



## The Role of LMRP Interventions in the Environmental Empowerment of Rural Women, North Kordofan, Sudan (2017-2022)

By

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### Article History

Received: 25/05/2025

Accepted: 10/06/2025

Published: 12/06/2025

### Vol – 2 Issue –6

PP: -69-76

### Abstract

*This study aimed to stand up on the role of the program in empowering rural women through the environmental interventions, to present applicable and scientific visions that can contribute in the environmental empowerment of rural women, in addition to drawing the attention of the stakeholders in the public and private sectors towards rural women issues. The study followed the Integrated Geographical Vision approach for hypothesis discussion. Data was collected by using the primary resources as questionnaires, in addition to interview, observation, and focus group discussion, beside the secondary resources. The sample size was 204 respondents selected using simple random sampling technique. The Statistical Package for Social Science program (SPSS) was used for the data analysis. The study results revealed that: 53.9% from the respondents had received training on the environmental activities including: Water, LPG, forests, and rangelands, while all respondents (100%) ensured that capacity building processes led to increasing their skills and raising their awareness towards the environmental issues, and that could be expressed by their selection criteria of the environmental activities including: Associated with neediness represented (52.7%), reduce environmental risk represented (25.5%), reduce family's disbursement represented (12.7%), and diversification of the income (9.1%), and that indicated the program managed to empower beneficiaries environmentally. The study revealed that the main challenges faced rural women's empowerments were: Decreased financial services access represented (84.8%), decreased access to solar energy and LPG services represented (9.3%), domination of man represented (4.9%), in addition to increased illiteracy rates among women represented (1.0%). The study recommended for the necessity of increasing training opportunities, financial access, in addition to facilitating the engagement of women in the environmentally friendly activities such as solar energy and LPG activities, besides establishing gas exchange centers at village's levels.*

**Keywords:** Women's Empowerment, Developmental Interventions, LMRP, North Kordofan State (NKS).

### 1. Introduction

According to (IFAD, 2014) The Livestock Marketing and Resilience Program (LMRP) is a joint effort between IFAD and the Government of Sudan/Ministry of Animal Resources (MoAR) to revive the livestock industry and optimizes the use of a seriously impacted natural resource base under threat from climate change. The overall goal of LMRP is "Increased food security, incomes and climate resilience for poor households in pastoralist communities". The development objective is "Increased earning opportunities and improved living conditions in livestock-based communities". The LMRP primary target population comprises economically marginalized and excluded households residing in pastoralist

and agro-pastoralist communities. In particular, the Program target rural poor women and young men in 1,000 villages in the five States of North Kordofan, West Kordofan, White Nile, Sinnar and Blue Nile, figure (2.1). Secondary target groups included private sector value-adders, service providers and operators in the principal livestock value chains, public sector managers and technical staff. Secondary target groups included private sector value-adders, service providers and operators in the principal livestock value chains, and public sector managers and technical staff. LMRP has three interlinked components, namely: Component 1: Livestock business development that aims to improve value-addition and market access for small-scale pastoralists and agro-pastoralists. Component 2: Community-led natural resources



