of Jakarta Bay and Ciliwung River** Mrs. SPM Budisusanti, Head of Chemical Industry Division, Deputy for Pollution Control, MOE, Indonesia Mrs. Peni Susanti, Head, Jakarta Environmental Management Board, Indonesia Mr. Antung Deddy Radiansyah, Assistant Deputy for River and Lake Degradation Control, MOE, Indonesia
1030–1200 (25 min presentation + 5 min Q&A each)	**Pollution Loading in Laguna de Bay, Philippines** Ms. Carolane P. Gonzales, Project Development Office/Technical Staff for Waste Load Model, Laguna Lake Development Authority, Philippines **Water Quality Trading in the Context of Total Maximum Daily Load for Industries in San Cristobal Sub-basin, Laguna de Bay, Philippines** Mr. Ronilo Dg. Samiano, Aquaculturist II and Head, Hydrology Model Team, Laguna Lake Development Authority, Philippines **Toward Cost Effectiveness and Value Addition: TPLMS Application for Masan Bay Revitalization** Mr. Jungho Nam, Director (Associate Research Fellow), Marine Environment & Climate Change Research Department, Korea Maritime Institute, RO Korea
1200–1330	Lunch

1330–1430	**Panel Discussion/Open Forum** Focus: Future Actions - Capacity needs for scaling up pollution reduction programmes in watershed and coastal areas Discussant: Mr. David Nemazie, University of Maryland Centre for Environmental Science, USA, Mr. Jungho Nam, Director (Associate Research Fellow), Marine Environment & Climate Change Research Department, Korea Maritime Institute, RO Korea Facilitator: Mr. Stephen Adrian Ross, Chief Technical Officer, PEMSEA
1430–1500	**Wrap-up of Session 1**
1500–1530	Coffee Break
Session 2: Pollution Reduction Strategies for Domestic Sewage: Centralized, Community-Based and On-Site Sewage Treatment and Disposal Chair: Mrs. Kati Andraini, Functional Officer for Development of Settlement Sanitation, Ministry of Public Works, Indonesia	
1530–1710 (20 min presentation + 5 min Q&A each)	**Centralized Sewage Treatment in Metro Manila** Ronald R. Muaña, Project Manager, Manila Water Company, Inc. **Septage Management in an Urban Environment** Ronald R. Muaña, Project Manager, Manila Water Company, Inc. **Improving Access to Sanitation through Community-Based Approaches: Case Study from Bali, Indonesia** Mrs. Yuyun Ismawati, Director, BALIFOKUS Foundation **Centralized Sewage Management – from Construction to Management–** Mr. Kazuya Suzuki, Director, Global Environment Division, JICA
1710–1800	**Panel Discussion/Open Forum** Focus: Assessment of pollution reduction options and their potential application in Jakarta Bay, Manila Bay and Bohai Sea Facilitator: Mr. David Nemazie, Associate Vice President for External Affairs, University of Maryland Centre for Environmental Science, USA Discussants: Paper presenters from Session 2
1900–2030	**Welcome Dinner** Host: PEMSEA Twinning Secretariat in Korea Maritime Institute
18 March	
0830–0900	**Wrap-up of Session 2**
Session 3: Accessing Available Sources of Financing for Pollution Reduction Projects at the Sub-National Level Chair: Dr. Edi Effendi Tedja Kusuma, Director for Environmental Affairs, National Development and Planning Agency, Indonesia	
0900–1030 (25 min presentation + 5 min Q&A each)	**Pollution Reduction Partnership Investment Fund** Dr. Jiang Ru, World Bank **Concept of Infrastructure Development for River Pollution Reduction in Urban Areas** Ir. Bambang Legowo, Development of Settlement Sanitation, Ministry of Public Works, Indonesia

