

# Impact of Urban Expansion on the Livelihood of Peri- Urban Agricultural Community: Case of Wolaita Sodo Town, Southern Ethiopia

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## Abstract

This study investigates the effects of the expansion of the town on the livelihood of the dislocated farming community in Wolaita Sodo. A total of 100 sample households were selected by the probability proportional to size and each was interviewed for the purpose. Offa Gandaba, Offa Sere, Bosa Kecha and Kokate Marachere are peripheries of the town where the largest projects of residential expansion are being implemented dislocating the farming community from these areas. Household survey, participatory group discussions and key informants interviews were used to assess the situation. To analyze the data, descriptive statistics like mean, standard deviation, percentage, and frequency distribution were used to describe the socio economic characteristics of the sample households. In addition, p and chi-square tests were used to compare age of Households head, education level and family size, land size, means of livelihoods, credit utilization, infrastructure and job opportunity of dislocated farming community. A Probit model was used to estimate factors determining the livelihoods of peri-urban community. A total of thirteen explanatory variables, 7 continuous, 6 categorical and dummy, were included in the empirical model. Out of these, seven were found to be statistically significant. These variables include Age of Household head, Education level, Land Size, means of livelihood, Credit utilization, infrastructure and job opportunity. The age of household head has negative relationship with urban expansion effect on peri-urban community, but significant at 5% significance level. The results of the study indicated that the implemented expansion program is not participatory and have marginalized the farming community. The compensation schemes envisaged for the loss of assets excluded youth and women. The dislocation program implemented is not rehabilitative and negatively affected the livelihood of the dislocated farming community.

**Key terms:** urban expansion, dislocation, displacement, livelihood, Probit model.

## 1. Introduction

Displacement due to urban expansion is widespread in the developing countries than the developed countries because the majority of the people in developing countries live highly concentrated in the periphery depending on agriculture with fragmented land holdings. This is particularly so in developing countries like Ethiopia where land remains public or government's property and amount of compensation paid, in case of possible displacement, depends on government decision. In many ways urban expansion is a spontaneous phenomenon that leads to displacing rural farming community (Tegegne, 1999). Even planned displacement has its own effect on the livelihood of the affected farmers. The effect of urban development or expansion on the rural farming community where agriculture is the main source of livelihood like Ethiopia is a least studied area. Ethiopia is one of the low urbanized countries having 14 percent urbanization level in 1994, which is less than that of other African countries (Tegegne 2000; Yeraswork and Fantu 2003).

Sodo Town, seat of Wolaita Zone, is expanding fast in all direction due to favorable weather conditions. As a result, it is creating a continuum with suburbs like Waja kero and Damot waja to Northwest, Kokate Mare Chare and Dalbo wogene to Southwest, and Bossa Kecha and Offa Sere Northeast and Gandaba Southeast. This expansion has influenced the surrounding farming communities, often leading to forced displacement. It is obvious that rural communities surrounding the expanding town has an advantage due to high land value, access to the urban services and urban rural development linkages or the trickledown effect of development. As Sodo town is expanding in area coverage and population size, the conversion of peasant farm and grazing lands into urban use by municipality directives is becoming significant. A recent study showed that seven kebeles with the peripheries are affected by the expansion of the city.

## 2. Objectives of the Study

The specific objectives of the study are to:

- ❖ identify the factors of urban expansion on the affected community in terms of livelihood.
- ❖ examine the impact of urban expansion situation of Wolaita Sodo town in the peripheral areas in relation to its benefit packages.

### 3. Method

#### 3.1 Study Area

Wolaita Sodo town is located in the centre of Sodo Zuria Woreda which is one of rural woreda administration in Wolaita Zone, Southern Nation Nationalities and Peoples' Region. The Woreda is located at a distance of 390km (to the south) from Addis Ababa. The Woreda has 31 rural kebele administrative. The total land coverage of the woreda was 40,805 hectares, of which 12,269 Ha (35.75%) is allocated for crop production, 9,067 Ha (19%) for fallow land while 12,019 Ha (30.61%) for grazing land and 7,450 Ha (15.02%) for forest land. The agro-ecology of the woreda is dominated by midland that covers about 87% of the total area, and the remaining 13% is highland with rugged mountains and slopes (WZFEDD 2005).

Agriculture is the main stay of the economy of Ethiopia both from the point of its contribution to the GDP, foreign exchange earnings and employment opportunities. This is partially true for the rural part of Wolaita Sodo periphery. The agricultural system in the study area is of traditional subsistence type or small scale peasant farming. It is practiced in small-scale fragmented holdings of peasant farmers. The major type of farming system in the suburbs is subsistence mixed farming accounting for 97% of the total farm households and livestock rearing 3% of the total farming community households (CSA, 1995). Both rainfed and irrigated agriculture is practiced in the periphery. Enset is the only perennial and staple food crop produced in all areas of the selected kebeles.

#### 3.2. Sampling Technique and Sample Size

In this study, three stage random sampling procedure was used. At the first stage, Woliata Sodo town was purposively selected due to its convenience for researcher to collect data and information from different sources for the severity of the problem. In the second stage, Out of the Seven dislocated kebeles, Four kebeles were randomly selected. These are Ofa Gandaba, Ofa Sere, Bossa Kecha and Kokate Marachare. In the third stage, a total of 100 sample households were selected by the probability proportional to size and each was interviewed for the purpose. A structured survey questionnaire was designed and pre-tested to collect the data.

