Assessment Of Pastoral Households Seasonal Migration In Itang Special District, Gambella Region Ethiopia

[1]Chayot Gatdet, [2]Kibrom Adino and [3]Tigist Petros

[1]Lecturer, Gambella University, College of Agriculture and Natural Resources, Department of Rural Development and Agricultural Extension
[2]Lecturer, University of Gondar, College of Agriculture and Environmental Sciences, Department of Rural Development and Agricultural Extension
[3]Lecturer, University of Gondar, College of Agriculture and Environmental Sciences, Department of Rural Development and Agricultural Extension

Abstract— **The pastoralists use seasonal migration as the key handling strategy for the various forces in Itang special district. These pastoral households seasonally migrate with their herds between the woodlands and Baro-river bank in the district. As such, the study was aimed to assess the patterns, determinants and the opportunities of the pastoral households' seasonal migration in the study area. Then, the multistage sampling techniques were employed primarily purposive, stratified and simple random sampling to collect the mixed approach data from 100 pastoral households in two kebele by using Focus group discussion, key informant interview, observation, questionnaire interview and documents analysis. Descriptive and binary logit model were used. The seasonal migration result showed that about 57% of the pastoral households have been migrated seasonally during the last reference period in the study area. These pastoral households have been migrated between December-February, June-August, September-November and March-May and migrated between rural-rural, urban-rural and rural-urban areas in the study area. The binary logit model results found that the occupation, herder perception, market distance, livestock water distance, credit access and livestock holding size influenced the pastoral households seasonal migration in study district. At the areas of origins, the pastoral households have faced the recurrent conflict, inadequate physical infrastructures, insufficient non-farm developments, water resource deficit and prevalent of livestock diseases in the study area. At the areas of destinations, the pastoral households have obtained the increasing livestock products, increasing resilience, promoting social cohesion and retaining rangelands in the study area. As a result, the pastoral households' seasonal migration becomes the stresses and shocks handling strategy that needs not to be neglected in the pastoral areas. Accordingly, the concerned organizations and communities need to eliminate the pushing forces of seasonal migration in order to strengthen the existing opportunities across the study district.**

Keywords—**Determinants, Itang District, Migratory Patterns, Pastoral Households and Seasonal Migration.**

I. INTRODUCTION

The pastoralists are the people or communities who are engaging in the economic system in which they rear or raise a large number of livestock (Stidsen, 2006). Similarly, pastoralists are the people who rely on mobile livestock rearing as the main sources of their livelihood (Nori and Gemini, 2011). They use migration system to cope with the environmental and human difficulties. The pastoralists usually maintain their livelihood and retain their livestock productivity through migration strategy. The pastoralists are using migration to efficiently utilize the available resources notably pastures and water (Georg et al, 2011). The migration lets the pastoral communities to exploit the existing resources in revolving manner and enables the vegetation on grazing lands to regenerate (Kassaet al, 2005). It also avoids the production reduction and mortality of animal from cold, shortage of forage, off-farm income opportunities, avoiding parasite invasion and vacating grazing areas (Kuenget al, 2013).

In Gambella region in general and Itang special district in particular, the pastoralists seasonally move with their livestock between the two locations.These communities move seasonally to drive their herds to place with pasture and water and come back in other seasons when the pasture develops with various magnitudes. In the region, the pastoralists move from area to area in search of pasture while the mixed agriculture inhabitants live on permanent settlement (Yilebes, 2017). But, a little has been done about this issue in the district or country. Only some of the studies emphasized the rural-rural migration by the assumption of grazing areas and water sources (Belete and Aynalem, 2017) and coping mechanisms of pastoral' migration (Ben and Michael, 2002). These studies have failed to investigate the general patterns, determinants and the challenges and the opportunities of the pastoral households' seasonal migration in the country in general and or district in particular. Therefore, this studytried to fill this gap by attempting to;

- To describe the patterns of pastoral households' seasonal migration in the study area
- To examine the determinants of pastoral households' seasonal migration in the study area
- To identify the challenges and opportunities of pastoral households' seasonal migration in the study area

II. RESEARCH METHODOLOGY

The Itang special district has a total population of 42,000, of whom 21,411 are male and 20,589 are females; with 8744 households (Alemseged et al, 2014). At this time, the leading livelihood strategy of the district is predominantly mixed agricultural practice in which the livestock rearing and crop production are both used from 23 kebele. Nearly, half of these communities depend on livestock production as the leading livelihood activity; by which almost 10 Kebele are utterly using livestock rearing as the main activity. Seasonally, these pastoral households move from home with their herds for search of better pasture areas and water points and come back to another home during other seasons. They use free herd mobility over the rangeland to get water and grazing places (Nakachewet al, 2018).

