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The Status of Poverty in Gebi Resu Pastoralists Area of Afar Region, Ethiopia

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Abstract
Poverty is a complex, interlocked and multidimensional phenomenon in Ethiopia. The country is among the world's poorest nations in terms of Human Development Index. Poverty in Ethiopia is predominantly a rural phenomenon. The overall poverty situation of Afar region stood higher than the national average. In a modest attempt to fill in the research gap observed in disaggregated poverty studies in Ethiopia, this research was undertaken at Gebi Resu zone of the region, with the objectives of assessing the status of pastoral poverty. To achieve the aim of this study, data collection on household characteristics was conducted through interview schedules, checklists, FGD and key informant interviews. A multi-stage sampling technique was employed. In the first stage, two woredas, namely; Gewane and Awash Fentale were selected purposively, in the second stage, 4 pastoral Kebeles were selected randomly and in the third stage 130 pastoral households were selected randomly probability proportional to size. The data collected were analyzed and discussed using the Cost of Basic Need approach through Foster Greer Thorbecke (FGT) family of indices and descriptive analysis. To this end, identifying poor and non poor households; examining the incidence, depth and severity of poverty in the area; investigation of the demographic and socioeconomic characteristics of poor and non poor groups of pastoralists have been made. Accordingly, the research found out that food, non food and total poverty line for the area were 1467, 479 and 1947 ETB per AE per year respectively. The incidence, depth and severity of poverty calculated for the area on the other hand were found to be 44.6 %, 11.9% and 4.14 % respectively, which are higher than the national average. The total poverty line for the area is also lower than the national average calculated for rural areas. The result of descriptive analysis of the study with respect to demographic and socio-economic characteristics of the pastoralist households revealed that there is a significant difference between the poor and non poor group at less than 1% level of probability in terms of age of household heads, mean food consumption expenditure per AE, income from livestock sales per AE, non farm incomes per AE and number of livestock owned in TLU/AE. In the same way, variables like dependency ratio at less than 5% level of probability and Family size at less than 10% level of probability showed significant difference between the poor and non poor households.
Keywords: Poverty, Cost of Basic Need, FGT indices, Gebi Resu

1. Introduction

1.1. Background of the Study

Over the last three decades, widespread poverty has prevailed in many Sub-Saharan African countries of which Ethiopia is the most affected one. The international financial institutions led by the World Bank have been prescribing different approaches and strategies for tackling poverty in developing countries. However, policy reforms have not resulted in economic growth and poverty reduction. Although some success stories of economic reforms and growth in different countries have been reported, poverty remains pervasive and continues to plague millions of people in most African countries, owing to unequal access to resources and institutional constraints (World Bank, 2000).

Ethiopia, a land of contrast, has a long history, mosaic of peoples and diverse cultures and resources potential for agriculture, biodiversity, water resources, minerals, etc (Assefa "*et al.*", 2010; Assefa, 2009). Yet, the country is desperately poor faced with complex poverty with many factors in the world (Eshetu, 2007; Sepahvand, 2009; Abinet, 2006). Ethiopia is still among the poorest in SSA with a HDI of 0.328, which gives the country a rank of 157 out of 169 countries (UNDP, 2010). The statistical figures on the state of poverty would confirm what a casual observer would feel about poverty in Ethiopia: it is massive, chronic, deep and severe. Thus, the country is better known for its symbol of abject poverty all over the world (Abebe, 1999). Hence, it is no wonder then that poverty reduction is high on the agenda of the government, donors and nongovernmental organizations operating in the country.

The poverty experienced for the last three decades results from a number of structural factors; civil war, geographical isolation, vulnerability to shocks, health hazards and lack of infrastructure, rapid population growth, and extreme environmental degradation (Assefa and Firehiwot, 2003; WB, 2006). However, Ethiopia has made

substantive economic progress for the last seven years (MoFED, 2010a), in comparison with an average population growth rate of 2.6%, implies that the average annual per capita income growth rate was 8.4 % (MoFED, 2010b; Marit *"et al."*, 2008).

Poverty reduction requires multi-dimensional approaches and strategies (Abu, 2007). We have reached an era in which the moral and economic justifications for reducing and even eliminating chronic poverty have received international support. Policies and strategies are then framed in the context of the MDGs that set specific quantitative targets to be achieved within a specified time framework. In response, governments and development partners have renewed their interests and re-committed themselves to poverty reduction (Odhiambo, 2005).

The general tendency among policy-makers to view the pastoralist mode of life as a 'backward' and 'wild' way of life that needs to be changed offers no possibility to understand the complexity of their vulnerability and find solutions more appropriate to their needs and aspirations. Poverty incidence differs across regions and in pastoral areas, is higher and social indicators are significantly lower than the national average. Human development indicators and poverty rates among pastoralists are uniformly worse than non-pastoralists in Ethiopia due to various manmade and natural pressures (Dereje "et al.", 2011; WFP, 2011; Beruk, 2004).

Moreover, pastoralists in Ethiopia are the most marginalized and least privileged with access to modern services as education and human health (Solomon "et al.", 2003). In this case, around 275,000 citizens, 18 percent of the total of Afar Region are chronically food insecure (PFE, 2009). Despite the incidence of poverty and the severity of their plight, attempts made to define and measure the depth of poverty situation in the areas are inexistent or a little. This reflects the view of the World Bank (2006) which claims that the pastoralist areas have received little attention from policy makers, and pastoral peoples continue to be marginalized economically, socially, and politically.

Since poverty analysis is a natural point of departure for the country analysis to meet the MDGs, measuring the magnitude of poverty and designing a strategy are imperative. A number of studies have sought to examine the extent of poverty in rural Ethiopia (Ayalneh, 2011). However, what have so far been studied in Ethiopia, much if not all, concentrate on and reflect the national picture. But studies and analysis at an aggregate level do not necessarily reflect the situation at grass root level. Dercon and Krishnan (1996) strongly advise that one should be careful about the implications derived from measurement of poverty at national level, because it hides many important differences that exist in different locations, and hence, are likely to be reliable only for particular localities.

The people in the rural areas particularly the pastoralists are dauntingly exposed to debilitating poverty. To combat such weakening poverty in view of very scarce resources available to be allocated for the purpose, the poor must be properly identified and an index that takes into account the intensity of poverty suffered by the poor should be constructed (Ayalneh "*et al.*"., 2005). However, so far, analytical works that scrutinize poverty profiles in the pastoral communities of Afar region is at best scanty. The updated estimates on poverty with an in depth area-focused research would provide about the nature and extent of poverty as experienced by pastoralists residing in Afar. Accordingly, this study has been conducted with the main aims of measuring poverty in pastoralist community.

2. Rationale of this study

The outcome of this study is expected to provide valuable information for designing development intervention by policy makers and development institutions working in the area of alleviating poverty. Moreover, the information can be used as a valuable ingredient to other similar areas having similar situations. The study could also help as an input for further study in the area with related subject. In addition, the findings of this research will have valuable practical relevance in designing poverty reduction policy at local, regional and national level.

This kind of assessment is very critical in decentralized decision making like Ethiopia as the degree and perceptions of poverty varies from place to place. Poverty alleviating programs also rely on geographic targeting as a crucial device to guide resource allocation. As such, studies of this nature are valuable to design and evaluate policies aimed at alleviating poverty.

