



Theoretical Framework for Climate Change Adaptation in Sahelian Pastoralist Systems: An Agricultural Perspective

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Abstract

The Sahel region of Africa is characterized by semi-arid climate conditions, which are particularly susceptible to the impacts of climate change such as prolonged droughts and unpredictable rainfall patterns. These environmental changes significantly affect pastoralist systems that rely on livestock for their livelihood. The theoretical framework is constructed based on a review of existing literature from Sahelian pastoralist regions and incorporates insights from climate science, agricultural economics, and social anthropology. It utilizes qualitative data analysis to explore the socio-economic impacts of climate change and potential adaptation pathways. The theoretical framework underscores the necessity of integrating traditional knowledge with modern agricultural innovations to foster climate-resilient pastoralist systems in the Sahel. Recommendations include the development of localized climate change adaptation programmes, support for market linkages for emerging cash crops, and capacity-building initiatives among community leaders and farmers to enhance their resilience against environmental shocks. The empirical specification follows $Y = \beta_{0+\beta} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: Sahelian, Pastoralism, Climate Change, Adaptation Models, GIS, Livestock Demography, Ecological Economics

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