2.1 Description of the Study Area

The study was conducted in Itang special district which is found at 45 km away from Gambella regional capital.

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2.2 Research Design

The pastoral households' cross-sectional survey design and descriptive study were adopted to assess the seasonal migration among the pastoral households in Itang special district. Meanwhile, a mixed research approach that held both qualitative and quantitative approaches were applied. The mixed approach mediates between the limitations with the representativeness of sample of qualitative approach and reductionist nature of the quantitative approach (Chambers, 2001; Degefa, 2005).

2.3 Sampling Techniques and Sample Size Determination

The multistage sampling techniques was undertaken to choose the study areas and the research respondents. The studyhad used the purposive to select the study district and the kebele;the stratified to screen the pastoral households and simple random sampling technique to choose the study respondents. As well, the 100 respondents were selected by using Arsham (2007) sample size determination as

The district is absolutely situated at 8015'N latitude and 34010'E longitude within the Gambella regional location. The Itang special district landscape is typically flat plain with the altitude ranging from 350 to 480 meters above sea level (MASL). It is also located in tropical Agro-climatic zone in the Gambella regional state. The district covers an area of 2188 km2 with an annual average rainfall and temperature of 933 mm and 27.40c respectively.

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n=(0.25)/SE2at 95% confident interval and 5% level of precision.

2.4 Data Sources and Collection Methods

The primary and secondary data were collected by using focus group discussion, key informant interview, households' interview, field observation and document analysis.

2.5 Methods of Data Analysis

The study had used both descriptive statistics (frequency, percentage, mean, standard deviation, chi-square and t-test) and econometrics statisticsanalysis (Binary logit model, Variance Inflation Factor, Contingency coefficient and Hosmer-Lemeshew) through SPSS form 20.

2.6 Hypothesis of Variables

The dependent variable of this study was seasonal migration which is binary response mainly seasonal migrants and non-seasonal migrants. The seasonal migrant households was coded by 1 while, the non-seasonal migrants for 0. As such, the 16 explanatory variables were hypothesized to influence seasonal migration of pastoral households in the study area (Table 1).

Table 1: Independent variables of study

Variables name	Nature	Sign	Description of variables
Drought	Dummy	+	1=Yes, 0=No
Age	Continuous	+/-	Year
Occupation	Categorical	+/-	1=Animal rearing,2=Trading, 3=Cropping
Pasture access	Dummy	+	1=yes, 0= no
Water distance	Continuous	+	Km
Credit access	Dummy	-	1=yes, 0= no
Market distance	Continuous	+	Km
Forage training	Dummy	-	1=yes, 0=no
Sex	Dummy	+	1=Male, 0=female
Livestock lost	Dummy	+	1=yes, 0=no
Herder perception	Dummy	+	1=yes, 0= no
Non-livestock income	Continuous	-	ETB
Flood	Dummy	+	1=Yes, 0=No
Livestock holding size	Continuous	+	TLU
Livestock Disease	Dummy	+	1=Yes, 0=No
Intensity of Cattle rustling	Dummy	+	1=Severe, 0=Moderate

III. RESULTS AND DISCUSSIONS

3.1 Patterns of Seasonal Migration

3.1.1 Temporal Seasonal Migration

Migration Status

The seasonal migration among the pastoral households is one of basic strategy for livestock rearing in Itang special district of Gambella region. Almost, the entire communities (57%) make it as a norm for their economic well-being. The estimate indicated that about more than half (58.7%) of seasonal migrants were extensively held in pulkodkebele while, 54.1% of the seasonal migrants were observed from Wathgachkebele (Table 2). A result of the FGD indicated that the most contributing factor for migration difference is the security issue among the people adjoining to the conflict fragile communities.

