

THE SOCIAL CONSEQUENCES OF PASTORALIST SEDENTERISATION SCHEMES IN SOMALI REGIONAL STATE, ETHIOPIA

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DOI: 10.7906/indecs.17.4.5
Regular article

Received: 30 October 2019.
Accepted: 22 December 2019.

ABSTRACT

Background: This study was carried out with the objective of assessing the social consequences of pastoralist sedenterisation schemes in Beer Caano district Shabelle Zone of Ethiopian Somali Regional State. Household data were collected from 154 households drawn randomly from three kebeles. In light of this, both primary and secondary data were used. The main tool of data analysis for this study was descriptive statistical and thematic analysis.

Results: Descriptive statistics results indicate that there was a significant mean difference at different levels of significance between before and after sedentarization of pastoral households in terms of household size, farmland size (in hectare), TLU holding and annual income. With regard to access to social and institutional services, after sedentarization schemes in the study area, there are improvements of social and institutional services in terms of education, health, water and sanitation, communication, irrigation usage, use of improved agricultural inputs, extension service, credit and market services. The sedenterization scheme has slight effects on the traditional and social aspects of resettled households that contributed social consequences in the study area.

Conclusive remark: Improving the production, productivity and marketing conditions of crop and livestock, and provision of basic social services would improve the livelihoods of pastoral household in the study area.

KEY WORDS

Beer Caano district, pastoral households, sedentarization

CLASSIFICATION

JEL: Q15, Q56, R14

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BACKGROUND AND JUSTIFICATION OF THE STUDY

Sedentarization have costs and opportunities for settled pastoralists, particularly on the health and well-being of community (especially women and children), those most at risk of morbidity and mortality [1-3]. Several studies, however, report negative social and health consequences of pastoral sedentarization including poorer nutrition, inadequate housing, lack of clean drinking water, and higher rates of certain infectious diseases despite better access of settled populations to formal education and health care [4-8].

Sedentarization is an increasing phenomenon affecting all sectors of pastoral society. It negatively impacts on women and girls including increased domestic and income generating burdens, especially when men need to stay away from the household to graze livestock at distant communal sites or to seek alternative employment because of government policies restricting land access, environmental degradation or conflict [4]. Settled pastoralists are often unable to keep their livestock close by and sometimes lose their animals completely. For women, this translates into the need to find alternative cash incomes for their livelihoods (which in a portion includes prostitution).

The sedentarization process has positive and negative influence on the pastoral livelihoods. In terms of health, the sedentary life has enabled pastoralists to access health services, water and sanitation facilities but it has also increased the risks of disease transmission and poorer nutrition. When sanitation facilities, health services and safe water quality lack in settled communities the consequences can be fatal. In terms of ecology, the sedentarization process naturally leads to higher density of humans and animals, and thus often higher pressure on pastures in the same area. Sedentarization had also enabled the pastoralists to engage more in agriculture at the same time as this indicated a shift from a livestock-based economy with primarily home consumption to a more market-oriented economy. In terms of Society, the sedentarization process did not seem to impact the rates of conflicts in the visited area. However examples from similar processes exemplify the importance of awareness and carefulness when such processes are encouraged.

In general, there is a long history of attempting to sedenterization of pastoralists but these processes often have limited success. In the horn of Africa, there have been different attempts to settle pastoralists, but they have largely failed [9]. In Somalia the government engaged in large-scale settlement schemes for displaced nomads because of the persistence of droughts and wars [10]. Policy-makers argue that it is difficult to provide services to nomadic pastoralists, and they cannot be easily contacted unless settled.

Different researchers' have conducted study on resettlement such as Kassa [11] conducted a study on resettlement and sustainable livelihoods in Ethiopia *A comparative analysis of Amhara and Southern regions*. This study focused on analyzing the effects of planned government intra-regional resettlement program on the sustainable livelihoods of settler households in Amhara and Southern regions, mainly targeting comparative analysis of regions. Bisrat [12] conducted study on impact of resettlement on the livelihood of settler population in Abobo *Woreda*, Gambella People's Regional State. This study focused on assessing the impact of resettlement on the living condition of the settler population in Abobo *Woreda* by Targeting livelihood outcomes in the study area. Dessalegn [13] analysed challenges and prospects of the post 1991 resettlement program in the quest for food security: the case of Kenaf Site, Western Oromia Region, Focused on mainly food security status of the resettlers. Kari [14] conducted a study on the health and ecological impacts of sedenterazation in Ethiopian Somali Regional State, Filtu *Woreda* of Liban Zone. Yet, that study focuses on the health and ecological impacts of sedenterization program on the pastoral