In order to make a closer investigation of the effects of urban expansion on rural community's livelihood situation, attitude and perception, information was collected from the localities covered by the study by means of unstructured interviews, and focus group discussions. Accordingly, the required information was obtained from both primary and secondary sources, in this research both primary and secondary data were used. The primary data was collected from household surveys and focus discussion which includes key informants interviews, local leaders, and displaced community members. Secondary data was collected and used from the relevant literatures like books, magazines, publications, and web browser. Descriptive statistics and econometric model is used to attain the objectives. The first objective and the second objectives are analyzed by econometric model (Logit model) and the third objective was analyzed by using descriptive statistics methods.

#### 3.3 Econometric model specification

According to this study Logit model basically is used to investigate the impact of urban expansion on the livelihood of peri-urban agricultural community. Hence, According to (Hosmer and Lemshew, 1989), Logit model is quite convenient for analysis when a dependent variable  $Z_i$  which cannot take negative values of explanatory variable which has sensible partial effect over a wide range and also better to estimate features of distribution of  $y$  given  $X_1, X_2, \dots, X_k$  other than the conditional expectation. Logit model would be adequate techniques for addressing probability question. It can be defined as

$$P_i = \frac{1}{1 + e^{-Z_i}} \text{----- (1)}$$

Where  $P_i$  is the probability of being user for the  $i^{\text{th}}$  farmer and  $Z_i$  is a function of  $m$  explanatory variables ( $X_i$ ) and expressed as:

$$Z_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_m X_m \text{----- (2)}$$

Where  $\beta_0$  is the intercept and  $\beta_i$  are the slope parameters in the model. Since the conditional distribution of the outcome variable follows a binomial distribution with a probability given by the conditional mean  $P_i$ , interpretation of the coefficient will be understandable if the logistic model can be rewritten in terms of the odds and log of the odds, (Gujarati, 2004).

The odds ratio to be used can be defined as the ratio of the probability that a farmer will use ( $P_i$ ) to the probability that he/she will not ( $1-P_i$ ).

$$1 - P_i = \frac{1}{1 + e^{Z_i}} \text{----- (3)}$$

There fore

$$\frac{P_i}{1 - P_i} = \frac{1 + e^{z_i}}{1 + e^{-z_i}} = e^{z_i} \quad \text{----- (4)}$$

And

$$\frac{P_i}{1 - P_i} = \frac{1 + e^{z_i}}{1 + e^{-z_i}} = e^{\beta_0} + \sum_{i=1}^m \beta_i X_i \quad \text{----- (5)}$$

Taking the natural logarithm of the odds ratio of equation (5) will result in what is known as the logit model as indicated below:

$$\ln \left[ \frac{P_i}{1 - P_i} \right] = \ln \left[ e^{\beta_0} + \sum_{i=1}^m \beta_i X_i \right] = e^{z_i} \quad \text{----- (6)}$$

If the disturbance term  $U_i$  is taken in to account the logit model becomes:

$$Z_i = \beta_0 + \sum \beta_i X_i + U_i \quad \text{----- (7)}$$

Hence, the above econometric model was used in this study and was treated against potential variables assumed to affect the dislocated periphery. Accordingly

In the second analysis, factors influencing the extent or amount of dislocated farmers were estimated using binary logit regressions model (Gujarati, 2004; Wooldridge, 2005).

Thus, in the first stage, the determinants of dislocated farming community were estimated using binary logit regression model. According to Maddala (1983) logit model is specified as:-

The Binary logit is:

$$Z_i = \beta_0 + \beta_1 X_{1i} + U_i \quad \text{----- (8)}$$

$X_i = (X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}, e)$

Where: X = Effect of urban expansion on the livelihood of peri-urban community

$X_1$  = Sex of household head (SEXHH)

$X_2$  = Age of household head (AGEHH)

$X_3$  = Education level of household head (EDUCLV)

$X_4$  = Land Holding Size (LADSIZ)

$X_5$  = Means of livelihood for households (MLHD)

$X_6$  = Livestock Ownership (LIVSTK)

$X_7$  = Infrastructure facility (INFRSTR)

$X_8$  = Total household income (INCME)

$X_9$  = Job Opportunity (JBOPRT)

$X_{10}$  = Households perception of the benefit from compensation (PRCPN)

$X_{11}$  = family size of household heads (FSHH)

$X_{12}$  = Credit utilization (CRDTU)

$X_{13}$  = households consumption (HCNPN)

$U_i$  = error term

$$Z_i = \beta_0 + \beta_1 \text{SEXHH} + \beta_2 \text{AGEHH} + \beta_3 \text{EDUCLV} + \beta_4 \text{LADSIZ} + \beta_5 \text{MLHD} + \beta_6 \text{LIVSTK} + \beta_7 \text{INFRSTR} + \beta_8 \text{INCME} + \beta_9 \text{JBOPRT} + \beta_{10} \text{PRCPN} + \beta_{11} \text{FSHH} + \beta_{12} \text{CRDTU} + \beta_{13} \text{HCNPN} + U_i$$

$\beta$  is vector of parameters to be estimated,  $\beta_0$  is the intercept term; and  $\varepsilon_{1i}$  are the disturbance term. The logit model was estimated to identify determinants of impact of urban expansion causes displacement, dislocation and segregation that result in social fabrics disorder.

