The Effect of Resettlement on Pastoralists' Livelihood in Somali Regional State: The Case of Hargelle Woreda.

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Abstract

The resettlement programme is considered as one of the development strategy in the country with in different regimes. Hargelle Woreda, Ethiopian Somali regional state, is one of the areas in which resettlement programme was undertaken to improve the living conditions of the settlers. This study was conducted to assess and examine the effect of resettlement on resettled pastoralists' livelihood in Hargelle. In light of this, both primary and secondary data were used. Primary data was obtained through semi-structured questionnaire, key informant interviews, focus group discussions and field observation. Secondary data was obtained from published and unpublished materials, books, journals and project reports. A total of 156 sample respondents were identified using simple random sampling technique. The study finding indicates the improvement of re-settlers' livelihood (improvement of infrastructure, improvement of basic services and increment of income). The analysis is made at household level on the basis of both inferential and descriptive statistics. The result of multiple-regression analysis showed that the demographic features and livelihood assets had relationship with respondents' livelihood outcomes. This situation had been observed across all demographic features and livelihood assets of the respondents. The multiple regression analysis also showed that marital status, education level, age of household, gender of household head, land size and TLU were found to be statistically significant related to the livelihood increment of settler population ($P<0.05$).

Key words: Resettlement, Livelihood, assets/capitals, effect.

Introduction: Background of the study

In the last half century, food insecurity and recurrent famines have become critical issues in Ethiopia. Due to the recurrent drought and land degradation in the rangeland areas, Ethiopia has failed to be satisfied the food demand of its rapidly growing population. Resettling people in reverine and well planned areas (irrigation areas) has been one of the policy ideals that the Ethiopian government has planned to reduce the effect of recurrent drought and land degradation caused by the climate change occurring in Ethiopia as well as the whole global (Mohamed, 2015).The official objective of resettlement schemes in Ethiopia, both in the past and current regimes, as stated in various documents, was to prevent famine (or attain food security) by moving people from drought-prone and over-crowded areas to sparsely populated regions and unoccupied virgin lands (Asrat, 2009). In some instances resettlement in Ethiopia has been employed as a strategy to sedentarize nomadic pastoralists and shifting to cultivators. The objective is, according to officials, to settle the scattered and mobile communities in concentrated settlements and provide them with improved agricultural inputs and other services. They are often expected to adopt the plough and abandon shifting cultivation (Ibid).

More than 10,000 households had been resettled in different areas in Ethiopia at a very high cost of eight million US dollars up until the 1974 revolution, (Alula and Piguet, 2004 cited in Mohamed, 2015).After the revolution occurred, the recurrence of drought forced the military government to start more resettlements mainly in the areas of reverine and areas with potential underground water, in order to increase the productivity and to avoid the effect of recurrent droughts (Ibid).

The adoption of resettlement by formerly mobile African pastoralists increased dramatically in the late twentieth century as a result of sharp economic, political, demographic, and environmental changes. Although the majority of the pastoralist households remain committed to raising livestock in the savannas and desert regions of East Africa (Kenya, Tanzania, Uganda), Northeast Africa (Somalia, Ethiopia, Sudan, Egypt), and West Africa (Senegal, Mali, Niger, Chad, Nigeria), many formerly pastoralist families have settled near towns and highland areas to pursue alternative economic strategies including cultivation, agro-pastoralism and/ or urban wage labour. Pastoralists settle for a variety of reasons, both in response to “pushes” away from the pastoral economy and due to “pulls” of urban or agricultural life (Fratkin, 2013).

Pastoralists, who mainly depend on livestock and their products, have been facing a number of both natural and man-made challenges to their livelihood in recent times. According to the Ethiopian Somali Regional Climate Change Adaptation Programme Coordination Unit (2011), because of erratic and unreliable rainfall, people are exposed to drought and chronic food shortages, risks of flood hazards, and conflict over increasingly scarce and fragile of resources. As a response to the challenges confronting the pastoralists, various development interventions have been started in Ethiopia. With the intention of supporting pastoral communities, Ethiopian government has pursued a number of strategies. One of these strategies is the re-settlement policy which adopts resettlement as its core strategy. In Ethiopia, some pastoral areas are identified on the basis of proximity to water bodies and the potential ecology of the sites to undertake the re-settlement programme. These re-settlement programme sites are in Somali, Gambella, Afar and Benishangul-Gumuz Regions; where a considerable number of the pastoral communities are being re-settlement and consequently resettled (Mohammud and Aberra, 2015). According to the Somali Regional Irrigation and Basin Development Bureau (2015), the process of resettlement has been taking place in Ethiopian Somali Regional State since 2010G.C. particularly along the riverine areas and areas with potential underground water. However, few studies examining the effects of resettlement on pastoralists' livelihood have been made in ESRS. So there is the need to examine on the effect of resettlement on the livelihood of the settled pastoralists.