community. Ali [15] conducted study on post-resettlement status of soil degradation and land management practices at Gubalafto *Woreda*, North Wollo, and Ethiopia: the case of three selected *Kebeles*. That study focused on examining the overall contribution of the 1984's resettlement program in alleviating soil degradation and the change in land management practices in the areas of origin of resettlers by assessing rate of soil erosion, the current status of soil quality as well as the changes in land management practices and farmers' perception after the resettlement, Mainly targeting the soil quality of study area. Asfaw [16] conducted a study on West Wellega Zone, Oromia Region, on the resettlement program with the time frame of 2003-2004. This study focuses on the processes of resettlement in general on the settled people of the West Wellega Zone, mainly targeting the agrarian actors. Mengistu [17] conducted study on the effects of resettlement schemes on the biophysical and human environments: the case of Gambela Region, Ethiopia. Asrat [18] conducted study on the dynamics of resettlement with reference to Ethiopian experience. Focused on understand how the resettlers were adapting to their new situation (where they adapting positively or negatively and what new institutional arrangements had been put in place). Gebre [19] conducted a study entitled: differential reestablishment of voluntary and involuntary migrants: the case of Metekel settlers in Ethiopia.

Taking into account the above researches and arguments one can see that there is a gap both in the area and aspects of sedenterzation program covered. Therefore, this study assessed the social consequences, both the positive and the drawbacks, of Sedentarization schemes of Ethiopian Somali Regional State.

Therefore, this study tries to fill this research gap and aims to build a better understanding of pastoral sedenterization process social consequences in the study area and narrow the existing information gap on sedenterization constraints, problems and future prospects. The study also tries to enlighten the concerned government institutions as well as policy makers for a better and thoughtful decision for improving the pastoral sedenterization process in the study area. This study focuses on the Social Consequences of Pastoralist Sedenterisation Schemes, the Case of Beer Caano district Shabelle Zone of Ethiopian Somali Regional State.

CONCEPTUAL FRAMEWORK OF PASTORAL SEDENTARIZATION SCHEMES

The supporters of the resettlement policy focus on the livelihood diversification aspects which received limited policy attention in the past. Since the PASDEP and consequent emphasis on livelihood diversification within the agriculture sector and it is one of its challenges towards pastoral development strategies. Still, the new pastoral development policy declared recently focuses on the resettlement of the pastoralists around rivers and water potential areas and gives poor consideration in targeting the nomadic pastoralists in the arid parts of the region where access to water is the main challenge.

Figure 1 describes the conceptual framework for the sedenterization process taking in Ethiopian Somali regional in riverine areas around main river banks. The people in this region grow limited type of crops like sorghum and maize but only in the rainy season. During the droughts, the pastoralists face serious asset depletion. A high scale irrigation system could be developed in riverine areas of the region to reverse drought induced problems. Thus, the people in region and its districts can be resettled to benefit from these ample resources. The Somali region basin development plan passes through three stages: from resettlement to full transformation. The implementation of stage one and stage two leads to full settlement of pastoralists while in stage three full transformation will occur. Likewise, stage one and stage two are also short and medium term strategies respectively whereas stage three is a long term strategy of the region.

