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Full Length Research Paper

Challenges and contributions of informal finance to the livelihoods of rural households in Gamo Gofa Zone, Ethiopia

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This study was to identify challenges and contribution of informal financial services on rural households' livelihood in selected Woredas of Gamo Gofa Zone. A multistage sampling technique was employed. Primary data on households' motives, challenges and contribution of informal financial services were collected from household heads and focus group discussants. The collected data were analysed using descriptive statistics and inferential statistics. Users reported the transaction cost to access the service in informal financial services is low while others reported that the service is responsive for immediate problems. Users also reported that the service doesn't need any criteria to be member while and some households are using informal financial service because of no more options available in the area. Others reported that the participation in the service has social benefit as it increases social networks, connectedness and the service doesn't need collateral. Lack of legal support, lack of trainings, administration of members, small money size, undocumented money transfer are among challenges of informal financial services. Informal finance contributed as source of money for non-farm activities partially and fully. Legal support, training and linking informal and formal financial service institutions need future intervention.

Key words: Informal finance, challenges, contribution.

INTRODUCTION

Availability of key-assets (such as savings, land, labor, education and/or access to market or employment opportunities, access to common property natural resources and other public goods) is an evident requisite in making rural households and individuals more or less capable of diversifying their livelihood (Ellis, 2000; Barrett et al., 2001). Sustainable livelihood framework

adapted by Chambers and Conway (1991) identified five important assets for livelihood (physical, natural, social, human and financial assets).

Low income households in developing countries are seen as particularly vulnerable. Their personal problems of low education and skill levels, low incomes, lack of marketable assets, and uncertain job markets have been

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compounded by external factors that have failed to provide adequate infrastructure and social services that would have enabled them to participate in mainstream economic activities. As a result, this has affected every facet of their life: employment (predominantly in the informal sector), education (non-existent or up to primary levels only), health (low quality or traditional), housing (impermanent materials and illegal settlements) etc (Hari, 2016).

According to Ashenafi (2015), informal financial market is important for households who are far away from formal one. However, informal financial markets are rudimentary, poorly organized and limited to small close friendship or neighborhood.

Informal financial service involves diverse forms which is aimed at meeting different needs like; consumption smoothing, enterprise financing and promoting savings (Michael, 2015).

The economic situation of rural households in Ethiopia is highly constrained with financial capital shortage due to the nature of economic structure which is predominantly depending on rain fed and subsistence agriculture. For many rural households in most developing countries, it is difficult to access financial sources due to complicated challenges. For this, rural households use informal financial services as important source for financial access.

Mwangi and Kimani (2015) identified poor governance of the groups, low attendance of group meetings, defaulting by members, poor record keeping, poor group leadership, lack of clear structure to guide group operations, conflict among members, low income, burden of gender roles, capacity building of informal finance and mechanisms to enforce group registrations as challenges facing informal financial groups in Kenya.

Basic education of business operators, maladministration of the business, inadequate finance, lack of registration by the government, and the problem of high interest rate are among the problems/challenges identified by Adetilo (2006).

Dejene (1993), in his study, pointed that *equb* (informal financial institution) has encountered some problems of default. A member may not be able to pay his dues as a result of business failure or for other reasons. In that case guarantors are obliged to cover the default.

In Ethiopia, informal financial services are used for diverse financial needs of rural households. Due its nature, the sector lacks important technical and institutional support from development organizations and the government.

The sector also faces various challenges which are affecting its possible contribution towards rural households' livelihood. However, these challenges are not well studied and documented for possible interventions. Therefore, it is quite important to study contribution of informal financial services for rural household livelihood and challenges that the sector is

facing.

RESEARCH METHODOLOGY

Description of the study area

Gamo Gofa Zone is one of 14 Zones of the Southern Nations, Nationalities and People Regional State (SNNPRS) and consists of 15 rural districts and two town administrations namely, Arba Minch Zuria, Mirab-Abaya, Boreda, Chench, Dita, Kucha, Daramlo, Bonke, Kemba, Zala, Ubadebretsehay, Oyida, Demba Gofa, Geze Gofa and Melakoza; and two reform towns called Arba Minch and Sawla. Gamo Gofa Zone lay center of the region around 5°57 – 6°71 N latitude and 36°37–37°98 E longitude. Gamo Gofa general elevation ranges from 680 to 4207 m.a.s.l. and it receives 600 - 1600 mm rainfall per annum and annual temperature ranges from 10 to 34°C (CSA, 2007). The Zone has a total population of 1,593,104, of whom 793,322 are men and 799,782 women; with an area of 18,010.99 square kilometers, Gamo Gofa has a population density of 144.68; while 157,446 or 9.88% are urban inhabitants, a further 480 or 0.03% are pastoralists. A total of 337,199 households were counted in this Zone, which results in an average of 4.72 persons to a household, and 324,919 housing units (Gamo Gofa Zone Agriculture and Natural Resource Department, 2016). (Figure 1)

Research design

Descriptive survey research design was followed as descriptive research is used to obtain information concerning the current status of the phenomena and to describe "what exists" with respect to variables or conditions in a situation.

Sampling techniques

In this research, multistage sampling technique was followed. Gamogofa Zone was purposively selected for its convenience and resource limitations. Three *Woredas* were randomly selected through simple random sampling technique and two (2) *Kebeles* (lower administrative structure in Ethiopia) from each *Woreda* were randomly selected assuming that informal finance is practiced in all *Woredas* and *Kebeles*. Users of informal financial services were selected following snow ball sampling as there is no documented list of users of informal financial services in the study area. 100 users of informal financial services were sampled from three *Woredas*.

Data types and sources

Households background characteristics (age, sex, family size, number of economically active family members, educational level of household heads), land holding size (farm and irrigation land), contact with agricultural extension agents, membership in cooperatives, number of livestock ownership (number of oxen), family labour supply, distance to the urban center, presence of transfers, remittance, and pensions, history (failure) of previous loan, perception towards formal financial institutions, households reason for using informal financial sources, challenges of informal financial services, households utilization of money they get from informal financial sources and others will all be collected from respondent households.

Formal saving and credit services, cooperatives, presence of awareness creation, training by formal financial services, credit

