**Climate Change in Ethiopia: Exploring Farmers’ Attitudes and Adaptation Strategies**

Around the world,climate change is impacting the availability of food and water, affecting people’s health and livelihoods. Unfortunately, these damaging effects are more pronounced in developing countries. In a recent study, Dr Abera Habte of Wolaita Sodo University and his collaborators investigated the impacts of climate change in Southwestern Ethiopia. His team incorporated the perceptions and knowledge of local farmers into their analysis, in order to develop more effective climate adaptation strategies.

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Temperatures across Africa have been rising faster than the global average, with much of this warming happening in the last few decades. The effects of climate change in dryer parts of the continent have been particularly stark. In these regions, the livelihoods of many people are based on agriculture, making them highly vulnerable to heatwaves, droughts, crop diseases and pest infestations.

For Ethiopia, a landlocked country on the east of the continent, many pieces of evidence have been collected to quantify the impact of climate change on the country, and to help local people to mitigate the effects of this change.

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Dr Abera Habte of Wolaita Sodo University in Ethiopia recognised the importance of combining local perceptions with physical data analysis, when conducting climate change research. By taking the perceptions and knowledge of local people into account, researchers and decision makers can design climate adaptation strategies that are far more likely to succeed.

Towards this aim, Dr Habte and his collaborators conducted a study, which was recently published in *Advances in Meteorology*, as part of Hindawi’s climate change article highlights campaign.

The team’s study analysed the impacts of climate change in Southwest Ethiopia over a period of more than thirty years, incorporating both scientific measurements and survey data from local people.

The areas covered in this study are South Omo and the Segen Area People’s Zone – both in Southwest Ethiopia. Dr Habte decided to focus on these areas as they are important regions for the production of sorghum, which is one of the most important cereal grains grown in Africa.

South Omo has an altitude of between 376 and 3500 metres, while the Segen Area People’s Zone is between 501 to 3000 metres above sea level, making them both very mountainous areas. Most parts of these two regions are categorised as ‘hot arid’ and ‘semi-arid’, meaning that they tend to receive very little rainfall.

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In order to collect a comprehensive sample of data from these regions, Dr Habte and his collaborators obtained rainfall and temperature measurements taken across 12 meteorological stations by the National Meteorological Agency.

To further enhance their dataset, the researchers combined these ground-based measurements with satellite observations of rainfall and temperature from both NASA and the European Organization for the Exploitation of Meteorological Satellites.

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To complement this dataset, Dr Habte and his collaborators also surveyed households from across South Omo and the Segen Area People’s Zone. The team chose to include survey responses from farmers who were over 40 years of age, as these people were more likely to have observed the impacts of climate change. In total, the team included survey data from 245 farmers across the entire area.

During their survey-based study, the team used questionnaires to gather information about the participants’ opinions on climate change, its impacts, and whether they had implemented any adaptation measures to mitigate such impacts.

The researchers also used focus group discussions and so-called ‘key informant interviews’ in order to cross-check the information they collected during the surveys with their climate data analysis. The key informant interviews differed from the team’s questionnaire-based interviews, as they allowed the participants to go into greater depth on a topic, rather than simply answering questions. Such interviews gave the team deeper insight into the impacts of climate change, including information on crop yields, deforestation and disease.

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Upon analysing the rainfall and temperature data, Dr Habte and his collaborators found that temperatures had been rising steadily between 1983 and 2016, with statistically significant trends for nearly all weather stations sampled. The annual maximum temperature of the region rose by a worrying 0.71 degrees Celcius over a 34-year period. The increase in temperature was even larger for the most southern parts of the studied region.

For rainfall, the team’s results were not as clear cut. In some locations, rainfall had increased on average, while it had significantly decreased in other places. These observations could be due to the extreme differences in altitude and landscape across these mountainous regions of Southwestern Ethiopia. The more northerly areas with higher elevation showed increased levels of rainfall, while the southerly, low-lying parts experienced reduced rainfall.

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The research team compared these results with the survey responses. They found that over 94% of the participants were well aware of climate change, and had noticed increasing temperatures in their areas. Over 82% of the farmers also indicated decreased rainfall in both spring and autumn, while a small percentage had noticed an increase in rainfall in their local area.

Most farmers were very aware of the impacts of climate change and had begun to implement adaptation practices. In terms of noticing the effects of climate change, 86% of the participants reported a decline in crop productivity, 74% noted an increase in livestock disease, and over 60% recorded an increase in human disease. Further reported impacts were increased cases of agricultural pests, water shortages, and increased levels of drought or flooding.

It became clear to Dr Habte that major adaptation methods need to occur in South Omo and the Segen Area People’s Zone before it is too late.

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About two-thirds of the participants reported that they had increased their efforts to protect soil and conserve water on their farms. Many farmers had also begun to implement other adaptation methods, including crop diversification, altering their planting dates, planting drought-tolerant crop varieties, and cultivating crops that mature earlier.

However, these methods were not successful in all regions, and over a quarter of the participants stated that they had sought other types of work due to the impacts of climate change on agriculture.

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The team’s study shows that the impacts of climate change in the Southwestern region of Ethiopia are severe.

Despite farmers having a thorough awareness of climate change and its impacts, Dr Habte concludes that many may not be using the most appropriate adaptation strategies. In future research, he wishes to explore the factors that might prevent farmers from adopting the most effective strategies for mitigating the impacts of climate change.

The researchers also believe that there should be more support from governments and NGOs to help farmers introduce appropriate adaptation strategies, to protect lives and livelihoods as the climate continues to change.

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This SciPod is a summary of the paper ‘Spatial Variability and Temporal Trends of Climate Change in Southwest Ethiopia: Association with Farmers’ Perception and Their Adaptation Strategies’, in *Advances in Meteorology*. [doi.org/10.1155/2021/3863530](https://doi.org/10.1155/2021/3863530)

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