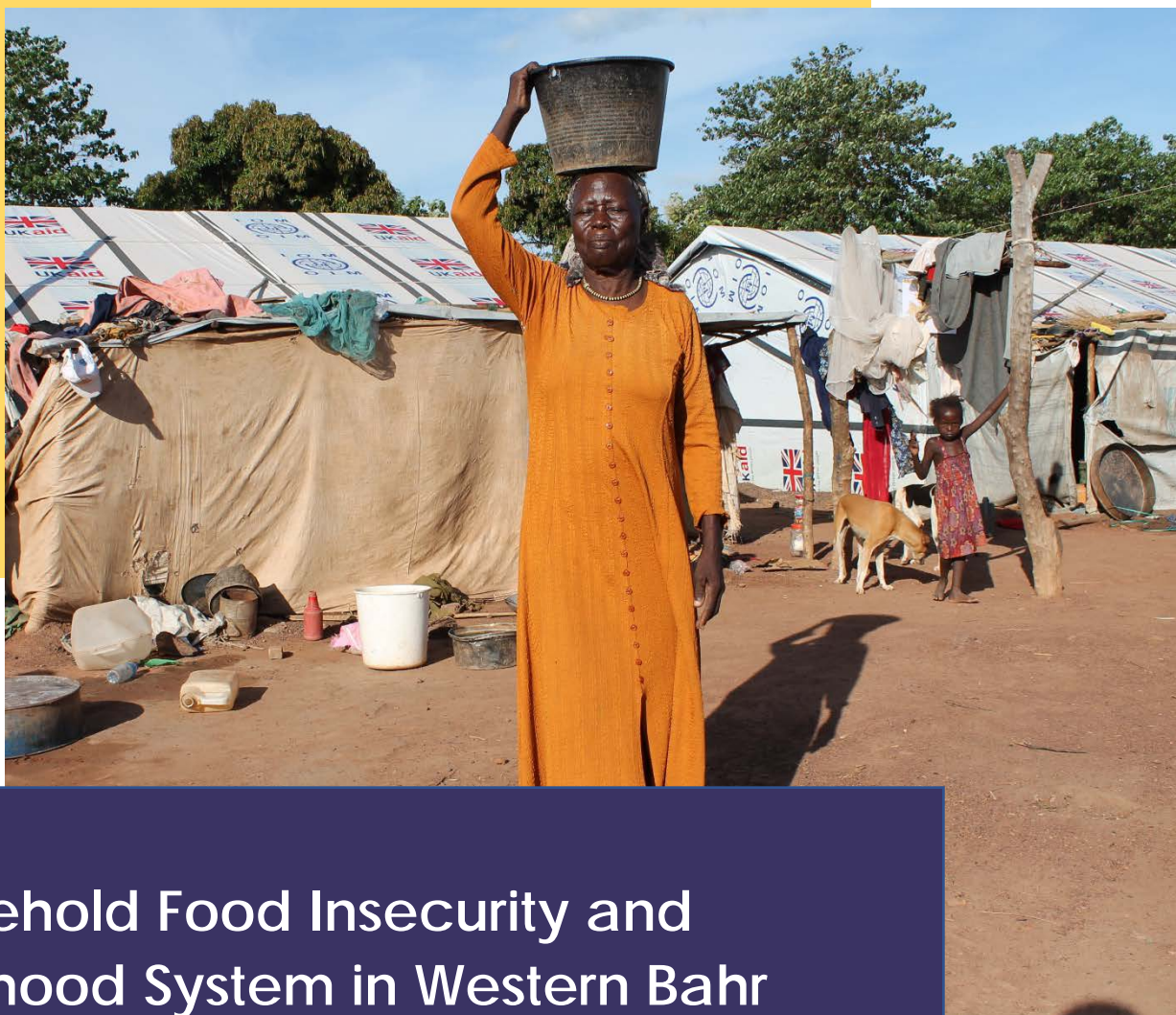




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Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)

July 2020



The publication “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)” has been funded by the Italian Agency for Development Cooperation within the Project “Food Security Support and Healthy Nutrition Promotion in Western Bahr el Ghazal SASN - AID 011423” (SASN).

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Acknowledgments

This report would not have been possible without the contribution of the 30 enumerators and data entries who patiently collected and organized the data even in difficult situations under the coordination of the local management and especially of Bangada Mangisto Livino Uganga. A very special thanks to my team, Poushali Bhattacharjee, Gopal Trital and Romina Palacios. Their input in data cleaning and organization and during report writing was valuable and indispensable.

Citation

Maria Sassi, (2020), Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019), Report developed within the project “Food Security Support and Healthy Nutrition Promotion in Western Bahr el Ghazal” SASN - AID 011423

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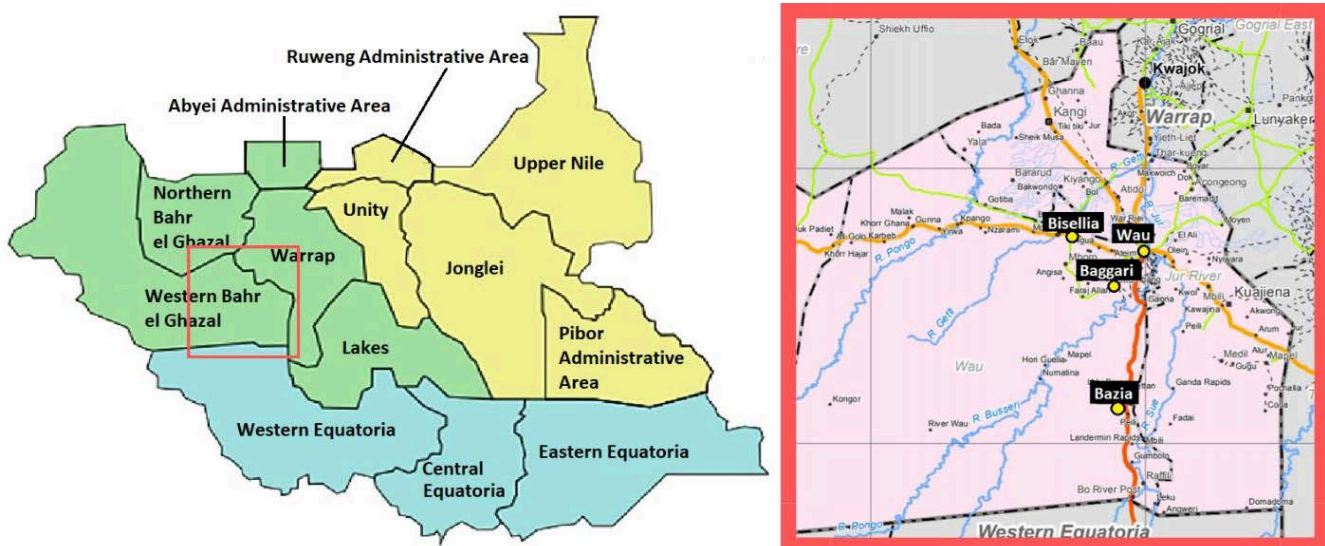
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1. Introduction

The present report provides statistical information on household food insecurity and livelihood systems in the state of Western Bahr el Ghazal, in the period of May and June 2019, as a result of the research developed by the project “Food Security Support and Healthy Nutrition Promotion in Western Bahr el Ghazal **SASN - AID 011423**” (SASN). In this context, the role of the University of Pavia as a partner of the project was to coordinate the research activity, one of the pillars of the project rooted in an approach of evidence-based intervention.

The SASN is a three-year project in the area of food and nutrition security promoted by the Italian NGO Volontariato Internazionale Donna Educazione Sviluppo (VIDES) and financially supported by the Agenzia Italiana per la Cooperazione allo Sviluppo. The aim of the project is to strengthen the resilience of the most vulnerable segments of the population in the food security area, therefore contributing to food security and fighting malnutrition in the entire region of Western Bahr el Ghazal, in line with the goals of the 2030 Agenda for Sustainable Development of the United Nations. As illustrated in the figure 1.1, the area investigated consists of the urban county of Wau and the three rural remote counties of Baggari, Bazia and Bisellia.

Figure 1.1 - Western Bahr el Ghazal State and the study location



Sources: Wikimedia Commons, 2020 (regional map) and OCHA, 2016 (city map), own elaboration.

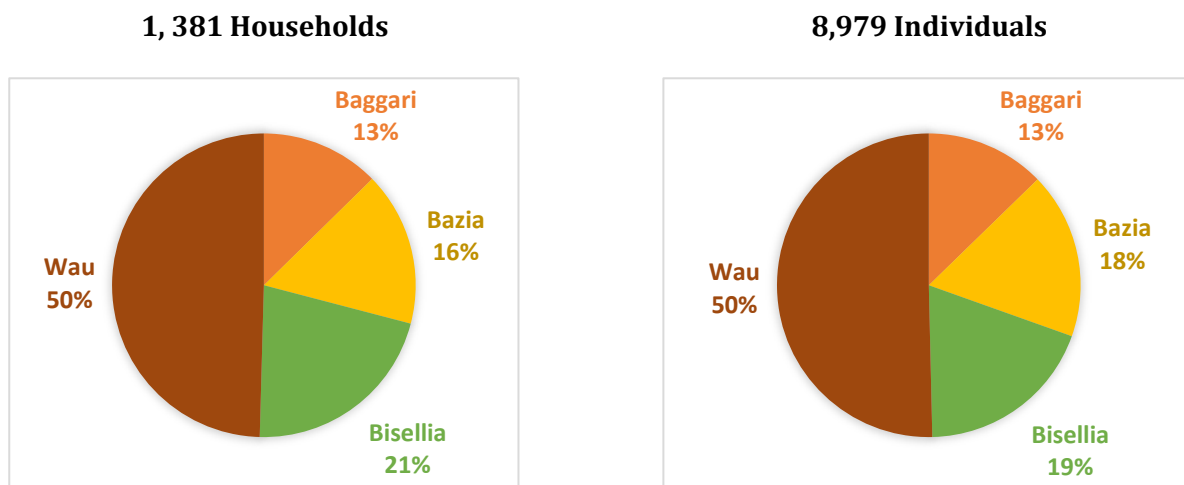
South Sudan is in a complex situation of emergency due to prolonged conflict, climate change, a fragmented health system and recurrent outbreaks of communicable diseases. The population of the country has been enduring war for almost 50 years and the area under investigation is one of the most affected by conflict. From late June 2016 to January 2019, the conflict situation was particularly severe, leading to the continuous destruction and looting of properties, schools and health facilities.

The area with the highest levels of conflict and insecurity is Baggari, which is evidenced by events such as looting of homes and livelihoods, killings, sexual and gender-based violence, and harassment of civilians. The limited access to the three remote counties investigated has worsened the situation due to the very limited access to humanitarian assistance. The research activity promoted by the project SASN is one of the first initiatives of this kind in Western Bahr el Ghazal and represents the widest and most comprehensive data collection developed in the area during that period. The distinction between the counties of Wau and Baggari, as well as Bazia and Biselia allows not only to highlight the different situations between rural and urban areas regarding food security and livelihood systems but also to investigate the current state of affairs in areas affected by different intensities of conflict and insecurity.

The research activity promoted by the project SASN is one of the first initiatives of this kind in the region of Western Bahr el Ghazal

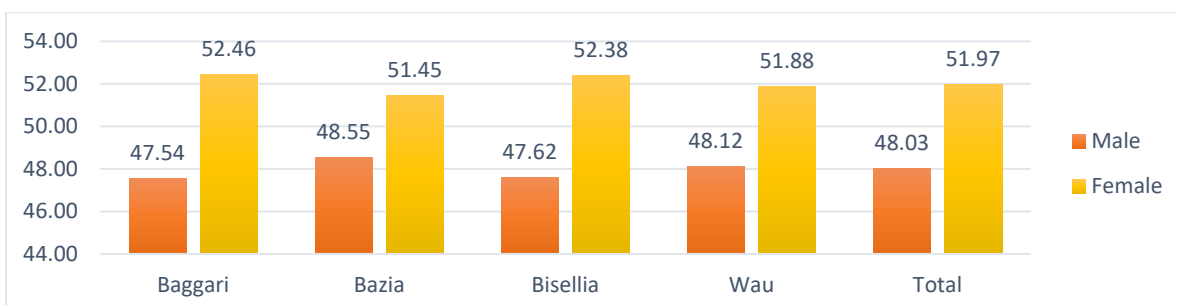
We collected data by conducting a survey to a statistically representative sample of 1,381 households for a total of 8,979 individuals (figure 1.2) during May-June 2019, in the rainy season and at the beginning of the lean season, when households strongly depend on the market for food purchases. Our sample is gender balanced across areas, with 48% male respondents and 52% female respondents in total (figure 1.3).

Figure 1.2 - Distribution of the households and population of the sample by county



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

Figure 1.3 - Distribution of the sample population by sex and county (%)



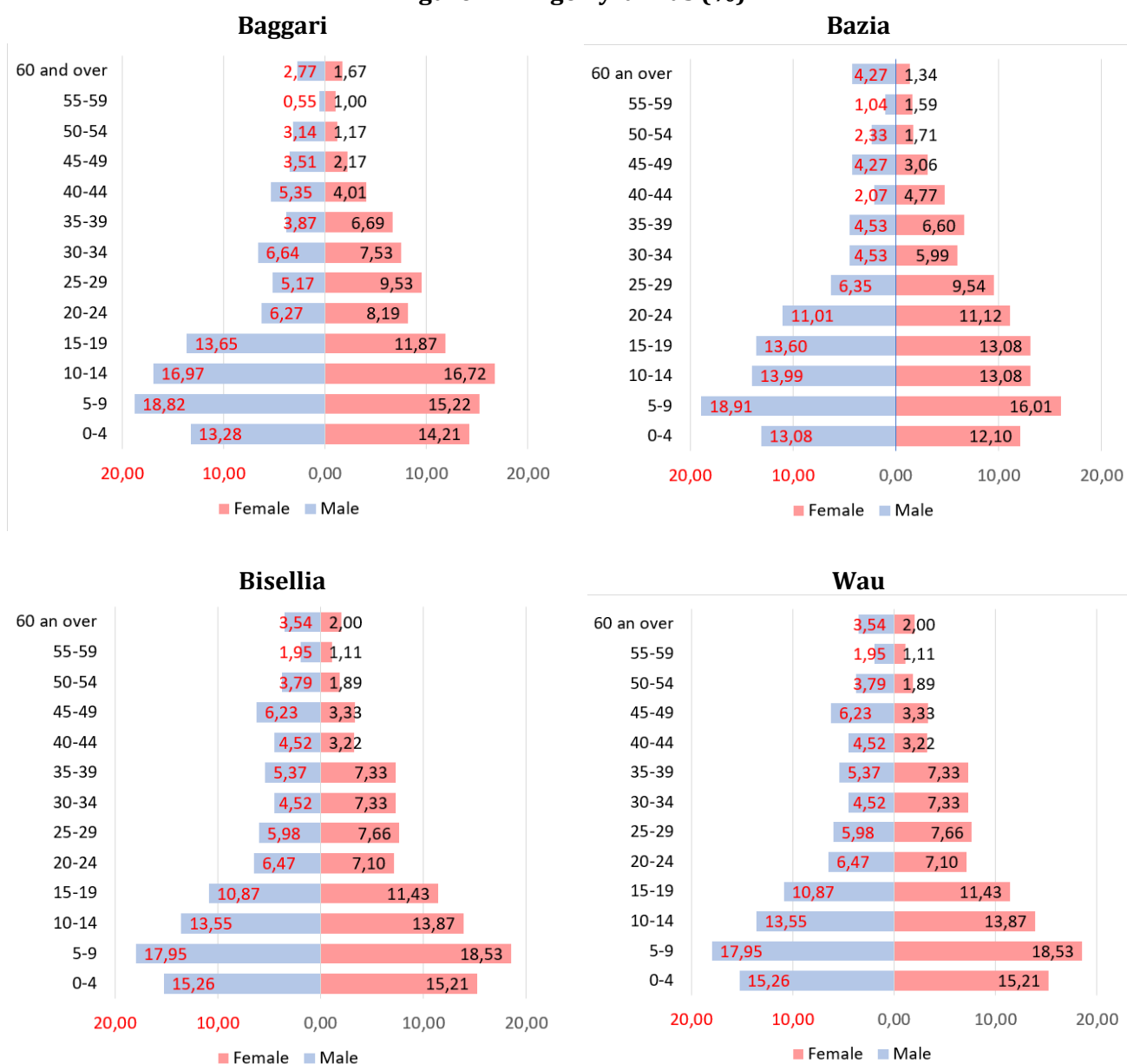
Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

The specific objective of the report is to analyze the critical characteristics of the population in terms of household structure, education, livelihood and income, food security, and sources of food and health environment, which can be used for prioritizing the allocation of resources. Furthermore, the assessment serves as a baseline for the project and its research activity since it is replicating data collection on a monthly basis.

2. Population Structure

The population pyramid in all the four areas investigated presents a narrow base and top section, revealing a population with low fertility and high death rates (figure 2.1). Consecutive age groups moving up the pyramid become narrower due to the high death rate and short life expectancy.

Figure 2.1 - Age Pyramids (%)

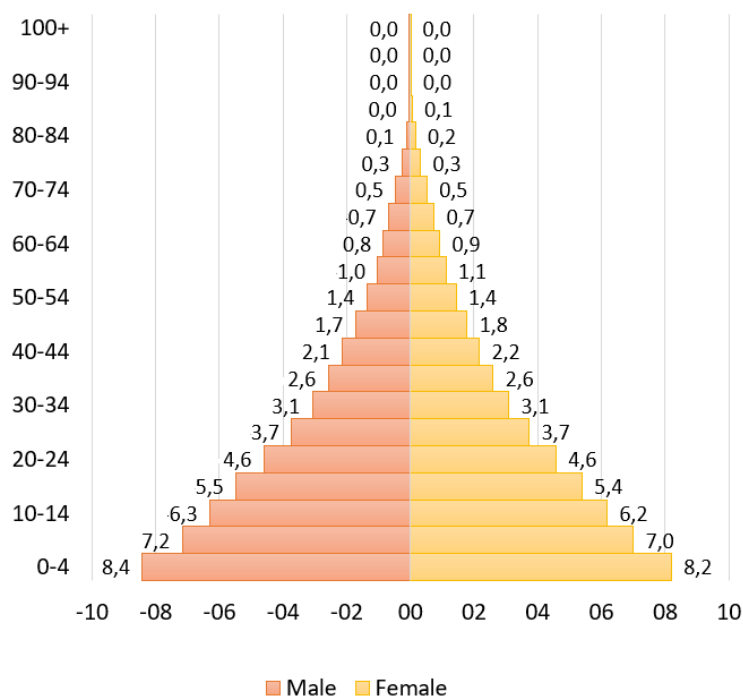


Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

The older age categories are contracting, especially with respect to 5 years ago. Moreover, the baby boom occurred 5-10 years ago was followed by a context of lower number of births and high child mortality rate. Various factors such as the conflict, the limited government capacity and the restricted human resource base have resulted in a fragmented health system. South Sudan faces a critical shortage of doctors and midwives; while the average number of nurses and midwives per 10,000 population in Sub-Saharan Africa is 10, according to the World Bank, the ratio for South Sudan is 0.5, a figure well below the average. One of the consequences of this situation is that the under-five infant mortality rate is one of the highest in the world.

