

Socio-Economic Characteristics of Farmers and Diagnosis of Socio-Cultural Factors Affecting Gender Mainstreaming in the Integrated Rice-Fish Farming System in Liberia

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Abstract - A study was conducted to understand the socio-economic characteristics of farmers and the gender norms, attitudes, practices, and power relations that constrain especially women and youth from participating in and benefiting from rice-fish value chain activities in 5 Counties of DeSIRA project intervention in Liberia. Primary data was collected between April and May 2022 using structured questionnaire and analysed using simple statistics on statistical packages for the social sciences (SPSS) with results display in tables and figures.

Results of the study indicate that male constitutes 53% and females 47% of respondents interacted with in the study. Desegregation of farmers by gender shows that women constitute 32%; men, 29%; male youth, 20% and female youth, 19%. The economically active age group (21-60 years old) constituted a total of 86.3% of the farmers. The mean age of 44 years shows that most respondents were relatively young and economically active. About 34% of the farmers have no formal education, 27% are primary school certificate holders, 31% have senior secondary school certificate, while 8% are university graduates. This shows that majority of the farmers are literate enough with abilities to understand simple agricultural communication on improved technologies and innovations. A larger proportion of the respondents (57.5%) have household size of 6-10 persons, with average size of 7. Gender desegregation of farmers by household headship, indicate that 41.4 % were men headed, 25% women headed, and 15% youth headed. About 56% of farmers in the project counties are members of farming groups (mainly FBOs) and the 44% that don't belong attributed this to lack of interest in working with other farmers, not foreseeing any benefit of joining and collapse of earlier groups in the community. Most respondents (84%) have no access to finance and therefore depended on meagre personal savings for their farm activities. Only 36% of the farmers in the project counties practiced integrated rice-fish farming (IRFF); while 57% grew sole rice and 7% were on sole fish culture. Value chain activities most suitable for women and youth was production as indicated by 80.5% and 64.4% respectively. This calls for designing gender-friendly technologies across the value chain activities. The average farm holding per farmer was 1.25 ha with average yield of 1.85 tons/ha for rice and 0.6 ton/ha for fish. Only 23% of the respondents having contact with extension staff on advisory/farm visits. Assessment of improved technology disseminated by the project indicates that 76% of farmers adopted NERICA L-19 rice for planting while only 37% of respondents accessed to and adopted the improved Tilapia for culture. Only 12% of respondents have skills on climate smart agriculture, 77% lack farm insurance coverage and 68% have no skills to cope with emergencies like flash floods and climate change. Major challenges in adopting the IRFF technologies by the respondents include inadequate farming tools (70.1%), inadequate access to market for produce (64.4%), poor access to transportation of farm produce (63.2%), high cost of ponds construction (62.1%) and inadequate knowledge and skills on the integrated rice-fish farming system (55.2%). Some of the main suggestions proffered by the farmers to make IRFF profitable include access to credit facilities (71.2%), control of ground hogs, birds, and rats in rice fields (65.5%), and capacity building of farmers on climate smart agriculture (49.4%).

Index Terms - Socio-Economic; Farmers; Diagnosis; Socio-Cultural; Gender Mainstreaming

1.0. INTRODUCTION

The agriculture sector in Liberia faces many challenges. The sector is characterised by the persistence of a dualistic structure in which an economically concentrated commercial plantation sector coexists with large numbers of poor farm households involved in low input/low output (shifting) cultivation. This dualistic system has been identified as a major contributing factor to the conflicts in the country (World Bank. 2013).

Agriculture provides the main livelihood for 48.9% of the workforce of Liberia's agriculture sector, dominated by traditional subsistence farming systems on uplands that are characterized by labor intensive - shifting cultivation, low technologies, and use of rudimentary inputs, resulting in low productivity (PAPD, 2018).. The farming systems are primarily forest based and they cover the largest portion of cultivated land area, are concentrated in the central belt of the country, and account for almost half (50%) of the total land area and almost 90% of arable land. Small acreages of tree crops are maintained for generating cash income while rice, intercropped with vegetables and other food crops, occupy the major portion of cultivated land (about 87%). Commercial agricultural activities are almost exclusively plantation estates of rubber, and to a lesser extent oil palm. Coffee and cocoa are produced mainly by smallholders and exclusively for export. Value addition is limited and restricted to rubber. The livestock sub-sector was decimated because of years of civil conflicts. Current livestock population is below 10% of national requirements. The fisheries sub-sector is also under- developed, but has good potential for growth, since only about 6.8% of sustainable yield is harvested annually (MOA 2008).