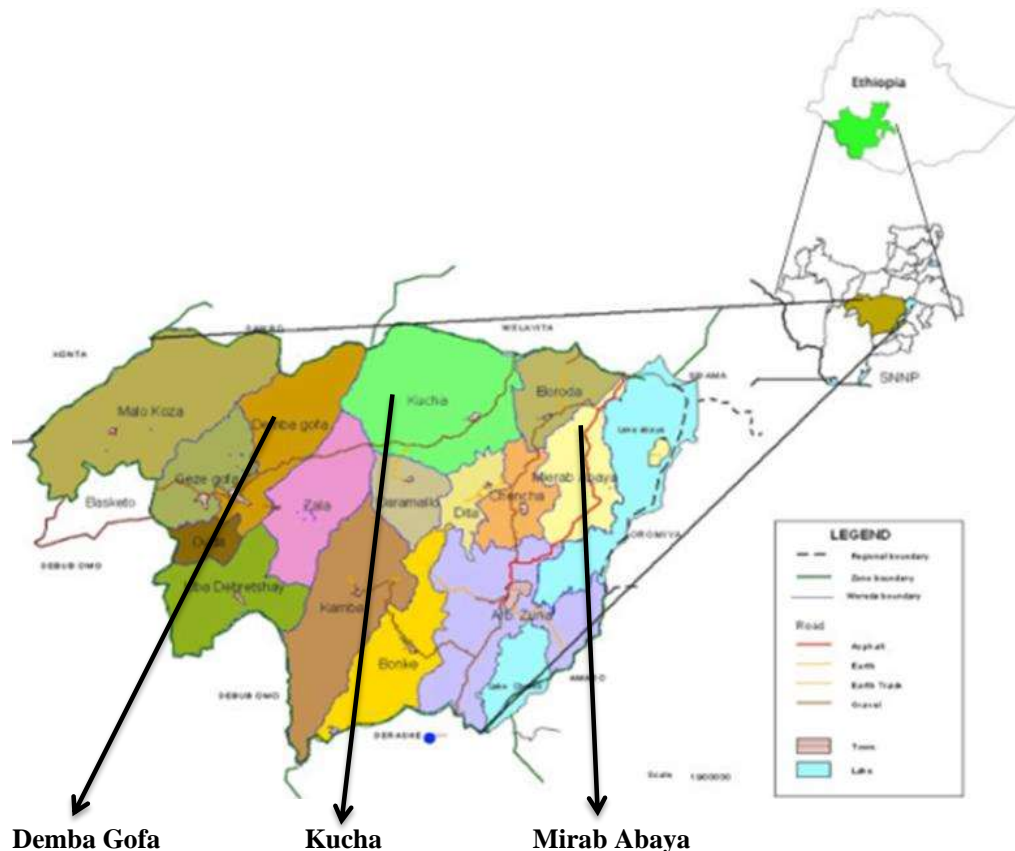


Figure 1. Map of the study area.

amount, criteria for formal lending, challenges of financial services, wealth grouping and status of the households collected from *Kebele* offices.

Methods of data collection

Data from respondent households were collected through interview schedule, key informant interview and Focus Group Discussion (FGD) while secondary data were collected through reviewing available files, reports, and website documents.

Methods of data analysis

Descriptive data were analysed using descriptive statistics such as; percentage, mean and frequency while comparison and association of different groups on different household characteristics was done by using t-test and chi-square with SPSS version 16.

RESULT AND DISCUSSION

Household characteristics and use of informal financial services

As depicted in Table 1 to 3, out of ten categorical variables of the study, 3 variables (saving history of the

household, presence of other income sources and livelihood strategy of the household) have significant association with use of informal financial services at significance level of 1 and 5%.

Gender of household heads and use of informal financial services

Out of 204 sample respondents, 137 were male headed households whereas 65 were users of informal financial services implying that 65% of users of informal financial services were male headed households while 67 sample respondents were female headed households, and 35 respondents (35%) of respondents out of 100 users of informal financial services were female headed households. This indicates that in sampled areas, male headed households are participating more in informal financial services than female headed households which is against prior expectation of this research where male headed households were less expected to use informal financial services as formal financial services with more favoring men than women due to resource endowment for collateral and other social status which make them more trusted for loaning by financial institutions and

Table 1. Statistics of respondents by *Woreda* and *Kebele*.

Name of the <i>Woreda</i>	Name of Kebele	Use of informal financial Services		Total
		Non-user	User	
Demba Gofa	Borda	19	9	28
	Zanga dormale	10	20	30
	Total	29	29	58
Kucha	Baso	29	27	56
	Gale	23	23	46
	Total	52	50	102
Mirab Abaya	Yayke	12	10	22
	Morode	11	11	22
	Total	23	21	44
Total		104	100	204

Source: Own Survey Data (2018).

Table 2. Type of informal financial services households using in the area.

S/No	Type of informal financial services	Frequency	Percent
1	Small size weekly rotating saving (“ <i>shufo</i> ”)	32	32
2	Large size weekly rotating saving (“ <i>equb</i> ”)	38	38
3	Long term saving (“ <i>traditional Bank</i> ”)	6	6
4	<i>Shufo</i> and <i>equb</i>	24	24
	Total	100	100.0

Source: Own Survey data (2018).

finding group members for group lending. However, there is no significant association between gender and use of informal financial services.

Educational level of household heads and use of informal financial services

Though educational level of respondents is not significantly associated with use of informal financial services, 71 and 62 respondents from non-users and users of informal financial services respectively attended primary education while 10 and 12 respondents from non-users and users respectively attended secondary education. The results shows that 12% of users and 10% of non-users attended secondary education while 2% of users and 0% of non-users attended secondary education which is against prior expectation as education level expected to affect use of informal financial services negatively. This result is similar with Eshetu (2015) whose study on “*determinants of credit constraints in Ethiopia*” found that educated respondents use informal finance while their uneducated counterparts pick formal

financial sources.

Wealth status of household and use of informal financial services

Wealth status of households is an important variable expected to affect households’ use of informal financial services. The highest number of respondents of both non-users and users 46 and 53 were medium while the least number of non-users were better-off households while the least number of user households were poor indicating even better-off households are using informal financial services in sampled areas, highlighting importance of the sector for livelihood of rural households in the area. Shocking result here is that out of 55 poor households, only 21 (38.2%) households use informal financial services while 34 (61.8%) did not use informal financial services. As it is difficult for poor households to access formal financial services, this obviously confirms that their financial need is still not addressed well by any financial service providers which would worsen their livelihood and poverty situation. This also opposes initial

Table 3. Descriptive Statistics of respondents.

Variable		Use of Informal financial services				χ^2	Sig.
		Non-user	User	Total	%		
Gender	Male	72	65	137	67.2	0.414	0.52
	Female	32	35	67	32.8		
Educational status	Not attended formal Education	23	24	47	23.05	2.37	0.43
	Attended primary Education	71	62	133	65.19		
	Attended Secondary Education	10	12	22	10.78		
	Attended post-secondary	0	2	2	0.98		
Wealth status	Poor	34	21	55	27.00	3.57	0.17
	Medium	46	53	99	48.50		
	Better off	24	26	50	24.50		
Saving history	Not saving	35	17	52	25.50	7.44	0.00***
	Saving	69	83	152	74.50		
Livelihood Type	Agriculture only	73	37	110	53.92	25.28	0.00***
	Trade	4	5	9	4.41		
	Agriculture and Trade	12	29	41	20.10		
	Agri. and other non-farm	15	26	41	20.09		
	Other unskilled non-farm	0	2	2	0.98		
	Other skilled non-farm	0	1	1	0.49		
Presence of transfer, pension and Remittances	No	78	87	165	80.88	6.57	0.03**
	Yes	26	13	39	19.12		
Frequency of contact with Agri. Extension	Less frequent	15	18	33	16.18	0.76	0.68
	Frequent	27	28	55	26.96		
	Very frequent	62	54	116	56.86		
Use of formal financial service	No	42	49	91	44.61	1.53	0.21
	Yes	62	51	113	55.39		
Failure of previous formal finance	No	65	71	136	66.67	1.65	0.19
	Yes	39	29	68	33.33		
Access to formal finance information and training	No	50	45	95	46.57	1.22	0.54
	Yes	54	55	109	53.43		

*** and ** (χ^2 significant at 1 and 5% significance level respectively).

expectation as better-off households have better access to formal finance therefore were less expected to use informal financial services.