### 3.4 Variable description

The dependent variable in this study is the index level of impact of urban expansion on the livelihood of peri-urban community.

**1. Sex of Household Heads (SEXHH):** It refers to sex of the household head displaced due to urbanization.

**2. Age of Household Head (AGEHH):** It refers to age of the household head displaced due to urbanization.

**3. Education Level of Household Head (EDUCLV):** The level of education of household head is one of determining variable to analyze the situation of dislocated farm community. Educated farmers are expected to have more awareness with impact of urban expansion and have better understanding of benefits of compensation. Thus, education is expected to have positive effect on the impact of urban expansion. Moreover, educated households are expected to be less dependent on agricultural production.

**4. Land size (LADSIZ):** is the main discriminating variable among farm households. Thus, as a farm input, farmland has its effect on the type of crops cultivated and acreage allocated to each crop. The operational land size used for crop and livestock activities was considered as land constraint. For each farming system, the total available land size per household was considered in the model. Land is the most important and scarce resource contributing to agricultural production in the study area, and since land use pattern largely determines the pattern of use of other resources. This variable is a continuous variable and it refers to the total area of farmland that a farmer owns in hectare. The dislocated farm requires substantial economic resources of which land is the principal one (Wadsworth, 1991; Klein et al.,).

**5. Means of livelihood of household (MLHD):** is provided by Chambers and Conway (1992), wherein livelihood comprises the capabilities, assets (including both material and social assets) and activities required for a means of living (Chambers and Conway, 1992). The livelihoods framework provides a comprehensive, and complex, approach to understand how people make a living. The same source stated that livelihood strategies are composed of activities that generate the means of household survival and are the planned activities that men and women undertake to build their livelihoods

**6. Number of Livestock (LIVSTK):** The livestock components considered in the models were pairs of oxen, cows, sheep, goats, horses, donkeys, bee-hives, and poultry keeping.

**7. Infrastructure Facilities (INFRSTR):** is one of the preconditions for a rapid economic and social development of a given society is the availability of physical infrastructures such as road, water supply, education and health centers, marketing facilities, telephone and other communication services.

**8. Total Income of Household (INCME):** The total income of household (in ETB) from farm and off-farm activities. It is a continuous variable.

**9. Job Opportunity (JBOPRT):** is varies according to skills (e.g., in trading, vehicle repair, brick making, petty trade, daily laborer etc) and education (e.g., for salaried jobs in business or in government).

**10. Household's perception of benefits from compensation (PRCPN):** Refers to the benefit that households harvest from compensation of dislocation.

**11. Family size of Household Heads (FSHH):** Refers to the total number of people living in the same residence. It is continuous variable<sup>1</sup>.

**12. Credit utilization (CRDTU):** is the access to credit is an opportunity to take part in business activities. The known financial institutions may give loan for those poor communities as they need. So credit utilization should be facilitated for dislocated peri-urban community in their context. The microfinance institutions and other loan providing units should have to give higher focus to aforementioned community members as it increases dependency unless they treated in a way that empowers their life.

**13. Consumption of households (HCNSPN):** Subsistence objective is viewed as insurance against the risk of being unable to satisfy the demand for food, to meet the diet requirements of family members, and having to pay relatively higher prices. Thus, including this activity ensures smallholders to produce some portion of their requirements; while purchasing serves to fulfill part of subsistence requirements from market. The consumption requirement per adult equivalent (AE) per year is determined based on Gryseels and Anderson (1983).

#### 4. RESULTS AND DISCUSSION

In this chapter, the results were discussed thoroughly followed by the discussion of the respective issues of interest. First, urban expansion situation in the peripheral areas in relation to its benefit packages is presented. Next, determining factors of urban expansion on the livelihoods of the community were identified using descriptive statistics and econometric (empirical) model results. Finally, the effects of urban expansion program on the rural community were determined.

##### 4.1 DEMOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS

This section highlights the demographic and social characteristics of the sample households in the study area. The issues discussed here are only those expected to have certain relationships with dislocation, income, consumption and expenditure including family size, age and sex composition, education, household access to productive resources such as land and livestock and off-farm income, etc. The average age of the respondents was 51 years. The age ranged from 18 to 84 years. Out of 100 respondents, less than 3% were younger than 33 years. However, about 20% were older than 65 years. The majority of the farmers (51%) were found in the age range between 50 and 65 years as indicated in (Table 3). The economically active age members (18-65), constituted 80 percent of the total family size. Thus, the remaining 20% of the sample household members were above 65 years. The majority of the respondents (69%) were married, 14 % were single, 10% were divorced, 4% were separated and 3% were widowed. The educational status of sample household heads was very low. Out of 100 respondents, 31(31%) were illiterate, and about 25% were read and write, primary (1- 8) were 17%, secondary (9-10) were 15%, preparatory (11-12) were 7% and above grade 12 were 5%.

#### 4.2 Land holding size of sample household heads

The landholding of the sample farmers ranged from 0.5 to 2.25 ha with an average of 1.375 ha. sizes of holdings also show variation between the sample farming community. The survey results show that about 49% of the respondents have a land size of 0.5 hectare while 1% had relatively higher size, which ranged between 2 to 2.25 ha.

