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Alternatives to the cross river superhighway balances sustainable infrastructure development with biodiversity conservation

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Statement of the Problem: Roads infrastructure development is necessary but can be problematic when poorly planned. Spatial scientists can provide evidenced-based reasoning in realizing viable and smart road infrastructure provisioning to optimize nature conservation, minimize environmental damages and maximize socioeconomic benefits.

Methodology & Theoretical Orientation: Based on integrated spatially explicit impacts assessment and cost-benefit analysis, the African case study presented in this study show how re-routing poorly planned highways can reduce negative environmental impacts, conserve biodiversity provide innovative and flexible ecosystem management solutions. Examining the proposed 260 km superhighway in Cross River State, south-eastern Nigeria illustrates how human actions threaten frontiers of biodiversity and wildlife conservation in equatorial Africa.

Findings: The examined proposed highway by the Cross River State Government in Nigeria would have intersected ~115 km of intact tropical rainforest or protected areas and would cost ~US$2.5 billion to construct. The two alternative routes 1 and 2 we offered and evaluated would be less damaging to the Cross River National Park, unprotected forests and biodiversity habitats. Although, the alternative routes are slightly longer (~290 and ~353 km), yet costing less (~ US$0.9 billion) to construct, compared to the state government proposed superhighway. The first alternative suggested, entirely avoids intact forest while aiming to provide maximum benefits to farmers and settlers.

Conclusion & Significance: In the context of achieving target #9 of the global sustainable development goals, smart infrastructure provisioning and sustainable land-use management suggestions from research outcomes should be incorporated as strategic tools for developing an informed conservation economy policy and decision-making in Africa. If biodiversity conservation and ecosystem management are to be achieved Africa wide, road infrastructure developments must be optimized to reduce environmental impacts and maximize socioeconomic benefits which can be realized by promoting lessons, trade-offs and synergies learnt from the cross river superhighway case study.

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