Similarly, the survey result showed that about 45.9% and 41.3% of the pastoral households were non-seasonal migrants observed from Wathgach and pulkodkebele (Table 2).This variation comes from the livestock water availability between the two kebele in the study area. Nathaniel (2019) study quantified that 60% of the pastoralists had involved in out seasonal migration in Northern Nigeria.

Table 2: Migration status of the sample households

	Pulkod(N=63)		Wathgach (N=37)	
Migration status	Frequency	Percentage	Frequency	Percentage
Non-seasonal migrants	26	41.3	17	45.9
Seasonal migrants	37	58.7	20	54.1

Source: Own Survey, 2020

Seasons of Migration

The twelve-monthly seasons of the year dictate the pastoral households' seasonal migration (PHSM) in Itang special district. Indeed, these seasons determine the time in which the pastoral households seasonally migrate in the study area. The people migrate between December-February (51%), June-August (40%), September-November (6%) and March-May (3%) in the study area (Table3).

The survey result showed that about 47.6% and 56.8% of pastoral households have seasonally migrated between December and February from Pulkod and Wathgachkebele (Table 3). Anna and Christian (2013) indicated that many pastoralists start their migration during winter season in Russia. The focus group discussion specified that the movement during this season is intensely rooted into the weeding, harvesting as well as grains grading.

Moreover, about 3.2% and 2.7% of the pastoral households have migrated between March and May from Pulkod and Wathgachkebele (Table 3). Nathaniel (2019) argued that some of the pastoral households migrate between late February and April in Northern Nigeria. From this view, the focus group discussion connected the migration during spring with the search of better grazing areas and water points as well as postharvest handling of the crops in the study area.

Further, about 42.9% and 35.2% migration season of the households was expected between June and August from Pulkod and Wathgachkebele (Table 3). Anna and Christian (2013) revealed that around 15 migrants households units travel through the areas during summer season in Russia. From this perspective, the focus group discussion indicated that the migration in this season is highly associated with wood land cultivation, extreme river water overflow and collecting grains.

All the same, about 6.3% and 5.4% of pastoral households have been migrated between September and November in Pulkod and Wathgachkebele (Table 3). Nathaniel (2019) stated that the summer is the time for crops harvesting and fodder availability in Northern Nigeria. The FGD showed that the floods event and the farms tilling inflict the pastoralists' migration.

Table *3*: Seasons of Migration

	Wathgach		Pulkod	
Seasons of migration	F	%	F	%
December-February	21	56.8	30	47.6
March-May	1	2.7	2	3.2
June-August	13	35.1	27	42.9
September-November	2	5.4	4	6.3

Source: Own Survey, 2020

Duration of Seasonal Migration

This study had analyzed the distinctive patterns of the PastoralSeasonal Migration duration in the study area. As observed in table 4 below, the pastoral households have a short (33%), medium (63%) and long term (4%) migration interval between BaroRiver and uplands areas in the study area.

The same, about 66.7% and 58.8% of pastoral households have continued to migrate seasonally for about three to five months in Pulkod and Wathgachkebele (Table 4). Bestowing with the focus group discussion; the pastoralistscontinuously remain longer in one area with regard to the circumstances of the security and the floods in the study area. Hussein and Helen (2019) study indicated that the pastoralists spent a quarter to half of the total annual cycle in the distant lands.

As well, about 28.6% and 40.5% of the pastoral households have stayed at the terminus for maximum of one to two months' time interval during seasonal migration from Pulkod and Wathgachkebele (Table 4). The focus group

discussion showed that the overgrazing, conflict, livestock disease and cattle raiding forces are the factors of the households' migration.

Likewise, the survey result presented that the total of 4.8% and 2.7% of the pastoral households migrated for extensive period from Pulkod and Wathgachkebele (Table 4). The FGD result showed that the pastoral households have preferred to spend a lot of months to specific locations with the aims of farming.Yonad (2017) reported that some pastoral households do not practice seasonal or circular migration system of life.

Table 4: The sample households durations at destination

	Wathgach		Pulkod	
Months of stay	F	%	F	%
One to two months	15	40.5	18	28.6
Three to five months	21	56.8	42	66.7
Six to twelve months	1	2.7	3	4.8

Source: Own Survey, 2020

3.1.2 Spatial Seasonal Migration

The pastoral households went on seasonal migration with various spatial migratory patterns in the study area. The main directions of the pastoral households'seasonal migration are therefore rural-rural (54%), rural-urban (13%) and urban-rural areas (33%) in the study area (table 5).