management and enhanced adaptive capacities to support a community lead process for priority natural resources management investments for building the sustainability of the livestock systems. Component 3: Rural enterprise and social development to promote the up scaling of viable business plans with further technical support and access to affordable loans from microfinance institutions. Empowerment as a concept was introduced internationally as a redistribution of social power and control of resources in favor of women. It is the process of challenging existing power relations and of gaining greater control over the resources of power Women's Empowerment refers to an increase in the strength of women such as spiritual, political, social, and economic. (Petesch et al., 2005), defines empowerment as "increasing both the capacity of individuals or groups to make purposeful choices and their capacity to transform these choices into desired actions and outcomes". In developing measurements of women's empowerment researches are using different theories and concepts of empowerment: Many studies have looked at the impact of microfinance interventions on women's empowerment; however, these studies conclude different findings. (Hashemi et al., c1996) find that microfinance has positive impact on women's mobility, economic contribution to household, political and legal awareness and participation in public protests and political campaigns. In addition to these findings. (Pitt et al., 2006) report: women have greater social network, and higher bargaining power within households. (Kabeer, 2001) finds in her study that microfinance programs lead to increased participation in household decision-making, and similarity. (Pitt and Khandker, 1998) find that microfinance influences women's decision-making power on household expenditure, non-land assets, and children's education. Furthermore (Schuler et al., 1996) suggests that microfinance programs can decrease women's vulnerability to domestic violence. Secondly, there are many ways of measuring women's empowerment. These can be related to the dimensions of empowerment, ranging from decision – making power within household to political participation in villages and economic activity (Amin et al., 1998). Women's Empowerment is acknowledged as a key variable of development in less developed countries. Increasing women's empowerment dose not only benefit the women themselves, but it is also believed to improve the overall life standard for their families, and strengthen their communities (Malhotra et al., 2002). In addition, female empowerment is important in order to make use of human kinds full potential; 70 percent of the world's poor are women. As Kofi Annan, former UN secretary-general explains " It is impossible to release our goals ,while discriminating against half the human race .There is no tool for development more effective than empowerment of women " (Kofi Annan, 2006).This declaration is in line with (DFID, 2007) stating that UN's Millennium Development Goal Three ,to promote gender equality and empower women ,is not only a development goal in itself, but also a key in succeeding the other goals .Although it is widely agreed that women's empowerment is important for alleviating poverty and increasing economic growth , it does not have any clear definition. According to (HSRC, 2009),

many studies investigate factors influencing limited involvement in development process by women such one that conducted in South Africa's semi and rural areas. The influence of government development policy, education and cultural values on rural women was also investigated. The results suggested that the majority of the women in rural areas are illiterate. These women have been involved in development related work without knowing it, because they lack initiatives, innovations, self-reliance attitudes and they are isolated, not exposed to information and are marginalized through the non-interactive government development policies. These symptoms reflect a lack of structured development strategy to create needed opportunities for women. All these are a result of high rate of illiteracy, unemployment, poverty and malnutrition. In other words; the development approach itself has failed them by not being able to enhance their welfare. According to (Nilesh B. Gajjar, 2017), women Empowerment refers to increasing the spiritual, political, social educational, gender or economics strength of individuals and communities of women. The World Bank says 'Empowerment is the process of increasing the capacity of individuals or groups to make choices and to transform those choices into desired actions and outcomes. Many Obstacles facing Women Empowerment including: Gender discrimination, Lack of Women Education, Low mobility, Marriage in same caste and child marriage. According to (Care International, 2018), community economic empowerment is strengthening the ownership of factors of production, strengthening the mastery of distribution and marketing, strengthening the community to obtain adequate salary or wages, and strengthening the community to obtain information, knowledge and skills, which must be done in multiple aspects, both from the aspect of the community itself as well as aspects of its policies. Empowerment is a breakthrough road that will accelerate the transformation of non-economic social activities into an economic enterprise. This study focused on the role of the program in empowering rural women through the environmental interventions, to present applicable and scientific visions that can contribute in their environmental empowerment.

## 1.2 Problem Statement and Justifications:

North Kordofan State has under gone to several waves of natural disasters such as droughts (1984-1991) followed by desertification, and recently remarkable climate changes observed resulted in fluctuation of rain fall rates, that negatively influence the productivity and production of agriculture and livestock, in addition to displacement phenomena of people from South Kordofan State, due to civil conflicts. Women are considered as the families' backbones especially in rural areas, because they have been shouldering a heavy burden, due to the migration of the men for mining, seeking for new earning opportunities to keep and improve their families' livelihoods. There were many developmental interventions seeking to improve rural women economic and social statuses in order to strength and empower them to face life challenges, from those interventions was the Livestock Marketing and Resilience Program LMRP. The research outlined these questions: Did the program manage to organize

rural communities? did the program manage to increase women's participations? And did the program manage to build beneficiaries' capacities and raise their awareness?

