

An Assessment of Coping Strategies for Drought Induced Food Shortages in Fedis District, East Hararghe Zone, Ethiopia

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Abstract: *The central theme of this study was to explore how the farm households cope with drought induced food shortage at Fedis District. In order to meet this objective, various data collection and analysis techniques were employed. The necessary data were generated from primary and secondary data sources to triangulate or cross check one data collection methods with the other so that its reliability could be maximized. Hence, field observation, household survey, key informant interview and focus group discussions were the principal means of generating primary sources of data while secondary data were obtained from various governmental and nongovernmental organizations documents and reports, books and academic research papers. The collected data were analyzed by using Statistical Package for Social Sciences (SPSS). The study findings revealed that the intensity and frequency of drought has been increasing in the last four decades. In line with this, the number of population exposed for food shortage have been increasing and dependency on external food sources become prevalent recently. In response to this, the farm households develop different coping strategies to overcome the problems of food shortage. The identified coping strategies were borrowing, eating wild foods, migration to surrounding urban areas, selling fuel wood and charcoal, pulling children out of school and petty trading. Depending up on their wealth status and sex, the farm households employ one or the combinations of these strategies to smooth food consumption patterns during drought induced harvest failures.*

Keywords: drought, farm household, coping, coping strategies, food shortage

1. Introduction

Evidence indicates that extreme weather events such as drought, heat and cold waves, heavy storms, floods, rising sea levels and increasing irregularities in seasonal rainfall are increasing with the changing climate. These have been affecting the global food production system, distribution infrastructures, incidence of food emergencies and livelihoods assets (FAO, 2008). Drought is the most climatic phenomenon affecting the livelihoods of millions of population worldwide throughout human history as compared to other climatic induced disasters (IFAD, 2009). It is the triggers of food shortage in lowering yields in crop and livestock production, increasing plant and animal diseases, livestock deaths, insect infestation, forest and range fires, damage to fish habitat, land degradation and soil erosion. Apart from these, it affects human health by increasing the risk of malnutrition, water and food borne diseases (FAO, 2011).

Ethiopia like other developing countries has been exposed to different disasters. Drought is the most common causes of disaster and food crisis in terms of frequency, area coverage and number of people affected (DPPC, 2004). In the last three decades in general (1970-1996), 25 drought events associated with food shortage and famine led to the deaths of 1,200,367 peoples and 60,880,064 affected (USAID, 2003). The DPPC (2004) also noted that there were many drought events occurred even before 1970s which sought for external support. Therefore, Ethiopia as one of the droughts stricken countries in the world is vulnerable to chronic food shortages for the last several decades (ENN, 2011). According to USAID (2003), these are mainly attributed to poor policy and inappropriate use of human and natural resources. These left more than half of the population food

insecure. They are unable to meet the basic requirement for their livelihood even under normal climatic conditions.

East Hararghe is known for their structural food insecurity, proneness to drought and famine. Staple food crop production, maize and sorghum are constrained by erratic and unpredictable rainfall pattern. These are worsened by high population pressure on land, lack of water resource and soil degradation (UN, 2003).

Regarding the study area the population of Fedis district has been food insecure for the last 30 years. Agricultural productivity has been declining from time to time owing to recurrent drought, erratic and inadequate rainfall, massive land degradation, land fragmentation, deforestation and other environmental related factors (SERA, 2000).

Therefore, there is need for research to understand how the small scale farmers cope with drought induced food shortage so as to design appropriate coping options and interventions which are important to enhance the resilience of farmers to drought related shocks. The results of study are helpful to understand the local situation and design appropriate coping options which enhance the resilience of farmers' livelihood in the study area.

2. Location of the Study Area

The study was conducted at Fedis District, East Harearghe zone of Oromia Regional State. Astronomically, it is located between 8° 22' and 9°14' latitude North and 42° 02' and 42°19' longitude East. According to the projection made from 2007 population and housing census, the 2012 total populations of the district are about 130,344 of which 65,976 are male and the rest of 64,368 are females.

