



THE EAST ASIAN SEAS CONGRESS

**25** Years of Partnerships for  
Healthy Oceans, People and Economies  
Moving as One with the Global Ocean Agenda

**27-30 November 2018** • Iloilo Convention Center, Philippines



**TRACK 2: MARINE POLLUTION AND CLEAN WATER**

**SESSION 2.4**

Catalyzing Improved Source-to-Sea (S2S) Governance, Management and Investment in East Asia and Southeast Asia

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The East Asian Seas Congress 2018

25 Years of Partnerships for Healthy Oceans, People and Economies: Moving as One with the Global Ocean Agenda

Iloilo City, Philippines, 27-30 November 2018

**Partnership Hub Track 2: Marine Pollution and Clean Water**

**Dialogue 2.4: Catalyzing Improved Source-to-Sea (S2S) Governance, Management and Investment in East Asia and Southeast Asia**

**27 November 2018**

**Partnership Hub Dialogue Co-Chairs:**

**Ms. Louise Whiting**, Senior Water Management Expert, Food and Agriculture Organization of the United Nations (FAO) Regional Office for Asia and the Pacific, Bangkok, Thailand

**Dr. Jose Padilla**, Regional Technical Advisor (Water, Coastal, Marine), United Nations Development Programme (UNDP) Regional Hub, Bangkok, Thailand

**Partnership Hub Dialogue Coordinator: Stephen Adrian Ross**, PEMSEA

**1. INTRODUCTION**

- 1.1 Ecosystems along a continuum from source-to-sea are being degraded as an unintended consequence of economic activities that might happen far upstream or downstream in the source-to-sea system (Granit. J. et al, 2017). This is happening primarily for two reasons: 1) lack of awareness and understanding of the land-to-sea ecosystem linkages and flows of water, sediment, pollutants, biota and ecosystem services; and 2) lack of capacity and know-how to avoid or mitigate the interconnected threats and negative impacts coming from multiple sectors and multiple resource users. The impacts of climate change currently add further stresses in river basins and coastal and sea areas in most regions of the world. It is clearly evident that the UN Sustainable Development Goals (SDG) include a number of targets (e.g., SDG 2, 6, 8, 11, 12, 13, 14 and 15) that are directly dependent upon the ability of governments and their partners to overcome these barriers.
- 1.2 A related overarching concern is that water use among East Asian and Southeast Asian countries is growing rapidly, while water quality and quantity challenges persist in such a way that the situation in some areas has threatened to derail economic growth. Increased population has intensified freshwater usage, both surface and ground water. Water

demand is increasing drastically due to rapid urbanization, industrialization and agriculture/food production intensification and expansion, and many areas in the region are projected to be water stressed by 2025 (Lee 2013).

- 1.4 These two issues are inseparably linked and require urgent attention.
- 1.5 The S2S Partnership Hub Dialogue session aimed to:
  - a) enhance S2S awareness by sharing the experiences and perspectives of policymakers, managers and practitioners at the regional, national and local levels;
  - b) identify priority demands, opportunities and challenges for further development and up-scaling of S2S solutions across the region;
  - c) explore and gather inputs on a regional approach to S2S, including potential value-add, focus areas, content, partners, etc. and, in doing so, confirm interest and informal endorsement of next steps.
- 1.6 In his opening remarks, Dr. Jose Padilla introduced the S2S approach, and specifically the connection between: a) the land area that is drained by a river system, its lakes and tributaries (the river basin), and connected aquifers; and b) downstream recipients including deltas and estuaries, coastlines and near-shore waters, the adjoining sea and continental shelf as well as the open ocean. He stressed that, in the past, the freshwater and marine water ecosystems were usually managed separately employing IWRM and ICM or similar processes. However, in the context of ecosystem-based management, source-to-sea continuum and climate change adaptation and mitigation, greater emphasis is required to link these freshwater and management approaches.
- 1.7 Dr. Padilla introduced a new GEF/UNDP/ASEAN/PEMSEA initiative on Reducing Pollution and Preserving Environmental Flows in the East Asian Seas through the Implementation of Integrated River Basin Management in ASEAN Countries. The project is in the Project Preparation Phase, with the objective of improving integrated water resources management (IWRM), reducing pollution loads from nutrients and other land-based activities, sustaining freshwater environmental flows and reducing climate vulnerability through demonstrations and replications, planning and strengthening of integrated river basin management (IRBM) in 7 ASEAN countries. The participating countries include Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, and Vietnam. Project start-up is expected to occur in the second half of 2019.