	Implementation of Environmental Investment within the Framework of ICM Mr. Stephen Adrian Ross, Chief Technical Officer, PEMSEA
1030–1100	Coffee Break
1100–1200	**Panel Discussion/Open Forum** Focus: Challenges in accessing financing for pollution reduction at the local government level Discussants: Paper presenters from Session 3 Facilitator: Dr. Neviaty P. Zamani, Bogor Agricultural University, Indonesia
1200–1330	Lunch
1330–1400	**Wrap-up of Session 3**
Session 4: Facilitating Upstream Downstream Agreements and Engaging Communities and the Private Sector in Projects Chair: Mr. Stephen Adrian Ross, Chief Technical Officer, PEMSEA	
1400–1605 (20 min presentation + 5 min Q&A each)	**Addressing Upstream Taedong River Environment Management Issues through ICM Scaling Up, DPR Korea** Mr. Choe Rim Director, General Bureau for Cooperation International Organizations, DPR Korea **Responsible Management System against the Waste Flowing into the Sea in the Nakdong River Basin** Mr. Han Kwang Hee, Korea Marine Environment Management Corporation, RO Korea **Cooperation among States along Chesapeake Bay for Pollution Reduction** Mr. David Nemazie, Associate Vice President for External Affairs, University of Maryland Centre for Environmental Science, USA **Making Wastewater an Asset** Mr. Djoko Sasongko, Regional Program Coordinator, Global Water Partnership Southeast Asia **Corporate Social Responsibility for Better Environment: Jakarta Water Ways Project** Mrs. Deva Rahman, National Corporate Affairs Manager, Coca Cola Amatil, Indonesia
1605–1630	Coffee Break
1630–1730	**Panel Discussion and Open Forum** Focus: Creating conducive climate for “partnerships” among communities and the private sector Discussants: Paper presenters from Session 4 Facilitator: Dr. Henry Bastaman, Deputy Minister for Communication and Community Participation, Ministry of Environment, Indonesia
19 March	
0830–0900	**Wrap-up of Session 4**
Session 5: Case Study: Implementing the Pasig River Rehabilitation Program Chair: Dr. Vicente B. Tuddao Jr., River Basin Control Office, Department of Environment and Natural Resources, Philippines	
0900–1000 (25 min presentation + 5 min Q&A	**Reducing Pollution in the Pasig River: Targets, Strategies, Good Practices, Achievements and Challenges** Arch. Deogracias J. Tablan Jr. Executive Director, Pasig River Rehabilitation Commission

each)	**Relocation and Resettlement of Pasig River: Informal Settler Families** Engr. Alan A. Gatpolintan Deputy Executive Director for Operations Pasig River Rehabilitation Commission
1000–1015	Coffee Break
1015–1115	**Panel Discussion and Open Forum** Focus: Sharing of good practices and lessons in IRBCAM between Pasig River and Ciliwung River Discussants: 2 presenters from Pasig River and 3 representatives from Jakarta Bay, possibly 1 each from Jakarta Province, Public Works and Housing Facilitator: Mr. Aboejoewono Aboeprajitno, Director of Basel Convention Regional Centre for South-East Asia (BCRC-SEA)
1115–1130	**Recommendations for Action** Dr. Jong-Deog Kim, Head, PEMSEA Twinning Secretariat
Closing	
1130–1145	**Closing Remarks** Mrs. Wahyu Indraningsih, Assistant Deputy for Marine and Coastal Degradation Control, Ministry of Environment, Indonesia **Closing Remarks** Mr. Stephen Adrian Ross, Chief Technical Officer, PEMSEA
1145–1330	Lunch
1330–1630	**Field Trip**

ANNEX 3

Opening Ceremony Remarks

Remarks
at the 5th Regional Twinning Workshop
on Integrated River Basin and Coastal Area Management
17 March 2010

Mr. Stephen Adrian Ross, Chief Technical Officer, PEMSEA

Mrs. Masnellyarti Hilman, Deputy Minister for Nature Conservation Enhancement and Environmental Degradation Control, Ministry of Environment, Indonesia, Dr. Jong-Deog Kim, Head of the PEMSEA Twinning Secretariat, Korean Maritime Institute, honorable representatives of the United Nations Development Programme, national agencies and local governments, friends, ladies and gentlemen;

It is indeed my pleasure on behalf of the PEMSEA Resource Facility to welcome you to this 5th Regional Twinning Workshop on Integrated River Basin and Coastal Area Management. We would especially wish to thank Dra. Hilman, as well as the hard working staff of the Ministry of Environment for their gracious and dedicated commitment to hosting and co-organizing this event. In addition, we wish to recognize the Ministry of Land, Transport and Maritime Affairs, Republic of Korea and the Korean Maritime Institute for their continuing support and commitment to this series of regional twinning workshops for the improvement of understanding and implementation of integrated management of river basins and coastal areas.