Further, the estimates of 52.4% and 56.8% of the pastoral households have seasonally migrated from rural-rural areas during reference period in Pulkod and Wathgachkebele (Table 5). The focus group discussion from both kebele showed that the people seasonally migrate from rural to rural direction of migration to search the grazing area and livestock water.Abdelah (2019) indicated that the Afar pastoralists migrate Northward between Talo, Teru and Megale.

Meanwhile, a result indicated that around 31.7% and 35.1% of the pastoral households have been seasonally migrated from the urban areas to rural areas of Pulkod and Wathgach last year (Table 5). The focus group discussion results described that the main aims ofmigrations between urban-rural areas are security and floods situation. Paolo et al (2018) revealed that the pastoralists migrated from urban areas of Cameroon to Mbam and Djerem national park.

In the same way, the survey result showed that the pastoral households that account for 15.9% and 8.1% have seasonally migrated from rural to urban areas of Pulkod and Wathgachkebele (Table 5). A result from FGD showed that particular pastoral households migrate to urban areas to seek out the trading activities and livestock veterinary services. Paolo et al (2018) indicated that the pastoral households usually migrate to the town of Mayo-Reya division in Cameroon.

Table 5: Directions of seasonal migration

	Wathgach		Pulkod	
Directions of seasonal migration	F	%	F	%
Rural-rural	21	56.8	33	52.4
Rural-urban	3	8.1	10	15.9
Urban-rural	13	35.1	20	31.7

Source: Own Survey, 2020

3.1.3 Main reasons of Seasonal Migration

Seasonal migration is not an aimless among the pastoral households. The pastoral households have recognized those main reasons into cultivating crops (26%), utilizing the resources (19%), evading the floods (28%) and coping with conflict (27%) in the study area. The survey result showed that about 22.2% and 37.9% of pastoral households have been migrated to evade the floods in Pulkod and Wathgachkebele (Table 6). In consensus with FGD; the pastoralists migrate to the other areas once the Baro river water overflew the living areas. The same report indicated that the movement of Afar, Somali and South Omo pastoralists are dictated by the seasonal flooding of Awash, Wabi-shabelle, Ganelleand Omo rivers (PFP et al, 2010).

In the meantime, the field survey indicated that about 27% and 24.3% of pastoral households have seasonally migrated to cultivate the crops from Pulkod and Wathgachkebele (Table 6). With this concern, The FGD point out that the pastoral households migrate seasonally for the aim of crops cultivation on the Baro river banks during winter season and on the wood lands areas during rainy seasons. Nathaniel (2019) result revealed that the locations of the farming communities determine the mobility patterns of the pastoral households.

Similarly, the result also indicated that nearly 14.3% and 27% of the pastoral households have been migrated between the BaroRiver and wood lands in Pulkod and Wathgachkebeleto access the water and grazing areas (Table 6). The focus group discussion showed that the pastoral households move between the two established locations to seasonally utilize the water and pasture resources. Kuenga et al (2013) result described that maintaining the grazing areas is the key reason for pastoralists' migration during winter season.

On the other hand, around 36.5% and 10.8% of the pastoral households have been migrated to evade the conflict from Pulkod and Wathgachkebele (Table 6). In line with the result of focus group discussion; the conflict makes the pastoralists to seasonally migrate between the two locations.In Afar region, Samuel et al (2016) result showed that the pastoralists change the grazing areas in the time of harsh insecurity.

Table 6: The main reasons of seasonal migration

Main reasons of seasonal migration	Wathgach		Pulkod	
	F	%	F	%
Utilizing the resources	10	27	9	14.3
Cultivating the crops	9	24.3	17	27
Coping with conflict	4	10.8	23	36.5
Evading the Floods	14	37.9	14	22.2

Source: Own Survey, 2020

3.1.4 Main features of seasonal migration

The seasonal migration of the pastoral households involves many exclusive features in the study area. The main unique features of the seasonal migration were therefore joint camp (26%), joint mobility (45%), communal grazing and watering (20%) and mutual support (9%) respectively in Itang special district.

