Land Use Pattern and Climate Related Risks Assessment in Angat River Basin: The Case of Riverfront Barangays in Baliwag and Bustos Bulacan, Philippines

Randy H. Po
Dr. Reynaldo C. Cruz
Alberto J. Valenzuela
Alvin V. Nuqui

Abstract

Almost half of the municipalities traversed by the Angat River have population density levels substantially higher than the provincial average of 1,525 persons per square kilometer while experiencing slow-growing settlement trend. Information generated using Geographic Information System (GIS) revealed that the built-up residential and industrial uses patterns in these towns are concerning around Angat River where natural hazards are common. Focusing on the towns of Baliuag and Bustos particularly on large communities living near or within the banks of Angat River as case study areas, GIS data confirmed increased pattern of settlement expansion around the river. This resulted in very high exposure of these populations and its built environment to climate-related risks.

Using qualitative and quantitative research including GIS tools, the study examined how land use patterns affected climate-related risks particularly by flooding hazard. This research also investigated the current institutional policies and performance of the local governments relative to managing risks at the Angat River basin including adaptation measures, resource mobilization, response and strategies related to land use considering that these areas are highly exposed to climate risks and that loss of lives and properties in these areas are recorded annually. This study demonstrated disasters, hazard and climate risk in the Angat River basin mitigated with improved land use planning and management as the long-term solution in reducing expenditures in disaster response and rehabilitation in areas defined as danger zones.

Keywords*: land use patterns, climate related risks, dominant level and river basin*