#### 4.3 Urban Expansion Situation of Wolaita Sodo Town

Wolaita Sodo town has city administration, sub-cities and Kebeles. The city is divided into three sub-cities and about 10 kebeles. But the study was focused on newly joined kebeles found in each sub cities (Kokate Marachare, Bossa Kecha, Offa Sere and Offa Gandaba). Urban expansion project to the study areas were designed and implemented by the city administration. The main objectives were to get space for shelter development within the urban plan.

The male and female ratio in the sample household head is 90:10. In terms of education the highest proportion 31 percent is illiterate which is very high by the town standard; which is 16 percent including rural areas (computed CSA 2010). 25 percent of the household heads can read and write, about 17 percent has reached primary and only 15 percent attended secondary school. 75 percent of the dislocated sample households are Wolaita and the rest are Amhara, Gamo and others. The most common languages spoken are Woliatigna and Amaharic. The respondents have a minimum of one and a maximum of 12 household members with an average family size of 6 per household, which is higher than the national average (5.58). This indicates that there is a high family burden among the dislocated farming community.

#### 4.4 Econometric Result

Results in (Table 8) presents the model results for the factors affecting the livelihoods of peri-urban community. The research was tried to analyze the situations of urban expansion as dummy by hypothesizing either it affects the livelihoods of the community or not. The explanatory variables include age of household, sex of household head, education level of household head, land size, means of livelihood, livestock ownership, infrastructure facility, family size, total household income, job opportunity, household's perception of the benefit from compensation, credit utilization, households consumption.

##### 4.4.1 Model of Household Commercialization Index

$$Y = (X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}, e)$$

$$Z_i = \beta_0 + \beta_1 \text{SEXHH} + \beta_2 \text{AGEHH} + \beta_3 \text{EDUCLV} + \beta_4 \text{LADSIZ} + \beta_5 \text{MLHD} + \beta_6 \text{LIVSTK} + \beta_7 \text{INFRASTR} + \beta_8 \text{INCME} + \beta_9 \text{JBOPRT} + \beta_{10} \text{PRCPN} + \beta_{11} \text{FSHH} + \beta_{12} \text{CRDTU} + \beta_{13} \text{HCNPN} + U_i$$

##### 4.4.2 Model Test

For the econometric estimation to bring about best, unbiased or reliable and consistent result, it has to fulfill the basic linear classical assumption. The basic assumption includes: non linear neglected variable test, for given explanatory variables the mean value and the variance of the disturbance term ( $U_i$ ) is zero and constant (homoscedastic). No exact linear relationship (Multicollinearity) in the regressors and the stochastic (disturbance) term  $U_i$  is normally distributed.

##### VIF Test (Test for Multicollinearity)

Variance of Inflation Factors (VIF) was used to check Multicollinearity among continuous variables and contingency coefficient was used tested collinearity among dummy and categorical variables. Based on the result the values VIF is less than 10 for all continues variable as indicated Gujarati, 2003. So, as the result shows that there is no Multicollinearity problem among the variables. (See on the Appendices A)

The binary logit regression analysis disclosed the explanatory variables that were statistically significant and had casual impact on the livelihood of peri- urban community due to urban expansion.

#### 4.5 Explanation of Significant Variables

**Age of HHH:** - In contrary to what is hypothesized, the age of household head has negative relationship with urban expansion effect on peri-urban community, but significant at 5% significance level. This implies that households with lower age are in favor of from the urban expansion by 4.086 as the age of household heads decreased by one year while other variables held ceteris paribus. The more household heads gets older the lower would be their livelihood affected by urban expansion. However, the model output revealed as age is negatively relates to urban expansion, key informants in focus group discussion agreed as age has negative association as some of aged household heads have higher resource endowments. Hence, the quantitative and qualitative results go parallel in this aspect.

**Education level:** - Education level is also significant (1%) and it has positive relationship with urban expansion in peri- urban community. The households are in favor of by urban expansion by 2.368 as their education increases by one level while other variables kept constant. More educate farmers can better access better means



of livelihood than illiterate in urban expansion. Qualitative analysis also agreed with the result as participants of focus groups convinced with the model result as educated households are outshining in their livelihoods by adapting new ways of living through urban expansion opportunity. This could be due to educated households are well aware to adopt new technologies and modernized kind of living.

**Land Size:-** Land size is the other variable which showed positive and significant relationship with the livelihoods of peri-urban community due to urban expansion. It is significant at 5% probability level. The odds ratio revealed that households with higher land size are in favor of by 1.111 as urban expansion increased by one unit, by citrus pubis condition. This result also consists with the prior literatures which stated as Ethiopia is among the poorest and least urbanized countries in sub-Saharan Africa. Since mid of 2000s, Ethiopia is achieving remarkable economic growth continually and urban population is growing rapidly as well. To meet the growing demand of urban land use, urban areas usually redraw their boundaries by incorporating the nearby rural villages.

**Means of Livelihood:-** the result revealed means of livelihood had significant and negative association with the livelihoods of peri-urban community due to urban expansion at 1% significance level. The households are in favor of in means of livelihood by 2.591 as they are peri-urban community, *ceteris paribus*. Key informants discussion result was also well-matched with the model output by concluding the means of livelihood is essential for the livelihood of peri-urban community. Additionally, they argued for means of livelihood of the households are those who early prepared and decided to diversify their incomes through different livelihood strategies. Hence, the variable is significant in both quantitative and qualitative analysis. The result is consistent with the findings.

