

## Understanding the Impact of Climate Change on Farmer's Technical Efficiency in Mali

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**Abstract :** In the context of agriculture, differences across localities in term of climate change can create systematic variation among farmers technical efficiency. Failure to account for climate variability could lead to wrong conclusions about farmers' technical efficiency and also it could bias the ranking of farmers according to their managerial performance. The literature on agricultural productivity has given little attention to this issue whereas it is necessary for establishing to what extent climate affects farmers efficiency. This article contributes to the preview literature by two ways. First, it proposed a new econometric model that accounting for the climate change influences on technical efficiency in the specific area of agriculture. Second it estimates the inefficiency due to climate change and the real managerial performance of Malian farmers. Using the Mali's data from agricultural census and CRU TS3 climatic database we implemented an adjusted stochastic frontier methodology to account for the impact of environmental factors. The results yield three main findings. First, instability in temperatures and rainfall decreases technical efficiency on average. Second, the climate change modifies the classification of the farmers according to their efficiency scores. Thirdly it is noted that, although climate changes are partly responsible for the deviation from the border, the capacity of farmers to combine inputs into the optimal proportion is more to undermine. The study concluded that improving farmer efficiency should include fostering their resilience to climate change.

**Keywords :** agriculture, climate change, stochastic production function, technical efficiency

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