### 1.3 Objectives of the Study:

The overall objective of this study is to identify the real role of the program in empowering rural women through the environmental interventions, in addition to achieve sub-objectives including:

1. To present an applicable and scientific-based vision, that can contribute in the environmental empowerment of rural women.
2. To draw the attention of the stakeholders in public & private sectors towards rural women's empowerment issues.

### 1.4: Study Hypothesis:

The hypothesis included:

1. The program managed to empower rural women environmentally.
2. The program managed to build beneficiaries' capacities on the environmental Activities
3. The program managed to raise beneficiaries' awareness towards the environmental issues.

## 2 Materials and Methods

### 2.1: Study Area:

North Kordofan State is located in central Sudan between 27° and 32° east longitude and 12.15 -16°43' N latitudes. North Kordofan is administratively divided into eight localities; Sheikan, Bara, West Bara, Alrahad, Umrwaba, Um Dam, Soderi and JabratAlsheikh (M.A.O and FNC, 2017) figure (2.1). Population of North Kordofan is 2920.99 persons, with an annual growth rate of 2.9%, of which 15% are urban and 65% are rural Central Bureau of Statistics, (CBS, 2008). Agriculture and grazing are the dominant economic pattern in the state.

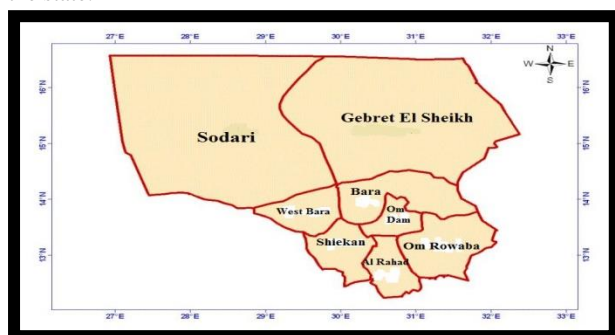


Figure (2.1): North Kordofan State Localities

### 2.1.2: Methodology:

The study followed the Integrated Geographical Vision approach for hypothesis discussion, SPSS program and Chi square method for the data analysis.

#### 2.1.2.1: The Integrated Geographical Approach:

According to (Artz and Jim Baumann, 2009), The Geographic Approach is a new way of thinking and problem solving that integrates geographical information in to how we understand and manage our planet. This approach allows us to create

geographic knowledge by measuring the earth, organizing this data, and analyzing and modeling various processes and their relationships. Also to apply this knowledge to the way we design, plan and change our world. Solving problems using geographic approach is not new. It is fundamental to the way geographer, study, analyze our world. The concepts are perhaps bet articulated by IanL.Mc Harg in the 1969 book, Design with Nature, in which he details the philosophical context for managing human activities within natural and cultural landscapes. As a methodology the geographical approach is used for location-based analysis and decision making. GIS professionals typically employ it to examine selected geographic datasets in details, which are combined for the comprehensive study and analysis of spatial problems. This methodology parallel to the well-known scientific methods and includes a research-focused, interactive process for examining diverse datasets and uncovering potential solutions. The approach comprised five steps: Step 1; Ask: Approaching a problem geographical involves, framing the question from a location-based perspectives, what is the problem you are trying to sole or analyze, and where is it located? Step 2; Acquire: After clearly defining the problem, it is necessary to determine the data needed to complete your analysis and ascertain where that data can be found or generated. Step 3: Examine; you will not know for certain whether the data you have acquired is appropriate for your study until you thoroughly examine it. This includes visual inspection, as well as investigating how the data is organized, how well the data corresponds to other datasets and the rules of the physical world (its topology), and the story of where the data came from (its metadata). Step 4: Analyze; The data is processed and analyzed based on the method of examination for analysis you choose, which is dependent on the results you hope to achieve. Step 5: The results and the presentation of the analysis are important parts of the Geographical Approach. They can be shared through reports, maps, tables and charts and delivered in printed form or digitally over network or on the web.