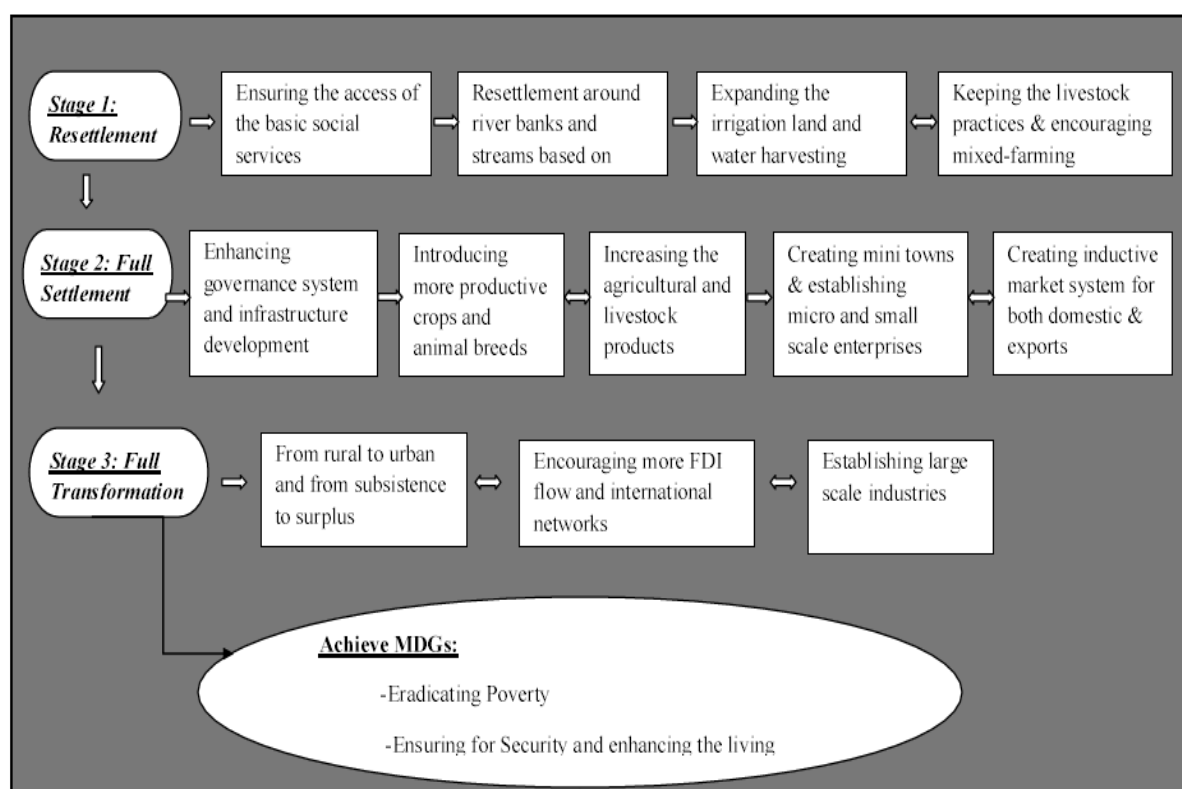


Figure 1. Conceptual framework of pastoralist sedenterization process.

Thus, sustainable development and poverty reduction could be realized in the arid pastoral areas if the diversification issue moves beyond farming and promotes livestock and livestock product based trade of milk, hides and skins, and animals. Yet, the current resettlement program has challenges which hindered the expected production capacity. Some of the main challenges include:

- a lack of community awareness on the advantages of resettlement program,
- land ownership claims by the clans settled there,
- extensive drought and dryness of the rivers,
- shortage of the skilled manpower and the agricultural materials,
- inadequate basic social facilities, and
- flooding of the rivers after rains started.

The implementation of the resettlement policy creates strategic challenges. The availability of water in most parts of the corridors has been a bottlenecked for the foreseeable future. Water development for irrigation, whether for channeling groundwater flows, river diversion or runoff catchments are all require investments in infrastructure and management capacity. Effective sustainable land use management combined with transport, communication and market infrastructural development are also required. A crucial challenge is the parallel to improve the productivity of livestock and develop special intervention programs in the arid pastoral areas to transform into settled livelihood and improve their standard of living. On the other hand, the diversification or the mixed farming system is not new to the region however only recently have these areas been used for resettlement on such a large scale.

RESEARCH METHODOLOGY

This section briefly describes the study area and describes methodology of the research including sampling technique and sample size, types, sources and methods of data collection and analysis.

RESEARCH AREA

Somali regional state is second largest regional states found in Ethiopia. It is organized into 11 zones and 93 districts. Shebele zone is one of the 11 zones of Ethiopian Somali regional state and located 1219 km away from the region main city Addis Ababa and 591 km to the region main city Jigjiga. The district is locate within latitudes and longitudes of 5°57' N 43°27' E and 5,95° N 43,45° E. The district is found in Shabelle Zone in eastern Ethiopia, and, 44 km south of the capital of the zone Gode. The district has a total of 13 Kebeles, total population of 61 970 and 10 328 households [20]. Among the 13 Kebeles, sedenterisation has been taken in 12 Kebeles. The district has a total of 9 995 households in the 12 Kebeles [21].

