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End line Evaluation, ADRA WASH and Food Security Assistance

Project ADRA SUDAN - OFDA - WFA: 720FDA19GR00228

Blue Nile State

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List of Acronyms and Abbreviations

ADRA	Adventist Development and Relief Agency
BNS	Blue Nile State
SWC	Sate Water Corporation
RWA	Rural Water Administration
HAC	Humanitarian Aid Commission
HH	Household
MOH	Ministry of Health
MoA	Ministry of Agriculture
SPLM-N- Sudan	People’s Movement –North
SBV	Sexual Base violence
WES	Water, Sanitation and Hygiene Project
WUC	Water User Committee
PM	Pump Mechanic
FFS	Farm Field School
SSF	Slow sand Filter
PPT	Participatory Performance Tracker
CBCPU	Community Based Child protection

1. Executive Summary:

WASH and Food Security Assistance” project is supporting the most vulnerable populations in Blue Nile State. WFA project aimed to target 30,000 vulnerable households. The project objectives are to increase the access to improved water sources, hygiene and sanitation practices to 19,800 people; and improve food production through increased access to agricultural input and resilient practices to 10,200 people. The program run for twelve months and its scope of activities spans two sectors: 1. Water, Sanitation and Hygiene; and 2. Agriculture and Food Security. The targeted areas are the 13 villages in the localities of Kurmuk, and Bau.

End line evaluation was conducted for the ended project. The evaluation used quantitative and qualitative data collection methods using the same tools that were used for the base line survey. Household direct interviews were conducted using a designed questionnaire for collecting the quantitative data, two FGDs and KII were applied to collect the qualitative data. Desk review was done for project documents including project proposal, log frame and different reports.

The assessed project is very relevant and supported the communities to access their main needs and required services, this included access to safe water, environmental sanitation and hygiene. Many of the community affirmed that; the project solved their critical problems that they are facing.

The project was implemented in a good level of efficiency; this is manifested by; ADRA procurement policies and guidelines, provision of services done through quotations that guaranteed fair prices and high quality.. Segregation of duties is properly maintained in financial procedures as per the ADRA financial system this is to be further confirmed after the overall project audit. However,, this had been slightly assessed through questions to the Project team. The designed project activities were implemented and supported achieving the targeted results.

Based on the findings from direct consultation of the project beneficiaries and other stakeholders; the project was implemented in adequate level of effectiveness; this include:

Food Consumption Score: From the consulted households, 34% of the HH have sufficient food for 0-1 month, 25.5% for 2-3 months, 27.5% for 3-6 months and 13% of them have food sufficiency 7 months and beyond. It is shown that the majority of the HH can sustain their food for more than 2 months.

Primary Source of Water: All the consulted communities reflect that they have access to safe water (47.3% from wells and 43.1 from protected Hafirs). Overall, the end line survey result indicated that 47.3% of interviewees primarily relay on protected water sources.

Access to Water Sources: Majority of the consulted people (61.1%) are spending less than 30 minute in fetching water including 5.7% spending less than 5 minutes.

Water treatment: Majority of the HH (94.7.3%) using Chlorine/other chemical reagents to treat drinking water whereas 7.1% practice boiling to treat water before drinking, 71.4% filter with clothes and (21.4%) with sun lights exposure, which indicate the messages of water treatment and hygiene well practiced among entire community in the two localities.

The hand pumps visited during the assessment, at the targeted areas 95%, were fully functioning with a high utilization rate and waiting times of less than 15 minutes; the recommended Sphere standard (500 meters) was overall respected

Sanitary Practices: 69.8 % of survey participants indicated that they use family toilets for defecation whereas 30.2% of them practice open defecation in bushes or open areas. Kurmuk locality has the highest latrines use (79.7%) compared to Bau locality where the latrines users are (31.4%). Awareness program and animation campaigns should be launched for improvement of sanitation practices.

Waste disposal practices: 63% of the surveyed households are handling and managing waste by throwing it away, 32.8% of the surveyed households are burning waste; nearly 2.3% bury waste, while 1.9% of the waste is collected by municipality. Result of the analysis reveals a wide variation between and among localities regarding mode of waste management.

Practice Of Hand Washing: from interviews indicate that most popular hand washing habits were 'Before meals' representing some 33.2% of the surveyed households, some 28.7% of the respondents do wash their hands after defecation, approximately 17.6% of the surveyed households prefer washing their hands before food preparation, around 10.4% of the surveyed households in particular women use to wash their hands before child feeding, and while nearly 10.3% of the surveyed households do hands washing after child cleaning. Hence, Concern's Hygiene Promotion intervention needs to place particular focus on increasing awareness of these moments of hand washing among the community.

Protection: Form interview findings, nearly 36.7% of the surveyed households could take child protection using self-power, around 31.8% obtain protection by consultation with local's traditional administration, some 28.8% resort to police authority and approximately 2.7% followed legal procedure of reporting to local authority.

COVID 19

From interview, indicates some 40.1% of the surveyed households have received training or attended awareness program on COVID-19 protection, and while 59.9% have not received any training or awareness program. This result reflects the lack of knowledge and the need of capacity building in the areas of COVID-19 among (59.9%) of the surveyed households. For protection Some 50.5% of the surveyed households confirmed necessity of wearing face mask, nearly 37.1% of the surveyed household could adhere to social distancing and 12.4% of the surveyed households do hands washing with soap and water. Result of the analysis indicates wearing face mask is greatly used by approximately half of the surveyed households.

2. Limitation and challenges:

- At the time of the survey, it was still rainy season. As a result, 50 % of 13 targeted areas in Kumuk and Bau localities were deemed inaccessible even for vehicles, thus making it difficult to meet beneficiaries. It was also the time when farmers are busy on their farm (seasonal farm preparation period), which occurs far from their village. The consultant experienced difficulties in travelling to different targeted areas due to the distance, bad road conditions, flooded areas and difficult terrain in the two targeted localities; it also meant that enumerators had to walk everywhere on foot rather than using vehicles.

Communication is one of the big constraints for coordination between the two localities. Interviews with stakeholders and key informants were conducted via mobile phone. This was difficult due to lack of power source for charging phones and limited cell coverage in the areas. This resulted in these activities taking more time to be completed.

3. Introduction and background

3.1 Justification for awarding grant

ADRA conducted an assessment in September 2018 and gathered information from a multi-sectoral assessment conducted in January 2019 by ADRA's local implementing partner, Mubadiroon . An analysis of these finds the **following needs:**

Water Supply & Sanitation: Access to clean and safe water remains a pressing need for both male and female respondents. Participants indicated that water and sanitation were high priority needs in both localities, particularly 35 water sources damaged as a result of conflict and conflict-related breakdown of technical and financial capacity to maintain the infrastructure, as well as specific challenges faced by women and girls related to WASH. These water sources had provided service to approximately 5,250 households, over 50 percent of which are IDPs. Respondents in highly populated areas, especially in the Bau locality in southern BNS, reported the need for an increase of water distribution points, as most sites and houses are scattered and not clustered around specific locations. In the nearby locality of Kurmuk in BNS, assessments highlight the need for rehabilitating a water haffir that **can benefit 4,500 people.**

Women and girls remain the primary collectors of water and sometimes must travel more than two kilometers each way for water collection. This is four times more than the 500 meters recommended by Sphere standards. The distances involved in water collection and the proximity of hostile tribes, military and rebels give rise to frequent incidents of SGBV. Around 75 percent of IDPs collect water from unprotected sources that are often contaminated, as most water sources are shared between animals and humans; 80 percent of the population does not treat their water at home; and 70 percent of the respondents in the target area practice open defecation. Women and girls have limited options to access latrines, either going to a distant neighbor or using open fields with no privacy. This increases the risk of SGBV associated with open defecation and urination, particularly during the night. The schools in the targeted villages have insufficient water supplies, no hand washing facilities and no latrines or poorly maintained latrines, contributing to the spread of fecal oral disease and to higher dropout and lower completion rates for girls

Food Security: Many areas in Blue Nile state are stressed in IPC Phase 3, where poor households and IDPs are typically highly dependent on markets to access food, and below-average purchasing power. Blue Nile state is highly dependent on agriculture. Nearly 64 percent of the households depend on agriculture as their main source of food and income. One third of all households obtain food (mainly cereals) from their own production, which is also an increase to those reported in 2017. This might also be attributed to the rising prices due to the inflation rates around the country, where the price for the average minimum expenditure basket doubled over the year. In Blue Nile, only 14 percent of households are able to afford the local food basket. This leaves many households, especially IDPs and those living in remote locations, highly vulnerable to seasonal food insecurity, as well as falling to negative coping mechanisms and practices.

Assessments conducted by ADRA on the food security situation in target communities show that although all communities had indicated that they had access to markets, however due to the price increases the majority of respondents expressed that they were unable to purchase the needed items. All

respondents also expressed that they have had to resort to negative coping mechanisms such as skipping meals, buying cheaper and expired food, and around 30 percent of respondents also reported harvesting immature crops and collecting wild berries from trees. A majority of the population in the targeted localities (especially IDPs and returnees) is pastoralist and agro-pastoralists and thus highly depend on agriculture as their main source of income, and at times even household food supplies.

Farming in Blue Nile is primarily rain-fed; however, assessment of 2018 rainy season farming found that five out of the eight communities reported unfavorable harvest due to long dry spells, plant pest, and low rains. These factors have resulted in growing food consumption gaps, particularly among IDP populations, as well as declines in dietary diversity scores for moderately and severely food insecure groups.

Protection – Gender Based Violence: GBV, harm, abuse and exploitation was identified as a concern throughout Sudan, but is greater in conflict areas such as Blue Nile. In Blue Nile, the protection situation is further hampered by a non-permissive operational environment where disaster-affected communities face extreme and exacerbated risks to protection. A critical overarching problem related to protection risks is the lack of a coordination and information gathering entity. This further amplifies the difficulties in data collection and the ability to access verifiable secondary information. However, as a many part of the Blue State, have become recently accessible to partners, information picked up by field workers or through various imbedded questionnaire has highlighted the growing need for protection activities in the area. Acts of GBV and human rights abuses in Blue Nile are also exacerbated by the conflict, include destruction of property and livelihoods, arbitrary killings, forcible disappearances, torture and cruel treatment. The economic crisis and rising inflation caused by the conflict, combined with the absence of socio-economic opportunities, have increased risks to abuse and exploitation and have prevented displaced people from rebuilding their lives. Risks to girls and boys for rape, violence, and physical and sexual exploitation are increased due to higher school drop-out rates and girls’ increased vulnerability when they work in the fields or engage in water and firewood collection.

3.2 Background about the project:

In 2019, the Adventist Development and Relief Agency (ADRA) and Office of US Foreign Disaster Assistance (OFDA) signed a cooperative agreement to finance ADRA Sudan WASH and Food Security Assistance Project. Since then, the program was implemented by ADRA Sudan in the following two localities of the Blue Nile State Kurmuk (Kurmuk town, Dindiro, Alkaili, Abaigo, Deglog, Karan Karan, Dokan, Gambarda, Bulung, Bangalulu); and Bau locality (Derang, Wad Abuk, Masfa, Maganza,).