### 2.1.3: Data Collection:

The study depended on primary data using questionnaires introduced to the (204) households, in addition to interview, observation and focus group discussion. Secondary data were collected from IFAD and program reports, in addition to the internet sources.

### 2.1.4: Sampling Technique:

The sample size was (204) respondents selected using simple random sampling technique.

#### 2.1.4.1: Study Area Selected:

The field survey was carried out in the study area in North Kordofan State, specifically in four LMRP targeting localities namely, Umrwaba, Alrahad, Sheikan and Bara.

#### 2.1.4.2: Selected Villages:

The program covered (237) villages in North Kordofan State. (60) Villages were selected for the study. Villages comprised large, medium and small ones from 18 administrative units table (2.1).

#### 2.1.4.3: Selected Households:

Targeted population was (8100) HHs. Selected households were (204) representing 2.5%.

**Table (2.1) Sample Selected (Admin Units, villages and Households)**

Locality	No of Admin Unit	No of Villages	No of targeted HHs	No of selected HHs
Sheikan	7	18	2908	54
Umrwaba	3	18	1952	54
Alrahad	4	12	1809	48
Bara	4	12	1431	48
<b>Total</b>	<b>18</b>	<b>60</b>	<b>8100</b>	<b>204</b>

\*It is considered that selected villages witnessed different interventions from the three components. Households were selected randomly, three from Sheikan and Umrwaba locality's villages and four from Alrahad and Bara localities to represent the sample.

### 3 Results and Discussion

#### 3.1: Households Demographic Characteristics

The study has dealt with some household demographic variables such as family size, age, education that are considered as important factors affecting household performance in terms of production capacity as most of social studies referred to them. The study investigates the role of the program (LMRP) in empowering rural women; therefore, the respondents were only women.

##### 3.1.1: Distribution due to Ages:

Age is one of the most important elements in such studies, because it has strong correlation with income earning opportunities and others. Results showed that the range of ages were: 37.7% for category (30-39) Years old, 30.9% for (20-29) Years, 24.0% for (40-49) years, 5.9% for (more than 50) years, and 1.5% for (less than 20) years Table (1). Result indicated that 94.1% of respondents were in age groups that represent the youth period (20-49) Years old. This means that the majority of the respondents were in ages which are socially and economically active to meet the objectives of the study. These results go in a line with study conducted by (Mahmoud *et al.*, 2008). This group represents the youth period in which human beings are much active and wish to change for better living conditions".

**Table (1): Average of Ages of the Respondents in Targeted Localities**

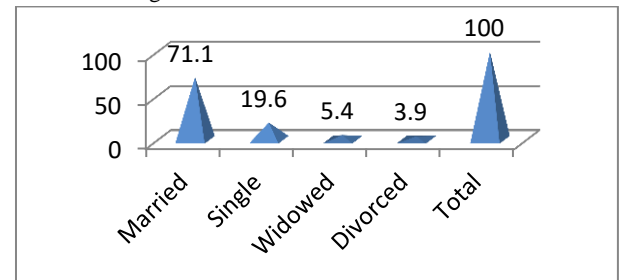
Age interval in years	Frequency	Percent %
Less than 20 years	3	1.5
20-29 years	63	30.9
30-39 years	77	37.7
40-49 years	49	24.0

