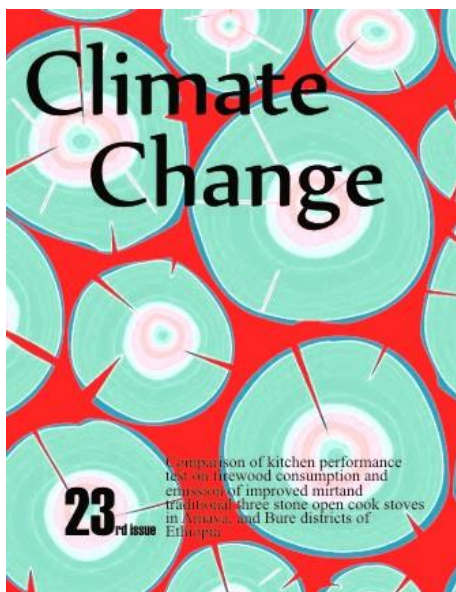


# Climate Change

## About the Cover



Firewood biomass has been the main source of energy for cooking in Ethiopia. Such biomass is used in inefficient traditional open three stone/ point stoves that created wastage of wood. Although improved stoves were distributed since 1980s to improve the efficiency of the traditional open three stone stoves, a number of households still use traditional open three stone stoves. National Improved Cook Stoves Program was designed to distribute 34.2 million improved stoves up to the year 2030. The production of improved cooking stoves has been growing over time by different organizations. Then cookstove testing was crucial because we can't know what problem exists without testing. The objective of the present study was to test kitchen performance on fire wood consumption of distributed stoves called "mirt" improved "injera" baking stoves. *Injera* is a traditional staple food in many parts Ethiopia made from Teff plant (*Eragrostis*). The study was conducted in two districts, Bure, and Ameya of Ethiopia, in 100 households each. Locally dried firewood used during baking was weighed directly after measuring the moisture content of the wood. Then the amount of wood consumption was compared between mirt and open three stone stoves and the opinion of local people was interviewed about the improved stoves. Quantitative data was analyzed by SPSS and excel software. In the districts studied, women using improved *mirt* stove protected their hands from fire burns. Mirtstove reduced wood consumption, enduse emission and deforestation by 37.4% in Bure and 42% in Ameya. The efficiency was lower than other mirt stoves elsewhere because of size unfitness of plates with stoves. Therefore, awareness creation should be made on management of improved mirtstoves and linking of mirt stove and plate manufacturers. (Ref: Miñtah Fekadu, Zenebe Mekonnen, Muse Tesfaye. Comparison of kitchen performance test on firewood consumption and emission of improved mirt and traditional three stone open cook stoves in Amaya, and Bure districts of Ethiopia. *Climate Change*, 2021, 7(23), 1-10).

### **Comparison of kitchen performance test on firewood consumption and emission of improved mirt and traditional three stone open cook stoves in Amaya, and Bure districts of Ethiopia**

Miftah Fekadu, Zenebe Mekonnen, Muse Tesfaye

Firewood biomass has been the main source of energy for cooking in Ethiopia. Such biomass is used in inefficient traditional open three stone/ point stoves that created wastage of wood. Although improved stoves were distributed since 1980s to improve the efficiency of the traditional open three stone stoves, a number of households still use traditional open three stone stoves. National Improved Cook Stoves Program was designed to distribute 34.2 million improved stoves up to the year 2030. The production of improved cooking stoves has been growing over time by different organizations. Then cookstove testing was crucial because we can't know what problem exists without testing. The objective of the present study was to test kitchen performance on fire wood consumption of distributed stoves called "mirt" improved "injera" baking stoves. *Injera* is a traditional staple food in many parts Ethiopia made from Teff plant (*Eragrostis*). The study was conducted in two districts, Bure, and Ameya of Ethiopia, in 100 households each. Locally dried firewood used during baking was weighed directly after measuring the moisture content of the wood. Then the amount of wood consumption was compared between mirt and open three stone stoves and the opinion of local people was interviewed about the improved stoves. Quantitative data was analyzed by SPSS and excel software. In the districts studied, women using improved *mirt* stove protected their hands from fire burns. Mirtstove reduced wood consumption, enduse emission and deforestation by 37.4% in Bure and 42% in Ameya. The efficiency was lower than other mirt stoves elsewhere because of size unfitness of plates with stoves. Therefore, awareness creation should be made on management of improved mirtstoves and linking of mirt stove and plate manufacturers.