Low production and productivity are mostly attributable to low level of public and private investments, which translates into the lack of quality farming inputs, extension services and the high dependency of agriculture on the vagaries of the weather. Inadequate and unreliable infrastructure (roads, storage, and processing facilities, as well as electricity/power supply and internet connectivity) caused by weathering climatic conditions hampers access to markets and thus the buying and selling of inputs and outputs; these conditions in addition to poor food safety and handling practices also result in high post-harvest losses and hampers value addition activities. Therefore, income-earning opportunities are undermined, and food security is low. At the local level, farmer-based organizations (FBOs) and community-based organizations (CBOs) have limited organizational capacities that limit their opportunities to improve their living standards and to deal with the impact of climate change. Access to land and secure tenure rights are also issues that hamper investment in agriculture.

Unsustainable agricultural practices are among the main cause of deforestation, land degradation and low productivity. Farmers often rely on labour-intensive, and slash-and-burn shifting cultivation and have limited awareness of sustainable land management practices (e.g., mulching for soil- moisture retention and nutrient recycling). Smallholder farmers are also held back by limited access to credit as the banking sector offers few products suitable for smallholder farmers, who remain underserved.

In addition, a 2022 survey conducted by the Food and Agriculture Organization of the United Nations (FAO) showed that smallholder subsistence farming is critical to food crop production and, thus, to food and nutrition security in Liberia (FAO, 2022). The labour-intensive nature of crop production and agriculture in Liberia, makes access to labour and critical inputs extremely important for nationwide crop production.

An estimated 85% of the calories consumed by Liberians comes from rice and per capita consumption is amongst the highest in the world; the importance of rice for Liberia cannot be overstated. In Liberia, rice has a high economic potential of approximately \$75-100 million annually through import substitution alone. Unlike almost all other agriculture crops in Liberia, local rice has a captive commercial market within the country and therefore does not have to be exposed to the uncertainties of global trade, something that the COVID-19 pandemic has highlighted all too well. Because it is the staple food, and has a huge demand within the region, rice does not have the complexity of dealing with the long lead times and working capital cycles typically required for exports. Rice is not only one of the main agricultural imports, it is also the main staple food crop produced in the country, together with cassava. It is estimated that traditionally more than two-thirds of cultivating households grow those two staple crops, and this figure has increased to 80% according to a recent assessment conducted (PAPD, 2018).

The government has developed a five-year National Development Plan referred to as the Pro-Poor Agenda for Prosperity and Development (PAPD) 2018-2023 (PAPD, 2018). As stated in the PAPD, the government recognizes the need for inclusive and sustainable economic diversification to achieve structural transformation and growth; the urgency of facilitating private sector participation in the economy as well as the importance of the agri-food sector as an engine of growth. The government has prioritized the agriculture sector to diversify the economy and has identified eight priority value chains for support under the PAPD 2018–23, including the rice value chain. The reason for the poor status of rice farming in Liberia is the absence of its recognition as a crop that has a commercial market. The main challenge to stimulate a move from traditional, upland production systems to adopt high productivity strategies in lowland rice production is limited access to market and for Liberian smallholder farmers in particular, this results into their lack of motivation to produce rice beyond their household consumption (USAID, 2016).

Liberia as a country has been fortunate to have a very large share of development partners' intervention projects in the agricultural sector. Although these projects made immediate impacts along the value chain, the sustainability of such impacts for overall agricultural development of the country has been difficult. The task before the DeSIRA- IRFFS Project is to converge the rice - fish value chain stakeholders to tackle the technical, economic, social, institutional, and policy challenges to enable sustainable development of the value chain for obvious socio-economic benefits to all stakeholders and the larger economy.

The IRFFS technology is targeted at 365 households (mainly smallholder farmers) to boost their productivity, income, and improved nutrition in project Counties of Gbarpolu, Grand Gedeh, Margibi, Maryland and River Gee. The '*theory of change*', to achieve the project objectives is '*to develop integrated, climate-smart rice-fish production systems sustainably, through balance interventions on*

participatory research on rice-fish farming, development of successful extension service delivery systems, value chain development with special attention to farmer strategies for value chain access, capacity building of actors involved and stakeholder platforms to create and sustain an enabling environment for adopting such integrated systems’.

The specific objectives of the study were:

- i. To characterize the value chain actors by demographic and chain activities
- ii. To diagnose the social-cultural factors affecting gender mainstreaming in agriculture
- iii. To identify challenges faced by value chain actors and the prospects of utilizing the capacity building of farmers for resilience and profitable enterprises.

2.0. METHODOLOGY

2.1. The Study area

The survey covered the 5 Counties of the project intervention – Gbarpolu, Grand Gedeh, Margibi, Maryland and River Gee (Figure 1).