3. Research methodology

3.1. Description of the Study Area

Afar region is located in the Great Rift Valley, comprising a total geographical area of 270,000 km (CSA, 2008). It is geographically located between 39^0 34' and 42o 28' East Longitude and 8^o 49'and14^o 30'North Latitude. The region has a great potential of livestock resources comprising of 2.3 million cattle, 4.3 million goats, 2.5 million sheep, 0.8 million camels and 0.19 million equines that support the region and contributes to the national economy **(**CSA, 2010). Administratively, Afar region consists of 5 administrative zones, 32 woredas (districts) and 401 kebeles or pastoral associations. Based on the 2007 Census conducted by the Central Statistical Agency

of Ethiopia (CSA), this Zone has a total population of 198,751, of whom 108,995 are men and 89,756 women. While 54,328 or 27.33% are urban inhabitants, a further 24,075 or 12.11% were pastoralists

The study was conducted in two selected districts of Gebi Resu zone of Afar National Regional State, which is situated in the North Eastern part of Ethiopia. Gebi Resu is one of five Zones of the Afar Region of Ethiopia, located in the southern part of the region. This zone is bordered on the south by the Oromia Region, on the southwest by the Amhara Region, on the west by the Administrative Zone 5, on the north by Administrative Zone 1, and on the east by the Somali Region. The zone consists of six districts, predominantly occupied by pastoral and agro-pastoral communities. Gebi Resu zone is characterized by arid and semi arid agro-climatic condition with ranging annual rainfall of 200 to 700 mm. The two selected districts of the zone, namely Gewane and Awash Fentale, are located in the dry lowlands of the rift valley, at about 230 and 280 km northeast, respectively from the capital Addis Ababa.

Gewane is one of the six woredas of the Gebi-Resu zone. The woreda is bordered on the south by Amibara, on the west by Buremudaytu woreda, on the north-west by administrative zone V, on the north by the administrative zone I, on the east by the Somali Region and on the south-east by the Oromia Region. The Awash River defines parts of the boundary with Administrative Zones III and V. The woreda consists of 7 kebeles of which two urban and seven rural (five pastoral and two agro-pastoral). It covers a total area of 59,640 ha. Based on the CSA report of 2008, in Gewane woreda 31,313 people reside; of which 5,982 are urban and 25,331 are rural dwellers. Therefore, more than 80% of the population of the wereda lives in rural areas. The woreda is generally semi-arid with a temperature level that falls between 28 and 42^0C, with an average temperature of 35^0C. Seasonal variations reveal that the temperature is moderate in the months between September and November and also in the months of December and January. The highest temperature is in the months between March and May. It is generally low from June to August. The woreda receives an average annual rainfall of 320milli meter. Most of the rain is concentrated in the months of July and August. The land use pattern shows that out of the total area coverage of the woreda according to information from the livelihood survey result of Farm Africa, 35.0% used for grazing, 6.6% is covered with crops, 15% is arable land, 25.4 % covered with shrubs and the rest 18.36% either, barren or rocky and for settlement **(**Farm Africa, 2009). Concerning livestock composition it has a total livestock population (cattle, shoat and camels) of 194,818.2 TLU (Farm Africa, 2009). The woreda has no livestock market place other than small daily village markets for only small ruminants. Gewane Agricultural Technical Vocational Training College is found in this woreda. Furthermore, there are 33 cooperatives currently working in the woreda.

Awash Fentale is one of the six woredas included in administrative zone-III of the Afar region. It is administratively divided in to six kebeles (kebena, Doho, Sabure, Dudub, Boloyita and Awash 01). It is bordered on the north by Amibara Wereda, on the west by the Awash River which separates it from Dulecha to the south-west then on the north-west by the administrative zone V, on the north by Gewane woreda, and on the east by Oromia region; and administratively, it is structured into 10 PAs. The livelihood of inhabitants in Awash Fentale woreda is predominantly pastoralism, although agro pastoralism is also practiced. The two kebeles are purely pastoralists, one urban kebeles and the rest practice agro-pastoralism. Furthermore, petty-trade and employment in local government and NGOs also constitute the means of living mainly for urban dwellers. In general, the main sources of food in the woreda are own livestock production, and some extent crop production, and also purchase of cereals from the market. Based on the CSA report of 2008, in Awash Fentale woreda 29,775 people reside; of which 16,844 are urban and 12,931 are rural dwellers. As it was seen from table 2, unlike the low level of urbanization in the Afar region, 56.57% of the population in Awash Fentale is urban dweller. Agro-ecologically the weather condition of the woreda is generally arid with an average temperature of 29.5^0C. The altitude of the woreda ranges between 720 and 1100 meter above sea level. Seasonal variations reveal that the temperature is moderate in the months between September and January while it is the highest in the months between February and May. Temperature is generally low in the months of July and August. The wereda receives an average annual rainfall of 575mm.

