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# Machine Learning Models in Climate Prediction and Adaptation Planning for Côte d'Ivoire: A Scoping Review

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## Abstract

Machine learning models have shown promise in enhancing climate prediction and adaptation planning for Côte d'Ivoire. A comprehensive search strategy was employed across multiple databases, including Google Scholar, Scopus, and Web of Science. Studies published between January and December were considered for inclusion. Machine learning models have been applied in various sectors such as agriculture, water management, and urban planning with varying degrees of success, particularly in improving short-term climate forecasts and enhancing decision-making processes. The review identified a growing body of research on machine learning applications for climate adaptation but noted inconsistent model performance across different regions and contexts. Further interdisciplinary collaboration is recommended to address the variability in model outcomes and improve the reliability of predictions. Model estimation used $\hat{\{\theta\}} = argmin\{\theta\} sumiell(yi, f\theta(\xi)) + \lambda lVert\theta rVert 2^2$, with performance evaluated using out-of-sample error.

**Keywords:** *Machine Learning, Climate Change, Adaptation Planning, Machine Learning Models, Data Mining, Geographic Information Systems, Spatial Analysis*

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