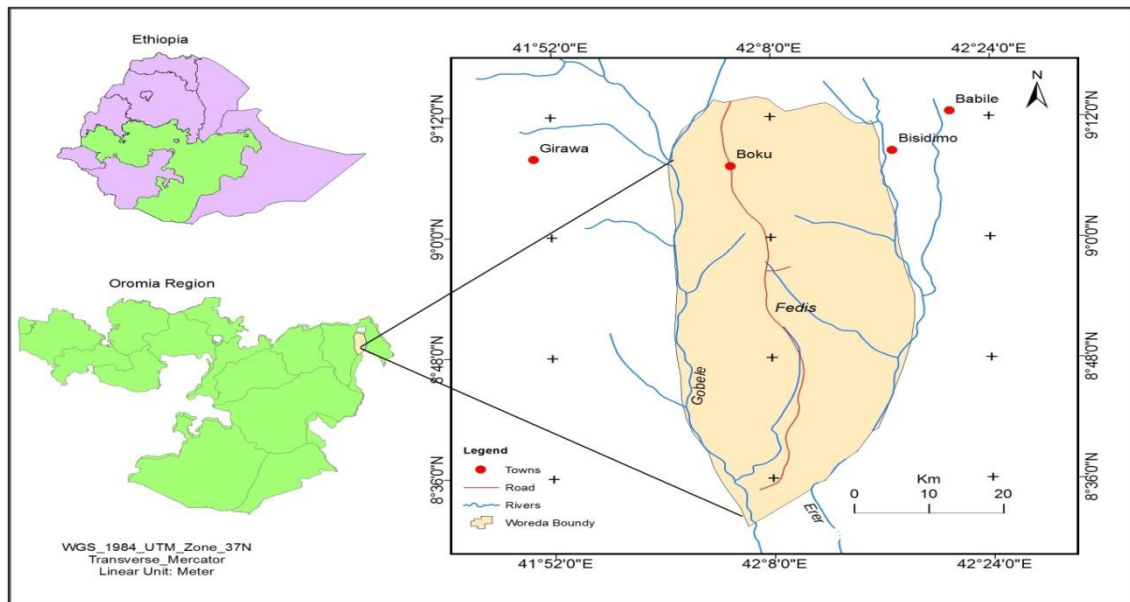


Figure 1: Location of the study area with the map of study area in box

3. Research Methodology

For this study, Survey research methodology was used which mainly relies on discovery of ideas, experiences and insights were conducted. So as to meet study objective, both primary and secondary data collection techniques were employed. The primary data were collected using Household Survey, Focus Group Discussions, Observations and Interview where as the latter collected by investigating the documented materials of different organizations relevant to the study under consideration.

Both probability and non probability sampling techniques were employed in this research. The selections of the study Kebeles (smallest administrative units) were carried out randomly from two agro ecological zones namely Mid land and Low land whereas the sample households were selected by stratified random sampling method. The numbers of selected household heads were proportional to the number of households within each stratum (better off, middle, poor and female households). Finally the quantitative data were analyzed by using SPSS, where as the qualitative data were narrated and described.

4. Results and Discussions

The survey result shows that vulnerability to food shortage were largely increasing over the last couple of years as a result of recurrent drought, erratic rainfall distributions and weed and pest infestation attacking the crop production in the study areas. A part from these, loss of livestock due to diseases, decrease in agricultural productivity due to decrease in per capita land holding, and depletion of household assets were also some the factors contributing to the farm households vulnerability to food shortages. Many informants indicated that the farm households exhibited shock situations when they feel the rain is erratic, sudden fluctuation in price and delayed in expected resources from donors. As a result, migration and joining the saturated urban environment, pulling children from school and illegal cutting of trees for sale were some of the bad story.

