Assessment of the Impacts of Coastal Inundation Due to Climate Change in the Dansoman Coastal Communities of Accra

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ABSTRACT

Inundation and the episodic flooding caused by spring tide in low-lying coasts are expected to exacerbate as a result of sea level rise caused by global warming. Both human development and natural habitats are at risk. The coastal terrain may become inundated, beaches eroded, coastal infrastructure damaged and people injured or displaced. Sea level rise is a significant and growing threat to the coastal communities of Dansoman in Accra due to its low lying terrain. This study presents an assessment of the expected impacts. Future sea level rises were projected based on global scenarios (CSIRO_MK2_GS). These were run the SimCLIM model based on the modified Bruun rule and overlaid on aerial photographs. It was revealed that the coastline could recede about 202 meters inland by the year 2100 with baseline from 1970-1990. The potential impacts on the socio-economic and natural systems of the Dansoman coastal area were described at the Panbros, Glefe and Gbegbeyise communities. From a survey conducted, it was realized that 84% of the respondents are aware of the rising sea level in the coastal area. However, most of them do not understand the causes of the sea level rise and have poor measures of adapting to the effects of flood disasters. Analysis of the likely impacts of coastal inundation revealed that 645,556 people, 926 buildings and an area of 0.78km^2 of land are vulnerable to permanent inundation by the year 2100. The possible adaptation and mitigation measure for managing the coast suggest that, a gradual withdrawal of human settlement from some areas of the coast may be the best management strategy for protecting natural ecosystems in the Dansoman coastal area.

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