*Climate Change*, 2021, 7(23), 1-10

## Climate Change & Agriculture

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### **Analysis of Household Response Farming Techniques to Climate Change in Southeast Ethiopia**

Siraj Beshir, Fitsum Bekele, Behailu Legesse, Wogayehu Legese, Jemal Abdulkarim

Response farming to climate change work towards reducing the vulnerability of the agricultural sector to climate change. Therefore, the objective of this research was to assess the response of farmers towards climate change in the target districts of bale zone. Thus, cross-sectional research design having multi stage stratified sampling procedures was followed to achieve the study objectives related with farmer's response towards climate change. Sinana, Ginir and Dallo Mana were purposefully selected from each strata of Bale zone based on the presence of meteorological station. Two kebeles from each district and a total of 370 households for this study and for each kebele it was proportionally calculated. Different research approaches were used to collect data from primary and secondary sources. Quantitative data was analyzed by using descriptive statistics and inferential statistics using SPSS 20 version software. Response farming practices like soil and water conservation, irrigation practices and crop diversification of the community to climate change and adjustment of crop water requirement scenarios was observed in the study districts. Therefore, emphasis on maintenance and conservation of response farming to climate change practices, improve extension service, information availability, and credit saving institution should get attention by all stakeholders.

*Climate Change*, 2021, 7(23), 11-24

### **Assessment of Climate change impact on wheat yield in Western Dry Region: A District level analysis**

Surendra Singh, Sanatan Nayak

By using district-level data and robust OLS model, present study attempted to calculate and predict the climate change impact on wheat yield in western dry region. Study findings reveal that wheat yield declined by up 4% during 1966-2011 in Bhulwara, Ganganagar and Sirohi districts. Prediction results show that wheat yield would decline up to 21.06% in Ganganagar, 20.77% in Sirohi and 20.71% in Bundi districts in 2080s and lead food crisis in the region. To anticipate the crisis, there is need of a comprehensive combat plan to deal with it. Inherent and planned adaptation strategies i.e., cropping pattern change, use of modern biotechnology, adjustment of sowing dates and diversification in livelihood pattern to deal with climate change.

*Climate Change*, 2021, 7(23), 25-34

**Long-term river runoff in South West Africa: scenario-based assessment of persistent changes**

Kovalenko VV, Gaidukova EV, Diawara H, Bongu E

The technique of assessing the hydrological impacts of climate change is considered in article. Probability characteristics of river runoff in South West Africa were estimated on different climate scenarios. Anomalous zones on norms and coefficients of variation of annual runoff were identified. In these zones the most probable faults in operation of hydrotechnical structures will expect.

*Climate Change*, 2021, 7(23), 35-41

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**Influence of land use and land cover changes on the urban heat island effect over Islamabad**

Yasmeen, Z, Haroon, MA, Tahir MK, Haider S

In this paper, it has been examined how urbanization has affected the Land Surface Temperature (LST) of Islamabad. For this purpose, satellite-based remote sensing techniques were used. Five different images of 1995, 2000, 2010, 2015 and 2018 were selected for spatiotemporal mapping of Land use and Land cover (LULC). Cloud-free images were selected for summer months (May-August) for estimation of LST and Normalized difference Vegetation (NDVI) of the study area. Object orientated classification has been performed along with the multi-resolution segmentation algorithm on LANDSAT TM, ETM+ and OLI satellite images. Based on the ground knowledge, the study area was classified into the water, barren land (rangeland), built-up (residential area) and vegetation. Islamabad has been experiencing rapid urban sprawl from 1995 to 2018 as depicted in the classification results. The results based on classification indicate that the land cover patterns have changed significantly. Islamabad was developed according to the master plan but there is an irregular urban development in the city especially north-east and north-west directions. Due to irregular development along the Expressway, Barakahu and south-western parts of Islamabad, the barren land has been covered with in the built-up land. The LST values lie in the range of (20-45°C) in summer months, while the observed maximum air temperature of Islamabad in summer remains in the range of (30-41°C). Relatively higher LST regions are mainly concentrated along the north-east, south-east and south-west side of the study region due to the low vegetation along the roads and construction of small urban areas irregularly. The thermal contrast between the city and the surrounding environment shows a higher temperature over the surrounding area comparatively then core city of Islamabad.

*Climate Change*, 2021, 7(23), 42-51