### **Part 1: Sharing S2S experiences at the regional, national and local levels**

Part 1 of the dialogue focused on the question: What are the main objectives and challenges of regional organizations and national and local governments in managing river basins, coastal regions, and/or sub-regional sea areas/LMEs in an integrated or holistic manner?

- 2.1 **Ms. Susana V. Siar**, Fishery and Aquaculture Officer, FAO Regional Office for Asia and the Pacific, introduced the Sustainable Management of the Bay of Bengal Large Marine Ecosystem (BOBLME) Programme, emphasizing that the major threats to a healthy and resilient BOBLME ecosystem were overexploitation of fish stocks, habitat degradation, and pollution, as identified in the 2012 Bay of Bengal Transboundary Diagnostic Analysis. The BOBLME Strategic Action Plan, which was adopted by 7 countries in 2015 (Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka and Thailand), covers 4 thematic issues, namely: marine living resources, critical habitats, water quality, and social and economic considerations.
- 2.2 Under the water quality theme, pollution reduction and waste management objectives were highlighted, namely: a) to reduce or minimize the discharge of untreated sewage and wastewater into river, coastal and marine waters; b) to reduce and minimize solid waste and marine litter; and c) to reduce and control nutrient loadings into coastal waters. Ms. Siar confirmed that one targeted output under this component was a demonstration project on investments in eco-waste infrastructure solutions. Mandalay City, Myanmar, has been identified as the demonstration site. This aspect of SAP implementation will be led by the Asian Development Bank (ADB).
- 2.4 **Ms. Maria Erlinda P. Pajarito**, National Water Resources Board, Department of Environment and Natural Resources, Philippines, introduced Integrated Water Resources Management (IWRM) in the Philippines. The Philippines has a long history of coordinating and regulating water resources, starting in 1974 with a Presidential Decree (PD 424) creating a National Water Resources Commission, which was later transformed to the current National Water Resources Board. The Philippine IWRM Framework Plan focuses on four key aspects: a) effective protection and regulation of water security and ecosystem health; b) sustainable water resources and responsive services for present and future needs; c) improved effectiveness, accountability, and synergy among water related institutions and stakeholders; and d) adaptive and proactive responses to future challenges.
- 2.5 Ms. Pajarito pointed out some of the ongoing initiatives to strengthen IWRM in the Philippines, namely: a) adoption and operationalization of IWRM through the river basin and island basin approach; b) preparation of a Water Security Road Map (covering agriculture, domestic, economic, environment, governance, resilience and urban aspects); c) updating of the National Climate Change Action Plan inclusive of water resource management; d) creation of an Apex Body to address institutional fragmentation and improved science-based decision making in IWRM; e) proposed legislation on a Water Regulatory Commission and Department of Water; and f) proposed amendment of the Water Code of the Philippines.
- 2.6 **Dr. Fang Qinhu**a, Professor, Coastal and Ocean Management Institute (COMI), Xiamen University, PR China, briefed the participants on Upstreaming Xiamen Integrated Coastal

Management (ICM) to the Jiulong River Watershed. The Jiulong River Watershed has an area of 14,700 km<sup>2</sup> and serves as a water source for approximately 10 million residents in Xiamen, Zhangzhou and Longyan cities. Primary threats to water security and safety include pollution from agricultural activities (i.e., Zhangzhou is one of China's most developed agricultural production regions) and environmental flow (there are more than 110 dams on the river). Xiamen City, which is located at the mouth of the river, has a population of 4 million people, is a harbor city and tourist destination and has been the flagship for ICM implementation in China since 1994.