To the workshop participants, representing the stakeholders in pollution reduction and rehabilitation of river systems and coastal seas, we thank you for taking the time from your busy schedules to be with us for the next couple of days. We truly hope that you will find this a purposeful knowledge sharing and learning experience.

As you may know, PEMSEA achieved a major milestone in November 2009 with the signature of the Agreement Recognizing PEMSEA's Legal Personality, signed during the EAS Congress 2009, in Manila Philippines. The document was signed by representatives of 8 governments from the EAS region, namely Cambodia, China, DPR Korea, Indonesia, Lao PDR, Philippines, RO Korea and Timor Leste, and signified the transition of PEMSEA from a regional project to an international organization with its own legal personality. At the same time, which may not be fully apparent, the Agreement signified the transformation from the implementation of a GEF regional project by and for countries of the region, to the pursuit by PEMSEA Partners to take proactive initiatives in planning, coordinating and implementing activities, projects and programs, individually and collectively, to achieve sustainable development targets as identified in the Sustainable Development Strategy for the Seas of East Asia. This requires a major change in mind set of the Partners, and a major change in the manner in which PEMSEA will operate in the future. First and foremost, it requires all Partners to acknowledge themselves as part of the PEMSEA mechanism, and therefore to take a proactive approach to the implementation of the SDS-SEA within the context of policies, priorities and issues within their respective country, programs and projects. Second it entails rethinking how PEMSEA needs to operate in the future, if the goal of a self-sustaining regional partnership mechanism, as identified in the Haikou Partnership Agreement, is to be achieved. We are just starting this transformation process, so it is an opportunity for all Partners, both Country and Non-Country, to participate in the design and development of your PEMSEA.

This workshop on the challenges of pollution reduction in river basins and coastal areas is a good example of the type of partnership that PEMSEA needs to aspire and fulfill. Pollution of the region's river systems and coastal areas is a problem in most countries of the region. The three watershed areas represented at this workshop, namely Jakarta Bay/Ciliwung River in Indonesia, Manila Bay/Pasig River/Laguna Lake in the Philippines, and the Taedong River in DPR Korea have many common concerns and challenges. Progress is being made in all sites, and we hope that this workshop will allow the policymakers, managers and technical personnel from these sites a chance to discuss not only the progress and success stories, but also the failures and shortfalls in your programs, so that by the end of this workshop, all sites will have a better appreciation of ways and means of improving the planning and implementation of their respective programs. We can achieve improved results through transfer of skills, knowledge and experience, as well as through on-the-ground technical assistance and support. A sustainable PEMSEA needs the vision, strategic direction, operating philosophy and means to assist countries to achieve their sustainable development targets, including pollution reduction, through integrated coastal and ocean management, effective partnerships and functional support networks.

To this end, we are also pleased to be joined by representatives from the Chesapeake Bay and the Masan Bay programs, two developed and mature programs in river basin and coastal area management, who will be sharing their experiences and lessons learned for the benefit of sites that are just now beginning the process.

Similarly, we are most pleased to have the private sector joining us. The Manila Water Company Inc is one of two concessionaires in Metro Manila that is responsible for water supply and sewerage services. The development of these services is a challenge in any area, but to undertake such a project in a large metropolis like Metro Manila is a huge challenge and we look forward to hearing how the company addressed the problem, and how a similar situation might be addressed here in Jakarta.