**Credit utilization:** - the model result showed that credit utilization had significant and positive relationship with the livelihoods of peri-urban community due to urban expansion at 5% significance level. Households using credits are in favor of promoting their livelihoods by 3.437 odds ratio as their credit utilization increases by one unit while other variables held *ceteris paribus*. This could be because households who utilize credit are able to diversify their sources of income to promote their livelihoods. But, the qualitative result is incompatible with the model result as focus groups expressed ground realities as households did not utilize credit exist in the community due to fear of legal issues constrained and unexpected losses.

**Infrastructure Facilities:** - infrastructure facility had also significant and positive relation with the livelihoods of peri-urban community due to urban expansion at 5% significance level. As infrastructure facilities increases by one unit, the peri-urban communities are in favor to promote their livelihood by 2.749 odds ratio while all other variables kept constant. The result directly agrees with the qualitative analysis as key informants strongly argue for the importance of the variable, infrastructure facilities allows them to diversify their incomes and to access new technologies. Thus, the variable is significant both in quantitative and qualitative analysis.

**Job opportunity:** - Job opportunity is another variable which had negative and significant relationship with the livelihoods of peri-urban community due to urban expansion at 1% significance level. The negative and significance relationship between the variables indicate that peri-urban community job opportunity decreases, the livelihood of the community became worse. The livelihood of peri-urban community is in favor of in getting job opportunity by 1.044, odds ratio while other variables *ceteris paribus*. The focus group discussion also agreed as job opportunity is negatively related to urban expansion. Hence, the variable is significant in both quantitative and qualitative analysis.

## 5. Conclusion

The result indicated that the majority (51%) of the sampled household heads were not aware of the urban expansion program in their vicinity while relatively considerable minority (9%) replied that they were aware of the urban expansion program in their vicinity. The age of household head has negative relationship with urban expansion effect on peri-urban community, but significant at 5% significance level. The result of the assessment showed that the majorities (80%) of the dislocated farmer household heads are within the working age and of which the highest proportion (31%) were illiterate. The dislocation program implemented is not rehabilitative and negatively affected the livelihood of the dislocated farming community. Furthermore, the study revealed that women and children are major victims to livelihood crisis. The coping mechanism/strategy adopted by the majority of the dislocated farmers is casual that is directly or indirectly dependent on agriculture, which is being vanished in the area. Finally, dislocation program that may be proposed in the future needs comprehensive planning and implementation to ensure community participation and create alternative livelihood. Wolaita Sodo town is expanding in different directions into the surrounding rural areas with fast physical and population growth. The physical expansion of the built up areas of the town has occurred through planned (legal plot division for house construction and commercial developers) and unplanned (squatter settlements). Since its establishment, the town has experienced a horizontal and physical The binary logit model output revealed that age, education level, land size, means of livelihood, infrastructure facilities, credit utilization and job opportunity had significant influence on the livelihood of the community on urban expansion program.

## 6. Policy Implications

Wolaita Sodo town is expanding at an alarming rate changing large productive farmlands to urban settlement in displacing and dislocating the settled farming community in the periphery. Consequently, farmers are exposed to joblessness and forced to depend on vulnerable livelihood that tend to add up to their poverty and food insecurity. This necessitates a more comprehensive approach to development including the promotion of a more diversified economic development in the periphery; where non-farm activities should be promoted; infrastructure development should be enhanced; and favorable conditions should be created for the better integration of the dislocated farmers into the new way of life in urban settlement.

- The dislocated farming communities are now engaged in casual activities such as daily labor, urban and peri-urban agriculture, which generate low income. There were people in working age who can engage in different income generating activities so that the working age should lead in organized way to improve their livelihood. Those who are disable and cannot engage in labor works should get opportunity which enable them to be economically empowered.
- It is evident that technical and entrepreneurial skills are needed to raise the productivity and enable the illiterate dislocated farming community to compete and possess the skills necessary to survive. Thus policies that ensure access to the rehabilitation benefits especially for women and children that enable them to control and utilize the environment for improved livelihood will lead to reduction in levels of general poverty and create basis for sustainable livelihood. This could be achievable in long run through promoting primary and secondary education and related benefit packages. This may help in creating and improving the opportunity of work for women and children in sustainable manner. There should also be re-establishing office that coordinates technical support (training and education) to dislocated farming community and to create stable economic environment.
- With low social and economic development in these areas the policies that evict farmers from their land without alternative means and improved capacity to expand their livelihood options and without creating better economic opportunity need to be reconsidered. Either government or non-governmental organizations working on livelihood development, economic strengthening and the related issues should focus on these areas in order to enhance means of livelihood for the dislocated peri-urban community. The town administration should refrain from engaging anti farmers ownership policies and practices which can destroy livelihoods or assets and reduce income of the household through such actions as implementing horizontal expansion policy, low compensation rate, evicting farmers from their livelihood without considering their future prospects, and ignoring their capacity to re-establish their livelihood in urban life; and devoid of agricultural extension service in the periphery.
- With low social and economic development in these areas the policies that evict farmers from their land without alternative means through job opportunities and improved capacity to expand their livelihood options and without creating better economic opportunity need to be reconsidered.
- Wolaita Sodo town is exercising horizontal growth since its establishment. This trend has brought social, economic and environmental problems that weigh the advantage. It is necessary to change this trend and induce the policies that implement vertical growth of the town. In order to bring this advancement the expansion of infrastructure facilities is a must. The access of infrastructure can boost the development and technological adaptation as soon as possible. The areas should be fulfilled by road, potable water, electricity and so on for mutual benefit of dislocated and reallocated communities.