The Statement of the Problem

This study was focused on resettlement effects on pastoral community livelihoods. According to the ESRS Irrigation and Basin Development Bureau (2015), the process of pastoralists' resettlement in the Region has been continuing for the last eight years. Pastoralists are being settled along the reverine areas of Afdher, Liban, Shabelle zone and in the underground water potential areas of Sitti Zone of the Region. Hargelle is one of the main districts in Afdher Zone where the implementation of the resettlement was started early. Among the main reasons for the resettlement of the pastoralists is said to be the degradation of natural resources, mainly pastureland and shortage of water resource. Moreover, the pastoralists' nomadic to semi-nomadic lifestyle makes it difficult to have access to basic social services. Therefore, the objective of the programme was to let the pastoralists have adequate access to basic social

services and also create alternative livelihoods (Elliot 2013). While the intent is clear, there is no clarity when it comes to the outcome i.e., whether resettlement has resulted in an improvement in income and access to social services is yet to be explored in a systematic manner. The major income sources for the pastoral and agro-pastoral communities in the Somali region are livestock and their products which are also highly susceptible to seasonal rainfall performances. Apart from this, poor households benefit from various income sources such as camel rent for transportation, labor and forest product sales. Most of these income sources are currently not viable income sources for various reasons (Ahmed, 2010).

Livelihoods in Somali Region have suffered a series of shocks in recent years. The most devastating livelihood shocks that Somali pastoralists, agro-pastoralists and farmers face are drought, the sequence of low rainfall, conflict over scarce resources and food shortage (Devereux, 2009). Resettlement program in Somali regional had been facing many problems which relate the time gap (Mohamed 2015). Although the program was said to be voluntary and well-planned, there was time gap, because the program was implemented in the drought time. Due to this problem the government has implemented the program as an emergency and the emergency implementation itself may cause problems such as reducing the capacity building which the resettles need to adapt the new environment and to achieve the goals of improvement of their livelihoods. The other problems facing the resettlement is lack of well-knowledge about agriculture (crop) productivity and how to use the agricultural technology and these may cause the shrinking of pastoralists income (Mohamed, 2015). At the country level there are some studies conducted in different times since the programme of resettlement had been started. Limited studies have been done in the area of programs affecting pastoralists. Some studies found out the programme as contributing to the loss of settlers' livelihoods in such a way that the demographic features and livelihoods assets of households being insignificantly related to their livelihood outcomes (Bisrat, 2011).Also research conducted from Gambela region which focused on the effect of resettlement on bio-physical and environment shows that the resettlement program has negative impact on the natural resource, land use and farming system (Mengistu, 2005). The resettlement in Gambela region has negative impact on natural resource, land use and farming system. It is obvious that if the program has negative impact on natural resources, it also has negative effect on livelihood of the settler's because natural resource is one dominant source of livelihood assets.

All studies that mentioned above were conducted in agro-pastoralist's areas. Although there are some studies that are related to the program which were conducted in pure pastoralists' areas such as the impacts of resettlement on pastoralists' livelihoods (Kalid, 2014; Mohamed, 2015), basically, both of them were conducted their studies in Shaballe Zone; but there is no still now study about resettlement program conducted in Adher zone. What makes this study unique from other studies is that, it has been examining the effect of resettlement programme on agro-pastoralist community livelihoods in Hargelle in the light of their assets, income and its challenges.

Objectives of the study

General objective

The general objective of the study was to assess the effect of resettlement program on pastoralists in Hargelle District, Afdheer Zone, Ethiopia.

Specific objectives

1. To assess the perception of pastoralists toward resettlement program.
2. To examine the challenges of re-settlers.
3. To compare livelihood assets of settlers and non-settlers (assets such as natural, social, financial, human and physical capital) in the study area.
4. To examine effects of resettlement program on re-settler's income.

Literature Review

Definition of concepts

Livelihood

Many scholars defined livelihood in different ways but the most popular definition of livelihood is that of Chambers and Conway (1992), "a livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stress and shocks, maintain and enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels in the long

and short term". A livelihood comprises the assets (natural, physical, human, financial and social capital), the activities, and the access to these (mediated by institutions and social relations) that together determine the living gained by the individual or households (Ellis, 2000).

Resettlement

Resettlement/sendentarization is the process of settling nomadic population formerly into non-mobile communities, and applies to foraging populations, livestock keeping pastoralists, and other occupational or ethnic groups that were formerly mobile such as Roma (Meir, 1997 and Salzman, 1980).

Wood (1977:154) cited in Mohamed, (2015) defined rural resettlement as a spontaneous or planned movement of people or group of people from their original home area to another area(s) to settle for a second time or subsequent time. This definition identifies resettlement from settlement in the sense that the former involves the repeated action of the settlement processes. Resettlement could be proposed for several objectives that the specific country intended to achieve. According to Mohamed (2015), the prominently experienced objectives include relieving of population pressure, to develop underdeveloped areas, increased agricultural outputs, considerations of national security, provision of land to the landless or displaced people and promotion of regional development. In line with the above objectives, experiences of different countries of the world show that resettlement has been practiced to attain one or a mix of country's specific objectives.

