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Smallholders’ Perception of and Responses to Climate Change – Evidence from Tanzania

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Abstract

Farmers’ subjective perceptions of climatic change are not always in line with historic climate evidence. Validated or not: There is a strong link between farmers’ perception and their behaviour. Therefore, local adaptation choices remain controversial, as they are based on these perceptions. The paper therefore tries to answer the following questions: First, what are farmers’ perceptions on climate change, especially with regard to rainfall and temperature? Second, do these perceptions correlate with evidence from climatic data? Third, how do farmers respond and what are the factors determining the choice of adaptation? The analysis is based on primary household survey data from a sample of 900 farmers in rural Tanzania and secondary data from local meteorological stations in the study regions of Dodoma and Morogoro. While farmers’ perception of a rising average temperature over time are generally confirmed by evidence from historic climate data, this cannot be said about rainfall. In the farmers’ perception, rainfall volume over the year decreased, but climate data rather indicates a decrease in the number of rainy days and simultaneously an increase in the intensity of rain on these rainy days. This change in rainfall pattern can also affect the farmer negatively, however we do find that the link between farmers’ perception and their behaviour is not very strong. Although farmers perceive climate change to happen and to affect them, still some farmers choose to do nothing or only respond in an evasive way, i.e. in a way that will not protect them from future damage. Only a small share chose investment-intensive strategies such as irrigation systems. Factors on the decision to adapt to climate change are chosen based on the framework of Grothmann and Patt and analysed using logistic regressions. Results indicate that not only education or access to credit play a role, relating to the farmers’ ability to adapt towards climatic changes. This analysis also identifies factors for the intention to adapt by including personality traits, such as extraversion and conscientiousness, and the experience of monetary loss because of climatic shocks. This approach gives a more complete picture of the farmers’ adaptation choices.

Keywords: Climate change adaptation, personality traits, Tanzania