For that reason, nearly 47.6% and 40.6% of the pastoral households have been engaged in the joint mobility during seasonal migration in Pulkod and Wathgachkebele (Table 7). Then, the focus group discussion showed that the migrations among the communities are organized in groups for livestock care, human safety and the wholecommunities. Nathaniel (2019) result point out that about 80% of the pastoral households had migrated in groups when they go to the new locations.

Moreover, the survey result indicated that about 22.2% and 32.4% of pastoral households of Pulkod and Wathgachkebele have established the joint camps in the course of seasonal migration (Table7). Agreeing withthe Focus Group Discussion; restricting the rampant of livestock looting and attack of the whole communities were the most notable ambitions of this feature.

In addition, the result indicated that about 19% and 21.6% of the pastoral households have engaged in communal grazing and watering of livestock during seasonal migration in Pulkod and Wathgachkebele (Table 7). The discussants showed that the basic aim of this feature is the prevention of the loss from thieves, wild animals attack and the distribution of the range resources pressure among each other. Samuel et al (2016) indicated that the pastoralists in Somali region use the system that stated that every person can use the resources on land.

Besides, the survey result closely showed that 11.1% and 5.4% of pastoral households have involved in mutual support during seasonal migration in Pulkod and Wathgachkebele (Table 7). According to the focus group discussion, the pastoralists help each other to find the loss animals, construct the thatch houses and share the local animals breeding as well.The study carried out in Afar revealed that the pastoral communities develop a communal support system as a measure of their success (PFE et al, 2010).

Table 7:The Main Features of Seasonal Migration

Main features of seasonal migration	Wathgach		Pulkod	
	F	%	F	%
Joint camp	12	32.4	14	22.2
Joint mobility	15	40.6	30	47.6
Communal grazing and watering	8	21.6	12	19
Mutual Support	2	5.4	7	11.1

Source: Own Survey, 2020

3.2 Determinants of Seasonal Migration

Then, the sixteen explanatory variables were hypothesized to influence the decision of pastoral households' seasonal migration in Itang Special District. Among these variables, six of them were statistically significant with seasonal migration decision of the pastoralists. At this respect, the binary logit model showed that livestock water distant, herder perception and credit access were statistically significant at 1% (Table 8). Also, livestock holding size and market distant were statistical significant at 5% while, the occupation was statistically significant at 10% (Table 8).

LHSIZE(Livestock Holding Size): Livestock holding size is one of the economic determinants of seasonal migration among the pastoral households in Itang Special District. As estimated, the model result showed the positive significant association between livestock holding size and pastoral households seasonal migration at 5% (p-value=0.032). This disclosed that the increase of livestock holding size, increase the pastoral households migration decision. The estimate indicated that increasing the number of livestock holding by one TLU would increase the probability of the pastoral households' decision to migration by 1.057. This implied that the households with the large number of livestock seasonally migrate in search of pasture and water points for livestock. Suresh et al (2011) indicated that the

livestock holding size positively influence the pastoralists' migration decision.

WADI (Water Distance): Livestock water distance is one of the environmental determinants of pastoral households' seasonal migration in the study areas. As expected, the livestock water distance positively influenced the seasonal migration decision of the pastoral households at 1% (p-value=0.006). This clarified that the increases of water distance, increase the seasonal migration among the pastoral communities. While keeping the other variables constant, the increase of livestock water distanceby one kilometer would increase the probability of seasonal migration among the pastoral households by 1.012. This signposted that the pastoral households seasonally migrate when the livestock water points are not close to their residing areas. Aime-Landry (2012) showed that the pastoral households trek the animals to short-term camps near to water areas.

CRA (Credit Access): The credit access is one of the institutional determinants of pastoral seasonal migration in Itang special district. As expected, the credit access influenced the pastoral households seasonal migration negatively at 1% (p-value=0.001). This meant that the decline of the credit access, increase the seasonal migration of the pastoral households in the study area. The estimate showed that as the credit access services decrease, the probability of seasonal migration would increase by 0.299. This necessitated that the households with less financial support could involve in different migratory patterns with their livestock across the various locations. Nonetheless, Suresh et al (2011) showed that the credit access positively determine the pastoralists migration decision.