Pastoral income diversification

As a means of alleviating the effects of both natural and man-made shocks, pastoralists can diversify their sources of income. Livestock herders of East Africa increasingly pursue non-pastoral income strategies to meet consumption needs and to buttress against risky shocks caused by climatic fluctuation, animal disease, market failure, and insecurity (Bahray, 2010). Pastoral diversification is defined as the pursuit to diversify their income sources, but it is not the only reason and in many cases it may not be the most important factor. The causes of pastoral diversification are multi-faceted and opposed to basic explanations. Part of the reason for this is that within the designated study area we are dealing with heterogeneous populations and ecosystems, considerable intra-community differences add to the complexity, in that motivations for diversification vary considerably along both wealth and gender lines. Rich and poor herders

pursue diversification for different reasons, and risk may not be equally important for both groups (Bahray, 2010).

For the relatively wealthy herders diversification is a strategy of accumulation or investment; for the impoverished it is a matter of survival. Three different sets of variables are distinguished in the model that influences herder decisions to diversify or not; and what types of strategies to pursue (Little, 2001: pp 405-407). And the three different variables are Conditional variables, Opportunity variables and Local response variables.

- **Conditional variables:** these factors address system-level phenomena and indicate whether conditions are conducive for pastoral diversification. They include such measurements as per capita livestock holdings, population density, and availability of rangelands.
- **Opportunity variables:** these help to explain the types of diversification opportunities available. They include measurements of climate (for example, rainfall), distance to the market, proximity to towns of various sizes, and education. Opportunities for diversification will vary considerably vis-à-vis these variables.
- **Local response variables:** even if system-level conditions and opportunities favor certain patterns of diversification, local-level variables can facilitate or constrain responses. These variables help to explain which herder groups will respond or not respond; who will share in the benefits and costs of diversification; and how certain social processes.

Sustainable Livelihood Framework (SLF)

Chambers and Conway, (1992) Scoones, (1998), and Ellis,(2000) argue that the construction of livelihood is an ongoing process- one in which the assets (resource), capabilities and activities change overtime and people adapt to it to form new livelihood strategies. This ongoing process is strengthened or challenged by a number of factors.

Livelihood as a framework emerged in development studies in the 1990s. The framework assists in understanding the changes in livelihood. A change in livelihood of a household largely depends on interplay between various forms of existing context, assets, mediating processes, the activities and the resulting livelihood strategies that the household pursues (Scoones, 1998; Ellis, 2000).

Vulnerability Context

Vulnerability as defined by DFID (2001) stems from the negative external environment in which people exist such as shocks (e.g. floods, droughts, storms), trends (e.g. population, economic, resources), and seasonal shifts (e.g. employment opportunities, prices, and production).

The livelihood of an individual or a household is influenced by trends, shocks and other stressors (Ellis, 2000). He identified drought, pests, diseases, and flood as a shocks and biophysical resources, migration, population, technical changes in production practices and economy of the people in a given area over time as trends. This research uses vulnerability as a concept because vulnerability helps to understand the extent to which shocks/trends force people to change their livelihood.

Livelihood assets

I. Human Capital

Human capital represents the skills, knowledge, ability to labor and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives. At a household level human capital is a factor of the amount and quality of labor available; this varies according to household size, skill levels, leadership potential, health status, etc.

II. Social Capital

There is much debate about what exactly is meant by the term ‘social capital’. In the context of the sustainable livelihoods framework it is taken to mean the social resources upon which people draw in pursuit of their livelihood objectives. These are developed through: networks and connectedness, either vertical (patron/client) or horizontal (between individuals with shared interests) that increase people’s trust and ability to work together and expand their access to wider institutions, such as political or civic bodies; membership of more formalized groups which often entails adherence to mutually-agreed or commonly accepted rules, norms and sanctions; and relationships of trust, reciprocity and exchanges that facilitate co-operation, reduce transaction costs and may provide the basis for informal safety nets amongst the poor.

The above are all inter-related. For example, membership of groups and associations can extend people’s access to and influence over other institutions. Likewise trust is likely to develop between people who are connected through kinship relations or otherwise.

Of all the five livelihood building blocks, social capital is the most intimately connected to Transforming Structures and Processes. In fact, it can be useful to think of social capital as a product of these structures and processes, though this over-simplifies the relationship. Structures and processes might themselves be products of social capital; the relationship goes two ways and can be self-reinforcing.

III. Natural Capital

Natural capital is the term used for the natural resource stocks from which resource flows and services (e.g. nutrient cycling, erosion protection) useful for livelihoods are derived. There is a wide variation in the resources that make up natural capital, from intangible public goods such as the atmosphere and biodiversity to divisible assets used directly for production (trees, land, etc.)

IV. Physical Capital

Physical capital comprises the basic infrastructure and producer goods needed to support livelihoods. Infrastructure consists of changes to the physical environment that help people to meet their basic needs and to be more productive. Producer goods are the tools and equipment that people use to function more productively.