50 years and above	12	5.9
<b>Total</b>	<b>204</b>	<b>100.0</b>

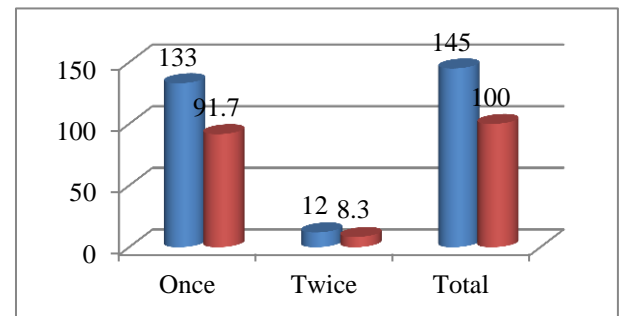
Sources :( Author, 2022)

##### 3.1.2: Distribution due to Types and Frequency of Marital Statuses:

The study findings showed that, the marital status among the respondents included: Married (71.1%), single (19.6%), widowed (5.4%) and divorced (3.9%), figure (3.1), while frequencies of marriages were (91.7%) for once and (8.3%) for twice figure (3.2). Results indicated that, there is marriage stability and peaceful co-existence living status among families in targeted communities.



**Figure (3.1): Types of Marital Statuses**



**Figure (3.2): Frequencies of Marriage**

##### 3.1.3: Distribution due to Family size:

Results showed that sizes of family of respondents were: 20.3% for (three) persons, 15.2% for (six) persons, 13.7% for (four & seven) persons, 12.3% for (five) persons, 11.3% for (eight) persons, 9.3% for (ten and more) persons 8.3% for (nine) persons, and 5.9% for (two) persons respectively. Results indicated that the average was 8 people, which were considered as suitable enough as labors to facilitate the positive engagement of families in agriculture and animal production activities. Results go in line with (Meinzen.et al, 2019) "Evidence shows that women farmers are less likely to adopt sustainable and resilient farming approaches due to their limited access to necessary resources, including land, labour, information and technology, and their lower levels of literacy, capital accumulation and weaker access to credit".



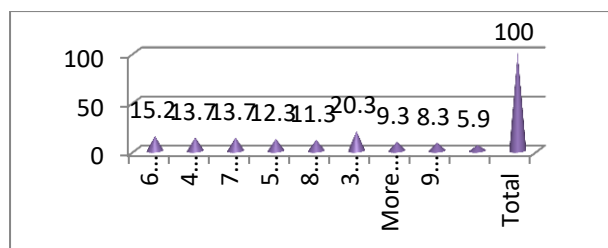


Figure (3.3): Family's Sizes of the Respondents

### 3.1.4: Distribution due to Education Level:

The study findings revealed that (49.5%) received primary education, (31.4%) had attended secondary schools, (6.9%) had acquired university education and (4.4%) gained religious education (Khalwa), which indicates that (92.2%) of respondents were educated at different levels figure (3.4). This results agreed with what had been said by (Desai,2010) "education had been regard as a key to women's empowerment for its ability to raise awareness and open possibilities as well as link to economic growth and children health".

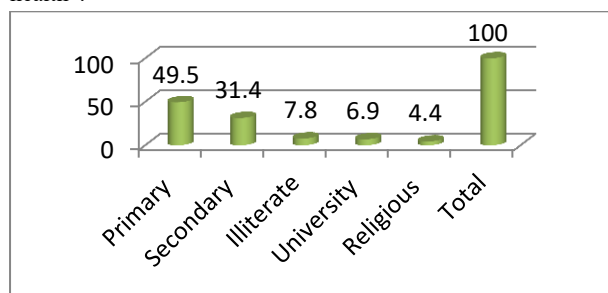


Figure (4): Education levels of the Respondents

### 3.2: Distribution due to Capacity Building on Environmental Activities:

Results showed that, (53.9%) from the respondents had received training on environmental activities, figure (3.5). Per localities 83.3% for Umrwaba, 62.5% for Alrahad, 55.6% for Sheikan, and 10.4% for Bara respectively. Results indicated significant difference in intervention between localities, table (2).