WFA project aimed to target 30,000 vulnerable households. The project objectives are to increase the access to improved water sources, hygiene and sanitation practices to 19,800 people; and improve food production through increased access to agricultural input and resilient practices to 10,200 people.

The program will run for twelve months and its scope of activities spans two sectors: 1. Water, Sanitation and Hygiene; and 2. Agriculture and Food Security. The targeted areas are the 13 villages in the localities of Kurmuk, and Bau.

3.2.1 Program goals:

The Goal of the program is to improve access of vulnerable communities in Blue Nile State to basic WASH services, increasing their food security and self-reliance, and improving their ability to prevent and respond to gender-based violence for 30,000 people targeted; 15,000 IDPs

3.2.2 Program objectives

The program objectives are to:

- Increased access to improved water sources, hygiene and sanitation practices; and Improved food production through increased access to agricultural input and resilient practices

4. Objectives of end line evaluation

The main purposes of the end of project evaluation are the following:

- To assess the performance of the project including the extent to which the enhancement of the water system and hygiene improvement has contributed to improve hygiene status within households; increase access to safe drinking water for the vulnerable population; and improved food production through increase access to agricultural inputs and resilient practices.
- To identify and document lessons learnt good practices and innovative ways that contributed to the attainment of the project objectives.
- The evaluation results will provide an opportunity for the project management team to examine the project's performance more closely, learn community views on sustainability, and familiarize partners and key stakeholders with the evaluation outcomes and further action or correction needed. On the other hand, it is expected that the evaluation will provide lessons learnt, success stories, areas of improvements and recommendations for similar programs

Scope of the evaluation

The evaluation will focus on conducting comprehensive assessment of WASH and Food Security Assistance (WFA) project that have been implemented from September 1st, 2019 to August 31st, 2020.

5. Evaluation Methodology

The evaluation followed a mixed methods approach to collect and triangulate the data. Both qualitative and quantitative methods for collecting data were used. This included review of the existing project reports and other documents such as the project proposal including the targeted indicators, consultation of the different project stake holder including beneficiaries and service providers. In addition to the direct consultation of the targeted households through direct meetings and using of designed HH questionnaire.

5.1. Desk review

Comprehensive desk review was been conducted to inform the design of data collection tools and to enhance the understanding of the situation in the targeted localities, that includes review of project

documents, narrative / financial reports, monitoring and evaluation reports and project database and review reports from different INGOs, NGOs and government relevant institutions

5.2. Focus Group Discussions (FGD):

Focus group discussions were conducted to allow for nuanced and open-ended responses to difficult questions, that elicited more information on attitudes, perceptions, and experiences that otherwise cannot be obtained by a structured survey. Two group discussions were conducted (one in each of the targeted localities), with groups of maximum of 8-12 participants, which represented the different project stakeholders including representatives of the project beneficiaries, Water committees, Farmers School farm committee for insight interactions on the project's progress.

5.3. Key Informant Interviews (KII)

Qualitative methods were employed in the end line survey for the survey key informant interviews (KIIs) and on the spot observation. The consultant carried out a total of five KIIs with key informants (5 ADRA project staff, 1 WES, 1 SWC, 2 Ministry of agriculture and 1 HAC) in Damazine town. The result of these interviews contributed to the details of the communities' profile on matters concerning WASH and food security.

5.4. Household Interviews HHs

The consultant conducted (262) structured household (HH) interviews with sampled beneficiary populations. Households were taken as a family eating from the same pot. In Bau a total of 51 households were targeted, of which 51 households were interviewed, where in Kurmuk 211 households were targeted, of which 51 households were interviewed (HHs header). The target group was selected based on random sampling and 40% were host community and 60% IDPs) A representative sample of targeted areas/beneficiaries selected and defined and the design of the questionnaire guided by the objectives of this assignment as outlined in the TOR agreed with ADRA.

The questionnaire tested on a small number of beneficiaries before implementation to a wider scale. Moreover, as per the sample size the questionnaire will be analyzed through Statistical Package for the Social Sciences (SPSS). The main questionnaires designed for household beneficiaries for the males and females headed households who are benefitting from the project activities.

Using a HH sampling method, these households were drawn from two localities covered six villages which have been selected by ADRA Damazine office, due to accessibility during the rainy season only 50% are accessible.

Depending on the secondary data and the size of the population in the targeted areas; the sample size was calculated at 95% as a confidence level and a margin of error (4.5%). Sample size was calculated scientifically using one of the methodologies available. This study used Glenn.I., 2002 method to determine the sample size. The sample size in each locality were distributed among villages locations proportionally according to the population size (HHs).

Sample size (n) = Total Population (N) / (1 + N * r²) r is a margin of error (degree of accuracy), the value of r lies between 1% up 10%. So the lowest is the best.

N = Total Population (4,572)

r = Margin of errors (0.06)

Table 1: Targeted villages and sample size

Locality	location	Population	HH	locality proportion	% Proportion	Sample size
Bau	Derange	4,213	714	19%	15.6	41
	Maganza	1,000	169		3.7	10
	Sub Total	5,213	883		0	0
Kurmuk	Dindiro	8,565	1,452	81%	31.8	83
	Gambarda	4,000	678		14.8	39
	Bulung	8,000	1,356		29.7	78
	Abaigo	1,200	203		4.4	12
	Subtotal	21,765	3,689		0	0
Grand Total		26,978	4,572		100	262

5.5. Field Observations

During the data collection, the program team took note of its observations. Major areas of focus for the observation include existing water sources and new water schemes: management, operation and maintenance; water quality, quantity; availability, type, location, articulate tools kit, farm, seeds, tools; availability of management committee for water schemes and livelihoods etc.

5.6. Survey team

The evaluation team leader was conducted by engineer consultant as team leader, able to discuss technical and financial issues in relation to ADRA Sudan polices, strategy and regulation together. He is responsible for all survey process and report writing.

The team leader was assisted by statistician specialists with good experience in conducting such surveys; he supported the team leader in facilitating numerator training. Six enumerator a (three male and three females) were recruited locally to conduct the survey questionnaire in targeted areas.

It is important to ensure that the quality of data is considered and maintained from the time of the survey design, the consultant and his assistant conducted a comprehensive training for the enumerators on how to conduct interviews, the same modality given for data entry and analysis.

5.7. Data Entry, Quality Assurance and Analysis

Quantitative data collected on paper were reviewed to check for consistencies and completeness, before coding and entering into SPSS ready for analysis. Qualitative data were asked in local language and translated to English on the questionnaire. These were then typed and uploaded into NVIVO software. Data analysis was a rigorous process that explored descriptive statistics, specifically the frequencies, mean, sum, standard deviation and variance. Qualitative variables were coded and organized into themes and the emerging trends and patterns identified using NVIVO software, guided by the objectives and the criteria. All the findings and discussion are presented below using ratios, graphs, figures and pie charts.

6. Findings, Discussion and Analysis

6.1. Gender and Heads of households age groups:

Table (2) below shows that of the total respondent heads of households interviewed, 81.7% were males and 18.3% were female. The majority of those who headed the households are of the age groups (18-49 years), representing 64.5% of the total sample. The composition of the sample shows 35.5% are of the age group (≥ 50 years) and 0% at the age groups (14-17 years). The analysis has shown a predominance of woman headed households (18.3%) in the sample which could indicate the absence of 'male households' heads who most probably immigrated to main towns seeking employment or joined rebels' groups leaving family responsibilities to women.

Ages		Locality of the study		Total	Respondent sex by locality (2)			
		Kurmuk	Bau		Locality	Head of HHs sex		Total
						Male	Female	
5-14 year		0	0	0	Kurmuk	176	35	211
15-17 year		0	0	0		83.4%	16.6%	100%
Age group	18-49 year	129	40	169	Bau	38	13	51
		61.1%	78.4%	64.5%		74.5%	25.5%	100.0%
	≥ 50 year	82	11	93	Total	214	48	262
		38.9%	21.6%	35.5%		81.7%	18.3%	100%
Total		211	51	262				
		100.0%	100%	100%				

Table 2: Age and sex of the respondents:

6.2. Education level of HH head:

(Fig. 1) Displays heads of household's educational level. Nearly 26.7% attended basic education, 7.3% have intermediate education, 2.7% completed secondary education, and only 0.4% had university and post graduate education. Illiteracy is prevalent among the community and accounted to 62.6%. The analysis revealed a significant variation between the two localities in illiteracy level which is higher in Bau.

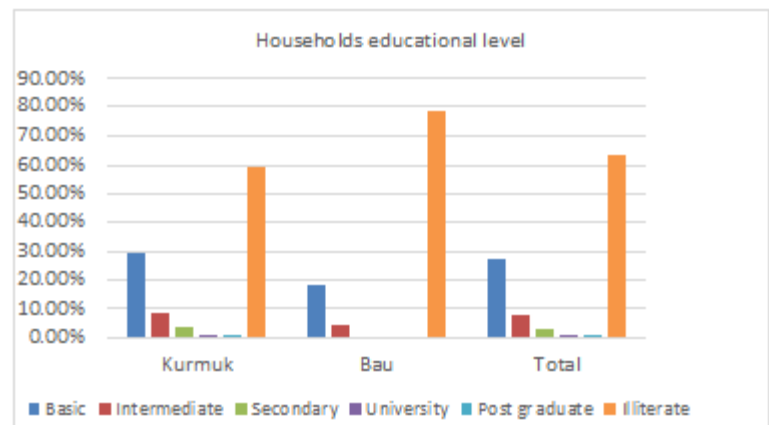


Figure 1: Education level of HH heads

6.3. Household composition

Table (3) illustrate the age groups of the family members excluding the household heads. Infants' children at age one year or less represent 4.1%. Those under school age (2-5 years) represent 15.9% of the sample size. Those at age (6-14) represent 30.2% of the sample. Those in age group (15-17 years) represent 9.2%. Those in the workforce age group represent 37.4% and age groups >64 years.

Females constitute 54.7% of the family size in the two localities; while male constitute (45.3%). The average family sizes in the two localities range from 6 in Kurmuk locality and 6.6 in Bau locality with an average of 6.1 for the sample size.

The adult women group in the workforce age 18-65 years is the group with the highest percent among females (21.9%). In this regard analysis reveals women are major contributors to family livelihoods, they assist men in farming. During the dry season when the young men of the family migrate for wage employment and self-employment in urban centers and irrigated farming schemes, they look after the family and household herd.