V. Financial Capital

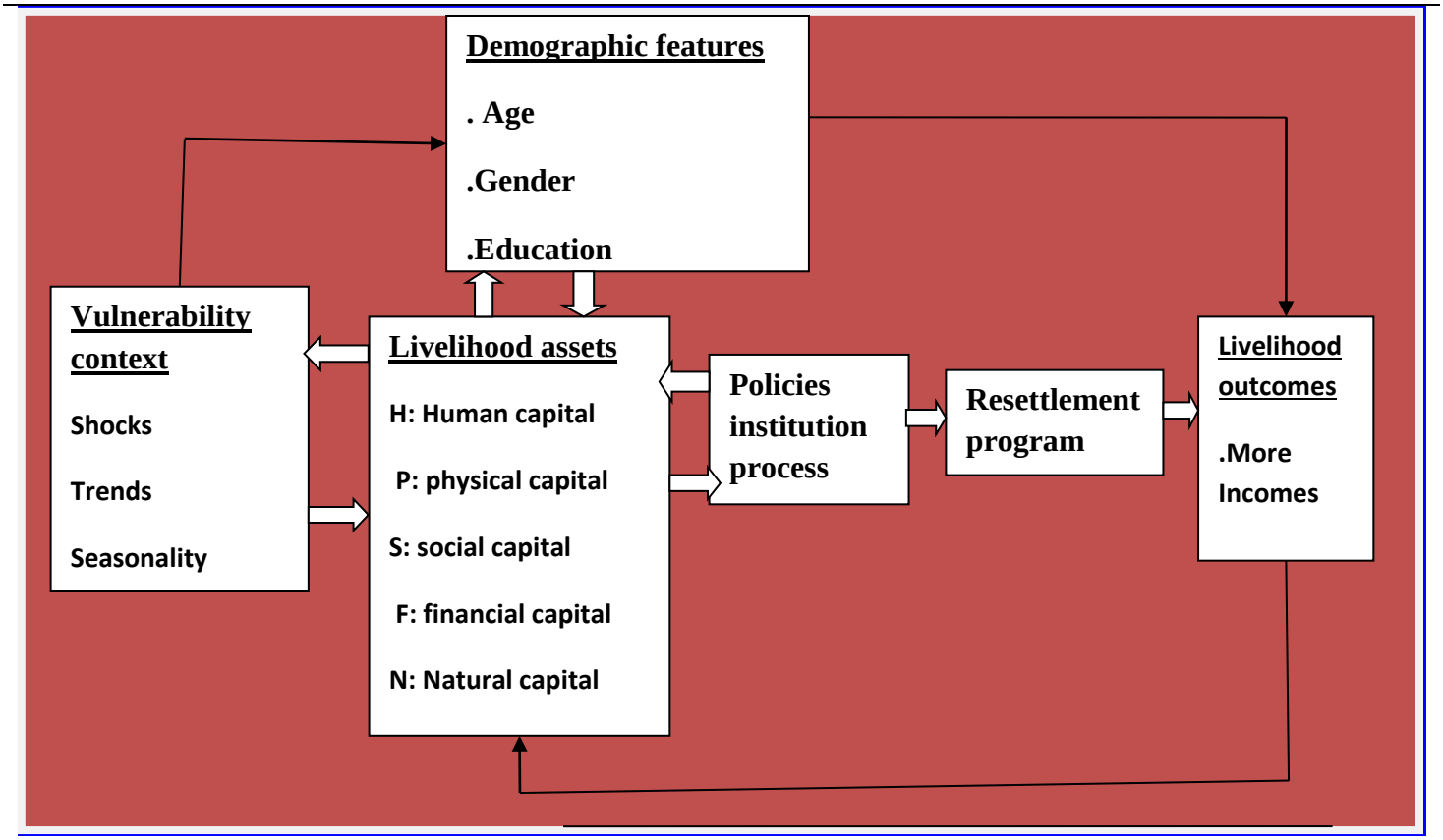
Financial capital denotes the financial resources that people use to achieve their livelihood objectives. The definition used here is not economically robust in that it includes flows as well as stocks and it can contribute to consumption as well as production. However, it has been adopted to try to capture an important livelihood building block, namely the availability of cash or equivalent that enables people to adopt different livelihood strategies (DFID, 1999).

Institutions and Organizations

Institutions and organizations mediate between the vulnerability context and the livelihood assets of the household. They are critical in defining the types of bargaining and decision making that take place within the trade-offs referred to earlier. As part of the political environment, they are also important in the vulnerability context and in the development of policy to reduce the impact of shocks on the poor (Scoones, 1998).

Livelihood Outcomes

Livelihood outcomes are that households achieve with their livelihood strategies are a result of all these factors, their assets, their vulnerabilities, the institutions and organizations that either enhance or restrict their livelihood outputs (DFID, 2001).



Conceptual Framework of the Study

Source: Department for International Development of the United Kingdom (1999), Modified

In this study, the DFID Sustainable Livelihoods Guidance/or framework is employed to determine the effects of resettlement program on pastoralists settled in the Study area.