Livelihood strategies and use of informal financial services

Out of 100 respondents of informal financial service users, 63 (63%) of respondents depend on non-farm income activities (5% in trading, 29% in agriculture and

trading, 26% in agriculture and other non-farm income, 2% in unskilled non-farm income activity and 1% in skilled non-farm income activity). 73 (70.2%) of non-users of informal financial services depend only on agriculture while only 37 (37%) of users of informal financial services depend on agriculture. This shows households using informal financial services have diversified income activities which is desirable with current vulnerable agricultural economy. Therefore, it can be concluded that informal finance encourages rural non-farm income diversification. χ^2 test also shows that there is significant

association between use of informal financial services and presence of transfer, pension and remittances at 1% significance level.

Presence of transfers, pensions and remittances and use of informal financial services

Prior expectation of the study was that presence of any possibly financial source may solve financial need of households and those households might not opt for informal financial services whereas those without any additional financial source opt for informal financial services. Out of 204 respondents, 165 respondents (80.9%) reported that they have no transfer, pension and remittance while 39 respondents (19.1%) reported they have additional financial sources from transfer, pension and remittance. In agreement with previous expectation, the study result shows that out of 39 respondent households with transfer, pension and remittances, 26 (66.7%) respondents' were not using informal financial services whereas only 13 (33.3%) of respondents were using informal financial services. χ^2 test also shows that there is significant association between use of informal financial services and presence of transfer, pension and remittances at 5% significance level.

Contact with agricultural extension agents and use of informal financial services

In rural areas of Ethiopia, agriculture extension plays a great role in multidimensional areas of livelihood. In this study also contact with agricultural extension agents expected to affect use of informal financial services negatively as those households with very frequent contact may have better access to many formal financial services while those with less frequent expected to depend on informal financial services to meet their financial need. The result shows that out of 204 respondents 33 (16.18%), 55 (26.9%) and 116 (56.86%) had less frequent, frequent and very frequent contact with agricultural extension agents respectively. Out of 33 respondents with less frequent contact majority 18 (54.5%) are users of informal financial services while only 15 (45.5%) are non-users of informal financial services showing households with less frequent contact opting informal financial services. Similarly, out of 116 respondents with very frequent contact, 62 (53.5%) were non-users of informal financial services while only 54 (46.5%) were users of informal financial services.

Use of formal financial services and use of informal financial services

Out of 204 respondents, 91 (44.6%) were non users of formal financial services while 113 (56.4%) of

respondents were users of formal financial services. Out of 100 user respondents of the study, 49 (49%) and 51 (51%) were user and non-user of formal financial services. It can be concluded that some households use both formal and informal financial services. Though there is insignificant difference between the two groups, households not using formal financial services are more than those who use informal financial services and vice versa.

Failure of previous formal financial loan and use of informal financial services

It was assumed that households who loaned from formal financial institutions and failed to be successful in investing and repayment were likely to opt for informal financial services. Out of 204 respondents, 136 (66.6%) reported no failure of previous formal finance loan while 68 (33.4%) respondents reported failure of previous formal finance. The result indicates that out of 104 non-users of informal financial services, 65 (62.5%) and 39 (37.5%) did not report previous failure of formal financial services and reported failure of previous financial services, respectively. This shows majority of non-users of informal financial services did not report failure; therefore, it is possible to conclude that they depend on formal financial services, whereas 71 and 29% of users of informal financial services reported no failure and failure of previous formal financial service respectively.

Access to formal financial information and training and use of informal financial services

Access to formal financial service information and training was expected to affect use of informal financial services negatively. The survey result shows that 95 (46.57%) respondents reported they had lack of access to formal financial service information and training while 109 (53.43%) respondents had access to formal financial service information and training. Out of 100 users of informal financial services, 45 and 55% reported lack of access and presence of access to formal financial service information respectively. This indicates that use of informal financial service is not depending on access to formal financial information and training as 55% of informal financial services users had access to the information and training of formal financial services, but still using informal financial services which highlights the continued function and importance of the sector even for the future.

Descriptive statistics of respondents by continuous independent variables

As evident in Table 4, out of 8 continuous variables of the

Table 4. Descriptive Statistics of Respondents by continuous independent variables.

Variable	Use of informal financial Services	Mean	t- Value	Sig.
Age of respondent household head	Non-user	42.65	2.76	0.09*
	User	41.6		
Household size	Non-user	6.33	0.24	0.62
	User	6.58		
number of children in school	Non-user	2.75	0.48	0.48
	User	2.53		
Livestock Size in Tropical livestock unit	Non-user	4.07	3.36	0.06*
	User	4.64		
land size owned by household in hectare	Non-user	1.52	7.45	0.00***
	User	1.2		
	User	0.89		
Amount of saving annually in ETB	Non-user	1,747.40	25.84	0.00***
	User	4,021.60		
Distance from formal financial service center	Non-user	8.8194	4.18	0.04**
	User	12.065		

***, ** and * shows significance mean difference at significance level of 1, 5 and 10%.

study, 5 variables have significance mean difference between users and non-users of informal financial services at significance levels of 1, 5 and 10%.

Age of respondents and use of informal financial services

The study results shows that mean age of non-users and users of informal financial services is 42.65 and 41.60 years, respectively. The t-test also shows that there is significant mean age difference between users and non-users of informal financial services at significance level of 10%. The result contradicts initial expectation as young respondents were expected to use more of formal financial services while old aged respondents expected to rely on informal one. This might be because informal financial service is more of being associated with non-farm income activities, particularly trading which is more of that practiced by young households as they have better motivation to use emerging opportunities in rural areas, and in most cases, have shortage of farming land which forces them to opt for other non-farm income activities.

Household size and use of informal financial services

Mean household size of non-users and users of informal

financial services is 6.33 and 6.58 respectively. Though it is statistically not significant, the result agrees with initial expectation of the study as large sized households are expected to use informal financial service to their financial needs.

Number of children in school and use of informal financial services

Though there is no significant mean difference of number children in school between the two groups, mean number of children is 2.75 and 2.53 for non-users and users of informal financial services respectively.

Livestock size of respondent households and use of informal financial services

T-test shows that at 5% significance level, there is significant mean difference of livestock size in tropical livestock unit (TLU) between non-users and users of informal financial services. Mean livestock size of non-user and user of informal financial services is 4.07 and 4.64 TLU, respectively, meaning livestock size of households positively affects use of informal financial services which opposes initial expectation, as livestock

Table 5. Contribution of informal financial services to rural saving.

Amount of saving annually in ETB	Non-user	1,747.40	P-value=25.84	0.00***	
	User	4,021.60			
Saving history	Not saving	Non-user	35	Total=52	25.50%
		User	17		
	Saving	Non-user	69	Total=152	74.50%
		User	83		

which is proxy to wealth status was expected to affect use of informal financial services negatively and wealthy households are expected to depend more on formal financial services.

Land ownership of respondent households and use of informal financial services

Land is an important and basic asset for rural livelihood and its proxy to wealth status of household was expected to affect use of informal financial services negatively. T-test result shows that there is significant mean land size difference between non-users and users. Mean land size of non-users and users of informal financial services is 1.52 and 1.20 ha, respectively. This result is similar with prior expectation.