2.2. Data Collection

Primary and secondary data were collected for the study. Primary data was obtained using questionnaire and checklists especially for value chain actors in rice-fish integrated culture in the project Counties. Direct contact was used for the interviews. The AfricaRice Focal Persons in the project counties were trained to assist in administering the questionnaire and conduct focus group discussion (FGD) with value chain actors.



Figure 1. Locations of the five IRFFS project Counties in Liberia

Secondary data were sourced from desktop research, DeSIRA-IRFFS project documents and other relevant sources of information.

2.3. Sample Size and Research Design

The target population were mainly farmers at the community level. A sample size of 100 farmers was targeted for the study in the 5 project counties, that is 20 farmers per county. In each county, project beneficiaries consisting of 7 males, 7 females and 6 youth (males and females not above 35 years old) were scheduled for interview. By proportion gender-wise, the target was 35% males, 35% female and 30% youth. Respondents were selected by purposive sampling at the various community where the IRFFS project is operating. Table 1 shows the target and achieved in questionnaire administration and retrieval during the study. A total of 87% retrieval was achieved with 29% for each of male, female, and youth category.

Table 1: Sample Size of Respondents

S/No.	County	Targets			Achieved			Total Retrieved
		Male	Female	Youth	Male	Female	Youth	
1	Gbarpolu	7	7	6	6	7	7	20
2	Grand Gedeh	7	7	6	3	4	3	10
3	Margibi	7	7	6	8	5	7	20

4	Maryland	7	7	6	5	6	6	17
5	River Gee	7	7	6	7	7	6	20
	Total	35	35	30	29	29	29	87

2.4. Data Analysis

Data collected from the survey will be analysed using simple statistics on the statistical packages for social sciences (SPSS) or Excel with results display in tables, figures, and plates.

3.0. RESULT AND DISCUSSION

3.1. Socio-Economic Characteristics of Farmers

Adoption of improved agricultural technologies is influenced by socio-economic characteristics of farmers such as gender, age, education, membership of groups and access to finance are known to be determinants of adoption of agricultural innovations (Bolorunduro and Falaye, 2003)..

i. Gender

Male constitutes 53% and females 47% of respondents interacted with in the study (Figure 2). This calls for the consideration of gender friendly equipment and other farm tools for the convenience of female farmers in land preparations, planting, weeding, harvesting and agro processing. Desegregation of farmers by gender shows that women constitute 33%; men, 29%; male youth, 22% and female youth, 19% (Figure 3). This indicates fair representation and the need for gender mainstreaming in value chain governance in the IRFFS project.



Figure 2: Percentage distribution of respondents by gender

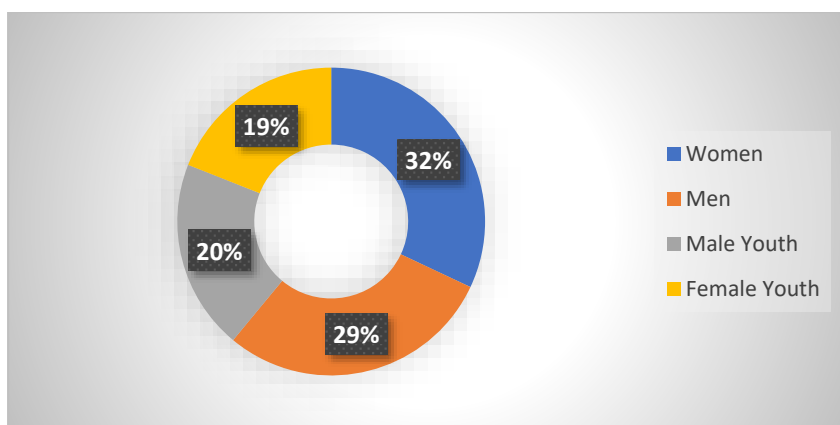


Figure 3: Desegregation of farmers by gender

ii. Age

Table 2 indicate the age distribution among the respondents. The economically active age group (21-60 years old) constitute a total of 86.3% of the farmers. Age has a lot of influence on adoption of educational innovations. The young farmers (≤ 20), that are not yet economically independent may find it difficult to take decisions on value chain activities no matter the envisaged advantages. This category constitutes 3.4% of the respondents. However, the economically active age group have flair for innovation pursuit and adoption (*ceteris paribus*). The elderly farmers (>60 years old), constituting 10.3% of respondents may not be much eager to embrace innovations until the perceived advantages are immediate and profitable based on their previous experiences. The mean age of 44 years shows that most respondents are relatively young and economically active.