Table 3: Household composition

Ages		Locality of the study area		Total
		Kurmuk	Bau	
HHs members age groups	0-1 year	47	7	54
		4.5%	2.4%	4.1%
	2-5 year	164	47	211
		15.8%	16.3%	15.9%
	6-14 year	304	97	401
		29.3%	33.6%	30.2%
	15-17 year	85	37	122
		8.2%	12.8%	9.2%
	18-45 year	400	96	496
		38.5%	33.2%	37.4%
	46-64 year	31	3	34
		3.0%	1.0%	2.6%
	> 64 year	7	2	9
		0.7%	0.7%	0.7%
Total		1038	289	1327
		100%	100%	100%

6.4. Relevance:

The project is adequately relevant and met the relevance criteria; and that the project contributes to the achievement of the project objectives and goals, by the end of the project life span, these are manifested by the following findings:

- As per the consultation of the targeted communities, they all reflect that the project touched their real needs because they are living in difficult situations. The communities reflect that, the available resources of water became insufficient after sharing with the influx of more communities who shared the same water sources in addition to lack of hygiene knowledge and poor practice of hygiene and sanitation led to spread of many diseases, and the project had solved many of these problems but they think addition work is still needed
- Significant increase in community accessing sufficient and improved quality water Most of the community members consulted reflect that the project meets their needs and provide them with good quality and sufficient water.
- Safe and proper disposing and handling of the wastes will contribute to reducing incidence and the spread of diseases, this is one of the key message for the proper hygiene.

6.5. Efficiency:

The project was implemented in good level of efficiency; this is manifested by the following findings:

- ADRA, as project budget holder, has a proper electronic financial system which provides adequate financial management and comprehensive reporting facilities.
- The project maintained the originally approved Program vs. Operations budget ratio.
- All ADRA procurements procedures were, strictly, adhered to resulting in fair prices and quality obtained through quotation process. Segregation of duties is properly maintained in financial procedures.
- The project run with a minimum required number of qualified staff who shows high competency and efficiency. There were 5 project staff aside from 2 staff from the local partner.

6.6. Effectiveness:

WASH agriculture and food security activities were implemented as per the design of the project. As per the community consultation and the findings; the project was implemented in adequate level of effectiveness regarding its designed results as below:

Objective: Increased access to improved water sources, hygiene and sanitation practices.

Sector1: Water Supply and Sanitation

Sub-sector 1: Water Supply

- Majority of the consulted households revealed that they have access to safe water, 47.3% of them get their water from wells and 43,1% get it from protected Hafirs as the main sources of water, 3.8% & 3.4% confirmed their water sources are Khor and Tanker respectively and 2.3% of the surveyed households rely on water from donkey carts. Communities are facing difficulties in getting water during summer, particularly those who are depending on Hafirs, because it is dry.

Table 4: Water sources

Locality	Sources of water										Total	
	Tanker		Cart		Hafir		Well		Khor			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Kurmuk	9	4.30%	1	0.50%	95	45.00%	96	45.50%	10	4.70%	211	100%
Bau	0	0.00%	5	9.80%	18	35.30%	28	54.90%	0	0.00%	51	100%

- Table (4) shows wells provide water supply for 47.3% of the surveyed households, some 43.1% of the surveyed households reported Haffir is their main water source, around (3.8% & 3.4) confirmed their water supply are Khor and Tanker respectively, while 2.3% of the surveyed households rely on water from donkey carts. Analysis of the result reflects lacks water in dry seasons since Haffir are dry up after rainy season directly
- Fig.(2) below illustrates water fetching time of the surveyed households across the two localities. Nearly 54.4% of the surveyed households collect between 5-30 minutes. Around 24.8% fetch water in 31-60 minutes and 13% of the surveyed households take 121-300 minutes, while 5.7% of the surveyed households take 0-5 minutes from source to home. The analysis did not show any variation in time for water fetching between the two localities.

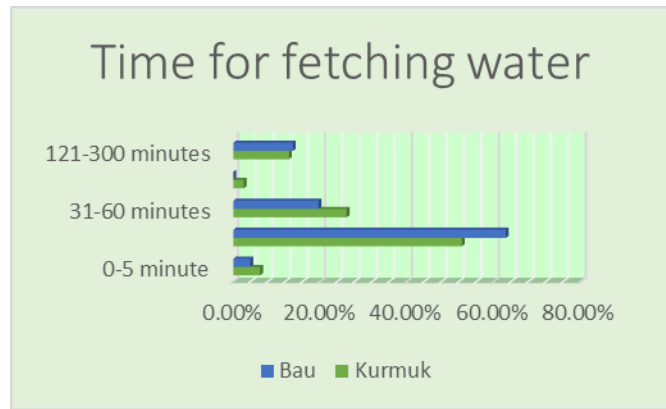


Figure 2: Time for fetching water

Fig. (3) displays that 16.4% of the surveyed households collect water once in a day, 27.9% households do so twice in day, 29% households do three times in a day and 26.7% households do water collection > three times in a day.

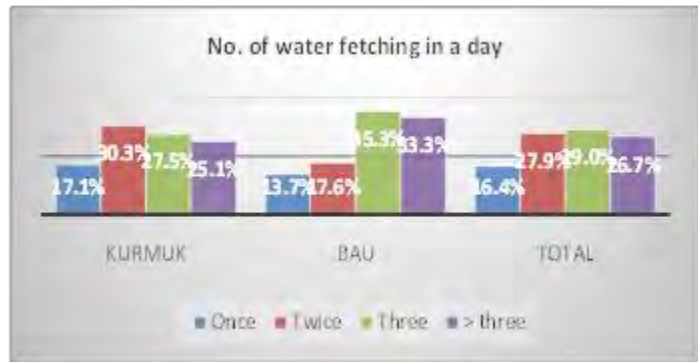


Figure 3: No. water fetched

- 30.5% of the surveyed heads of households are responsible for water collection, and while 69.5% do not do. Result shows around 69.5% of the family members either boys or girls are responsible for water collection.

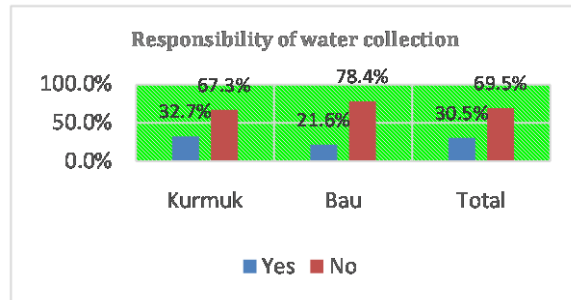


Figure 3: Responsibility of fetching water

As shown in figure (5); 52.% of the elderly female (18-50) year are responsible for fetching water for the whole surveyed households. Adult females (5-17) year use for fetching water is coming second in ranking which reported (27%) of the whole surveyed households. On the other hands, adult males (5-17) and elderly males (18-50) year constitute 11% and 7% as water collectors of the surveyed households respectively, and while under 5 years males and females are only reported .3% and .7% respectively. The analysis revealed that females are greatly contributing in responsibility of water fetching rather than males.

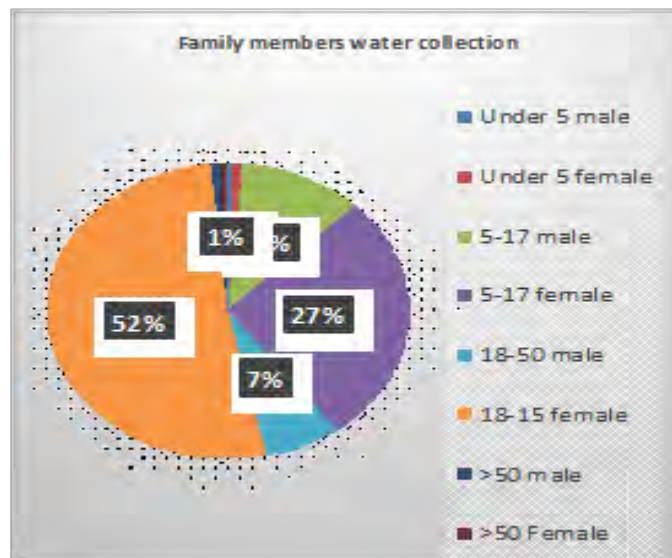


Figure 5: Family members collecting water

56.9% of the households revealed that they do not stand in a queue the water source, while the remaining households have different queuing time, 61.1% of them wait for collecting water between 15-30 minutes, around 23% of them household could wait in a queue between 31-60 minutes. Nearly 15% could stand for > 60 minutes, and while a minority (.9%) could wait for < 15 minutes. The analysis has shown slight variations between the two localities in queuing time duration.

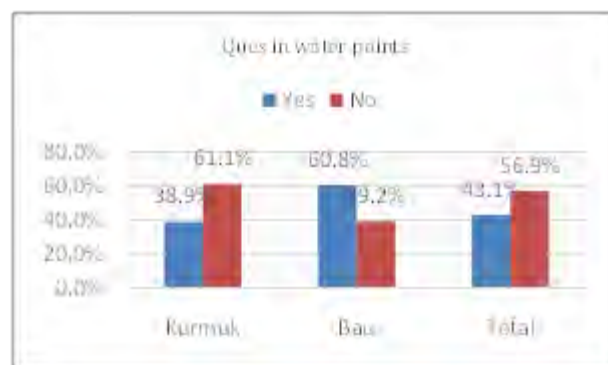


Figure 6: time for queuing in water point

Sub-sector 2: Hygiene Promotion

The project succeeded to improve the community hygiene which was reflected in their practicing hand washing with water and soap, in addition to good practice in keeping drinking water clean and safe.

As shown in Fig. (7) 92.7% of the surveyed households keep water container storage clean.

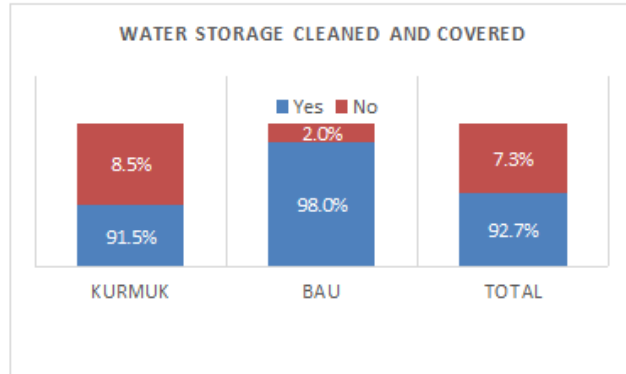


Figure 7: HH keeping water containers clean

Fig. (9) illustrate that some 71.8% of the surveyed household have heard of water chlorination for the water treatment, and while 28.2% did not. The analysis revealed observable variations among two localities in water chlorination knowledge. In this regard it seems that the community of Kurmukis well acquainted with and widely knowledgeable of chlorination.

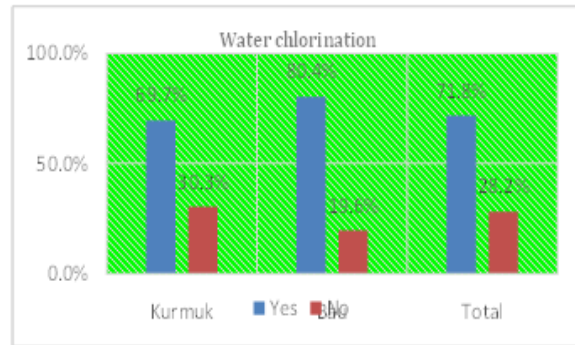


Figure 8: water chlorination

It shows around 46.8% of the surveyed households have experiences in water chlorination for the water treatment for safe drinking. Around 53.2% lack such experience.