Distance from formal financial institutions and use of informal financial services

Distance from formal financial service institutions was expected to affect use of informal financial services in that households living in distant areas are less likely to go to formal and opt for informal financial services to meet household financial need. The study result shows that at 5% significance level, there is significant mean difference of distance in kilometer between two groups. For non-users of informal financial services, mean distance is 8.81 km while it is 12.06 km for users of informal financial services. This result agrees with expectation of the study.

Contribution of informal financial services towards rural non-farm income activities

Financial capital is crucial for rural households' livelihood improvement. In most rural areas, agriculture is becoming unable to support livelihood of many households due to various constraints like climate variability, land shortage, crop and livestock diseases, market fluctuation and failure are some among many. For these reasons, it is becoming very important to encourage rural livelihood diversification towards non-farm income activities. Non-farm activities require financial capital that is highly

scarce in rural areas for this household's quest for all possible options available around.

In this research also, informal financial services contribution towards rural non-farm activities is analyzed by using three components (type of rural non-farm business sector invested, share of informal financial services contribution for starting rural non-farm income activities and specific non-farm activity that rural informal financial services used.

Rural saving and non-farm income activities

Saving rural income diversification is becoming very important than ever due to current challenges that agriculture is facing like climate change, land productivity problem, land shortage and landlessness, shortage of pasture land for livestock, diseases and pests of crops and livestock among others. Therefore, promoting rural non-farm sector income diversification is crucial for improving rural food security and livelihood. This can be possible only if household have access to financial sources to undertake non-farm income activities.

The result in the Table 5 shows that 52 (25.5%) of respondents were without saving history in any formal and informal financial sectors while 152 (74.5%) of respondents are with saving history in formal and informal financial services. Out of this 52 households without saving history, 35 (67.3%) are non-users of informal financial services while 83 households out of 152 households with saving history 83 (54.6%) are users of informal financial services highlighting that rural saving is highly associated with informal financial services and the sector plays important role in providing saving services. This can be generalized as informal financial services that contribute towards rural income diversification and non-farm sector development as saving encourages investment. χ^2 test also shows that there is significant association between use of informal financial services and saving history of households at 1% significance level.

Independent T-test shows that there is significant saving amount difference between users and non-users of informal financial users. The result shows that mean annual saving amount of users of informal financial services is 4,021.60 ETB which is far more than mean annual saving amount of non-users of informal financial

Table 6. Type of non-farm business invested.

Non-farm business	Frequency (N=100)	Percent
Not invested in rural non-farm activities	36	36
Petty trade	44	44
Livestock trade	9	9
Grain trade	6	6
Local food and drink	3	3
Black smith	2	2
Total	100	100

Table 7. Household livelihood strategies and use of informal financial service.

Livelihood strategies	Non-user		User		Total	
	N	%	N	%	N	%
Agriculture	73	70.19	37	37	110	53.92
Trading	4	3.85	5	5	9	4.41
Agriculture and trading	12	11.54	29	29	41	20.10
Agriculture and other non-farm	15	14.42	26	26	41	20.10
Unskilled labour	0	0	2	2	2	0.98
Skilled labour	0	0	1	1	1	0.49
Total	104	100	100	100	204	100
Chi-square test: 24.824*** (0.000)						

services that is 1,747.40 ETB. This indicates contribution of informal financial services towards rural saving which is a base for rural income diversification and investment. It can be assumed that informal financial services contribute towards financial capital of livelihoods of rural households.

Therefore, it is important to support and encourage informal financial services through various institutional and technical areas.

Investment of money from informal finance

Rural households use money from informal financial services for various purposes. This study intended to analyse contribution of this informal financial services towards non-farm income activities.

As shown in Table 6, about 64% of informal finance user households invested in non-farm activities while only 36% of respondents reported that they did not invest in non-farm income activities. This highlights importance of informal financial services for rural non-farm income activities.

Household livelihood strategy and use of informal financial services

Rural households participate in diverse livelihood

strategies based on the livelihood capita that they have, such as entitlement and access. Rural household livelihood strategy choice is highly dependent on financial capital. The chi-square test also shows that there is significant association between use of formal financial services and use of informal financial services. In Table 7, it is revealed that household using informal financial services have more diversified livelihood strategies. 70.19% of non-users households of informal financial services depend on agriculture while only 37% of user households of informal financial services depend on agriculture. Rural trading is an important livelihood strategy that most rural households use in diversifying their livelihood. Only 15.39% of non-users households participate in trading while 34% of user household of informal financial services participate in trading. This highlights that contribution of informal financial services on rural household livelihood diversification and meeting financial need for diversification is significant.

Contribution of informal finance for rural non-farm activity

Level of using money from informal finance still varies across the households because of variability in household assets. Financial capital is believed to be an important determinant for rural livelihood diversification. Access to this capital in rural areas is highly constrained

Table 8. Contribution of informal finance on non-farm.

Level of contribution	Frequency (N=100)	Percent
No contribution	28	28
50% contribution	53	53
100% contribution	19	19
Total		

Table 9. Use of money from informal finance.

Use of informal finance	Frequency (N=100)	Percent
Petty trading only	31	31
Agriculture, trade, household consumption and schooling	6	6
Agriculture and household consumption	1	1
Agriculture – farming	12	12
Agriculture and other non-farm activities	27	27
Household consumption	8	8
Schooling	11	11
Trade, cloth and schooling	1	1
Agriculture and schooling	3	3
Total	100	100

due to geographical disadvantages and information asymmetry that formal financial institutions face. In this study, we tried to assess whether households use the money from informal financial services for rural livelihood diversification.

Table 8 shows that out of 100 users of informal finance, for 53 (53%) of respondents, level of contribution of informal finance in non-farm activities is 50% while informal finance helped 19% of the respondents to run non-farm activities by all money (100%) from informal finance. The same table also shows that 28 respondents reported that informal finance did not contribute towards non-formal activities in the study areas. In general, the sector contributed towards 72 users (72%) non-farm activities in the area. This indicates importance of informal finance for rural households in supporting their livelihood and meeting financial needs.

Use of money from informal financial services

Rural households use money that they get from informal financial services for various purposes. Main purposes that households use it for are mentioned in Table 9.

Data collected indicates that rural households use money from informal financial services for various purposes as financial capital is very scarce in most rural areas. Table 9 shows various areas that rural households allocate the money from informal financial services.

Focus group discussants raised money from informal financial services has been used for petty trade, for

buying house in towns, house construction, motor bike for renting, generator for video rooms, barber, fertilizer and improved seed, small ruminant, and household consumption. This indicates contribution of the sector to non-farm income activities.

Table 9 shows the variety of purposes for which households utilize money that they get from informal financial sources. As can be seen from the table, out of 100 users of informal finance, 31(31%) used theirs for petty trade, 27 (27%) used theirs for agriculture and other non-farm sector, 12 (12%) used for agricultural activity (farm inputs), 11 (11%) users used for sending their children to school (cloths, stationery and other school fee) while other purposes that informal finance money used for shares (19%). In general, 92% of households use money from informal finance for productive activities which highlights contribution of informal finance for non-farm involvement and over all livelihood improvement of rural households in the area. 21% of respondents reported that they use money from informal finance for education purpose like for school fees, stationary, cloths and other school payments. This indicates the sector's contribution towards proper utilization of money.

