



Ministry of Agriculture and Forestry (MAF)

Agricultural Value Chain Development Project (AVDP)

Baseline Survey Report – 2021

Country- Sierra Leone

Assignment Completed by:

AVDP-AVDP-PMU/QCBS/C/3/6/20

**Investment Forum for Community Development (IFCoD)
Consulting Team**

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List of Acronyms

ABCs	Agricultural Business Centres
ABSL	Apex Bank of Sierra Leone
AF	Adaptation Fund
AfDB	African Development Bank
AMIS	Agricultural Market Information System
AVDP	Agriculture Value Chain Development Project
AWPB	Annual Work Plan and Budget
BSL	Bank of Sierra Leone
CB	Community Bank
C/KM	Communication and Knowledge Management
DAO	District Agricultural Officer
DSF	Debt Sustainability Framework
EPA	Environmental Protection Agency
ESMP	Environmental and Social Management Plan
EU	European Union
FAO	Food and Agriculture Organization
FBO	Farmer Based Organization
FFS	Farmer Field School
FO	Farmer Organization
FSA	Financial Services Association
GALS	Gender Action Learning System
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GoSL	Government of Sierra Leone
GYP	Gender and Youth Action Plan
HDI	Human Development Index
ICADEP	Inclusive Comprehensive Agricultural Development Programme
ICB	International Competitive Bidding
IEC	Information, Education and Communication
IFAD	International Fund for Agricultural Development
IsDB	Islamic Development Bank
IVS	Inland Valley Swamp
KFTCRC	Kenema Forestry and Tree Crop Resource Centre
KM	Knowledge Management
Km	Kilometre
M&E	Monitoring and Evaluation
MAF	Ministry of Agriculture and Forestry
MG	Matching Grant
MoFED	Ministry of Finance and Economic Development
MT	Metric Tonne
MTR	Mid-term Review
NCB	National Competitive Bidding
NPCU	National Programme Coordination Unit
NSC	National Steering Committee
O&M	Operation and Maintenance
OFID	OPEC Fund for International Development
PBAS	Performance Based Allocation System
PCR	Project Completion Report
PDO	Project Development Objective

PDR	Project Design Report
PEMSD	Planning, Monitoring and Evaluation and Statistics Department
PRP	President's recovery Programme
QCBS	Quality and Cost Based Selection
RCPRP	Rehabilitation and Community-based Poverty Reduction Project
RFCIP	Rural Finance and Community Improvement Programme
RFI	Rural Finance Institution
RIMS	Results and Impact Management System
SCADeP	Smallholder Commercialization and Agribusiness Development Project
SCP-GAFSP	Smallholder Commercialization Programme - Global Agriculture and Food Security Programme
SDR	Special Drawing Rights
SECAP	Social Environmental and Climate Change Procedures
SLARI	Sierra Leone Agricultural Research Institute
SLeCAD	Sierra Leone Chamber of Agricultural Development
SLIEPA	Sierra Leone Investment and Export Promotion Agency
SLL	Leone
SLRA	Sierra Leone Road Authority
SMS	Short Message System
TBI	Tony Blair Institute
TOR	Terms of Reference
USD/US\$	United States Dollar
WAATP	West Africa Agricultural Transformation Project
WEAI	Women's Empowerment in Agriculture Index

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Executive Summary

The Agricultural Value Chain Development Project (AVDP) is a six-year, USD 102 million project intended to benefit 43,000 households in all sixteen districts in Sierra Leone. The project is jointly funded by International Fund for Agricultural Development (IFAD), the Adaption Fund (AF), the OPEC Fund for International Development (OFID), Toni Blair Institute (TBI), the Private Sector, the Government of Sierra Leone (GoSL) and project beneficiaries. The project is directly being implemented by the Ministry of Agriculture and Forestry (MAF) through a dedicated Project Management Unit (PMU). By its design, the AVDP project is a market-led and demand driven project that seeks to organize and capacitate smallholder farmer groups to increase their production and productivity levels for four priority crops in Sierra Leone (Rice, Vegetables, Oil Palm and Cocoa). The project's interventions are designed in ways that stimulate rural farming households to acquire marketable surpluses after every production cycle, increase household incomes and enhance their overall wellbeing. The project has three main components. These include: i) Promoting Climate Resilient and Smart Agricultural Production; ii) Promoting Agricultural Market Development and iii) Ensuring Effective Project Coordination and Management. These three components contribute to the project's outcomes and expected impact.

To get the project's activities off the ground, assessing the current state of the key performance indicators at the impact and outcome levels was crucial. This baseline assessment was therefore commissioned by the Project Management Unit (PMU) to help provide adequate data for setting key benchmarks for the project. The primary objectives of this assessment included: i) collecting baseline data on key performance indicators of the project and ii) obtaining data on the pre-condition status of beneficiaries following IFAD's COIs guidelines.

This baseline assessment aims to provide data that will set the stage for the impact evaluations that will be carried out at mid-term and closure of the project in addition to informing program monitoring and learning. It also provides data that will be used for targeting during the project's implementation. To help solicit both quantitative and qualitative data, mixed methods research design was employed for data collection. A total of 2,606 households were sampled nationwide (i.e: all 16 districts in Sierra Leone) which represent acceptable margins or error (± 5) and confidence level (95%). Data was collected within proposed treatment and control communities. The treatment sample represents 50% (1303) of the total household sample. These were deemed critical to guide project interventions and set a framework for identifying counterfactuals for future evaluations.

Data were collected from these respondents using close-ended structured questionnaire that probed into the following: i) Household Demographics, ii) Production, iii) Employment, iv) Dietary Diversity, v) Financial Services, vi) Assets, vii) Producer Organizations, viii) Climate Resilience, ix) Women Empowerment. Using Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs), the assessment also collected

qualitative data on the following themes: 1) Production, 2) Market Access, 3) Livestock, 4) Fisheries, 5) Employed, 6) Dietary Diversity and 7) Financial Services. Results from the qualitative data helped in providing additional context/clarifications to the quantitative data collected and provided direct responses to qualitative indicators in the project's logic model.

With guidance from the PMU, this report presents results based on these nine sections from the structured household survey, instead of the project's logic model. Note however that all relevant indicators in the project's logic model are captured in these nine sections.

In the following section, we present highlights of the key results:

a. Household Demographics:

Gender: 50.7% of targeted household members were female across all three beneficiary/sampled categories (Households expected to benefit from the project directly, indirectly, and not at all). Across districts, female representation was highest in Falaba (58%) and the lowest in Bo (47%) . For those in the control group, female representation was highest in Kambia (64.5%) and lowest in Karene (41%) .

Marital Status: About 85% of household heads are married across all beneficiary categories. Of these, 64% are married in monogamous unions (63.1% in treatment group and 65.2% in control group) while 22% (23.1% in treatment group and 21.5% in control group) are married under polygamous structures. Across gender, male-headed households represented the largest share for married household heads while female-headed households had more widows/widower.

Age: Only 3.6% of households across all beneficiary categories had children below three years. 60% of household heads were middle aged, with ages between 36 years and 65 years. 35% are young adults and about 5% old aged. Average age for household heads stands at 43 years.

Religion and Ethnicity (Tribe): 73% of households practice Islam. Across gender, equiproportionate results were observed. That is, on average, 73% of male and female headed households' practices Islam. 42.05% of households were Mendes while 22.28% were Temnes.

Educational Levels: Over 82% of heads of households attained a primary, JSS, SSS level education. Equal shares were represented in all three categories (JSS, SSS and Primary).

Production

Main Source of Livelihood: The primary source of livelihood for majority of households is farming. On average, 81% of all targeted households rely on farming for their livelihood. Majority of farmers farm in the uplands (50.37%). 43.83% use Inland Valley Swamps while the others (under 5%) use Boli-lands, mangrove swamps or riverine. Overall, 54% of the household are involved in rice production, 8% in cassava, 9% in vegetables, and 12% in oil palm.

Area Under Cultivation: The average number of plots each household farm was recorded at 3. For the key value chain crops, areas cultivated per household stood at: Rice – 21 to 26 acres for young adults, 7 to 19 acres for middle aged. Vegetables – 55 acres to 68 acres for young adults and 25 acres to 53 acres for middle aged; Cocoa – 4 acres for young adults and 22 acres for middle aged. Oil Palm -3 acres to 10 acres excluding the control. Overall, average farm sizes for respective crops stood at Rice – 3.4 acres, Cassava – 2acres, Vegetables 2 acres, oil palm – 3.7acres and cocoa – 1.9 acres.

Use of Improved Inputs: Results showed that majority (between 61% to 68%) of respondents expressed being very satisfied with the seeds received. From the qualitative results, majority of seeds received by farmers come from MAF and development partner projects. For fertilizer, less than 15% of households use fertilizer on their fields. This was the case for both inorganic and organic fertilizer. Technology adoption rates are dismally low across all beneficiary categories. Less than 15% of respondents confirmed that they adopted new technologies for farming in the last cropping cycle. These technologies are typically introduced to farmers through Farmer Field Schools and other farmer group trainings. These may include agronomic practices, the use of improved varieties, the use of improved tools etc. Regarding irrigation, less than 20% of all households targeted had their fields irrigated.

Post-Harvest Losses: 67% of respondents confirmed suffering post-harvest losses in the last season that are related to rotting, pest/insect/rodent infestation, or theft. Across districts, post-harvest losses were greatest in Pujehun and Kambia districts. Across crop type, the highest levels of post-harvest losses were recorded for Coffee, Maize and Rice. Amongst AVDPs value chain crops, Rice represented the crop with the highest levels of post-harvest losses. About 19% of rice produced goes towards wastes across beneficiary categories, gender of households heads and age groups.

Marketable Surpluses: Across all age groups and beneficiary categories, about 48% of households sell part of their produce to the markets. Of these, 35% sell to established marketing outlets (periodic and daily markets) while the larger share sells through other local means. The alternative marketing outlets include community in-kind exchanges (barter), through collectors, through processors, etc.