The population structure in our study area is contradictory to the youthful and growing population of Sub-Saharan Africa and represents a significant change with respect to the characteristics of the country in 2009 as depicted by the National Baseline Household Survey provided by the National Bureau of Statistics in 2012 (figure 2.2).

Figure 2.2 – Population structure of South Sudan in 2012 (% of the total population)



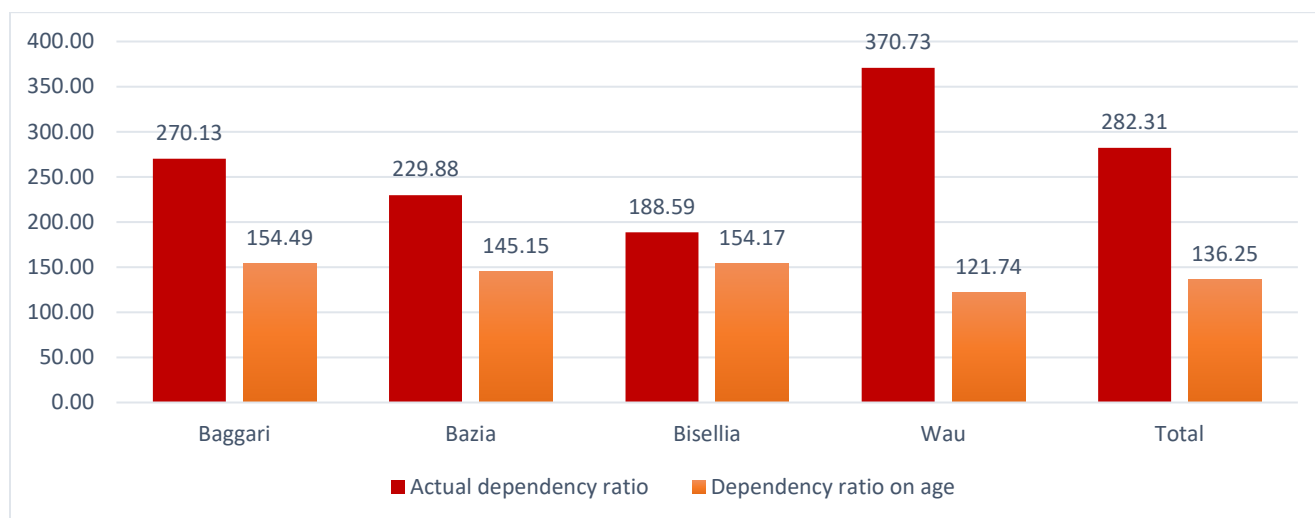
Source: National Bureau of Statistics, 2012. Own elaboration.

The predominantly young population is responsible for the high standard dependency ratio, which is computed as the number of children (0-14 years old) and older persons (65 years or over) with respect to the working-age population (15-64 years old) (figure 2.3). This indicator gives insight into the number of people of non-working age, compared with the number of those of working age. The situation indicates that the economically active population and the overall economy of the investigated area face a great economic burden to provide the social services needed by children such as schooling and child-care.

The standard dependency ratio is also well above the value of 100 percent estimated in the 2009 Census of South Sudan for the region investigated. However, the actual dependency ratio, given by the number of those who are

not working over the working population, indicates that not all the working-age population is economically active (table 2.1).

Figure 2.3 - Actual and standard dependency ratio (%)



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.



Woman and child at the Health Centre Ireneo Wien Dut Health in Wau.

Table 1 - Reasons for not working declared by individuals by county (%)

Reasons for not working	Baggari	Bazia	Bisellia	Wau	Total
Student	43.15	28.34	31.23	56	46
Too young	32.33	38.54	46.44	17.14	27.6
Cannot find a job	15.75	21.48	11.92	18.6	17.59
Housewife (only for female married)	1.8	2.72	2.58	2.22	2.31
Too old	0.84	1.9	2.31	2.13	1.95
Looks after housework	0.96	1.44	2.14	0.81	1.16
Looks after children	2.04	0.9	0.71	1.04	1.09
Not allowed to work	0.37	0.63	0.43	0.53	0.52
Retired	0.12	0.63	1.25	0.28	0.48
Pregnant	0.12	0.72	0.09	0.39	0.36
So ill that he/she cannot	0.6	0.72	0.36	0.14	0.33
Does not need to work	0.48	0.72	0.18	0.22	0.33
Looks after elderly	0.96	0.36	0.09	0.11	0.26
Do not know	0.36	0.63	0	0.08	0.2
Does not want to work	0.12	0.09	0.27	0.03	0.09
Handicapped	0	0.18	0	0.06	0.06
Total	100	100	100	100	100

Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

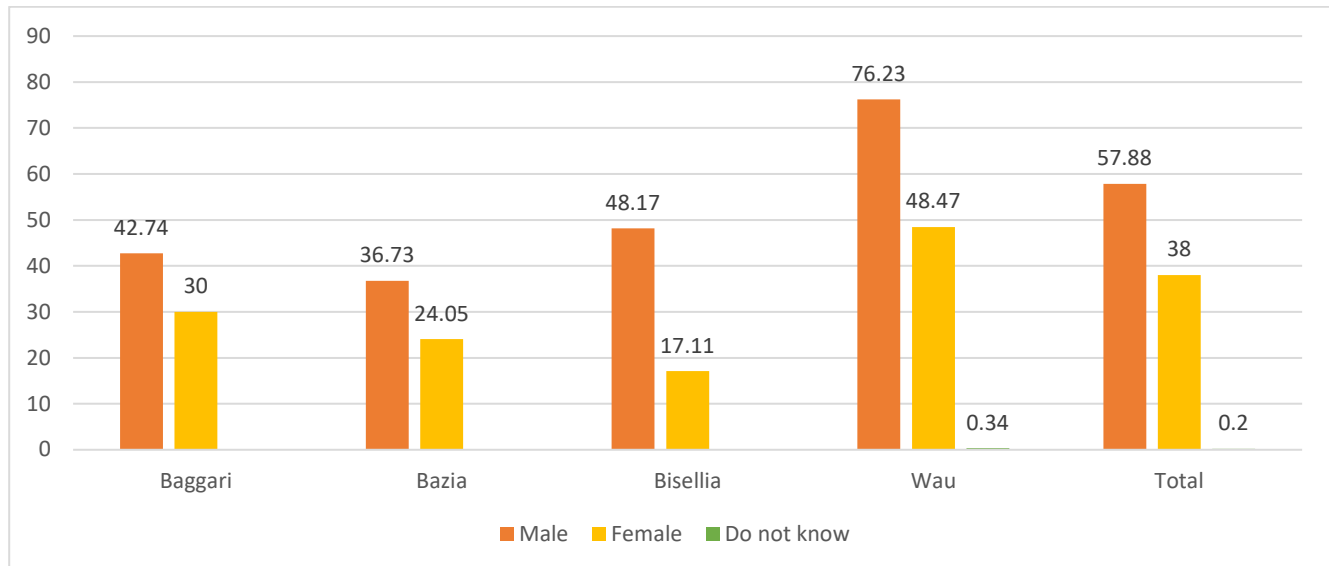
This category includes a large share of people who cannot find a job and of women carrying out household duties. Therefore, age dependency is not only due to the young age of the population but also to the labor market and cultural conditions. Concerning unemployment, in South Sudan this term often refers to those who are underemployed within the informal economy, a segment of the population with a poor living standard. Moreover, the job opportunities for the population of working age are compromised by a fragile and unstable economy and a widespread situation of insecurity that limits the availability of jobs on the formal market.

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3. Education

Rigid gender roles are not the only challenge for women in the investigated area. They combine with their high illiteracy rates that moreover lead to strong gender imbalances, especially in Wau and Bisellia (figure 3.1).

Figure 3.1 - Literacy ratio by gender and county (%)



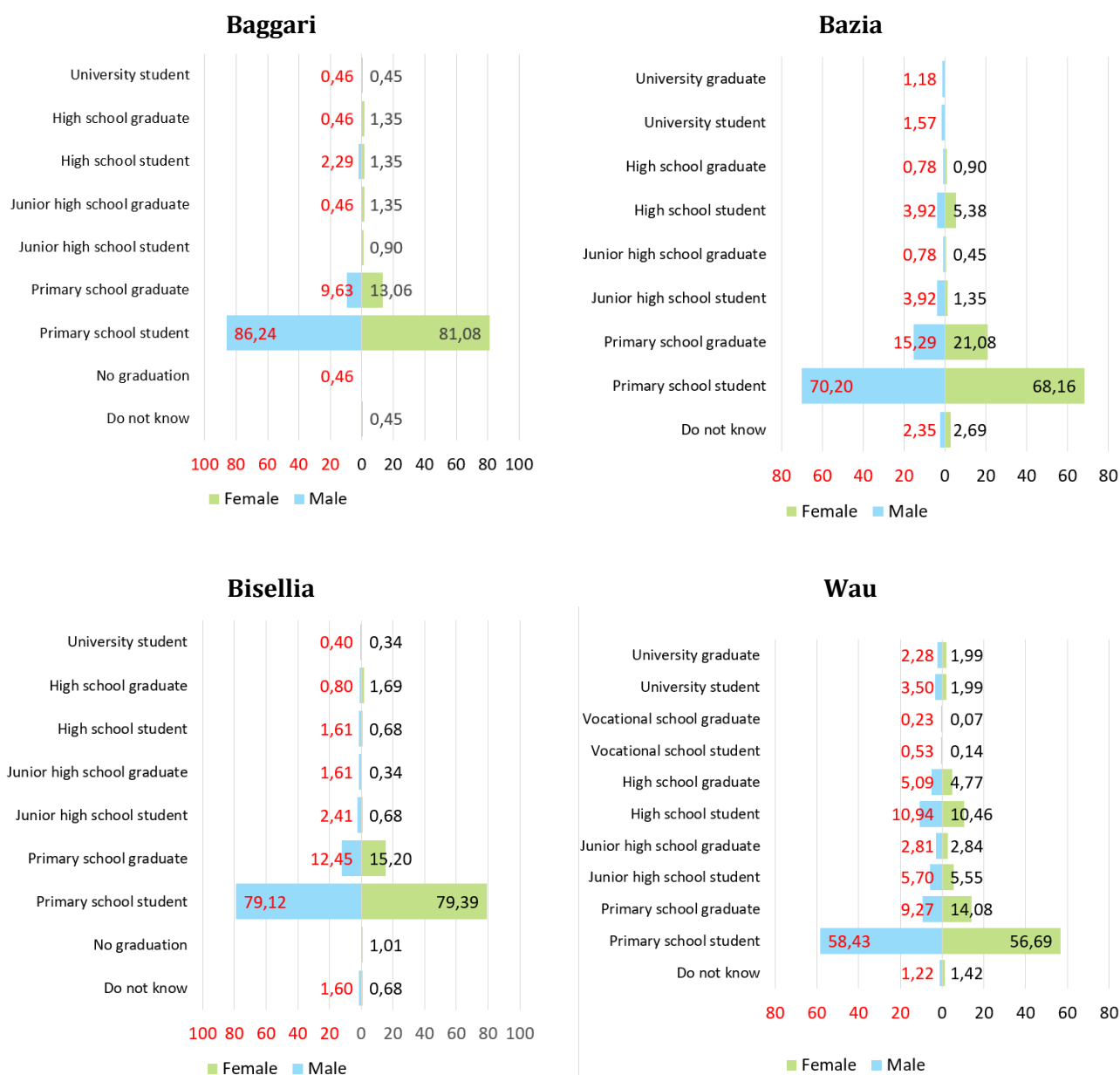
Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

A social context characterized by widespread illiteracy and low educational levels

According to the statistical evidence of South Sudan, women are more likely to die in childbirth than to complete primary school. This situation calls for a greater effort on the side of stakeholders to meet international commitments on gender equality and women empowerment. Achieving gender parity in literacy is critical for women to effectively compete in the labor market and to contribute to poverty reduction at the community level.

Taking into account all the people in our sample (household head and members of the household), the level of education of the literate individuals is low in all the counties investigated, with the majority of the total population being in the primary school category (figure 3.2). Wau shows the largest share of both male and female respondents with a relatively higher level of education with respect to the remote counties. Moreover, this urban county offers access to vocational training.

Figure 3.2 - Level of education of literate people by gender and county (%)



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

This finding confirms the literature on developing countries according to which primary schooling is the only formal education for the population and, therefore, the only main channel of literacy acquisition (Williams, 1998).

The situation is even more dramatic if we consider the gross enrollment ratio (GER) to primary school, that in our study area is very low for both boys and girls (Table 3.1). Moreover, apart from Baggari, the gender parity index (GPI) is imbalanced towards boys.

Table 3.1 - GER and GPI primary school lower level – Primary 1 to 4 (6-9 years) by county

County	Gross Enrolment Ratio Girls*	Gross Enrolment Ratio Boys*	Gender Parity Index**
Baggari	6.19	5.9	105.8
Bazia	4.4	4.79	91.83
Bisellia	5.33	5.49	96.96
Wau	5.93	6.67	88.95
Total	5.58	6.01	92.78

* GER is the share of total students enrolled in primary lower level education expressed as a percentage of total population of official primary lower level education age. In this table, the GER has been calculated separately for girls and boys.

** A GPI equal to 100 indicates parity between GER for girls and boys, lower (or greater) than 100 GER for boys is greater (or lower) than that of girls

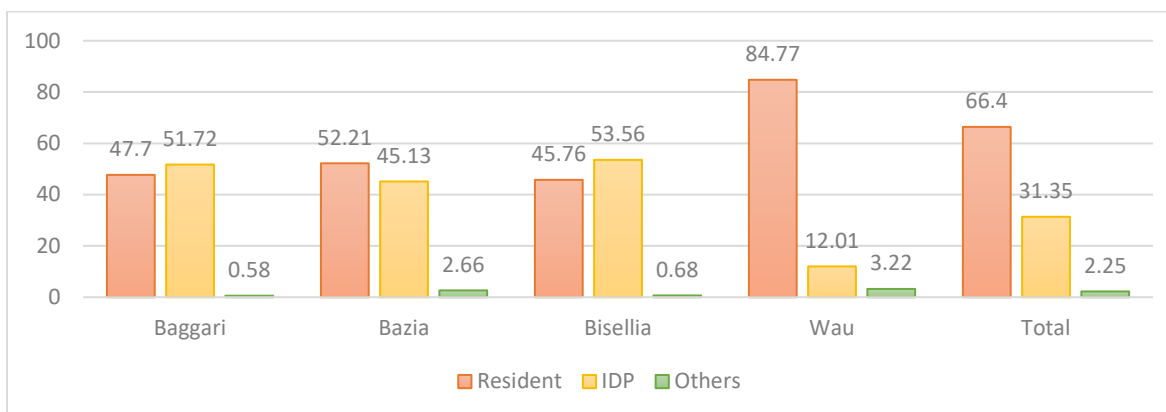
Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

Our achievements suggest that additional critical efforts should be carried out by stakeholders to improve the literacy rate and the enrolment rate in higher educational levels as a milestone for fostering empowerment, individual development, as well as community and national development. These efforts should include the improvement of adult learning as a key aspect of all the strategies aiming at improving the social, economic, political and cultural determinant factors for development and peace.

4. Household Status

The South Sudanese population is on the run. Displacement, orphans and migration are the consequences of conflict and insecurity, combined with severe food insecurity and poverty. We registered a high number of households displaced in Baggari, Bazia and Bisellia where nearly half of the population had been forced to flee their home but remained within their country’s borders (figure 4.1).

A population
on the run

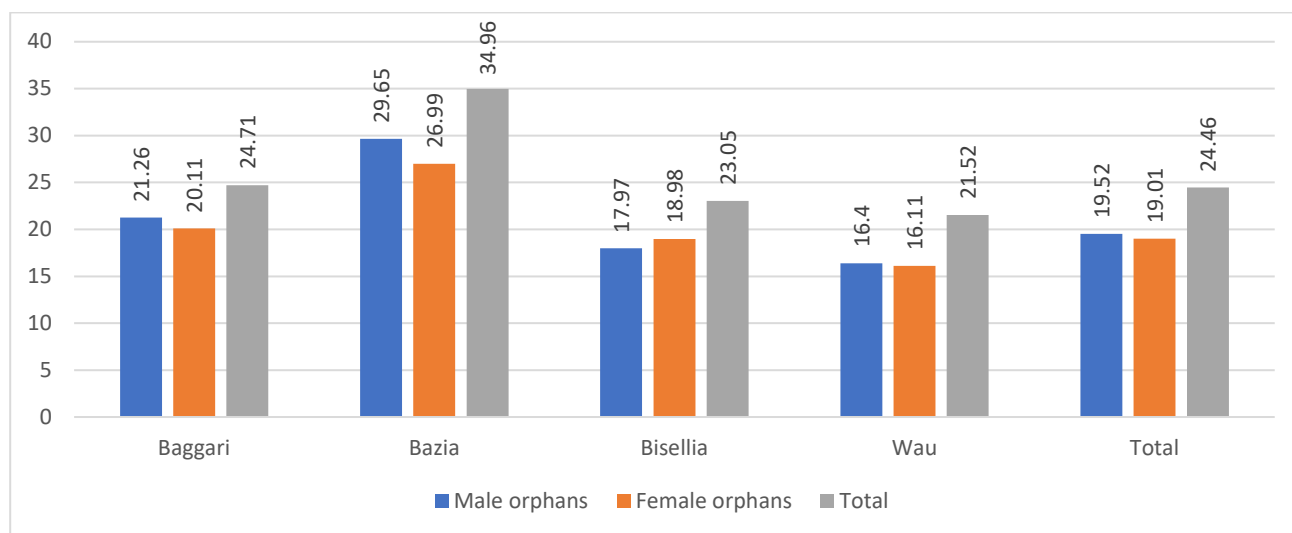
Figure 4.1 - Distribution of households by status* (%)

* The category “Others” mainly includes returnees and refugees.

Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

The internally displaced persons (IDP) are concentrated in civilian camps or IDP camps and absorbed by host communities already under stress. This segment of the population accesses to inadequate public goods and services due to the limited capacity of the central government and of local institutions to deliver them. Therefore, a large proportion of this population is destitute. Almost one quarter of households in our study area host orphans and this share is above the average in Bazia (figure 4.2 and table 4.1).

Figure 4.1 - Households Hosting Orphans (%)



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.



Family in an IDP camp in Western Bahr el Ghazal

Table 4.1 – Median number of orphans hosted by households hosting orphans

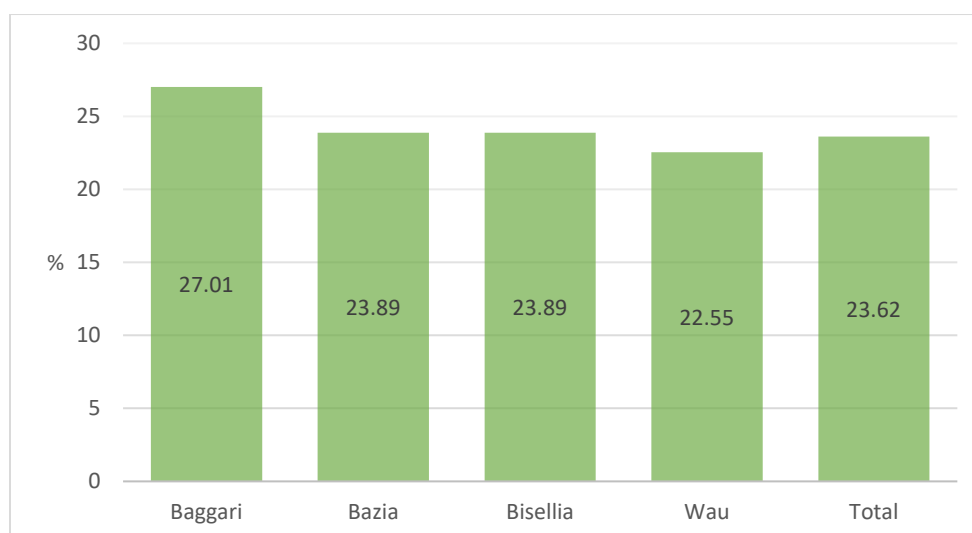
County	Male	Female
Baggari	1	1
Bazia	2	2
Bisellia	2	1
Wau	2	2

Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

This phenomenon is especially the result of conflicts and insecurity that force children to flee their homes. Many of them have lost their parents or have been separated from them and have been left to survive on their own.