- 2.7 The Fujian Provincial Government issued watershed an environmental protection regulation covering 12 key watersheds in the province to strengthen regional coordination particularly between upstream and downstream. The Jiulong River and Xiamen Bay Ecosystem Management Strategic Action Plan (JXSAP) and framework were also developed in 2014 to: a) enhance the management capacity of Jiulong River and Xiamen Bay; b) relieve pressure on the Jiulong River and Xiamen Bay; and c) ensure river-bay ecological safety. In particular, a so-called ecological compensation mechanism between upstream and downstream was created, which is financed by local governments (based on income levels and water consumption) and the provincial government, to develop and coordinate local projects on improved drinking water, pollution reduction and management, and ecological restoration. An Information Sharing Platform of the Jiulong River watershed was also developed to support water environmental decision-making based on cross-city and cross-sectoral data sharing, coupled with modeling.
- 2.8 In 2017, a River Chiefs System was established, headed by the Vice-Governor of Fujian Province, with the participation of corresponding hierarchal government leaders from every section of the Jiulong River watershed. The current priorities of the River Chiefs are: a) to clean the most seriously polluted portions of the water body; b) to identify all discharge outlets to the river; c) to secure ecological flow from the hydropower dams; and d) to clean the water course.
- 2.9 **Dr. Nguyen Minh Son**, Institute of Environmental Technology, Viet Nam Academy of Science and Technology, Viet Nam, discussed Integrated Management of the Vu Gia - Thu Bon River Basin and the Coastal Area of Quang Nam - Da Nang, Viet Nam. The river basin watershed area is approximately 10,250 km<sup>2</sup>, with a population of about 2.5 million people. Major development challenges in the river basin and coastal area include: uncontrolled urban development, destruction and degradation of forests and biodiversity, unsustainable hydro dam development and operation; salt water intrusion; competing uses of water resources; pollution; solid waste/marine litter; and unsustainable agricultural and fisheries practices.
- 2.10 In 2017, Da Nang City and Quang Nam Province established the Coordination Committee for Integrated Management of the Vu Gia – Thu Bon River Basin and Quang Nam – Da Nang Coastal Area, as well as Permanent Working Groups to assist the Co-ordination Committee.

The objectives of the intergovernmental committee are: a) to apply an integrated S2S approach; b) to improve the regulation of water use between dry season and wet season; c) to monitor hydropower in the upper reaches of the river for improved implementation of multi-reservoir procedures; d) to develop a natural resources environmental monitoring network; and e) to strengthen measures to control sources of pollution and waste from urban areas and industries.

- 2.11 Dr. Son identified major challenges in managing the Vu Gia – Thu Bon river basin and respective coastal area as: a) the Coordination Committee is just new, and is focused primarily on planning and analyzing issues; b) lack of orientation and technical capacity for managing multi-purpose water use and conflict resolution among users; c) limited capacity in integrated wastewater and solid waste management; d) limited investment in wastewater management/pollution reduction; and e) little engagement with the private sector.
- 2.12 **Dr. Natalie Degger**, Deputy Director, GEF LME-IW Learn Project, IOC UNESCO, Paris, France, addressed Knowledge Sharing and Networking in Source to Sea Governance and Management at the global level. She reminded the participants that the GEF International Waters Objectives for GEF 7 included: a) under Strategic Action 1.1 (Sustaining healthy coastal and marine ecosystems): create multi-state cooperation frameworks for transboundary deltas, including an integrated S2S approach; and b) under Strategic Action 3.3 (Investments in water, food, energy and environmental quality): increase water use efficiency, reuse, and reduce point and non-point sources of pollution addressing primary and emerging pollutants along the S2S continuum sustaining healthy coastal and marine ecosystems.
- 2.13 Dr. Degger reviewed the activities, services and tools provided by GEF IW Learn related to strengthening S2S governance and management across various regions and globally. She specifically referred to a S2S regional workshop conducted in Asia-Pacific region (Fiji) in October 2017, where various challenges were highlighted, including: a) a need for a much stronger than usual governance system; b) addressing multiple levels of governance and different cultures; c) lack of consistency in stakeholder and government engagement; d) mismatch between boundaries (cultural, jurisdictional, biological) for conservation objectives; e) limited financial resources; f) weak capacity at all levels of management; g) complicated and complex nature of S2S; g) diverse and conflicting priorities amongst different groups involved.
- 2.14 Ms. Whiting facilitated an open discussion following the five presentations. The bottom line from the discussion was that, across the Southeast and East Asia region, there is limited working experience in S2S governance and management. Strategic Action Plans at the regional seas/LME level have identified important linkages between activities in river basin watershed areas and coastal and marine waters, but implementation of the various plans has not produced concrete results at present. Similarly, at the national and local

government levels, there are existing and pending policies and legislation that support IWRM and ICM program development and implementation, but few examples of integrated implementation as per the Xiamen case study.