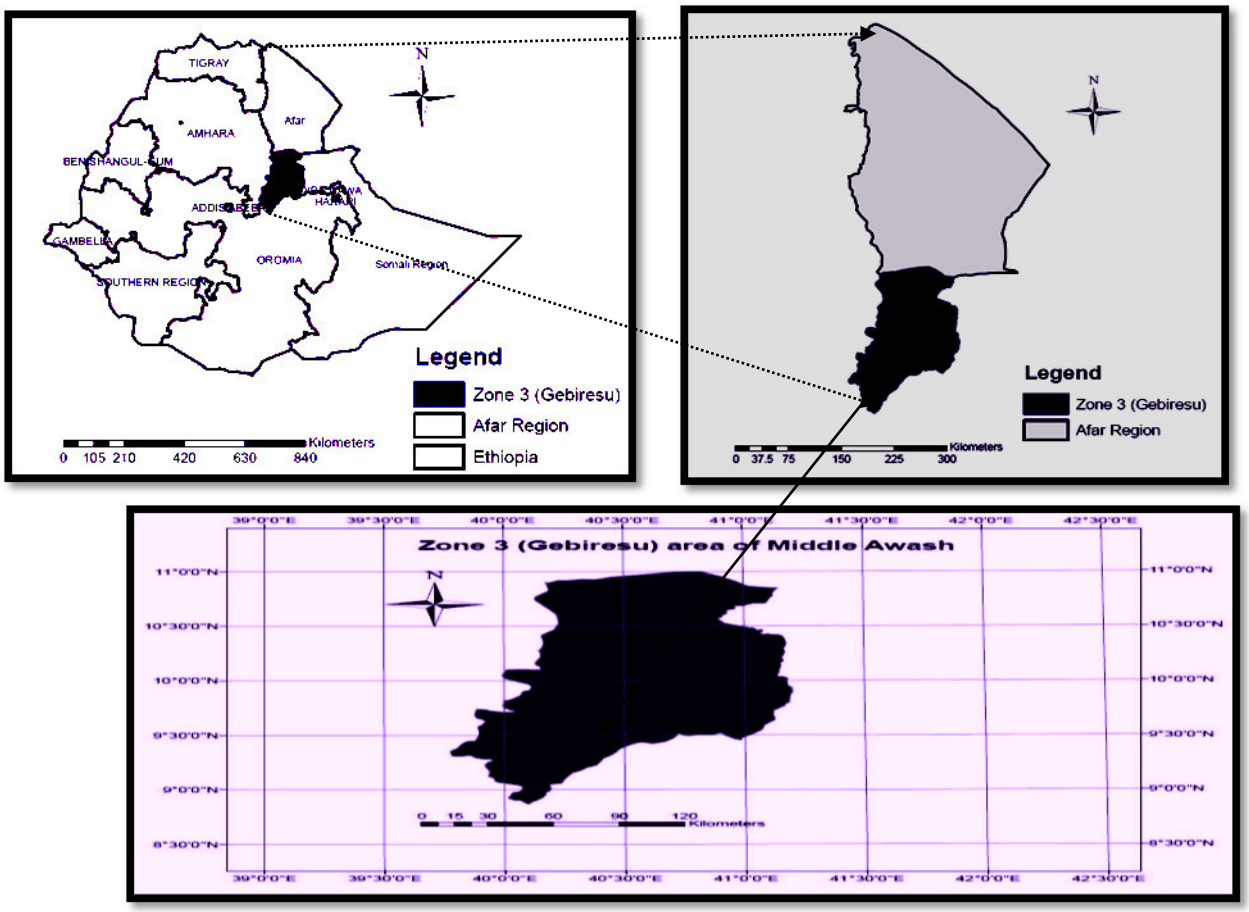

Figure 1. Location Map of the Study Area

3.2 Source of data

The research design followed a multi stage sampling method, both systematic and random sampling at woreda, village and household levels, respectively. In the first stage, two woreda namely; Gewane and Awash Fentale were purposively selected in Gebi Resu based on frequency of shocks like flood and drought, food relief program and the subsequent death of cattle during drought season as criteria.

According to data obtained from Pastoral and Agro-pastoral Office of the study area, the lists of pastoral villages or PAs in the woredas are 7 and 6 respectively. Among these, two villages for each of Awash Fentale and Gewane woreda respectively were selected using random sampling techniques. Complete lists of household heads of selected four villages were not available at the Administration Office. But, according to the information obtained from clan leaders, the total number of households in Doho, Dudub, Biraforo and Adebaro respectively was found to be 75, 54, 71 and 95. Therefore, from those 4 villages, using random sampling techniques probability proportional to size, 33, 24, 31 and 42 households a total of 130 household were selected as indicated in figure 3.

3.3 Data Collection Methods

The study applied an interview schedule, Focus Group Discussions and Key Informant Interviews in targeting local communities for the selected areas. Participatory Rural Appraisal (PRA) technique like Wealth ranking was also applied to identify the wealth status of people using local criterion for measuring wealth. Checklists were also developed and used for collecting information. Finally, secondary data analysis also substantiated the findings of the primary data.

Before the actual data collection, several preparatory activities have done; group discussion with a few elders was conducted (both from Gewane and Awash Fentale). The discussion was important for re-designing the interview schedule and build trust in the research process. In many villages the head of the village is the most influential person and the first person to contact. This helped to ensure that the interview schedule received the greatest support throughout the village. Before conducting the field survey, five enumerators with practical knowledge of the area and well conversant with the culture and language were recruited. The enumerators collected the required data under a close supervision of the researcher. The filled in interview schedule were

thoroughly checked every day on the spot for the completeness and for re-interview if problem happened.

Baskets of food items that particularly represent the poor were adapted from past research efforts with some adjustment to fit the specific characteristics of the study area. To this end, the minimum food basket that gives 2200Kcal per adult equivalent per day -the minimum calorie intake suggested by WHO required for an adult to perform daily duties, constructed for a cereal-based farming rural area of Ethiopia is adapted for Gebi Resu. In addition, to control consumption differences created by age and sex differences of household members, Adult Equivalent Conversion factors developed for such purposes are adopted for the study. Price data for the food items were collected during the survey period.

3.4. Techniques of Data Analysis

In order to measure the status of poverty, the survey data were first sorted out, edited, and coded, organized, summarized and analyzed using statistical package for social sciences (SPSS version 16.0). The costs of basic needs, Foster - Greer - Thorbecke indices and descriptive statistics were employed to address the stated objectives of the study. Using the costs of basic need approach, the poverty line was drawn to categorize households as poor and non poor. With the help of FGT indices, the head count, poverty gaps and squared poverty gaps were calculated. The descriptive statistical tools like mean, standard deviation, and inferential statistics and cross tabulation were employed during analysis and interpretation of the household quantitative characteristics. Besides, statistical test such as tests of significance was used for interpretation of data and drawing conclusions. In this study, both quantitative and qualitative methods of data analysis including case studies have been employed.

As a starting point for poverty analysis, the point of demarcation known as absolute poverty line was drawn with cost of basic need approach estimation, by considering the quantities of various wellbeing indicators as a yardstick to classify pastoral households as poor and non-poor. On the other hand, households were categorized as poor and non-poor based on the predetermined minimum amount of calorie which is 2200Kcal per adult equivalent. While measuring standard of living in terms of the consumption expenditure below the poverty line, pastoralists are counted as poor, and otherwise non poor.

As it is noted by Foster, Greer and Thorbecke (1984**),** the three measurement indices, namely; head count, poverty gap and squared poverty gap were used to identify proportion of the poor whose measured standard of living is below the poverty line, the gap or relative shortfall of the poor from the poverty line and severity of poverty or poorest of the poor households respectively. They all refer to a certain amount of income that is considered as a threshold between being poor and non poor, the so-called poverty line. Mathematically, the model is expressed as;

$$P_\alpha = \frac{1}{N}\sum_{i=1}^{q}\left(\frac{z-y_i}{z}\right)^\alpha,\ \alpha \geq 0$$

Where, P_α = poverty measure

Z = poverty line

Y_i = income level

N = Population number

q = is the number of poor

α = "poverty aversion" parameter (the weight attached to the severity of the poor)

In the equation, $z - y_i = 0$ if $y_i > z$

The head count index is defined as the proportion of the population whose measured standard of living is less than the poverty line. However the index does not capture the differences among the poor. The poverty gap index shows the intensity of poverty, which is the difference between the line and the mean income of the poor, expressed as percentage of the poverty line. The severity index measures the mean of the individual poverty gaps raised to the power of α (poverty aversion parameters).

Formally, the head count ratio is given by;

$$\text{Head count} = \frac{\text{Number of people whose income is below poverty line}}{\text{Total size of population}}$$

Mathematically; $P_0 = \frac{1}{N}\sum I\,(Y_i < Z)$

It is measure of prevalence of poverty. Thus, the headcount index shows the percentage of the population below a certain threshold, and the poverty line respectively. Here 'I' is an indicator function that takes on a value of 1 if the bracketed expression is true and 0 otherwise. So, if expenditure Y_i is less than the poverty line Z then, 'I' is equal to 1 and a household would be counted as poor. N is the total number of population. The poverty gap index measures the extent to which individual falls below the poverty line. It indicates the relative shortfall of the poor from the poverty line. The sum of these poverty gaps gives the minimum cost of eliminating poverty, if transfers were perfectly targeted. The poverty gap index P_1 may be

written as;

$$P_1 = \frac{1}{N}\sum_{i=1}^{q}\left(\frac{z-y_i}{z}\right)$$

Where; N is the size of the sample
Z is the poverty line
G_i is the poverty gap ($Z - Y_i$) and
q is the number of persons with income below poverty line.