4.1 Drought history in the last twenty years

During field work, focus group discussions, key informant interview and document review were made to know the occurrences and frequency of drought in the last twenty years. Thus, the information obtained from these sources compiled as follows.

Table 1: shows Drought history in the last 20 years

No.	Crop Years	Nil	Moderate	Severe
1	1991/92	X		
2	1992/93	X		
3	1993/94	X		
4	1994/95			XXX
5	1995/96	X		
6	1996/97	X		
7	1997/98	X		
8	1999/00			XXX
9	2000/01		XX	
10	2002/03		XX	
11	2003/04		XX	
12	2004/05		XX	
13	2005/06		XX	
14	2006/07*	X		
15	2007/08		XX	
16	2008/09			XXX
17	2009/10		XX	
18	2010/11		XX	
19	2011/12		XX	
20	2012/13		XX	

Source: compiled from key Interview, focus group discussions and document review, 2013

As it is indicated in the table above, the frequency of drought has been increasing. The gap between two consecutive droughts was decreasing from five years to one year. The 1994/95, 1999/00 and 2008/09 were the severe drought years which were mostly remembered by the farm households during discussions. They locally named it 'bara azelo' which means years nothing grown. According to key informants, 1974 was the turning point for the district's crop production. Before 1974, the district's was surplus producers

of cereal crops (sorghum and maize). Above all, it was known by the production and important source of locally named onion called 'Fediso'. However, 1974 onwards, inadequate rainfall has been the major problem to agricultural systems of the area. The rain dependent livelihoods activities were getting deteriorated and the farm households resort to adopt different strategies to cope up the hardest situation at expense of their surrounding environment and socio-cultural aspects.

4.2 Identified coping strategies

4.2.1 Borrowing

Borrowing was one of the strategies that the farm households used in the study area during drought years. Households found in one Kebeles borrow from friends and/or relatives in the other Kebeles, within Kebeles or even from friends or relatives found in other districts with the understanding that the loan will be paid back when the borrower will get good harvest. Household survey result shows that of the total sample households, 68% (100) borrowed grain/cash from friends and/or relatives to cope with drought induced food shortages. Of the total sample households of respective agro ecological categories, about 97.7% (47) of mid land and 53.5% (53) of low land reported that they borrowed cash or grains during drought where as 66.6% (87) of male and 81.2% (13) of female headed households reported that they engaged in similar strategy. From this one can understand that the mid land parts relied more on borrowing than its low land counterparts. This might be due to the fact that there is no such gap among the farm households in terms of wealth at Low land agro ecology to depend on each other during adversity.

With reference to wealth, the majority 82.8% (48) of poor headed households reported that engaged in borrowing cash and/or grains during drought to cope with drought induced food shortages. On the other hand, relatively small proportions of better off and medium also reported engaging in similar strategy. From this, it is possible to deduce that borrowing was a strategy that highly pursued by poor headed households since the problem of food shortage was more serious for this sections of the society. Thus, they depend on others for their problems.

4.2.2 Selling Livestock

According to the farm households, it is difficult to rear livestock even under normal weather conditions due to problems associated with lack of grazing land and water. Hence, they only keep small number of livestock in order to sell them during adversity. According to the focus group discussions, the farm households do not resort to other coping options like migration, eating wild foods as far as they own livestock. Selling livestock resources were the major coping strategies to them. Shoats and small other ruminants were the most preferred to sell during drought years to access cash and/or grain. The survey result revealed that of the total sample households, about 45% (66) reported that they sold livestock during drought.

Of the total sample households surveyed, about 89% (43) of mid land and 23% (23) of Low land agro ecology reported that they sold livestock to purchase food grains during drought. This is due to the fact that the former agro ecology more entitled to livestock resources as compared to its counterparts. On contrary to this, the low land part repeatedly stricken by the drought and prone to acute water and pasture problems so that the areas experiences low entitlement to the livestock resources. As compared to female headed households, more male headed households relied on this strategy to cope with food shortage. This might be attributed to differences in livestock ownership between male and female headed households.