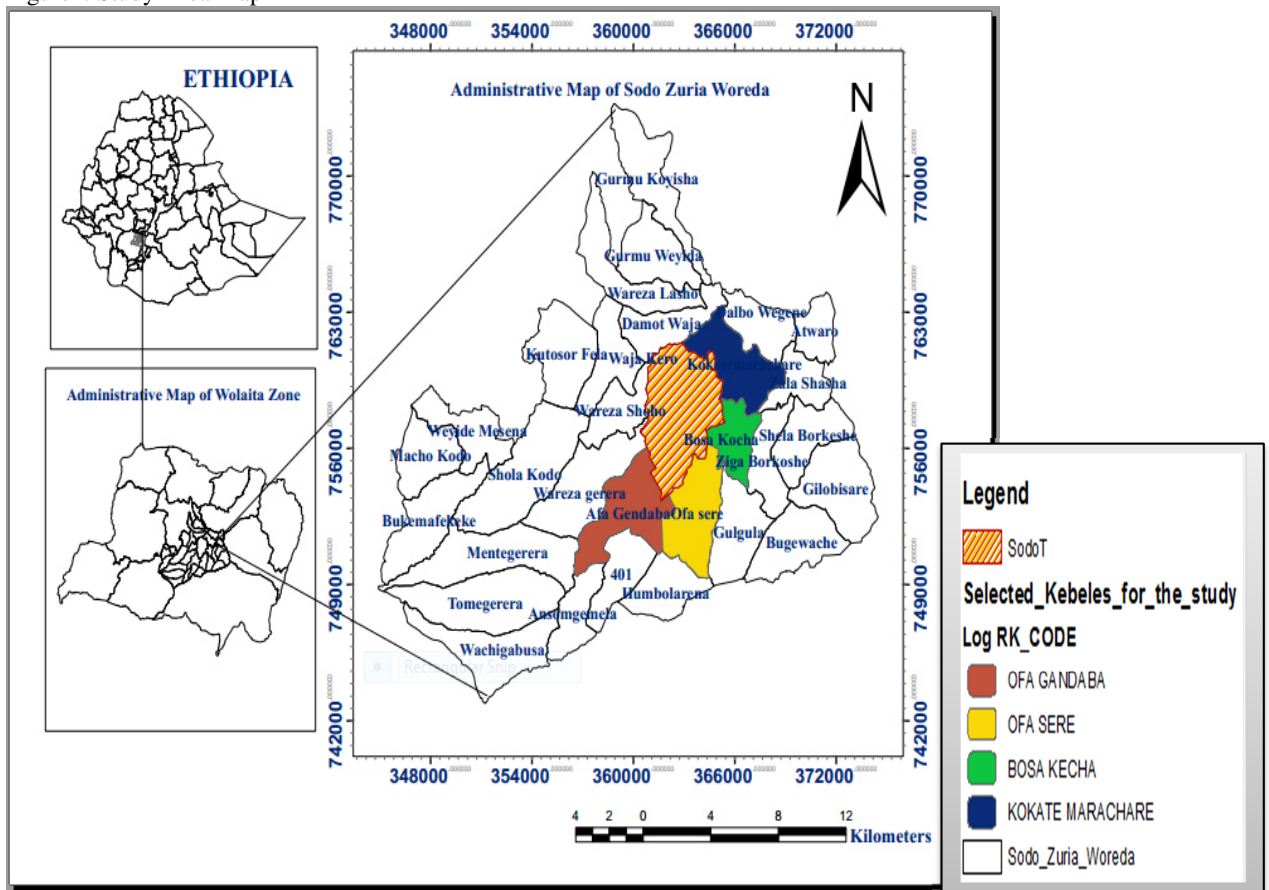
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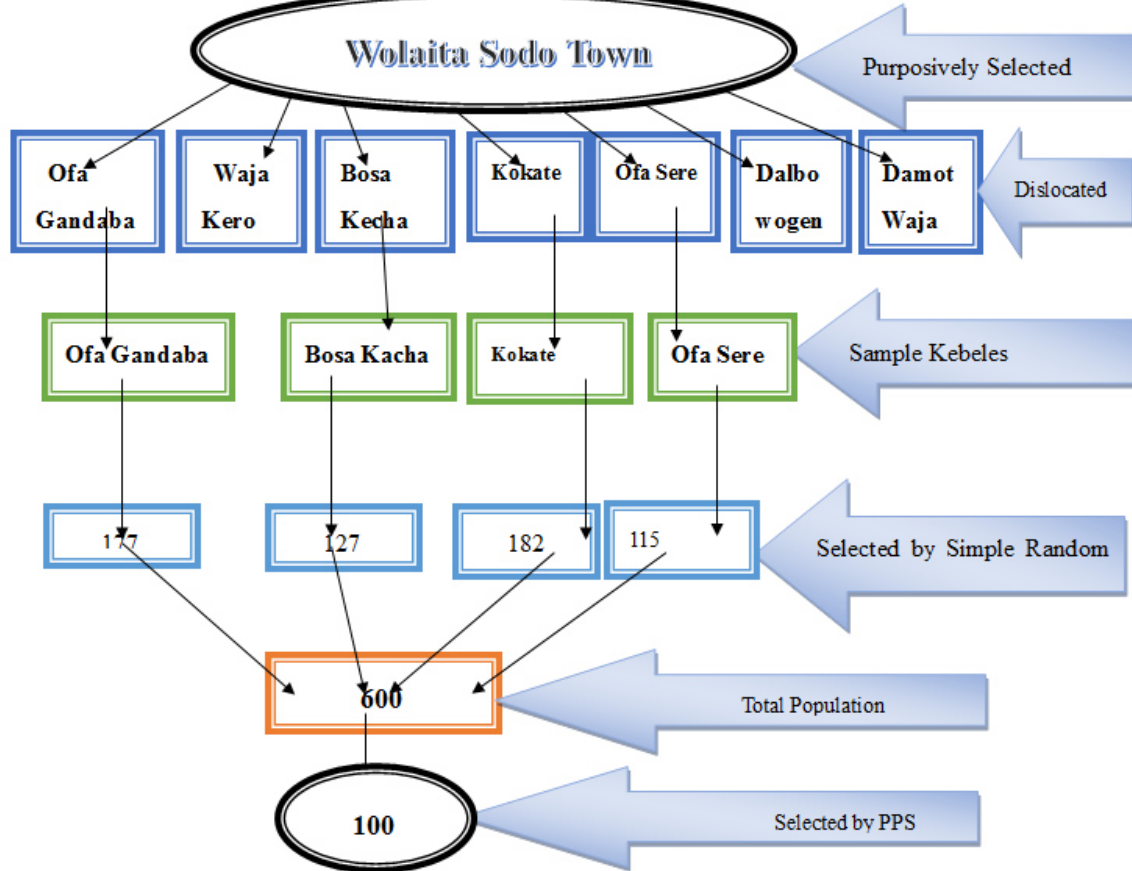
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Figure1: Study Area Map