The squared poverty gap (poverty severity index) P_2 averages the square of the gaps relative to poverty line. It is one of the Foster- Greer- Thorbecke classes of poverty measures, expressed as;

$$P_2 = \frac{1}{N}\sum_{i=1}^{q}\left(\frac{z-y_i}{z}\right)^2$$

This poverty index gives greater emphasis to poorest of the poor by weighing each poor person by the square of his or her proportional shortfall below the poverty line (Ravallion, 1992).The poverty severity index is more sensitive to redistribution among the poor in that a dollar gained by the very poor would have more effect on poverty than that gained by moderately poor people. It is a good measurement to compare policies that are aimed to reach the poorest.

4. Results and Discussion

4.1. Poverty Line and Indices

The starting point for the poverty line was the assumption that the Afar pastoralist requires 2200 calories per day to be adequately nourished. In fact, the calories required vary by age, sex and physical activity, but an average over different groups in Ethiopia population leads to a figure of approximately 2200 (MoFED, 2006a). With this assumption, the question addressed was: what basket of food item follow typical pastoralist food consumption pattern and provides 2200 calories per day? In this case, households were divided into four groups of equal size (QUARTILES) according to their consumption expenditure per AE.

The average per AE daily calorie intake level in the Gebi resu is computed to be 2172. According to Eshetu (2007), pastoralist forum Ethiopia, there is a slight increasing trend in the last two consecutive five years for Afar region as 1617 kcal (2000) and 1861(2005). The region, though second poorest in terms of household income, was second most "food secure" in terms of food consumption, around 2050 kilocalories a little less than Somali region and 2746 Kilocalorie at the national level in 2004/05, possibly a reflection of the high meat and milk content of pastoralist diets (Devereux, 2007; MoFED, 2006a).

The choice of reference group should be determined on the basis of the commitment the governments want to make it in terms of allocating resources to poverty reduction programs. It may be reasonable to choose the population belonging to the bottom (fourth) quartile as a reference group (Kakwani, 2010). The food poverty line is obtained by selecting baskets of food items which are reasonably consumed in a given setting and then calculating which basket yields the specific calorie minimum at the lowest cost under the prevailing prices (MoFED, 2006a). The cost of this basket defines the food poverty line (Weerahewa, 2005). For the purpose of finding a food basket that provides 2200 calories, the fourth quartile is the one whose calorie consumption is smallest to 2200 calories per day. Thus, the food basket was based on the food consumption pattern in the lowest income quartile. To obtain a basket of food items with the same consumption pattern yielding 2200 calories and to calculate the food poverty line, quantities of the lowest income quartile is used. From the available data, the food poverty line was calculated to be 1467ETB as it is shown in table 1.

Table 2. Food Consumption of the Lowest Income Quartile and Poverty Line

Food items	Mean Kcal per kg/lt	Gram consumed per adult per day	Kcal per day per Adult	Kcal share (%)	Mean price per Kg/Lt (Birr)	Value of poverty line per year (Birr)	Expenditure share (%)
Cereal	3470	505.9	*1755.4*	*79.79*	738.61	4	50.32
Milk	737	330	243.22	11.06	240.9	2	16.41
Sugar	3850	17.45	67.21	3.05	89.17	14	6.10
Salt	1780	28.99	51.60	2.34	42.32	4	2.88
Oil	8964	4.65	41.76	1.89	42.43	25	2.89
Meat	1970	12.88	25.37	1.15	188.04	40	12.8
Vegetables	370	18.02	*10.37*	*0.47*	51.13	5	3.48
Coffee	1190	2.55	2.81	0.128	23.26	25	1.58
Tea leaf	1103	1.9	2.26	0.103	52.01	75	3.54
Total			2200	100	1467.76		100

Source: Own computation, 2011

Note: The mean kcal per kg/Lt is extracted from poverty profile of Ethiopia, a report for Welfare Monitoring Unit of MOFED 1999/2000.

The method of deriving the nonfood poverty line is equivalent to the method of driving the food poverty line, that is, by choosing some non food items considered essential. However, since there is no absolute standard for minimum non food requirements similar to that of food that has a standard calorie intake as a basis, constructing the non food poverty line remains arbitrary.

The study valued the non-food basket based on the standards consumer theory and Ravallion's assumptions that if a person's total income is just enough to reach the food threshold, anything that a person spends on non food items will be seen as important. Based on this idea, the non food poverty line is the HH's non food expenditure at which the HH's total expenditure equal to the food poverty line. At this point, the HH's income is just sufficient to buy only the nutritionally adequate food basket so that any expenditure a HH incurs on non-food will be absolutely essential. The non-food needs were obtained by examining the non-food expenditures per AE per year for households in the lowest income quartile. The mean value was 479 ETB per AE per year. Adding this to the food poverty line gives a total poverty line of 1947 ETB per AE per year.

Compared to other studies at disaggregated level, the poverty line of Gebi Resu valley was found to exceed what Hilina (1126 ETB) computed for Shinilie zone in 2005, Kefelegne (1362 ETB) for Kebribeyah in 2007, Gosaye (1251.5 ETB) for Lasta wereda in 2008 and Tessema (1683 ETB) for Zeway district in 2009. Given an average household size of 4.979 adult equivalent units, a typical household in the study area needs an income of ETB 9694 per annum to escape poverty in Gebi-Resu. Review of domestic expenditures in relation to all payments revealed that Afar region has one of the highest figures in the country. The region exhibits the characteristics of poor regions i.e. high expenditure in relation to all payments against savings (Assefa "*et al.*"., 2010). The extent of poverty is examined based on the three most common indices: namely; head count, poverty gap and poverty severity (squared poverty gap), and found out to be 0.446, 0.119 and 0.0414 respectively. It is presented in table 2.

Table 3. Absolute Poverty Indices of Sampled Pastoralist Households

Poverty indices	**Index value**
Head count index (α=0)	0.446
Poverty gap (α=1)	0.119
Squared poverty gap (α=2)	0.0414

Source: Own computation, 2011

The results indicate that 44.6% of the sample households are deemed poor as can be measured in absolute head count index (α = 0). This implies that this share of the sampled population in Gebi Resu is below the poverty line; that is, the share of the population that cannot afford to buy a basic basket of goods enabling to get the minimum calorie required (2200 kcal per day per adult) adjusted for the requirement of non food items expenditure. The poverty gap index (α=1) on the other hand, reflects the total deficit of all the poor households relative to the poverty line. Thus, the overall shortfall relative to the poverty line is 11.9% (231.69 ETB/AE/year). With 4.979 AE in the area, there was a shortfall of about 1154 ETB per year for a HH. Since the two woreda

have a total number of 13612 HHs, it would be 15,708,248 ETB/year overall shortfall and per capita cost of eliminating poverty. It is, therefore, a much more powerful measure than the head count ratio because it takes into account the distribution of the poor below the poverty line and also reflects the per capita cost of eliminating poverty. Because it shows how much would have to be transferred to the poor to bring their incomes or expenditures above the poverty line (as a proportion of the poverty line) and is an indicator of the potential saving to the poverty alleviation budget from targeting: the smaller is the poverty gap index, the greater the potential economies for a poverty alleviation budget from identifying the characteristics of the poor. Similarly, the FGT severity index (α=2) shows that 4.14% of the poor falling below the threshold line are poorest of the poor, implying severe inequality. Thus, for 4.14% of the total 130 HHs, more weight has to be given as they are poorest of the poor.