MAD (Market Distance): Market distance is one of the institutional factors that were hypothesized to determine the pastoral households' seasonal migration in the study area. The relationship between the market distance and seasonal migration of pastoral households was positively and statistically significant at 5% (p-value=0.021). This demonstrated that the increase of the market distance, increase the seasonal migration decision of the pastoral households. While other variables are kept constant, the estimate indicated that the increase of market distance by one kilometer would increase the probability of the pastoral households'seasonal migration by 1.027. This showed that the pastoral households seasonally migrate to the nearby market cities for lives animal and livestock products trading in the study area. Saverio et al (2018) result showed that the main livestock market centers are commonlyproximate to where the pastoralists are travelling.

OC (Occupation): The occupation of the pastoral households is one of the economic determinants of seasonal migration in the study area. The occupation of the pastoral households was positively and statistically significant at 10% (p-value=0.099). This indicated that being the livestock owners increase the migration decision of the pastoral households in the study area. Thus, the estimate showed that the increase of pastoral households work to animals rearing by one unit would increase the probability of seasonal migration decision by 1.03. This is in connection with the fact that the livestock holders are often demanding to take their livestock into the greener and safer grazing areas as well as to the closer water sources across the district. Nathaniel (2019) result indicated that the pastoral communities' reliance on livestock as sources of the livelihood lead them to constantly migrates.

HPER (Herder Perception): Theherder perception is one of the hypothesized determinants of the pastoral households' seasonal migration in the study area. As expected, the herder perception was found to be positively and statistically significant at 1% (p-value=0.002). This exhibited that as the preference of the pastoral households to migration increase; the seasonal migration increase as well. The estimate indicated that the increase of the herder perception to livestock migration would increase the probability of the pastoral households' seasonal migration by 6.40. This meant that the pastoral households that perceived the seasonal migration positively migrate more in the pastoral areas. George et al (2011) showed that the pastoralists have perceived the migration with the livestockpositively.

Table 8: The results of the binary logit model

Variables	B	S.E	Wald	Sig.	Exp(B)
AGHH	0.022	.025	.731	.748	1.022
LHSIZE	.055	.060	4.837**	.032	1.057
NLI	.000	.000	.761	.122	1.000
WADI	.012	.007	2.944***	.006	1.012
MAD SEHH	.027	.026	1.086**	.021	1.027
HPER OC	1.444	.763	3.576	.475	4.236
LDIS	.446	1.004	1.197***	.002	6.40
CRUS LILO	.149	.072	2.577*	.099	1.03
PDRO	-.029	.686	.002	.922	.971
PFLO PAC	.299	.877	.116	.522	1.349
CRA FOTR	.474	.071	.320	.276	7.79
Constant	-.028	.606	3.002	.901	.972
	.989	.633	2.445	.280	2.689
	-.638	.693	.848	110	.529
	-.1.208	1.087	1.234***	.001	.299
	2.939	1.140	.647	.872	.902
	-45.160	.608	.000	.999	.000
LR Chi^2 (16) =199.99, p-value=0.000					
HosmerLemshow Chi^2 (8)=4.116, p=0.847					
Number of Observation=100					

(Source: The binary logit model output)
Note: *, ** and *** represent the variables that are statistically significant at 10%, 5% and 1%.

3.3 Challenges and Opportunities

3.3.1 Challenges of Seasonal Migration

Recurrent Conflict

The conflict of resources is the critical constrain in the pastoral areas of Itang special district. The pastoral households are constantly sensitive to different resources conflict on their migration routes in the study area. About 70.2% and 27.9% of seasonal and non-seasonal migrants' households have informed the harshness of the recurrent conflict while about 15.8% and 39.5% of the seasonal and non-seasonal migrant households have indicated the moderate condition of the conflict (Table 9). In connection with focus group discussion, the pastoral households cope with the conflict through incentives, reconciliation, food assistant and cross-wide social networks in the study area. Marie et al (2018) result indicated that the conflict moved 78%of the pastoral households.

