

El Niño Impacts on Philippine water resources: Focus on Angat Dam

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The Philippines, like many other countries in the Asia-Pacific Region, is greatly affected by the El Niño Southern Oscillation (ENSO) phenomenon, particularly the agriculture and water resources sectors. The Pampanga River Basin is the fourth largest basin in the Philippines which covers an approximate aggregate area of 10,540 square kilometres. It experiences one flooding in a year on average and is also affected by the occurrence of El Niño resulting to rainfall deficiency. There are two dams within the basin, the Pantabangan Dam and Angat Dam. Both dams have multi-purpose uses : irrigation, power generation, domestic and industrial water supply. Angat Dam supplies more than 90% of the domestic water use of Metro Manila. During the 1997-98 El Niño, there was a reduction of water supply to Metro Manila (from Angat dam) from 37 cms to 22 cms resulting to water rationing as the available water was reduced to 4 hours per day. About 30% of the population of Metro Manila who have no access to water coming from the Metropolitan Waterworks and Sewerage System (MWSS) relied on private operators which offered water at a higher cost. Indiscriminate use of groundwater wells contributed to groundwater depletion which resulted to salt water intrusion in some areas in Metro Manila. The low water level in Angat reservoir resulted to high concentration of manganese content of water being delivered to the Metropolis. As a remedial measure, the MWSS undertook a longer sedimentation process and increased the use of chemicals to address the problem. Cloud seeding activities conducted nationwide by the Bureau of Soils and Water Management (BSWM) amounted to about P36.7M during the 1997-98 El Niño. The deficit for hydropower generation was maximum at 333 Gwh starting from the second quarter of 1997 up to the third quarter of 1998. In this paper, it is shown that climate variability (in terms of rainfall) and hydrologic variability (in terms of inflow from reservoirs) exist at varying magnitudes in the study areas. The response of the study areas is more distinct during the occurrence of El Niño than during La Niña episodes. The impacts indicates that even with abundant surface water resources in the Philippines, water shortage is likely due to population increase and brisk economic development.