**Figure 2: Sampling Frame**



**Table 1 : Sample Households distribution**

No.	Kebele	Family Head		
		Male	Female	Total
1	Offa Gandaba	27	3	30
2	Bossa Kecha	20	1	21
3	Offa Sere	15	4	19
4	Kokate Marachare	28	2	30
<b>Total</b>		90	10	100

Source: Own survey, a total of 100 sample households were selected by the probability proportional to size, 2016

**Table 2. Explanatory Variable Specification, Measurement and Expected Sign**

Variable Name	Variable Code	Variable type	Expected sign
Consumption of household	HCNSPN	Continuous variable measured in birr	-ve
Means of livelihood of household	MLHD	Continuous variable measured in birr	-ve
Landholding size	LADSIZ	Continuous variable measured in ha.	-ve
Sex of household head	SEXHH	Dummy variable measured as(1 if a male and 0 otherwise)	+ve/-ve
Livestock	LIVSTK	Continuous variable measured in number	-ve
Education level	EDUCLV	Categorical variable measured in illiterate, literate	+ve
Infrastructure facilities	INFRSTR	Dummy variable measured as (1 if access infrastructure 0 otherwise)	+ve
Total income of household	INCME	Continuous variable measured in birr	-ve
Job opportunity	JBOPRT	Dummy variable measured as (1 if job access and 0 otherwise)	-ve
Credit utilization	CRDTU	Dummy variable measured as (1 if access of credit and 0 otherwise)	+ve
Household's perception of benefits from compensation	PRCPN	Dummy variable measured as(1 if satisfactory and 0 otherwise)	+ve
Family Size	FSHH	Continuous variable measured in number	-ve
Age of Household head	AGEHH	Continuous variable measured in number	+ve/-ve

Source: Ownservy data, 2016

**Table 3, Distribution of the household heads by age groups (%)**

Age Group	Frequency	Percentage (%)
18 – 33	3	3
34 - 49	26	26
50 - 65	51	51
>65	20	20
<b>Total</b>	100	100
<b>Minimum</b>	18	
<b>Maximum</b>	84	
<b>Mean</b>	48.8100	
<b>St. dev</b>	16.49897	

95% Confidence Interval

Source: Own Survey, 2016

**Table 4: Educational status of sample household heads**

Educational Status	Frequency	Percent
Illiterate	31	31
Read and Write	25	25
Primary	17	17
Secondary	15	15
Preparatory	7	7
Above Grade 12	5	5
<b>Total</b>	100	100