Table 2: Age Range and Mean Age of Respondents

S/No.	Age Group (yr)	Frequency	Percentage
i	≤ 20	3	3.4
ii	21-40	29	33.3
iii	41-60	46	53.0
iv	>60	9	10.3
Total		87	100
Mean	44		

iii. Education

Among the farmers, 34% have no formal education, 31% have senior secondary school certificate, 8% are university graduates, while 27% are primary school graduates (Figure 4). Educated farmers are more prone to adoption of improved technologies with anticipated benefits. Majority of the project farmers are therefore sufficiently literate enough with abilities to understand simple agricultural communication on improved technologies and innovations.

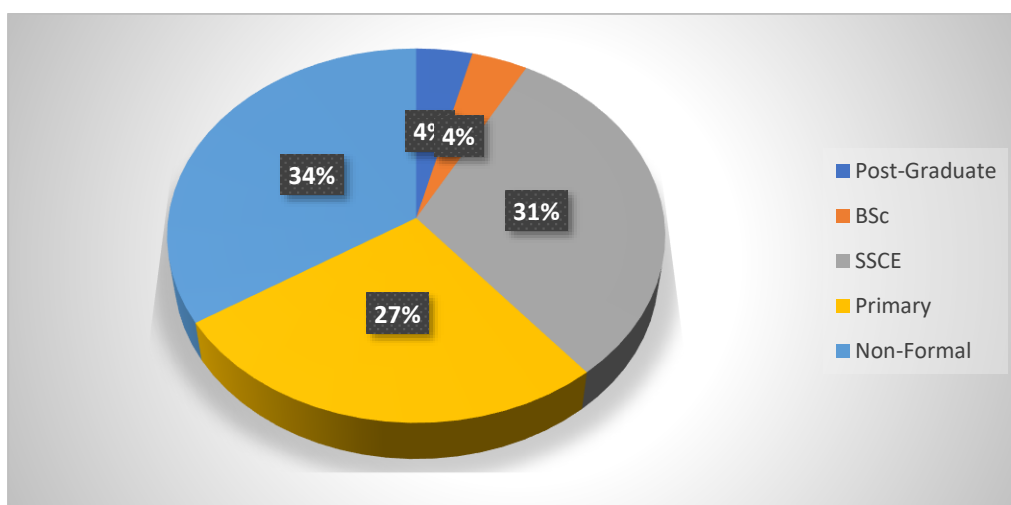


Figure 4: Highest Educational Attainment by Farmers

iv. Household Size

Majority of the farmers (57.5%) have 6-10 persons per household, although the average for the households of the respondents is 7 (Table 3). In the traditional African society, the size of the household determines the family labour available for farming operations and the larger the household, the higher the status of a farmer in the community. However economic realities are making modern day farmers to have reduced household size. Gender desegregation of farmers by household headship, shows that 41.4 % of the household are headed by men, about 25% by women and about 15% by the youth (Table 4). This spread justifies the effort to mainstream gender in decision making and overall governance of farm activities at the household and community levels in the IRFFS project sites and ultimately in the agricultural sector.

Table 3: Household Size of Farmers

S/No.	Household Size	Frequency	Percentage
i	1-5	27	31.0
ii	6-10	50	57.5
iii	>10	10	11.5
Total		87	100
Mean	7		

Table 4: Gender Desegregation of Farmers by Household Headship

S/No.	Gender	Frequency	Percentage
i	Men	36	41.4

ii	Women	22	25.3
iii	Male Youth	9	10.3
iv	Female Youth	4	4.6
v	Non-Household Head	16	18.4
Total		87	100

v. Membership of Farmers’ Groups

Cooperative approach in assisting farmers through funding and capacity building is trending as one of the agricultural best practices globally in promoting innovations for stakeholders’ benefits. About 56% of farmers in the project counties are members of farming groups (mainly FBOs), Figure 5. This result can be leveraged upon by the project to promote cooperative registration as basis for establishment of Innovation Platform at the community level. Reasons were given by farmers that are not members of farming groups. Such include lack of interest in working with other farmers (37%), not sure of any benefit of joining (32%) and non-existence of any in the community (26%), Table 5. These has been integrated into the upcoming extension workshop to proffer approaches for promoting cooperatives at community level.

vi. Access to Finance

Access to finance and other forms of credit to smallholder farmers is important in agricultural development. Figure 6 reveals that 84% of respondents depend on personal savings, while 16% finance their enterprises through informal sources (thrift savings in groups or loan from friend and relations). In the focus group discussions and personal interactions with the farmers, they indicated that they couldn’t access formal credit institutions for funds.

