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Climate Change Disproportionately Hits Women Farmers

Preliminary Result from Climate Vulnerability Assessment Study in Ethiopia

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Key messages

- The effect of climate change is manifested by increased frequency, duration and intensity of extreme weather and climate events that include unexpected, unusual, severe, or unseasonal weather conditions.
- These primarily range from increases in seasonal temperature involving heat waves, dry spells, and water stress, as well as cold (frost) and changes in the precipitation patterns, including rainfall intensities and flash floods.
- The effects of extreme weather events are seen in rising economic (production) costs, loss of livestock (human) lives, droughts, floods, landslides, and salient changes in agro-ecosystems.
- These results in reduced crop yield, crop failure, reduced soil fertility, loss of vegetation cover, livestock number reduction and land degradation, among other factors.
- Women and men experience the impacts of climate change differently, but considering the existing gender inequalities, these climate crises pose more threats to women and young girls than men.

- Climate change is burdening women to provide energy, water and food for their families and livestock.
- Accordingly, the analysis indicated that women excessively suffer the impacts of climate disasters, as they are more exposed, sensitive and have low adaptive capacity.

Introduction

In sub-Saharan Africa, where most farmers depend on rain, the impact of climate change is significant. Climate change is manifested through rising temperatures, erratic rainfall, and ultimate recurrent droughts and floods (Gitz et al., 2016).

The impact of climate change varies across different regions in the world and different sectors. Its impact may also vary within the age and sex categories of the same country (Awiti, 2022). The differences in vulnerability can be attributed to substantial variations in topography, climate conditions, and ecosystems, as well as differences in the social structures and economic status of different communities (Mekonnen et al., 2019).



Ethiopia is one of the most vulnerable countries in Africa; since the country's economy is mainly dependent on subsistence rain-fed agriculture coupled with high levels of poverty (low capacity for adaptation), population pressure, land degradation, and water scarcity, the vulnerability to climate change is high (Tadesse et al., 2021). In Ethiopia, the number of rainy days has decreased perceptibly, which increases dry spells by 0.8 days per decade, causing crop moisture stress during the growing season. The mean annual temperature has been warming at a rate of 0.12 to 0.54 °C per decade, and it is expected to rise by 1.4 to 4.1 °C by 2080. Average annual temperatures nationwide are expected to rise 3.1°C by 2060 and 5.1°C by 2090 (Rovin et al., 2013).

Methods

The survey was conducted in four districts, namely Doyogena (2521-2810 m.a.s.l), in the Southern Nations, Nationalities, and People's Region, Dodota (1648-1899 m.a.s.l), Hitosa (2158-2525 m.a.s.l), and Tiyo (2220-2638 m.a.s.l) in the Oromia region, Ethiopia (Figure 1). A household survey and Focus Group Discussions (FGD) were used to collect data from 387 individuals (193 Female and 194 Male). A total of eight FGDs were administered to discuss the farmers' perceptions about climate change, identification of climate change events, the impact of the events on their livelihood, and adaptation mechanisms. The household survey questions targeted demography, production systems, climate change events and coping mechanisms, changing roles or activities due to climate change perception etc.

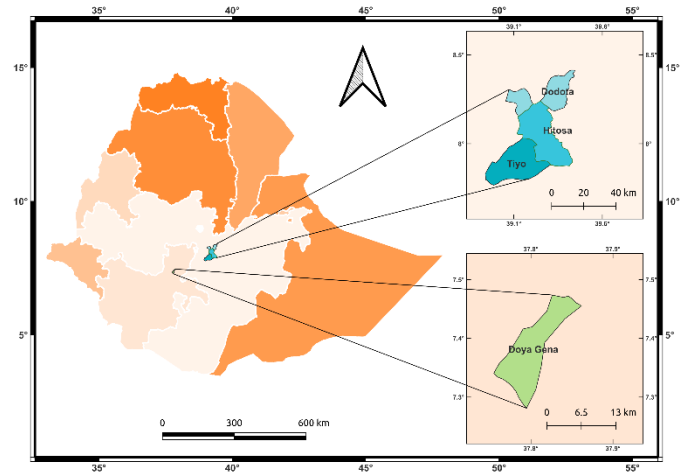


Figure 1. Map of the study areas

Results

Climate change events in the study areas

In the household survey and focus group discussion, farmers were asked to identify climate change events in the past 20 years. The major climate change incidents and devastatingly extreme events are presented in Figure 2 and Figure 3, respectively. In the four study areas, 70% of the respondents claim irregular rain to be the major climate event, followed by high temperature (54%) and higher humidity (32%). In areas where the altitude is above 2000 m.a.s.l (Doyogena, Hitosa and Tiyo), irregular rainfall (73.7%) and high temperature (52%) are identified as the major climate change events (Figure 1). In Doyogena, heavy rainfall (57.3%) is ranked as the third climate change event.