Employment:

SMEs/Petty Trading: About 6% of households confirmed having a Small and Medium Enterprise (SME) that provides off-farm income that supplements other ag-related income sources for their households. About 38% of these had SMEs that dealt with the trade of agricultural products while 30% dealt in the trade of non-agricultural products. Regarding management of resources from SME activities, results showed that over 59% of decisions were made by wives. This suggests that women involvement in household's decision-making can improve significantly if more farm households are encouraged to set-up SMEs in addition to their farming activities.

Paid Labor: The assessment also looked at complimentary income in the form of paid labor. Results showed that only 4% of households had opportunities for complementary income through paid labor. For this limited share, the majority were schoolteachers and administrators involved in the agriculture/forestry and fishery sectors. About 43% were employees of the National Government.

Dietary Diversity

Food Security: In this section, we present results on Food Security, looking at Dietary Diversity and the Food Insecurity Experience Scale. (FIES). Dietary diversity is typically measured by the Household Dietary Diversity Score (HDDS). However, it has been proven that a strong positive correlation exists between HDDS and the Food Consumption Score (FCS) (Maxwell, 2013). For this baseline, we use the FCS as a proxy for Dietary Diversity. From the results, Food Consumption Scores ranged from 31.9% to 66.7% amongst households that are targeted to benefit from the project and from 35.9% to 69.7% for households in the communities where AVDP's project are not expected to be implemented. Regarding the hungry season, about 74% of households confirmed that their hungry season lasts for over four months.

Financial Services

Informal Lending: About 25% of households confirmed having access to informal financial services in their communities. About 45% of these had received loans for their agricultural and SME activities from these sources.

Community Banks: About 10% of respondents confirmed having access to community banks in their communities across all age groups. This suggests that Community Bank penetration rates in the vicinities of the communities where the AVDP project will be implemented are very low. Regarding access to loans, only about 9% confirmed having benefitted from loans from the Community Banks. Between 17% and 25% of respondents confirmed having benefitted from Financial Literacy training from the Community Banks.

Financial Service Association (FSA): On average, about 20% of respondents confirmed having access to Financial Service Associations in their communities. For those that have

access to these FSAs, over 31% confirmed having benefitted from loans over the last twelve months. This also confirms that FSAs have a higher rate of penetration in rural communities than Community Banks and Commercial Banks.

Assets:

Two categories of asset ownership were considered. Assets that are related to agriculture and those that are not related to agriculture. For non-agriculture related assets, the largest share of households confirmed having access to mobile phones (76%), Radios (64%) and Watches (30%). For assets that are agriculture related, results showed that more than half of all households own an Axe, a piece of land, a machete, or a hoe.

Asset Index: An asset index was computed using Principal Component Analysis (PCA). The asset index ranges from zero to one with units having scores closer to one considered wealthier than those with scores closer to zero. Results showed that targeted households have more non-farm related assets than farm related assets as an average asset index of 0.41 was recorded for agriculture related assets and 0.51 recorded for non-agriculture related assets. Overall, baseline measure of asset ownership stands at 0.46. For farm related assets households had more rudimentary farm implements than improved forms of mechanization like tractors.

Climate Resilience:

Related to climate resilience, the assessment looked at the level of training households have received in the areas of climate risk management and knowledge about environmentally sustainable agricultural practices. It also looked that adoption rates of knowledge gained from these trainings into their usual agricultural activities.

Trainings: Households in Kailahun, Kenema, Port Loko and Western Area Rural had more households that have received trainings related to climate risks and environmentally sustainable practices from other entities (organizations, Projects, MAF) in the past. Overall, only 6.6% had received trainings on climate related risk management while 8.4% had received trainings in environmentally sustainable practices. Across age groups, results showed that more households had received trainings related to environmentally sustaining practices than on climate related risks across all three age groups.

Adoption: Results showed that, of households that have received these trainings, adoption rates of climate resilience technologies were higher (greater than 50%) overall. For households that received trainings in the management of climate related risks, adoption rate stood at 58%. For those that fell into the other category, adoption rate stood at 68%. Across age groups, adoption rates were higher for the old aged (95%), followed by middle aged (93%) and lastly the young (86%). See figure 88 below:

Women Empowerment in Agriculture:

The assessment also looked at women's empowerment in agriculture at the household level. This was done based on how women spend their time daily on key dimensions of empowerment.

Time Allocation: Time allocation was presented across 16 different dimensions. These dimensions represent time women pray, exercise, undertake their hobbies, travel, take care of kids, carryout domestic work, cook, weave/sew, farm, trade, go to school, go shopping, personal care, to go work etc. Below are few highlights:

- Most religious activities are held in the morning (81) %
- 66% of respondents expressed that they never have time for hobbies and recreation. This was also the case for exercise.
- In terms of travel, 41% of respondents expressed that they prefer traveling in the morning while 42% confirmed that they seldom travel.
- 69% expressed that they never have time for school while 85% stated that they do not have time for paid employment.

Conclusions:

The AVDP Project seeks to improve livelihoods, food security and climate resilience of 43,000 rural farming households in Sierra Leone. This baseline assessment presents data that address the key performance outcome and impact indicators for the project. This data helps in setting benchmarks for the project and guiding project implementation. From the analysis presented above, data collected addresses all the key performance indicators presented in the RF and additional contextual data that can support project implementation, even at the output level. The evaluation team suggests three key recommendations for the project team:

- One of the key strengths of this study is the raw data that has been collected. This data is critical for data collection at midterm and end-line. We strongly recommend that the M&E unit safely keeps this data.
- Given the broad nature of the dataset collected, there are additional thematic studies that can be undertaken with this data. These thematic studies will support the implementation of the project. It is strongly recommended that additional thematic studies are conducted using the same dataset and possible complementary qualitative data collection. This higher-level analysis will also address additional requests from IFAD.

Introduction:

Sierra Leone's economy is mainly agrarian and relies heavily on the agricultural sector for creating jobs for over 61.1% of the population (International Labour Organization (ILO) et al, 2015). Historically, the agricultural sector also contributes the most to the country's Gross Domestic Product (GDP). However, over the last two decades, as the country struggles to recover from a brutal 10-year civil war, the shares of revenue streams from the extractive industry have been steadily increasing. Particularly, in 2013, the country enjoyed the strongest ever GDP growth rate of 21% which was driven primarily by the increase in iron ore exports. This positive trajectory was cut short with the downturn in iron ore prices and the outbreak of the Ebola Virus Disease (EVD) in 2014. GDP growth rate fell to minus 20.5% in 2015 and has yet to recover to its 2013 and 2014 levels. In 2015-2016, the economy bottomed-out of the effects of the EVD epidemic. GDP growth was recorded at 6.3% in 2016, 3.8% in 2017 and 3.7% in 2018. However, despite the positive outlook promised for 2020, The COVID-19 pandemic stalled all earlier progress that has been made to the Sierra Leonean economy. Current growth rates suggest that the Government of Sierra Leone's policies during COVID -19 helped in minimizing the anticipated shocks to food supplies and the whole economy. Currently, as the pandemic subsides and vaccines are being introduced, development partners are reinvesting in various sectors, like agriculture, health and education to set the stage for economic recovery.

Over the years, several agricultural projects have been funded by international donor organizations in Sierra Leone with the ultimate goal of increasing household food security and income levels in rural communities. Despite these investments into the sector, productivity levels remain very low and poverty persists. The International Fund for Agricultural Development (IFAD) has been in Sierra Leone since 2003, funding agricultural programs all over the country. Over the last ten years, IFAD has funded over 200 Million USD in the agricultural sector through the following projects: 1) SCP GAFSP, 2) RPSDP, 3) GEF, and 4) AVDP (\$100 M - Newly funded).

The AVDP is a market-led and demand-driven project that seeks to organize and capacitate smallholder farmer groups to increase their production and productivity levels for key priority value chain crops in Sierra Leone. It builds on successes made by earlier IFAD funded projects. It is a six-year project funded by the International Fund for Agricultural Development (IFAD), the Adaption Fund (AF), the OPEC Fund for International Development (OFID), and the Government of Sierra Leone (GoSL). With the Ministry of Agriculture and Forestry (MAF) serving as the implementation entity, the project's goal is *to improve livelihoods, food security and climate resilience of rural farming households*. The project's development objective is *to increase incomes for smallholder farmers through the promotion of agriculture as a business*. At design, the AVDP seeks to reach out to about 43,000 direct beneficiaries and their families, thereby reaching a total of 260,000 persons all over Sierra Leone.

The project's interventions are designed in ways that stimulate rural farming households to obtain marketable surpluses after every production cycle, increase their income levels obtained from agriculture, strengthen their livelihoods, and enhance their overall wellbeing. The project has three main components: 1) Climate Resilience and Smart Agricultural Production; 2) Agricultural Market Development and 3) Project Coordination and Management. These three components contribute to the major outcomes and expected impact of the project.

To get the project's activities off the ground, assessing the current state of the key performance indicators at the impact, outcome, and output levels is crucial. This baseline assessment was commissioned by the Project Implementing Unit to help provide adequate data for setting key benchmarks and realistic targets for the project. This report summarizes the key findings of the baseline assessment.

Project Description:

The AVDP seeks to organize and capacitate smallholder producer groups to increase production and productivity of key value chain crops in Sierra Leone in ways that will provide marketable surpluses, increase income levels and livelihoods. The project provides technical assistance to smallholder farmers through Farmer Field Schools and farmer organisations to better plan production and purchase of inputs. It also provides support towards increasing the availability of certified seeds through the setting up of seed multiplication plots. The project will provide matching grants to facilitate beneficiary's investment in productive infrastructure to enhance productivity. The matching grants scheme will also enhance the financial inclusion, as most producer groups will need credit for their investments. Province-level multi-stakeholder platforms will better integrate the value chains by bringing the different stakeholders – including representatives of the smallholder farmers – to the table to find solutions to current obstacles, build trust and facilitate business deals. The project will set these multi-stakeholder platforms in strategic locations all over the country. Rehabilitated feeder roads will further facilitate market linkages. Additionally, the project will seek to climate proof the productive investments and ensure relevant capacity building. The overall approach of AVDP is market-centered and demand driven.