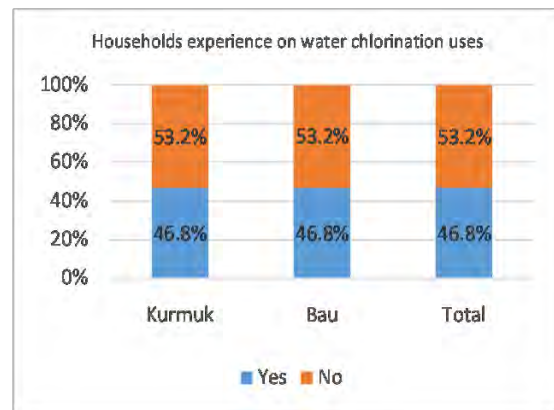


Figure 9: HH experience on Water chlorination

As in figure (10); 70 % of the total surveyed households have latrines at home and as an average from the two localities, Kurmuk locality has the highest latrines use (79.7%) compared to Bau locality where the latrines users are (31.4%).

Among the surveyed households that have latrines; most of them are traditional latrines comprising 98.9%, and while public latrines are used by 1.1%.

68.4% of the households who have no latrine, they confirmed that they defecate in open areas, and while 31.6% defecate in bushes.

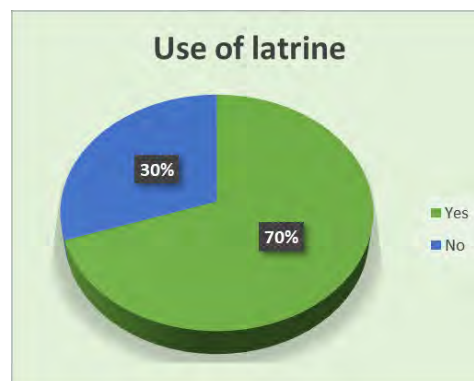


Figure 10: Use of latrines

Table 4: Waste management

Types of waste management	Collected by municipality			
		Count	Percentage	Total
Collected by municipality	Collected by municipality	5	0.0%	5
		2.4%	0.0%	1.9%
Throw away	Throw away	128	37	165
		60.7%	72.5%	63.0%
Bury	Bury	6	0	6
		2.8%	0.0%	2.3%
Burning	Burning	72	14	86
		34.1%	27.5%	32.8%
Total	Total	211	51	262
		100.0%	100.0%	100.0%

Table. (5) Shows 63% of the surveyed households are handling and managing waste by throwing it away, 32.8% of the surveyed households are burning waste, nearly 2.3% bury waste, while 1.9% of the waste is collected by municipality. Result of the analysis reveals a wide variation between and among localities regarding mode of waste management.

From the consulted households, 96.6% confirmed washing their hands before eating. 18.7% confirmed that they have allocated place for hands washing inside home

Total of 55.7% of the surveyed households wash their hands with water only, 42% use soap with water and 2.3% wash their hands with ash and water. However, it is remarkably seen that approximately 2.3% of the households are still using traditional methods of cleaning their hands with ash, which is neither healthy nor hygienic.

Table 5: time for hand washing

Table (6) displays the surveyed households most popular hand washing habits were ‘Before meals’ representing some 33.2% of the surveyed households, some 28.7% of the respondents do wash their hands after defecation, approximately 17.6% of the surveyed households prefer washing their hands before food preparation, around 10.4% of the surveyed households in particular women use to wash their hands before child feeding, and while nearly 10.3% of the surveyed households do hands washing after child cleaning. However, the proportion of respondents who recalled that ‘Before feeding a child or breastfeeding a baby’ and ‘When hands are dirty are critical moments of hand washing was substantially lower, comprising 10.4% and 28.7%for the whole sample. Hence, Concern’s Hygiene Promotion intervention needs to place particular focus on increasing awareness of these moments of hand washing among the community, in addition there is need for increasing awareness of the other times of hands washing).

Description		Localities		Total
		Kurmuk	Bau	
Time for hands washing	After defecation	175	38	213
		28.8%	27.9%	28.7%
	After child cleaning	64	11	75
		10.5%	8.1%	10.1%
	Before food preparation	108	23	131
		17.8%	16.9%	17.6%
	Before meals	199	48	247
		32.8%	35.3%	33.2%
	Before child feeding	61	16	77
		10.0%	11.8%	10.4%
	Total	607	136	743
		100.0%	100.0%	100.0%

The surveyed household's water consumption per day is including drinking, washing and cooking. The average water consumed per day by the surveyed households are; water for drinking estimated at 3.8 jerry cans, water for washing is 4.1 jerkins (equal to 20 liters), water for cooking is 1.6 jerkin. In conclusion, the whole average daily water consumption per capita for all house activities is around 9.5 jerkin as average household with approximately 6 members.

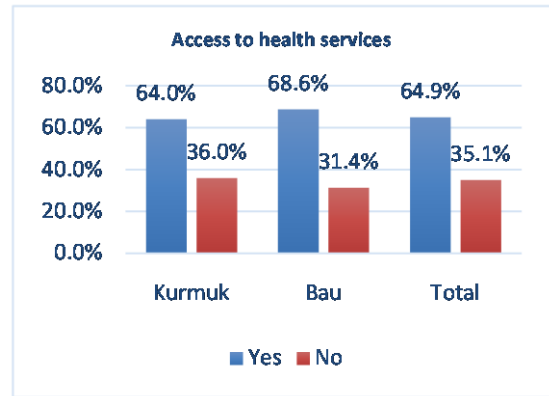


Figure 11: Access to health services

Fig. (11) Shows nearly 64.9% of the surveyed households could easily have access to health, while 35.1% of the households complain of lack of health services. The analysis has not indicated any variations between two localities regarding infection rate.

As shown in table (7) illustrates treatment sources for those without easy access to medical care, in this regard some 53.3% of them go to another health facility seeking treatment, around 32.2% restore to traditional healers or rely on herbs treatment, while 14% they do not know what to do. The analysis result has shown observable variation between and among both localities in treatment source. Although, it has been observed that some 32.2% of the surveyed households are preferring traditional treatment instead of medical cure because they are living in scattered villages far away from towns.

Table 6: Source of treatment

Description		Locality of the study		Total
		Kurmuk	Bau	
Treatment	Traditional medicine	30	0	30
		38.5%	0.0%	32.3%
	Go to another health facility	39	11	50
		50.0%	73.3%	53.8%
	Don't Know	9	4	13
		11.5%	26.7%	14.0%
Total		78	15	93
		100.0%	100.0%	100.0%

Fig. (12) Shows that; around 6.9% of the surveyed households stated some of their family members felt ill of chronic diseases, and while 93.1% of the households did not complain of any illness. The analysis has not indicated any variations between two localities regarding chronic diseases infection rate.

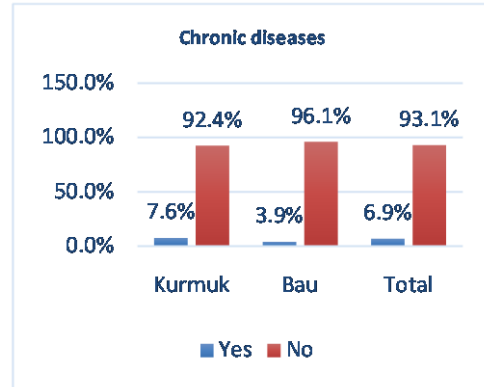


Figure 12: Chronic diseases

Fig. (13) Reveals a total of 97.3% households confirmed that their children are vaccinated regularly, and while 2.7% do not do any vaccination. The analysis indicates no remarkable variations between two localities.

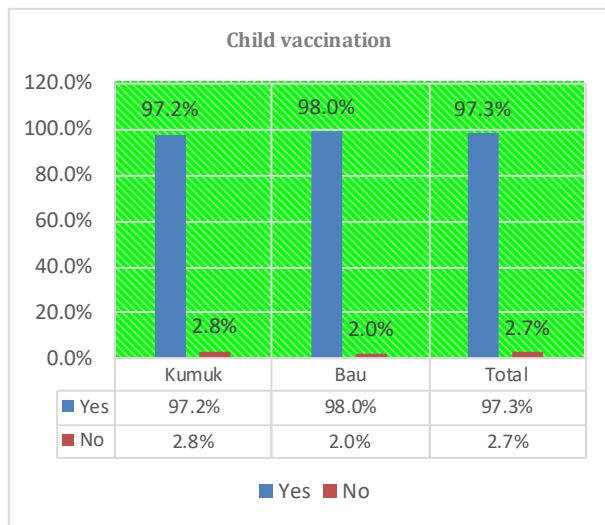


Figure 13: Child Vaccination

Fig. (14) Shows some 35.5% of the surveyed households confirmed their knowledge of COVID-19 infection transmission, and while 64.4% of the surveyed households do not know.

33.2% of the surveyed households have considerable knowledge and awareness of precautions that should be taken towards avoidance COVID-19 infection transmission, while 66.8% do not know.

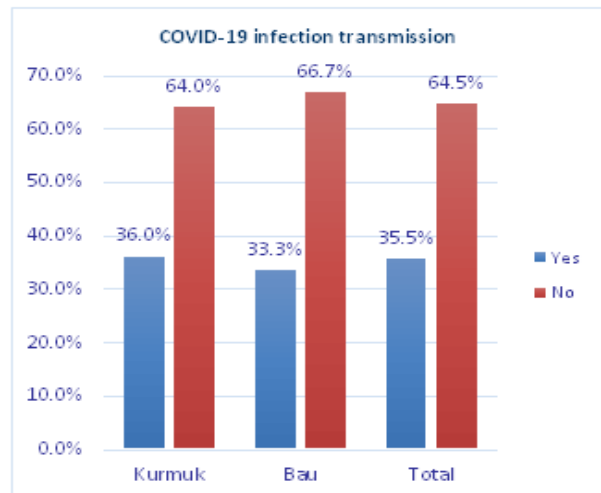


Figure 14: COVID-19 infection transmission

Table (8) describes methods and precautions that are carried on by the surveyed households in order to avoid COVID-19 infection transmission. Some 50.5% of the surveyed households confirmed necessity of wearing face mask, nearly 37.1% of the surveyed household could adhere to social distancing and 12.4% of the surveyed households do hands washing with soap and water. Result of the analysis indicates wearing face mask is greatly used by approximately half of the surveyed households.

Table 7: Households methods of protection during the pandemic

methods of protection	Face mask	30	19	49
		38.5%	100.0%	50.5%
	Social distancing	36	0	36
		46.2%	0.0%	37.1%
	Washing hands with soap and water	12	0	12
		15.4%	0.0%	12.4%
Total	78	19	97	
	100.0%	100.0%	100.0%	

Table (9) shows that; 65.1% of the surveyed households could easily receive information on COVID-19 through health authority campaigns and awareness programs, around 26.7% of the surveyed household do get messages through mass media which are broadcasting on daily basis, while nearly 17.1% get messages of awareness in mosques and/or churches.