We are also pleased to be joined by representatives from the Global Water Partnership, JICA, Balifokus Foundation, the Korea Marine Environment Management Corporation, and the World Bank, who will share with us their policies, perspectives and experience in how pollution reduction/wastewater treatment projects may be developed, implemented and financed in a sustainable and affordable manner. We all recognize that financing of pollution reduction is perhaps the most significant constraint to implementation of these projects at the local level, so I do hope that you will ask questions and learn from these experts. We may not be able to solve the problem of financing during this workshop, but at least let us target a better understanding of the process required in order to develop pollution reduction projects that are bankable and affordable to local governments.

In closing, I would like to once again, on behalf of all of the participants, express sincere appreciation to the host and the co-organizers of this workshop. As PEMSEA Partners, we can overcome the seemingly insurmountable together. Pollution reduction and rehabilitation of our river systems and bays can be achieved. It will take time, no doubt, but with the right approach and support of our Partners, we can start to show progress and results.

I wish you a successful workshop, and the start of new partnerships among the participants.

Good morning.

Remarks
at the 5th Regional Twinning Workshop
on Integrated River Basin and Coastal Area Management
17 March 2010

Mr. Choi Joon-Wook, Director, Marine Environment Policy Division
Marine Policy Bureau, Ministry of Land, Transport and Maritime Affairs, RO Korea

Honorable Mrs. Masnellyarti Hillman, Deputy Minister for Nature Conservation Enhancement and Environmental Degradation Control, the Ministry of Environment of Indonesia, Prof. Raphael Lotilla, Executive Director of PEMSEA, Distinguished representatives from Manila Bay of Philippines, Jakarta Bay of Indonesia, Bohai Sea of China, Taedong River Basin of DPRK, Chesapeake Bay of the United States and Masan-Cinhae Bay of the ROK for the 5th Twinning Workshop on 'Meeting the Challenges of Pollution Reduction in River Basin and Coastal Area', Distinguished delegates from the Ministry of Environment of Indonesia, Ladies and Gentleman,

First of all, I would like to extend my warmest welcome to distinguished guests from related public and private sectors, international organizations including the World Bank, JICA for joining us today. It is a great honor for me to meet all of you at this meaningful event, held in Jakarta, Indonesia.

I am Choi Joon-Wook, Director of Marine Environment Policy Division, Marine Policy Bureau, Ministry of Land, Transportation and Maritime Affairs of the ROK and the focal point of PEMSEA cooperation projects. I'd like to convey my sincere sorry not to attend the meeting this time because of domestic affairs. But I'd like to stress MLTM of RO Korea has been expected this mechanism could play an important role to conserve marine environment and to build sustainable cooperation network in the region. So, we are going to support this twinning network as we mentioned several times.

As all of you acknowledged that many East Asian countries are facing serious environmental problems such as water pollution, destruction of marine ecosystem and habitats and reduction in fishery catches caused by rapid industrialization.
PEMSEA was established to response the environmental deterioration of the Seas of East Asia and set the clear development direction with adopting 'Sustainable Development Strategy for the Sea of East Asia (SDS-SEA)', 'Putrajaya Declaration', 'Haikou Partnership Agreement', and 'Manila Declaration'.

The ROK and PEMSEA recognized that marine environment is closely linked to the management of watersheds and came to establish the IRBCAM, which is an integrated management of watersheds, estuaries and adjacent coastal areas. Upon the IRBCAM mechanism, the Twinning Workshop has been regularly held since 2005 aiming for promoting information exchange and cooperation among twinning sites.

The Masan Bay of Korea is one of twinning sites. The environment of the Masan Bay has been heavily deteriorated by urban development, high population density, pollutants discharge without proper treatment and consideration of environmental carrying capacity. To improve the environment of the Masan Bay, the Korean government designated the area as a Special Management Area (SMA) and established the 'Comprehensive Management Plan for the Environment of the Masan Bay' in 2004. Besides, in 2008, the Korean government established the 'Total Pollution Load Management System (TPLMS)'

and 'TPLMS Implantation Plan' for the Masan Bay. By doing these efforts, water quality of the Masan bay has been improved compared to the past.

Through this important event, we would like to introduce TPMLS system for the Masan bay. Also we want to share lessons learned from experiences in improving coastal and marine environment in Masan Bay with other Twinning sites, having similar environmental situation.