The project has three main components: 1) Climate resilient and Smart Agricultural Production; 2) Agricultural Market Development and 3) Project Coordination and Management.

Component 1: Climate Resilient and Smart Agricultural Production. The outcome of this component is that volume and value of production increased and production systems are made more climate resilient. This component supports the preparation of Business Development Plans at the level of the Agri-Business Centres (ABCs) that will include a comprehensive plan of the investments needed to develop the productive capacities of rice, cocoa or oil palm. Capacity building for improved production techniques and

extension will be provided using the Farmer Field School (FFS) methodology. This component has three sub-components:

- **Support to smallholder rice production and productivity:** The project works with 5,625 rice farmers who have not previously benefited from the SCP/GAFSP project, to provide technical assistance through Farmer Field Schools and financial support for the development of inland valley swamps for double or triple cropping of rice, and improved access to quality inputs and mechanized farming services. The project will help Farmers' Organizations and ABCs mentioned above add value to paddy by improving milling capacity and quality and facilitating market linkages with off-takers. The project will similarly provide technical assistance and training to 5,000 legacy rice farmers that have benefited from past IFAD-financed projects.
- **Support to tree crop production and productivity:** The project works with 11,000 farmers (6,000 cacao and 5,000 oil palm producers) each receiving support for the establishment of a one-hectare plot, who were not direct beneficiaries of the SCP-GAFSP. The subcomponent will enhance the economic viability and climate resilience of oil palm and cacao farmers and link them more effectively to private sector markets. The AVDP will also continue to provide technical assistance and training for 4,000 legacy oil palm farmers who received assistance under past IFAD projects.
- **Replanting and new planting of cocoa sites** will be supported partially by the Adoption Fund with provision of climate resilient hybrid seeds provided by the rejuvenated clonal garden of the Sierra Leone Agricultural Research Institute (SLARI). The AVDP will provide technical support for the establishment of community nurseries to outgrow the seedlings obtained from SLARI. The replanted or new plantations will intercrop plantains, cassava, and/or timber trees for shade provision and supplementary income generation.
- **For oil palm,** AVDP will procure improved tenera variety seeds from regional private sector suppliers and establish community nurseries. The Project will assist farmers to carry out intercropping with food crops (groundnuts and rice) during the initial growth of infant trees to improve livelihoods and household nutrition. AVDP will not support the clearing of forest areas for tree crop plantations. Rather degraded secondary bush areas will be used for such plantings.
- **Support to the vegetable value chain.** This subcomponent will support vegetable production among smallholders in targeted areas of the country by facilitating access to improved vegetable seeds, fertilizer and agrochemicals, irrigation, and mechanization for land preparation and harvesting as well as improve on-farm

and off-farm storage and processing facilities to reduce post-harvest losses.

- **Vegetable production** has recently become the main livelihood and income source in certain districts (mainly Koinadugu, Fala, Port Loko and Western Area) with comparative advantage. The main reasons for this shift to vegetable production for (mostly female) farmers are the possibility for continuous cropping due to seasonal differences between various crops and the high income that can be obtained with vegetable production as compared to other crops.

Component 2: Agricultural Market Development. This component has two sub-components: (i) Market access and (ii) Climate resilient rural infrastructure. The expected outcome of this component is the improved performance and organization of the selected value chains for increased smallholder production and productivity.

- **Sub-component 2.1 Market Access** will focus on strengthening the business skills of ABCs, Farmer Organizations and Farmer Field Schools and facilitating value chain organization and deal making through the establishment of provincial level multi-stakeholder platforms. Key activities under this sub-component include mapping of existing value chain players, including farmer-based organizations, and the provision of capacity building according to their needs; through the multi-stakeholder platforms, the project will facilitate linkages and deal making between AVDP beneficiary organizations, input suppliers, aggregators and large-scale processors and commodity buyers.
- **Sub-component 2.2 Climate Resilient Rural Infrastructure**, financed mainly through the Adaption Fund, will rehabilitate 20 warehouses to improve product drying and storage capacity, construct secondary roads and farm tracks and undertake spot improvements on trunk roads. The AVDP will use a labor-based approach to road improvement, employing local residents for certain tasks, thereby generating temporary employment opportunities. The sub-component will also finance improved livestock and domestic water supply, sanitation, water retention structures and solar pumps among other activities.

Component 3: Project Coordination and Management. The outcome of this component is an efficiently and effectively managed project. The component is divided into two sub-components: (i) project coordination and management; and (ii) financing mechanisms for target groups. The implementation of AVDP will be anchored within the NPCU and Ministry of Agriculture and Forestry at the district level. Staffing levels at NPCU will be complemented with technical assistance as needed. As part of component 3, the project will partner with the Tony Blair Institute (TBI) to set up a delivery unit that will enhance the Government's ability to deliver agricultural transformation and meet the targets set

forth in the National Agricultural Transformation Programme 2023 and the Medium-Term National Development Plan 2019-2023.

Results Chain/Theory of Change:

In this section, we present the theory of change upon which the AVDP project is based. We show how the activities anticipated for implementation will lead to attaining expected outputs, outcomes and impacts of the project. This sets the stage for the key performance indicators at the outcome and impact level that are captured in this baseline assessment.

Smallholder rice, tree crop and vegetable producers in Sierra Leone currently face a number of limitations to enhance productivity and increase incomes. These limitations include: (i) Lack of quality inputs such as certified seeds and sufficient fertilizer; (ii) Limited access to extension services; (iii) Low investments and limited working capital; (iv) Unfavourable farm to market linkages; and finally (v) climate change is putting pressure on production. The project will address these challenges through the three mutually reinforcing components: (i) Climate Resilient and Smart Agricultural Production; (ii) Agricultural Market Development; (iii) Project Coordination and Management.

The overarching goal of the AVDP project is to improve livelihoods, food security and climate change resilience for rural farming households in Sierra Leone. The main precursor for attaining this goal is the increase in household incomes of smallholder farmers through the promotion of agriculture as a business. This represents the Development Objective of the project. The project makes a fundamental premise that household livelihoods, food security and climate resilience **will only** be achieved if the project's interventions increase household incomes through increased sales of agricultural commodities. This result node suggests that the role of the Agri-business function is pivotal for the success of the AVDP project.

To achieve this Project Development Objective (PDO), two overarching outcomes are critical: 1) Increasing volumes and the value of agricultural produce and 2) Value Chain Organizations and Performance Improved. The first outcome is based on the premise that income levels from agriculture will only be enhanced at the household level if farmers increase on the volume of marketable surpluses and add value to their produce. This makes interventions around increasing farm sizes, tackling postharvest loss issues and value addition on priority value chain crops critical. The second outcome is based on the intended entry point of the project's interventions. Given that ABCs and farmer groups are the principal entry point into the communities, having efficient farmer organizations is key to the success of this project.

At the output level, AVDP seeks to improve the capacities for service production of agribusiness centres, train farmer groups on new technologies; increase hectares of land

under climate-resilient management. These outputs contribute to the first outcome. For the second outcome, key outputs are around creating functioning multi-stakeholder platforms; rehabilitating/constructing feeder roads leading farms to markets; provision of WASH services.

This baseline assessment provides background information that will inform the project's implementation in actualizing this results chains and tracking progressing towards targets.

AVDP Results Framework:

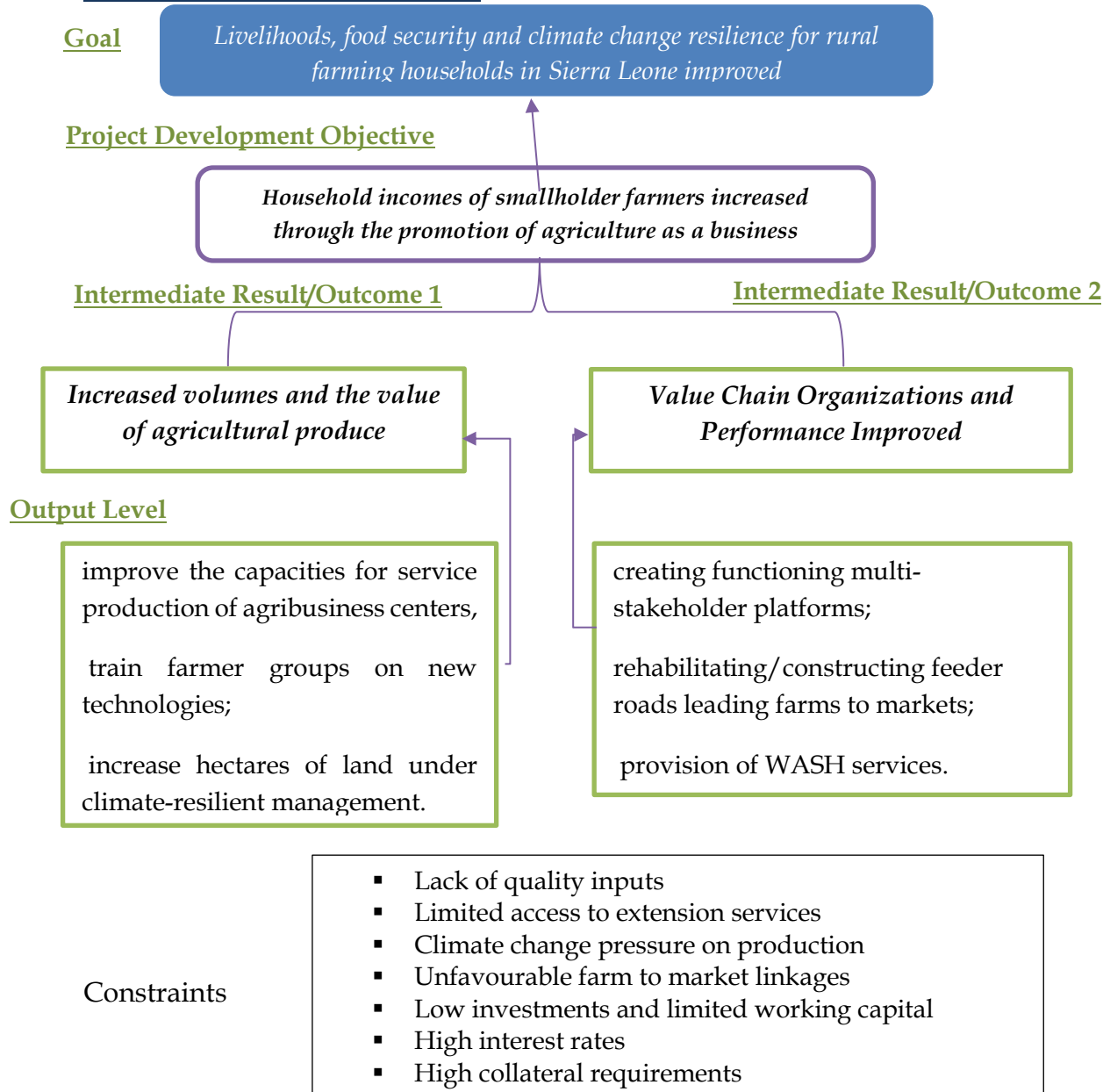


Figure 1: Results Framework (Draft)

Figure 1 above provides a draft annotation of the results framework that represent the key changes anticipated by the AVDP project. The results framework has key performance indicators with defined targets. This baseline assessment provides baseline statistics of these key performance indicators.