Table 8; Sources of information about COVID-19

Description		Locality of the study		Total
		Kurmuk	Bau	
Source provider	Health authority	118	25	143
		57.0%	52.1%	56.1%
	Mass media	54	14	68
		26.1%	29.2%	26.7%
	Mosque/church	35	9	44
		16.9%	18.8%	17.3%
Total		207	48	255
		100.0%	100.0%	100.0%

Fig.(15) indicates some 40.1% of the surveyed households have received training and attended awareness program on COVID-19 protection, and while 59.9% have not received any training or program. This result reflects the lack of knowledge and the need capacity building in the areas on COVID-19 protection among (59.9%) of the surveyed households.

Objective: Improved food production through increased access to agricultural input and resilient practices

Sector 2: Agriculture and Food Security

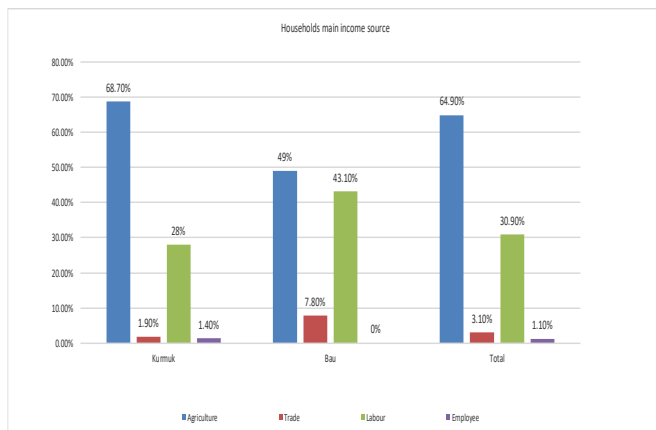


Figure 16: HH source of income

Fig. (16) Shows that agriculture constitutes the main income source for 64.9% of households, and while labor activities are second in ranking reported by 30.9%. This followed by petty trade and peddlers (3.1% & 1.1%) respectively. The analysis revealed there is observable differences in job types in the two localities as agriculture and manual labor activities reported by (68.7% & 28%) in Kurmuk and (49% & 43.1%) in Bau respectively.

Fig. (17) Shows that; around 77.5% of the surveyed households stated their income is satisfactory and meets family basic needs, while 22.5% of the households complained of the lack of income. The analysis has not indicated any observable variations between the two localities.

Table. (10) Illustrates 76.1% of the surveyed households confirmed bridging gap of income with temporarily work in firewood, charcoal making and marginal work in towns. An average of 9.4% are receiving relief from organizations and UN agencies, while Zakat pays 4.9% support to poorer families. Around 5.1% & 2.9% of the surveyed household generate income from animal rearing and subsidy respectively, and 3.6% had support from relatives.

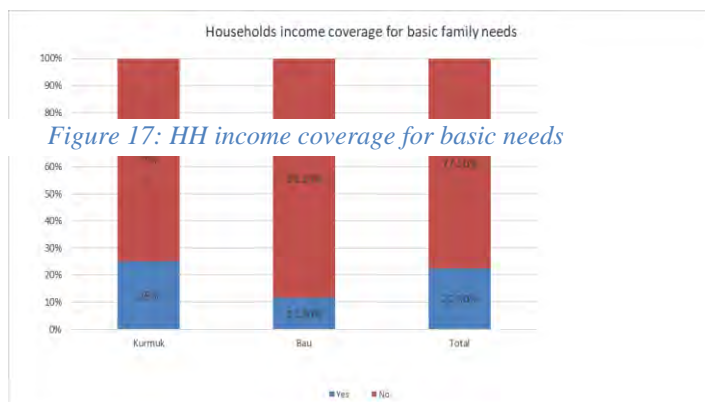


Figure 17: HH income coverage for basic needs

Table 9: Sources of household’s income for filling gap

Description	Localities		Total
	Kurmuk	Bau	
Relief	11	2	13
	9.6%	8.3%	9.4%
Subsidy	4	0	4
	3.5%	0.0%	2.9%
Zakat	4	0	4
	3.5%	0.0%	2.9%
Relatives support	4	1	5
	3.5%	4.2%	3.6%
Labour	89	16	105
	78.1%	66.7%	76.1%
Animal rearing	2	5	7
	1.8%	20.8%	5.1%
Total	114	24	138
	100%	100%	100%

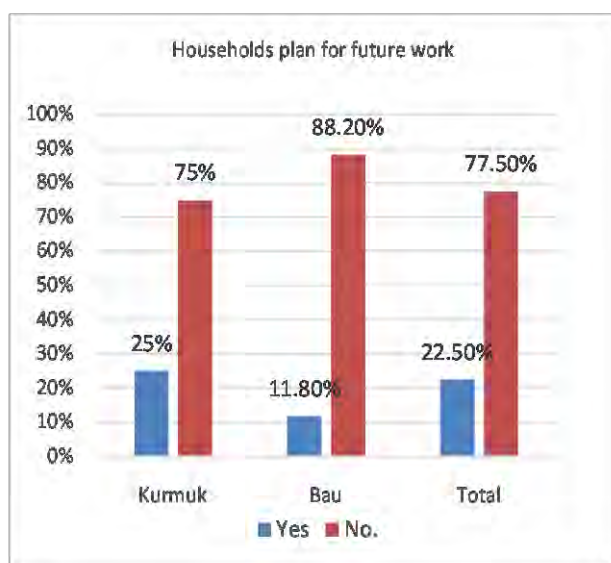


Figure 18: Household plan for future work

Fig. (18) Show that 77.5% of the surveyed households confirmed thinking of seeking future work, and while 22.5% of households didnot. The analysis revealed that there is slight variation between the two localities in work seekers which is to an extent is observable in Kurmuk (25%).

Some 57.4% of the surveyed households work seekers hope to get animal rearing work, 14.9% of the surveyed households prefer petty trade, 6.4% are seeking vehicles driving work, an average of 21.3% have ambitions to become small farmers. Agriculture is comes first for work seekers particularly in Bau locality where all (100%) of the surveyed households are interested in agriculture for generating income. More effort

should be devoted to improving agriculture infrastructure and to supporting inhabitants through agricultural inputs and linking them with financial institutions in order to increase production and productivity.

Sub-sector 1: Improving Agricultural Production / Food Security

Table (11) below shows some 67% of the surveyed households could buy food from market, 26.9% could obtain food from their farm product, and while 1.9% & 1.3% receive food support from relatives and labor for food respectively. The analysis has not shown any variations between the two localities in food sources.

Description		Locality of the study		Total	
		Kurmuk	Bau		
Source of food	Market	168	41	209	
		65.9%	71.9%	67.0%	
	Farm product	69	15	84	
		27.1%	26.3%	26.9%	
	Relatives support	5	1	6	
		2.0%	1.8%	1.9%	
	Labor for work	4	0	4	
		1.6%	0.0%	1.3%	
	Relief	9	0	9	
		3.5%	0.0%	2.9%	
	Total		255	57	312
			100%	100%	100%

Table 10: source of food

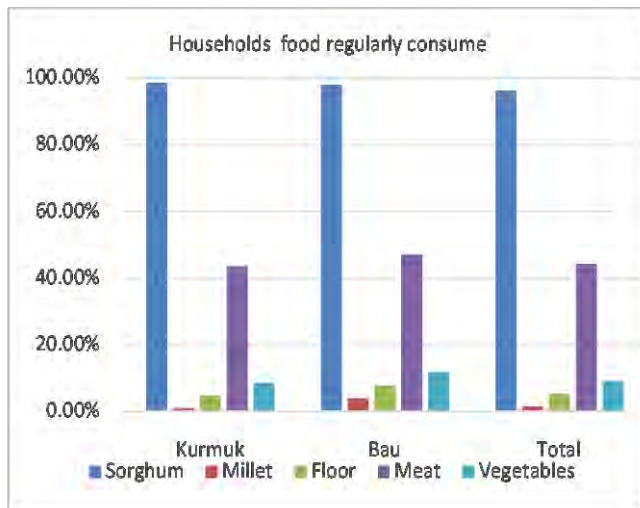


Figure 19: HH food regular consume

Fig. (19) Illustrates some 96.2% of the surveyed households confirmed that Sorghum is a main food regularly consumed by family. Meat is second in ranking as family food ingredient which is consumed by 44.2%, and while Millet is consumed by 1.5% of the survey households. This followed by consumption of vegetables and flour which are 9.2% & 5.3% respectively. The analysis did not show an observable variation between the two localities in food ingredients, or mode of family meals. In this regard the surveyed households indicate Sorghum is a main staple food for communities of both localities.

Total of 72.9% of the surveyed households confirmed that they are taking meals twice a day. Averages of 20.6% are taking meals three times. Around 5.7% take meals once a day and less than 1% of the

surveyed households have not eaten for a whole day. Around 1% takes meals more than three times. The analysis revealed a wide variation between the two localities in type of food and number of meals being taken (3 meals average) which reported to be 29.4% in Bau and 18.9% in Bau & Kurmuk respectively. In this regard the locality of Bau is the highest in meals taking number.

Table (12) shows that around 34% of the surveyed households stated last season harvest covered their food needs for 0-1 month, 27.5% confirmed that product satisfied their food needs for 4-6 months. So 25.2% said product was enough for 2-3 months, and while nearly 12.6% stated the product met their needs for 10-12 months.

Table 11: Food coverage during the season

Description		Locality of the study		Total	
		Kurmuk	Bau		
No. of months	0-1 month	64	25	89	
		30.3%	49.0%	34.0%	
	2-3 month	58	8	66	
		27.5%	15.7%	25.2%	
	4-6 month	60	12	72	
		28.4%	23.5%	27.5%	
	7-9 month	1	0	1	
		0.5%	0.0%	0.4%	
	10-12 month	28	5	33	
		13.3%	9.8%	12.6%	
	more than 12 months	0	1	1	
		0.0%	2.0%	0.4%	
	Total		211	51	262
			100%	100%	100%

The average months' gaps in food for the surveyed household before new crops harvesting varied from 7.4 months in Kurmuk and 8 months in Bau. The average months of food gap for the surveyed household are 7.5%.

Fig. (20) Describes methods and techniques adopted by the surveyed households for crops protection in which some 3.8% & 2.7% of the interviewees applied protection techniques of plants remedies and pesticides, respectively. However, the majority of the surveyed households did not use any technique of crops protection. The result of analysis would lead to lack of improved farming practices over the surveyed households, in this regard partners and farmers association (FFS) , should have to be thinking of extension organizing program for raising knowledge on crops protection methods. However the farmers are well trained in the methods and technique of crop protection, but still some process of pesticide application and other means of crops protection is too early in stage to be used (in August)

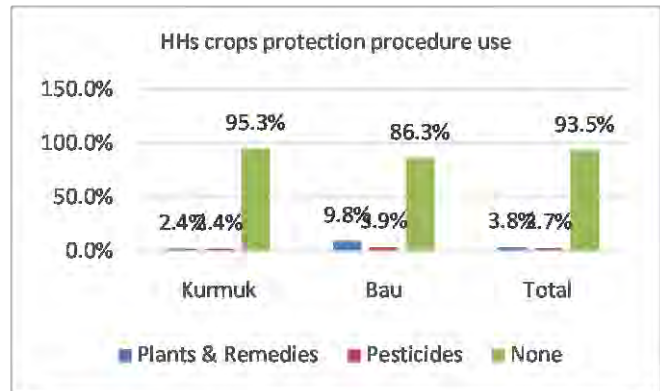


Figure 20: Crop protection procedures

Table (13) below shows nearly 58.5% of the surveyed households could annually cultivate 1-2 hectare. Around 8.4% of the surveyed households do farming in 2-3 hectare, some could practice farming in 4-5 hectare and a minority of the surveyed households (0.4%) could cultivate > 5 hectare annually. On the other hand, results of the analysis shows approximately 30.5% of the surveyed households have no access to lands for farming. Moreover, the analysis reveals a wide variation between the two localities in farms land ownership which is better in Kurmuk locality rather than Bau locality.

