



# Integrating carbon capture utilization with credit scoring for poverty alleviation: A case study of Port Harcourt, Nigeria

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**This study addresses the dual challenge of persistent CO<sub>2</sub> emissions (specifically from gas flaring) and financial exclusion in the oil-rich Niger Delta, using Port Harcourt, Nigeria, as a case study. Traditional credit systems exclude low-income individuals and microenterprises, inhibiting their ability to adopt sustainable technologies and diversify livelihoods. We propose a novel, integrated framework that couples Carbon Capture and Utilization (CCU) projects with an innovative credit scoring system to generate economic incentives and alleviate poverty. The research aims to develop a conceptual model where verified participation in CCU activities (such as emissions reduction or carbon repurposing) earns participants quantifiable metrics, which are then incorporated into an enriched credit score. The methodology will employ a mixed-methods explanatory sequential design, starting with a quantitative survey of approximately 200 households/enterprises, followed by qualitative interviews and focus groups to deepen understanding of institutional barriers and community perceptions. The study hypothesizes that linking CCU performance to improved credit access will significantly increase participants' willingness to engage in carbon capture and lead to measurable gains in income and economic status. The findings will provide actionable policy recommendations for translating climate action into a scalable model for financial inclusion and local economic opportunity in underserved regions.**

**Keywords:** Carbon Capture and Utilization (CCU), Financial Inclusion, Credit Scoring System, Gas Flaring Emissions, Niger Delta Economy.

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