Note: The above annotation is only for demonstration purposes. The PIU can make modifications as deemed necessary.

Objectives of the baseline study

The baseline study is a statutory implementation requirement for Agricultural Value Chain Development Project (AVDP), which will be used to gauge the performance of the programme during and after implementation. The AVDP commissioned the survey to establish benchmarks for assessing changes in the livelihood of program beneficiaries in the 16 districts where the program is being implemented in Sierra Leone.

The specific objectives of the baseline study include:

- 1- To determine the pre-intervention conditions of the project area and beneficiaries, in order to be able to monitor outcome-level changes and
- 2- Collect and analyse benchmark household data which will be used for measuring key output, outcome and impact indicators particularly Results and Impact Management System (RIMS) indicators and those identified in the AVDP logical framework.
- 3- Establish priority areas/planning where the results of a baseline study can show some aspects of a programme that will require more focus
- 4- Assist in determining attribution- without the baseline it will be difficult to establish what impact will the programme have on the intended beneficiaries.
- 5- Develop appropriate tools which will subsequently be used to evaluate the impact of the programme.
- 6- To pilot the Core Outcome Indicators (COI) methodology with the aim of scaling it up to other IFAD funded projects. The FOS was developed by RIA and OPR to measure Core (outcome) Indicators (CIs). FOS build on the Annual Outcome Survey (AOS) that is a project monitoring and evaluation (M&E) tool to measure the progress of IFAD-funded operations at outcome level with reliable and timely data.

Methodology

In this section, we present a summary of the methodology that was used for this baseline assessment. Emphasis is placed on the following: 1) The Research Design; 2) Study Area; 3) Sampling Procedures; 4) Data Collection Methods and 5) Data Analytic Framework. These are further discussed below:

Research Design

A participatory approach was employed to solicit the data needed for this analysis. Given the inherent heterogeneity amongst the different potential respondents, a Mixed Method Research Design (MMRD) was used (Wisdom & Creswell 2013). Sequential Exploratory Mixed Methods was desired at inception. However, due to some limitations, the research team used basic mixed methods for the assessment. This approach combines a wide range of quantitative and qualitative data collection techniques and tools to meet a global objective in a multi-stakeholder environment and hence more holistic and richer information was obtained. Three data collection techniques were used to solicit primary data requirements for this exercise. These are: 1) Structured questionnaire survey 2) Focus Group Discussions and 3) Key Informant Interviews. The second and third methods mainly focused on responses from key stakeholders while the questionnaire survey targets the individual household heads.

Study Area

For administrative purposes, Sierra Leone is divided into five regions: Eastern, Northern, Southern, Western and North-Western regions. Each region is divided into districts of unequal population size and land area. Each district is divided into chiefdoms, which in turn are divided into sections where sections are divided in to localities/communities and the localities/communities are divided into households.

All the 16 districts are targeted for this project. After an initial mapping exercise, 43,476 potential beneficiary households were identified and mapped. These were used to serve as the sampling frame for this assessment. This baseline assessment was undertaken at the district level. See figure 2 below showing Map of Sierra Leone.

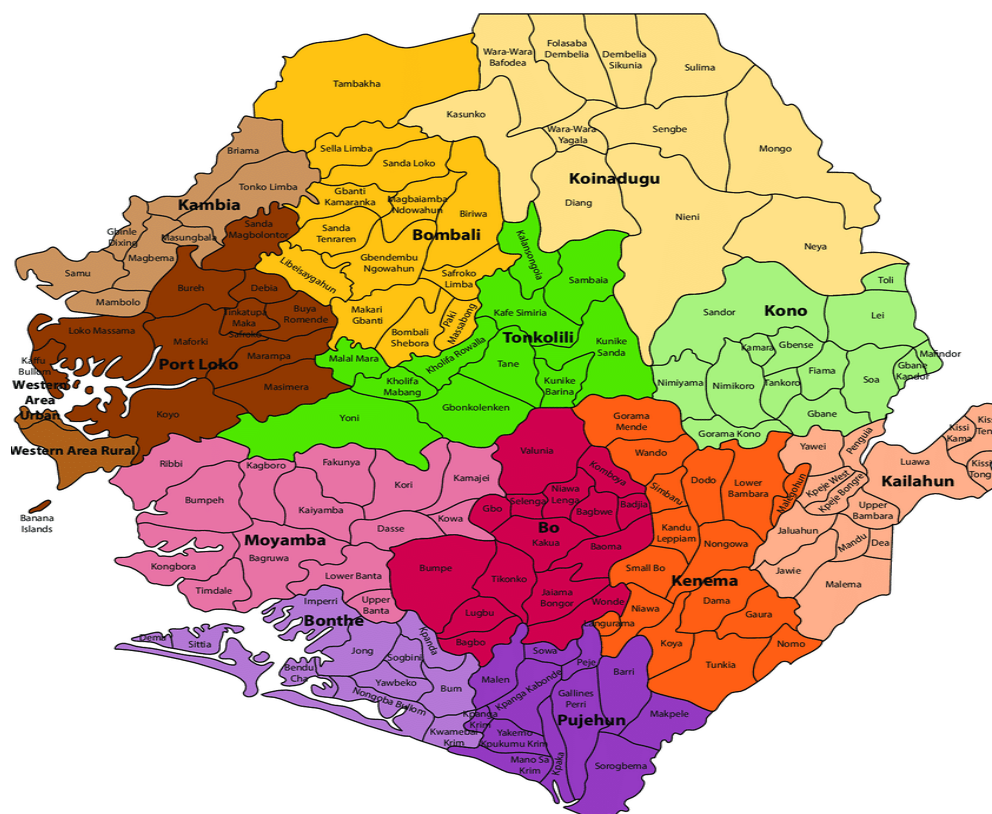


Figure 2: Map of Sierra Leone

Sampling Procedures

This survey constituted collection of information from household/producer (farming households that are/will be beneficiaries and non-beneficiaries of the AVDP project) in four value chain crops (IVS rice, oil palm, cocoa and vegetables) using a structured questionnaire. A sampling methodology was therefore developed and samples selected for each value chain by random sampling.

The sample size for this study was calculated using the power formula as outlined in the IFAD Core Outcome Indicators (COI) Measurement Guidelines, May 2020. In order to reduce bias due to over sampling or under sampling of any of the value chains, the calculated sample size was allocated to each of the four value chains (IVS, oil palm, cocoa and vegetable) using the allocation proportional to size methodology. Also in order to have a representative sample of each value chain for each of the districts/chiefdoms (ecologies), the sample size allocated to each value chain was also allocated to each district (and chiefdom) using the allocation proportional to size methodology. The selection of households for each value chain was done in four cluster stages; at first stage, chiefdoms were randomly selected among the treatment chiefdoms (chiefdoms where the project will be implemented) from the districts, the second stage was the random selection of sections from the treatment sections in the selected chiefdoms. The third stage

entailed the random selection of localities/communities among the localities/communities within the the selected sections and finally, households were randomly selected from the lists of farmers (which are the treatment farmers) provided for each of the localities/communities. These households were considered the treatment group.

After the random sampling of households in the treatment group in the chiefdoms, sections and localities/communities, households from the control group (households that will/are non-beneficiaries of the project) were also selected. There are two types of controls groups- clean control and partial control. The households for the partial control group were randomly selected from the list of households within the treatment localities/communities (or localities/communities within the same section as the treatment localities/communities) that will/are non-beneficiaries of the AVDP project. The households for the clean control group were randomly selected from the list of households within localities/communities that are non-treatment sections localities/communities that share boundaries with the treatment section for each value chain. The ratio of clean control and partial control in the sample is 3:2. The total number of households in control group was equal to the total number of households in the treatment group; that is 50% of the sample size was from the treatment group, 30% was clean control group and 20% was from the partial control group.

Sample Size for Household Questionnaires

Sample Allocation

To ensure sufficient statistical power in the determination of the sample size, the World Bank power formula, which is recommended in IFAD's COI guideline, was used. The sample size calculation for this survey required essentially five elements or pieces of information:

- a. **Effect size:** the expected difference in the variable (COI indicator) with and without intervention or the difference between the treatment and the comparison group in the variable of interest.
- b. **Variance:** How variable is the effect, how wide of the range of difference you expect and
- c. **Confidence level:** How sure you want to be (95% generally);
- d. **Power level.**
- e. **Design effect**, or cluster effect, of the sample selection procedure

The formula illustrates the mechanics of how the elements above come together to determine the sample size.

See formula below:

$$n = \frac{4\sigma^2(z_\alpha + z_\beta)^2}{D^2} [1 + \rho(H - 1)]$$

Where;

n = is the required sample size

D = is the effect size; this was based on the difference in the outcome *before* and *after* the project intervention

σ^2 = is the variance in the population which tells how wide of a range of differences you expect in the outcome that was measured.