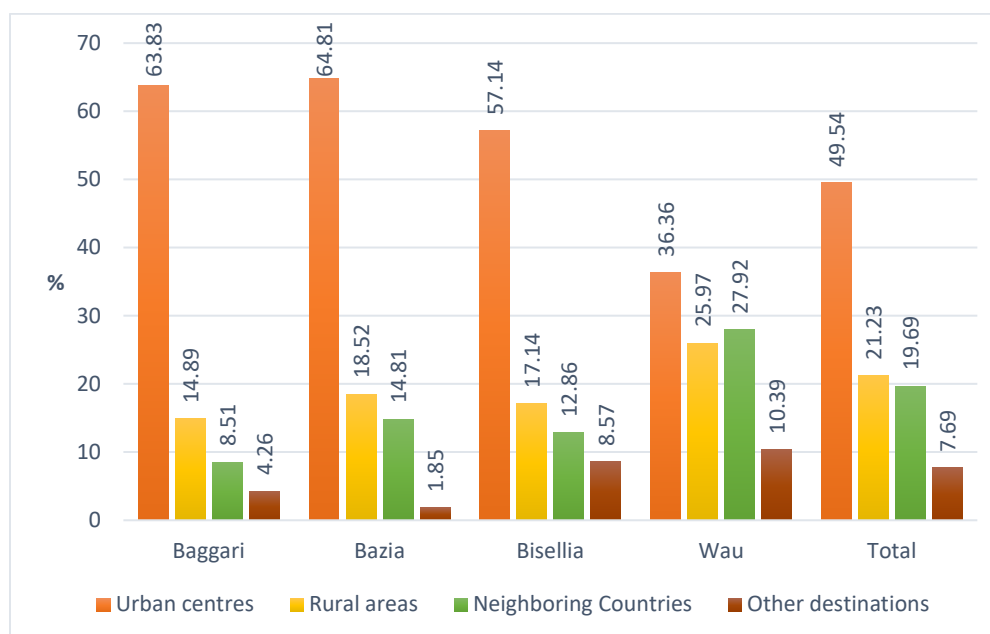
Almost one quarter of households in our study area host orphans and this share is above the average in Bazia. This phenomenon is especially the result of conflicts and insecurity that force children to flee their homes.

The migration of members of the household is another form of population movement characterizing almost one third of the households in our sample (figure 4.2). The most important destination, especially for those living in Baggari Bazia and Bessilia, is the urban centers (figure 4.3).

Figure 4.2 - Share of households by migrants* in the last 12 months by county

* Members who left for 6 months or more and intend not to return for the next 6 months.

Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

Figure 4.3 - Destination of migrants (% share of households with migrants)

Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

In this case, conflict and insecurity are also major causes indicated by the households in our study area as responsible for the migration process, followed by school attendance and job-related motivations, which are strongly interconnected with conflict and insecurity.

Table 4.2 - Reasons for migrating (share of households with migrants)

Reasons for Migrating	Baggari	Bazia	Bisellia	Wau	Total
Job search as an employee	4.26	16.67	18.57	17.53	15.69
Job transfer	4.26	7.41	17.14	18.18	14.15
Lack of food	6.38	5.56	0	2.6	3.08
Joining family members or relatives	2.13	11.11	2.86	13.64	9.23
School attendance	25.53	33.33	32.86	15.58	23.69
Household/property destroyed	4.26	1.85	0	1.3	1.54
Insecurity	63.83	33.33	41.43	25.97	36
Threat of insecurity	6.38	1.85	0	5.84	4
Seeking medical treatment	2.13	0	0	3.9	2.15
Other reasons	0	0	0	2.60	1.23

Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

Concerning migration for school attendance, it should be noted that it is especially due to a general lack of educational infrastructure or to the closure of schools, particularly in Baggari, Bazia and Bisellia. In these areas, conflict has a devastating impact on all the spheres of education ranging from a negative psychological impact on students, teachers, and communities to the degradation of the educational infrastructure. This situation highlights the challenge of the reconstruction and expansion of the education system, currently characterized by low investment, low capacity, and high demand, as a priority to promote human development.

5. Occupation and Income

As illustrated in table 5.1, occupation differs across urban and remote rural areas. Agriculture is the main activity for the majority of the people in the Baggari, Bazia, and Bisellia counties; this dominant rural labour force is concentrated mainly in low productivity non-wage employment. In the comparatively urban county of Wau, there are more diversified job opportunities and trading, and skilled labor. In this county, the commercial and manufacturing sectors absorb more than 50% of the population in our sample.

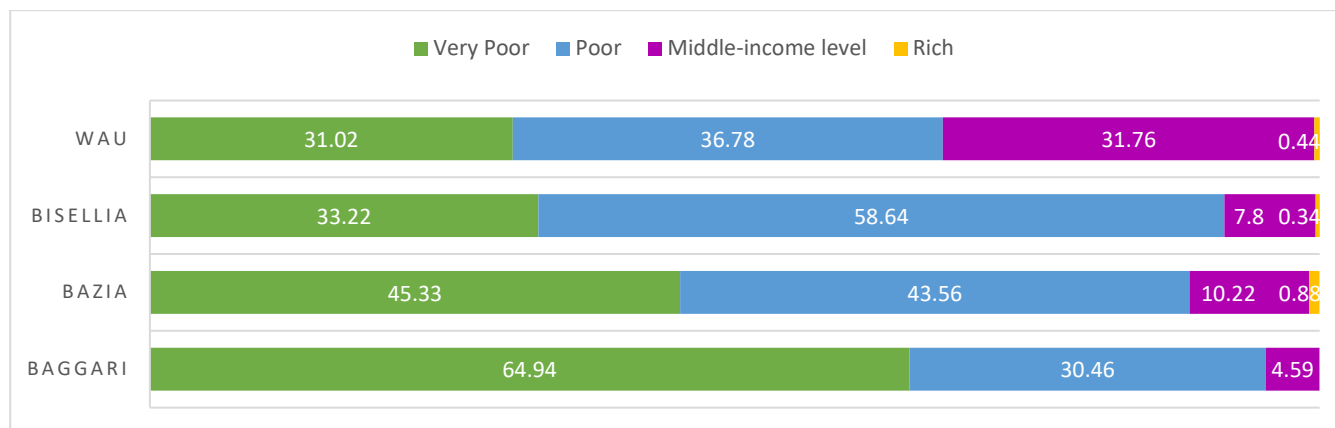
Table 5.1 - Share of individuals by primary occupation type and county

Primary Occupation Type	Baggari	Bazia	Bisellia	Wau	Total
Agriculture and sale of cereals, vegetables and other crops	78.90	81.12	77.68	16.77	53.62
Livestock and sale of livestock/livestock products and poultry	0.32	0.21	1.51	0.94	0.85
Sale of alcoholic beverages/brewing	2.92	2.70	3.36	7.29	4.77
Casual labour	6.82	4.98	3.52	9.79	6.82
Traders, shop owners, commerce, petty trading, handicraft, etc.	2.92	1.45	1.34	20.10	9.25
Skilled labour/Salary work	3.25	4.15	2.85	32.92	15.47
Sale of firewood, charcoal, grass, stones	3.90	1.66	9.56	6.35	5.88
Moneylender	0.00	0.00	0.00	0.21	0.09
Fishing or sale fish	0.32	0.83	0.00	0.63	0.47
Begging	0.32	0.21	0.00	0.10	0.13
Gathering of wild food and hunting	0.32	2.70	0.17	0.52	0.85
Other	0.00	0.00	0.00	4.38	1.79
Total	100.00	100.00	100.00	100.00	100.00

Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

The rural urban divide in the occupational structure is one of the main contributing factors to the different levels of poverty across counties (figure 5.1).

Figure 5.1 - Household distribution by perception of poverty in the last 30 days by county (%)



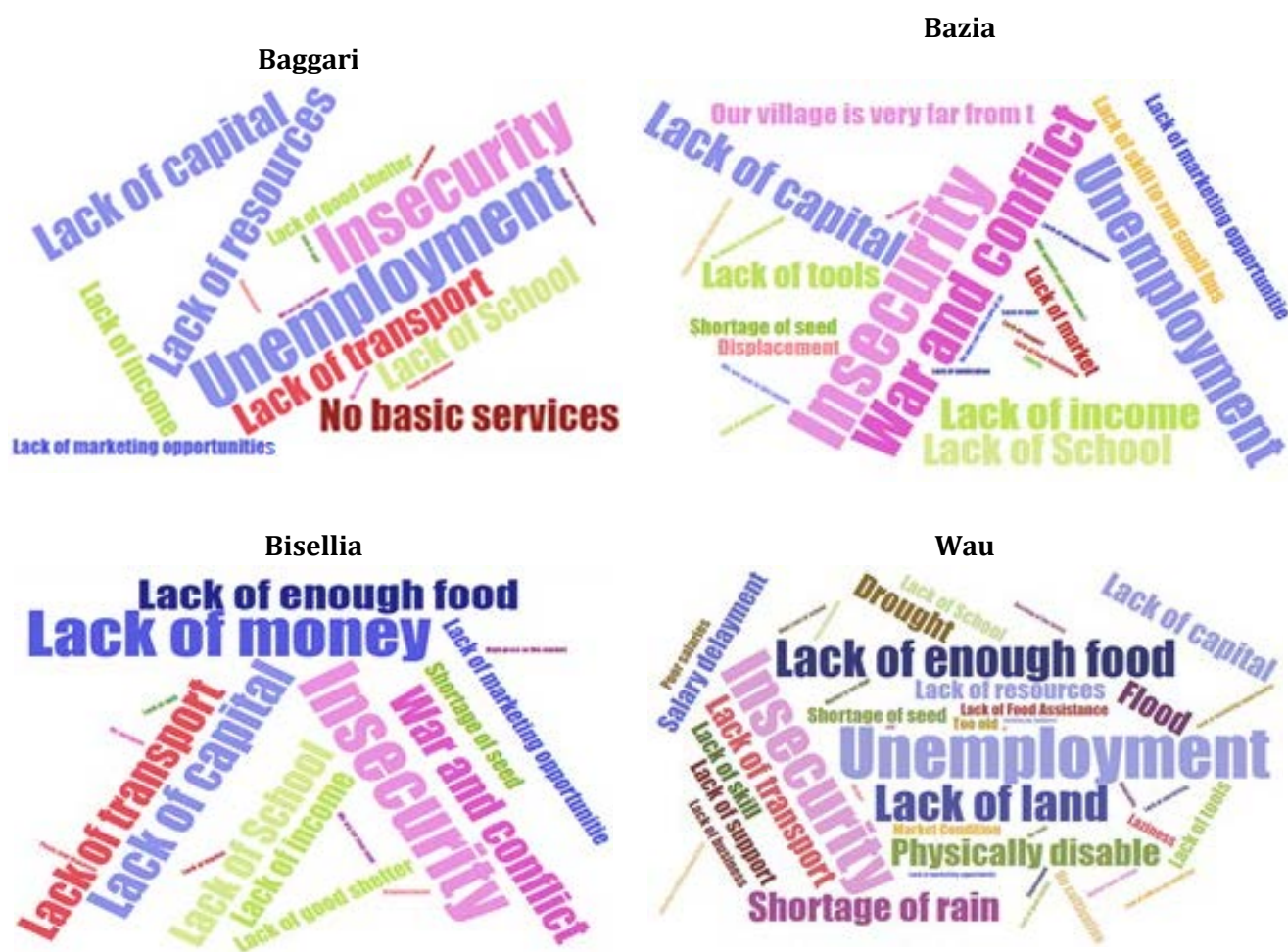
Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

In Wau, the share of middle-income people is significantly larger than in the other counties. This situation reveals economic diversification as a critical factor to growth and job creation. However, the economic sector in the investigated area, as well as in all South Sudan, is grossly underdeveloped. In addition, the human capital is scarce, due to low levels of schooling, as well as technical and vocational skills, which represents a constraint on the supply side of the labor market that is suffering from a lack of marketable skills. However, the high level of poverty in the investigated area occurs due to two combined shocks: conflicts and unemployment, which are the dominant reasons for poverty throughout all the counties (figure 5.2).



Woman cooking in a PoC camp in Western Bahr el Ghazal.

Figure 5.2 - Word cloud for the poverty reasons by county*

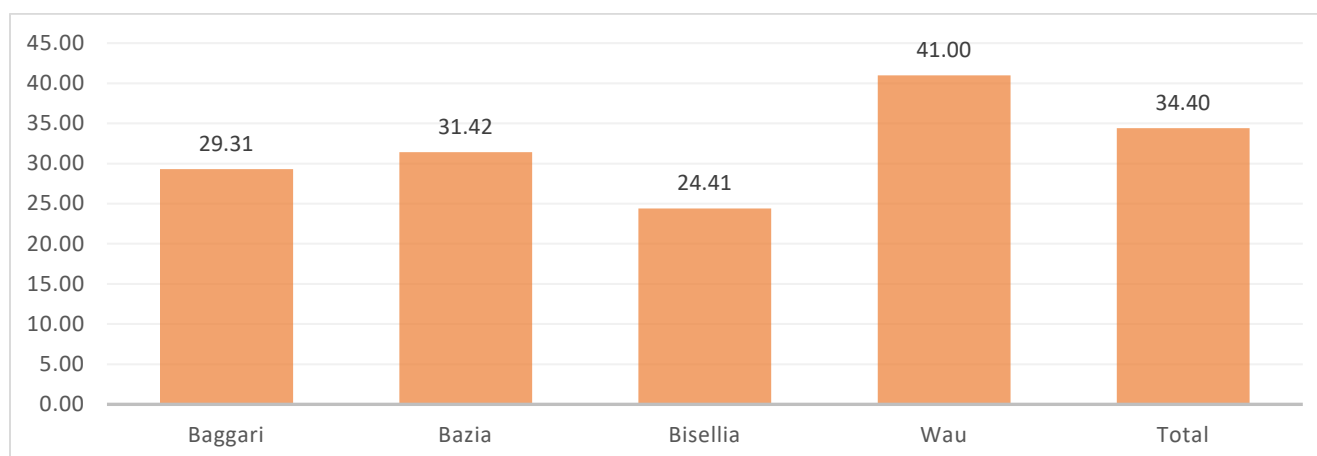


* The size of the font represents the frequency of the mentioned is the issue

Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration

We noted that the cycle of poverty starts from insecurity due to ongoing war and conflicts. The conflicts generate a large portion of the internally displaced population who lose their jobs and fall into the trap of severe unemployment or "unpaid" work. This phenomenon fuels situations of deprivation in terms of money, food, and capital among the population. On top of that, the detrimental effect of the environmental degradation and the limited access to basic services like school and transport exacerbate the poverty significantly.

Compared with the interview referring to the previous 30 days, more than one third of the households in our sample declared an income reduction (figure 5.3). This share reached 41% of households in Wau where households are disproportionately affected by the price hikes in the market, as they are more reliant on markets for food and non-food items (table 5.2). In the conflict-prone counties of Baggari, Bazia, and Bisellia, households completely or partially lost their livelihoods due to war related reasons.

Figure 5.3 - Share of households declaring a reduction in income in the last 30 days, by county

Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

Table 5.2 - Classification of reasons declared by households for income reduction in the last 30 days prior to the survey (%)

Reasons for Reduction in Income	Baggari	Bazia	Bisellia	Wau	Total
Income sources completely destroyed	56.59	35.33	36.09	11.74	27.84
Income sources partly destroyed	23.26	26.35	24.35	12.21	19.12
Market conditions have changed	17.83	23.35	40.00	47.89	37.61
Workplace closed	10.08	10.18	2.61	7.04	6.93
Cannot access to workplace	11.63	13.17	5.65	6.1	7.98
Getting less money due to inflation	6.2	19.16	32.17	18.31	20.17
Other reasons	8.53	11.98	8.70	3.29	6.83

Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

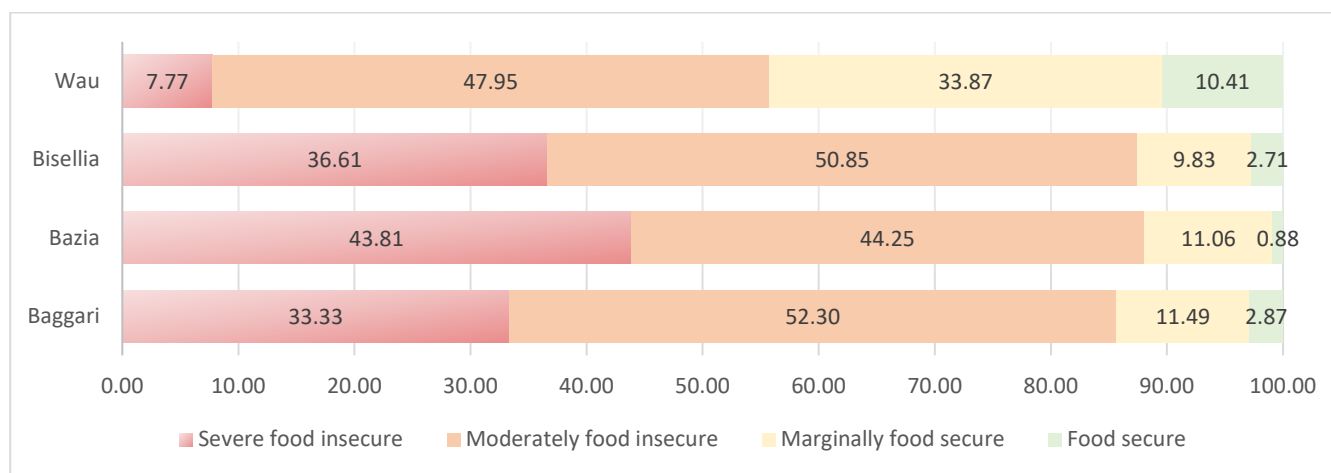


Women of the region of Western Bahr el Ghazal waiting for the interview by the enumerators of the project.

6. Food Security

The Household Food Security Index (HFSI), computed according to the Consolidated Approach to Reporting Indicators (CARI) methodology of the World Food Programme, highlights the precarious food security situation faced by the majority of the population in our study area, especially the one living in Baggari, Bazia and Bisellia, where more than one third of the people is severely food insecure and only less than 15 percent are marginally food secure or food secure (figure 6.1).

