Session II – Envisioning New Approaches to Managing Great Deltas, Great Rivers, and Great Lakes
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Role of Wetland and Constructed Wetland in Wastewater Treatment

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Abstract

Natural wetland systems are well known as functional compositions in nature. They have many roles such as habitats, landscapes, air purification and wastewater treatment. In the present work, (1) natural wetland is described and calculated in relation to ecological system in water treatment; (2) constructed wetland is modified from natural wetland and investigated with the aim of protecting environment from water pollution.

In natural systems, the proposed models were applied in wastewater treatment based on the loading capacity of system. These models undertake the water purification efficiently. There was no disease in aquaculture systems and effluent from aquaculture regions has not caused water pollution for a long time. Educational role of this model is to point out the importance of natural systems in sustainable development. Reduction of water pollution by natural wetlands also plays a role in natural resource management and conservation at Can Gio Biosphere Reserve.

A constructed wetland with a cover of vegetation is considered to be one of the friendly-environment systems. In detailed research, a model of constructed wetland with vetiver grass which has special characteristics in absorbing the pollutants from wastewater was designed and applied to treat domestic wastewater. Chemical oxygen demand (COD), total nitrogen (N), total phosphorus (P) and pathogens in influent and effluent of the treatment system were analyzed to evaluate the performance of the system. After two months of settlement, the system was intensively operated in 2 years with the dense grass

coverage. The system removed 91% of N, 94% of P, 97% of COD and reduced a considerable amount of pathogen from wastewater. The water quality of the effluent met the standard of EPA for watering plants and flowers in a garden. The obtained results indicated that both types of wetlands had potential for wastewater treatment.