Z = are the values taken from a table depending on the values of α and β . α - relates to "type I error" and β - relates to "type II error".

ρ is the intra-cluster correlation coefficient; and

H = is the number of observations sampled in each cluster

Here we assume that there is no correlation between the clusters from which the data will be collected (i.e. $\rho=0$)

Therefore;

$$n = \frac{4\sigma^2(z_\alpha + z_\beta)^2}{D^2}$$

D ; was determined from the proportion of farmers that have access to financial services in the terminal evaluation report on Smallholder Commercialization Program (SCP) Global Agriculture and Food Security Program (SCP-GAFSP) in Sierra Leone, 2019. From the study, the difference in effect (D) between the average proportion of farmers that have access to financial services before and after the intervention (treatment). This was calculated to be 0.0649 (or 6.49%).

If we assume the acceptable level of significance of 0.05, the z_α for a two tailed test is 1.96 and taking the value of z_β as 1.282 for 90% power of the test.

To calculate the variance (σ^2) we use the formula;

$$\sigma^2 = \frac{N}{N-1}pq$$

Where N is the number of farmers, p is the proportion of farmers that have access to financial services and $q=1-p$.

For large N ,

$$\sigma^2 = pq$$

Therefore the sample size (n) is given by

$$n = \frac{4pq(1.96 + 1.282)^2}{0.0649^2}$$

For maximum sample size we take $p=0.5$

$$n = \frac{4 \times 0.5 \times (1 - 0.5)(1.96 + 1.282)^2}{0.0649^2} = \frac{10.511}{0.0042} = 2,502$$

To compensate for anticipated 10% non-response rate we inflate n by $0.1n$.

That is

$$n = 1.1 \times 2,502 = 2,752$$

Therefore, the sample for the treatment and control groups is **1,376**

a) Producer

The sample size for the treatment group was proportionally allocated to the value chains as follows;

Table 1: Number of samples allocated to value chain

Value Chain	Number of Farmers by Crop	Samples by Crop
IVS	10128	239
Cocoa	8550	202
Oil Palm	13864	327
Vegetable	8495	200
Legacy IVS	13791	325
Legacy Oil Palm	3523	83
Total	58351	1376

The number of chiefdoms selected in the districts, number of sections selected in the selected chiefdoms and localities/communities selected in the selected sections for each value chain was driven by the total number of households allocated to the districts, chiefdoms and sections respectively each value chain.

The sampling frame of the producers (households) for the treatment group was the 43,476 households that will benefit from the project nationwide in all the 16 districts. Sample selection was done using random sampling. The selection of households for each value chain was done in four cluster stages; the first stage was the random selection of chiefdoms among the number of chiefdoms with intervention in each district, the second stage was the random selection of sections among the number of sections with intervention in the selected chiefdoms, the third stage was the random selection of localities among the number of localities with intervention in a section and finally,

households was randomly selected from the lists of farmers provided for the localities/communities. These households will be considered the treatment group.

The following table gives the sample distribution of value chains by region and district

Table 2: Matrix of samples allocated by value chain and by region and district

PROVINCE	DISTRICT	IVS RICE	COCOA	OIL PALM	VEGETABLE	Legacy IVS	Legacy Oil Palm	Total
Eastern	Kailahun	12	41	64	0	72	4	193
	Kenema	24	49	34	23	78	5	213
	Kono	16	40	23	4	80	-	163
North West	Kambia	15	-	16	14	4	8	57
	Karene	10	-	19	9	5	2	45
	Port Loko	25	-	12	24	4	6	71
Northern	Bombali	16	-	13	13	7	8	57
	Falaba	12	-	22	21	2	4	61
	Koinadugu	12	-	12	20	3	5	52
	Tonkolili	19	15	26	19	10	9	98
Southern	Bo	26	27	19	1	7	6	86
	Bonthe	13	-	23	-	19	7	62
	Moyamba	19	10	15	5	9	7	65
	Pujehun	13	19	21	0	20	7	80
Western	Western Rural	6	-	9	43	4	5	67
	Western Urban	-	-	-	4	-	-	4
Total		239	202	327	200	325	83	1376

After the selection of treatment groups in the chiefdoms, sections and localities/communities, the control group (households that are not beneficiaries of the project) were selected from list of households within localities/communities that are not beneficiaries of the project. The partial control (i.e. households in the same locality that did/will not benefit from the intervention or households in the non-intervention locality nearest to the intervention locality but in the same section) and the clean control group (i.e. households in localities that are in a non-intervention section nearest to the intervention section)

For optimum cost and representation, a maximum of 10 households and minimum of 5 households were selected from each of the selected localities/communities for each value chain, not more than 4 communities/localities were selected in each section for each value chain and not more than three sections were selected from a chiefdom for each value chain.

The same procedure was followed for both the treatment and control groups. The sample selection for the treatment group was done using a random selection from the list of beneficiaries in the selected localities/communities; these selections were done by the statistician (survey management team). For the control group, households were randomly selected from the non-beneficiary localities/communities; this was done by first listing at least 50 and at most 100 households in the non-beneficiary localities/communities by the enumerators/supervisors, and then a maximum of 10 or a minimum of 5 households were randomly selected from the list. The total numbers of control (non-beneficiary) households selected in a chiefdom/district **will were** to the total number of treatment households selected in the chiefdom/district.

The household questionnaire was then administered to the selected households in both the beneficiary and non-beneficiary localities/communities.

The same sample distribution **in Table 2** was used for the control group, the sample of non-beneficiary households/communities.

Community level/Key Informant Interview: Key Informants Interviews (KIIs) were conducted on stakeholders involved in driving the agricultural sector in Sierra Leone. These actors ranged from public sector players to private sector actors involved in the key value chains.

Supervision

The IFAD Nutrition Advisor and the Consultant paid preliminary visits to some project sites to supervise data collection by some field staff. This was done to ensure that enumerators actually did the correct things. All District Nutrition Officers, acted as supervisors for their districts. Apart from distributing the research materials, they were required to vet the filled questionnaires and ensure they were properly completed. They also acted as moderators for the focus group discussion sessions.

Data Analysis and Presentation

Qualitative data from FGDs and KIIs were analysed using non-statistical methods. The data was managed using Microsoft Excel. The management involved ensuring consistency of entries, validating entries, merging data and ensuring that the merged data conformed to CSPro processing. Using SPSS, descriptive and inferential statistics specifically; frequencies, cross tabulations and comparing means were used for the analysis. Results of the analysis are presented in forms of figures and tables.

Limitation of the study

Computation of Food Consumption Score (FCS):

The Food Consumption Score is a proxy indicator for household caloric availability. It is an index that aggregates household-level data on the diversity and frequency of food groups consumed over the previous seven days. This measure is then weighted according to the relative nutritional value of the consumed food groups. Based on this score, household food consumption to be further categorized into one of three categories: poor, borderline, or acceptable.

Step-by-step Method of Computation:

The evaluation team computed the FCS from the survey results. The following steps were followed:

1. The consumption frequencies were summed and multiplied by the standardized food group weight (see the food groups and corresponding weights below).
2. Households were then further classified as having "poor," "borderline," or "acceptable" food consumption by applying the World Food Program's (WFP) recommended cut-offs to the food consumption score.

Table 3: Food Groups and Weights for FCS

Food Group	Weight
Main Staple	2
Pulses	3
Vegetables	1
Fruit	1
Meat/Fish	4
Milk	4
Sugar	0.5
Oil	0.5

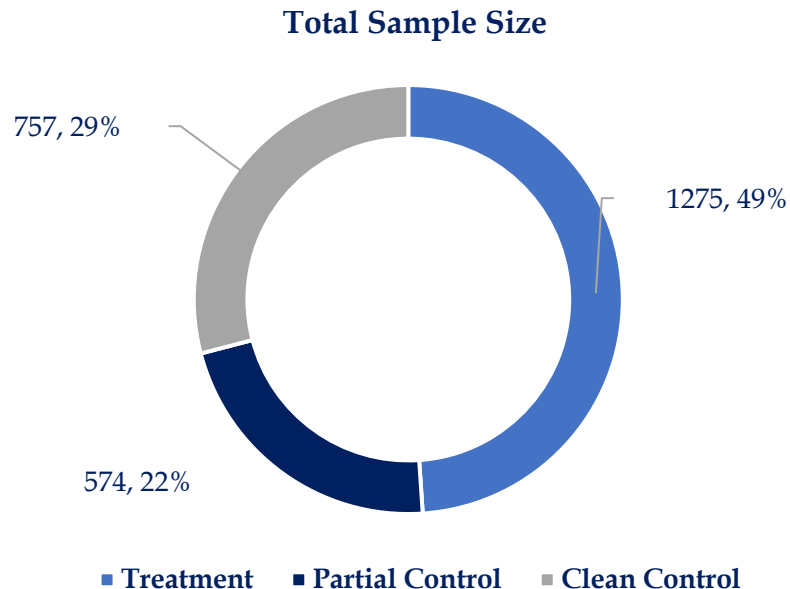
1. Group food items in the specified food groups (condiments not included).
2. Sum all the consumption frequencies of food items within the same group.
3. Multiply the value of each food group by its weight (see table).
4. Sum the weighted food group scores to obtain FCS.
5. Determine the household's food consumption status based on the following thresholds: 0-21: Poor; 21.5-35: Borderline; >35: Acceptable.

Key Findings:

In this section, we present the key findings obtained from the baseline assessment. The section is divided into nine main components. These are based on the types of interventions that are anticipated for implementation of the AVDP project and the structure of the results framework. These sections include: 1) Household Demographics, 2) Production Levels (including crop production; post-harvest loss; market access; livestock production and fisheries) 3) Household Livelihoods (including Incomes and Expenditure; enterprise employment mode etc), 4) Food Security (Dietary Diversity, Food Security), 5) Financial Services; 6) Assets; 7) Producer Organizations, 8) Climate Resilience, 9) Women Employment in Agriculture; Tree Crop Production and Marketing. For a better understanding of the data, we start by presenting a summary of sample that was collected with regards to number of households sampled.