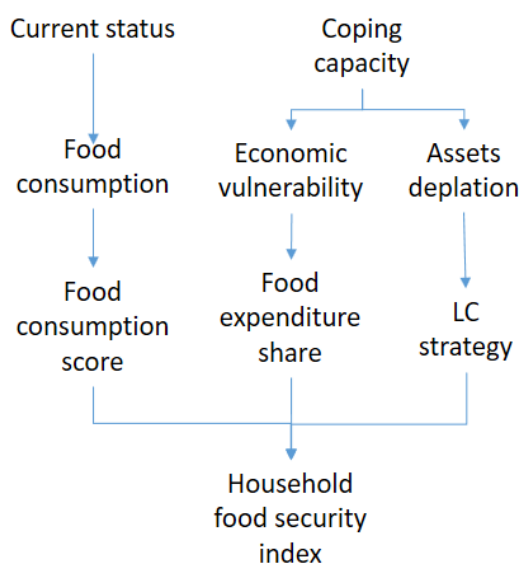
Figure 6.1. Household Food Security Index by county (%)



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

The HFSI is a composite indicator that combines the Food Consumption Score (FCS), the Livelihood-Based Coping Strategy Index (LCS) and the Food Expenditure Share. These three indicators provide information regarding the different aspects of the food security mosaic as illustrated in figure 6.2.

Figure 6.2 – The components of the Household Food Security Index



In table 6.1, we compare the FCS, as proxy of the current food security status, with the LCS capturing the future household capacity to cope with shocks and stresses affecting food security.

Table 6.1. The future coping capacity to food insecurity, share of households by LCS and FCS (%)

Baggari					Bazia				
Future coping capacity (Livelihood coping strategy)					Future coping capacity (Livelihood coping strategy)				
Current state of food insecurity (FCS category)	Middle	Low	Very low	Total	Current state of food insecurity (FCS category)	Middle	Low	Very low	Total
Food secure	9.52	23.81	66.67	100	Food secure	4.55	13.64	81.82	100
Moderately food insecure	3.33	26.67	70	100	Moderately food insecure	8.11	12.16	79.73	100
Severe food insecure	2.15	26.88	70.97	100	Severe food insecure	7.69	11.54	80.77	100
Total	3.45	26.44	70.11	100	Total	7.52	11.95	80.53	100

Bisellia					Wau				
Future coping capacity (Livelihood coping strategy)					Future coping capacity (Livelihood coping strategy)				
Current state of food insecurity (FCS category)	Middle	Low	Very low	Total	Current state of food insecurity (FCS category)	Middle	Low	Very low	Total
Food secure	11.76	20.59	67.65	100	Food secure	15.88	27.9	56.22	100
Moderately food insecure	5.08	16.95	77.97	100	Moderately food insecure	12.5	20.83	66.67	100
Severe food insecure	4.9	23.78	71.33	100	Severe food insecure	10.22	28.47	61.31	100
Total	5.76	20.68	73.56	100	Total	13.2	24.78	62.02	100

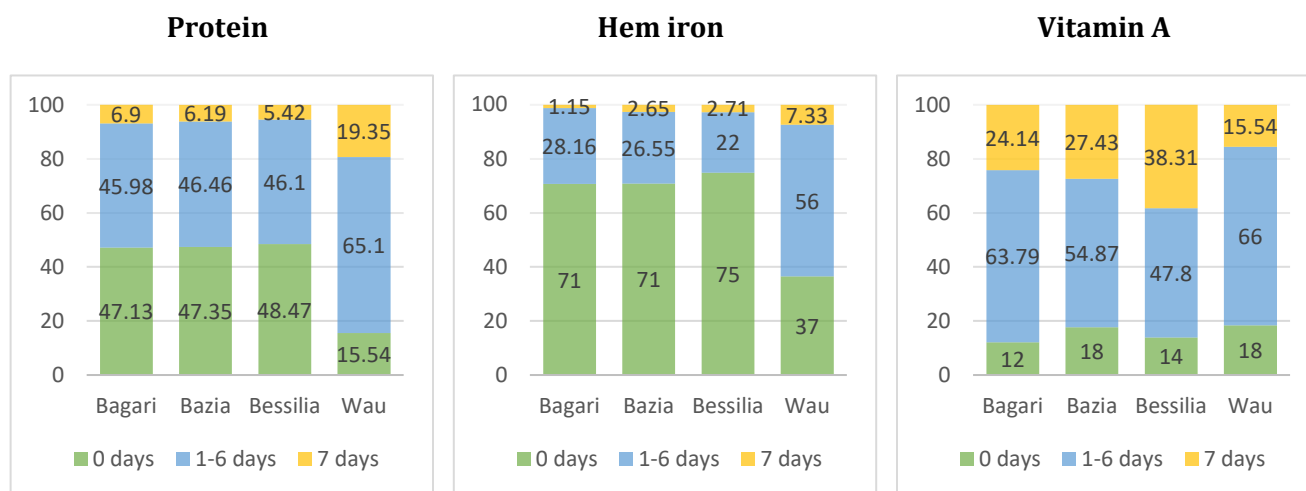
Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration



Vegetable garden in a PoC camp.

Independently of the level of food security, nearly the totality of the households in our study area is extremely vulnerable to food insecurity. This aspect highlights the deep fragility of the household food security in the study area, which is even more severe considering the fact that the diet is far from being nutritious for the majority of the interviewed households. Figure 6.3 shows that this situation is especially severe in Baggari, Bazia and Bisellia where there is a severe gap of protein and hem iron in large part of the households. The consumption of micro and macronutrients improves in the urban county but even in Wau hem iron deficiency is a problem.

Figure 6.3 - Share of households by consumption frequency of micro and macro nutrients and county



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration

The figures 6.4 to 6.6 indicate that the consumption deficit of micro and macro nutrients is dramatic for severely food insecure households.



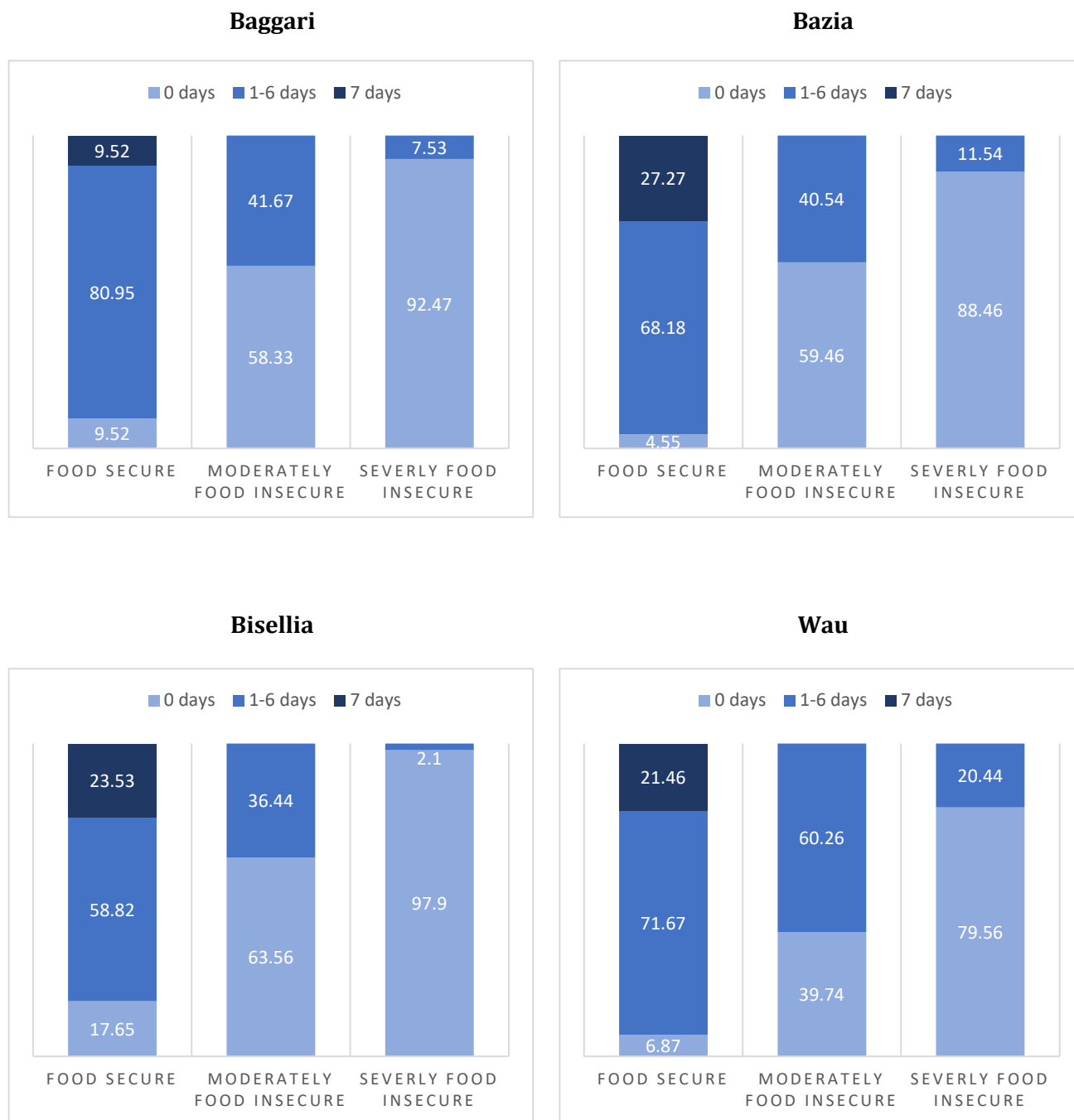
Woman of an IDP camp in Western Bahr el Ghazal cultivating a kitchen garden.

Figure 6.4 - Share of households by consumption frequency of protein, food security status and county



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration

Figure 6.5 - Share of households by consumption frequency of hem iron, food security status and county



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration

Figure 6.6 - Share of households by frequency of consumption of vitamin a, food security status and county (%)



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration

Diet diversification is very limited in our state area. Table 6.2 indicates that the most important categories of food items consumed are cereals and grains, green leafy vegetables, sugar and sweet, condiments and spices and oil, fat and butter.

Table 6.2 - Share of households by food item consumed and number of days of consumption

N. of days	Cereals and grains	Roots and tubers	Legumes and nuts	Milk and other dairy products	Fresh meat	Organ meat	Fish and shellfish	Eggs	Orange vegetables	Green leafy vegetables	Orange fruits	Other fruits	Oil, fat and butter	Sugar and sweet	Condiments and spices
0	2.32	68.8	53.92	90.06	68.72	91	79.9	95.72	91.65	22.42	92.09	91.44	33.45	36.94	38.75
1	4.06	8.56	11.32	5.59	9.87	3.05	8.35	2.54	3.27	7.04	2.98	2.39	10.45	8.13	7.33
2	6.46	11.1	16.04	2.03	10.74	2.39	6.17	0.94	2.47	11.03	1.96	1.45	19.16	9.14	11.18
3	8.85	5.95	10.52	0.94	6.02	2.39	2.9	0.44	1.38	16.26	1.09	2.25	17.63	6.89	7.11
4	8.71	2.1	4.21	0.51	2.25	0.65	1.38	0.07	0.65	12.55	1.02	0.58	6.31	4.64	5.73
5	11.1	1.38	1.67	0.07	0.8	0.07	0.73	0.07	0.22	11.25	0.22	0.58	3.41	4.5	2.9
6	3.05	0.44	0.29		0.15	0.07			0.15	3.19		0.29	0.8	2.83	1.45
7	55.44	1.67	2.03	0.8	1.45	0.36	0.58	0.22	0.22	16.26	0.65	1.02	8.78	26.92	25.54
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Mean days	6	3	3	2	2	2	2	2	2	4	3	3	3	5	5

Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration

The sources of these food items vary from own production to food assistance and market purchases; in this respect, we found divergences between rural and urban areas. In the Wau county, dependence from market dominates while in the rural counties there is a greater source of diversification. The majority of the households in the sample in Baggari, Bazia and Bisselia have access to cereals and grains, legumes and nuts, and oil, fat and butter through food aid while in Wau these items are obtained through the market (table 6.3).



Woman of Western Bahr el Ghazal waiting to be interviewed

Table 6.3 – Sources of food for cereals and grains, legumes and nuts, and oil, fat and butter

CEREALS AND GRAINS	BAGGARI	BAZIA	BISELLIA	WAU	TOTAL	LEGUMES AND NUTS	BAGGARI	BAZIA	BISELLIA	WAU	TOTAL
Own crop/garden production	10.34	21.24	9.83	1.9	7.84	Own crop/garden production	14.29	13.89	7.89	7.25	8.82
Purchased in market in cash or credit	18.79	14.68	14.58	78.14	46.66	Purchased in market in cash or credit	12.7	19.44	15.79	74.87	51.81
Food assistance	63.03	65.6	78.64	11.83	41.46	Food assistance	53.97	61.11	71.93	11.14	31.97
Borrowing or debts	0	0.46	0	0.75	0.45	Borrowing or debts	1.59	0	0.88	1.81	1.42
Support from neighbours or relatives	4.24	2.75	0.68	2.99	2.6	Support from neighbours or relatives	3.17	1.39	1.75	3.11	2.68
Exchange of food for labour	1.82	0	2.37	1.95	1.71	Exchange of food for labour	6.35	0	1.75	0	0.94
Hunting	0	0.92	0	2.1	1.19	Gathering	3.17	4.17	0.88	0.52	1.26

OIL, FAT AND BUTTER	BAGGARI	BAZIA	BISELLIA	WAU	TOTAL
Own crop/garden production	3.49	9.57	6.06	3.47	4.8
Purchased in market in cash or credit	25.58	22.61	18.18	83.01	56.05
Food assistance	69.77	63.48	74.24	11.2	36.86
Borrowing or debts	0	0	0.51	0.39	0.33
Support from neighbours or relatives	0	4.35	1.01	1.35	1.53
Gathering	2.32	1.74	0	0.19	0.55

Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration

Green leafy vegetables are own produced in the rural areas and purchased in the market in Wau (Table 6.4). Sugar and sweet and condiments and spices are mostly purchased from markets in all counties (Table 6.5).

Table 6.4 - Sources of food for green leafy vegetables

Green leafy vegetables	Baggari	Bazia	Bisellia	Wau	Total
Own crop/garden production	66.22	62.98	74.9	9.26	41.16
Purchased in market in cash or credit	10.14	9.94	8.23	85.71	44.81
Food assistance	0.68	1.1	0.82	1.21	1.03
Borrowing or debts	0.68	1.1	0.82	1.21	1.03
Support from neighbors or relatives	5.41	6.08	4.53	1.01	3.27
Exchange of food for labor	5.41	6.08	4.53	1.01	3.27
Gathering	13.52	23.2	33.33	1.61	14.12

Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration

Table 6.5 Sources of food for sugar, sweet, condiments and spices

SUGAR AND SWEET	BAGGARI	BAZIA	BISELLIA	WAU	TOTAL	CONDIMENTS AND SPICES	BAGGARI	BAZIA	BISELLIA	WAU	TOTAL
Own crop/garden production	0	6.93	3.45	2.63	2.99	Own crop/garden production	4.26	2.35	4.89	1.87	2.84
Purchased in market in cash or credit	84.62	71.29	81.38	93.23	87.8	Purchased in market in cash or credit	85.11	72.94	86.96	88.57	86.26
Food assistance	2.2	0.99	1.38	2.26	1.96	Food assistance	1.06	2.35	0	2.91	2.01
Borrowing or debts	0	0	1.38	0	0.23	Borrowing or debts	0	0	0.54	0.21	0.24
Support from neighbours or relatives	3.3	0.99	2.07	0.94	1.38	Support from neighbours or relatives	1.06	11.76	1.09	2.29	2.84
Exchange of food for labour	5.49	4.95	6.9	0	2.3	Exchange of food for labour	7.45	4.71	6.52	1.66	3.67
Gathering	3.3	11.88	4.14	0.56	2.77	Gathering	1.06	4.7	0	1.25	1.31

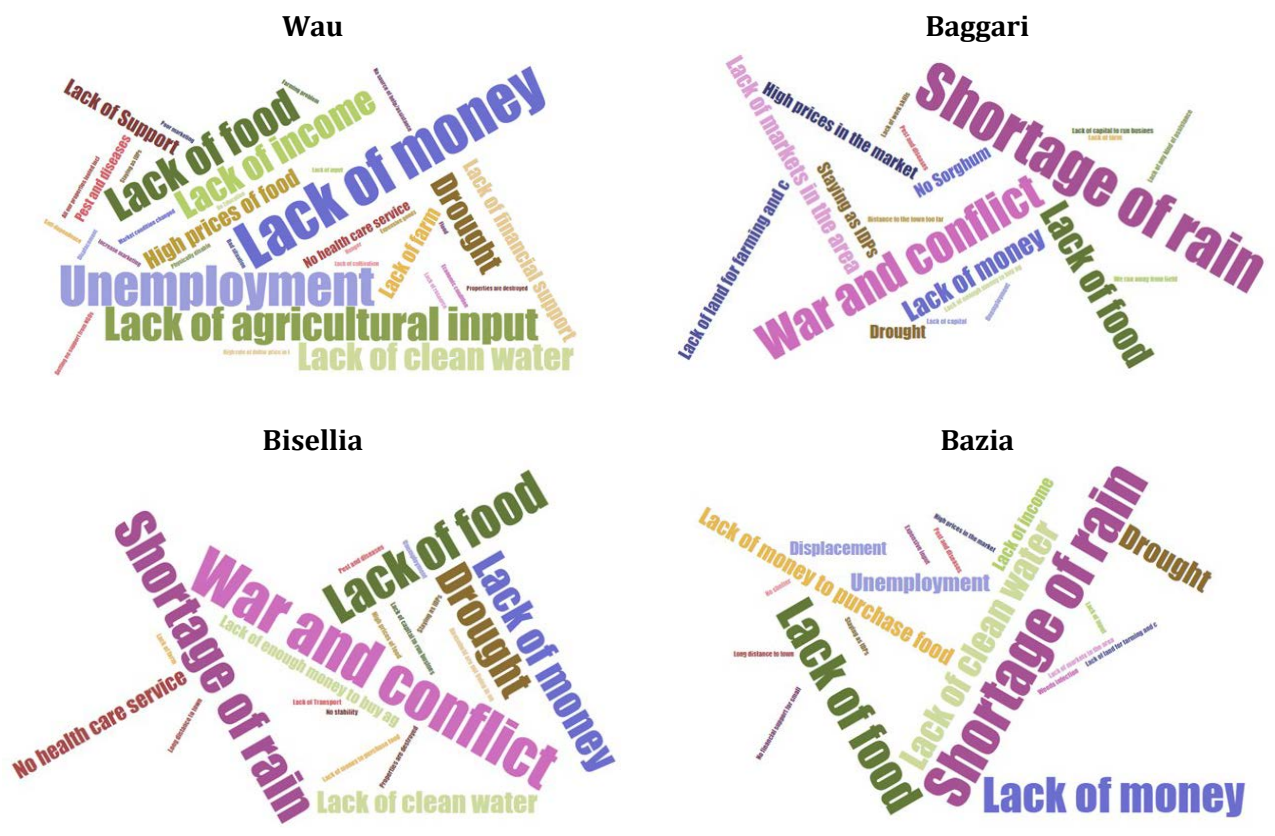
Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration

This evidence explains, at least in part, the differences in the most important food insecurity problem that the respondents in our sample declared to face in their payam in the reference period (figure 6.7). In South Sudan, a payam is the second-lowest administrative division, below counties.



People of Western Bahr el Ghazal waiting to be interviewed.