## **Part 2: Innovations and responses to S2S demands**

Part 2 of the dialogue explored innovations and potential opportunities for national and local governments, communities, business sector/investors, donors and the region as a whole to leapfrog barriers and challenges to S2S development and implementation, including financial, technical and scientific.

2.15 **Mr. Bruce K. Dunn**, Director, Environment and Safeguards, Asian Development Bank (ADB) spoke about Catalyzing Green Finance for S2S Solutions. He pointed out that the current demand for infrastructure, including power, transportation, telecommunications and water and sanitation, in Asia and Pacific to 2030 is about \$26 trillion, with East and Southeast Asia representing \$9 trillion of this estimate. At present, there is a shortfall between current investments and investment needs of about \$800 billion per year. ADB is currently working on a platform for S2S solutions, which will impact on reduced marine pollution and litter and restored health of rivers and marine ecosystems. The platform will cover: a) knowledge (e.g., sharing best practices, high-level commitments, regional coordination, business leaders forum on circular economy, IEC; partnerships); b) enabling environments (e.g., action plans, policy and regulatory support, institutional strengthening, capacity building, economic and financial analysis, PFS); and c) project investments (basin investment programs, solid waste management systems, ADB Ventures Facility, Green Financing Catalyzing Facilities, Blue Bonds).

2.16 Mr. Dunn emphasized that the bankability of green investment projects entails meeting three basic requirements: measurable green benefits; economic returns and social benefits; and financial returns. He described key financing modalities for addressing financing gaps (green bonds, blended finance, catalyzing green finance, credit guarantees) and the proposed Asian Green Finance Catalyzing Facility being considered by ADB. The Catalyzing Facility is designed to help local governments or utilities to issue blue bonds to finance water and wastewater treatment infrastructure, as well as putting in place institutional reforms to increase credit ratings, capacity building and financial packaging. Mr. Dunn welcomed further discussion on the proposed Facility among the participants and other interested organizations.

2.17 **Mr. Juergen Lorenz**, JL Business and Technology Consultancy, Manila, Philippines, spoke on Innovations in Technology and Integrated Management Solutions, emphasizing that environmental issues and economical activities are closely interconnected and must be handled in an integrated manner. To tackle the problem requires a shift to a sustainable

pathway, namely a circular, sustainable economy that incorporates valuation, development, and integration of social and environmental indicators into the balance sheets of government, corporations and economies. Mr. Lorenz questioned, “How to achieve this?”.

2.18 The solution proposed by Mr. Lorenz involved three interconnected elements of a crosscutting, cost-efficient and integrated solution approach:

