

## Understanding human system vulnerability to typhoon for Improved Adaptive Capacity

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Typhoon is one of the most natural disastrous phenomena that have devastating impacts on human system around the world. In the context of climate change, Asian countries particularly in tropical climate zone with high humidity and unevenly-distributed abundant precipitation tend to have frequent occurrence of typhoons and flooding. Here, we present a conceptual framework that incorporates 21 indicators across three dimensions, including vulnerability, exposure/sensitivity, and adaptive capacity to classify vulnerability and adaptive capacity (VAC) using geospatial techniques at regional scales over Vietnam. Results indicate that large spatial differences in VAC are obtained and identify top-priority regions that need enhanced adaptation to typhoons. The Southern Coastal area, South East and Red River Delta exhibit high and very high vulnerability because their physical features tend to be affected by the intensity of typhoons that frequently cross these parts. The lower Mekong Delta and Northern Coastal areas are vulnerable to typhoon-driven flood threats and, in particular, compounded by sea-level rise. Findings of this study are useful in making efficient policy decisions to minimize vulnerability to typhoons in Vietnam. In addition, the framework can be potentially applied to the other regions.

Keywords: human system vulnerability, Typhoon, Adaptive capacity, Geospatial techniques