Figure 6.7 - The most important food insecurity problems by county



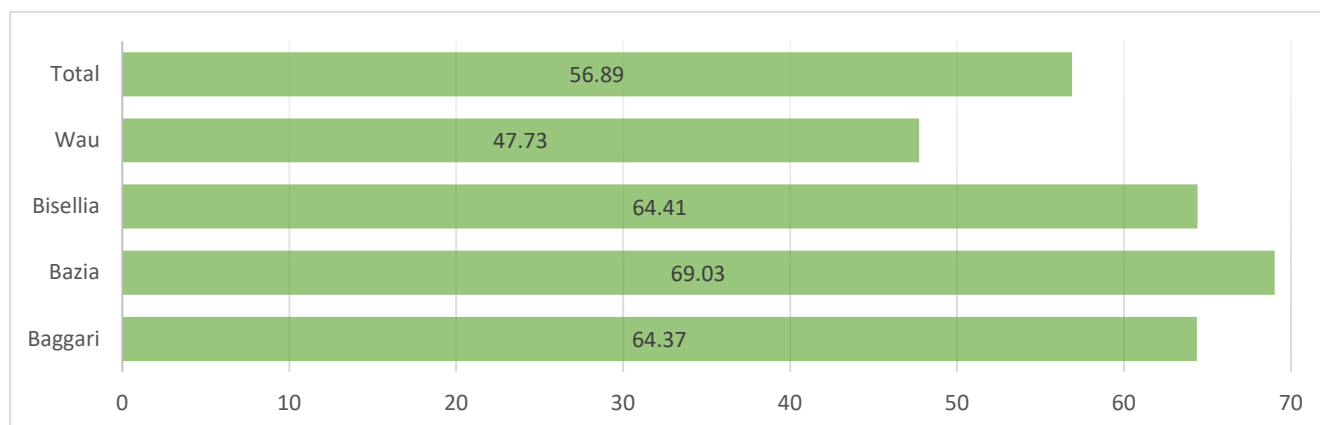
In Baggari, Bazia and Bisellia, the most significant problems are related to food availability and access due to shortages of rain, war and conflicts, while in Wau food access considerations dominate. Lack of money and unemployment were the most frequent indicated reasons in Wau.

7. Food Production and the role of the agricultural sector

The largest source of food for households is self-production. Moreover, the majority of the population relies on agriculture, forestry, and fisheries, which constitutes their primary livelihood. In this sense, access to land is a very valuable resource for them.

As shown in section 5, households from Bazia, Baggari, and Bisellia are mostly engaged in agriculture. As a result, in figure 7.1 we observe that a higher percentage of the households of these counties have access to land with regard to Wau households where skilled jobs and trading are the dominant occupations.

Figure 7.1 - Share of households with access to land by county (%)

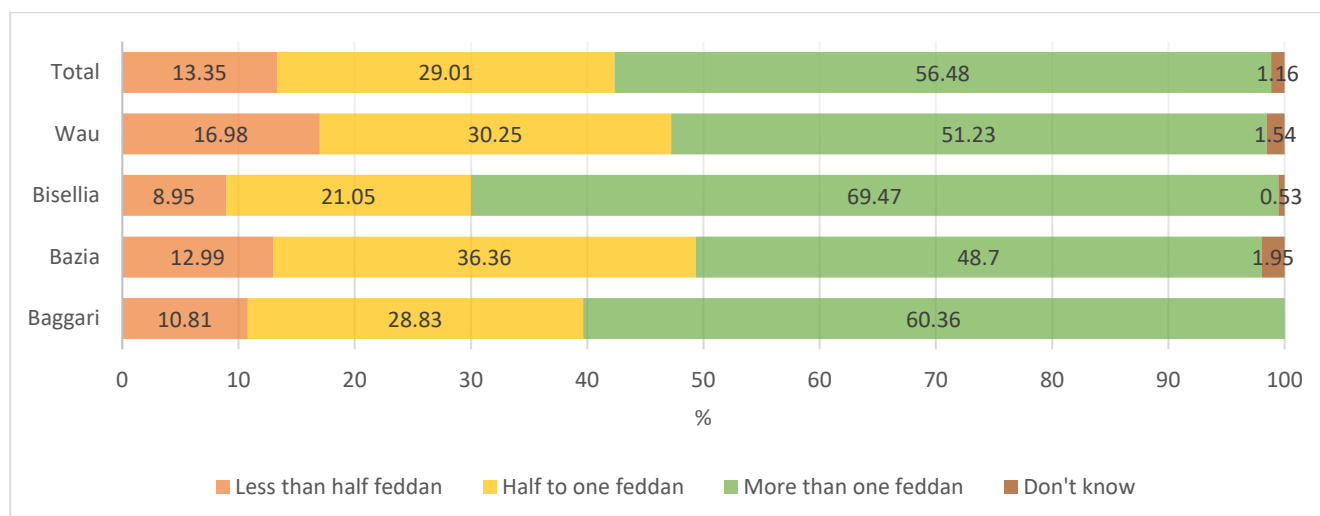


Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration

Although the investigated area is naturally endowed with agricultural potential, it continues to fail in the creation of the surpluses needed to feed a rapidly growing number of rural and urban consumers and relies on imports to fulfill the food demand.

The agricultural sector in South Sudan largely remains at the subsistence level focused on low-input low-output agriculture instead of production for markets. We found the same features in the investigated area. A large share of households has a land size lower than one feddan (one feddan = 0.42 hectares), as can be seen in figure 7.2.

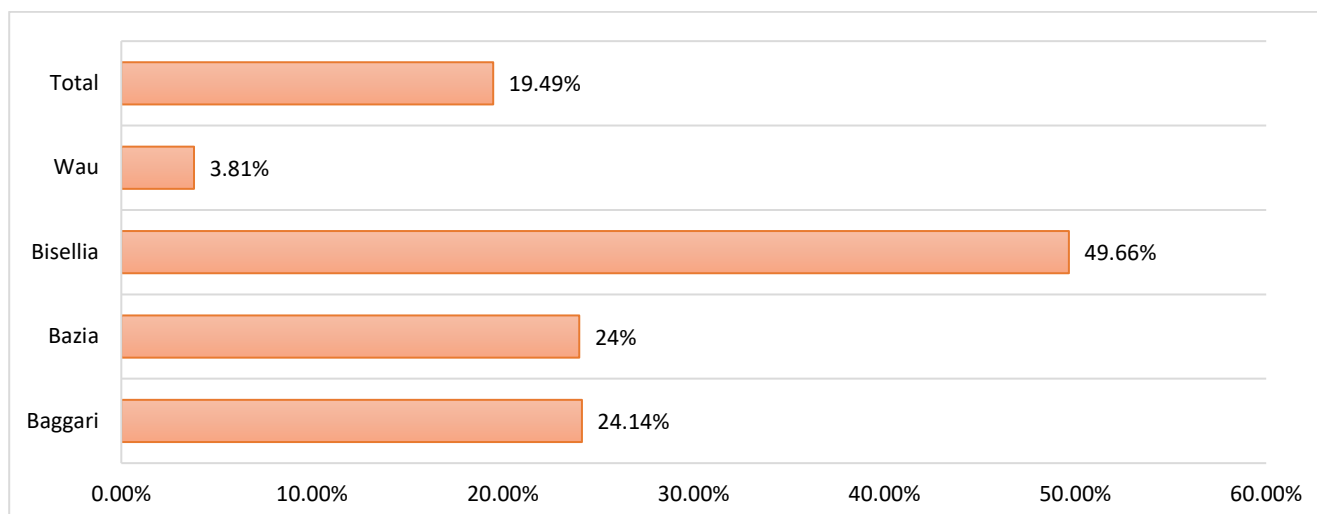
Figure 7.2 - Share of households with access to land by land size (%)



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

The crop yields remain low mostly due to lack of improved agricultural inputs such as seeds and fertilizers, storage facilities, and irrigation development. Figure 7.3 ascertains this fact as, except for Bisellia, all three counties have a very low number of households with access to land declaring to have used agriculture inputs in the last 30 days of the survey reference period. As agriculture is not the dominant occupation in Wau, the use of inputs is also very limited, suggesting that the subsistence sector dominates. Whereas, with better access to land, the use of inputs is significantly higher in Bisellia.

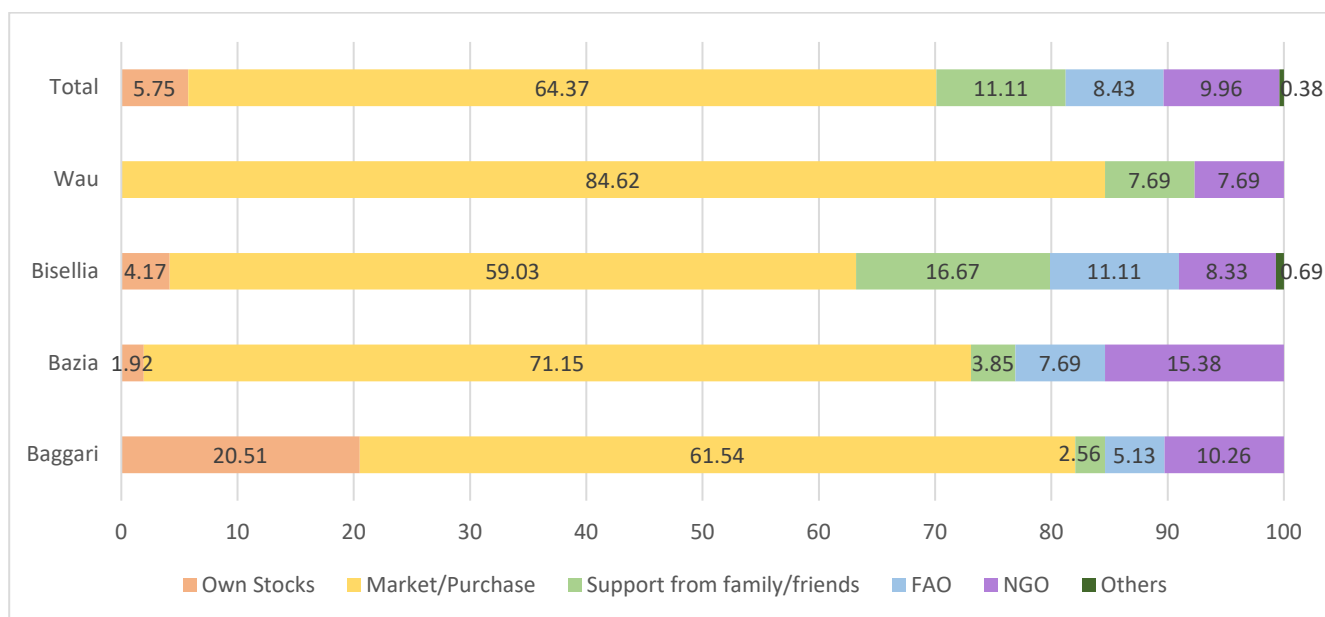
Figure 7.3 - Share of households with access to land using inputs in the last 30 days (%)



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

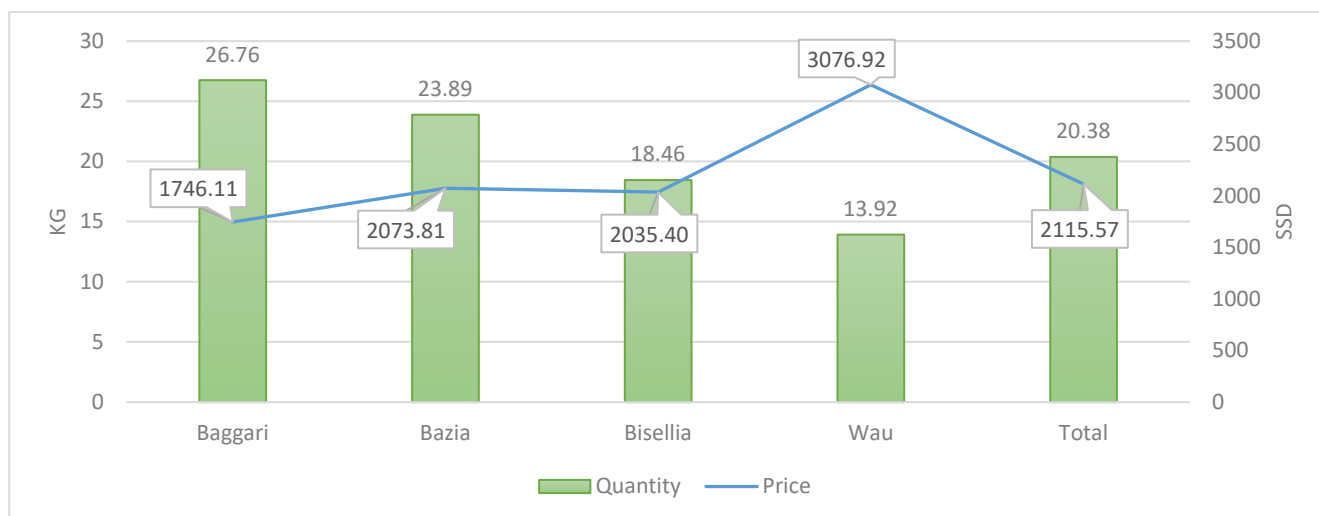
Figure 7.4 shows the strong dependence from the market for purchasing seeds and from figure 7.5 it seems that the purchasing of seed follows the law of demand, as the purchased quantity is higher when the mean price is lower.

Figure 7.4 - Share of households by source of funds used to buy seeds



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

Figure 7.5 - Mean quantity of seeds purchased (kg) in the last 30 days and mean price (SSD)

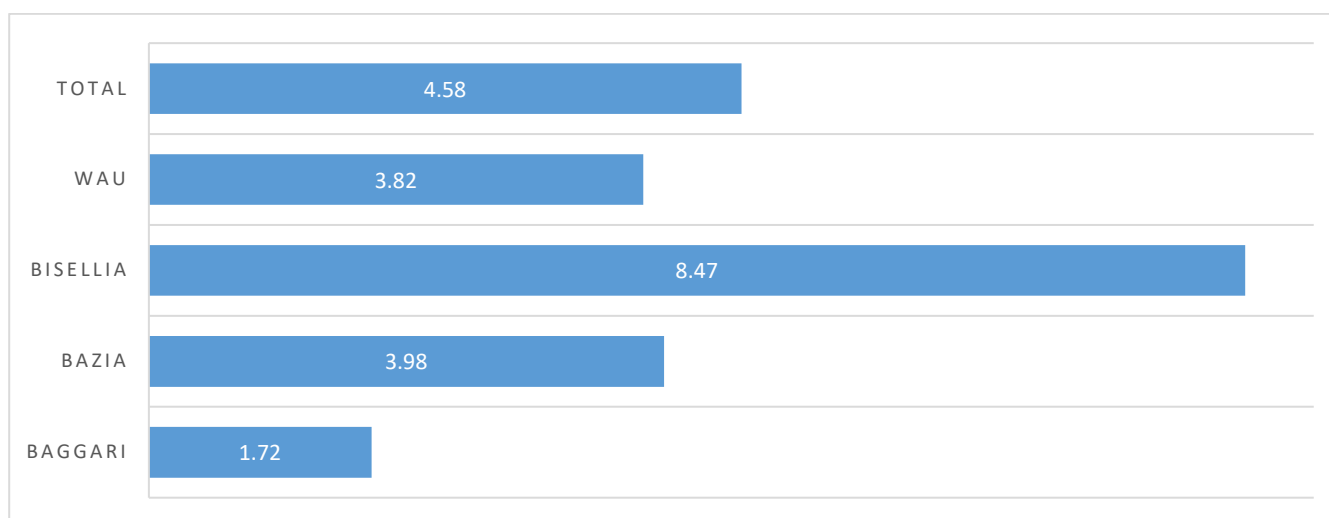


Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

It should be noted that in the investigated area there are four types of seed system: formal, informal, relief, and community based. Informal farmers' seed and seed aid provide the largest portion of the seed, reaching the majority of farmers while the formal seed system is less effective and operates mainly for imported seeds. However, the political and regulatory instability in South Sudan is reflected in a lack of seed availability. Therefore, for a better agricultural yield, efforts should be focused on establishing an effective seed supply chain system, which ensures the availability of quality seed to farmers at the right time and place, at affordable prices.

Another aspect that characterizes the poor performance of the agricultural sector in our study area is the weak provision of extension services to support to farmers (figure 7.6) reflecting the general situation of the country where the coverage and capacity of public extension services are very low.

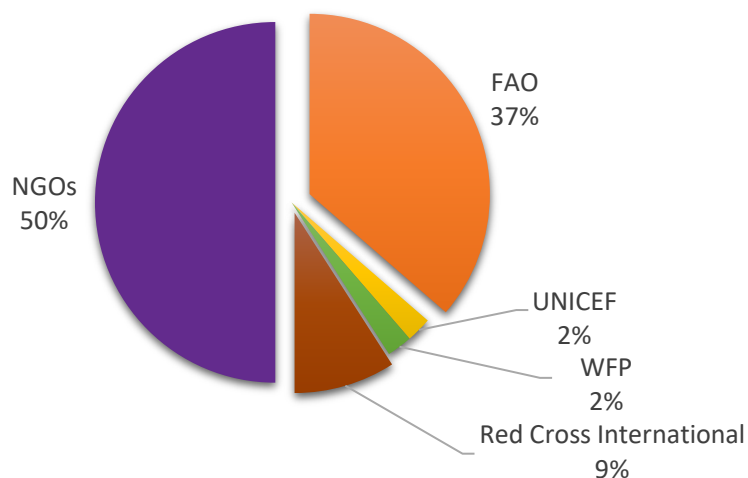
Figure 7.6 - Share of households with access to extension services by county (%)



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

The limited number of households having access to extension services are receiving them mainly from the International Organizations and NGOs (figure 7.7). However, the effort of these organizations is far from achieving the optimum level.

Figure 7.7 - Organizations providing extension services to the households interviewed (%)



Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

Therefore, it should be important to evaluate the possibility to expand extension services especially in the planting season, also through encouraging the private sector and civil society organizations to provide them. In addition to the abovementioned barriers to farming, the respondents in our sample, indicated insecurity and climatic shocks (table 7.1).