Challenges of informal financial services in the study areas

Informal financial services face many constraints which hinder effectiveness of the sector in contributing to rural households' livelihood development.

Table 10. Challenges of in formal financial services.

Constraints	Frequency	Percent
Lack of Legal support	34	34
Lack of trainings	24	24
Administration	14	14
Small money size for trading	9	9
Undocumented money transfer	8	8
Miss utilization by users	7	7
Fraud by leaders	4	4
Total	100	100.0

Table 10 shows that lack of legal support by government offices, lack of trainings (management, small business development), administration of members, lack of documented money transfer, small loan/credit size for business/trading are among constraints of informal financial services in the area. This result is also similar with Adetiloye (2006), Dejene (1993) and Mwangi and Kimani (2015) as they identified poor governance of the groups, low attendance of group meetings, defaulting by members, poor record keeping, poor group leadership, lack of clear structure to guide group operations, members conflict, low income, burden of gender roles, capacity building of informal finance and mechanisms to enforce group registrations. Lack of registration by the government, the problem of high interest rate and inadequate finance are also among constraints.

Conclusion

Though informal financial service is considered as traditional and long history, the sector is still an important financial service provider for many rural households. Also, it is understood that during FGDs, the trend of using informal financial service in the study area is not declining even though there is expansion of formal financial service providers. At lower administrative level, the government offices have no organized information about the informal financial service providers. Informal finance is almost important for both female headed and male headed households.

Informal financial services are contributing for rural money saving, non-farm sector participation and livelihood diversification. Informal financial services had significant contribution towards non-farm activities, especially petty trading, livestock and grains trades. Use of informal financial services in the study areas is not limited to some wealth groups. All wealth groups are using the service in varying level. Remoteness of the rural areas is an important factor that determines the use of informal financial service as there is significant mean distance difference between users and non-users; therefore, it can be concluded that informal financial

services are more important for remote rural areas than nearest areas to market and formal financial service centers.

Informal financial services in the area are used by all households in spite of various educational levels. The sector also contributes to education development in rural areas as it covers various financial needs for sending children to schools. Informal financial services had got less attention by government and other concerned bodies in terms of training, legal support, technical support, etc. Despite its strengths, the sector is facing challenges that all concerned should advance more. The study result shows that informal financial services are contributing towards non-farm income activities, household asset development, household consumption and other relevant aspects. It would be better if the service providers' informal financial groups are registered and recognized at local government bodies for legal and technical supports that they seek.

Government bodies and others concerned should organize information on informal financial service providers for any support and follow up. Governmental and other organizations working around rural areas on livelihood improvement programs should consider trainings on record keeping, leadership, business development and resource management.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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Full Length Research Paper

Climate change, food insecurity and household adaptation mechanisms in Amaro Ward, Southern Region of Ethiopia

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Climate change poses an increasing risk to the agricultural sector and the dynamics that underpin food security. It is one of the main driving forces of the current food insecurity problem in Ethiopia and in Amaro ward in particular. The objectives of this study were to: Examine the current household food security situation in Amaro ward of Ethiopia; identify the adaptation mechanisms deployed by residents of the ward in response to the negative effects of climate change; and ascertain the coping strategies of the households in the study area with respect to food insecurity. A multistage sampling technique was used to select the study area and 100 sample respondents. Data was collected using structured interview and focus group discussions. Household Food Insecurity Access Scale (HFIAS) was used to examine the food security situation. Weighted Average Score (WAS) was used to analyze the adaptation mechanisms to climate change and the coping strategies to food insecurity. The results showed that majority (80%) of the households were food insecure. Majority (93%) of the respondents also utilized adaptation strategies contentedly. However, majority of households (71%) had great difficulty coping with food insecurity while 29% coped with relative ease. Hence, adaptation to climate change and coping with food insecurity are important factors that determine the welfare of households in Amaro ward. Therefore, common indigenous strategies adopted by farmers like replanting, annual crop rotation, regular weeding, change of meal preferences and reduction of the frequency of feeding in the area should be augmented with modern adaptation and coping practices to minimize food insecurity.

Key words: Climate change, food insecurity, adaptation mechanisms, Amaro ward, Ethiopia.

INTRODUCTION

The international community has espoused a set of ambitious goals which includes eradication of hunger, universalizing food security, improvement of nutrition and promotion of sustainable agriculture under the

Sustainable Development Goals. However, the changing climate may affect all endeavours made towards achieving the goals (FAO and WB, 2017). In many parts of the world, climate change is presently exacerbating

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drought, conflict, poverty, chronic malnutrition, and weak governance. Although some people still deny the reality of climate change and question the wisdom of making attempts to combat it, others are struggling to adapt to the changing climate because its impact is worsening over time (OXFAM, 2017).

Africa, particularly sub-Saharan Africa (SSA), is the most vulnerable region to climate change because of its high poverty level, unequal distribution of wealth, reliance on rain-fed agriculture and very low adaptation capacity and these factors have severe implications for food security (IPCC, 2001; Kotir, 2011). Furthermore, the effect of climate change varies across the Sub-Saharan African region. East Africa suffers from certain extreme weather events such as flooding while West Africa experiences decline in oceanic productivity resulting in shortages in food and fish production.

As a result of the foregoing, it has been argued that adaptation is more of a necessity than an option for Africa (Thornton et al., 2006; Dim et al., 2016). In case of Ethiopia, both chronic and transient food insecurity situations are severe. Recurrent drought causes perennial food shortage and famine; hence, the prevalence of biting food insecurity in the country (African Development Bank, 2014). Ethiopia is overly susceptible to weather-related shocks because 80% of its population are dependent on climate change sensitive agriculture and rainfall in the country is characteristically unpredictable and varies by region (World Bank, 2010).

Previous empirical studies indicate that the major adaptation strategies used by farmers in response to the adverse effects of climate change include: mixed cropping, planting of different crop varieties, changing planting dates, use of soil and water conservation techniques, conservation agriculture practice, engagement in non-farm income activities, selling of assets and social protection programmes like the Productive Safety-Net Programme (PSNP) (Wondimagegn and Seifu, 2016; Weldegebriel and Prowse, 2013; Sorhaug, 2011). Coping strategies for drought and flood embraced by rural households in rural Ethiopia are minimizing the number and quantity of meals eaten in a day, diversification of livelihood income sources, migration, and wage labour (Sewnet, 2015).

Other researches on the food security status in the Upper Blue-Nile of Ethiopia found that 57.8% of the households were food secure, while the remaining 42.2% of the households were food insecure (Woldeamanuel and Simane, 2017). Similarly, Abi and Tolossa (2015) also used 2100 kcal as a benchmark to evaluate the household food security status. The study showed that households in the study area were prone to food insecurity and the available dietary energy of study households met only 45.3% of the minimum daily allowance during the study year, leaving a deficiency of 54.7%. Although these studies dealt with climate change but they failed to combine adaptation mechanisms to

climate change and coping strategies to food insecurity at household level.