Sampled Households

The survey covered a total of 2,606 households, representing a margin of error of ± 5 and 95% confidence level that was computed at design. Of this sample, 1,277 (49%) represented households that were in communities that were registered to benefit from the interventions of the AVDP project while the other half of 1,329 (51%) represented potential non-beneficiaries (control). From the share that are not expected to benefit, 22% fell in the category of households that existed in the vicinities where the interventions will be implemented but are not potential direct beneficiaries because they will not participate in the targeted value chain; hence were not part of the registered groups. These households represent potential indirect benefactors of the project.



Number of Sampled Households by District

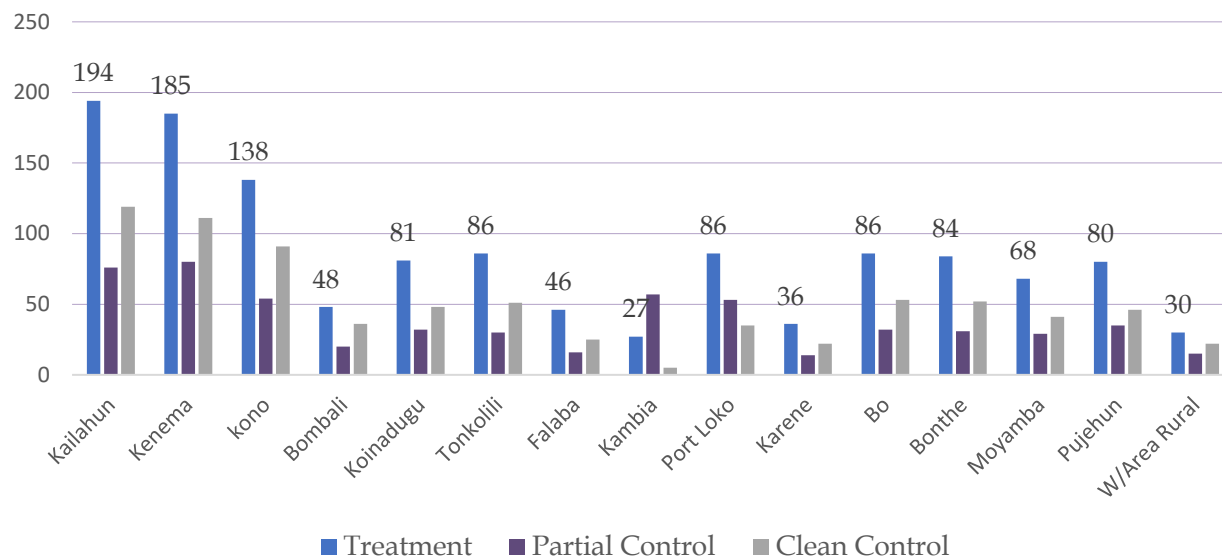


Figure 4: Number of Households Targeted by District

Across Districts, Kailahun had the largest share of households (15%) while Western Area Rural had the lowest (3%). See figure four below. Overall, the 2,606 households sampled represents an over sampling of 4.2% over the agreed sample of 2,505 households.

Household Demographics:

Eight main demographic categories are presented in this section. These include Gender, Age, Family Type, Marital Status, Educational Levels, Religion, Ethnicity (Tribe) and Occupation. In all of these categories, disaggregation across Gender and Districts are provided. For some, disaggregation across beneficiary categories are also presented.

Gender

Mainstreaming gender across all activities is a major implementation criteria/strategy of the AVDP project. This was meant to ensure women's involvement or minimize women exclusion from all activities of the project. In this section, we present two statistics of gender from the baseline survey. One looks at gender within the households targeted and gender of the household heads.

Gender Within Households:

As shown in figure five below, about 50.7% of targeted household members are female across all three beneficiary categories. For households in planned treatment group, 52.4% are female, for those in partial control, 50.6% are female while those in clean control can a female representation of 49.1%. Across districts, female representation was highest in Falaba (58%) for potential direct beneficiaries of the project. For those in the partial control and clean control groups, female representation was highest in Moyamba (59%) and Kambia (64.5%) respectively. See figure five above.

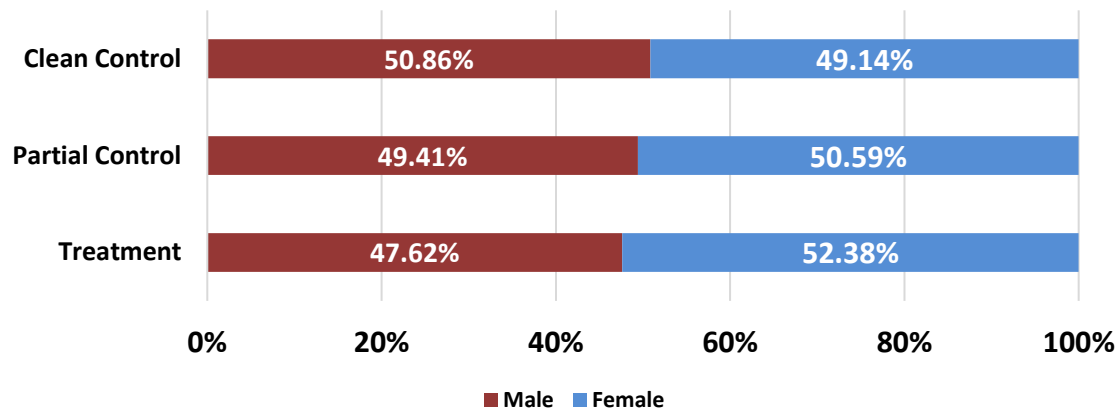


Figure 5: Gender Within Households by Beneficiary Category

Gender of Household Heads:

In this section, we present results on the gender of household heads. As shown in Figure seven, about 54% of respondents that are potential beneficiaries are female and 46% male. This confirms that the projects aim to target more female headed households. Results in figure seven **pull** together both clean control and partial control groups. As shown, amongst household heads in the control groups, only 25% are female.

This further suggests that in the selection of potential project beneficiaries, gender was a

criterion directly or indirectly. Across districts, female representation was highest in Falaba, Koinadugu, Tonkolili and Port Loko. In these four districts, females head over 61% of the potential beneficiary households. Overall, more female representation was observed amongst households that will not be benefitting than those expected to benefit.