Table 7.1 - Share of households by main challenge faced during farming

Challenge	Baggari	Bazia	Bisellia	Wau	Total
Shortage of rain/dry spells	53.45	52.65	63.95	7.91	32.97
Floods	2.87	1.77	0.68	0.88	1.23
Pests and diseases	17.24	38.94	42.52	3.81	19.54
Heavy weed infestation	3.45	5.75	7.14	0.73	3.27
Shortfall of seeds	47.7	47.79	42.52	4.54	25.3
Shortage of agricultural tools	37.93	34.07	29.25	3.66	18.45
Expensive input	27.59	16.37	20.41	3.37	12.2
Cost of casual labor increased	6.32	3.1	2.04	0.15	1.82
Insecurity	47.13	35.4	31.97	12.3	24.69
Lack of marketing opportunities	3.45	2.65	3.4	1.61	2.4
Lack of draft animals/ draft power	0.57	6.19	8.5	0.59	3.2
Other challenges (for 4 households over 27, it is lack of land)	3.45	4.87	1.02	1.02	1.96

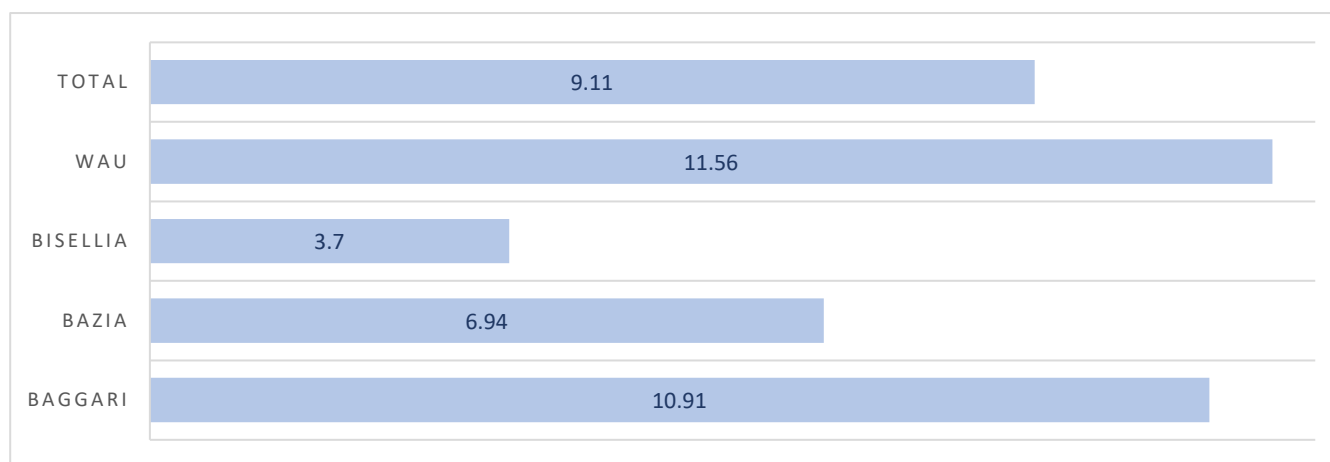
Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

Sometimes, the crops are destroyed, and farmlands are abandoned due to the ongoing conflict and insecurity, which largely affects agricultural productivity. Moreover, the irrigation system does not exist or is not accessible to most of the subsistence farmers due to technological deficiency and cost. Therefore, dry seasons pose a severe threat to farming crops.

8. Livestock

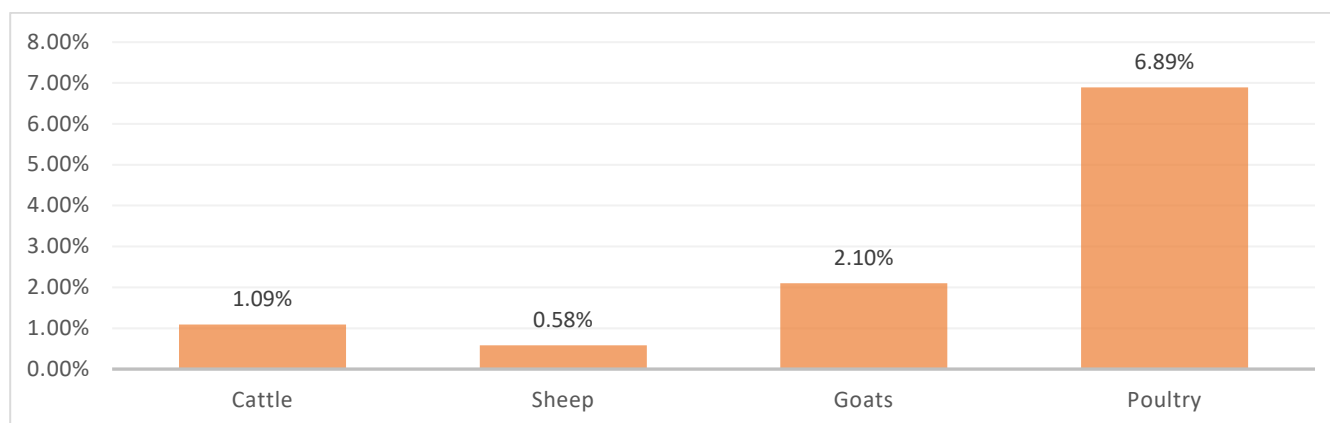
In South Sudan, livestock farming is dominated by culture and tradition rather than productive reasons. Therefore, some ethnic groups do not own cattle. Additionally, the lack of business orientation and value chain exploitation have made livestock ownership less lucrative from an economic perspective. As a result, we observed a low level of livestock ownership in all the counties investigated. On average, only 9.11% of the households owns livestock (figure 8.1). The majority of the population surveyed owns poultry (figure 8.2).

Figure 8.1 - Share of households owning farm animals by county (%)



Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

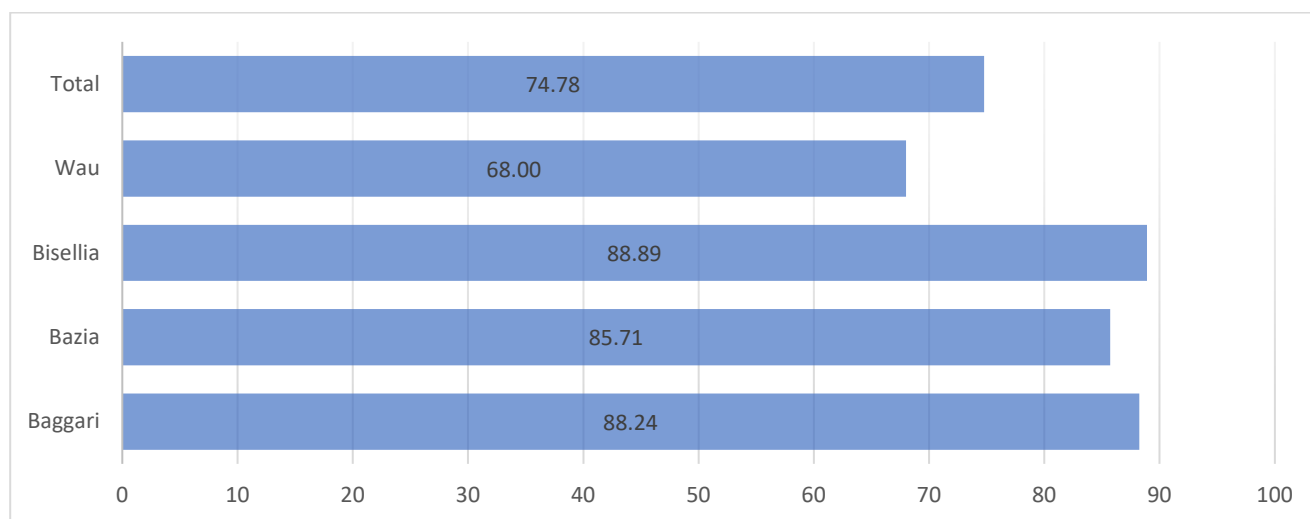
Figure 8.2 - Share of households by type of animal owned (%)



Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

In Baggari, Bazia, and Bisellia, these animals stay in the same house where people live for more than 85% of cases (figure 8.3). As Wau is a comparatively urban area, the place in the dwelling unit is limited and costly. Therefore, in Wau only 68% of the households affirm to have farm animals staying in the same house, percentage which is much lower than in the other counties.

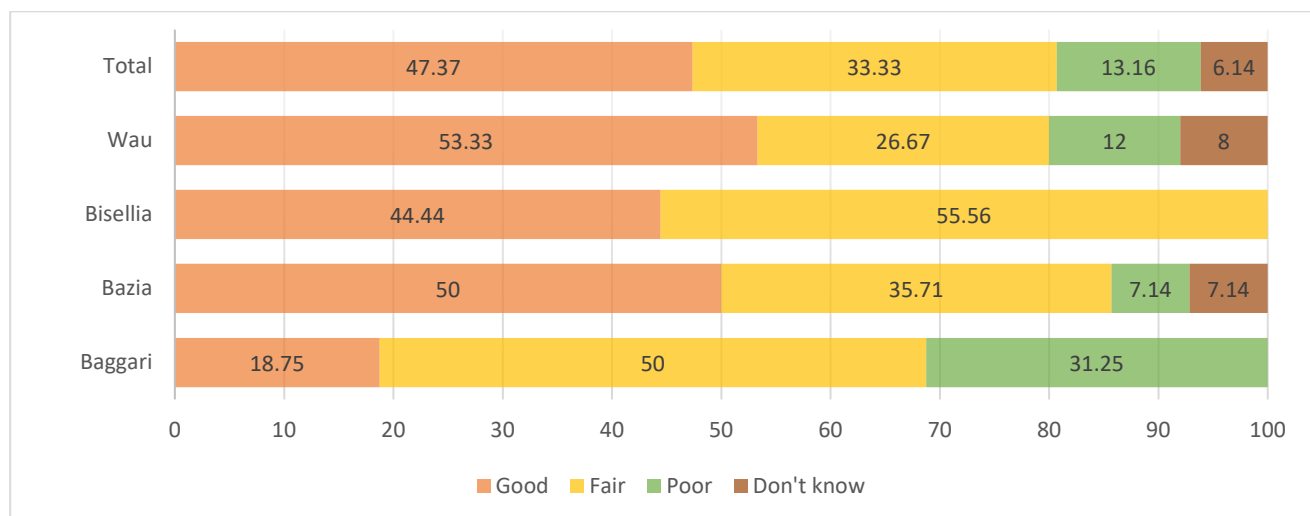
Figure 8.3 - Share of households owning farm animals with animals living in the house (%)



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

The cohabitation with farm animals exposes households to pathogens from poorly managed animal feces, occurring through inhalation, contact, or via vectors such as insects. Therefore, in households cohabiting with animals, specific effort is required to improve hygiene conditions. Figure 8.4 highlights that only 18.3% of households in Baggari reported their animals with a good health status and more than 30% with a poor health condition.

Figure 8.4 – Share of households that own animals by animal status



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

The scenario is comparatively better in Wau and Bazia where almost half of the households have animals in good health. The health of animals is highly affected by the diseases and the low quality of animal health professionals (table 8.1). The poor animal husbandry practices among farmers lead to low births and high mortality rates for both young and mature livestock.

Table 8.1 - Share of households by reasons for reduction in animals owned

Reasons	Baggari	Bazia	Bisellia	Wau	Total
Armed groups	11.11	13.33	10.00	9.09	10.00
Intercommunal raiding	0.00	0.00	20.00	1.30	2.50
Disease outbreak	38.89	40.00	50.00	18.18	26.67
Sale or slaughter	11.11	13.33	30.00	14.29	15.00
Lost in migration	16.67	26.67	10.00	3.90	9.17
Drought	5.56	0.00	0.00	2.60	2.50

Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

Figure 9.5 highlights that, except for Wau, in all the other three counties more than 70% of households had a large decrease in their owned livestock compared to the same period of the previous year. In Wau, 44.16% of households experienced a large decrease in their livestock number while for 37.66% the number remained the same as before.

Figure 8.5 - Share of households declaring a change in the number of livestock owned compared to the same time last year (%)



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

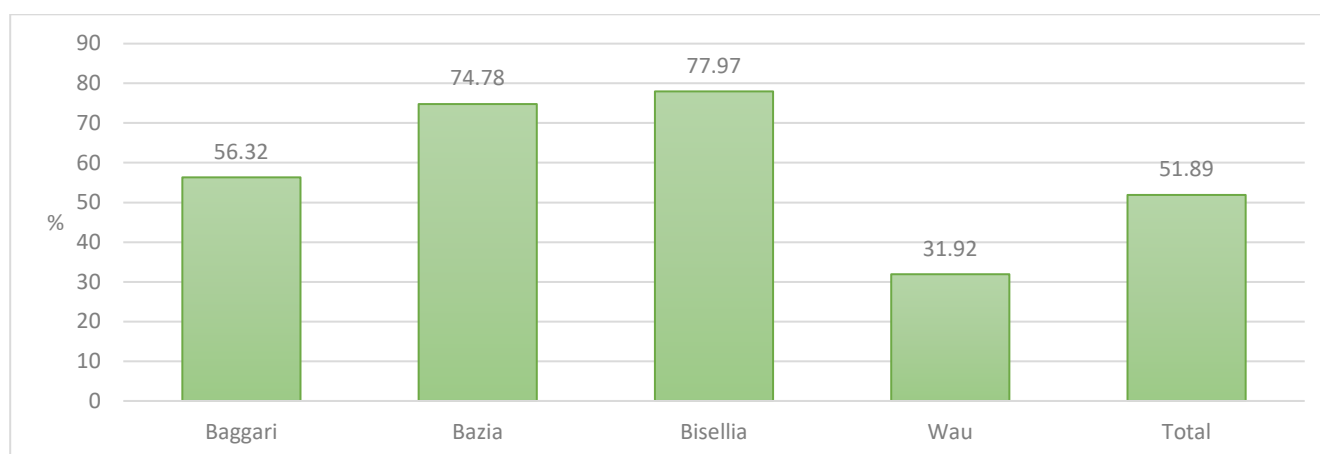
The low availability and access to animal health service providers triggers the abovementioned problem to a great extent. The internal migration resulting from conflict and the presence of armed forces in Baggari, Bazia,

and Bisellia also contributes to the decrease in the number of farming animals. In Bisellia, together with conflict, the intercommunal raiding is also pervasive.

9. Wild Food

During times of severe food shortages, the consumption of wild food plays a very important role as an alternative food source. We can observe from figure 9.1 that on average almost 52% of households consumed wild food the previous day of the survey period.

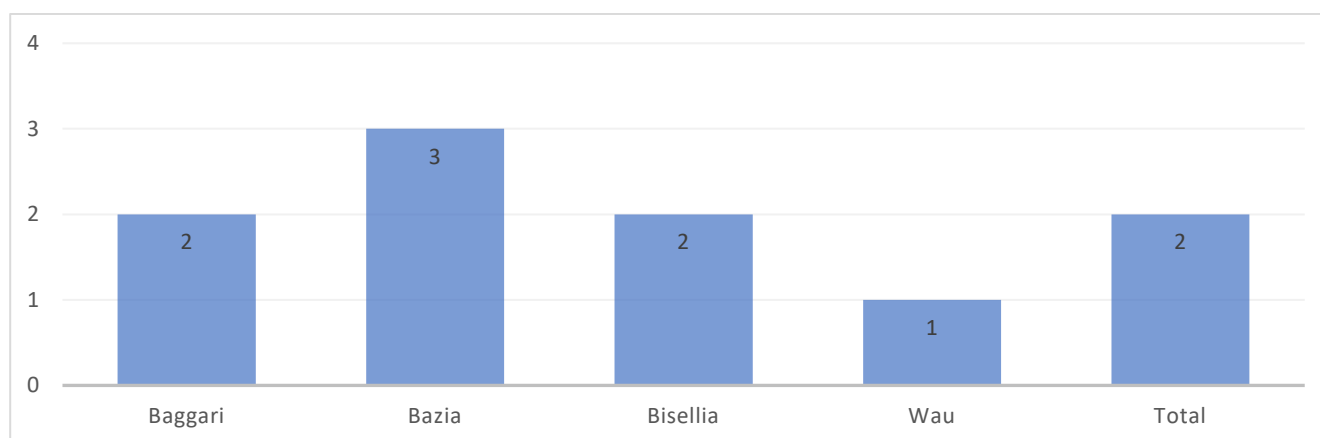
Figure 9.1 - Share of households declaring to have consumed wild food the previous day (%)



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

However, the consumption of wild food is significantly lower in Wau than in the other counties. We expected this result because the utilization of wild food is considered as a primary coping mechanism for people affected by conflict and Wau is less conflict-prone than the other counties. Similarly, figure 9.2 highlights that households in Wau only consume wild food one day in a week which is lower than the average value for the total household sample. The households of Bazia use wild food the most frequently, 3 days in a week, as their alternative food source.

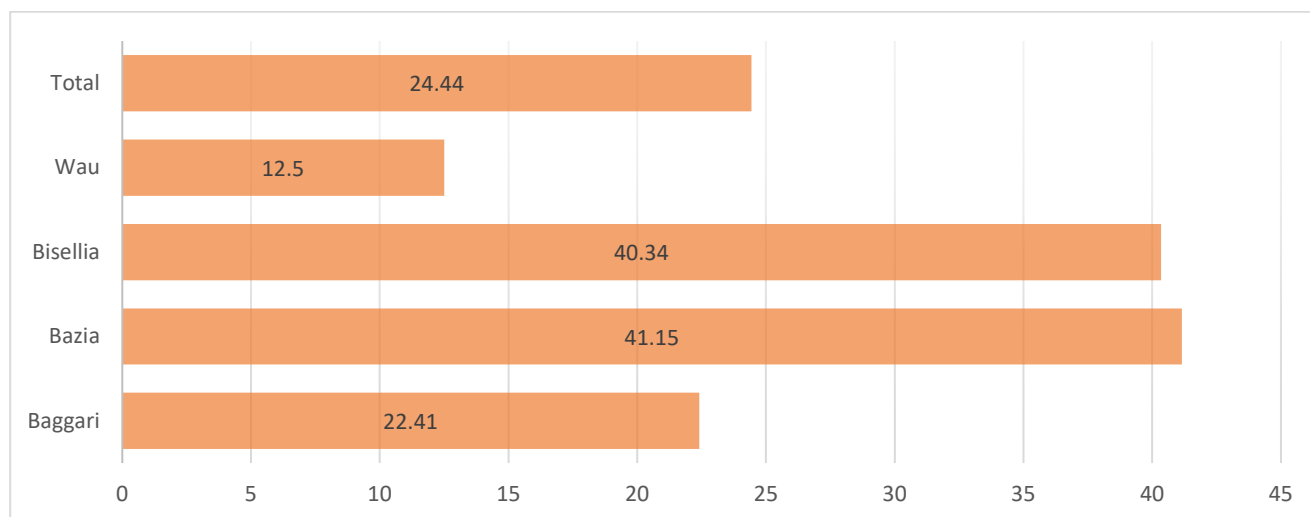
Figure 9.2 - Average number of days wild food consumed in last 7 days



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

In most cases, the households of Wau continued to consume the same type of wild food they had usually consumed in the last 30 days before the survey period (figure 10.3).

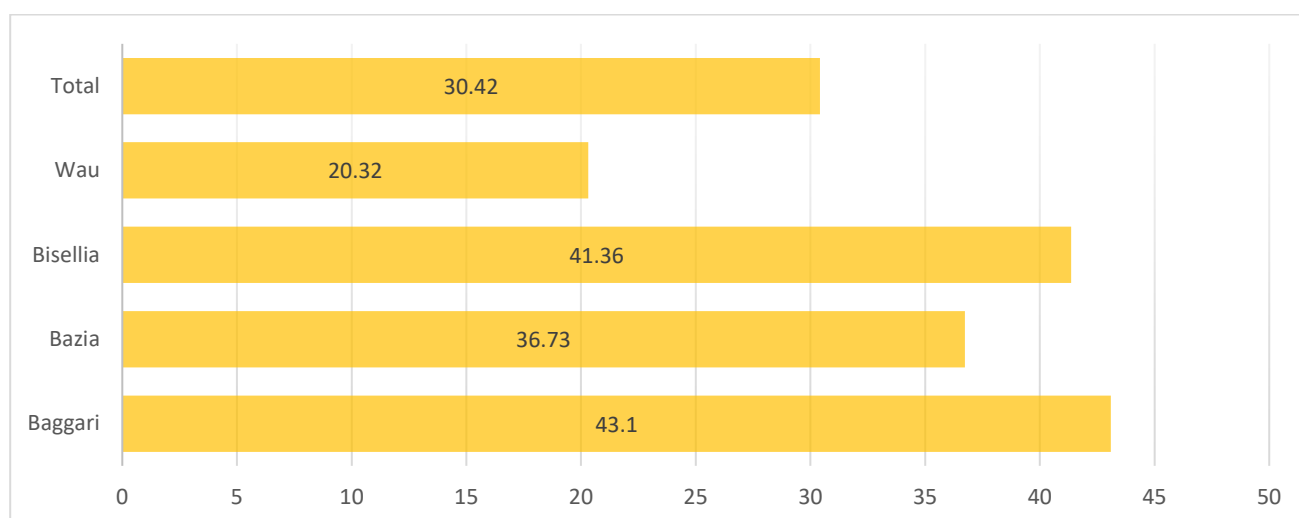
Figure 9.3 - Share of households that in the last 30 days have consumed new kinds of wild food that they had never tried before (%)



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

Whereas, in Bazia and Bisellia more than 40% of the households searched and tried some completely new type of wild foods that they had never tried before. The households in Bazia and Bisellia generally try to exploit the variety of wild food to create a sustainable source of much-needed nutrients in their body but also to explore new types of wild food when they have exhausted the types normally consumed. While collecting wild food, more than 40% of households in Bisellia and Baggari face problems (figure 10.4).