On the other hand, the Korean government established the Secretariat of Twinning Network at Korea Maritime Institute in June 2008 aiming for facilitating exchange of experience and information among Twining partners. We believe that Twinning Workshop will continue to contribute a lot to the improvement of environment in the Seas of East Asia with successful operation of the Secretariat of Twinning Network.

Finally, I would like to express the Korean government's commitment to supporting PEMSEA's successful transformation into the international legal personality. It is strongly believed that PEMSEA will play a vital role in the conservation and management of coastal environment in the East Asian Region as an independent international organization in the foreseeable future.

Moreover, the ROK will successfully host the 4th EAS Congress with the perfect preparation, and Expo 2012 Yeosu Korea under the theme of "the Living Ocean and Coast" will generate mutual synergy effects for both the ROK and PEMSEA.
In this context, the ROK government would like to ask for the PEMSEA and Twinning Network partners' support and participation to host both EAS Congress and Yeosu Expo in 2012.

Once again, I would like to take this opportunity to extend my sincere gratitude to Prof. Lotilla, Director of PEMSEA, delegates from Ministry of Environment of Indonesia and all participants for their hard work and preparation of this workshop. I hope you all have fruitful discussions through this meaningful event and make valuable recommendations which can serve as a foundation for promoting further development of the Twining Network.

Thank you.

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OPENING REMARKS
by
Deputy Minister for Nature Conservation Enhancement and Environmental Degradation Control,
Ministry of Environment, Republic of Indonesia

AT THE 5TH REGIONAL TWINNING WORKSHOP
ON INTEGRATED RIVER BASIN AND COASTAL AREA MANAGEMENT
(IRBCAM)

Theme: The Challenges of Pollution Reduction
In River Basin and Coastal Area

Distinguished

1. Representatives of the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA),
2. Representatives of Ministry of Land, Transportation and Maritime Affairs, and Korea Maritime Institute, RO Korea
3. Representatives from PEMSEA Participating countries
4. Representatives from of the International Organizations JICA, World Bank and Asian Development Bank
5. Mr. David Nemazie, Associate Vice President for External Affairs, University of Maryland Centre for Environmental Science, USA

Assalamu'alaikum Warakhmatullahi Wabarakaatuh

Good morning

First of all, let us praise Our Lord The Almighty for His blessings and forgiveness for all of us in gathering here today at the occasion of the **5th Regional Twinning Workshop on Integrated River Basin and Coastal Area Management (IRBCAM).**

We on behalf of the Indonesian Government, which trusted us to be the host to organize this regional workshop, and as the National Focal Point of Indonesia in cooperation with PEMSEA wish to welcome all of the participants to this workshop.

This workshop is conducted in order "*to share good practices and experiences in planning, developing, financing and implementing pollution reduction programs in*

river basin and coastal areas of Bohai Sea (PR China), Manila Bay (Philippines) and Jakarta Bay (Indonesia)"

As part of the World's community, since the year 1994 Indonesia is already involved and supported the regional cooperation of the East Asian marine environmental management which is facilitated by PEMSEA. This cooperation is very useful for the enhancement of the national capacity as well as the local government in supporting the marine and coastal sustainable development in Indonesia as well as in the Seas of East Asia.

We again would like to remind you that, after having signed the Putrajaya Declaration of *Regional Cooperation for the Sustainable Development of the Seas of East Asia* (SDS-SEA) together with 11 (eleven) other countries in East Asia in 2003, it is now the time for us to implement real actions related to this declaration.

We also would like to extend our highly appreciation to PEMSEA in developing the partnership as agreed through the **Haikou Partnership Agreement in 2006.** This becomes an important point in synergizing various resources which are owned by various parties, whether the International as well as the Regional and the State itself.

We acknowledge that our region is vulnerable to various impacts of climate change, which include frequent and extreme weather events, flooding, water shortage, acidification of the oceans and seas, salt water intrusion, sea level rise and other environmental emergencies that we all face. We stress that the impacts of climate change cut across various areas and issues including water resources, food security and livelihood, pollution, hazards and disaster, as well as biological diversity.