4.2. Descriptive Statistics

4.2.1 Consumption Expenditure of the Pastoral Households

With respect to mean food expenditure per AE, the survey result on table 3 reveals that there is statistically significant difference at less than 5% probability level. Apart from vegetables which differ significantly at less than 5%; milk, meat, cereals, sugar, coffee and oil on pastoralist HH expenditure indicated a significant difference at less than 1% probability level. But, expenditures per adult equivalent on food items such as salt and tealeaf do not significantly differ between the two groups. The mean difference in non food expenditures per AE generally and expenditures for medical, education, kerosene, transport, utensils, religious contributions, social obligations and miscellaneous particularly, between the poor and non poor groups are not statistically significant. Fortunately, however, statistically significant differences between the two groups exists with regard to the mean non food expenditure of use of veterinary services at less than 1% probability level; clothing, gun bullets, chat & tobacco at less than 5% probability level and livestock purchase at less than 10% probability level.

Table 4. Absolute Poverty Indices of Sampled Pastoralist Households

	Poor (N=58)		Non poor (N=72)		
Expenditures	**Mean**	**Std.dev**	**Mean**	**Std.dev**	**T-value**
Food expenditure/AE	1030.8	340.17	1901.4	609.24	-9.58 **
Milk	196.47	240.28	310.87	164.30	-3.21 ***
Meat	135.71	71.99	231.6	96.08	-6.31 ***
Cereals	542.63	212.34	955.32	360.80	-7.69 ***
Vegetable	48.37	145.84	95.28	137.27	-1.87 **
Oil	34.43	27.60	69.40	54.24	-4.46 ***
Sugar	53.31	41.36	108.39	77.18	-4.89 ***
Salt	25.02	17.65	50.79	43.12	-1.53
Coffee	19.98	18.70	63.60	215.08	-4.26 ***
Tea leaf	19.98	51.92	20.12	41.46	-0.018
Pasta and macaroni	0.00	0.00	20.96	59.26	-2.69 ***
Non food expenditure	414.79	209.89	1047.4	330.5	-1.429
Clothing	139.31	129.1	189.62	124.49	-2.25 **
Medicals	154.29	554.38	166.33	380.877	-0.146
Veterinary services	22.68	22.65	28.90	22.80	-3.04 ***
Education	8.93	15.66	10.12	12.74	-0.48
Livestock purchase	12.79	35.40	25.00	45.84	-1.66 *
Chat and tobacco	64.00	38.98	82.11	58.37	-2.02 **
Utensils	6.24	22.97	11.43	23.65	-1.25
Religious contributions	7.66	9.21	8.69	9.45	-0.62
Kerosene/lump/soap	44.80	28.43	64.03	40. 75	-1.54
Social obligation	11.49	56.84	13.44	44.70	0.219
Transportation	33.47	186.43	26.97	127.70	0.235
Bullets	17.61	18.60	30.84	45.05	-2.09**
Miscellaneous	20.17	74.31	23.44	52.44	-0.29

Source: Own survey result, 2011

Note: ***, ** and * significant at 1%, 5% and 10% probability level respectively

4.2.2 *Age of Household Head*

The average age of the sampled pastoralists' household head is computed to be 43years, with 11.46, 20 and 80 years standard deviation, minimum and maximum ages, respectively (table 4). According to the survey result, poorer households are headed by elderly persons compared to the non poor ones. To see the relationship between poverty status and age of household head; dividing respondents into age groups (age between 21 and 30, 31 and

40, 41 and 50, 51 and 60 and above 60) is worthwhile. The samples t-test revealed that there is a significant difference between the poor and non poor groups at less than 1% level of probability. The statistics result implies that as the age of the household head increases the tendency of HHs to be poor increases.

Table 5. Age distribution of respondents

	Poor (N=58)		Non-poor(N=72)		Total (N= 130)	
Age Group	**No**	**(%)**	**No**	**(%)**	**No**	**(%)**
20-30	5	8.60	17	23.61	22	16.92
31-40	12	20.68	31	43.05	43	33.07
41-50	21	36.20	16	22.22	37	28.46
51-60	13	22.41	7	9.72	20	15.38
>60	7	12.06	1	1.38	8	6.15
Mean	48.91		38.50		42.98	
Std. Dev	11.17		9.53		11.46	
t – value					5.772 (000)***	

Source: Own Survey Result, 2011

Note: *** significant at 1% probability level respectively

As it can be seen in table 4, it is observed that as it moves from the lowest to the highest age group, the percentage of the poor relative to the non poor households in each group keep on increasing; implying that as age of the household head increases, the tendency of households to be poor increases. However, the largest proportion of non poor household heads is found in the second age group (31 and 40) as household heads are going to be more productive mentally, physically and economically.

4.2.3. Family Size

The average family size in AE of the sampled households is 4.979 as depicted on table 5. The minimum and the maximum family size in AE units are 1 and 9.15 respectively. The standard deviation is computed to be 1.43. The mean family size in AE of the poor was 5.25 whereas it is 4.79 for the non poor household. The independent samples t-test shows that with respect to the specific characteristics of poor and non poor households, family size is observed to have an influence on determining the state of poverty. Therefore, the mean differences in family size in AE units between poor and non poor pastoralist groups are statistically significant at less than 10% probability level. This finding is in agreement with a priori expectation. The result shows that as the number of persons in the household increases the tendency of households to become poor slightly increases. That is, households with larger family size tend to be poorer than those with small sizes. This can be justified as an increase in the tendency of entering in to poverty is as a result of dependency burden.

Table 6. Family Size distribution of respondents

	Poor (N=58)	Non- poor (N=72)	Total (N=130)	T- value
Mean family size/AE	5.25	4.79	4.979	1.82 (0.071)*
Standard deviation	1.37	1.46	1.43	
Maximum	9.15	8.45	9.15	
Minimum	2.35	1	1	

Source: Own survey result, 2011

Note: *Significant at less than 10% probability level

4.2.3. Dependency Ratio

Table 6 indicated that the mean dependency ratios to the overall sampled, poor and non poor household are 0.5549, 0.5974 and 0.5223 respectively. The dependency ratio between the poor and non poor groups significantly differs at less than 5% level of probability. The sample population has less equivalently distributed population dependency ratio among the poor and non-poor households. The proportion of economically non-active to active persons within the overall, poor and non-poor households respectively in the study area is 124%,148% and 109% (see table 6). This implies every 100-person within the economically active population groups support not only themselves, but also shoulder additional responsibility of 24, 48 and 9 non-productive persons for the overall, poor and non-poor households respectively. This clearly indicates a low dependency burden for the non-poor and high for the poor households in the study area. The possible justification for this may be children from the non poor households have the opportunity to live in Djibouti, Kombolcha and Nazareth with their relatives for education.