According to the survey result, the largest proportion, about 75% (21) and 56% (25) of better off and medium headed households respectively reported that they sold their livestock during drought to purchase food. On the other hand, small proportion of poor which constitutes about 28% (16) used similar strategy to purchase food grains for their family. This is due to the fact that the better off and medium households have more livestock for marketing purposes. Thus, they preferred to sell their livestock than resorting to other coping options.

4.2.3 Eating wild foods

Eating wild foods was one of the means to cope with food shortages during severe drought years. During the survey, *Manihot esculenta* (*Muka dekika*), *Portulaca quadrifida* (*Marare*), *Opuntia ficus-indica* (*Tini*), *Agave sisalana* (*Kacha*) and *Aloe* (*Argisa*) were identified wild foods consumed during drought years to smooth food consumption patterns. With the exception of *Portulaca quadrifida* (*Marare*), all are moisture stress plants.

Of the total sample households, 34% (50) responded that they engaged in gathering wild foods during drought years. About 83.3% (40) of Mid land and 10% (10) of Low land reported that they used wild foods to smooth food consumption patterns during drought. This is due to the fact that the Mid land agro ecological zone experienced more opportunities to access these plants due to its physical abundance and accessibility to the farm households. For instance, *Manihot esculenta* (*Muka dekika*) which was commonly reported coping plants by the farm households and *Portulaca quadrifida* (*Marare*) the second commonly reported drought coping plants are abundantly available at this agro ecological zone.

From the total sample households of the respective wealth categories, about 36% (16) and 38% (22) of medium and poor headed households reported that they used wild foods to smooth food consumption where as 21% (6) of better off households also reported that they engaged in similar strategy. Though poor and medium headed households seem more engaged in this strategy, the differences among wealth categories are not significant. Thus, it's possible to deduce that gathering wild foods was a strategy pursued almost equally by all household categories. This might be attributed to the fact that the households can obtain those foods from their village regardless of cost.



Figure 2: shows Agave Sisalana (Sisal/Kacha) and Manihot esculenta (Cassava tree/Muka dekika) taken during the survey at Belinarba and Nega Umarkulle kebeles

4.2.4 Migration

Fedis district farmers are known by their migration to the nearby towns and cities during drought. Owing to regular occurrences of drought, the farm households lost their purchasing power, economic and ecological base in their native place of residence. Thus, some people migrated to distant places outside the district to pursue livelihood strategies other than agriculture.

Of the total sample households, about 33 % (48) reported that they migrated to the surrounding urban environment in search for better livelihoods during harvest failure. In relation to agro ecology, nearly 21 % (10) of Mid land and 38.4 % (38) of low land areas reported that they engaged in migration to cope with drought induced food shortage. From this, it is possible to deduce that the Low land areas were more engaged in migration because of low coping options and capacity to cope with adversity. This is consistent with the information obtained from key informants that the low land agro ecological zone was more engaged in this strategy than its counter parts. With respect to sex of the households, the survey result indicated that equal proportions of both sexes migrated in search for better livelihoods.

The survey result also revealed that among the total poor headed households surveyed, 48 % (28) migrated to urban areas for employment opportunities where as 20 % (9) of the medium and 21 % (6) of better off similarly engaged in this strategy for better livelihoods during drought. Thus, it is possible to deduce that poor household heads migrated to the surrounding urban areas as compared to medium and better off which are mainly attributed to limited asset bases to withstand the problems arising out of rainfall shortage.

According to the information obtained from key informants and also during the discussion with the respondents there are two distinct types of migration observed at their locality. The first one is the type of migration in which the male household head migrated to the surrounding urban areas like Harar, Aweday, Hargeisa, Jijjiga, Diredewa, Bable, Haremaya, Kobmolcha and to other districts where crop production is relatively better. It is the common type of migration carried out mainly during normal and moderate drought years to bridge the annual food deficit encountered their family. The second type of migration is under the situation when the whole families leave their places of residence and migrate to the nearby urban areas. It is spontaneous migration arising as a result of recurrent production failures.