Figure 9.4 - Share of households declaring to have incurred in problems in collecting wild food



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

The households of Wau have the lowest level of wild food consumption and less propensity to consume the new types of wild food. Consequently, the households of Wau are having the least problems while collecting them among all the counties. The main problem in the wild collection is generally the hindrance in the accessibility and the knowledge gap about the variety, not the availability. Table 9.1 shows that the location of the source is the main obstacle in collecting and consuming wild food.

Table 9.1 - Share of the households with problems in collecting or eating wild food by the reasons of the problems

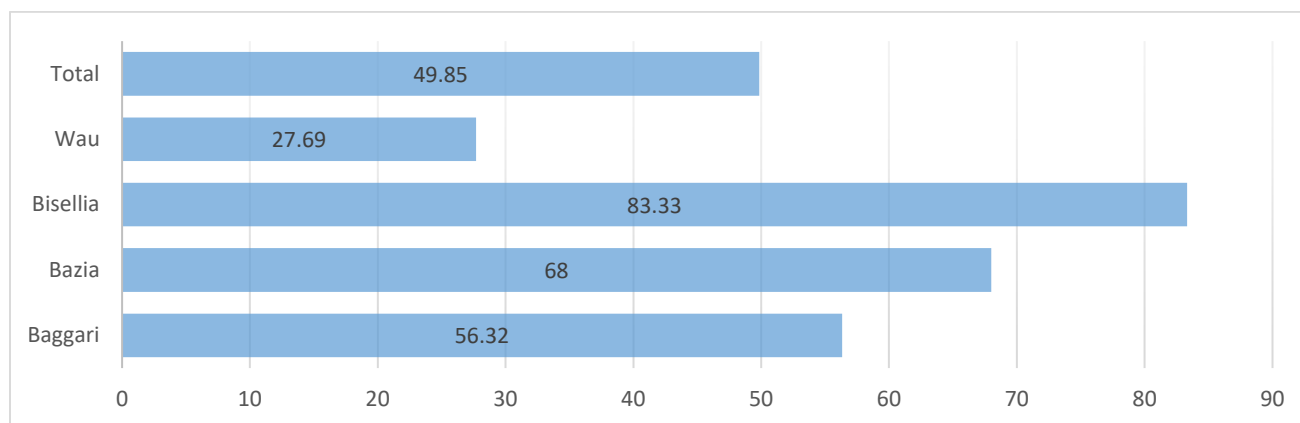
Reason of the problem	Baggari	Bazia	Bisellia	Wau	Total
Eating bad tasting or less preferred wild foods	14.67	15.66	10.66	10.14	12.2
Wild foods making adult sick	38.67	34.94	38.52	5.07	26.79
Wild foods making children sick	56	38.55	44.26	7.25	33.01
Wild foods located too far away	56	59.04	45.9	35.51	46.89
Wild foods located in physically unsafe or dangerous location	33.33	31.33	22.13	35.51	30.38
Eating not normal wild foods for long time of the year	6.67	10.84	11.48	3.62	7.89
Wild foods gathering takes too much time and makes me exhausted	8	20.48	15.57	5.8	11.96
Too much time or difficulty preparing or cooking wild foods	29.33	26.51	18.03	9.42	18.9

Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

Either the source of wild food is located far away, or it is in a dangerous location. The second important aspect is the health issue. Some varieties of wild food are not suitable for all age groups and result in sickness among children and the elderly population. The third problem is the cooking process and taste. Sometimes wild food takes much longer time to prepare than the introduced food items and the exotic taste does not seem appealing to all.

10. Food Assistance, Borrowing and Access to Market

The ongoing conflict and insecurity in our study area generated violence in livelihood activities, poor macroeconomic conditions, cereal production shortages, below-average access to livestock products, and elevated food prices. As a result, the vulnerable populations continue to rely on a different form of assistance to meet their basic needs. Figure 10.1 shows that, in total, almost half of the households from all the four counties have received some type of assistance in the last 30 days before the survey period in the most conflict-prone areas.

Figure 10.1 - Share of households receiving assistance of any form in last 30 days by county (%)

Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

Table 10.1 highlights the different forms of food assistance received by households in South Sudan. In the case of approximately 84% of households, food assistance was delivered in the form of general food for all categories.

Table 10.1 - Share of the households by form of food assistance received in the last 30 days by county: the role of food assistance

Form of Food Assistance Received	Baggari	Bazia	Bisellia	Wau	Total
General food for all	85.71	85.62	85.71	78.72	83.77
Food for school children	6.12	1.31	2.45	4.26	3.22
Food assistance for assets	12.24	8.5	7.35	5.32	7.75
Nutrition	3.06	3.92	0	4.79	2.63
Cash for work	0	0	0	1.6	0.44
Agricultural inputs	4.08	1.96	8.16	2.13	4.53
Agricultural tools	4.08	1.96	7.76	0.53	3.95
Fishing gear	3.06	4.58	6.94	5.32	5.41
Veterinary	0	0	0.82	0.53	0.44
School fees and uniforms	1.02	1.31	1.63	5.85	2.63
Health/medicines	24.49	1.31	0	5.32	5.26
Shelter material	6.12	1.96	0	1.6	1.75
Household utensils	0	0	0	1.6	0.44

Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

According to our estimate, more than 50% of the population in the investigated area is facing higher levels of food insecurity. Consequently, the interventions of food assistance are more focused on the unconditional provision of the necessary food items targeting the most vulnerable population. In Baggari, two other forms of food assistance, namely food assistance for assets and for health, have significantly contributed to help the households.

Our results also show that elderly women are a priority category in distributing food assistance programs as they are considered vulnerable (table 10.2). Additionally, a large share of men within the range of 16-60 years old was registered as collecting food aid. The majority of them accompanies the elderly women during the distribution to help them bring food home. They are usually sons, relatives, or assistants.

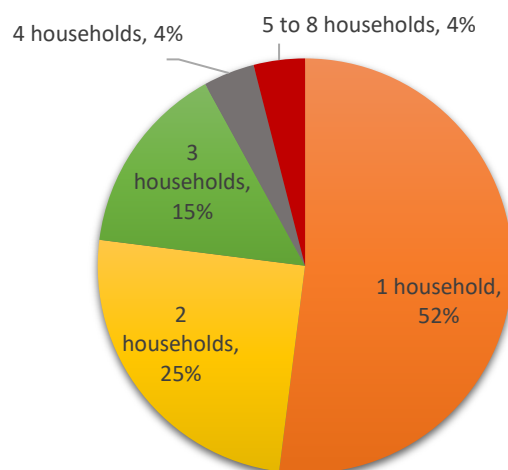
Table 10.2 - Share of the households by member who collected food from distribution

Members who collected food	Baggari	Bazia	Bisellia	Wau	Total
Male less than 15 years	5.94	2.56	7.76	4.96	5.48
Male 16 – 60 years	45.54	40.38	43.67	26.04	38.88
Male over 60 years	0	0.64	2.45	3.13	1.87
Female less than 15 years	10.89	8.97	4.9	11.98	8.65
Female over 60 years	51.49	60.26	54.69	55.21	55.62
Someone outside the household	0.99	3.21	3.67	1.04	2.45

Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

Sharing food assistance is frequent in the investigated area. Approximately half of the households receiving assistance share it with another household and another third with 2 households (figure 10.2).

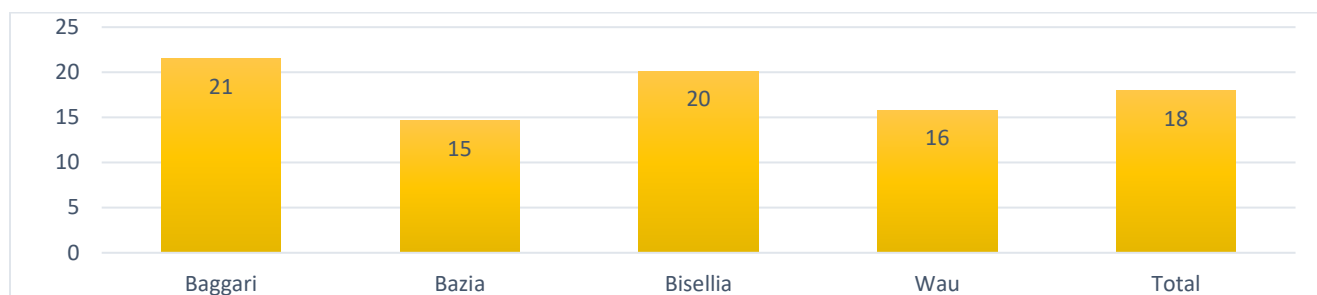
Figure 10.2 - Share of households by number of households they share food assistance with (%)



Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

Figure 10.3 indicates that on average, the last received food assistance by the households lasted for 18 days. Food assistance mainly operates during the lean period when there is a shortage of crop production and employment. However, this unfavorable time generally lasts for more than 18 days and so there is a possibility that the households suffer from food shortage due to the lack of food assistance.

Figure 10.3 - Average number of days that the last distribution of food lasted



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

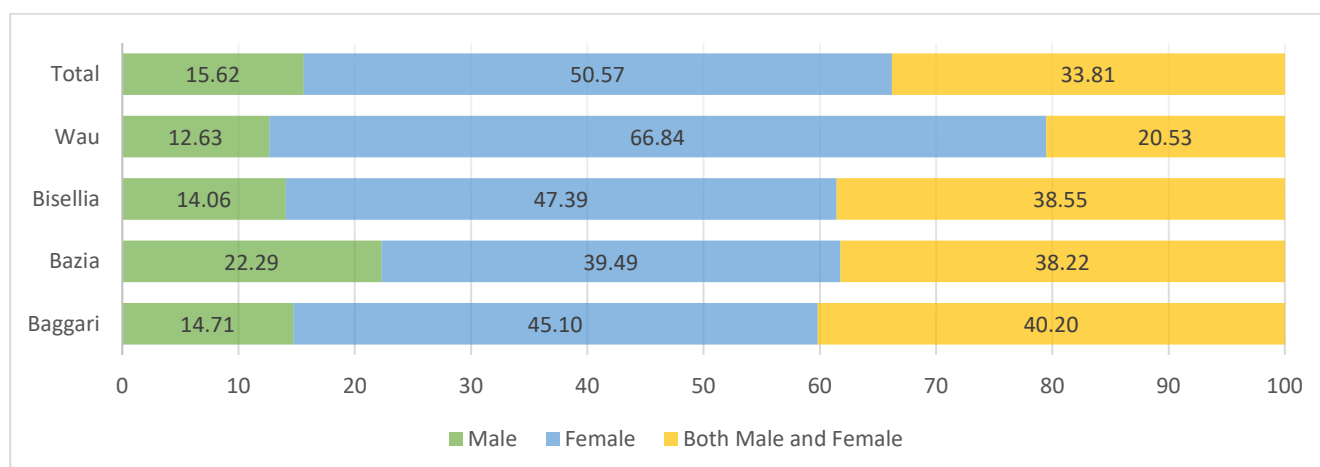
Most of the households are concerned and aware of the distribution location of the food assistance (table 11.3), whereas the percentage of households knowing their entitlements and the procedures for obtaining assistance is remarkably lower. Despite a general lack of decision-making power among women and girls at household and community levels, the burden of care work at home is high for females. Therefore, women have an important role in deciding how to use food assistance (figure 10.3).

Table 10.3 - Share of households receiving assistance, informed about some aspects of assistance

Aspect of assistance	Baggari	Bazia	Bisellia	Wau	Total
Entitlement in assistance	28.57	24.84	26.12	25	25.88
Distribution location	69.39	72.55	88.57	64.89	75.73
Procedure of getting assistance	20.41	22.88	14.29	20.21	18.71

Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

Figure 10.3 - Share of households by decision maker over the utilization of food assistance



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

In our study location, received food assistance is not enough for the households to survive the vulnerable period and food produce is limited. Therefore, in total, almost 55% of households borrow money, mainly to purchase food (table 10.4).

Table 10.4 - Share of the households by borrowing money by reasons and county

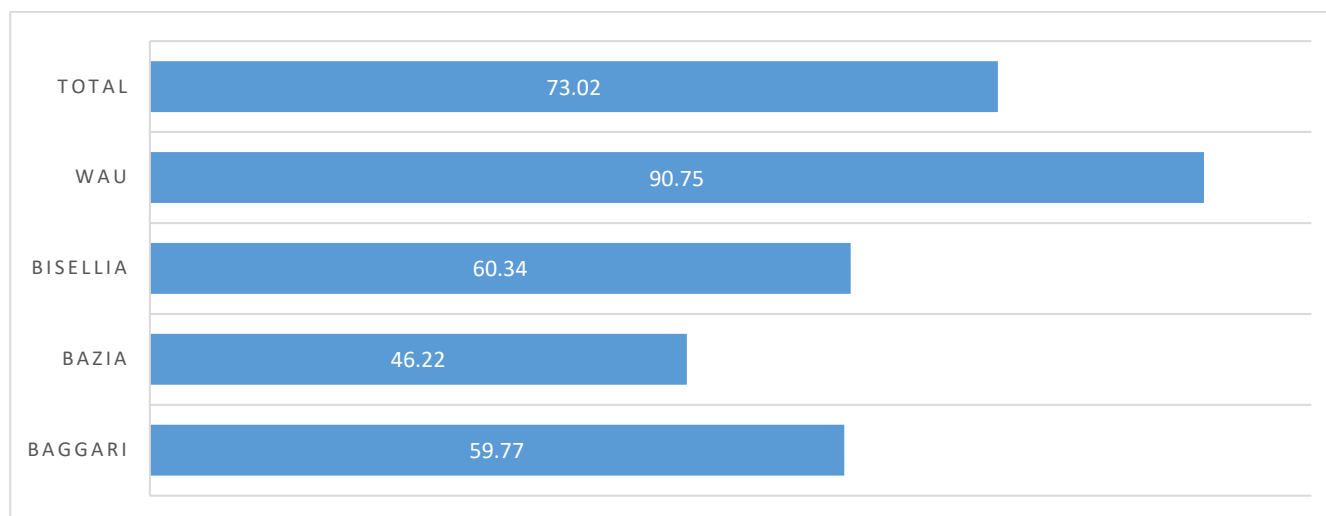
Reasons	Baggari	Bazia	Bisellia	Wau	Total
Borrowed money to purchase food	59.77	62.83	62.37	47.73	54.86
Borrowed money to pay tuition fees	17.24	22.57	16.95	11.86	15.38
Borrowed money to pay for health care services	37.93	52.21	46.44	38.21	42.24
Borrowed money to purchase livestock	2.87	3.98	1.02	1.32	1.89
Borrowed money to purchase agricultural inputs	14.37	13.72	14.24	3.66	8.93
Borrowed money to purchase household equipment	4.02	3.54	1.02	0.73	1.67
Borrowed money to pay the rent	0	0.88	0.34	3.51	1.96
Borrowed money for marriage or ceremonies	0.57	4.42	4.07	4.25	3.77
Borrowed to pay fines and/or taxes	0.57	0.44	0.34	1.32	0.87
Borrowed money to purchase land/building or house	10.92	3.54	1.36	1.17	2.83
Borrowed money to pay travel	1.15	9.29	6.78	5.86	6.02
Borrowed money for other reasons	4.02	3.1	0.34	1.76	1.96

Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

Moreover, in the investigated area, the government intervention in health insurance and service coverage is meager. The out of pocket expense is a dominant source of health expenditure. As a result, the second most common reason to borrow money is bearing the health expenditure.

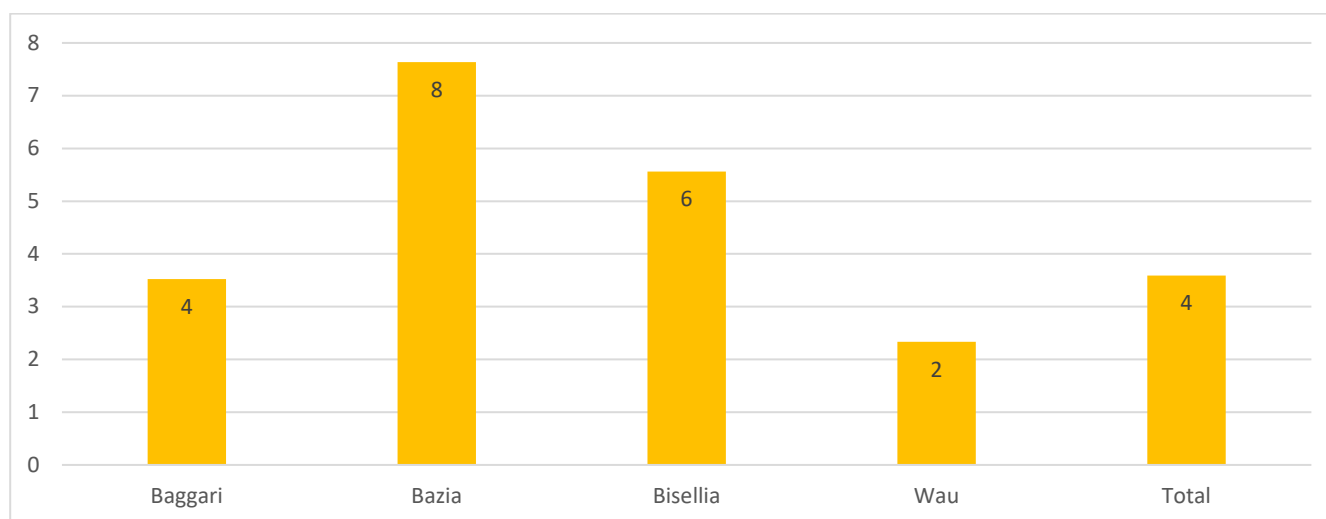
Local production of staple food and food aid are insufficient to meet monthly household food requirements. Therefore, access to market is essential to food security. Lack of roads and large distance to the market especially for food is one of the major causes of the low share of households accessing to markets in the remote areas of Baggari, Bazia and Bisellia in comparison to Wau (figures 10.4 and 10.5).