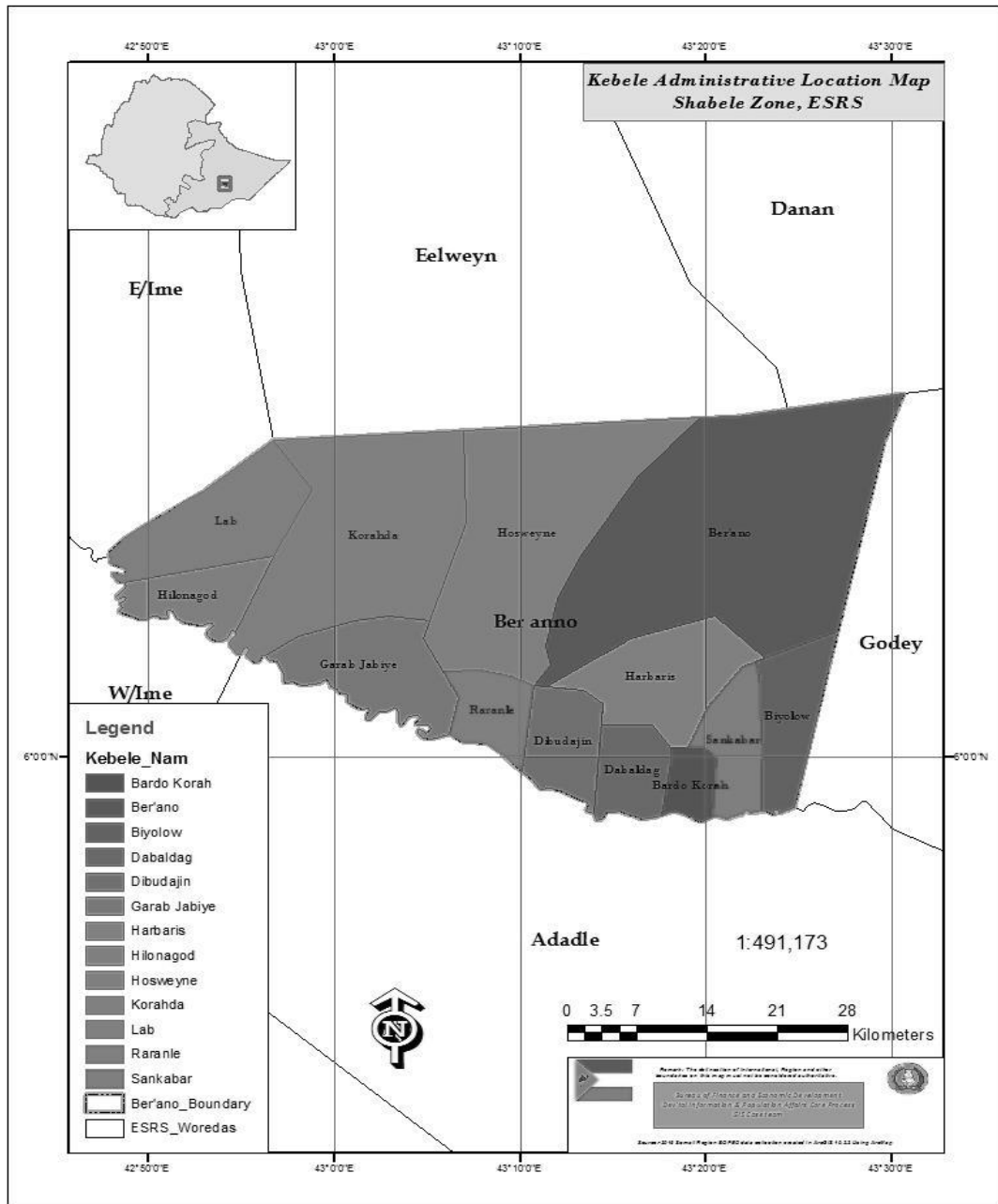


Figure 2. Map of the study area [20].

Shabelle Zone has the largest water/river source in comparison to other zones of the region. Beer Caano district was selected purposely for this study because the existence of large sedenterization sites in the Shabelle zone and region. Since the district is located along the

Wabishabele River, it has the largest resettlement sites as compared with other districts of the zone and there are mass sedenterization intervention program in the district. In the process of selecting the sample, a multi-stage random sampling procedure was used. In the first stage, three sedenterized Kebeles were randomly selected from the total twelve sedenterized Kebeles that exist in the district. The determination of the surveying sedentarized households were made by using simple random sampling. The sedentarized households in the three Kebeles of Beer Caano district were recorded and among the list of these three sedentarized household Kebeles a representative sample size was drawn based on Yamane's formula. Following the identification of the sample size, informal survey and pre-survey visit was conducted in the sample areas. This made possible collecting the wide range of information by visiting the areas, making dialogue with key informants, focus groups and participating in the community discussions. Based on the information obtained and learnt experience from the informal survey, questionnaire that was used latter in the formal survey was drafted and structured. Moreover, the questionnaire was pre-tested for its appropriateness and further improved before it was used.

SAMPLE SIZE DETERMINATION

The existing literature debates the issue of successful selection and meaningful sample-size. Determining sample size varies for various types of research designs and there are several approaches in practice. Sample size determination is an important element in any survey research, although it is a difficult one. A Simplified formula for Proportions was developed by Yamane has been used in this study. Accordingly, Yamane [22] provides a simplified formula to calculate sample sizes.

$$n = \frac{N}{1 + Ne^2}, \quad (1)$$

where n is the sample size, N is the population size, and e is the level of precision.

According to data [20] the total population of Beer Caano district is about 61 970 with average family size of 6 persons per household and 10 328 households. According to the Ethiopian Somali Regional state Irrigation and basin development coordination bureau [21], the total sedenterized households of the Beer Caano district was about 9 995 households. Values for 92 % confidence level and $e = 0,08$ are inserted into (1) to obtain:

$$n = \frac{9995}{1 + 9995 \cdot 0,08^2} = 154. \quad (2)$$

Following Yamane formula [22], the sample size of 154 sedentarized households were selected randomly from pre-selected three sedentarized Kebeles. This sample size was assumed to enable us to gather richer data with regard to demographic, socio-economic behaviours, livelihood styles, environmental factors, traditional institutional setup and others. After having the total number of households in each of the three sedentarized Kebele households' probability proportional to size will be employed to select the sample households from the three sedentarized Kebeles. Accordingly, the selected 154 sample households will be interviewed by using semi-structured survey questionnaire.