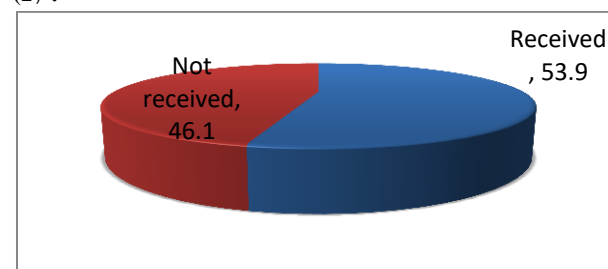


Figure (3.5): Trainings on Environmental Activities

Table (2): Training on Environmental Activities/ Localities

Status	Bara		Alrahad		Sheikan		Umrwaba		Total	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Received	5	10.4	30	62.5	30	55.6	45	83.3	110	53.9
Not received	43	89.6	18	37.5	24	44.4	9	16.7	94	46.1
<b>Total</b>	<b>48</b>	<b>100</b>	<b>48</b>	<b>100</b>	<b>54</b>	<b>100</b>	<b>54</b>	<b>100</b>	<b>204</b>	<b>100</b>

Sources: (Author, 2022)

### 3.2.1: Distribution due to Frequency and Duration of Trainings

Result showed that frequencies of trainings were (55.5%) for category once, (23.6%) for twice, (12.7%) for third time and (8.2%) for more than three times figure (3.6), while the duration of trainings ranged between (84.5%) for category 1-3 days, (5.5%) for more than 10 days, (10%) for others, figure (3.7). Results indicated that there was a decreased training opportunity, and that referred to the distribution of the opportunities among the cluster's members.

