Climate Change and the Tea Sector in Kenya: Impact Assessment and Policy Action

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Food Security and Nutrition in the Context of Climate Change: An Assessment of Households in Tea Producing Areas of Kenya

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Background

- Climate change affects all sectors of the economy
- It could be making HHs of small scale farmers vulnerable to food insecurity with negative implications for nutrition status
- Limited data on the relationship between climate change, food security and nutrition in tea producing areas of Kenya

Study objectives

- Examine the magnitude of food security and dietary patterns
- Explore whether or not climate variability has led to changes in food and crop composition
- Assess whether or not increased access of women to resources, utilization and decision making improves food security

Objectives Cont'

- Examine the nutrition status of children & mothers
- Explore the association between nutrition outcomes (malnutrition) and contextual variables like farm productivity
- Determine coping strategies to improve food security and associated challenges

Research methods

- Seven tea factory catchments on the Western and Eastern parts, in relation to the Rift Valley, were purposively targeted

Research Methods Cont'

- A cross-sectional study design was employed
- A survey was conducted in 406 households with children below 5 years
- 7 focus group discussions (FGDs) – male farmers
- 1 FGD with female farmers/tea pickers at Tombe and Ragati
- 1 or 2 in-depth interviews at each site

Research Methods Cont'

- Dietary data were collected from 351 care givers
- Anthropometric data of the youngest index child and the mother were taken, specifically, the Mid Upper Arm Circumference (MUAC)
- MUAC of children was taken from 335 households

Quality assurance

- Trained the field staff
- Pre-tested research tools
- Revised tools and noted anticipated challenges
- Reviewed data in the field after collection
- Held debriefing sessions
- Counter-checked data using in-depth interviews
- Cleaned the database

Data Analysis

- Quantitative data were analyzed using Statistical Package for Social Sciences (SPSS) Version 17
- Univariate, bivariate and multivariate analyses were performed using descriptive statistics, chi square, Analysis of Variance (ANOVA) and linear regression
- Qualitative data were transcribed and coded using Nvivo Version 10

Results

- Over half of the 406 HH 232 (57.1%) were food secure
- Respondents 249 (63.4%) attributed this to increased rainfall leading to higher yields of tea and food crops

These days, there is plenty of rainfall in this area. This has increased the amount of food served in most homes … farmers plant many types of food and harvest in large quantities (72 yr old farmer, Momul)

Food security

- 125 (30.8%) HH were partially food secure while 49 (12.1%) were insecure
- Respondents attributed this situation to drought, increased frost, hailstorms, pests and diseases that decrease tea yields and destroy food crops

  Climate change is a major challenge to us. It has reduced tea yields yet we depend on cash from tea to purchase food for our families. *(45 year old farmer, FGD Kiegoi Factory Catchment)*
- Significant differences were found between respondents' reported status of food security and level of income ($\chi^2 = 26.548$, $p < 0.05$), education status ($\chi^2 = 42.186$, $p < 0.05$) and occupation ($\chi^2 = 44.186$, $p < 0.05$)

Dietary Patterns

- HH food diversity score of 9.2479
- There was a difference of (4.35418, $p<0.05$) between Kimunye and Tombe tea factory catchments
- Overall, inter group differences were not significant
- Most HHs 282 (69.5%) reported that their households consumed balanced diet
- A good proportion of cash from tea was utilized to improve nutrition status of HHs
- In 269 (76.6%) of 351 HH, only one food group had been consumed by children in the past 24 hrs

Changes in food composition

- New crops had been introduced in areas of study: e.g. bananas in parts of Makomboki, sweet potatoes and beans in Momul
- Attributed to increased temperatures and rainfall variability
- Harvest time-food produced within HH; Hunger time-food purchased from markets
- Staple food crops are still treasured

Changes in food Compo Cont'

- Limited consumption of stable foods and vegetables

  Ten years ago, members of my HH were always assured of eating food [maize meal]. But these days, food is scarce due to high cost (58 year old male farmer, FGD Chebut Factory Catchment)

  *When there is frost in this area, people consume beans instead of vegetables. (*47 year old female tea picker, FGD Tombe Factory Catchment)

- Failure of tissue bananas at Ragati

  *The tissue bananas that were introduced to this area [when temperatures were warmer] have refused to do well because the area has become cooler than in previous years. (*57 year old farmer, FGD Ragati Factory Catchment)