Table 1. Sample frame and distribution in the study area.

District name	Kebele name	Target population households	Sampled households
Beer Caano	Dib u dajin	700	42
	Har baris	750	45
	Sanka Bar	828	57
Total		2278	154

This study was mainly depending on qualitative and quantitative primary data which was collected by using structured questionnaire. Data was gathered from household level survey of 154 sample households using structured questionnaire. The study was also supplemented by qualitative data generated through focus group discussion, key informant interviews and the researcher's field observation. For the data collection, five college or high school graduate enumerators who speak the local language fluently were recruited from the study area and they were trained. During the data collection phase the researchers were supervised by the enumerators. The filled questionnaires were thoroughly checked on the daily basis for the completeness and for possible re-interview if deemed necessary.

In addition to primary data, relevant secondary data was collected from Beer Caano district irrigation and basin coordination office, administration, health office, water office, zonal offices, Ethiopian Somali Regional State line bureaus, NGOs and organizations operating in the district. Both published and unpublished documents were extensively reviewed to secure pertinent secondary information.

METHODS OF DATA ANALYSIS

Descriptive statistical analysis like percentages, ratios, mean, frequencies and others were used to assess the sedenterized pastoral households in the study area based on the social consequences, demographic, socio-economic situations of the sampled households. The data from survey questionnaire, key informants interviews, focus group discussions and observation were analyzed and described through statistical analysis after collecting, sorting out, grouping and organizing of the data by using statistical STATA version 11 software tools. In addition, inferential statistical test of paired t-test was employed.

RESULTS AND DISCUSSION

LIVELIHOOD CHARACTERISTICS OF SAMPLED HOUSEHOLDS

Survey results show that the sample resettled pastoral households were pushed out from their original places due to drought, rangeland degradation and shortage of water problems respectively as the main causes to sedentarize the pastoralists, Table 2. In addition, government through its development interventions and policy for provision of basic social services to pastoral community designed and implemented mass sedenterization schemes.

Table 2. Causes of pastoral sedenterization in study area.

Cause	Frequency	Percentage
Drought	97	63
Range land degradation	20	13
Shortage of water	37	24
Total	154	100

LIVESTOCK HOLDING

According to focus group discussion and key informants', settlers were rear different types of livestock such as; goats, camel, sheep, cattle and donkey before and after sedentarized. Livestock contributes to households' livelihood in different ways, that is, as a source of draught power, source of cash income, source of nutrition and means of transport. Besides, livestock are considered as a means of saving and means of coping mechanism during crop failure and other calamities in the study area. According to survey data, the mean livestock holding (TLU) of the sampled households before sedentarization were 14,84 with standard deviation of 9,16. The maximum and minimum livestock holding of the sampled households

before sedenterization were 45,77 and 0, respectively. However, the mean livestock holding of the sampled households after sedenterization was 17,15 with standard deviation of 11,07. The maximum and minimum livestock holding of the sampled households after sedenterization were 60,07 and 0, respectively. The Paired sample t-test shows statistically significant difference in the mean TLU that households own before and after sedenterization at the 1 % level of significance.

As indicated in Table 3, after sedenterization households have more livestock holding compared to the situation before sedenterization in study area. The reasons may include that after sedenterization the livestock got better feeds, handling and management because before sedenterization livestock was feed through open grazing land with communal rangeland degradation. Generally, there were increments of livestock and livestock production after sedenterization as compared to before sedenterization. In addition, due to low prevalence of animal disease and accessibility of veterinary services in the study area that may increase the number of livestock.

Table 3. Livestock holding of the sampled households.

Variable	Mean	Standard deviation	Maximum	Minimum	t-value
TLU before sedentarization	14,84	9,16	45,77	0	-5,34***
TLU after sedenterization	17,15	11,07	60,07	0	
Annual income before sedenterization	12 264,29	6 322,52	36 000	2 100	-11,65***
Annual income after sedenterization	16 127,27	6 475,78	39 500	5 000	
Land holding before sedenterization in hectare	0,00	0,00	0	0	-35,38***
Land holding after sedenterization in hectare	1,40	0,040	2	1	

***significant at 1 % probability level

ANNUAL INCOME OF THE HOUSEHOLDS

According to focus group discussion and key informants, settlers' main income source is agriculture that composed of livestock and crop production while before sedenterization main source of income was only livestock production. These contributed to households' livelihood diversification. The study area has a potential to produce high value crops like sesame, haricot bean, soybean and fruit plants (mango and banana). So, it is economically feasible to specialize on these crops beside the food crops growing in the locality like maize and sorghum. According to survey data, the mean annual income of the sampled households before sedenterization was Birr 12 264,29 with standard deviation of Birr 6 322,52. The maximum and minimum annual income of the sampled households before sedenterization was Birr 36 000 and Birr 2 100, respectively. However, the mean annual income of the sampled households after sedenterization was Birr 16 127,27 with standard deviation of Birr 6 475,78. The maximum and minimum annual income of the sampled households after sedenterization was Birr 39 500 and Birr 5 000, respectively. The Paired sample t-test shows statistically significant difference in the mean of annual income that households own after sedenterization at the 1 % level of significance.