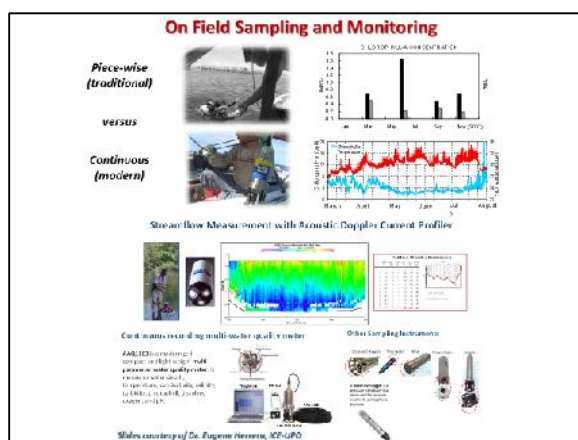
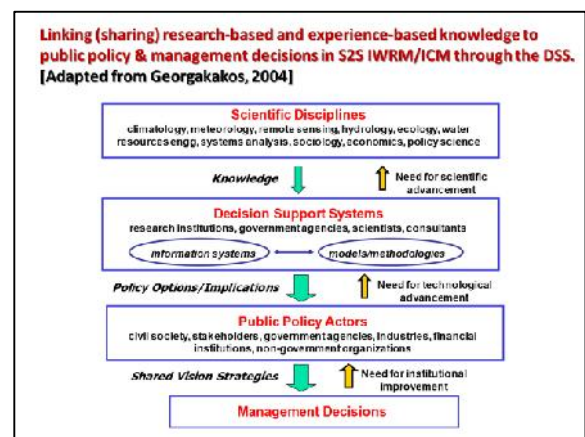
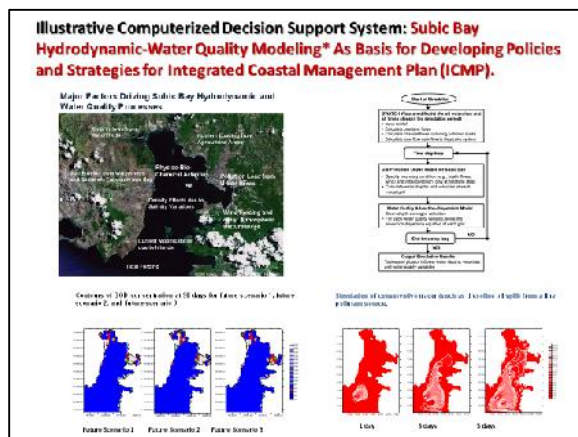
- a) *Closing the gap*: A major problem facing local governments, especially in developing countries is lack of capacity in project preparation, providing inefficient and unsustainable solutions, that are often too costly for government and/or not investible. To change this, an affordable, professional project preparation service is needed that can focus on executing appropriate project preparation in partnership with local governments. This is an essential precondition to achieve sufficient financial packaging, social acceptance and a well-rounded, sustainable project structure. Such a service needs to be operating under a strictly neutral, unbiased manner, independent of sectoral interests both within the country and outside the country.
- b) *Solution-oriented, real-life focus*: Projects need to be developed in a holistic manner, i.e., looking at all issues and identifying solutions that help address a myriad of interconnected social, environmental and economic challenges to sustainable development and blue economy growth. The S2S approach provides a good platform for such projects, with issues such as solid waste management/plastics recycling, water/food security and safety, sewerage treatment/nutrient reduction, environmental flows, hydro-energy and renewable energy alternatives (solar-hybrid) and their social, environmental and economic indicators all within the boundary of one river basin or sub-basin and coastal area.
- c) *Balancing of interests*: Current infrastructure development projects embody various privatization models and ODA funding structures to facilitate financing and implementation across the region. In general, governments are either undertaking infrastructure projects on their own, or via full privatization or a public-private partnership modality. Ultimately, the primary role of people and communities is to pay for the projects, either through taxes or user fees. However, a true measure of sustainability is the ownership and inclusiveness of people/communities in the project. To achieve this, an alternative financing and investment modality is needed, one that balances interests across government, private sector and the people. The model should provide a functional, socially beneficial investment, sound financial and operating structure, and equitable distribution of added-value and benefit to the three sectors during its project life, i.e., a sustainable and inclusive PPP or PPP Inclusive Growth model.

2.19 **Dr. Guillermo Q. Tabios III**, Professor of the Institute of Civil Engineering and Research Fellow of National Hydraulic Research Center, College of Engineering, University of the



Philippines, Diliman, Quezon City, Philippines, discussed an S2S Transdisciplinary Approach to Collaborative Research & Knowledge Sharing and Field Monitoring. He explained that the essential elements of a transdisciplinary approach entail: a) stakeholder engagement to solve problems through integrated, participatory and collaborative learning, research and consensus building; b) an iterative process such as “learning as you do it and doing as you learn”; c) work collectively from problem identification, knowledge generation and actions, to project implementation; and d) decisions are made on hierarchical basis in the order of: (i) satisfying physical laws and constraints, (ii) environmentally sound, (iii) economically beneficial, (iv) socially justifiable, and (v) politically acceptable. In an S2S context, a transdisciplinary approach engages all relevant stakeholders in arriving at a consensus, which is backed by science, for identifying policies for the better management of river basins and coastal areas.