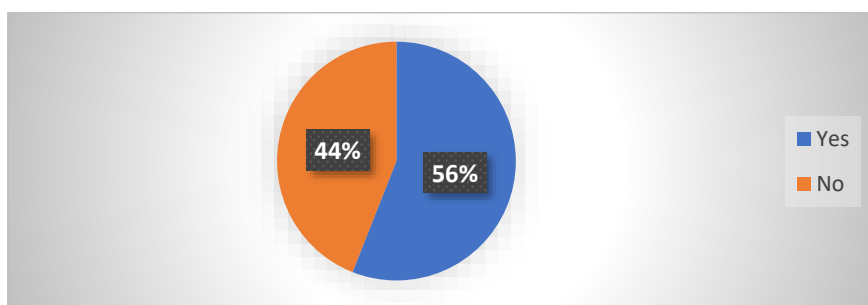


Figure 5: Membership of Farmer -Based Organizations

Table 5: Reasons for not belonging to Cooperative/Farmer Groups*

S/No.	Reasons	Frequency	Percentage
1	Farmers not interested in working together	14	37
2	Don't see the need or usefulness	12	32
3	None around in the immediate community	10	26
4	Cumbersome to register group	10	26
5	Financial demand for registration is too high	8	21

*Multiple responses

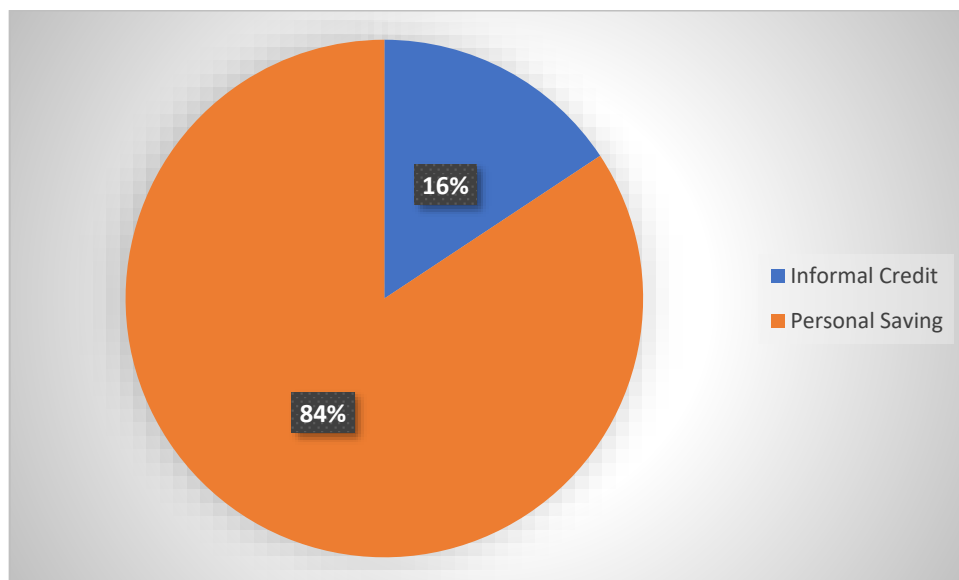


Figure 6: Source of Finance for Farming

3.2: Farming Practices by Project Beneficiaries

Only 36% of the farmers practiced integrated rice-fish farming (IRFF); while 57% grew only rice, and 7% cultured fish only. These categories of farmers under the project were either waiting for Tilapia fingerlings or NERICA L-19 rice seeds to join the integrated culture practices (Figure 7).

Value chain activities most suitable for women and youth is production as indicated by 80.5% and 64.4% respectively (Table 6). This calls for designing gender-friendly technologies across the value chain activities. Since the introduction of the IRFFS in the project counties in 2020, only 17% of farmers have harvested both rice and fish from the integrated plots, while others were just stocking fish or waiting for supplies at the time of the study (Figure 8).

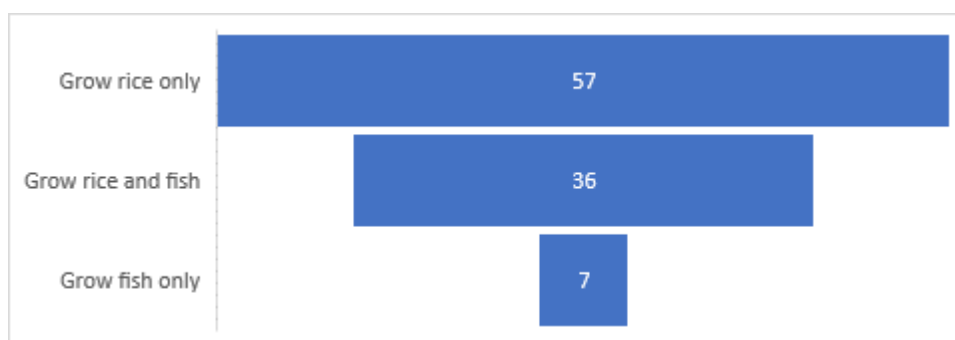


Figure 7: Distribution of Farmers by Farming Practices

Table 6: Value Chain Activity Most Suitable for Women and Youth*

S/No.	Value Chain Activity	Women		Youth	
		Frequency	Percentage	Frequency	Percentage
i	Production only	70	80.5	56	64.4
	Processing only	10	11.5	13	14.9