LAND HOLDING

Land size is considered as a critical production factor that determines the type of crops grown and the amount of crops harvested per season/year. Moreover, the availability of grazing land

is an important factor for livestock rearing. Therefore, under subsistence agriculture, land holding size is expected to play a significant role in influencing sedentarized households' living standard. Accordingly, the land holding of the sampled households after sedenterization ranged from 1 ha to 2 ha with an average of 1,40 ha with standard deviations of 0,40 ha. The average farm size before sedenterization was almost zero because the land was commonly owned with open grazing and rare land cultivation utilization.

In relation to this, farm size and overall production perspectives, there was also a group discussion on sufficiency of own crop production as well as wealth ranking conditions with key informants and sampled households. Out of the total sampled households about 80 % indicated that their current year crop production could feed the households all the year round because water is available all time with irrigation schemes but there is increasing irrigation cost of production. On the other hand, almost 20 % have reported that their current year crop production lasts up to five to eight months. In addition, about 10 % of the sampled households reported that their living standard turned for the worse, 70 % experienced better and improving living conditions and about 20 % had not come across any change (constant) in their living conditions over the surveyed period.

SOCIAL AND INSTITUTIONAL DELIVERY SERVICES

The main functions of social and economic institutions are to provide signals that will guide self-interested economic agents/entities to act in the interest of the larger community [23]. The main task of any nation-state is to create social and institutional arrangements that provide the needed signals to individual economic entities. In general, institutions and organizations are important aids to development. They may affect agricultural and rural development in many different ways, including provision of production inputs and services, reduction of transaction costs, enhancement of bargaining power of sedentarized pastoralists *vis à vis* those to whom they sell their produce and from whom they buy production inputs and services, influencing investments and savings that expected to enhance positive social consequences level in the society.

ACCESS TO EDUCATION SERVICES

It is a basic social service where by human capital could be developed, which is a necessary resource for livelihood improvement and positive social consequences. The all sedentarized *Kebeles* have school services which range from ABE to primary schools. The access to these services was measured against proximity and utilization. The findings indicate that 65,5 % of the sampled households have sent their school age children to schools while 34,5 % did not for various socio-economic problems of their own. This indicates that slight majority of school age children are at school which in the long-run could contribute to poverty reduction and positive social consequences.

The access to school services between before and after sedenterization was seen in terms of the average distance travelled to the nearest school .Proximity to school within the standard of ministry of education was considered as a measurement to access. Accordingly, it was found out that after sedenterrization the mean distance travelled to the nearest school was 5,75 km. but before sedenterization, there were no access to school services due to the mobility pattern of the pastoralists. The maximum distance travelled is 6 km which can be seen accessible by national standards. Moreover, the group discussants and key informants participants also have agreed that they have free access of primary education services to their families and the provision have shown an improvement after sedentarization. However, as mentioned above, access to primary school is available in all sentarized *Kebeles*but there is no secondary school in most of sedentarized *Kebeles* that caused large school drop out after completion primary

schools. Because sending students into *Beer Caano* district secondary school after completion primary school required additional costs which households cannot afford.

ACCESS TO HEALTH SERVICES

The all sedentarized *Kebeles* have access health services that range from health post to health center services levels. The majority of these services in the study area are provided through these facilities. To analyze the contribution of health services towards positive social consequences they are seen from accessibility to the health facilities and mortality cases faced by households. Access to health services in the study area after sedenterization, which is seen from distance traveled to the nearest health facility indicates that the meandistance traveled is 1,25 km.

The longest distance traveled is 2,5 km. But before sedenterization, there were no such health services due to long distance and the mobility nature of the pastoralists. In all sampled sedentarized *Kebeles* of the district there were no hospitals which can give better health services.

The occurrence of disease incidence indicates that the incidence of sick person was 45,9 % before and 35,33 % after sedenterization. The mean person per household who were sick in the study area is also found higher before sedenterization. Mortality cases among the sedenterization indicate that before sedenterization they have lost higher number of family members than the after sedenterization, the mean being 0,20 and 0,11, respectively which is a statistically significant result at less than 5 % probability level.

In addition to this, the group participants conformed that the health service (health post) is not operational for different reasons including lack of health professional, lack of medical supply and equipment and in some case lack of repair and maintenance of the facility. Therefore, according to them, they are obliged to travel to Gode town and spend extra money for transportation and health facility.

