Harmonising Climate Resilience in iSimangaliso: A Geospatial Workflow for Adaptation, Planning, and Community Outcomes

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SUMMARY

iSimangaliso Wetland Park is a coastal–estuarine World Heritage landscape facing rising climate hazards and complex community–conservation interfaces. This paper sets out a practical geospatial workflow that translates climate-risk intelligence into planning and management actions across the iSimangaliso system. Using authoritative and open datasets, the workflow assembles coastal and fluvial hazard layers (extreme water levels, surge, flood pathways), ecosystem condition and services, settlement exposure, and livelihood dependencies. It then structures an analysis of risk and opportunity at three scales—landscape, catchment, and settlement—linking these to management plan levers and municipal planning instruments. In practice, this often means clarifying where to prioritise wetland and dune restoration, where to manage growth pressures through planning controls, and where to design community programmes that support safer livelihoods.

The case consolidates current institutional efforts, including ecosystem-based adaptation partnerships in the marine and estuarine domains, and demonstrates how geospatial evidence improves accountability and sequencing of actions. Outputs include: (i) risk-to-measure matrices that tie hazards to feasible interventions; (ii) a data model for monitoring indicators such as wetland condition and exposure of critical services; and (iii) a lightweight governance template for inter-agency review and community dialogue. Early implementation lessons suggest that well-structured geospatial storytelling accelerates decision cycles and strengthens the rationale for investment in nature-based solutions. The paper concludes with a replication checklist for protected-area authorities and municipalities: data prerequisites, processing steps, decision hooks, and metrics to track progress over time. The iSimangaliso case illustrates how integrated spatial analysis can guide adaptation in a socially complex, biodiversity-rich setting, and offers a transferrable approach to climate-resilient spatial development.