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ii	Production and processing	14	16.1	20	23.0
	Processing and marketing	10	11.5	10	11.5
iii	Marketing	4	4.6	7	8.0
iv	Agro Input sales	2	2,3	-	-

*Multiple responses

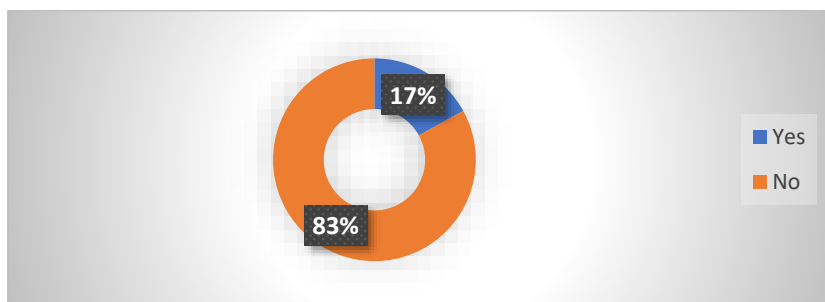


Figure 8: Rice and Fish Harvested from same Plot.

Some of the preliminary production statistics from the study are shown in Table 7, while the average farm holding per farmer was 1.25 ha, the average area of land devoted to IRRF was 0.64ha. Average yield of rice and fish from integrated plots were higher, 3 tons/ha and 1.5 tons/ha respectively than from sole cultivation.

Table 7: Some Production Statistics of Farmers in the IRFFS.

S/No.	Factor	Unit
1	Average farm holding	1.25 ha (0.25-6.5 ha)*
2	Average land devoted to IRFFS	0.64ha (0.4-6.5 ha)*
3	Proportion of land devoted to IRFFS	51.2%
4	Average yield of sole rice	2 tons/ha
5	Average yield of sole fish	0.8 ton/ha
6	Average yield of rice from IRFFS	3 tons/ha
7	Average yield of fish from IRFFS	1.5 tons/ha
8	Price of paddy rice per kg	3 USD
9	Price of harvested fish per kg	4 USD

*Figures in parentheses are ranges.

3.3: Dissemination of Integrated Rice-Fish Farming Technology

About 89% of the farmers sourced their information and technologies to start IRFF from AfricaRice while 11% got information from the Ministry of Agriculture (Figure 9) between 2020 and 2022 (Table 8). With support from the project on equipment supply, technical back up by the Focal Persons in the project counties and capacity building of farmers. With support for farmers the future of IRFFS for upscaling in other counties is bright.

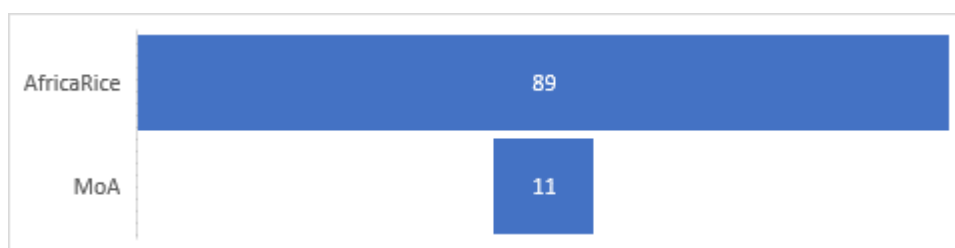


Figure 9: Agencies Responsible for Dissemination of Rice-Fish Culture Technology

Table 8: Year of Awareness of Integrated Rice-Fish Culture Technology

Year	Frequency	Percent
2020	18	20.7
2021	30	34.5
2022	39	44.8
Total	87	100

Assessment of improved technology disseminated by the project indicates that 76% of farmers had access to NERICA L-19, while 24% are yet to access the seeds. Equally only 37% of respondents accessed the improved Tilapia for culture (Table 9).