ACCESS TO WATER AND SANITATION SERVICES

Potable pure water coverage of the sedenterized *Kebeles* are so low that the access to it is determined by coverage. Quantity of water fetched and proximity to these services was analyzed. The average water usage by the households before and after sedenterization was 20,08 l and 90,89 l per day, respectively. Moreover, the mean distance traveled to water sources after sedenterization was 500 m. But before sedenterization they used to travel about 100 km in search of water with the aid of camels and pack animals. It took two days for round trip to get water, excluding queuing time which may require one extra day since the sources of water are traditional well, reservoirs (*birka*), *haffirs dams*, hand dug wells, ponds and rivers.

The access to clean water and the average daily consumption is also crucial for health, sanitation, productivity and hence run out of poverty. Both before and after sedenterization households do not have access to water sources at national standard. However, the daily average water consumption per household is higher after sedenterization. The mean difference which is statistically significant at 1 % indicates before sedenterization household consume less which is almost 0 l/day while it is 14,15 l after sedenterization. Before sedenterization households were found to consume below national standards which is 15 l per day and per adult equivalents.

In addition, according to focus group discussion and key informants, water affects the health of the people in the study area either by facilitating or impeding the transmission of communicable disease. Water born and water washed diseases are the most important health problems in the study area. These problems can be reduced and ultimately, be overcome by

using the shallow wells and covering the Birkas and the Haffirs. Before sedentization, in the dry season, most of the people were traveling long way under harsh weather conditions in search of water. Information available from focus group and key informants interview with community elders shows that they used to travel about 100 km in search of water with the aid of camels and pack animals, it took 2 days for round trip to get water, excluding queuing time which may require one extra day. Hence, most of the people who were living at far locations from the permanent water had the opportunity to save a time equivalent to 2-3 days. The other important benefit is energy saving. According to focus group discussion and key informants, the average proportion of the daily energy intake spent on water collection alone was estimated to in Birkas/Haffir dams are 27 % or more in dry areas. This indicates that more than 1/4 of the daily calories are on fetching water from distant places. Thus, the provision of water at closer distances saves much time which can be applied on other productive activities.

Children, to a certain limit, are relieved from the burden of fetching at least drinking water from distance places, but in the dry season, the burden of livestock watering still remains to be the responsibility of children. According to focus group discussion and key informants, women were also relieved from the burden of fetching water from distant places. In most of the villages before sedentization, women were obliged to breastfeed their babies only two times in the day-early in the morning and in the evening. But after sedentization water was made available in the community, women were able to breastfeed their babies as they wished.

ACCESS TO COMMUNICATION SERVICES

Almost all Sedentarized *Kebeles* have no a well-developed rural infrastructure that interlinks and connects different parts of the district or that creates communication access to the neighboring and adjoining zones/districts. One of the means of communication available in the sedentarized Kebeles is the gravel road that passes through the all sedentarized *Kebeles* from Gode to Beer Caano and East Imey. But this means of transport is inaccessible to most of the sedentarized communities for the reason that sedentarized households are residing at the remote areas far from districts, where there is farm and grazing land as well as water for their livestock. All weather roads coverage is as low as 20 km which goes from Gode to Beer Caano and east Imey through sedentarized *Kebeles*. These roads are serving as the routes to the main market outlets allowing trade agricultural and non-agricultural items for the Beer Caano at large and sedentarized *Kebeles* in particular, but not accessible for the majority of the sedentarized households. In addition, the Gode town has Ethiopian airline means of transportation, which is start from Addis to Dire Dawa, Jigjiga and Gode for five days per week, but this means of transportation is very expensive and has limited flights that hinder accessibility of services by sedentarized *Kebeles*. Except the above mentioned outlets there is no other means of transportation that permits movement and communication to facilitate market integration. As a result, people and animal trek long distances to reach social service centers and markets. In addition, the participants of group discussants at sedentarized areas as well agreed that transportation service is one of the most serious problems. Due to two problems first all-weather roads are limited and second the cost of transportation is very high.

Until recently, all sedentarized *Kebeles* have no telecommunication centers and telephone services. People have to travel up to 70 km on average in order to get telephone services. In the sedentarized community, the postal service is totally missing and absent in sedentarized community in the study area.

IRRIGATION USAGE OF THE HOUSEHOLDS

From the total sample households, 92 % use irrigation for crop production. Sedentarized households of *dib-udajinta* and *Haar-bariis Kebeles* get irrigation water from two modern

small scale irrigation dams, which were constructed by the government after the sedenterization program was implemented. Most of the households from *Sankabaar Kebele* use traditional irrigation schemes which were diverted by the beneficiary households. But before the sedenterization there were no even cultivation of land let alone irrigation usage. The survey result revealed that sedentarized households had more access to irrigation water with a statistically significant difference at 1 % probability level.