Table 7. Dependency ratio of sample respondents

	Poor (N=58)	Non-poor (N=72)	Total (N=130)	T- value
Mean dependency ratio	0.5974	0.5223	0.5549	2.254(0.026)**
Standard deviation	0.1749	0.1966	0.1905	
Maximum	0.90	0.90	0.90	
Minimum	0.00	0.14	0.00	

Source: Own survey result, 2011

Note: ** Significant at less than 5% probability level

4.2.4. Distribution of Livestock Ownership by the Respondents

Total herd size is measured in a standard unit called Tropical Livestock Unit (TLU), where 1 TLU is equivalent to 250kg of livestock. In this study, total size of cattle, shoat and camel were computed into TLU using factors 0.7, 0.1 and 1.25, respectively (Strock *et al.,* 1991). It is displayed on table 8 that the average TLU the sampled respondents in the study area have is 11.311. The standard deviation is 9.087. The value of standard deviation clearly implied that there is a large variation in the herd size of the sampled respondents, in turn, implying that there is high wealth difference and income inequalities, as income is a function of total TLU in pastoral areas. In pastoral areas the total TLU holding is used as a measure of wealth and used to indicate income level. Average TLU is also computed for the poor and non poor pastoral household categories which help to see if there is any significant relationship between the two categories and TLU. Accordingly, the mean, standard deviation, maximum and minimum TLU for the poor household respectively are 5.970, 4.160, 20.90 and 0.00; whereas, 15.353, 9.717, 57.25 and 1.90 for the non-poor ones. The t-test statistic revealed that the mean difference in TLU/AE between the poor and non poor groups is found to be 1% statistical significance.

Table 7. Distribution of Livestock Holding in TLU

Livestock ownership	Poor (N=55)	Non-poor (N=71)	Total (N=126)
Mean TLU	5.970	15.353	11.311
Standard deviation	4.160	9.717	9.087
Minimum TLU	0.00	1.90	0.00
Maximum TLU	20.90	57.25	57.25
T-value	-6.767(000) ***		

Source: Own survey result, 2011

Note: *** significant at 1% probability level

A comparison made between the two groups shows that better-off households keep more livestock than poor households do. Moreover, better-off households own more camels and cows than poor households, which show that the former are in a better position to withstand recurrent drought

4.2.5. Livestock Income of Households per AE per Annum

The process of collecting information on the herders' income is complicated for several reasons. It needs relying on the memory of the respondents, resulting in some degree of error during reporting; and the respondents most often underestimated their cash income, thinking about the relief aid they could receive. Usually herders receive cash income from sale of animals and animal products (milk and milk products, hides and skins). However, respondents may not sell animals or animal products for the whole season before the survey which may result in zero livestock income for some respondents. Therefore in this particular study, livestock and livestock products used for home consumption are valuated to ETB and included in the livestock income data other than the cash income received from sale of animals and animal products.

The nature of the livestock income data revealed that there is large variability in the annual livestock income among the respondents. Table 10 indicated that the mean annual income as ETB 2232.2, minimum as 0.00 and the maximum is 6454.50. However, the average annual income derived by the respondents from livestock for the poor and non poor households respectively is 1115.7 Birr and 3077.2Birr.

Moreover, the respondents are arranged in to five livestock income groups to better recognize the livestock income level of respondents. The percentage computation of respondents revealed that the highest percentage of respondents 39.66% and 31.96% found to lie in the lowest per AE livestock income group (less than 800 ETB) for poor and the highest income group (greater than 3000 ETB) for non poor households respectively. On the contrary, the lowest percentage of respondents, 5.17% and 6.94% for the poor household categories lie in the fifth income group (greater than 3000 ETB) and the lowest income group (less than 800 ETB) for non poor households respectively.

The result shows that as the livestock income group grows from the lowest to the highest, the percentage of respondents for the poor declines and the non poor get higher. This implies that livestock herders in the study area who derive higher income from their livestock resources are better off ones. The mean income from the sales of live animals shows that there was a significant difference between poor and non poor household at less than 1% level of probability.

Table 8. Household income/AE per year from sales of livestock and its products

Birr/AE	Poor (N = 58)		Non-poor (N = 72)		Total (N = 130)	
	No	%	No	%	No	%
< 800	23	39.66	5	6.94	28	21.53
801 - 1500	15	25.86	13	18.05	28	21.53
1501 - 2200	11	18.97	16	22.22	27	20.76
2201 - 3000	6	10.34	15	20.83	21	16.15
> 3000	3	5.17	23	31.96	26	20.03
Mean		1115.7		3077.2		2232.2
Std. dev		931.03		2445.6		2169.08
T value						-5.693(000) ***

Source: Own field survey, 2011

Note: *** Significant at 1% probability level

4.2.6. Non-pastoral Income of Households per AE per Annum

Table 11 depicted that that the average non-pastoral income earned in Birr/AE/year for the poor and non poor households respectively is 415.87 and 1023.8. Similarly, the respondents were categorized in to five non-pastoral income groups to capture their non pastoral income level. The computation revealed that the highest and the lowest per AE percentage of the poor respondents (60.34% and 3.14%) were found to lie on (less than 500 ETB) and (greater than 2000). The highest per AE percentage of the no poor respondents (31.94% and 8.35%) were found to lie on the non-pastoral income group (less than 500 ETB) and (501 – 1000 and greater than 2000 ETB).

Table 9. Non-pastoral Income of Sample Households per AE per Annum

Birr/AE	Poor (N = 58)		Non-poor (N = 72)		Total (N = 130)	
	No	%	No	%	No	%
< 500	23	39.66	15	20.83	50	38.48
501-1000	15	25.86	23	31.94	41	31.53
1001-1500	11	18.97	16	22.22	19	14.61
1501-2000	6	10.34	12	16.66	14	10.77
>2000	3	5.17	6	8.35	6	4.61
Mean		415.87		1023.8		761.90
Std. dev		423.08		713.85		675.27
T value						-5.661 (0.000)***

Source: Own field survey, 2011

Note: *** Significant at 1% probability level

The result implies that as the income group grows from the lowest to the highest the percentage of respondents for both the poor and non poor gets lower. But, the mean non-pastoral income for the non poor being greater than the poor and the overall households, clearly indicated that participation in non-pastoral income generating activities have a direct implication to come out of poverty. Therefore, the average non-pastoral income in the area shows that there were significant differences between poor and non poor household at less than 1% level of probability. The major sources of household non-pastoral incomes were wage employment, petty trade (sale of *Gadeta*[1] firewood and charcoal) and land rent for farm investors.

4.1.3.7. Land Ownership and Land use Rights

In Afar, FGD participants indicated that rangeland is a common property of the clan within its boundary. It is accessible for use by every Afar. As the experts in bureaus of pastoralist agriculture and rural development noted that there is no clear demarcation among the lands belonging to the different clans. But, every clan has plenty of hectares of land in their settlements areas. As to the opinion of elders, the social organizations of the Afar are responsible for the allocation of the various natural resource endowment areas. Accordingly, the lands are divided into *Dinto* with *Dikka*[2]. It was also confirmed that in pastoral areas, the demarcation of user rights is clearly more difficult than in areas of settled agriculture and their fluidity is part of a process of strategic forage and water utilization supported by traditional rules and the principle of reciprocity. However, Afar's social institutions have maintained uniformity, whatever the distance between and among different Afar clans might be.

Now a day, numbers of investors are engaged in the production of cash crops and cereal over large hectares of land that has created job opportunities predominantly for the highlanders than local communities. The survey identifies two major types of lease system between the investors and land owners; net profits sharecropping and fixed-rent leasing system, which warrants the land owner some percentage of the net profits by the share croppers. In this system, the landowners get, on average 35-40% of share from the total net profit

[1] It is a local mattress made of Papyrus reed (a plant grown at the peripheries of water bodies)

[2] Tribal territories and their lines of demarcation with natural features such as rivers, hills and rocks respectively.

obtained by the investors. While the later is an agreement where the principal and the agent fix certain rent price for a hectare of land. They rented a hectare of land at a fixed-rent price. The rates vary form 400-500 Birr per hectare of land**.** The private investors pay for all inputs, get all the benefits and bear all the risk for production. Types of crop grown in the study area by investors include: Cotton, Maize, and Vegetables.

