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2017 Annual Meeting | Oct. 22-25 | Tampa, FL

MANAGING GLOBAL RESOURCES FOR A SECURE FUTURE

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180-9 Modeling Water Management Options for Lake Buhi in Bicol River Basin of the Philippines Under Climate Change Scenarios.

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Tuesday, October 24, 2017: 10:00 AM
Tampa Convention Center, Room 13

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Audio File | Recorded Presentation

Abstract:

Lake Buhi is located in the Bicol River Basin of eastern Philippines. It collects water from the Buhi catchment that is very vulnerable to climate change and El Niño related weather extremes, such as droughts and floods. Thus, water availability in this lake highly sensitive to the patterns of changing precipitation. In fact, this lake is the key source of water to domestic use, agriculture and fisheries in this region. Changing climate and weather conditions significantly affect the capacities of water managers and farmers to address management questions e.g., how much water is available to each users in the lake, how water can be shared based on priority and equity, and how management decisions can be altered for sustainable water use. To answer these questions, we used the Water Evaluation and Planning (WEAP) hydrological model and developed climate change projections for the basin. Properly calibrated WEAP model was used for Lake Buhi under three scenarios - dry (10^{th} percentile), normal (50^{th} percentile) and wet (90^{th} percentile) of the expected climate projections. There were four demand sites in the basin namely, Buhi municipality (domestic), Rinconada River Irrigation System (RIS), Buhi-Lalo RIS and Barit RIS in the order of priorities for water allocations. In WEAP, the lake was defined with three water levels of management zones as inactive zone, buffer zone and conservation zone. Inactive zone was there to keep water for fisheries in the lake. WEAP model was run to elucidate the storage volume of lake and demand site features (supply requirement, supply delivered, coverage and reliability). Model outputs highlighted the water shortage periods especially under dry scenario and variabilities in demand coverage and reliability when the priority of water allocation moves to lower levels. These results could guide decision makers to develop climate resilient and sustainable water use practices in this region,

especially under a variable and changing climate.

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