Figure1 shows the conceptual framework of the study. The framework was developed by the researcher to analyze the influences of the variables such as, livelihood Assets, vulnerability, and resettlement program, whereby any change that appear from these variables may affect livelihood outcomes either negatively or positively.

All these variables have direct or indirect relation to livelihood outcomes as depicted above. Resettlement has direct relation to livelihood outcomes, while the outcome of livelihood had a directly responsible the livelihood assets.

Empirical Evidence on Resettlement

The debate between the advocates (proponents) and opponents resettlement continues. The settling of formerly mobile pastoral populations is occurring rapidly throughout East Africa. It has been encouraged by international development agencies and national governments to alleviate problems of poverty and food insecurity (Yonas etal, 2013).With similar argument, the Government of Ethiopia opted for resettling pastoralists in order to mitigate their problems. However, it is not convincing development practitioners whether this is a viable livelihood strategy or not (Adugna, 2012).

Pastoralists settle for a variety of reasons, both in response to “pushes” away from pastoral economy and to “pulls” of urban or agricultural life. For example, the Masai in southern Kenya have lost grazing land due to the growth of agricultural and pastoral populations, privatization of land for commercial farms and ranches, and the expansion of tourist game parks, causing many pastoralists to combine sedentary maize cultivation with animal rising. In the more arid and less densely populated north of Kenya where Rendille live, pastoralist families settled in response to the environmental stress of drought and famine combined with political violence, livestock raiding and ethnic conflict (Fratkin, 2004). By the late twentieth century pastoralists faced increasing pressures of land crowding, population growth, and competition with both farming and Pastoral resettlements in Northern Kenya pastoral populations, but have also settled near towns to market milk, meat, and livestock, as well as to take advantage of new opportunities in wage labor, education, and access to health care. The settling of nomadic or semi-sedentary pastoralists in Africa has been advocated by multilateral and bilateral development agencies, religious missions, conservation groups, and national governments, who deem nomadic pastoralism wasteful or unproductive, and who promote permanent settlement as beneficial to integrating pastoralists into the national economy, assimilating marginal populations, forging of national identity, and improving their material well-being. Despite these interventions, it is not clear what the costs and benefits of resettlement are to pastoralists (Fratkin, 2004).

Rangelands have been carved up through the establishment of private enclosures, water points and cisterns, 'farmlands', ranches, and conservation areas. Some fragmentation has been driven by state investment in large irrigation schemes. Successive governments in Ethiopia have expanded industrial agricultural estates in the Awash Valley for producing cotton and sugar, even though per hectare returns for pastoralism are higher than for industrial crops. Elsewhere, governments excised large riverine areas to establish irrigation schemes that are meant to provide pastoralists with alternative livelihoods. These were established at great cost, but often had disappointing results. For example, in the 1970s, the UNDP and FAO supported a number of schemes in Turkana, investing up to $62,000 per hectare or $21,800 per tenant, but these fell into a state of disrepair barely ten years after being introduced (Lind, 2007). While there are many examples of failed state-led, donor-funded large irrigation schemes in eastern Africa dry lands, privately-led community-based and profit-oriented smaller-scale irrigation activity has spread across the region, driven by an indigenous entrepreneurial class. Examples include along the Wabe Shebelle River in Ethiopia's Somali Region, and in the Mandera triangle (Sandford, 2013). The total extent of the irrigated lands involving pastoralists in the Horn of Africa is about 120,000 hectares. However, plot sizes typically are very small at around 0.25 ha/household; further, dry land farming remains a high risk activity in many dry land areas, and for most is not a reliable substitute for livestock-keeping (Lind, 2016). In his findings, Nesredin,(2015) found out that resettlement has a significant effect on the income of the resettled pastoralists in Shebelle Zone where he has estimated their total annual income to be 24,876 Birr and that of the non-resettlement pastoralists to be 14,259 Birr. The difference which is 10617 Birr is attributed to crop production and off-farm activities.

Resettlement has been started to be implemented in a number of Regional States in Ethiopia among which the Ethiopian Somali Regional State is one. Yet there are a lot of debates, pros & cons towards this issue and whether it has improved the livelihood of pastoralists or not. The standpoint of the government is that it is difficult to adequately provide basic social services to the pastoral people as they lead a mobile way of life. On the other hand, few literatures are available concerning the effect of resettlement on the livelihood of pastoralists.