Table 12: HHs area cultivate annually in hectare

Description		Locality of the study		Total
		Kurmuk	Bau	
cultivated area in hectare	None	54	26	80
		25.6%	51.0%	30.5%
	1-2 hectare	130	23	153
		61.6%	45.1%	58.4%
	2-3 hectare	21	1	22
		10.0%	2.0%	8.4%
4-5 hectare	5	1	6	
	2.4%	2.0%	2.3%	
more than 5 hectare	1	0	1	
	0.5%	0.0%	0.4%	
Total		211	51	262
		100%	100%	100%

Fig. (21) Displays nearly 68.3% of the surveyed households could have access to farmland through either ownership or rental or lease while 31.7% have no access to land. The analysis has shown accessibility to farming in Bau (52.9%) is twice Kurmuk (26.5%)

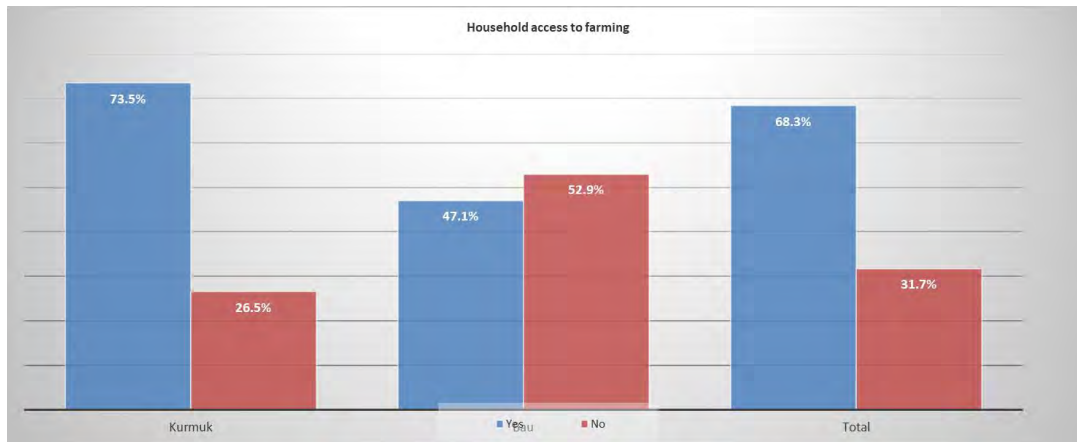


Figure 21: HH access to farming

Fig. (22) Displays some 63.7% of the surveyed households practice improved farming through weeding adoption, 2.3% give high consideration to integrated pest management as essential technique for crops protection. Also approximately 2.3% of the surveyed households apply crops cover method. Small segments of the surveyed households (0.4%) use a minimum soil disturbance technique in farming. On average 29.8% of the surveyed households do not perform any improved farming techniques. The analysis observed weeding as element of improved farming techniques is dominant in Kurmuk locality

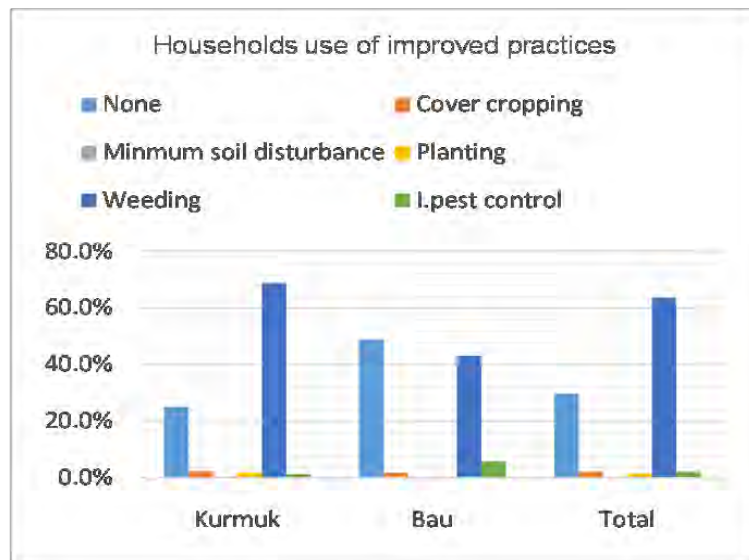


Figure 22: HH use of improved agriculture practice

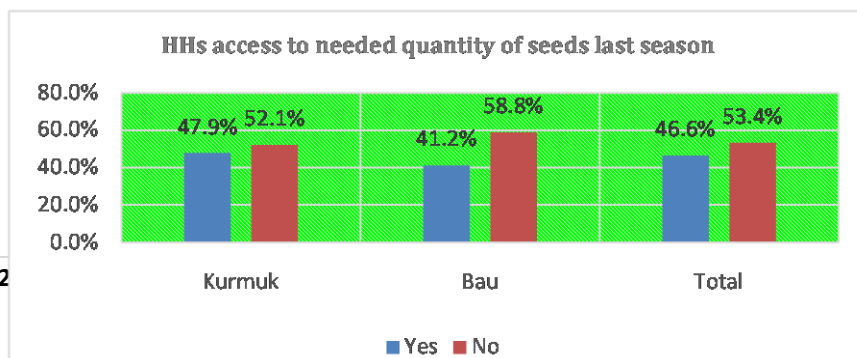


Figure 23: HH access to seeds

Fig. (23) Shows approximately 46.6% of the surveyed households obtained the needed seeds quantity and while 53.4% did not. The analysis indicates

more than half of the surveyed household had difficulties in receiving seeds supply last season.

Table (14) shows some 43.2% of the surveyed households sell their crops in markets, and around 10.1% do crops selling through direct purchase by someone who directly purchases it. Selling through mediators constitute around 4.7%. The analysis also displays some 41.9% of the surveyed household do not sell any crops because the crops harvested are kept for family – consumption

Table 13: Crop marketing

Description		Locality of the study		Total
		Kurmuk	Bau	
Crops mode of selling	Some directly purchase it	14	1	15
		10.9%	5.0%	10.1%
	Market	55	9	64
		43.0%	45.0%	43.2%
	Through a mediator	3	4	7
		2.3%	20.0%	4.7%
	crops for self-sufficient only	56	6	62
		43.8%	30.0%	41.9%
Total		128	20	148
		100%	100%	100%

Nearly 4.3% of the surveyed households could do food processing, and while 61% could not do. In this regards result revealed only 8 families out of 262 families had done Okra drying last year.

Fig. (24) Shows some 1.9% of the surveyed households have a membership in agricultural associations and/or groups, and while 98.1% do not belong to any association. Analysis displays that most membership for associations or groups is confined to Kurmuk locality which account for 5.1%.

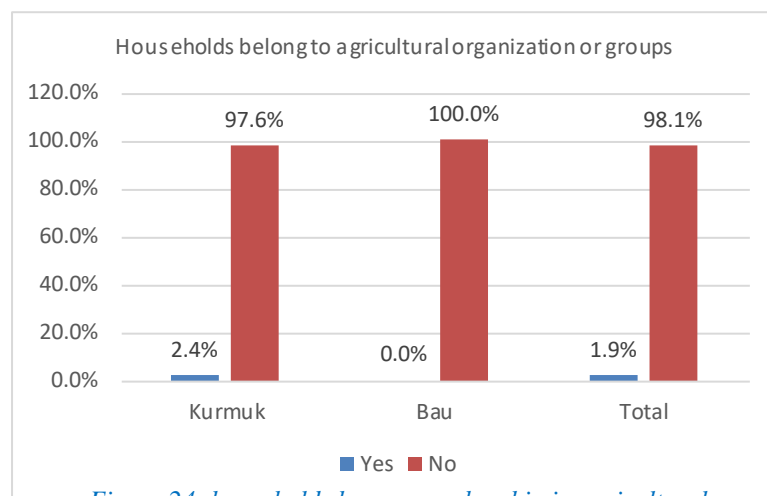


Figure 24: households have a membership in agricultural associations

Conclusions and Recommendations

7. Water

- The WASH activities have increased access to safe drinking water from protected water sources such as hand pumps and treated water from Haffirs. Furthermore, communities' knowledge on water treatment, using protected water sources and other key hygienic practices have significantly improved, which may have positive impact in a decrease of water-borne diseases such as diarrhea and other water related diseases especially among children's.
- Rehabilitation of hand pumps Haffirs restored functionality for boreholes, that had been down for a long period, on the other hand access to safe water improved; distance travelled by girls and women to the nearest water point was reduced to less than 500 meter if compared with MDGs of sphere standard . So was the risk of violence against girls on the way to or from water points (SGBV). However, the exclusion of hardware support such encourage and mobilization for latrine construction to vulnerable beneficiary households was a gap since effectiveness and impact of WASH interventions are maximized when increased access to safe water supply is coupled with increase access to improved sanitation facilities and strengthened through hygiene promotion.
- Haffirs rehabilitation can be measured as a remarkable to improve water access and hygiene conditions in El Niño-affected communities.
- Development of new program for upgrading hand pump to water yard with solar system will be one big challenge for using friendly environmental protection technology.
- The beneficiaries asserted unanimously their appreciation for the quality of the water, pointing to the reduction in the incidence of waterborne diseases among children and within the households

performed the water quality tests in collaboration with WES /rural water corporation laboratories prior to the start of the distribution to beneficiaries.