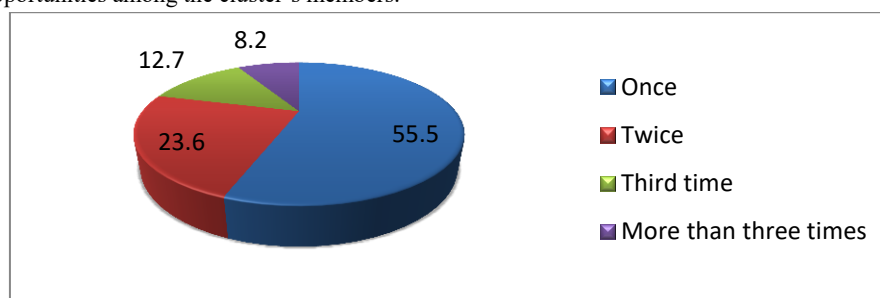


Figure (3.6): Frequency of Trainings

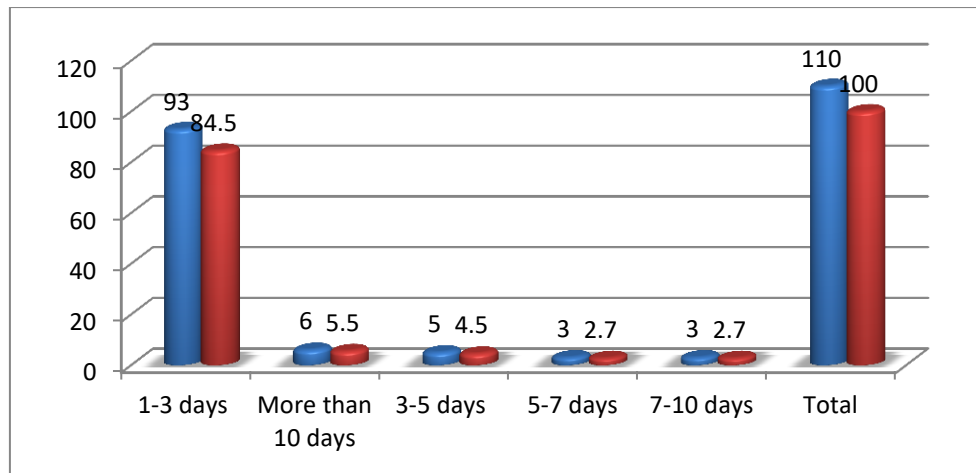


Figure (3.7) Duration of Training Courses

### 3.3: Distribution due to Types of the Environmental Activities:

The study showed that, types of the environmental activities received by the respondents comprised of: (26.4%) for LPG (Liquid Petroleum Gas) activity, (21.8%) for water, (13.6%) for water +LPG,(12.7%) for forest + rangeland ,(11.8%) for water +forest +rangeland, and (13.7%) for others, table (4). Results showed that distributions of activities per localities were: LPG: (41.4%) for Umrwaba, (38.0%) for Sheikan, (17.2%) for Bara and (3.4%) for Alrahad. Water: (50%) for Umrwaba, (50%) for Sheikan. Water + LPG: (60%) for Umrwaba, (40%) for Sheikan .Forest + rangeland (78.6%) for Alrahad, (21.4%) for Umrwaba. Water + forest + range (76.9%) for Alrahad, (23.1%) for Umrwaba table (5).Results indicated that Umrwaba and Alrahad localities had the priority of allocations of the interventions in the field of water and LPG per (60%), (40%) respectively, while Alrahad in the fields of forest and rangeland per (78.6%) ,table (3).The distribution of interventions based on LMRP approach ,hence the program adopted the clustering approach, in which the criteria of selection based on the potentiality of shared resources, in addition to communities contributions in cash or kind. Results go in line with what had been reported by (World Bank, 2021). “Rural women in low and lower-middle income countries face persistent obstacles and constraints

limiting their empowerment. Women producers and entrepreneurs in agri-food systems are hindered by limited access to and control over essential resources and opportunities, particularly land and natural resources”.

Table (4): Types of the environmental activities

Type of activity	Frequency	Percentage (%)
LPG	29	26.4
Water	24	21.8
Water + LPG	15	13.6
Forest + range	14	12.7
Water + forest + range	13	11.8
Forest	8	7.3
All	4	3.6
Water + forest + LPG	2	1.8
Range	1	0.9
<b>Total</b>	<b>110</b>	<b>100</b>

Sources: (Author, 2022)

Table (5): Types of the Environmental Activities per Localities:

Types of Training	Bara		Alrahad		Sheikan		Umrwaba		Total	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
LPG	5	100	1	3.3	11	36.7	12	26.7	29	26.5
Water	0	0	0	0	12	40	12	26.7	24	21.8
Water + LPG	0	0	0	0	6	20	9	20	15	13.6
Forest + range	0	0	11	36.7	0	0	3	6.7	14	12.7
Water +forest + rangeland	0	0	10	33.3	0	0	3	6.7	13	11.8
Forest	0	0	2	6.7	0	0	6	13.2	8	7.3
LPG +water +forest + rangeland	0	0	4	13.3	0	0	0	0	4	3.6

Water + forest + LPG	0	0	2	6.7	0	00	0	0	2	1.8
Rangeland	0	0	0	0	1	3.3	0	0	1	0.9
<b>Total</b>	<b>5</b>	<b>100</b>	<b>30</b>	<b>100</b>	<b>30</b>	<b>100</b>	<b>45</b>	<b>100</b>	<b>110</b>	<b>100</b>

Source: (Author, 2022)

### 3.3.1: Distribution due to Reasons behind Selection of the Environmental Activity:

Result findings revealed that, there were different reasons behind respondent's selection of the environmental activities comprised: (52.7%) associated with the neediness, (25.5%) for reduce environmental risks, (12.7%) for decrease family's disbursement, and (9.1%) for income diversification figure (3.8). Results indicated that selection based on their real need to obtain essential services such as water, LPG, forests and rangeland services, and this go in line with what had been said by (Resurrección et al., 2019) "Rural, indigenous, ethnic minority and pastoralist women still face immense barriers in access to and control over natural resources, services, technology, information and decision making".