Numerous studies have focused on change in pastoral societies under the influence of resettlement from political, economic, social and environmental perspectives. Furthermore some development planners and workers consider such resettlement of nomadic pastoralists a

departure for pastoralism, by highlighting the benefits of resettlement, such as increased access to formal education, health care, wage, works and other economic opportunities, whilst scholars consider it the end of pastoralism, due to the complicated situation and difficulties that pastoralists now face, including rangeland privatization, environmental degradation, the break-down of traditional cooperative organizations and social and economic differentiations. Fratkin, (2004) in his book entitled "As Pastoralists Settle", has reviewed the major factors leading to pastoral resettlement, which include population growth, drought and famine, loss of common property resources, commoditization and urban migration, and insecurity and added new findings by investigating health, nutrition and demography which demonstrated the deterioration of nutrition and increasing health hazards women and children face after resettlement. The same author talks about the benefits that the pastoralists accrue as a result of resettlement. He also mentions that they have started a dual residential system one being the resettlement system and the other being temporary camping for livestock in search of pastures and water. However, he does not talk about the effect of resettlement on the number of livestock and whether it decreases or increases (Dingde, 2015).

METHODOLOGY

Research approach Adopted

In light of the research problem, the current research combines both qualitative and quantitative research approaches. That is, to get the benefits of a mixed method approach, and to mitigate the bias in adopting only one approach. The quantitative aspect, qualitative aspect, and data analysis methods adopted in this study are further elaborated in the following sections.

Quantitative aspect of the study

The quantitative aspect of the research method intends to obtain data needed to generalize about the effect of re-settlement program on pastoralist's livelihood. To gather data for quantitative aspect of the current study, survey design employed to assess the situation of both settlers and non-settlers. The following section reveals the survey design of the study.

Survey design

To obtain data at one point in time from a sample selected relevant for the investigation of the effect of the re-settlement program, this study employed a cross-sectional survey with a semi-

structured questionnaire, which administered through distributing to the sample of the participants.

The adoption of survey method is to obtain information that was not available from other sources and for standardization of measurement. In this regard, Linda (2002), noted the nature of survey methods include standardization of measurement, use of probability sampling, and uniqueness of information. Typically, there are many modes of survey administration includes face to face, telephone, mail, web, and combination of methods. The use of mail and web modes of survey design has many advantages. However, the current study used paper structured questionnaire.

Qualitative aspect of the study

To substantiate the data obtained through survey and to get clarification on some issues, in-depth interviews and FGD with microfinance institution clients were also used. This form of data collection procedures constitutes the qualitative aspect for the study.

Sample size determination

In statistics sample is a subset of population selected for measurement, observation or questioning to provide statistical information about the population. Hargelle District has total population of 96,666 (14,215.6 HH), of whom 39356(41%) are men and 57310 (59%) are women. Out of the total 21 administrative villages, resettlement program was implemented in 4 villages. The total households included this program were about (5,001) households, of which 2300 of them are female headed households and the rest 2701of male-headed households. The sample size was determined based on the simplified formula provided by Yamane (1967), at 95% confidence level, 0.05 degree of variability and 8% level of precision.

$$\mathbf{n} = \frac{\mathbf{N}}{\mathbf{1} + \mathbf{N}(\mathbf{e^2})}$$

$$\mathbf{n}=\frac{\mathbf{14{,}215.6}}{\mathbf{1+14{,}215.6(0.08)2}}\ \mathbf{n} = \underline{\mathbf{156}}$$

Where **n** is the sample size, **N** is the total population (total household live in Hargelle district which is 14,215.6) and **e** is the level of precision.

The 156 sample size was proportionally distributed to the sample villages. Finally systematic random sampling was employed to select sample size of households from the villages, after getting list of households in the each village.

Sample size from non-settler's administrative villages

Kebelle Name	Number of Households	Sample per administrative village	Interval selection (k)
Babur,ed	**631**	**13**	**Every 50 HH**
Galgalat	**1,123**	**23**	**Every 50 HH**
Yoco	**1,410**	**28**	**Every 50 HH**
Qardag	**705**	**14**	**Every 50 HH**
Total	**3,869**	**78**	**Every 50 HH**

Source: Researcher's own sampling by using kith formula (kith, 1993)

Sample size from settler's administrative village

Kebelle Name	Number of Households	Sample per administrative village	Interval selection (k)
Dawa,ale	758	15	Every 51 HH
Dhirindhir	697	13	Every 51 HH
Hayer	1,319	26	Every 51HH
Eid.Dere	1,245	24	Every 51 HH
Total	**4,019**	**78**	Every 51 HH

Source: Researcher's own sampling by using kith formula (kith, 1993)

Data analysis

After the data was collected, data processing was carried out. The raw data was also converted into suitable form for analysis and interpretation. This was achieved through arrangements of activities including editing, coding, entry, and tabulation. The objectives were to check the completeness and consistency of the answers to each of the questions. Statistical analysis was also carried out using SPSS Software (v.20).