- The technical and the basic management trainings delivered did effectively grow the capacity of committees' members, although limited to the ordinary maintenance of the systems, also because the spare parts were not provided by the project (ADRA) for long. The WUCs are encouraged to set up a limited cost-recovery system, to spend on Operation and Maintenance (O&M) with the purchase of small spare parts for hand pumps maintenance, and they able to manage their water source effectively.
- Most of the users were collecting the water in properly maintained jerry cans, whilst a limited part of them were still employing broken containers or containers with missing caps. The beneficiaries interviewed showed overall a good knowledge of hygiene practices and the advantages of properly storing water in closed containers.
- Women role and participation in WUCs and other WASH community-based water source management committees is one of the big challenges, due to cultural and historic reasons, women are often the primary collectors, transporters and users of water in The Blue Nile State. They tend to have the main responsibility for health, child care and are managers of domestic water as well as promoters of home and community based sanitation activities. However, their involvement in key WUC roles was associated with more effective water management, including regular meetings and revenue collection, and improved functioning of water systems, but the percentage of women involvement is very low since they playing an important role in these regards, we can conclude that the participation of women and girls in WASH decision making structures is a critical milestone towards their empowerment.
- Accountability by the WUCs is very important because it may impact on the level of collections that the committee is able to realize. In the absence of accountability, users of water sources loose trust in the management and may even refuse to contribute towards maintenance of the water source by subscription or paying user charges. From end line observation and interviews the WUCs had no lists or records of users or of their finances, they need more training in book keeping and monitoring of their water source performance, their roles with the care taker to regulate use of water sources which reduces abuse, they watch over the water source which may reduce vandalism and they also enforce rules on contribution towards maintenance of the water source.
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8. Sanitation and Hygiene Promotion

- Emphasis need to be placed on key hygiene behaviors such as hand washing with soap at appropriate times, safe disposal of feces and use of latrines, safe weaning food preparation and safe water handling and storage, this issues will contribute and reduce prevalent of COVID 19 outbreak . Hygiene and health education campaigns need to be held in different parts of the program coverage area. In schools, hygiene and health clubs will need to be formed. This will target the pupils as children are known to be the best agents of change.
- Explore innovative ways of changing attitudes and practices relating to use of ash/ soap during critical times for hand washing since adoption of use of soap/ ash during hand washing was just too low to be acceptable. Similarly, the setting up and maintenance of hand washing locations with soap and water at homesteads needs more aggressive campaigns as the evaluation received more excuses for the absence of hand washing locations (tip taps) than evidence of their presence at the homesteads visited for hygiene inspection reasons.

- Community participation plays an important role in operational planning whereby people in most areas participate to different degrees in identifying needs and priorities. Such processes largely depend on different types of local committees and organizations. The awareness-raising activities targeting environment and hygiene issues depend to a large extent on the participation of the communities.
- Hygiene promotion campaigns and trainings of community members within the committees were effective in reducing the open defecation according to direct observation and FGDs. Soap is sometimes replaced by ash or sand, as recommended during the hygiene promotion, however, most of the beneficiaries from targeted community after participating in FGD were not able to afford the cost of purchasing soap due to their poverty on the other hand the awareness raising sessions in Gender-Based Violence has contributed to the decrement of the incidence of SGBV related cases in the area.
- The WASH activities have enhanced increased access to safe drinking water from protected water sources. Furthermore, communities' knowledge on water treatment and other key hygienic practices have significantly improved, which may have positive impact in decrement of water-borne diseases such as diarrhea. There is an improvement in the sanitation practice of targeted households, which is manifested by a decrease in the incidence of open defecation and practice of appropriate solid waste disposal.
- Regarding solid waste management indicates that all community at the targeted areas has no means of proper handling and treatment of solid waste, it need more mobilization in this regards and introduction of regular cleaning and awareness campaign modalities is essential are to sensitize communities and improve environmental hygiene.
- Communities' practice regarding solid waste disposal in the targeted areas is not to the expected level. This might partly be attributed to lack of sanitation facilities. Thus, future programs need to support the installation of community-based sanitation facilities especially in market areas in addition to the software activities (i.e. sanitation awareness activities).
- WASH responses in rural setting are most effective and impactful when hard ware and software interventions are coupled together and treated as one packages, both in the water and in the sanitation sub-sectors. Rehabilitating water sources without hardware support to toilet construction or comprehensive software component such as CLTs/CATs approached as integrated process will leaves room for the environmental hazard of open defecation to undo the outcomes and impact of the intervention, since there are huge gabs between provision of safe drinking water and sanitation activities at all levels.
- The challenge of sustainability will not be solved unless and until the health system is strengthened to provide ongoing monitoring and promotion at household level. For this much more funding is needed. Funding is also needed to scale up CLTs /CATs – at present very little is being done by government outside of donor funded projects.
- The effectiveness of CLTs depends very heavily on the skills of the facilitators. Not everyone can be a good facilitator as it depends on personality and sensitivity as well. In general, NGO staff tends to be better suited than government officials or private sector consultants.

9. Agriculture and food security

- The results of the end-line survey showed that the project has proven to be effective in meeting its objective of meeting the immediate needs of vulnerable households, promote recovery of livelihoods, and improve access to safe water, sanitation, hygiene and reproductive health services. The food security and livelihood activities under this project (such as improve seeds ad

tools distribution) have contributed to the enhancement of the food security and nutritional status of targeted households.

- From benefit and experience of FFS and interviews with youth groups (males and females) findings, there is a high need for alternative income generating activities especially for youth such as small business support through vocational training, provision of capital and provision of tools to support sustainable returns and community's economic development, particularly for women youth female.
- Farmer Field Schools (FFS) one of successful approached which enable communities to work with groups of farmers to educate them on customized farming practices for their respective communities and to promotes experimentation and analysis using demonstration plots to help farmers discover the best possible solutions for common challenges they face on the other hand this approached will provide farmers with opportunities for sharing experiences and collectively solving farming problems to improve productivity which can be replicated easy to other parts.
- Majority of returnees and host communities' practices agricultural activities but they have limited access agricultural extension services and agriculture inputs such as provision of improved seeds, farming tools, land preparation, in addition to poor storage technologies practices for their products ,they needs more assistant as group of association rather than individual to bridge the gabs of income and nutrition services.
- Since traditional livelihoods such as agriculture may not provide the means to address the root causes of poverty, and food insecurity for many households, particularly as populations grow, a new approached needed to promote alternative livelihood strategies by analyzing household economic assets and prospects and working with members of these households to diversify livelihoods through non-farm employment and entrepreneurship options. The employment and entrepreneurship initiatives help the income earning prospects of at-risk women, men and youth by assessing high-potential employment and entrepreneurship opportunities and providing vocational , technical education, life skills training, functional literacy and numeracy education, entrepreneurial training, business start-up support and job linkage support. It will also help program participants to apply their new skills through apprenticeships or enterprise groups, where they can gain confidence and credibility with employers and clients.
- The modality of the Village Savings and Loan Associations (VSLA) which will provide simple savings and loan opportunities in a community that does not have easy access to formal financial services, but this process need to be encourage Peer groups of villagers pool their savings and offer small loans to association members especially in livelihoods and food security . This provides access to credit to those who otherwise would not be able to borrow money, allowing them to invest in small business opportunities which will provides access to credit to those who otherwise would not be able to borrow money, allowing them to invest in small business opportunities.
- Innovative and sustainable livelihoods practices such as seed banking, irrigation, Village Saving and Lending Associations (VSLA), sustainable farming and improved livestock production will be central in the targeted areas. Local veterinary services need to be strengthened, and links will be created between small producers'/farmers groups and the Ministry of Agriculture (MoA).
- ADRA may need to increase promotion of the need to buy productive assets or to plough proceeds from VS&L into micro-enterprises as the development trajectories of those who buy non-productive assets and those who buy productive assets are totally different. In the long run, those who buy productive assets pave their way out of the vicious cycle of poverty. This recommendation rises from meeting with FFS committee member out of concern over a

substantial proportion of beneficiaries who reported having bought utensils using proceeds from VS&L (where others reported having bought goats or materials for construction of business premises, for instance).

- Community capacity building through establishing grassroots structures empowers communities and enhances impact and sustainability of project effects as well as community resilience to shocks; Village Savings and Lending clubs are an effective tool for women empowerment. They increase women control of assets and family financial flows, this approach if applied and adopted it will help to increase their capacity as resilience building programs
- ADRA approached modalities in livelihood and food security interventions which include distribution of improve seeds and tools and other extension services .The coordination in implementation modality used in the project of partnership between ADRA and government is sound, it could be further strengthened with a clearer definition of government’s responsibilities and tasks, especially those not funded by the project. MOU documented in joint work plans, with effective joint monitoring and evaluation will be one of the cornerstones for projects successes.
- More intervention needed in livelihoods interventions to a structured economic empowerment of rights holders by mobilizing and organizing them and supporting them to start income generating activities (IGAs).
- Improve access of agriculture packages is required (land preparation, improve seeds, seed bank, seedling and harvesting) and will have great impact. However, the focus need to be on improving access to markets, value chain, providing youth and women with skills that improve employability and support to those who practice seasonal farmers in neighboring rural area.
- Blue Nile Sate has one of the highest poverty and malnutrition rates in the Sudan, making it a target area for ADRA livelihood and resilience-building activities. The people living there are especially vulnerable during the agricultural lean season (break between harvests) when food stocks deplete. During this season, there are no other means of livelihood or income generating activities that would enable families to meet their basic food security needs
- An increase in commercial agriculture would lead to higher income and thus increased food security by consumption of more and/or better quality food. However, the promotion of cash crops requires well-functioning markets where the incomes from cash crops can be used to replace the reduction in staple crops as land is diverted to cash crops.
- A gender gap related to food production and food security is demonstrated by the fact that male headed households produce more food than female headed households and also are much more likely to be food secure. A countermeasure may be to strengthen female land ownership
- ADRA policies target households’ incomes, smallholders’ own production of food, diversify agricultural food crops, improve agricultural services, increase agricultural productivity through technology adoption, and long-term human capital development.
- Empower households economically by focusing on improving food security and increasing access to livelihood opportunities it will be achieved through diversification of livelihood opportunities, improve crops and land productivity and increasing access to market through skills and knowledge transfer, removal of market barriers and value addition to products, it will absorb and recover from the negative impacts of human-made and natural shocks.
- Most targeted communities living without enough food are smallholder farming families, their income from agriculture and livestock can be irregular due to price fluctuations, climate change and seasonality. ADRA aims to address these challenges by helping to enhance productivity through improved practices and technologies; reducing the susceptibility of farming to shocks

through climate-smart and environmentally sustainable approaches; improving business practices to make farming more profitable; facilitating links between producers, intermediaries, markets and last mile service providers;. While direct support such as providing seeds or training to farmers is an important short-term measure this will assist in transition from these activities to more systemic interventions through approaches that strengthen markets and institutions as soon as possible if there is good coordination and cooperation within the inline government authorities.

- Marketing of agricultural produce is an important activity among the sample households, The most commonly sold food crops were sesame seed and beans the two varieties which distributed by ADRA . sesame seed sales, overall, attracted the highest volume of income . Relatively fewer households were engaged in selling, most likely due to the low production gained from both types, along with the need to satisfy household demand for the crop (Beans being the main staple of the communities in the study area).

10. Protection:

- A Compressive effort in awareness and capacity building is required in gender and child and women protection, in addition to establishing/strengthening of Community Based Child Protection Networks (CBCPU) and providing psychosocial support to unaccompanied children, particularly whom lost their families during the war and displacements.
- Child protection need special consideration particularly in IDPs and host communities, in this regard strong coordination need to be done with SCCW for their role they are playing and their experiences in formation and functioning of CBCON
- Youth, particularly female, need to be empowered by providing sources on income and should have chance in decision making through involve them in the different CBOs.
- Women and girls vulnerable to SGBV, especially during the collection of water, wood and open defecation, awareness rising needed in this regards with protection network members.
- Lack of job opportunities and lack of skills and required capital is the main challenges facing youth and hindering form finding jobs or establishing their own business. Vocational and skill training is required with provision of tools and capital to start.
- Education service at basic schools is very poor in the two states, in this regard a lot of work needs to be done to improve the school environment to increase the level of enrolment and reduce the high dropout. This can be through hard work an intervention such as improving WASH services and soft works such as training of teaches and forming and training of parents and teacher's associations.