The Ethiopian government has significantly modified its existing food security program by scaling up its intervention allocation to food security problems. In 2003, the government launched a large scale consultation process called the New Coalition for Food Security (NCFS) alongside a large Productive Safety Net Program (PSNP) (MoARD, 2009). PSNP, a component of the government's Food Security Programme (FSP), was launched in 2005 with the aim of bettering the food security status of the chronically food insecure household's members through direct grants to the poor, elderly or incapacitated individuals, and payments to able-bodied members for participation in labour-intensive public work initiatives (MoARD, 2014). Despite the government's significant food security strategies, however, humanitarian needs in Ethiopia are mounting primarily in the southern and south-eastern pastoral areas due to failure of the 2016 dryer (October to December) rains and below-average and erratic 2017 rainfall. As of May 2017, 7.8 million Ethiopians were in need of emergency food aid, a 39% increase from mid-January. Malnutrition rates are also on the increase and extreme coping mechanisms are observed (FAO, 2017).

In view of the direness of the situation, a location specific study to assess the adaptation and coping strategies of the rural households to food insecurity was undertaken in Amaro ward, Ethiopia. The specific objectives of the study were to: (1) examine the current household food security situation; (2) identify their adaptation mechanisms to the negative effects of climate change; and (3) identify the coping strategies to food insecurity in the study area.

RESEARCH METHODS

Study area

The study was conducted during the year 2017/2018, in Amaro ward (otherwise woreda in Amharic language) of South Nation Nationality and People Region (SNNPR), Ethiopia which is located at about 468 km from Addis Ababa and 207 km south from regional city of Hawassa (FDRE, 2011). The ward has a total population of 167,379 of which 84,411 (50.4%) are males and 82,968 (49.6%) are females. There are 7,990 households in the sample villages and most of the population (75%) is engaged in mixed farming systems (CSA, 2010). Majority (94.2%) of the people are rural dwellers and their livelihoods revolve around small scale, rain-fed rural agriculture while about 5.8% of the people are engaged in non-agriculture related activities.

The area has different agro ecological zones, ranging from lowland to highland. These agro-ecological zones make it possible to grow different crop types but the changing climate threatens productivity in the area (AWADO, 2010). The ward receives an average annual rainfall ranging from 800 to 1000 mm and temperature ranging from 12.6 to 25°C. The ward has two main seasons (summer and winter) where different crops such as fruits, enset, vegetables, cereal crops, coffee, root crops, oil seeds and others are grown at low level of production due to erratic rainfall (Amaro Ward Agriculture and Rural Development Office, 2010).

Sampling and data collection

The study used a combination of purposive, stratified and systematic random sampling techniques to select the study area and sample respondents. Amaro ward was purposely selected from the five wards of Segen People Zone of Ethiopia because of its erratic rainfall, land degradation, scarcity of arable land, prevalence of food insecurity and dependence on food aid programmes (FDRE, 2011). Of the total 34 villages in Amaro ward, two villages were selected: Dayketa from the highland and Suluko from the lowland. Stratified sampling technique was used to identify male and female households in the area and systematic random sampling was used to select proportional respondents from lowland (Suluko village) and highland (Dayketa village) agroecological zones for making a total of 100 households (household head is a sample respondent).

Primary data were collected from the 100 households using structured interview triangulated with data collected from focus group discussions. Community leaders, head of the ward agricultural office, extension experts, elders and model farmers in the ward were part of the focus group discussion. On the other hand, the secondary data were retrieved from relevant publications such as journals, conference proceedings, theses and project reports.

Data analyses

Data were collected using structured interviews which were coded and processed using SPSS software version 24 for further analysis. To measure the household food insecurity access, Household Food Insecurity Access Scale (HFIAS) was used. It consists of 9 items specific to an experience of food insecurity occurring within the past one month. Each respondent indicated whether he/she had failed to access the items due to lack of resources to buy food in the last 30 days. Standard coding procedure was used with 1 point for occurrence and 0 for non-occurrence. The frequency scores ranged from 0 to 3: with 0 representing non-occurrence; 1, rarely (once or twice in the past 30 days); 2, sometimes (3 to 10 times in the past one month); and 3, often (more than 10 times in the past 4 weeks). Household food insecurity access category for each household was calculated according to the approach of Coates et al. (2007). Accordingly, household food insecurity access category was coded as follows: 1=Food Secure, 2=Mildly Food Insecure Access, 3=Moderately Food Insecure Access, 4=Severely Food Insecure Access. The criteria for categorizing the households under one of the aforementioned four major food insecurity category are the household's response to the 9 standard questions (Q1=not have enough food, Q2=not able to eat the kinds of foods you preferred, Q3=eat a limited variety of foods, Q4=eat some foods that you really did not want to eat, Q5=eat a smaller meal than you felt you needed, Q6=eat fewer meals in a day, Q7=no food to eat of any kind, Q8=any household member go to sleep at night hungry, Q9=any household member go a whole day and night without eating anything).

Based on these classifications, if household answers 1 or 0 for Q1 and 0 for the remaining 8 questions, then the household is food secured (category 1). On the other hand, responses for category 2 or mildly food insecure household could be: Q1a=2 or Q1a=3 or Q2a=1 or Q2a=2 or Q2a=3 or Q3a=1 or Q4a=1 and 0 response for the rest 5 questions. HFIA category 3 (Moderately Food Insecure) responses could be: Q3a=2 or 3 or Q4a=2 or 3 or Q5a=1 or 2 or Q6a=1 or 2 and 0 for the remaining 3 questions. Finally, a household is severely food insecure (category 4) if his/her responses to Q5a or Q6a=3, Q7a=1, 2 or 3, Q8a=1, 2 or 3 or Q9a=1, 2, or 3 or at least one of the mentioned alternatives in the last 4 weeks.

Weighted Average Score (WAS) was used to identify the adaptation mechanism to climate change and the coping strategies

to food insecurity. A weighted score is calculated by determining all the variables and their respective values by using frequencies. To arrive at a weighted score, values were assigned to each of the variables and multiplied by the corresponding numerals. The results were tallied and divided by the sum of all of the original values to yield the weighted average. It was used in this study to identify the degree of agreement of households in Amaro ward about their adaptation to climate change and coping strategies for food insecurity. A total of 21 and 13 statements were used in the questionnaire to ascertain how agreed households with their adaptation to the effects of climate change and coping strategies for food insecurity, respectively.

The responses to the statements were ranked on 5 point Likert Scale ranging from strongly agree to strongly disagree. Thus, the coding of Likert Scale was graded 5, 4, 3, 2 and 1, respectively. The data generated were subjected to WAS analysis. The threshold value to establish the agreement degree was derived by summing up the grades and dividing the total by the number of ranks possessed by the Likert Scale which is 5. Therefore, we have $(5+4+3+2+1)/5=3$. This implies that any statement with a WAS of less than <3 for adaptation strategies to climate change and coping strategies to food insecurity indicates low degree of perception and agreement, respectively while any statement ≥ 3 indicates high degree of agreement.

Descriptive statistics such as percentage, frequency and mean were used for further analysis. Narrative analysis was also used to analyse qualitative type of data collected from focus group discussion to enrich and illustrate qualitative conclusion.