Table 9: Suitability of Improved Technologies to Value Chain Activities*

S/No.	Improved Technology	Accessed	Not Accessed	Challenges
1	Nerica L-19	32 (76)	10 (24)	Seeds not readily available
2	Suakoko-8	48 (92)	4 (8)	Not growing well
3	Improved Tilapia	10 (37)	17 (63)	Lack feeds and technical back up

Note – Figures in parenthesis are percentages.

3.4: Extension Contact

The weak institutional capacity of extension system in Liberia was further revealed with only 23% of the respondents having contact with extension staff on advisory services (Figure 10) and 25% of this category are visited weekly (Figure 11).

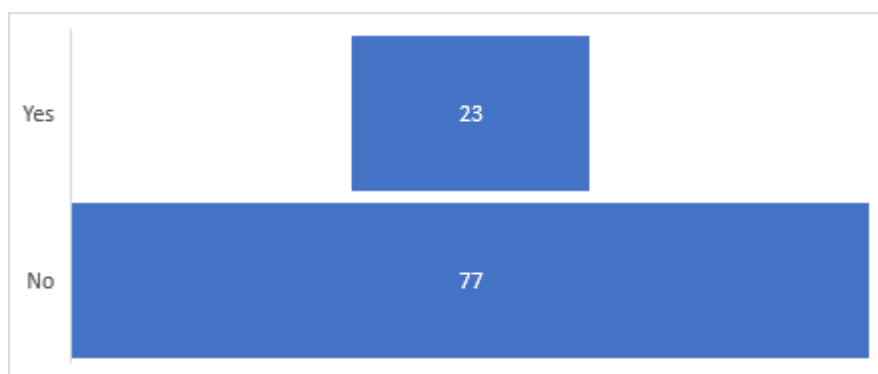


Figure 10: Access to Extension Visit

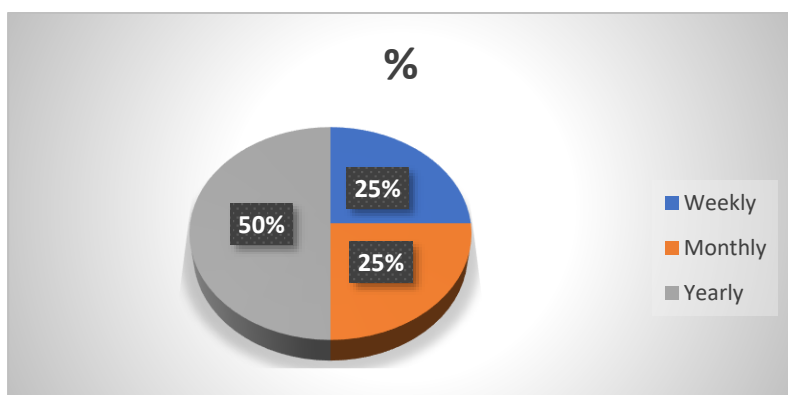


Figure 11: Frequency of Extension Visit

3.5. Cross Cutting Issues

Liberia is faced with high climate change risks including cyclones, floods, and a rising sea level because of its location in a tropical rain forest climate belt. Projections on climate change point to average annual rainfall 3.0% greater by 2050, annual temperatures 2.6°C higher by the 2060s, and a rising sea level of 0.56 meters by 2100 (AfDB, 2022).. Only 14% of respondents have skills on climate smart agriculture, 88% lack farm insurance coverage and 78% have no skills to cope with emergencies like flash floods and COVID-19 (Table 10).

Table 10: Skills for Climate Smart Agriculture and Other Emergencies*

S/No.	Issue	Yes	No
1.	Skills for climate smart practices	12 (14)	75 (86)
2.	Farm Insurance coverage	10 (12)	77 (88)
3	Skills for coping with emergencies e.g., COVID-19, flash floods	19 (22)	68 (78)

* Values in parenthesis are percentages

3.6: Social-Cultural Factors Affecting Gender Mainstreaming in IRFFS

Greater awareness is being raised globally about women’s economic empowerment and gender equality. Women comprises of over half of the agriculture labour force and about two-thirds of the trade and commerce labour force with women consisting of nearly 60% of farmers in Liberia (GROW, 2022). Their role in agriculture is important, particularly in food crops, where they are reported to produce over half of the output (World Bank, 2010). On the average, about 87% of respondents indicated that there are socio-cultural barriers to women mainstreaming in agriculture in Liberia such as gender violence (98%), denial of opportunities for self-expression (94%), denial of land right and ownership (92%), underestimation of women abilities (92%) and limited access to extension services (92%) – Table 11. An average of 86% of respondents agreed that youth also face socio-cultural factors militating against their mainstreaming in agriculture such as denial of land right until after demise of parents (98%), drudgeries of traditional agriculture (98%), lack of guidance, support, and mentorship in agricultural career (96%) and exclusion in farm decision making (94%), among others (Table 12).

