

Assessment and Adaptation Strategy of Climate Change to Water Quality in the Erren River and Its Impact to Health

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Abstract : The impact of climate change to health has always been well documented. Amongst them, water-borne infectious diseases, chronic adverse effects or cancer risks due to chemical contamination in flooding or drought events are especially important in river basin. This study therefore utilizes GIS and different models to integrate demographic, land use, disaster prevention, social-economic factors, and human health assessment in the Erren River basin. Therefore, through the collecting of climatic, demographic, health surveillance, water quality and other water monitoring data, potential risks associated with the Erren River Basin are established and to understand human exposure and vulnerability in response to climate extremes. This study assesses the temporal and spatial patterns of melioidosis (2000-2015) and various cancer incidents in Tainan and Kaohsiung cities. The next step is to analyze the spatial association between diseases incidences, climatic factors, land uses, and other demographic factors by using ArcMap and GeoDa. The study results show that amongst all melioidosis cases in Taiwan, 24% cases (115) residence occurred in the Erren River basin. The relationship between the cases and in Tainan and Kaohsiung cities are associated with population density, aging indicator, and residence in Erren River basin. Risks from flooding due to heavy rainfall and fish farms in spatial lag regression are also related. Through liver cancer, the preliminary analysis in temporal and spatial pattern shows an increases pattern in annual incidence without clusters in Erren River basin. Further analysis of potential cancers connected to heavy metal contamination from water pollution in Erren River is established. The final step is to develop an assessment tool for human exposure from water contamination and vulnerability in response to climate extremes for the second year.

Keywords : climate change, health impact, health adaptation, Erren River Basin

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