Majority of middle and large scale farm investors in the area are engaged in investment without official permission of either the regional or federal government. The clan leaders' deal a contractual agreement with the private investors to rent the land for investment and all the clan members share the money from land leased out via the clan leader. However, the deal consists of informal procedures of agreements. The contractual agreement, which is signed between the landowners and investors, is the only legal instrument required when a group of clan leaders lease-out their clan land to the cultivators. The regional government does not play a vital role in the agreement. Its role is approving the agreement by providing the stamp of the regional justice bureau only as a formality. In the whole process, the investment office at any level has no participation. FGD participants have identified the rights and obligations set in the contract as: a) duration of the contract lasts for 5 to 10 years; b) investors use the land as to their wish for any kind of crop production; c) unless the investor is in any kind of problem, all leased-out land should be cultivated; e) land owners are supposed to protect the crop from cattle damage; f) as the land preparation needs plenty of money, the first year is given free of charge; g) owners need to get either percentage share of the profit earned or a rent the land based on the contract; and h) if conflict arises between the two parties, it should be arbitrated by clan leaders or transferred to the region.

Besides, investors have to keep promises of paying salaries of 360 ETB for the so-called *wule sechi* [1] apart from payment for rent. Moreover, it is an obligation for investors to support financially and materially for medical services when an opinion leader is seriously sick. Moreover, any youngster has the ability and responsibility to manage and rent land as long as the size of land cleared from Prosopis juliflora.

It is clearly indicated by elders in Biraforo that contractual agreements is made with investors getting 35-40% of the share from the annual net profit, and after 5 years build their financial capital to take over the land lease-out to investors for their own investment.

> *"However, practically no clan takes over land back from the investors and cultivate on its own. The possible reasons are some clan leaders might have hidden agreement with the investors and hence they impose their clan members not even to raise the idea of self-cultivation. Moreover, many of the clan members have taken loan from the investors, so we are always indebted and hence do not have any moral and legal right to take over the land from the investors without paying our debt. Rather we offer additional hectare of land even by clearing the forests assuming that we could get enough share for the coming years" (discussion with the young herders in Biraforo).*

As far as land ownership is concerned, it seems hard to ask the Afar pastoralist if he/she owns land. Some of them replied no and others yes. However, some respondents argued that they had small hectare of farm land and practice crop farming. The grazing land is commonly shared with clan members. Accordingly, 43.1% of the respondents indicate that they had farm land. However, not all of them cultivate crops due to labor shortage, rain failure, *Weyane* invasion, lack of skills etc. A few of them grow cereals and vegetables in small scales. Few also grow cash crops like sisal and cotton. The crops grown were mainly meant for home consumption. However, the percentage share of land rentals in the total income of respondents is very less as it is indicated in table 13. Young herders in Adebaro express their feelings sadly as;

> *"It's too difficult to say that the Afar is benefited from the land rentals. The cultivators collected a large amount of return on their investment. But, we get less or no profit from leasing out land. Most investors do not usually show their actual loss and profit statements. Moreover, they deducted the health expense; cost of the vehicle to take patients to the hospitals in Dessie or Nazareth and the daily accommodation. Nowadays, cultivators exploit us. Some greedy investors became prosperous at the expense of our people and our land. GADP[2] for example declares profit last year that is for the first time in its many years of investment. It has paid a total of 100,000 Birr as an annual share for our clan. Accordingly, the annual share of each individual in the clan is expected to be 85 Birr and hence the clan leaders have decided to distribute the money only for those households who are in a serious problem".*

The land tenure system was described as communal. Land in the study area is rented to investors communally via the respective clans. Moreover, with regard to land ownership and tenure system, the results of the focused group discussions with the rural development experts of the woredas show that land is not privately owned, it is in the hands of the clans. Clan leaders used to rent the land to investors and divide the collected sum

[1] Wule sechi are those elders in the clan who mediate the negotiation to be either a witness or guarantee for investors to settle disputes at any point of time in the investment process.

[2] One of the largest private investments in Gewane woreda, which is called Gewane Agricultural Development Project

to the clan members. The wereda finance office collects tax from the investors. In addition, the investors pay 35-40% of the revenue earned to the clans. The pastoralists do not pay land tax.

4.1.3.8. Wealth Ranking Estimates of Pastoralists

Wealth in Gebi-Resu is basically measured by the quantity and composition of livestock possessed by individuals, farm land ownership, and dependency on relief aid or not. Livestock are not only source of food but also source of prestige and capital reserve as a security in times of shocks for pastoral communities. With the expansion of the farming activities in the area, farm wealth is growing to make up the wealth of the community but not yet given adequate recognition. Since herd size is often directly correlated to wealth and social status in the pastoral societies, the number of livestock owned by the respondents has been taken in this study. Four wealth categories were identified during the participatory wealth ranking exercises. These are *Gedeli* (rich), *Unde Gedeli* (medium), *Tule Mera* (poor) and *Maskintu* (very poor) as shown in table 19. Cattle are considered as the most important criterion of measuring wealth than camels and shoats. However, donkeys are not given weight at all as a measure of wealth by most of the pastoralists. Individual's wealth in pastoral households of the study area is generally categorized in the following manner as to the opinion of FGD participants. A household possessing more than 20, 30 and 100 camels, cattle and shoats respectively are considered as rich. If a household has a cultivated plot of land it would also be recognized as wealthy. After the drought shock in the new Ethiopian millennium in the area, there was a sudden herd loss and less recovery. Therefore, it is common to call a household who possesses 1-10, 10-20 and 25-50 camels, cattle and shoats respectively as medium. But, a household with 0-5cattle and 1-15 shoats only is considered as poor. And when a household owns very few (less than 5 shoats) or no livestock at all and completely dependent on relief aid, it is considered as very poor (*Maskintu*)[1].

> *"Ten to twenty years ago one who owned some 200-300 cattle, large size of goats and camels, one who can slaughter camel to feed relatives, give a camel, a cow, sheep or goats whenever asked for contribution and call relatives to live with him till their live improved is considered as a rich person. There are indications that long-term livestock population trends may be declining, while the human population is rising. This time, anybody who owns fifteen or more cattle and a few goats and camels, is considered a very rich person. Good clothing is not a criterion for wealth and a rich person can have up to four wives. Due to the recurrent drought and livestock diseases we have lost a large part of our livestock. There has been a dramatic decline in livestock in the past ten years" We have a traditional system of restocking whereby rich people through a religious obligation assist his poor relatives by providing them with livestock in this rule, a rich person is expected to provide 1 cow for every 40 head of cattle, a male calf for each 30 cattle and a goat for each 5 camels owned. Regardless of this, many households in Gewane have no animals at all. They explained this to have resulted from selling of animals they were provided, as their daily income does not commensurate with their basic needs" (Elders in Adebaro kebele).*