Table 9: Magnitude of conflict in seasonal migration

Challenges		Non-seasonal migrant		Seasonal migrant		X^2	p-value
		F	%	F	%		
Conflict	Severe	12	27.9	40	70.2	1.21***	0.000
	Moderate	17	39.5	9	15.8		
	Less	14	32.6	8	14		

Source: Own Survey, 2020

Inadequate Physical Infrastructure

The dearth of physical infrastructure becomes an unlimited constraint in the time of seasonal migration in the district. The survey result indicated that about 35.1% and 18.6% of seasonal and non-seasonal migrants' households have confronted the severe effect of the inadequate physical infrastructure during seasonal migration whereas;about 52.6% and 62.8% of seasonal and non-seasonal migrant households have recognized the moderate nature of inadequate infrastructure mainly roads, health and schools building in the study area (Table 10). The Focus Group Discussion showed that the pastoralists send the patients and students to the Itang town, kebele and to the proximate refugee camps to manage the deficiency of the social amenities.Abdurahiman and Bekabil (2013) showed that around 32% of the households were forced to migrate by deteriorated living ailment and pedagogicaldisruptive.

Insufficient Non-farms Developments

The insufficient non-farms interventions is the common constrain in the pastoral areas of the district. The developments of differences non-farm activities have disremembered the pastoral areas across the study setting. A survey result showed that about 72% and 11.6% of the seasonal and non-seasonal migrants' households have reported the severe constrain of limited non-farm activities during seasonal migration (Table 10). Alike, the survey result showed that about 26.3% and 74.4% of seasonal and non-seasonal migrant households have consistently observed the constraint of non-farm activities in the study area (Table 10). A result from the focus group discussion have showed that the pastoral households sell the live animals, livestock products, fish, grains and wild animals meats to manage the deficiency of non-farm activities in the study area.Abdurahiman and Bekabil (2013) result detailed that the deficiency of employment opportunities have forced 40% of the pastoral households to migrate.

Table 10: Degree of inadequate physical infrastructure and non-farm activities

Challenges		Non-seasonal migrant		Seasonal migrant		X^2	p-value
		F	%	F	%		
Physical	Severe	8	18.6	20	35.1	5.27**	0.031
	Moderate	27	62.8	30	52.6		
	Less	8	18.6	7	12.3		
Nonfarm	Severe	5	11.6	41	72	2.32**	0.028
	Moderate	32	74.4	15	26.3		
	Less	6	14	1	1.7		

Source: Own Survey, 2020

Prevalent of Livestock Diseases

The pastoral households undergo the rampant of livestock diseases across the district. The survey result indicated that the seasonal migrants (63.2%) and non-seasonal migrant households (9.3%) have reported the severe effects of livestock disease while, 79.1% and 17.5% do not face the diseases in the study area(Table 11). The result from the focus group discussion showed that the liver fluke, foot and mouth diseases, rabies, bird flu diseases etc. characterized the summer and autumn seasons in the district. Nathaniel (2019) showed that many health glitches spell the pastoral households livestock on their migration directions.

Table 11: Magnitude of Livestock Diseases and Water Deficit

Challenges		Non-seasonal migrant		Seasonal migrant		X^2	p-value
		F	%	F	%		
Diseases	Severe	4	9.3	36	63.2	3.23	0.432
	Moderate	5	11.6	11	19.3		
	Less	34	79.1	10	17.5		
Water	Severe	2	4.7	34	59.6	4.56***	0.000
	Moderate	1	2.3	14	24.6		
	Less	40	93	9	15.8		

Source: Own Survey, 2020

Decline of Water Resources

The water scarcity is an excessive pressure during pastoral households' seasonal migration across the district. The survey result showed that about 59.6% and 4.7% of the seasonal and non-seasonal migrants' households have reported the severe effects of water resources contraction while, about 93% and 15.8% of non-seasonal and seasonal migrants have not put it to the limited water resources (Table 11).The focus group discussion resultspecified that the water sources usually dried up from the areas situated at the distance of the Wetland areas and Baro River banks during dry seasons in the study area. Saverio (2019) result indicated that the provision of waterservices has commendably favored the people whose livelihoods are in settlement.