4.2.5 Selling firewood

Selling firewood is a common practice in the study areas during normal as well as bad agricultural years especially for poor and female headed households. Unlike the normal agricultural years, it has been intensified during bad years by all household categories. According to the information obtained from the district's food security office head, increasing number of fire wood sellers has been served as an indicator for food shortages in the last several agricultural years.

As per the survey result about 29 % (29.3) of Low land and 14.6 % (7) of Mid land respectively reported that they engaged in selling firewood to cope with drought induced food shortage. The proportion was higher for low land due to the fact that the low land areas are more accessible to Gobelle and Erere mountains where the natural forests are relatively abundantly available. Besides, the low land areas have limited coping options and thus restored to selling firewood. With respect to sex of the households, about 43.8 % (7) of female headed households engaged in this activity during drought which is higher proportions as compared to male counter parts.

Of the total poor headed households, about 31 % (18) reported that they sold firewood to cope with drought induced food shortage. On the other hand, relatively small proportions 16 % (7) and 14 % (4) of the total medium and better off households respectively similarly engaged in this practices to cope in adversity. This shows that the poor headed households have limited asset bases and easily resort to selling firewood as compared to other wealth categories.

4.2.6 Pulling out children from school

Children's school dropouts were one of the common drought coping strategies at the study area. As survey result indicated, equal proportions of farm households pulling out children from school regardless of agro ecology and sex during drought years. During focus group discussions, the farm households noted that they do not care about their children's education during food shortage. Rather, they prefer to engage them in casual labor in order to obtain cash income or they send to other districts to live with their relatives or friends deemed crop production are better.

As per the survey result, of the total poor, medium and better off households, about 29 % (17), 20 % (9) and 18 % (5) respectively responded that they withdrew children from school during drought. This shows that all wealth categories did not want to teach their children during drought. The farm

household were asked to state reasons for school drop outs in their order of importance. Accordingly, about 49 % (17) and 37 % (13) responded that to engage in casual labour and lack food, to engage in casual labour alone were among lion share reasons to withdrew children from school at the study area during drought.

4.2.7 Petty trading

According to the livelihoods study report by East Harerghe Zone (2008), the road access and market conditions of the study area are rated as good. The district is accessible to major towns of Harar, Dire Dewa, Haremaya, Aweday Kombolcha and Jijjiga. Groundnut and Khat are the main cash crops traded from local markets to Harar, Dire Dewa, Aweday, Haremaya, Kombolcha and Jijjiga. It also traded among different Kebeles within the districts and among different districts. Apart from these, biscuits, tea, bread, sugarcane, banana, onion, tomatoes, buying and selling of small ruminants are small trading activities carried out during the normal period along the major transportation routes and market places around the villages. These activities were intensified during drought years. Specifically, food related items were said to be highly traded. Despite of its variations among the Kebeles, the numbers of peoples engaged in these activities were increasing during harvest failure. During field survey, there was hot marketing of Khat and other products at the Nega Umakulle Kebeles throughout the week before mid- day. It is the most accessible market area for towns of Haramaya, Babile, Harar, Diredeba and located along the road from Harar town to Midega tola (other district). These created an enabling environment to widely engage in trading activities for farm households resides in the area. Farm households at Belina arba and Agudora were similarly engaging in these activities at market places found at their villages.