In Dodota, Hitosa, Tiyo and Doyogena, 78.2%, 52.1%, 35.1% and 16.7% of the respondents identify drought as the most devastating extreme climate event, respectively (Figure 2).

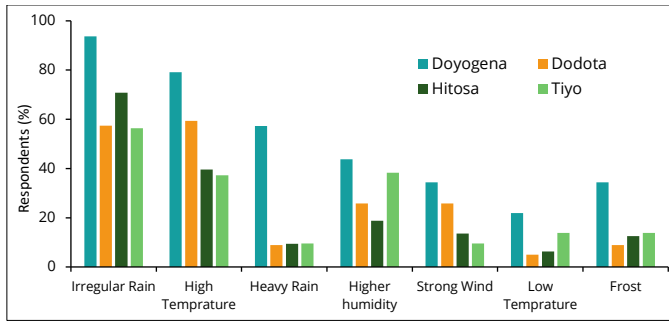


Figure 2. Climate change events in the past 20 years

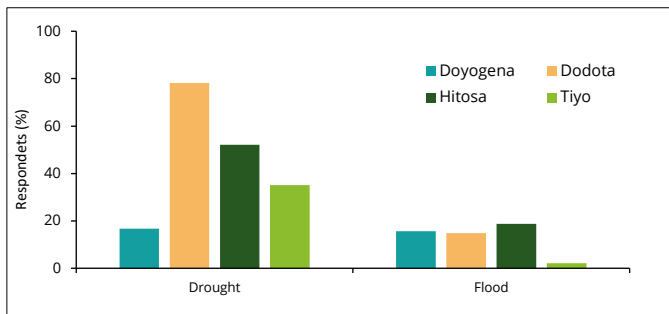


Figure 3. Extreme climate change events in the past 20 years

Impact of Climate change events on farmer's livelihood

The livelihoods of farmers and livestock keepers in Ethiopia are being impacted by climate variability and change, posing serious threats to crop and livestock productivity. In the current study, it has been shown that climate change affects households' livelihoods in different ways. Its impacts range from soil fertility reduction, land degradation, yield reduction, crop failure, water shortage, and loss of crop species.

Women are being overly affected in three ways when crops fail, 1) They lose the yield that could have been gained/ low money in cash for women; 2) they are expected to cook a good meal with the failed crop, and 3) they are expected to harvest because men are unwilling to harvest such a failed crop stating that "this is for women – let them find for them to cook." Water scarcity is also an issue for women, increasing their time to complete their tasks and adding to their burden. The loss of livestock also affects women differently, particularly poultry and milking cows, which means that poultry,

eggs, and milk are left to women to manage and use as they see fit.

The impact of climate change in the four study areas is presented in Figure 4. In all study areas, 77% and 54% of the respondents reported crop yield reduction and crop failure are the major impacts of climate change. On top of that, reductions in the number of livestock (44%) are due to a shortage of feed, water, disease, and pest outbreak because of climate change. In Doyogena, 80% of respondents claim to lose crop species and can no longer plant indigenous crop species due to climate change.

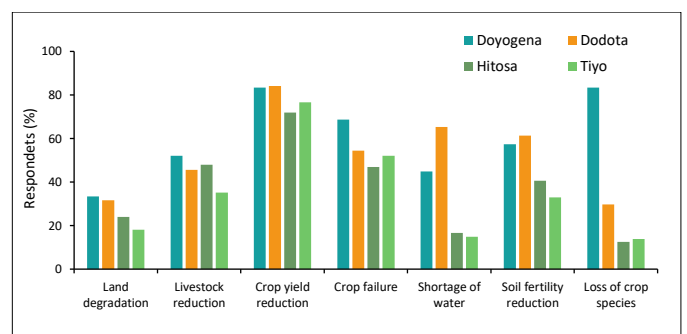


Figure 4. The impact of climate change on household livelihood

Workload on women due to climate change events

Climate change has a distinct impact on women and men – exacerbating women's heavy workload to provide energy, water and food for their families and livestock. Farmers were asked if climate change is impacting women and consequently increasing workload due to climate change. The current study shows that 74% of respondents in all study areas claim that climate change has increased women's workload.

Climate change consequences related to water resources, temperature increases, shifts in precipitation patterns, and a likely increase in the frequency of flooding and droughts. In this study, drought is more pronounced than a flood (Figure 3). This has resulted in water shortage, forcing women to walk long distances to fetch water. They also work extra time in domestic chores, including collecting firewood, processing

and preparing food, traveling, transporting, and caregiving. On top of this, to offset the impact of climate change on household income, they engage in extra off-farm activities such as working for others and trading (Figure 6).