Descriptive statistics was used to obtain for the main variables of concern which are comprised of the effect of the resettlement program. For instance, measure of central tendency such as mean, median, mode and measures of dispersion such as standard deviation, variance, range and standard errors were used. Inferential statistics were applied to examine the effect of resettlement

on pastoralists' livelihood. Multiple-Linear regression model was used to identify the effect of resettlements on pastoralist's livelihood outcome. Before was running the regression model, the researcher checked all the model assumptions (multi-co linearity, normality, auto correlation and homogeneity)

Definition of Variables and model specification

Econometric Model

$$Y=\beta_0+\beta_1 Eduhhhead+\beta_2 lndsz+\beta_3 maritalstus+\beta_4 Age+\beta 5 Membshpcoop+\beta_6 marktdistnc+\beta_7 gndhhhead+\beta_8 TLU+\beta_9 sett\&non\text{-}sett+\varepsilon$$

Table: 3. 1. Definition of Variables and model specification

1	***Income of household:***	***The total annual income of the household from all members of the household. (A continuous variable).***
2	***Household head***	***it is used to measure category the education level of HH (1: Yes 2:***
3	***Size of land***	***The number of hectares of land cultivated by the household***
4	***Credit use***	***It is dummy variable, those used and those not used(1: Yes 2:No)***
5	***Membership of cooperatives***	***It is dummy variable, those are member of formal cooperatives and those are not (1: yes 2: No)***
6	***Distance to market***	***it is continuous variable and it's measurement was in kilometer***
7	***Age of the household head***	***The effect of the age of the household head on the livelihood of the household, its measurement was in (year).***
8	***Gender of the household head***	***The gender of the household being male or a female has an effect on the livelihood of the household income (1: Male 2: Female).***
9	**Remittance**	***If remittance received or not (1: Yes 2: No)***
10	**Tropical livestock unit**	***it is continuous variable and it is collected through computation of different livestock(continuous)***
	Dependent	**Definition**
	Y	***Income of household (continuous)***
	Independent	**Definition**
1	**Edulevhh:**	**Educational Level of the household (1: illiterate 2: literate)**
2	**Lndszha**	**Land size in hectare (ha).**
3	**Marktdistnc**	**Market distances (km)**
4	**Agehh**	**Age of household head (year).**
5	***Membshpcoop***	***Membership of cooperatives (1: Yes and 2: No).***
6	**Gndhhhead**	**Gender of household head (1: M and 2: F)**
7	**Maritalstus**	**Marital status (1. Married 2: widowed)**

8	**TLU**	**Tropical livestock unit (continuous variable)**
9	**Sett&non-sett**	**Settler and non-settlers, Dummy variable (1: settler 2: non-**

Result and Discussion

This chapter presents the results of the findings obtained from the field and also the discussions resulting from the findings. These results and discussions were based on responses obtained from one hundred fifty six (156) respondents.

Comparison of settlers and no-settlers among demographic variables

The main pieces of information in the following table are Chi-Square value, the degrees of freedom (DF) and the significance level (presented as Sig.). If this significance level is less than .05, it is a statistically significant difference in the dependent variable across the groups.

According the result of A Kruskal-Wallis Test revealed a statistically insignificant difference in settlers and non-settlers variable across five different age groups (G1. 21-30 G2.31-40 G 3. 41-50 G4.51-60 G5. <60), x2 (7.2, *n* = 156) = 0.044, *p* = 1.22. The age group (41-50 year) recorded a higher median score (*Md* = 2) than the other four age groups, which recorded median values of 1 and 1.5. The other result in the table shows that only education level variable has statically significant difference among settlers and non-settlers, where the rest of variables in the demographic have statically insignificant difference among settlers and non-settlers.

Comparison of settlers and no-settlers among demographic variables

	settlers and non settlers		
Age of respondents			**Median**
Chi-Square	7.282	21-30	1.00
DF	4	31-40	1.00
Asymp. Sig.	.122	41-50	2.00
		51-60	1.00
		<61	1.00
		Total	1.50
	Settlers and non-settlers		
Marital status			**median**
Chi-Square	2.633	married	1.00
DF	2	divorced	1.00
Asymp. Sig.	.268	widowed	2.00
		Total	1.50

	Settlers and non-settlers		
Education level			**Median**
Chi-Square	14.307	can't read and write	7.000
DF	4	can read and write	7.500
Asymp. Sig.	.006	primary first cycle (1-	3.500
		primary second cycle	1.000
		secondary school (9-	8.000
		Total	6.000

Source: Researcher's own computation from field data (2018)

Evaluating the model

Before giving analytical explanation based on the model, some additional diagnostic tests such as, whether other misspecification problems occur due to the conceptual framework or not should be tested by using ANOVA. As the result illustrated in the table below, the F-test of the p-value is 0.000 and the significant value is 0.05. Hence, the significance (sig.) value is greater than that of the p-value; therefore, accept the statement which is stated that the model is fitted or good.

Evaluating the model

Model	R	R square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.574a	.730	.293	3927.45285	1.985

Source: Researcher's own computation from field data (2018)

Have taking the above concept in mind, the next question which follows is how much is the model good. The answer is given by the goodness of fit test (R^2). The goodness of fit test or R square is also used to measure how much of the variation in the dependent variable, identified by the repressors. The larger the value of R square, the better it fits.