Table 10. Wealth Ranking Estimates

Possession / Groups	Proportions (%)	Camels	Cows/Oxen	Goats /Sheep	Others
Gedeli	5 -10	20 - 40	30 - 50	100 -150	1 - 5 donkeys
Unde Geli	40 – 45	1 - 10	10 - 20	25 - 50	1 - 5 donkeys
Tule Mera	35 – 40	-	1 - 5	1 - 15	Daily laborer
Maskintu	10- 15	-	-	<5	Depend only on relief aid

Source: FGD participants, 2011

5. Conclusion and recommendation

5.1. Conclusion

This study analyzed status of household poverty in pastoralist area. Regardless of the consecutive national economic growth and slight decline in poverty rate, as reported by the government in the country, the study clearly indicates that the declining rate of poverty in Gebi-Resu is remaining stagnant and its magnitude exceeds the national average and is extremely high compared to other regions. As compared to national averages, a level of poverty in the area is huge in magnitude both in terms of incidence, depth and severity. Average consumption expenditure and total poverty line calculated for the area is higher than the national average. Because of high

[1] The destitute, who are affected by chronic food insecurity and impoverishment.

cost of living prevailing in the area, food poverty line for Gebi Resu is found to be higher than the national average. Apart from indicators drawn from understanding of rural livelihoods in non pastoral areas; it was realized in this survey that frequent shocks, declining in per capita livestock holding, loss of grazing land and poor infrastructure services are the defining features responsible for recent increase in poverty rates.

Drought in the study area happens frequently leaving no space for resilience and rebuilding their assets. It occurred so rapidly before their rangeland recovered and its impact became severe due to the cumulative effect of the past consecutive droughts. Therefore, it is causing a decline in pastoralist copping capacity. Generally, herders perceive drought as curse from God; shortage of graze and water and shortage of feed. Drought is becoming an inevitable phenomenon in the Afar region causing very serious impacts on their livelihood. In times of drought two years ago, majority of pastorals' livestock faced the risk of being wiped out. That loss of livestock assets, in turn lead many people in the area to destitution and chronic impoverishment.

Due to degradation of the range resources and recurrent droughts, though no recent data on livestock population in pastoral areas is available, the population tends to decline. According to the result of this study, the cattle population has been the most affected in per capita livestock holding. Since there is a shift in vegetation composition from natural pasture to shrubs and bushes, the livestock composition has been altered in favor of goats, camels, and donkeys.

For the communities in the study area, the contribution of livestock and livestock products to the household's income is the highest for the non poor and smallest for the poor due to the size of livestock they hold. The destitute households have no livestock. Yet the number of poor households is increasing due to drought. Even though livestock is the major investment of pastoralists, lack of access to market added to terms of trade shock, using local breeds and poor feed supplement aggravates the poverty situation of people in the study area. Pastoralists have less bargaining and purchasing power. Besides, credit institutions are inexistent and only a few pastoralists have the knowledge of saving. Moreover, the service of extension is weak, though pastoralists are keen to adopt technologies like improved breeds which can foster production. Pastoralists in the study area are subsistence in their way of life.

Causes of losing valuable land in Afar are diverse in nature. Let alone the encroachment of the bush; expansions of commercial farms, national parks and wild life sanctuaries, and cross border settlement by the Issa clan, identified by this study are the detrimental ones. Due to fear of conflict in the settlement pattern, most productive drought reserve grazing area remains idle and overgrazing is common in a relatively secure area. This situation directly facilitates not only environmental degradation but also a rapid decline in the per capita livestock holding and an increase in stockless pastoralist.

5.2. Recommendation

The result of poverty measures clearly indicate that the magnitude of poverty is quite high and needs serious attention. Based on the results and findings of the study, to reduce pastoralist households' poverty status, some recommendations are out forth to be addressed by the pastoral societies themselves, concerned different government and non-governmental organizations. Complexity of poverty implies the need to recommend solutions in a multifaceted way. Thus, based on the observation and analysis of the poverty situation in the study area and sticking to the significant determinants affecting household poverty, the following priority areas of intervention have been suggested. The recommendation covers both short and long-term interventions, which contribute to sustainable livelihood and reduce poverty status.

The majority of the population in the study area practices pastoralism. Keeping livestock safeguard households from drought and other shocks, raise the ability of households to meet social obligations and enhance cultural identity. Livestock for herders is financial asset; as a source of food and storage of wealth; social asset; basis of social relationships through gifts, exchanges, fines etc, and capital asset; with careful tending, can drive households out of poverty. For herders, consumption of livestock products can serve as an important means to decrease the vulnerability to seasonal food deprivation, fulfill food security needs and enhance the nutritional status of the most vulnerable; especially women, children and the elderly.

Identifying alternative livelihoods and diversification is a strategy aimed at generating additional sources of income that are less prone to seasonal or weather disturbances such as drought and flooding. Non pastoral livelihood will avert continued emergencies. To reduce dependence on the very volatile pastoral income, such income generating activities as small ruminant fattening, charcoal making, petty trade, production of handicrafts and feed processing from Prosopis Juliflora pods should be considered. Provision of working capital and grant funds are therefore necessary so that people will have some initial capital requirements. Mechanism for grant fund needs to be designed to make sure that the funds are able to rotate or used by other groups or individuals and make the operations self-sustaining.

Efforts should be made to improve the production and productivity of the sector so as to benefit much. Productivity can be improved through the use of improved breeds, introduction of alternative feed sources other

than the natural grazing pasture, modern livestock production techniques (strategic feeding, feed storage, housing and etc.); and better management of communal grazing resources and risk management. Generally, pastoral poor are characterized by extreme asset poverty. It is their lack of assets that results in continuously low returns, even in good years. Lack of assets causes also high vulnerability to shocks. Herders will be assisted in provisions of adequate veterinary services and regular vaccination. Prevention of curable animal disease is expected to minimize livestock mortality and increase weight gains thus improving their income potential. Herders should also be supported in gaining access to drugs through the use of community animal health workers.

Effort should be made to provide basic social services such as education and health. These services are important in increasing human capital and vital in changing the lives of the poor. Focused government policies need to be designed to reduce poverty by taking in to account the livelihood of the pastoralist community and the environment they are living in. Strong social sector programmes that will take the livelihood system of the vulnerable groups into account especially, the pastoralist society will strengthen human capabilities resulting in poverty reduction. Policies of different sectors need to focus on the specific needs of pastoralists and farmers and they have to be implemented with a focus on livelihood differentiations.

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Appendices

Appendix 1. List of Selected Pastoral Kebeles & Number of Sample Households

Wereda	Sample PA	Number of respondents
Gewane	Biraforo	31
	Adebaro	42
Awash Fentale	Dudub	24
	Doho	33

Appendix 2. Conversion Factors Used to Estimate Tropical Livestock Unit (TLU)

Age	Male	Female
< 10	0.6	0.6
10- 13	0.9	0.8
14-17	1	0.75
17-50	1	0.75
> 50	1	0.75

Appendix 3. Conversion Factors Used to Estimate Adult Equivalent

Animal category	**Tropical Livestock Unit (TLU)**
Calf	0.25
Donkey (young)	0.35
Weaned calf	0.34
Camel	1.25
Heifer	0.75
Shoat (adult)	0.13
Cow and Ox	1
Shoat (young)	0.06
Horse	1.1
Donkey (adult)	0.7
Chicken	0.013