3.3.2.Opportunities of Seasonal Migration

Increasing Livestock Products

The increases of livestock products among the pastoral households is a gratifying opportunities in the study area. A survey result indicated that about 64.9 and 67.4% of the seasonal and non-seasonal migrant households have shown the high increase of livestock products during seasonal migration in the study area (Table 12). The focus group discussions from both pulkod and wathgachkebele have wide-opened that the seasonal migrations have increased the quantity of milk, reduced the calving stages and reduced the annual rate of livestock reproduction across the district.Matthew and Eva (2019) reported that the pastoral households' seasonal migration is a strategy to improve the livestock conditions and reproduction.

Table 12: The extent of maintaining rangelands and increasing livestock products

Opportunities		Non-seasonal migrant		Seasonal migrant			
		F	%	F	%	X^2	p-value
Rangeland	High	5	11.6	33	57.9	2.31***	0.000
	Medium	36	83.7	9	15.8		
	Low	2	4.7	15	26.3		
Products	High	29	67.4	37	64.9	5.22	0.711
	Medium	10	23.3	17	29.8		
	Low	4	9.3	3	5.3		

Source: Own Survey, 2020

Retaining Rangelands

Maintaining the grazing areas and water resource is an abundant panorama for livestock production in the pastoral areas. The result indicated that about 57.9% and 11.6% of seasonal and non-seasonal migrants' households have described the high grazing and water areas retaining whereas; about 15.9% and 83.7% of seasonal and non-seasonal migrant households have demanded the medium retentive of the pasture and water areas (Table 12). The focus group discussionresults have indicated that the seasonal migration preserves the grazing and water areas across the district.Abdelah (2019) showed that the mobility allows the pastoralists to adjust to the changing weather conditions without everlastingly diminishing a definite fixed environment.

Increasing Resilience

Increasing the resilience is a common prospect in the pastoral areas of the district. The survey result showed that about 61.4% and 34.9% of seasonal and non-seasonal migrants' households have described the great increase of resilience while, about 28.1% and 34.9% of seasonal and non-seasonal migrant households have indicated the medium increase of resilience in the time of seasonal migration (Table 13). The Focus Group Discussion result showed that the seasonal migration helps the pastoral households to increase the resilience by movingaway from the dangerous threats across the district. In consensus with this,Nathaniel (2019) study carried out in Nigeria showed that the pastoralists were involved in seasonal migration to escape the destructive insects, extreme weather, livestock thieves, tax assessors and others threatening.

Table 13: The extent of promoting social cohesion and increasing resilience

Opportunities		Non-seasonal migrant		Seasonal migrant		X^2	p-value
		F	%	F	%		
Cohesion	High	12	27.9	31	54.4	3.45***	0.000
	Medium	24	55.8	11	19.3		
	Low	7	16.3	15	26.3		
Resilience	High	15	34.9	35	61.4	4.32**	0.042
	Medium	15	34.9	16	28.1		
	Low	13	30.2	6	10.5		

Source: Own Survey, 2020

Promoting Social Cohesion

The social cohesions develop to be a well opportunity during seasonal migration in the pastoral areas particularly at Baro river banks. In line with the survey result, nearly 54.4% and 27.9% of seasonal and non-seasonal migrants' households stated the high opportunity of generating social cohesion during seasonal migration (Table13). The focus group discussion results showed that the pastoral households organize territory structure, clan structure and age-sex set structure during migration pattern across the district.Paolo et al (2018) result showed that the cattle owners have a habit of having more frequent contact with other pastoralists during seasonal migration.

IV. Conclusions

Theseasonal migration acts as a cultural production strategy which could not be neglected in the pastoral areas of the Gambella region. In the pastoralists' areas, it is the stresses and shocks handling strategy.Indeed, many pastoral households have involved in various migratory patterns. Meanwhile, the several determinants factors influence the decision of seasonal migration in the district.In the same compassionate, the different constraints drive the seasonal migration of the pastoral households in the Pastoral areas.Moreover, the seasonal migration pledges the pastoral households to procure the various reimbursements for the livelihood boost in the district.

V. Recommendations

- The public and private organizations need to provide the infrastructure services (road, health, school and water wells) to the pastoral areas.
- The government should establish the Effective Pastoral Market Center.
- The government and NGOs should provide the Financial Services.
- The governmental and NGOs should create the Alternatives Livelihood activities in the pastoral areas.
- The governmental and NGOs should strengthen the Pastoral Awareness.
- The farmer and pastoralists need to developthe Conflict Management Strategies in the communities wide.

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