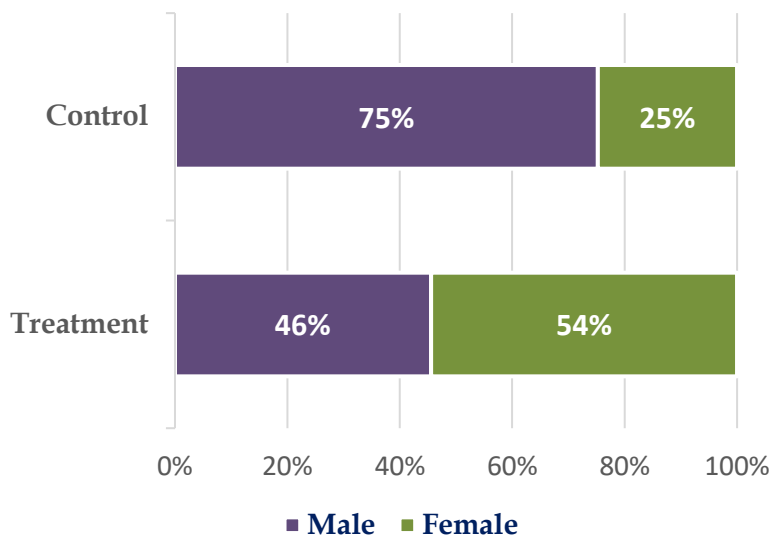


Figure 6: Gender of Household Heads by Beneficiary Category

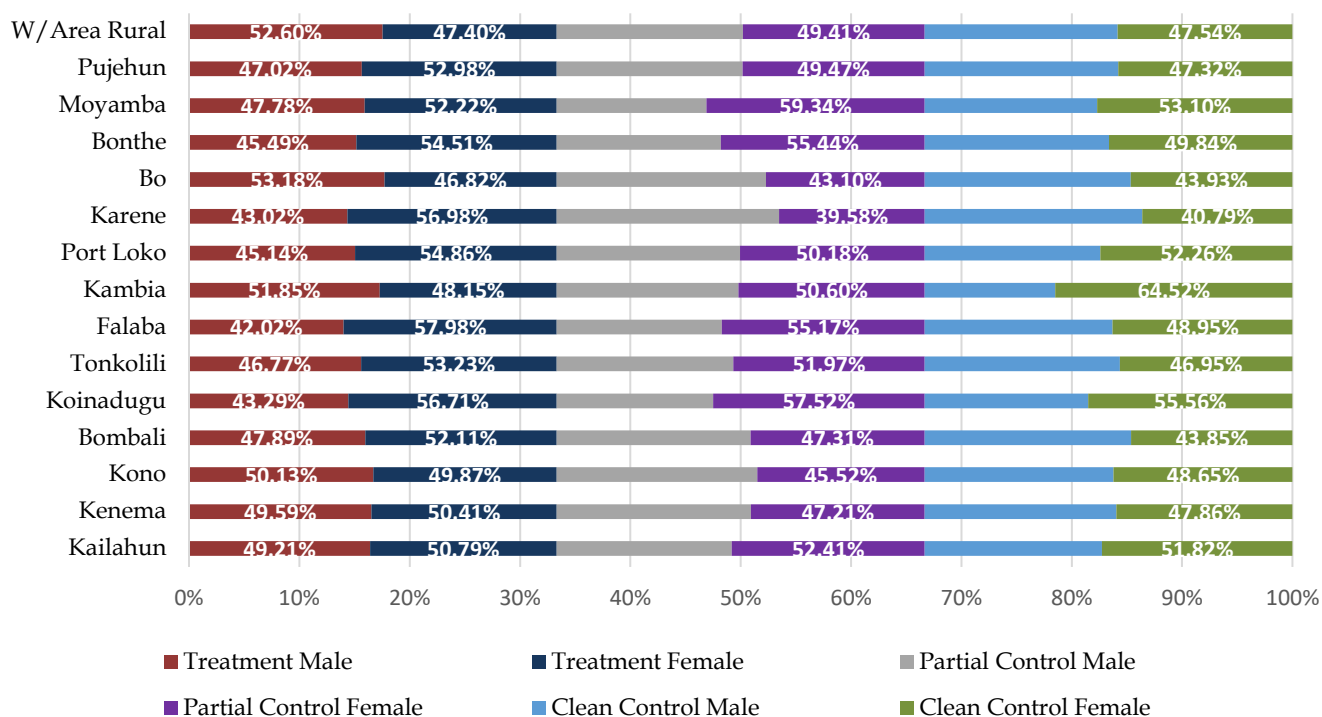


Figure 7: Gender Within Households by District and Beneficiary Category

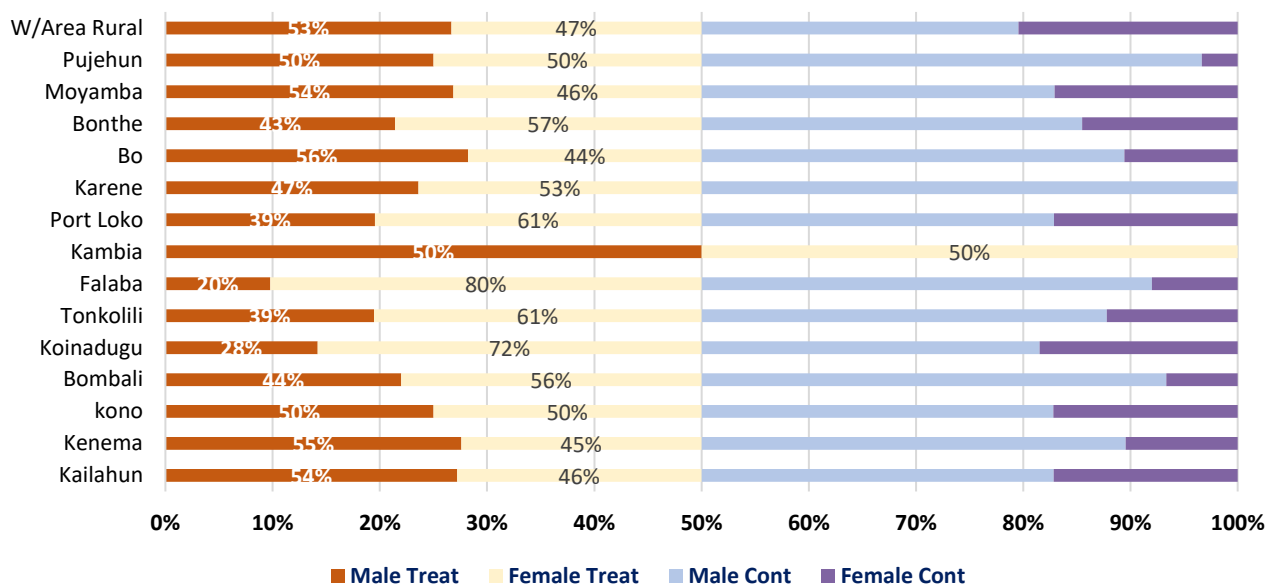


Figure 8: Gender of Household Heads by District

Marital Status

In this sub section, we present a summary of results showing marital status of household heads. As shown in figure nine below, about 85% of heads of households are married across all beneficiary categories. Of these, 64% are married in monogamous unions while 22% are married under polygamous structures.

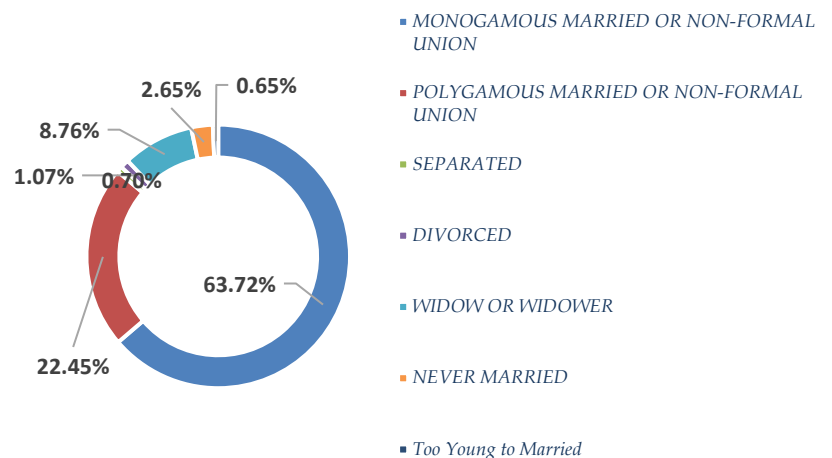


Figure 9: Marital Status of Household Head

Across gender, male headed households represented the largest share for married household heads while female headed households had more widows/widower. This may suggest that male household heads that lost their wives from death were able to remarry or were in polygamous marriages. Furthermore, the results show that female headed households were in majority for marriage categories that represent the most vulnerable (Separated, Divorced and Widow/Widower). See figure 10 below:

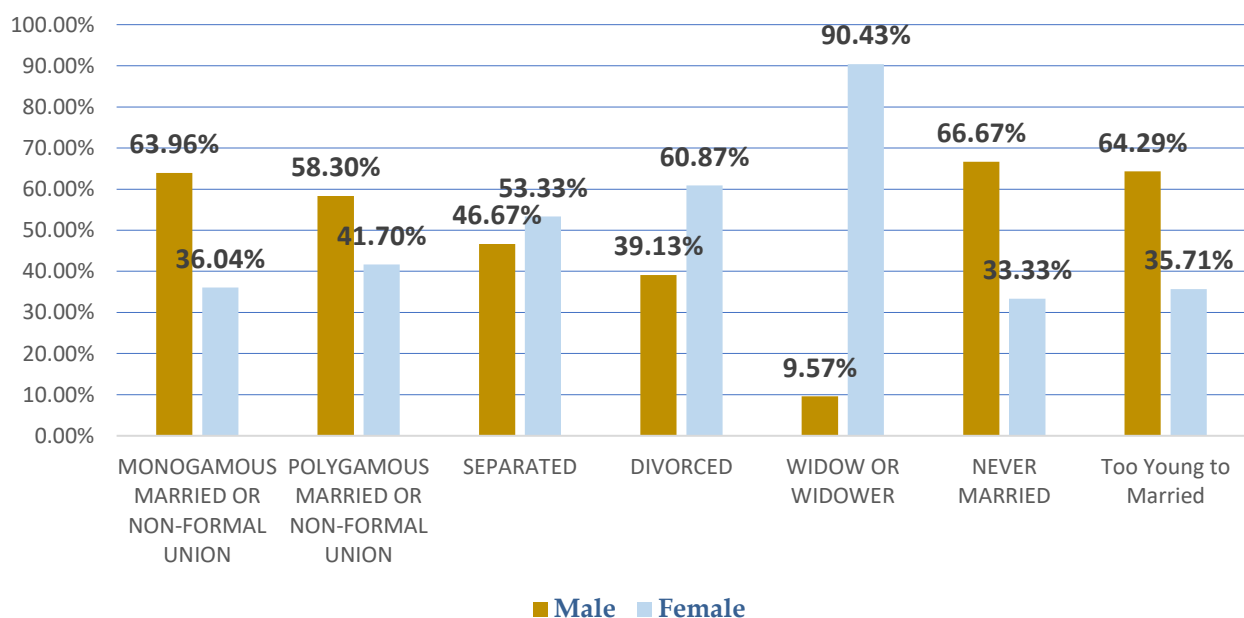


Figure 10: Marital Status of Household Heads by Gender

Age

In this section, we present results on age levels of household heads and members within households. Two key levels are considered: 1) Households with children under three years and 2) Average age of household heads (include across age categories).

Children Below Three Years

Results showed that only 3.6% of households across all beneficiary categories had children below three years. Across beneficiary categories, households within the potential benefiting communities had slightly higher number of children younger than three years. Also, Male headed households had slightly more children under three years. See figure 11 above.

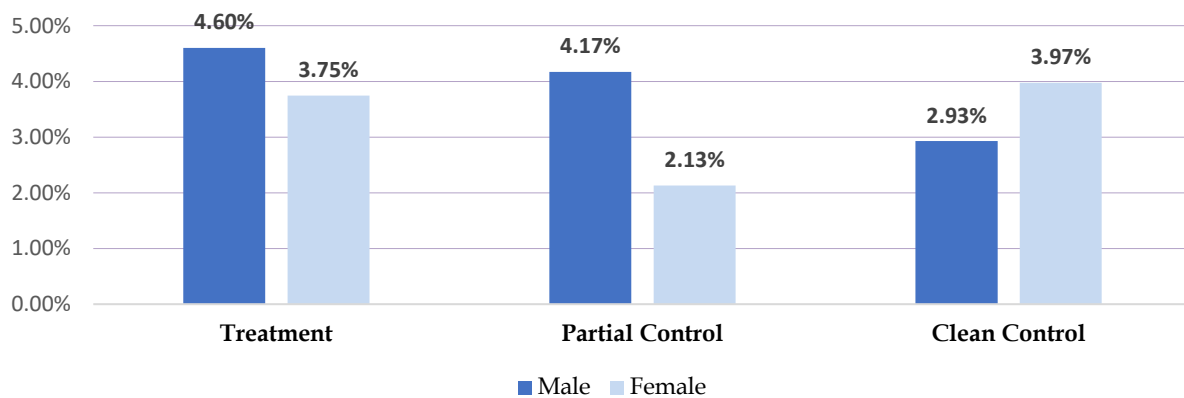


Figure 11: Households with children under three years old

Age of Household Heads

On average, results showed that majority (60%) of household heads were middle aged, with ages between 36 years and 65 years. 35% are young adults and about 5% old aged.