11. Monitoring

- The local organization (Mubadron) as a local partner organization sharing ADRA responsibility of the project monitoring, evaluation and implementation; according to KII interview we reveal that the organization operates in harmony with ADRA and its staff are available and remain close to the project over the project life span and are present in the fields and office too. However, this office has been shut down by government and no longer active, this one of barriers need to be solved. ADRA tried to overcome this problem to increase their presence at field level to avoided the future result to be generated of poor product in terms of both qualities of monitoring and social facilitation in both WASH and food security, since still there is some activities not been completed such as cultivation of SFF program approached which need effective M&E to measure the impact and benefit to the communities and how to be replicate at largest areas and sustain.

- The most important form of community capacity-building is training local committees' members on community management in general and program activities in particular. Communities also received technical training which is usually intended only for men and women's which qualified them for the installation and maintenance of the provided facilities and equipment but according to the field assessment results and the project's available documentation, the project's performance is demonstrated to be meeting expectations; achieving the intended outputs and outcomes and attaining an overall good quality of the services delivered. However, the monitoring system certainly needs more effort to improve, collecting evidence-based data when measuring the indicators' progress.
- Harmonization, cooperation and activation of unified implementation modality among partners working in same area, will improve the quality of the work, effective resources utilization measurement and reduce communities' competition, this issues has been disturbed by shutting down of Mobadroom office as implementation partner and will affect negatively in M&E and long and short term of sustainability.
- According to the interview with inline authorities in Ministry of agriculture we observe that there is a tendency to insist on more involvement and a higher profile, but in practice to take a back seat arguing a lack of resources especially in logistic. This was observed during the evaluation. A clearer definition of respective responsibilities, documented in joint work plans, with effective monitoring and evaluation, could help overcome this difficulty in the coming future program.
- Facilitators in FFS need to be able to adapt their messages and approaches in accordance with local conditions, the quality of facilitation needs to be monitored and retraining provided if necessary, or ineffective staff replaced.
- During FGD with water committees, the finding indicated weak of community consultation meetings regularly to discuss the critical issues to discuss their role in water management, the water attendance and develop system to provide spare parts and changes broken points which should be done by water committee team and pump mechanic which has been trained by ADRA, this issues need continuous visit from ARDA to activates M&E and follow up system performance.
- Weak of community consultation meetings regularly to discuss the critical issues to discuss their role in water management ,the water attendance and develop system to provide spare parts and changes broken points which should be done by water committee team and pump mechanic which has been trained by ADRA.
- To enhance communities' ownership and resilience and sustain the service, this also will need to continue focusing on capacity building and promoting community contributions by working together with other actors in the areas, involve, youth, women in all project cycle and not depend on Omda or Shakih in committee selection alone to avoid confect between community groups, Water committee need to be selected through participatory approach, women representative is essential , according to the survey all groups interviews confirm this facts therefore, ADRA intervention plan to put a strong emphasis on developing beneficiaries' ownership and self-reliance.
- Review all process of the contract either for water rehabilitation, and ensure that site engineer presence at all time for checking and inspection of all materials used so as to ensure standard and specification for system has been met, together with specific handing over process together with presence of client, ADRA and any other partners.

12. COVID 19

- The already dire food security situation in Blue Nile state could worsen with the adverse economic impacts of COVID-19 for some extent, including a slowdown in the importation of basic commodities.
- Humanitarian partners have been adapting the response to deliver safely, responsibly and effectively in this COVID-19 environment although communities is likely to be more vulnerable because of the dependence on markets for food and a higher population density, which exposes them to greater risk of disease transmission;

13. Impact

There are no specific studies and researches that provide evidence base for the direct impact of WASH services in improving the health and living standard of the target communities, reducing school dropout rates (especially of girls since water been so near home) and reducing conflicts among pastoralist and farmers/resident communities. The major success and impact of the WASH programme was the contribution of ADRA in avoiding any serious outbreak of WASH related diseases over this year as indicated in the weekly Morbidity and Monitoring report (generated by SMOH).

The communities in many states mentioned that the walking distance from the household to the water point is reasonable and queuing time as well) contribution to the reduction of human suffering, particularly for the vulnerable groups compared to the situation before intervention. Rehabilitation of water sources contribute positively in reduction in distance - and hence also time for women and girls travel to fetch water through in which they challenging many constrains and abuse (GBV) during water collection.

Key informants listed several impacts they believe are a result of the programmer's intervention. Listed below in brief are the main results of key informant interviews, followed by an in-depth examination of the impacts.

- Obvious impacts on health conditions and disease prevalence rates, and the complete eradication of some diseases such as Guinea Worm.
- The programs resulted in clear positive impacts, which are appreciated by all parts.
- The program has more impact on the poorest segment and most vulnerable groups.
- The program has more impacts on women than on men.

14. Sustainability

The quality of the established WASH facilities through ADRA has been inspected and found to be satisfactory and compatible to the technical specifications. The facilities are still in good condition, operational and in use by the local communities, indicating that project outputs are effective and meeting community requirements, but the elements of sustainability are not in place as mentioned above.

Empowerment of the community members by training them to foster sustainable operation and maintenance of the water facilities is crucial for keeping the systems operational. This activity has been properly done by ADRA team. However, in the same way community leaders were involved in selection of community volunteers for training and other related activities Community based hygiene promoters disseminating hygiene messages regularly to their communities. But despite all these genuine supports

but situation on the ground does not reflect the expected outcome in this regard, more attention in criteria of committees and monitoring their progress in highly appreciate.

The program has been effective in increasing access to WASH services in rural and emergency areas and improving the quality of those services, and has been implemented as agreed with the government and usually based on participatory decision making and in consultation with the relevant stakeholders. Almost all actors work in harmony which positively impacts the effectiveness of the program's implementation but the main gap in effectiveness is in the regularity of maintenance and monitoring in general. There is a lack in equipments and requirements, especially with respect to means of transportation, inadequate program funding, irregular financial transfers from the government, recurrent failure of partners to fulfill their obligations and commitments in time, insecurity, inaccessibility, remoteness, inadequate monitoring and information system, unclear ownership of some services and weak capacity of private sector.

The WASH programme in Blue Nile is considered to be one of the best development programmes due to the integration of water supply, sanitation and hygiene in one package. The linkages between water supply, sanitation and hygiene are very strong in most NGOs supported projects but not appropriately practiced within the government institutions as the components are scattered among entities (MofH and Mof Urban planning). The sustainability will not be achieved unless there is a realistic M&E plan been implemented, since all the local communities which has been trained and motivated need to be followed and strengthens the WASH and food security program issues.

7. Case studies

7.1. Selected farmer for FFS (Derange)

Yousif Sava Jamouse (30 yrs.) said, when he was chosen to take part in the ADRA project, he did not believe that it would change his life and increase his knowledge through training in farming. He was one of the beneficiaries that benefited from improved seeds and tools which were distributed by ADRA as well as information on improved farming. He said the project changed his priorities for crops that they now know that these are more suitable for the weather patterns in this area.

Yousif has been migrating from his villages (Derange) since 2015 to Damzine due to war and came back on 2019. He returned and settled in the village where they can now participate in asset creation for the benefit of the community.

Last year Yousif farm of 5 acres produced 2.5 sack of sesame, this year his 2.5 acre and expected to produce 5 sacks of improved sesame crops that can be kept in store as improved seeds. to increase the areas to more than 5 acre and hoping life will changing for the better in the coming future, so he can buy goats and cow for his family to improve his live stander and share and replicate his experience with farmers .He in the future t to work in group of association rather than individual .

7.2. Selected Young Girls as FFS facilitators

As case study; three girls at age 16-17 have been selected as facilitator for FFS, namely Halima Dafalla, Islam Abad Rahaman and Miriam Belal. They were very active, they reflected in the interview all process for farming starting from land preparation, cleaning, extension till the final process of harvesting and

storing the final product in very smart and confident ways, which represent excellent facilitation for farmers, compared with their age and approach.

Food security, nutrition and resilience are greatly impacted by the power relations between men and women and the different levels of access, control and decision making they have over resources. To address this, ADRA focuses on gender transformative programming that empowers women and girls socially and economically. The FFS facilitators, some of which are female, can be also able to engage community influencers to tackle harmful gender norms and promote joint decision-making between men and women using culturally appropriate and sensitive approaches to increase equity and inclusion. ADRA also works to ensure that community governance structures are equitable and include representation from women, youth and marginalized groups.

The main roles of facilitator are to follow and monitor and give advice to farmers as a The Participatory Performance Tracker (PPT) which is a participatory self-assessment tool that allows farmers belonging to a particular group to monitor their progress against collectively set targets and recommended practices. This exercise helps farmers of a producer group to discuss which practices they are adopting and the benefits they may be experiencing from such new adoptions. This also provides a platform for farmers to discuss any challenges that they may be facing in adopting certain practices. This participatory discussion creates an environment where farmers those with lower adoption rates may be encouraged by their peers to try out the improved practices in the next crop season and groups together with their field officers can make plans to address challenges the farmers are facing.

8. Annexes:

Annex 1: Updated log frame

Number	Indicator	Desired Direct (+/-)	Disaggregation	Baseline	End line
Goal: Improving access of vulnerable communities in Blue Nile State to basic WASH services, increasing their food security and self-reliance, and improving their ability to prevent and respond to gender-based violence					
Sector 1: Water, Sanitation and Hygiene					
Objective: Increased access to improved water sources, hygiene and sanitation practices.					
Sub sector 1: Water Supply					
Indicator 2:	Percent of households targeted by WASH program that are collecting all water for drinking, cooking and hygiene from improved water sources	(+)	N/A	11%	90.4%
Indicator 3:	Percent of water user committees created and/or trained by the WASH program that are active at least three (3) months after Training.	(+)	Percentage	0%	95%
Sub-sector 2: Hygiene Promotion					
Indicator 2:	Percent of people targeted by the hygiene promotion program who	(+)	Percentage	11%	79.5%

	know at least three (3) of the five (5) Critical times to wash hands		Male	4%	36.1
			Female	7%	43.4
Indicator 3:	Percent of households targeted By the hygiene promotion program with soap and water at a designated hand washing Location.	(+)	N/A	28%	56.9%
Indicator 4:	Percent of households targeted by the hygiene promotion program who store their drinking water safely in clean containers	(+)	N/A	91%	92.7%
Sector 2: Agriculture and Food Security					
Objective: Improved food production through increased access to agricultural input and resilient practices					
Sub-sector 1: Improving Agricultural Production / Food Security					
Indicator 1:	Number of months of household food self-sufficiency as a result Of improved agricultural production programming	(+)	N/A	2-3 months	4-6 months