IMPACTS OF CURRENT AND FUTURE SALTWATER INTRUSION ON LIVELIHOODS IN COASTAL COMMUNITIES OF PEMBA AND POSSIBLE SOLUTIONS TO REDUCE IMPACTS, ENHANCE THE ENVIRONMENT AND ALLEVIATE POVERTY

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Pemba is a low-lying island located off the coast of Tanzania in the Western India Ocean. Over 30% of its area is less than 10 metres above sea level and as a result, the island experiences major impacts from salt water intrusion (SWI), which contaminates drinking water and agriculture land, leading to social, economic and environmental impacts on coastal communities. The impacts of SWI compounds the high background levels of poverty and environmental degradation among coastal communities.

Salt water intrusion is a natural process, and it is caused by tidal fluctuations, fractures in coastal rock formations and storm surges. However, salt water intrusion rates have been increasing on Pemba in recent years for two reasons. The first is increasing human interventions, such as the cutting down of mangroves, sand mining along the beach and poor farming methods. The second is due to climate change, from rising sea-levels and increasing wind and wave strength. This research is employing a multidisciplinary approach, including review, analysis and surveys, to measure current SWI risks and to investigate the attribution between natural and man-made influences. It is analysing and quantifying the socio-economic drivers and impacts of salt water intrusion, including gender and distributional differences. It is also looking at how saltwater intrusion impacts could change over future decades, in particular with the threat of sea-level rise, and assessing the future impacts on coastal communities, the environment and the wider economy.

To address these challenges, the research is also reviewing and assessing alternative solutions for addressing saline water intrusion problems. This is looking at various approaches that could tackle the human drivers of salt water intrusion, but also adaptation response that could reduce or prevent the physical impacts of sea level rise. A particular focus of the research is to evaluate environmentally sustainable, ecosystem-based responses for addressing salt water intrusion impacts, looking at options that can provide environmental and community livelihood benefits. The results will provide key policy relevant information to help reduce the drivers and impacts of salt water intrusion on Pemba.