Changes in food preparation

- Smaller pans are used to prepare meals unlike in the past

- Food is rationed unlike in the past

The portions are smaller and rationed using a knife to ensure that everyone has a share of the limited food. (45 year old male farmer, FGD, Kiegoi Factory Catchment)

Access of women to resources & decision making

- Most respondents 307 (75.6%) observed that increased access of women to resources and decision making could improve household food security

  Yes …. They will grow many varieties of food crops if they access more land. (37 year old farmer, FGD Chebut Factory Catchment)

- Women in the East-more access to resources which contributes to higher food diversity scores compared to the West

Women Access Cont'

- Some FGD respondents supported the proposal but were reluctant to implement it due to conflict of interests over land ownership, control of cash and monopoly of agricultural knowledge

  ***Yes…but women may not know how to apply fertilizers…and need support from men*.** (45 year old farmer, FGD Makomboki Factory Catchment)
- Others opposed due to the patriarchal structure

  Kazi ya wanawake ni kufuata amri . [The role of women is to follow instructions](45 yr old farmer, Tombe Factory Catchment)

Nutrition Status of Children

- . There were no cases of severe malnutrition among children in the study area
- Most children were well nourished 294 (87.7%), those at risk of malnutrition were 28 (8.4%), while the moderately malnourished were 13 (3. 9%)
- WHO prevalence of malnutrition in the study area was 12.3% with a total of 41 children

Determinants of Nutrition Status

- Monthly household income (15.683, $p<0.05$) was found to be a significant determinant of nutrition status
- There was a difference of Ksh 2000 between HHs with well nourished children and those with malnutrition
- T-test ($t=15.683$, $p= 0.000$) between well nourished and malnourished children was significant

Nutrition Cont'

- The cash controlled by women contributed more to food security of households
- Women were reported to be more vulnerable to food insecurity & malnutrition than men

***When there is a shortage of food, women often go without food because they can't eat before serving their children and spouses*.** (47 year old respondent, FGD Tombe Factory Catchment)

Nutrition Status of Mothers

- Most mothers 334 (95.2%) were well nourished, 14 (4.0%) were moderately malnourished, while 3 (0.9%) were severely malnourished
- WHO prevalence of malnutrition was 4.9% with a total of 17 mothers being malnourished

Nutrition & farm productivity

- There was a direct relationship between amount of tea picked by women on daily basis with their nutrition status
- The mean kilograms picked increased from 9.1724 among 3 severely malnourished women to 21.0846 among 14 moderately malnourished women to 29.7968 among 334 women with normal nutrition status

Strategies adapted to cope with food insecurity

- Introduction of new high yielding crops varieties
- Drought tolerant crops such as sweet potatoes, millet, sorghum and bananas
- Skipping of meals
- Alternative livelihoods
- Borrowing from neighbors, shops, merry-go round groups & financial lending institutions
- Food aid from the Government of Kenya and Churches
- Leasing land to grow food crops
- Remittances from friends and relatives

Challenges

- Insufficient information regarding CC
- Fragmentation of Land

The small pieces of land cannot allow us to use tractors to save on time and improve farm production. (56 year old farmer, FGD Tombe Factory Catchment)

- Lack of Market for Alternative Livelihoods

French beans did so well in this area. Had the NGO returned for the produce, people could have continued planting them. (45 year old, Kiegoi Tea Catchment)

-Lack of market for fish at Kimunya

Challenges Cont'

- Unreliability of Remittances

-Survey respondents 228(56.2%) lamented that remittances were too unreliable and unsustainable

- 224(55.17%) respondents identified inability to repay borrowed loans as a challenge
- Lack of Water for Irrigation at Kiegoi
- High Cost of Fertilizer
- Poor Quality Seeds for Food Crops
- High Market Prices of Food

Challenges Cont'

- Planting of Eucalyptus along river sources and destruction of the environment

  The tea factory has finished most trees in this area… If the factory could look for alternative sources of fuel, that would be great…(56 year old farmer, FGD Ragati-Factory Catchment)
- Exploitation of Farmers by NGOs and Individuals who Lease Land

Recommendations

- Farmers need more information on CC to better cope with its effects
- Capacity building is needed so that farmers can irrigate their land and continue harvesting food crops
- Need for value addition to tea crop and food crops by applying enough fertilizer to increase production

Recommendations Cont'

- Need for integrated soil management practices to ensure that soil moisture is sufficient to sustain the growth of tea and food crops
- Women need more empowerment to access and utilize land and cash derived from the sale of tea
- Awareness should be created to men to appreciate the value of co-working with women for improved food security of HHs
- Need for alternative sources of fuel