USE OF IMPROVED AGRICULTURAL INPUTS

To raise farm productivity per hectare and livestock head only 106 (68,83 %) sample households utilized different improved varieties and commercial fertilizers. The rest, 48 (31,17 %) did not utilize any improved agricultural inputs in the last cropping seasons. But before sedenterization, there were rare even cultivation of land, let alone improved agricultural inputs usage in the study area.

EXTENSION SERVICE PROVISION

Many of the sedentarized sample households have access to extension advice by three development agents assigned to each rural *Kebele* administration. Accordingly 84 % of sedentarized households have access to extension services. However, according to the planned extension service provision program practical training of farmers at farmers training center was not practically conducted at all the study *Kebeles*. The development agents provide only technical advices on farm which was not practically supported by demonstration as per the program schedule proposed by Bureau of basin development coordination and agriculture and natural resource development to ensure food security. But before sedenterization, there were no extension services at their origin of place because of way of life.

ACCESS TO CREDIT SERVICES

Credit institutions play a vital role in the livelihood of rural dwellers by providing loans so that poor households boost their economic performance. The available utilized sources of finance in the study area were friends or neighbors (34,69 %), relatives (50,38 %) and merchants (14,93 %). The credit service is rendered both in cash and kind (agricultural inputs). Credit is important to resource-poor sedentarized households who cannot finance agricultural inputs to purchase at early stages of technology adoption. Nonetheless, the reality in the ground (in the study area) was that most agricultural inputs such as improved varieties and agricultural implements were delivered subsidized low price by the regional government, research institutes. Thus, sedentarized households took credit to solve their immediate food shortage, other family needs and social obligations, not to purchase inputs. From individual interview and group discussions, it was observed that farmers seek short term credit service to purchase improved agricultural inputs, but have no access. This was practically indicated in low utilization of different agricultural inputs and low productivity per hectare of farm land and per animal head.

DISTANCE TO MARKET PLACE

Markets play a vital role in rural communities for they are a source for inputs and a place for sale of outputs. If the input-output market is closer, sedentarized households can have access to information, reduce cost of production and transaction, can easily purchase improved agricultural inputs, and display their output at fair price with good margin. The district has small livestock market at Beer Caano level and one common (large) livestock market is found in Gode town which around on average 70 km.

In the study area, after sedenterization households used to go a minimum and a maximum of 45 km and 70 km from their residence to reach the nearest market center, respectively. On average they have to travel 60,36 km to reach the nearest market center to sell their products and/or buy others. Similarly, the mean time required to reach the nearest market center was found to be 10,06 h.

CONCLUSION AND RECOMMENDATIONS

CONCLUSION

The objective of this study was assessing the social consequences of sedentarized pastoral households at Beer Caano district of Shabelle zone, Ethiopia Somali regional state. The demographic features of sampled sedentarized households such as age, sex, educational status and household size were significantly affect social consequences and managerial implication of the settlers. TLU, annual income and land size were associated significantly with social consequences and managerial implications of the sedentarized pastoral households in the study area. Moreover, there has been slight change on traditional and cultural aspects after the resettlements program took place.

Generally resettlement program in the study area attained a positive impact on the resettlement program participant households' livelihood in improving livelihood physical asset, financial income, provision of social services like human health service from constructed health center in the study sites, health extension service at each *Kebele*, potable water service from shallow wells pump, agricultural extension service, veterinary health post service at each *Kebele*, availability of 1st-8th grade school in each *Kebele*, newly constructed modern small scale irrigation schemes and availability of traditional irrigation system facility in the study area. However, there is no availability of all-weather road connecting each rural *Kebele* of the study area and other resettlement site in the study area. The government has tried to reduce the role of male domination in the households' affairs with the assumption that male and female are equal.

RECOMMENDATION

Based on the finding of the study, the following points are recommended to tackle the negative impact of resettlement and to promote positive social consequences of sedentarization:

- poor rural infrastructure especially inadequate health services, transportation services and access to market for livestock were identified as major problems that can affect the livelihood of the settlers in the study area. Thus to overcome these problems the district administration in collaboration with the regional state, the settlers and other concerned bodies (NGOs), need to take corrective action in improving the social service and constructing rural infrastructure in study the area,
- the region needs to focus more on boosting value farm production in areas around the river basin and in the rain abundant areas so that to increase the food self-sufficiency in the sedentarized pastoral areas,
- agricultural and the livestock products should be commercialized for domestic and export and establishment of agro-business enterprises in the region,
- without infrastructure improvements, it is difficult to achieve the objectives of this policy and therefore, it is very crucial to focus on the development of road networks, communication system, electricity and banking system in the study area.

ACKNOWLEDGEMENT

The authors acknowledge the Somali Region State for financial support.

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