RESULTS AND DISCUSSION

Current food security situation in Amaro Ward

Results from the answers to the 9 standard questions and the Household Food Insecurity Access Prevalence (HFIAP) status indicator show that 20% of the households were food secure; 13%, mildly insecure; 33%, moderately insecure; and 34%, severely food insecure (34%) (Table 1). According to Coates et al. (2007), a food secure household experiences none of the food insecurity issues, or just experiences worry, but rarely. A mildly food insecure household worries about not having enough food sometimes or often, and/or is unable to eat preferred foods, and/or eats a more monotonous diet than desired. A moderately food insecure household sacrifices quality more frequently, by eating a monotonous diet or undesirable foods sometimes or often. But it does not experience any of the three most severe conditions. A severely food insecure household has advanced to cutting back on meal size or number of meals often, and/or experiences any of the three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating), even as infrequently as rarely. In other words, any household that experiences one of these three conditions even once in the last four weeks (30 days) is considered severely food insecure.

Dayketa village is more food secured (28.2%) than Suluko village (14.8%). This is because Dayketa village is one of the villages in which the largest share of the total population consumes enset plant, a non-seasonal crop.

Table 1. Categories of food insecurity.

Category	Suluko (%)	Dayketa (%)	Amaro (%)
Secured	14.8	28.2	20
Mildly Insecured	11.5	15.4	13
Moderately Insecured	27.9	41.0	33
Severly Insecured	45.8	15.4	34
Total	100	100	100

Source: Authors' computations from the Field Survey (2018).

Enset is used for food, fiber and forage. It is also used in the manufacture of construction materials and medicines. It is a sure source of income and a veritable insurance against hunger (Asres and Omprakash, 2014). Most enset crop varieties grow in face of environmental stress better than other annual crops. The crop is drought resistant and climate resilient. Therefore, it is a suitable choice in adaptation to climate change and variability (Nurebo, 2017; Yemataw et al., 2018).

Enset is an important staple crop in Amaro ward. It grows in all agroecological sections of the ward. However, it does far better in Dayketa village which is in the high altitudes of the ward. Few of the enset plants (*Enset ventricosum*) are found in the lowland area. Enset plant is considered as household's source of wealth and main source of food. Its possession in a household is perceived as an evidence of the family's food self-sufficiency. If the enset farm is thriving, the flow of household income will be guaranteed and the household will expend less money in purchasing food in the local market. Most families use indigenous knowledge in the management of the enset crop in order for it to yield high productivity.

From the focus group discussion (FGD), it was gathered that the community's idea of a food secure household is one with an impressive enset farm of at least 0.25 ha and two or more cattle. It is believed that a man with such belongings is qualified enough to get married. An average household typically consumes 10 to 20 big enset plants per year. The plant covers 61% of the total area allocated for perennial crops in the entire ward. The Enset plant is used as a raw material for several products in the ward. The proportion of these products is as follows: 4,200 tonnes of "kocho", 1,650 tonne of bulla, 410 tonne of fibre per year (Demekech, 2008).

Relationship of socio-economic characteristics with food security in the study area

Male headed households are more food secured than female headed households in the study area (Table 2). This is because the patriarchal culture allows a man to go out and work in the farm at will but somewhat restricts the woman from engaging in farming on her own terms. Man is also physically stronger than woman and so can work and endure long hours of strenuous labour more than

the woman. Whereas female who heads a household cannot execute her plan for the seasonal or annual farming activities without soliciting help from male relatives. In addition, females in Amaro ward, like women in many parts of Africa, are socialized to be contented with their supposed gender-specific roles as wives, mothers and homemakers. During the FGDs, the women expressed the difficulties they face in trying to juggle the multiple tasks they are saddled with in the household.

With respect to the relationship between marital status of respondents and their level of food security, married households were the most food secured in the study area (Table 2). This is due to the ability of the household members to work together in order to achieve food security. For example, when it is time for weeding, all the household members go together until they finish the weeding of a particular farm land. Moreover, interactions from the FGDs revealed that married household members help each other during harvesting, storing and transportation time. Only 5% of widowed household is food secured. This is as a result of the assistance and contribution to the widowed household from the widows' daughters, sons and relatives.

The same Table 2 shows that households who have no formal education were more food secured than educated households. This is due to the fact that illiterate farmers tend to have more farmland than educated farmers. In this case, their high food security owes to abundance of the produce from their farms. Most of them remain food secured even in drought season because they reserve crops prodigiously after harvest. Information from the FGDs revealed that educated households (Certificate, Diploma or Degree holders) are highly dependent on constant salary from non-agricultural sectors. Hence, they gain access to food by purchase. And since the market price of crops fluctuates, they tend to be the food insecure. Table 2 also shows that households with 5 to 8 members are more food secure than small and large sized households. This is due to the fact that majority of the households with medium sized family have their children with the productive age bracket.

Adaptation mechanisms to climate change in the study area

Weighted average score (WAS) analysis was used to

Table 2. Cross tabulation of independent variables with food security.

Independent variable		Response, N=100		Frequency (%)
		Food secure (n=20; %)	Food insecure (n=80; %)	
Sex	Male	14.0	60.0	74.0
	Female	6.0	20.0	26.0
Marital status	Single	0	10.0	10.0
	Married	15.0	59.0	74.0
	Divorced/Separated	0	2.0	2.0
	Widowed	5.0	9.0	14.0
Educational status	No formal education	15	33.0	48.0
	Primary school dropout	1	19.0	20.0
	Primary education	4.0	14.0	18.0
	High school	0.0	5.0	5.0
	Preparatory	0.0	5.0	5.0
	Diploma	0.0	2.0	2.0
	University degree	0.0	2.0	2.0
Household size	2 to 4 members	1	16	17
	5 to 8 members	11	41	52
	9 to 13 members	8	23	31

Source: Field Survey (2018).

identify 21 statements to the degree of satisfaction/agreement of the respondents with their choice of adaptation mechanisms to climate change in the study area. The results show that, on the whole, 93% of the respondents were able to adapt to or utilized adaptation strategies with ease (Table 3). This is attributable to good indigenous knowledge about climate change, good agricultural extension services, aimed to and the determination to increase farm production and thereby improve the household's access to food. Some of the respondents stated that "there is nothing anyone can do about climate change other than to adapt to it. One has to adapt in order to feed his household or suffer hunger and starvation". On the other hand, 7% of the respondents were not able to adopt adaptation strategies because they carried on with their farming practices as usual. They did not cultivate or harvest early. Neither did they apply pesticides or inorganic fertilizers.

With respect to growing different crop varieties in Amaro ward, 56 and 22% of respondents agreed and strongly agreed, respectively. The WAS of 3.83 indicates a high degree of agreement to adaptation to this variable. In the case of diversifying into non-farming activities in Amaro ward, many of the respondents (44%) agreed and 17% strongly agreed. The WAS of 3.49 indicates a high degree of agreement to adaptation to this variable. These results have shown that farmers in Amaro ward were using growing different crop varieties and diversifying into non-farming activities as adaptation strategies to climate

change. With the exemption of rainwater harvesting for irrigation with WAS of 2.63 and carrying on as usual with WAS of 2.47, the remaining statements have WAS ≥ 3 ; indicating their high degree of agreement to adaptability. Carrying on as usual and rainwater harvesting for irrigation had the lowest adaptability while regular weeding with WAS of 4.60 was the most popular adaptation strategy to climate change in Amaro ward. It is common knowledge that a crop land that is weeded regularly would produce higher quantity of crops even in dry season than unweeded farm.

