

# **A Systematic Review of Telecommunications Infrastructure Deployment Challenges in Remote Mauritian Regions: An African Engineering Perspective**

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# | Abstract

The deployment of telecommunications infrastructure is crucial for development. Remote regions, such as those in Mauritius, present distinct engineering challenges that can widen the digital divide. Examining these barriers from an African engineering perspective is necessary for effective strategy formulation. This systematic literature review identifies, synthesises, and critically analyses the documented engineering challenges of deploying telecommunications infrastructure in remote Mauritian regions. Its objective is to consolidate evidence to inform future infrastructure planning and policy. A systematic search was executed across several academic databases using predefined search terms. Studies were screened against inclusion and exclusion criteria. Data were extracted and subjected to thematic analysis using a qualitative synthesis approach. The process adhered to established systematic review protocols to ensure rigour. The analysis identified five primary thematic challenges. The most cited was prohibitive deployment cost, exacerbated by difficult terrain and logistical complexity. A prominent finding was that a majority of the reviewed literature identified the lack of reliable grid power as a fundamental barrier to sustaining network operations in these localities. The review concludes that infrastructure deployment in remote Mauritius is constrained by interconnected engineering, economic, and environmental challenges. These barriers necessitate integrated, context-

specific solutions that diverge from standard urban deployment models to enable equitable digital access. Future engineering projects should prioritise hybrid power solutions and innovative, low-cost deployment techniques suited to Mauritius's geography and climate. Further primary research is required to evaluate the feasibility of emerging technologies, such as low-earth orbit satellite backhaul, within this context. telecommunications, infrastructure deployment, remote regions, Mauritius, engineering challenges, systematic review, African engineering

This review provides a novel synthesis of evidence specific to the Mauritian context, offering a consolidated framework of deployment challenges to guide engineers and policymakers working towards bridging the digital divide in similar remote island settings.

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