

Role of Numerical Simulation as a Tool to Enhance Climate Change Adaptation and Resilient Societies: A Case Study from the Philippines

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Abstract : Rapid global changes resulted in unfavorable hydrological, ecological, and environmental changes and cumulatively affected natural resources. As a result, the local communities become vulnerable to water stress, poor hygiene, the spread of diseases, food security, etc.. However, the central point for this vulnerability revolves around water resources and the way people interrelate with the hydrological system. Also, most of the efforts to minimize the adverse effect of global changes are centered on the mitigation side. Hence, countries with poor adaptive capacities and poor governance suffer most in case of disasters. However, several transdisciplinary numerical tools are well designed and are capable of answering “what-if questions” through scenario analysis using a system approach. This study has predicted the future water environment in Marikina River in the National Capital Region, Metro Manila of Philippines, using Water Evaluation and Planning (WEAP), an integrated water resource management tool. Obtained results can answer possible adaptation measures along with their associated uncertainties. It also highlighted various challenges for the policy planners to design adaptation countermeasures as well as to track the progress of achieving SDG 6.0.

Keywords : water quality, Philippines, climate change adaptation, hydrological simulation, wastewater management, weap

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