Interactions during the FGDs indicated that households are adapting to climate change differently based on their knowledge and perception of climate change.

A farmer stated that:

"Decades ago, changes were not noticed due to high fertility of the land. But we have been using some common adaptation strategies to increase crop production in recent times. The drastic changes in climate seem to come from God as a punishment to the people because of their sin" (Uel, FGD on 23rd September, 2018).

Commonly adopted adaptation mechanisms identified by the households themselves during the FGDs and field observation include: growing different crop varieties, replanting, planting different fields at different times, annual crop rotation, regular weeding, application of

Table 3. Adaptation mechanisms to climate change.

Statement	1=SD	2=D	3=NS	4=A	5=SA	WAS	Frequency (%)
Growing different crop varieties	3	12	7	56	22	3.83	-
Diversifying into non-farming activities	6	17	16	44	17	3.49	-
Replanting	6	12	2	46	34	3.90	-
Different fields planted at different times	9	10	12	36	33	3.74	-
Annual crop rotation	1	5	2	34	58	4.43	-
Regular weeding	1	13	10	31	45	4.60	-
Use of organic manure	13	15	8	30	34	3.57	-
Fields are left fallowing	7	33	10	39	11	3.15	-
Tree planting alongside crops	8	26	20	32	14	3.18	-
Rainwater harvesting for irrigation	19	39	8	28	6	2.63	-
Praying for rain/asking for Gods intervention	0	4	2	28	66	4.56	-
Application of chemical fertilizers	3	9	8	37	43	4.08	-
Mixed farming	4	14	13	53	16	3.63	-
Early cultivation	1	27	8	39	25	3.60	-
Early harvesting	4	26	10	36	24	3.50	-
Farming intensification	5	20	16	48	11	3.40	-
Carrying on as usual	22	40	16	13	9	2.47	-
Lease your land	14	28	4	29	25	3.93	-
Spraying pesticides	2	22	10	30	36	3.76	-
Good spacing	1	8	8	44	39	4.12	-
Growing drought resistant crops	2	16	16	40	26	3.72	-
Overall adaptation							
Able to adapt comfortably	-	-	-	-	-	-	93
Not able to adapt comfortably	-	-	-	-	-	-	7

SD= Strongly Disagree, D= Disagree, NS= Not Sure, A= Agree, SA= Strongly Agree.
Source: Field Survey (2018).

inorganic fertilizers, praying for rain/asking for Gods intervention and spraying pesticides.

The households stated that when they observed the manifestations of climate change they resorted to application of inorganic fertilizers and pesticides, practices which were not common in the area decades ago in the area. When asked to divulge the sources of these strategies for climate change adaptation, some of them answered that they have learnt the practices from extension service workers but others are part of folk knowledge. From the aforementioned information, it is apparent that households in the Amaro ward have been practicing adaptation measures even before the concept of climate change became an item of government policy.

Any statements with WAS ≥ 3 is deemed as a good mechanism for adaptation to climate change.

Coping strategies to food insecurity

Table 4 shows that 29% of the respondents can cope with food insecurity comfortably. This is because they could reduce the quantity, number and types of meal they

take; postpone the celebration of some festivals; and sell some of their ruminants like goats and sheep. On the other hand, 71% of respondents cannot cope comfortably. This is because some farmers harvest immature crops, sell charcoal and fuel wood, consume some of the seeds reserved for next planting season, sell their lands to purchase food, etc.

Any statement with WAS ≥ 3 is deemed as a good strategy for coping with food insecurity. The coping strategies used by the households can be seen as an expression of negotiated decisions to minimize the impact of food insecurity in the household. Hence, understanding these coping strategies could be a fertile ground to formulate household based coping strategies to improve food security at the household level by government.

Weighted average score (WAS) analysis was used to identify 13 statements related to the degree of agreement of the respondents about their coping strategies in the study area. All coping strategies in Table 4 with WAS < 3 indicate low ability to cope (Table 4). With respect to reducing quantity of meals, 1, 64 and 17% of the respondents strongly disagreed, agreed and strongly

Table 4. Coping strategies to food insecurity.

Statement	1=SD	2=D	3=NS	4=A	5=SA	WAS	Frequency (%)
Reducing quantity of meals	1	10	8	64	17	3.86	-
Reducing numbers and types of meals	2	7	14	50	27	3.93	-
Postponing some festivals	2	24	18	41	15	3.43	-
Selling small ruminants like goats, etc.	1	31	11	38	19	3.43	-
Harvesting immature crops	15	40	10	22	13	2.78	-
Selling charcoal and fuel wood	59	27	6	5	3	1.44	-
Selling big livestock such as oxen, etc.	25	31	7	29	8	2.64	-
Consuming some of the seeds reserved for next planting season	17	19	11	41	12	2.32	-
Out-migration of family members	24	46	13	11	6	2.29	-
Going without food throughout the day	18	43	10	23	6	2.56	-
Selling land to purchase food	41	38	12	6	3	1.92	-
Consuming wild foods	49	23	3	22	3	2.07	-
Begging	52	33	3	6	6	1.81	-
Overall coping							
Can cope comfortably	-	-	-	-	-	-	29
Cannot cope comfortably	-	-	-	-	-	-	71

SD= Strongly Disagree, D= Disagree, NS= Not Sure, A= Agree, SA= Strongly Agree.
Source: Field Survey (2018).

agreed, respectively. The WAS of 3.86% indicates high degree of agreement on the use of this coping strategy. In the case of reducing numbers and types of meals, postponement of the celebration of some festivals and selling small ruminants, majority of the respondents (50, 41, and 38%) agreed, respectively. Reducing numbers and types of meals, with WAS of 3.93, is the best coping strategy to food insecurity in Amaro ward. This is because people in the community detest begging, starvation, migration and related coping strategies. Cultural norms exert a lot of influence on the selection of coping strategies in the community. For example, begging is considered as a reproachful practice in Amaro ward community.

In FGDs, it was discovered that households have been coping with food insecurity for decades but some new coping strategies have materialized over time. The view of households on the idea of food security differs from one another. Most of them stated that they are food secure as far as they eat 3 times a day regardless of the food's nutritional content. Others said that they are food secure as far as they could not feel hungry even if they eat once or twice a day. The households mentioned that none of the aforementioned food insecurity coping strategies is new as they are traditional coping strategies in the community. Therefore, it can be said that households in the Amaro ward have been practicing coping strategies for food insecurity even before climate change gained attention as a global concern. However, the government provides food aid to the citizens in times of food crises.

CONCLUSIONS AND RECOMMENDATIONS

This study concludes that indigenous adaptation measures and coping strategies were necessary to cope with the changing climate and improve food security of households in the study area. Though local or indigenous strategies adopted by farmers in the area over the years have helped them cope with the changing climate and food insecurity, it is also vital to integrate modern adaptation and coping practices for improved access to food to take place. This is because, with time, the efficiency of the indigenous methods and practices for adaptation and coping will begin to dwindle.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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