2.20 Dr. Tabios provided three examples of how transdisciplinary approaches have been applied in decision support systems and monitoring, with relevance to S2S management, as follows:



2.21 Ms. Whiting facilitated an open discussion following the three presentations. In sum, innovations in financing, technology, support services, and multi-sectoral and transdisciplinary partnerships were well-received. However, there is an urgent need to test and demonstrate these innovations on-the-ground, so that the costs, advantages, short-

comings and benefits can be proven and articulated. It was suggested that the next EAS Congress provide a similar dialogue, but with some real-life examples of these innovative applications.

### **Part 3: Respondents on Priority Needs, Opportunities and Approaches for Scaling-up S2S Governance and Management in East Asia and Southeast Asia**

- 2.22 **Ms. Ruth Mathews**, Programme Manager at the Water Governance Department and Coordinator of the Action Platform for Source-to-Sea Management, Stockholm International Water Institute (SIWI), Stockholm, Sweden, introduced the Action Platform for S2S management (S2S Platform) that SIWI is hosting. She proposed that such a platform could serve as venue for knowledge exchange for discussing innovative approaches for improved management of land, water, coastal and marine linkages.
- 2.23 Picking up some of the key points brought up in the presentations, Ms. Mathews clarified the six key source-to-sea flows addressed in the source-to-sea approach: water, biota, sediment, pollutants, materials and ecosystem services to suggest that source-to-sea projects need to address more than pollution entering the oceans. She reflected that there was strong evidence that an integrated and synergistic approach is needed to combat the troubling trends in freshwater and marine ecosystems and that source-to-sea management offers a holistic approach to addressing these issues. Coordination across source-to-sea segments and cooperation between sectors can provide new opportunities and present previously unrealized solutions. Challenges can occur in managing conflicting priorities and the complexity of interrelationships; multiple levels of governance are needed to facilitate source-to-sea management.
- 2.24 **Mr. Irham Adhitya**, Cooperation Analyst, Directorate General of Aquaculture, Ministry of Marine Affairs and Fisheries, Republic of Indonesia, related the growing importance of aquaculture to food security in Indonesia, for the East Asia region, and indeed for the world, providing 47 percent of the world fish supply in 2016. Indonesia ranked second, behind China, in global aquaculture production in 2016. Mr. Adhitya gave examples of the challenges to sustainable aquaculture development in Indonesia, including decreasing freshwater and marine water quality and changes in environmental flows with longer dry seasons and floods. He highlighted that Indonesia's Sustainable Aquaculture Framework is inclusive of freshwater, brackish water and marine water and their linkages, and that the aquaculture industry is a important partner in S2S governance and management.
- 2.25 **Ms. Leah Karrer**, Senior Environmental Specialist, Global Environment Facility, Washington D.C., USA, iterated that GEF 7 includes S2S as part of its new strategy and thus is providing opportunities for funding, particularly in Asia. GEF may also support national projects focusing on critical river basins to replicate successful initiatives from other regions.

## Closing

2.26 The Co-Chairs, Ms. Whiting and Dr. Padilla, provided the following conclusions for the S2S Partnership Hub Dialogue:

- a) awareness as to the benefits (and necessity) of taking an S2S approach among organizations in the EAS region is high. There are a number of ‘S2S seeds’ being planted, including the UNDP-PEMSEA IRBM project, however more attention, funding and policy focus is needed to help these seeds to grow. Innovations in research, approaches and financing will accelerate the implementation of this approach.
- b) a regional approach to S2S would have significant benefits in terms of sharing knowledge and best practices from the projects as they are implemented. This is especially important as S2S governance and management is inherently challenging. Working coherently and in a mutually supportive manner across the region can help reduce complexity and increase S2S effectiveness and reach.

2.27 The overall recommendation from the S2S Partnership Hub Dialogue was stated during the closing session of the International Conference of the EAS Congress 2018 as, *“National and local governments of the region, international/regional organizations, financial institutions, donors, investors, the private sector and universities/research institutions need to work collaboratively and in a mutually supportive manner over the next 3 years to demonstrate progress in developing and demonstrating a ‘regional approach’ to S2S governance and management, building on existing experiences, sharing knowledge and best practices on effective institutional mechanisms, policies/strategies, legislation, financing, and investments from new projects, and helping to increase S2S effectiveness and reach.”*

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