In 2009, during the conduct of the East Asian Seas Congress in the Philippines, the member states of PEMSEA have also signed the ***"Manila Declaration on Strengthening the Implementation of Integrated Coastal Management for Sustainable Development and Climate Change Adaptation in the Seas of East Asia Region".*** In this Declaration, the countries recognized the importance of ICM as a strategy for addressing challenges arising from climate variability.

At this juncture we also would like to congratulate PEMSEA, for obtaining recognition as an International Organization for implementing the regional cooperation for the marine and coastal programmes of the East Asian Seas. The signing of the Agreement Recognizing the International Legal Personality of PEMSEA is a recognition of the countries' ownership of and support to the regional coordinating mechanism for implementing the SDS-SEA.

The government of Indonesia, through the Ministry of Environment, confirmed its commitment to the GEF/UNDP/PEMSEA Regional Programme on the

Implementation of the Sustainable Development Strategy for The Seas of East Asia (SDS-SEA) with the signing of a Memorandum of Understanding (MoU) on 25 November 2009. Among the targeted outputs identified in the MoU are a national policy and 6-year work programme in support of the implementation of the SDS-SEA in Indonesia.

Distinguished Ladies and Gentlemen,

Currently, various destructions and environmental pollution are happening in the marine and coastal areas. Furthermore, various activities from the uplands, such as: dumping of domestic and industrial wastes, both through the rivers or directly to the sea are causing environmental pollution and destructions at the marine and coastal areas. This is a common concern among the countries in the region which are addressing this concern through different fashions.

For example in Indonesia, the water quality of the Jakarta Bay are influenced by the 3 (three) provinces of Jakarta, West Java and Banten. Through the river system from the uplands there are 13 (thirteen) rivers which are emptying in the Jakarta Bay. From the uplands, the general use of these rivers are commonly for fishery aqua-culture, dumping of husbandry waste, industrial liquid waste at river banks , including as dumping of domestic waste from human settlements along the river sides, or as transportation of waste from uplands to the Jakarta Bay.

In the framework of decreasing the pollution and destruction flows, the Strategic Management Plan of the Jakarta Bay is in the process for adoption by the 3(three) Provinces of Jakarta, West Java and Banten. The rehabilitation of water quality in the 3 (three) main rivers flowing to the Jakarta Bay, namely the Ciliwung, Cisadane and Citarum rivers form the national priority to be implemented.

Currently, the National Action Plan for Rehabilitation of Ciliwung River Water Quality is in the legal process to be formed as a Presidential Decree. The Scope of the Work which is covered by the National Program of Action consists of Spatial Planning, Pollution and Destruction Control, Community Development and Law Enforcement. Even-though the legalization process of the Action Program is still in the process for finalization, but simultaneously real actions, as related to Ciliwung River Water Quality, conducted by various institutions are underway as according to their daily scope of works.

The Twinning Programme will be useful for Jakarta Bay to learn from the experiences and practices from other sites in addressing pollution in their river system and coastal areas. And otherwise, other Twinning Sites could also learn from the Jakarta Bay experiences as mentioned above.

Distinguished Ladies and Gentlemen,

We believe that the twinning initiative provides an opportunity for interregional and cross- site program networking and sharing among managers, researches, practitioners, including mutual technical assistance and transfer of information. By establishing twinning arrangements among priority sites within and outside the region, country members will have better opportunities for knowledge – sharing and technical cooperation in managing river basins, coastal areas and coastal seas in an integrated fashion.

To get effective and efficient of this workshop, we invite all participants to share the creative and innovative ideas in discussions at all sessions during 3 (three) days.

We sincerely hope that this workshop outputs will be useful to participants for any future implementation plans in the countries, especially to improve environmental quality in rivers, coastal as well as the marine ecosystems.

Finally, with this I would like to officially open this workshop.

Wassalamu'alaikum Warakhmatullahi Wabarakaatuh.

Jakarta, 17 March 2010

Deputy Minister for Nature Conservation
Enhancement and Environmental Degradation
Control,
Ministry of Environment, Republic of Indonesia

Dra. Masnellyarti Hilman, M.Sc