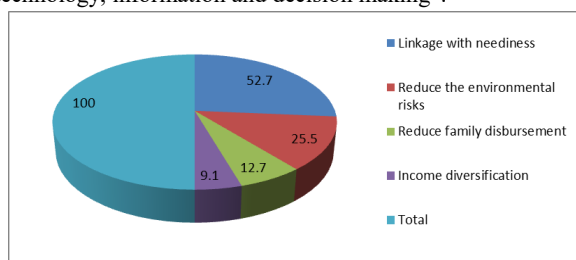


Figure (3.8) Reasons behind Respondent's Selection of Activities

### 3.4: Distribution due to Effects of Capacity Building in Increasing Respondent's Skills and Raising Awareness

The study results revealed that 100% from the respondents who had received training on environmental activities ensured that training led to increasing their skills and raising their awareness towards the environmental issues figure (3.9). Results indicated that the program managed to empower beneficiaries environmentally.

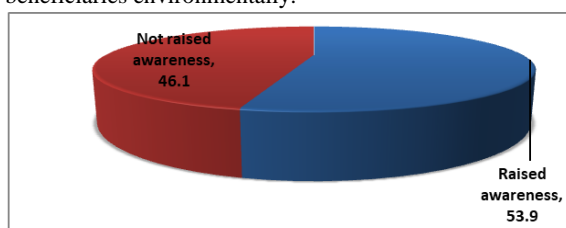


Figure (3.9): Effects of Capacity Building in Increasing Respondents' Skills Raising Awareness

### 3.5: Distribution due to Challenges that Faced LMRP Interventions

Respondents categorized challenges that faced the program to empower rural women in four categories comprised: (84.8%) for decreased financial access, (9.3%) for decreased access to solar energy and LPG, (4.9%) domination of man, and (1.0%) for increased illiteracy rates among women, figure (3.10). Results indicated the priorities of rural women for services as finance and LPG services.

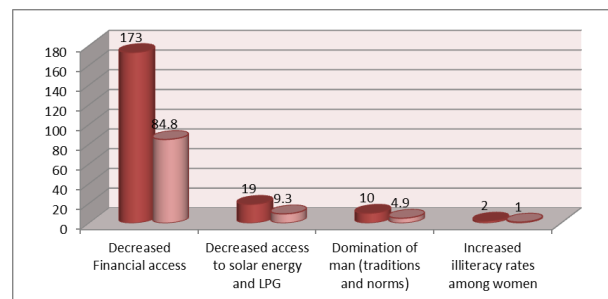


Figure (3.10): Constrains Faced LMRP Interventions

## Conclusion & Recommendations

The study results showed that the targeted groups were of youth category which is considered as the leaders of change for better living conditions for their communities. Stability and peaceful coexistence living conditions among the targeted communities were expressed by the marital statuses and frequencies of marriages. Availability of labor force at family level enabled them to positively engage in the economic activities such as agriculture, animal production and commerce. High educational levels facilitated the knowledge acquisition processes. About half of respondents had received training packages on different environmental issues. The decreased percentage referred to the criteria of nominating the beneficiary for attending training courses, which was based on the distribution of opportunities among beneficiaries from the different villages that comprised the cluster, and the cluster might be represented by one or two villages only. The program interventions regard to water, LPG, rangeland, forestry activities based on clustering modality, beside the readiness of targeted community to contribute in activities implementations in cash or kind, and that interpreted the significant differences in the distribution of activities among localities. Capacity building processes led to the increase of skills and raising the awareness all respondents who received trainings, and that expressed by their criteria of selection, which indicated that the program managed to empower beneficiaries environmentally. The study recommended for the necessity of increasing training opportunities, financial access, in addition to facilitating the engagement of women in the environmentally friendly activities such as solar energy and LPG, besides establishing gas exchange centers at village levels.

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