During household surveys and focus group discussions, farmers revealed that climate change impacted women in several ways. Such as:

- In Doyogena, during enset preparation, women suffer from frost and the prolonged preparation phase.
- In Dodota, food insecurity has resulted in a higher risk of depression among rural women. They are expected to take care of all the family even when the resources are scarce.
- In Hitosa and Tiyo, low supplies due to yield reduction and high demand are causing steep price increases, particularly in food commodities.

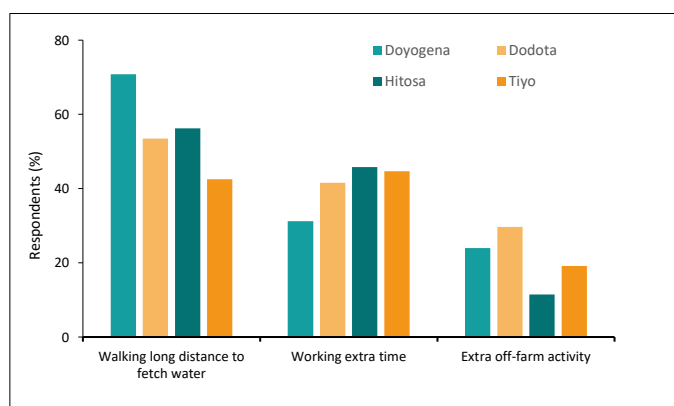


Figure 5. Increased workload on women

Vulnerability analysis using the vulnerability component

Three components (exposure, sensitivity, and adaptive capacity) were considered during the vulnerability analysis. The exposure analysis based on the frequency of climate hazards revealed that the Dodota district is highly prone to drought, followed by floods in Hitosa and Doyogena. Tiyo district is less exposed to these extreme events (Fig. 3).

Sensitivity analysis was used to determine the extent of the climate-induced effect. The result showed that the Dodota district was susceptible to the impact of climate change because their primary source of income is rain-dependent agriculture, and they have a relatively higher family size (6). Second, the Doyogena district becomes sensitive due to the combined effects of decreased soil fertility and high population density (about 9 family size) in a small land holding (0.72ha) per household. Because of their greater landholding capacity and potential production, Hitosa (1.74 ha) and Tiyo (1.1 ha) districts are less sensitive to climate change.

Most districts have an adaptive capacity that will allow them to cope with the disaster. The district of Doyogena has a relatively high adaptive capacity. This was primarily due to their experience in producing diversified crops, enset and cabbage as a cash crop, as well as the availability of training, credit service, 'ekub' and advisory services. And also, they are practicing a Climate Smart Agriculture (CSA) technology. Dodota has low adaptive capacity, whereas Hitosa and Tiyo have medium adaptive capacity. The vulnerability analysis revealed that the Dodota district was highly vulnerable to the effects of climate change, while the rest of the district was only moderately vulnerable.

According to the focus group findings with women and the vulnerability analysis, women are disproportionately affected by the effects of climate disasters. Males own most of the land and have less ownership power; they are not permitted to sell a large kilogram/quintal of grain. They have less access to agricultural extension services, information on markets, and

current issues, and also it would be hard for a woman to find credit from their neighbors.

Accordingly, the analysis indicated that women excessively suffer the impacts of climate disasters, as they are more exposed, sensitive and have low adaptive capacity

Conclusion

Climate change is one of the most significant challenges confronting all climate-sensitive sectors, particularly farmers who rely on rain-fed agriculture. Irregular rain (70%), high temperature (54%) and higher humidity (32%), drought and flood are the most devastating extreme climate change events. Drought and flood are the most common climate change events. Climate change impacts range from soil fertility reduction, land degradation, and yield reduction (77%) to crop failure (54%), loss of crop species, and reduction in livestock number (44%) due to limited feed, water, and disease outbreak.

Climate change has affected both men and women, with women bearing the brunt of the burden. It has been revealed that women are affected in a variety of ways by being exposed to frost for enset preparation, and it takes them longer; they are less privileged to access cash; yield reduction also puts them in a scarcity to purchase food commodities, and they fail to feed their families, putting them at a higher risk of depression.

According to the FGD and vulnerability analysis, disasters disproportionately affect women because they are more vulnerable, sensitive, and have low adaptive capacity. Dodota was also the most vulnerable of the four to climate change, with the rest of the district being moderately vulnerable.

The Way Forward

The analysis in this report provides additional evidence that male and female farmers are vulnerable to climate change, with women being more vulnerable. Districts with better CSA adoption have higher adaptive capacity than those without. If the following changes are made, the current level of vulnerability will be altered in the future:

- Promote CSA technology to increase women's adaptive capacity and labor savings.
- Encourage diversified livelihood/farming system; and
- Support and encourage homegrown adaptation and mitigation options.

Further Reading

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