Moreover, table 4.14, displays R, R square, adjusted R square, and the standard error. R is the multi-correlation coefficient which is measuring the relationship between the dependent and predictor variables. The values of R range from -1 to 1. The sign of R indicates the direction of the relationship (positive or negative). The absolute value of R indicates the strength, with larger absolute values indicating stronger linier relationship. So, the value of R is 0.574 which implies the dependent and the predictors have developed a strange positive linear association.

Furthermore, as discussed in the above portion, R squared is told about the proportion of variation in the dependent variable explained by the regression model. It is ranged from 0 to 1. Small values indicate that the explainable level of the independent variables to determine the dependent variable is weak. The sample R squared tends to optimistically estimate how well the models fit for the population. Both R squared and adjusted R square somehow has the same meaning and purpose. But, adjusted R square is applicable for the small numbers of observation (n<30) and numbers of variables. So, in the case of this study, the researcher used the R square, because the numbers of variables involved in the study were more. In that regard, the R square value in this case was 0.730. This shows that 73% of the variance or changes in the dependent variable can be accounted for by the confluence of the independent variables; whereas, the rest 27% of the variation can cover by other unknown variable which is not included in the study.

Statistical significance

To assess the statistical significance of the model result, it is necessary to look in the ANOVA table from the regression model result. This tests the null hypothesis that multiple R in the population equals 0. The model in this finding reaches statistical significance (Sig. = .000; this really means p<.0005). So the model is statistical significance and fit as the ANOVA table indicates.

Statistical significance

Model	Sum of Squares	DF	Mean Square	F	Sig.
Regression	1116495495.753	8	139561936.969	9.048	.000[b]
Residual	2267458227.880	147	15424885.904		
Total	3383953723.633	155			

Source: Researcher's own computation from field data (2018).

Conclusion

The objective of this study was to assess the effect of resettlement on pastoralist's livelihood condition of settlers in Hargelle. In light of this, the findings of the study indicated that

resettlement had positive effect on livelihood assets which had significant effect on livelihood outcome. The demographic features, i.e., age and education significantly affect livelihood outcome of the settlers. Among livelihood assets, literacy status, land size, TLU, access to road and access of formal cooperatives were associated significantly with livelihood outcome. To the settlers; their livelihood relatively has shown an improvement as compared to non-settlers. This can be certified in different manner in the study. For instance, in holding of basic livelihood assets especially land, the average holding of land at the area of resettlement was much higher than for non-resettlement areas. Therefore, this involves that the majority or all the settlers in Hargelle have acquired farmland as compared to the non-settlers. This enabled them to produce more than the non re-settlers do. It can be seen that the major source of income for the majority the settlers is farming. This is true not only for crop production but also livestock raring. Nevertheless their livelihood depends highly on the natural as well as physical capital.

Different demographic factors and livelihood assets were affecting the livelihood of settlers in the study area. Among these, sex, age, education level, remittance, income from livestock and access to credit was the dominant ones.

However, the increment of the income of the settlers has attained at the expense of the natural assets. However, with a high dependence on the natural assets and low level of proper use of this resource will have a negative and devastating effect on the natural assets?

Generally, the programme has brought improvement to the settler's livelihoods in terms of asset creation and income generation. The existence of problems and challenges were also not too much. In conclusion, the resettlement programme in Hargelle *Woreda* is characterized by the improvement of the livelihoods of the settlers even if the level of improvement differs across settler households.

Recommendation

- Access to credit is one of the major factors to improve the livelihood of the settlers. However, settlers are unable to access saving and credit institutions in the *Woreda*. Therefore, there is a need to enhance financial capital through the promotion of rural small-scale saving and credit institutions that are accessible to the people. Alongside with this, strengthen rural financial services by promoting micro finance institutions and service cooperatives are highly recommended to support agricultural development.

- Distance to reach the main market center significantly and negatively affected the livelihood outcome. Here, it is mirrored that as the distance from homestead to market center increases, the likelihood of the household to improve livelihood outcome declines. This is possibly because households residing far from market centers have less probability to access and participate into non-farm and off-farm activities. Therefore, the policy should give more attention for the development of rural infrastructure and not only improve transport services but also monitor the cost of transportation in the study area because transportation cost is very high compared to other parts of the country.
- Though education level is one of the significant variables affecting the livelihood outcome among the sample respondents, Education coverage in the study area is very low. Consequently, about 62.2% of the respondents were unable to read and write. Therefore, expansion of education coverage and strengthening both formal and informal education and vocational or skill training should be promoted to increase rural households awareness of more viable livelihood options in their locality and improve decision making skill.
- The model results indicated that sex was significantly related to the improvement of income. Women were generally more likely to participate in non-farm activity than men, while men headed households participated in off-farm activities in combination of agriculture strategy. Targeting of education and skill development trainings towards household heads in the study area is likely to have a relatively large impact on their ability to diversify livelihood strategies. Therefore, actions to enhance education should be given into consideration by the concerned bodies.
- Finally, this research is limited to the effect of resettlement on patoralist's livelihood of the settlers; the other aspects of the settlers were not studied. Hence, the study calls for further research in the area poverty situation in Hargelle *Woreda* especially for the settlers situations.

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