Figure 10.4 - Share of households with access to market in the last 30 days



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

Figure 10.5 - Average distance to the market (km)



Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

It should be noted that Wau is an important distribution center to markets within the State of Western Bahr el Ghazal and neighboring states. This makes food availability less severe than in the remote areas. However, the investigated period was in the rainy season and it was found that poor road conditions affected the volume of food available. Moreover, the evidence showed a dramatic increase in the cost of living during the investigated period linked to the hyperinflation due to instability and excessive exchange rate stemming from the strong food dependency from imports.

11. Water, sanitation and hygiene

A healthy household environment is important for food and nutrition security. Better sanitation and health services prevent and limit the impact of diseases, especially infections on nutritional status. Water, sanitation and hygiene (WaSH) programmes are a broadly adopted response in this area. They include interventions aimed at improving the drinking water coverage and safe storage, as well as safe feces disposal, hand washing with soap, and sleeping under a mosquito net to reduce child and adult sickness.

In Baggari, Bazia, and Bisellia, the majority of the households needed from one hour to less than half a day to collect the water.

Water

The basic water supply coverage in our study area is still very low. Almost 45% of households in Bazia used rivers/streams to access water, which is one of the most unimproved sources of water (table 11.1). However, in Baggari and Wau, more than half of the respondents were using borehole as the main source of water which is considered as an improved water source. In some conflict-affected areas, the boreholes can be submerged underwater rendering the water source contaminated. In Bisellia, along with borehole, the public tap was also used equally as an improved water source.

Table 11.1 - Share of the households by main source of water (%)

Source of water	Baggari	Bazia	Bisellia	Wau	Total
Borehole	50.57	33.63	25.08	52.42	43.25
Public tap or stand pipe	32.18	15.04	29.15	22.4	23.88
River/stream	16.67	44.69	14.92	2.49	13.86
Unprotected well/Hand dug well	9.77	15.93	27.46	14.64	16.98
Swamp	14.37	5.75	2.03	1.76	4.06
Puddle/stagnant water	13.22	7.08	4.75	2.49	5.08
Purchase from sellers	0	0	0	3.37	1.67

Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

A water source is accessible if it is within 30 minutes walking distance. Table 11.2 shows that the households in Wau county had better access to water sources, as more than 50% of them took less than 30 minutes to collect water. On the other hand, in Baggari, Bazia, and Bisellia, the majority of the households needed from one hour to less than half a day to collect the water.

Table 11.2 - Share of households by time necessary to collect water and county (%)

Time necessary to collect water	Baggari	Bazia	Bisellia	Wau	Total
Water available inside the compound	2.3	1.77	0.34	10.28	5.74
Under 30 minutes	12.07	15.49	29.15	56.53	38.3
30 minutes to less than 1 hour	25.86	20.35	21.02	23.35	22.67
1 hour to less than half a day	48.28	54.42	42.03	7.05	27.54
Half a day	6.9	5.31	4.75	0.73	3.13
More than half a day	4.6	2.65	2.37	0.29	1.67
Do not know/want to answer	0	0	0.34	1.76	0.94
Total	100	100	100	100	100

Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

The quality of collected water not only depends on the water source but also on the container in which the water is stored. Even if the water is collected from an improved water source, inadequate storage conditions can lead to an increase in the microbial contamination of water sources, thus a higher risk of an infectious disease. On average, in Baggari, Bazia, and Wau, jerry cans with lid were used more than buckets. The households in Bisellia used both jerry cans and buckets in equal quantity to collect water (table 11.3). These two types of containers are safe in terms of water storage.



Children collecting water in an IDP camp in Western Bahr el Ghazal State.

Table 11.3 - Average number of tools available by household for collecting water

County	Jerry cans with lids	Buckets with lids
Baggari	2	1
Bazia	2	1
Bisellia	1	1
Wau	3	2

Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

Table 11.4 highlighted that, in all the four counties analyzed, the responsibility of collecting generally fell upon the adult female member of the household. The children were less likely to stand in the queue with heavy cans to collect the water.

Table 11.4 - Share of households by member responsible for collecting water

Member responsible for collecting water	Baggari	Bazia	Bisellia	Wau	Total
Female Adult	46.55	49.56	52.2	73.17	61.44
Male Adult	12.07	14.16	15.59	10.26	12.27
Both Male and Female Adult	16.09	17.7	18.31	3.23	10.46
All the family (male and female adults and child)	14.94	6.64	2.71	0.44	3.78
Female Child	4.02	3.54	5.42	6.89	5.66
Male Child	1.15	1.33	1.02	2.64	1.89
Other	5.18	7.07	4.75	3.37	4.5
Total	100	100	100	100	100

Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

Considering that the adult female is often the one collecting water from the different water sources, safety is a major concern. In all the counties, more than 60% of households felt safe while collecting water (table 11.5).

Table 11.5 - Perception of safety while collecting water in the last 2 weeks by county (%)

Felt unsafe	Baggari	Bazia	Bisellia	Wau	Total
Yes	23.56	37.17	29.49	22.25	26.42
No	76.44	62.83	70.17	75.99	72.64
I do not collect water	0	0	0.34	0.88	0.51
I do not know	0	0	0	0.88	0.44

Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

Latrine

South Sudan had only 11% coverage with basic sanitation and with 63% of the population still practicing open defecation. Table 11.6 highlights that in Baggari, Bazia, and Bisellia this situation is even worse. More than 70% of households have no latrine and, as a result, more than 80% of households in these counties defecated in the bushes in the last two weeks before the survey period (table 11.7).

Table 11.6 - Share of households with shared or communal latrine in their settlement, by county (%)

Shared or communal latrine	Baggari	Bazia	Bisellia	Wau	Total
No	86.21	76.44	80.34	15.67	48.37
Family latrine	6.9	20.44	17.63	63.4	39.43
Communal/institutional latrine (marketplace, school, ecc.)	5.75	0.44	0.34	3.51	2.61
Shared latrine	0	1.33	1.36	17.13	9.01
Do not know	1.15	1.33	0.34	0.29	0.58

Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

Table 11.7 - Share of households by place where feces of children under-five went in the last 2 weeks and county

Places	Bagari	Bazia	Besselia	Wau	Total
In the bush	36.78	40	50.34	5.01	24.49
Cat method	42.53	38.22	29.59	10.01	22.96
In the latrine	8.62	14.22	13.27	82.92	47.3
Left where it is	0	0	0	0.29	0.15
Mixed method	12.07	7.56	6.8	1.18	4.81
Do not know	0	0	0	0.59	0.29

Source: Survey "Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)". Own elaboration.

The situation is further aggravated by the lack of sustainable operations and maintenance systems for existing sanitation facilities and infrastructure. The high proportion of households with limited access to latrines across the counties highlights the need for both increased sanitation infrastructure and sensitization to remain a sanitation priority. Wau shows a comparatively improved sanitation system compared to the other counties. Almost 64% of households had access to a family latrine and among them, 82.72% of households used the latrine in the last two weeks before the survey period.

A similar situation is observed when it comes to placing the feces of the children under five. The health of the children highly depends on the process of their fecal sludge management. In Baggari, Bazia, and Bisellia more than 75% of households disposed of children feces either in the bush or following cat method (table 11.8). Previously from table 11.7, we observed that the population of Wau had greater access to a latrine. Therefore, 82.27% of households in Wau used a latrine to manage the feces of the children.

Table 11.8 - Share of households by toilette system in the last 2 weeks, by county

Toilette system	Bagari	Bazia	Bisellia	Wau	Total
In the bush	82.18	80.89	90.51	9.08	47.49
In the river	0.57	2.67	1.02	3.51	2.47
Cat method	2.3	4.44	2.03	3.37	3.12
Use of a latrine	2.87	6.67	4.07	82.72	43.36
Other	0	0.89	0	0.59	0.44
Mixed method	12.07	4.44	2.37	0.15	2.83
Do not know	0	0	0	0.59	0.29

Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

Soap

The risk of contracting a water-borne disease in the Baggari, Bazia, and Bisellia is further exacerbated by limited access to soap. Table 11.9 revealed that only nearly 10% of the households of these three counties owned soap, which was used for cleaning. In Wau, the presence of soap was observed in 50% of the respondents’ house.

Table 11.9 - Share of households by availability of soap at home and county

Availability of soap	Baggari	Bazia	Bisellia	Wau	Total
Yes (and appears)	8.05	9.29	13.56	50.22	30.33
Yes, but doesn't appear	16.67	14.16	21.69	20.2	19.09
No	75.29	76.11	64.75	29.28	50.36
Do not know	0	0.44	0	0.29	0.22

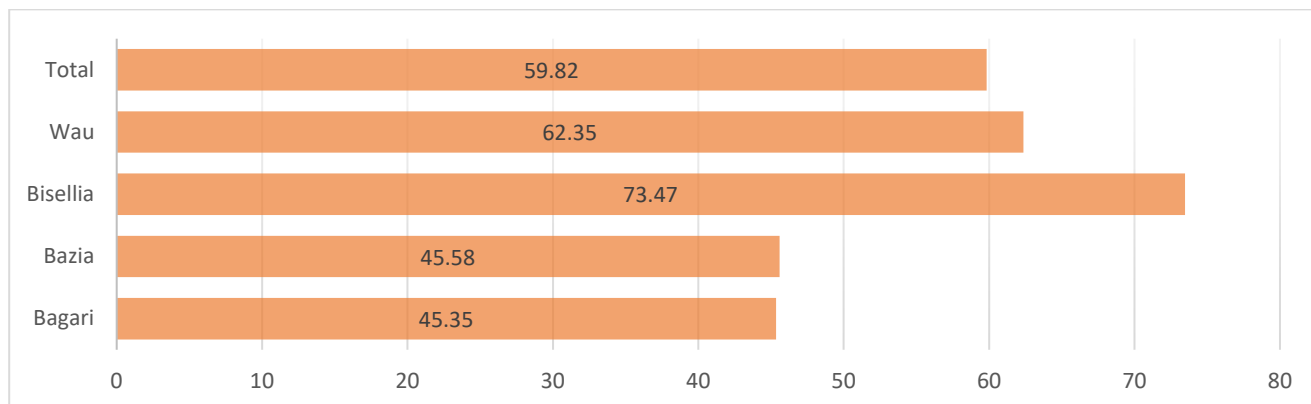
Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

In South Sudan, access to many of the locations remains highly challenging due to conflict, lack of roads, and inhospitable terrain which reduces the transport capacity of materials and staff required to build water and sanitation infrastructure, as well as the possibility to reach the most vulnerable communities in some counties.

Mosquito Nets

Sleeping under a mosquito net is considered an important indicator in terms of disease prevention, according to the Global WASH cluster. The use of mosquito nets decreases the potential of catching malaria and other vector-borne diseases. Our study revealed that, in total, around 40% of the households surveyed were not using mosquito nets while sleeping (figure 11.1).

Figure 11.1- Share of households in which every member slept under mosquito nets in the past 2 weeks by county (%)



Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

Among the four counties, the households of Baggari and Bazia showed an extremely poor performance regarding the use of the mosquito nets while sleeping. Only approximately 45% of the households in these two counties indicated that every member slept under a mosquito net. Wau and Bisellia had better access to mosquito nets in comparison to the other two counties.

Sickness

The described precarious WaSH situation in all the four counties in our study area is even more concerning given the health conditions faced by the affected populations. The access to water and sanitation facilities and the use of soap and mosquito nets were extremely low in Baggari, Bazia, and Bisellia than Wau county. As a result, more than 90% of households in Baggari and Bazia and 82% in Bisellia had at least one sick member during the two weeks prior to the survey period (table 11.10).



The Health Centre Ireneo Wien Dut Health in Wau.

Table 11.10 - Share of households declaring to have a sick member in the prior two weeks, by county

Has been sick	Baggari	Bazia	Bisellia	Wau	Total
Yes	92.49	92.04	82.71	77.42	82.86
- Yes children	35.26	38.5	29.49	36.07	34.96
- Yes children & adult	45.09	40.71	40	26.69	34.16
Yes adult	12.14	12.83	13.22	14.66	13.74
No	7.51	7.08	16.95	22.43	16.86
Do not know	0	0.88	0.34	0.15	0.29
Total	100.00	100.00	100.00	100.00	100.00

Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

In Wau, the percentage is slightly lower. In all the counties, the main victims of the poor health status were primarily the children, as they are highly susceptible to the poor WaSH system. In nearly 40% of households, along with children, adults were also reported to be sick during the reference period, especially in the Baggari, Bazia, and Bisellia county.

The disease profile of our study sample highlighted the tremendous gap in the WaSH facilities in the counties analyzed as malaria, acute diarrhea, and typhoid were the prevalent diseases among the children along with the flu and fever (table 11.11). These are the vector and water-borne diseases that mainly occurred due to the limited access to the WaSH services. Due to the improved WaSH services, the children of Wau were reported to have fewer cases of malaria and acute diarrhea than the other counties. The adults were also affected by types of diseases that were very similar to the ones contracted by the children except for lower cases with acute diarrhea (Table 11.12). This situation calls for a more effective humanitarian response for immediate life-saving WaSH activities and contingency planning for durable solutions to ensure better health for all.

Table 11.11 - Share of households by sickness children have and county

Disease	Baggari	Bazia	Bisellia	Wau	Total
Malaria	73.21	74.76	66.79	54.96	63.22
Acute Diarrhea	28.57	38.57	33.21	19.02	26.60
Cholera	2.38	3.81	0.73	1.63	1.89
Skin infection	10.71	14.76	8.39	2.60	6.95
Eye infection	15.48	10.48	4.74	2.93	6.24
Flu	40.48	29.05	22.63	8.13	19.02
Fever	43.45	36.67	33.58	23.74	30.62
Typhoid	29.17	26.67	28.83	16.91	22.73
Stomach pain	22.62	18.57	11.68	7.32	12.15
Skin disease	11.90	12.86	3.28	2.93	5.84
Others	8.33	10.95	16.42	4.72	8.76

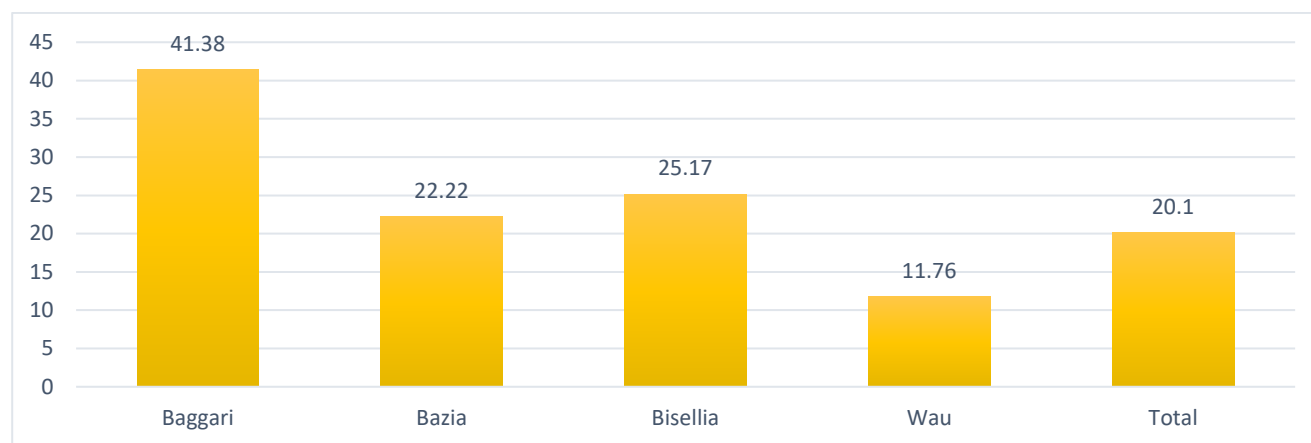
Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

Table 11.12 - Share of households by sickness adults have and county (%)

Disease	Baggari	Bazia	Bisellia	Wau	Total
Malaria	56.71	56.45	50.56	32.89	43.57
Acute Diarrhea	17.07	27.42	14.87	9.14	14.25
Cholera	4.27	4.84	0.74	1.00	1.97
Skin infection	10.98	11.29	4.09	1.50	4.83
Eye infection	14.02	12.90	5.20	2.99	6.47
Flu	26.22	18.82	14.87	3.16	11.22
Fever	32.93	24.19	21.56	9.63	17.61
Typhoid	40.24	34.41	28.25	20.93	27.19
Stomach pain	24.39	16.67	14.50	7.31	12.61
Skin disease	10.37	10.75	1.86	1.99	4.42
Others	4.88	9.68	15.61	4.98	8.03

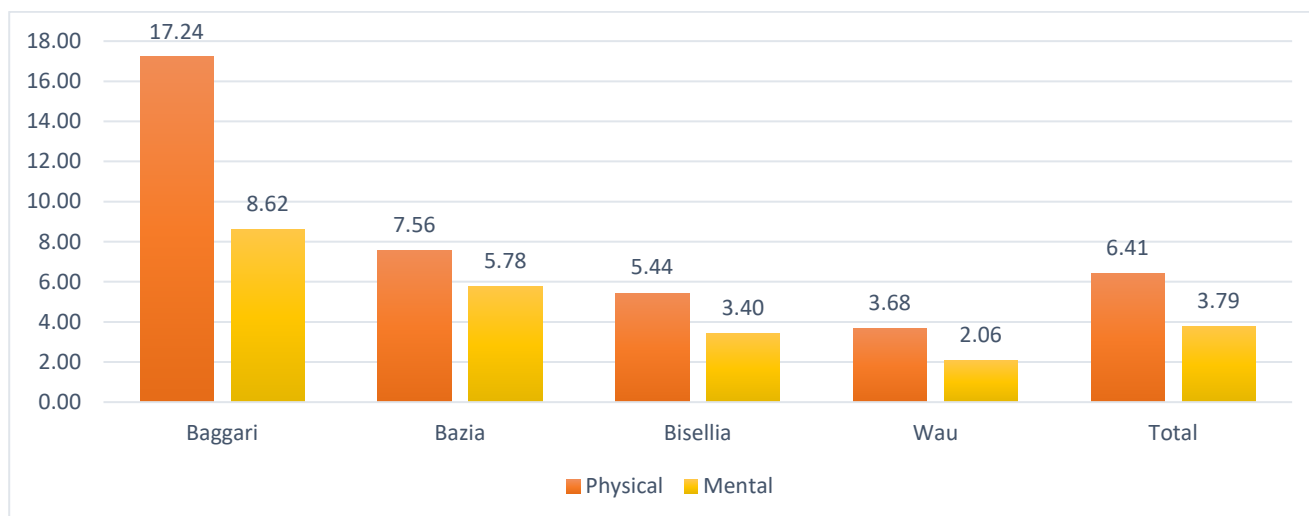
Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

The poor living conditions of people due to poverty and conflicts, as well as their limited access to essential utility services resulted in a high number of households with chronic diseases living in all the counties, especially in Baggari with 41.38% (figure 11.2). Baggari also had the highest number of households with physically and mentally disabled members (figure 11.3).

Figure 11.2 - Share of households with members with permanent/chronic disease/health problems by county (%)

Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

Figure 11.3 - Share of households with physically disabled or mentally disabled members



Source: Survey “Household Food Insecurity and Livelihood System in Western Bahr el Ghazal State (May – June 2019)”. Own elaboration.

In accordance with the situation of WaSH services, Wau presented an improved scenario securing a significantly lower number of households with chronic disease, as well as physical and mental disability than the other counties. The mental disability is a serious matter of concern in the conflict-prone countries like South Sudan where people are constantly facing displacement crises. However, the issue is sometimes overlooked due to the continuous struggle of the livelihood of its population.



Women and children after lunch.