Source: Own Survey, primary data, 2016

Figure3: Age Group Distribution by HHh

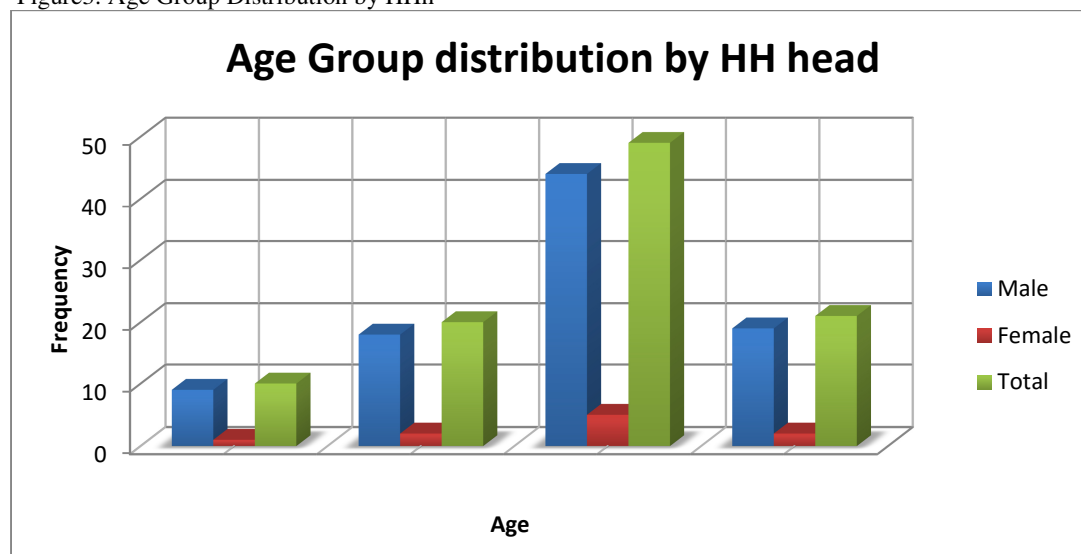


Table 5: Distribution of sample household heads by land holding size (%)

Land holding size (ha)	Frequency	Valid Percent
≤ 0.5	49	49.0
0.5 – 1.0	37	37.0
1.01 – 1.55	11	11.0
1.56 – 2.00	2	2.0
≥2.01	1	1
<b>Total</b>	100	100.0
<b>Minimum</b>	0.5	
<b>Maximum</b>	2.25	
<b>Mean</b>	0.8400	
<b>St. dev.</b>	0.39492	

Source: Own Survey, 2016

Table 6: The dislocated farming households for Wolaita Sodo town development expansion and benefit packages provided in dislocation (2012-2016)

Development Expansion Site	Area taken for Development (Ha)	Dislocated farmers (H.H)	Benefit Packages in Birr	Residential area replaced (M <sup>2</sup> )	Farmers Obtained Housing plot Replacement (H.H)	Purpose of Development
Kokate Marachare	58	30	1,635,673	15734	29	Residence
Bossa Kecha	41	21	1,056,327	13745	17	Residence
Offa Sere	39	19	865,328	11652	19	Residence
Offa Gandaba	61	30	1, 136,872	15700	22	Residence
<b>Total</b>	199	100	4,694,200	56,831	87	

Source: - Wolaita Sodo town municipality (June 2015)

**Table 7: Population characteristics of sample dislocated household head**

General Characteristics	Particular	Mehal	Merkato		Arada	Total	Percent
		Gandaba	Offa Sere	Bossa Kecha	Kokate		
Age of Respondent (group)	18 – 33	1	-	1	1	3	3
	34 – 49	4	7	8	7	26	26
	50 – 65	12	13	16	10	51	51
	>65	7	2	5	6	20	20
	<b>Total</b>	24	22	30	24	100	100
Sex of Respondent	Male	27	15	20	28	90	90
	Female	3	4	1	2	10	10
	<b>Total</b>	30	19	21	30	100	100
Marital Status	Single	4	3	5	2	14	14
	Married	19	20	12	18	69	69
	Divorced	3	2	4	1	10	10
	Widowed	1	-	-	2	3	3
	Separated	2	1	1	-	4	4
	<b>Total</b>	29	26	22	23	100	100
Ethnicity	Wolaita	17	20	12	26	75	75
	Gamo	5	7	2	1	15	15
	Amahara	1	4	3	1	9	9
	Others	-	-	1	-	1	1
	<b>Total</b>	23	31	18	28	100	100
Level of Education	Illiterate	8	10	9	6	31	31
	Read & Write	7	5	11	2	25	25
	Primary (1-8)	6	2	5	4	17	17
	Secondary (9-10)	1	6	3	5	15	15
	Prep (11-12)	2	1	3	1	7	7
	>12	1	-	3	1	5	5
	<b>Total</b>	31	32	22	15	100	100
Household member (group)	1-5	6	8	4	3	21	21
	6-10	12	10	24	19	65	65
	>10	5	4	3	2	14	14
	<b>Total</b>	23	22	31	24	100	100

Source: Own Survey, primary data, 2016



**Table 8: Binary Logistic Regression Results for factors determining the livelihoods of peri-urban community**

Variable	B	Odds ratio Exp( $\beta$ )	Wald	Std error	P- value
SEXHH	0.091	1.095	0.434	0.058	0.119
AGEHH	-0.477	4.086	6.231	0.620	0.053**
EDUCLV	0.862	2.368	14.718	0.225	0.000***
LANDSZ	0.105	1.111	3.128	0.294	0.071**
MLHD	- 3.027	2.591	4.01	0.519	0.000***
LIVSTK	0.267	1.306	0.003	4.679	0.955
INFRSTR	1.011	2.749	4.447	0.478	0.034**
INCME	0.004	1.204	0.024	0.003	0.532
JBOPRT	- 0.430	1.044	22.178	0.073	0.004***
PRCPN	0.091	1.095	2.434	0.058	0.119
FSHH	-0.430	1.044	3.178	0.073	0.554
CRDTU	1.181	3.437	8.658	7.310	0.006**
HCNSPN	0.115	1.451	0.128	0.294	0.720
Constant	0.969	2.636	22.483	0.204	0.000***
Log-likelihood functions	-45.0576				
Restricted log likelihood	-55.2985				
Chi-squared	48.78839				
P-value	0.324				
Predicted success	85.4%				

Note: \*\*\*, \*\*, & \* indicate significance level at 1%, 5%, and 10%, respectively.