The survey result shows about 14.6 % (7) of Mid land and 24.2 % (24) of Low land reported that they engaged in petty trading during drought whereas about 18.3 % (24) of male and 43.8 % (7) female headed households engaged in similar strategy. From this it is possible to deduce that the Low land and female headed households more engaged in this activity as compared to Mid Land and male headed households. The survey result also shows that of the total better off households, about 35.7 % (10) engaged in petty trading

where as relatively small proportions of poor 12 % (7) and medium households 16% (7) also reported that they engaged in this activity during drought. From this, one can understand that the better off and female headed households were more engaging in the activity during drought years. According to the information obtained from key informants and own observation, female headed households are highly engaging in petty trading during normal as well as drought years which is mainly associated with traditions. The traditional Khat dealers are mostly female headed households at the study area. Thus, it is the matter of maintaining their businesses during adversity. But for better off and medium headed households, petty trading is not common activity during normal period since they are mainly obtained income from crop and livestock production sales at different scales. The poor less engaged in petty trading activities during normal as well as drought years. This might be attributed to lack of start up money or financial constraints. This is contradictory with the findings arrived at most of the petty traders were poor during drought at Humbo woreda, SNNP (Getahun, 2006).

During focus group discussions, the farm households noted that the large numbers of petty traders were females during drought. Females were less active in searching for local labour outside the district (land preparation, weeding, harvesting) and migrating to far distant in search for employment rather they preferred to engaging in small businesses at their locality. This is consistent with the finding that most females were petty traders during drought at the pastoralists' areas of Shinile districts (Mulu, 2010). On the contrary to this, the farm households noted that female headed households immediately stops after getting married since they become busy in routine activities and caring for their children.

One focus group discussants shared his life experiences as follows:

".....Before I got married to my wife, she was Khat traders. I thought that she will continue after marriage so that our family could lead successful and happy life. But everything has been changed after marriage. She immediately stopped to engage in such activities and started to wait for income from crop and livestock sale....."



Figure 3: shows petty traders along the road from Harar to Midegatola at Umakulle Kebeles

4.2.8 Preferred future coping mechanisms: discussions

In order to minimize the effects of frequent drought, households identified the preferred future coping strategies

specific to their district. These are petty trading (like Khat , livestock, food items, and cereals trading), temporary migration of male headed households to urban centres (for

works like construction, Khat processing, and for employment opportunities like guards), migration to other districts (for works like land preparation, weeding and harvesting), fattening livestock, strengthening the culture of interdependence during adversity (borrowing from friends, gifts), small scale irrigation agriculture (which is very difficult to really exercise it), cultivating short cycle and drought tolerant sorghum and maize, diversification of livestock and crop types, saving and educating children were raised preferred coping options suggested by the farm households during discussions.

5. Conclusions

The study revealed that the frequency and intensity of drought has been increasing while the farm households' drought coping options has been decreasing in the last few years. The livelihoods of the study population getting deteriorated 1970s afterwards and thus the farm households exposed for chronic food shortage. In line with this, dependency on external food sources has been increasing. In addition to frequent drought, vulnerability to food shortage has been increasing owing to low entitlement to productive resources like farm land, livestock resources and farm oxen which are the determinant factors for food availability at household level. Despite of positive relationship between availability of food from own harvest and productive resources, the study findings revealed that the farm households have low entitlement to these resources because of frequent drought that decreasing livestock ownership, increasing population pressure on limited land which further undermines crop production and productivity and coping capacity of the households. The problems are found to be severe for poor and female headed households and low land within agro ecology.

In response to frequent drought and subsequent food shortage, the farm households adopt different coping strategies to smooth food consumption patterns. Borrowing, selling livestock, eating wild foods, migration to urban centers, selling fuel wood, pulling children out of school to engage in casual labor and small business activities are the identified strategies adopted to increase food availability during drought. The finding shows that though all strategies are adopted during drought at a different degree by all household categories, the wealth status regardless of agro ecology determines the specific strategies that the farm households first resort to. Thus, borrowing, migration, selling firewood and eating wild foods are mainly adopted by poor and female headed households whereas selling livestock is strategies mostly pursued by better off and medium households. Petty trading is strategies highly pursued by better off and female headed households. Besides, the farm households do not want to send their children to school regardless of wealth status during harvest failure.

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