

Assessment of Physical Vulnerability of Dakar, Senegal to Coastal Erosion

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Significant obstacles to the wellbeing of coastal populations arise from the fast growth of megacities along coastal regions, which is driven by urbanisation and made worse by the effects of climate change. Coastal erosion poses a particular threat to the Dakar region in West Africa, given its vast 133-kilometer coastline. The purpose of this study is to measure the level of physical vulnerability to coastal erosion in the Dakar region using the Coastal Vulnerability Index (CVI), which is strengthened with the proximity of settlements to the sea and the presence of protective infrastructure. Using a combination of technologies such as ArcGIS, DSAS, Google Earth Pro, and GPS Visualizer, significant variations in vulnerability were identified across the region. Specifically, the northern and southern coasts are more vulnerable, with average CVIs of roughly 94 and 23, respectively, whereas the western coast has a lower average CVI of around 10, indicating considerably less vulnerability. These findings highlight the importance of taking into account a variety of criteria when assessing coastal vulnerability, as well as providing significant insights for personalised interventions. This research contributes to our understanding of the Dakar region's vulnerability, informing discussions on coastal resilience and adaptation planning in the face of ongoing global environmental changes, thereby increasing our ability to mitigate the negative impacts on coastal populations and infrastructure.

Topic

Environmental informatics: Climate Change/Environment

Primary author: Dr POUYE, Ibrahima (West African Science Service Center on Climate Change and Adapted Land Use (WASCAL))

Co-author: Prof. NDIONE, Jacques André (ECOWAS)

Presenter: Dr POUYE, Ibrahima (West African Science Service Center on Climate Change and Adapted Land Use (WASCAL))

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