Table 11: Socio-Cultural Factors Affecting Women Mainstreaming in IRFFS in Liberia*

S/No.	Factors	Frequency	Percentage
1	More prone to gender violence	85	98
2	Denial of opportunities for self-expression in meetings	82	94
3	Denial of land right and ownership	80	92
4	Under-estimation of women abilities	80	92
5	Limited access to extension services	80	92
6	Denial of access to credit	76	87
7	Exclusion in decision making	75	86
8	Low priority in agricultural education	72	83
9	Neglect of views and suggestions	70	80
10	Subjection to early marriage and total dominance	68	78
11	Unequal treatment in farm labour compared with men	65	75
	Mean	76	87

*Multiple responses

Table 12: Socio-Cultural Factors Affecting Youth Mainstreaming in IRFFS in Liberia*

S/No.	Factors	Frequency	Percentage
1	No land right until demise of parents	85	98
2	Drudgeries of traditional agriculture are disincentives	85	98
3	No guidance, support and mentorship in agricultural career	84	96
4	Views not regarded in farm decision making	82	94
5	No motivation by government to practice agriculture	69	79
6	Youth capacities in value chain activities not recognized	65	75
7	Limited opportunities for youth in agriculture	55	63
	Mean	75	86

*Multiple responses

3.7: Challenges Faced by Value Chain Actors and Recommended Solutions

Major challenges in adopting the IRFF technology by the respondents include inadequate farming tools (70.1%), inadequate access to market for produce (64.4%), inadequate transportation facilities for farm produce (63.2%), high cost of ponds construction (62.1%) and inadequate knowledge and skills on the integrated rice-fish farming system (55.2%), Table 13.

Table 13: Major Challenges in Adopting Rice-Fish Farming Technology*

S/No.	Challenges	Frequency	Percentage
1	Lack adequate farming tools	61	70.1
2	Lack market access	56	64.4
3	Inadequate transportation facilities for farm produce	55	63.2
4	High cost of pond construction	54	62.1
5	Lack access to rice mills	49	56.3
6	Lack adequate knowledge and skills on rice-fish farming	48	55.2
7	No access to credit facility	41	47.1
8	No adequate fish feeds	41	47.1

9	Lack adequate skills in flood control	40	45.0
10	Lack of protective farm gears	39	44.8
11	Climate change affects planting cycle	39	44.8
12	Incidence of termite infestation	37	42.5
13	On-farm theft of produce	25	28.7
14	Insect/Bird infestation	22	25.3

* Multiple Responses

Some of the main suggestions proffered by the farmers to make IRFF profitable include access to credit facilities (71.2%), control of ground hogs, birds, and rats in rice fields (65.5%), and capacity building of farmers on climate smart agriculture (49.4%), Table 14.

Table 14: Recommendations for more Profitable Integrated Rice-Fish Farming Practice to Farmers*

S/No.	Suggestions	Frequency	Percentage
1	Access to credit facility	62	71.2
2	Control ground hogs, birds, rats	57	65.5
3	Capacity building on climate smart agriculture	43	49.4
4	Provide some farming tools	42	48.3
5	Facilitate market access for produce	42	48.3
6	Capacity building of farmers on fish farming	40	45.0
7	Access to agrochemicals for plant health	39	44.8
8	More access to Narica-L 19	39	44.8
9	Provision of fish feeds	37	42.5
10	Provision of protective farm equipment	35	40.2
11	Capacity building on farm layout for water control	28	32.2

* Multiple Responses

4.0. CONCLUSION

The study has shown the rice-fish value chain in the integrated system with a simplistic mapping of actors. This is because the IRRFS project is new in Liberia. As the value chain develop with opportunities to explore by actors the chain mapping will be gradually more interwoven and complex. The challenges faced by the actors are typical to those within the agricultural sector of Liberia. The most pronounced is the weak institutional capacity of a sector that is underfunded, understaffed with infrastructural defects. Luckily opportunities still exist for agricultural project funding for which Liberia has been a hub in the post-war era.

The integrated rice-fish farming technology being promoted by AfricaRice has created awareness in the entire country since it is an appropriate technology suitable for small-holder farmers especially when they are formed into cooperatives. Capacity strengthening of the farmers' groups, timely provision of inputs, farm tools with technical backup as practiced by AfricaRice is what has been making the beneficiary farmers on course with the IRFFS technology.

Sustainability and scaling out for any project depend on several interacting factors in the agricultural sector with each actor playing their expected roles properly. This is the opportunity inclining towards rapid gender mainstreaming will bring through all the stakeholders interacting together for the good of the system.

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