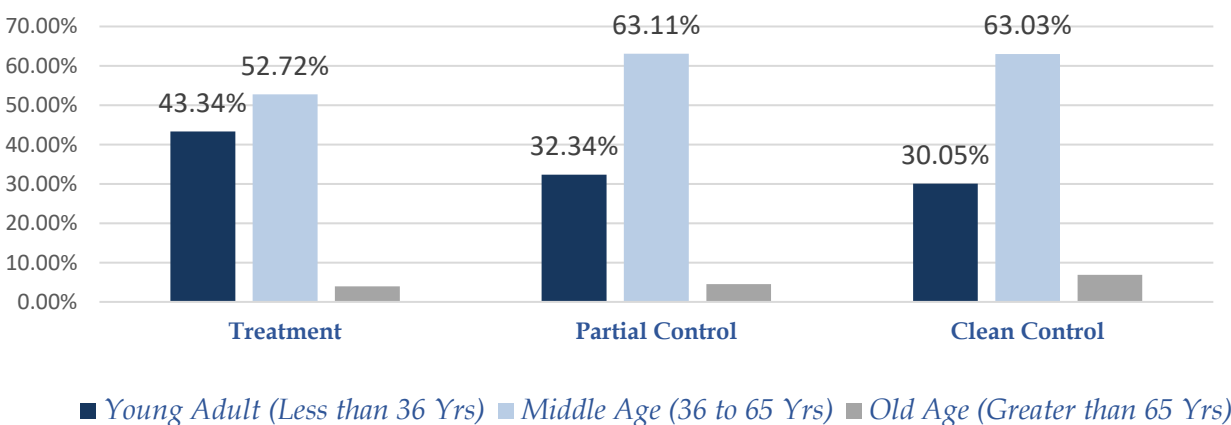


Figure 12: Age Groups of Household Heads

Results from the survey showed that average age for household heads stands at 43, with a minimum of 36 and a maximum of 82. Across gender, average male age was 44 years while average female age was 41 years. Across districts, ages were highest in Bonthe and lowest in Koinadugu.

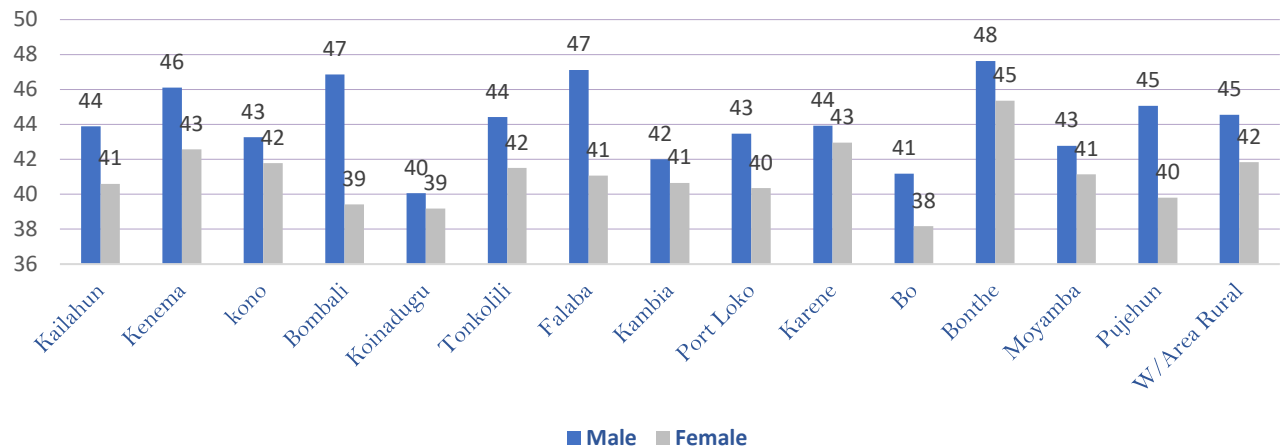


Figure 13: Average Age of Household Heads by District.

Religion:

Results from the survey confirmed that majority of farming households are Muslims. On average, 73% of households practice Islam. Across gender, equiproportionate results were observed. That is, on average, 73% of male and female headed households' practices Islam. See table 1 below:

Gender		Islam	Christianity
	Male	73%	27%
	Female	75%	25%

Table 4: Religion of Targeted Households

Ethnicity (Tribes):

Results from this survey revealed that the largest share of targeted households belong to the Mende tribe (42.05%) while the second largest share belong to the Temne tribe (22.28%). The third share (10%) belong to the Kissi tribe. These results suggest that gains from this project are heavily skewed towards one tribe (Mendes). This might be as a result of the pre-registration exercise that was done and/or clusters of farmers involved in specific value chains that project seek to support.

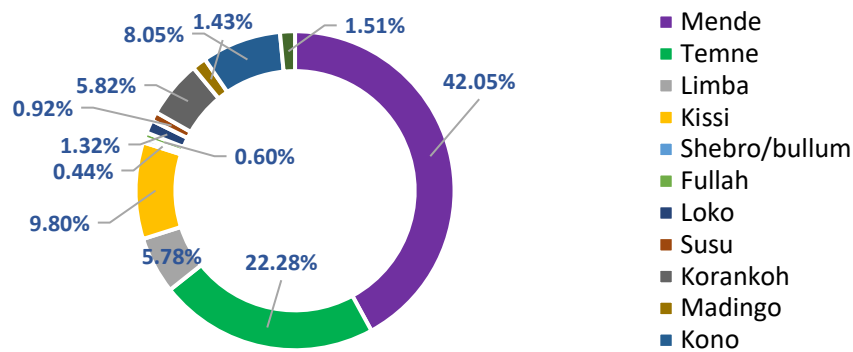


Figure 14: Ethnicity of Households

Educational Levels:

In this section we present the educational levels attained by household heads. We use the highest level attained by head of household as a proxy for literacy levels within targeted households.

Results showed that over 82% of heads of households attained a primary, JSS, SSS level education. Proportionate shares were represented in all three categories (JSS, SSS and Primary).

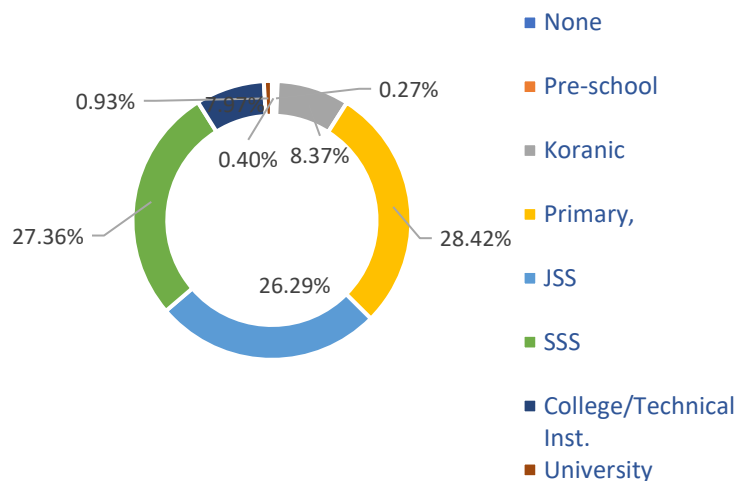


Figure 15: Educational Levels

Across age groups, results showed that household heads that were young adults were the most literate farmers targeted across all beneficiary categories. 34% of young adults had completed Senior Secondary School. For middle aged farmers, the largest share had only completed Primary Schooling (30.65%). This suggests that literacy levels are increasing amongst farming households as reflected in the younger generation. Results also showed that the largest shares of farmers that had university degrees or had some college/technical certificate were represented amongst older farmers. This may be as a result of retired educated persons that return to farming in their later years.

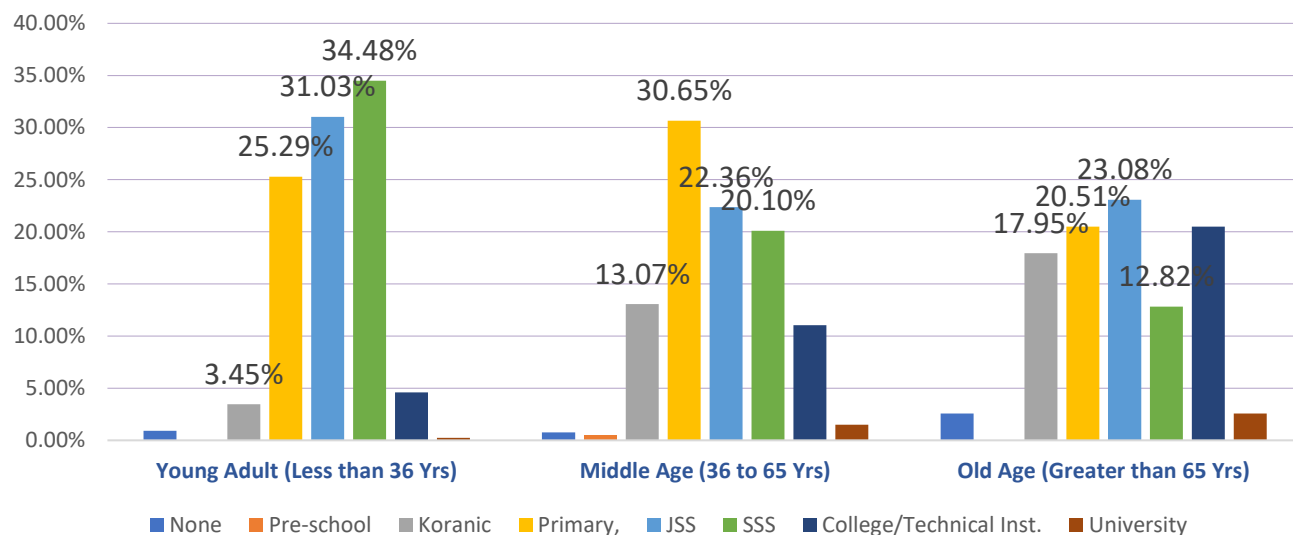


Figure 16: Educational Levels by Age Groups

The assessment also looked at household heads that have received additional specialized training in agriculture, particularly in the value chains they work on. Results showed that the majority (90.15%) have not received additional training.

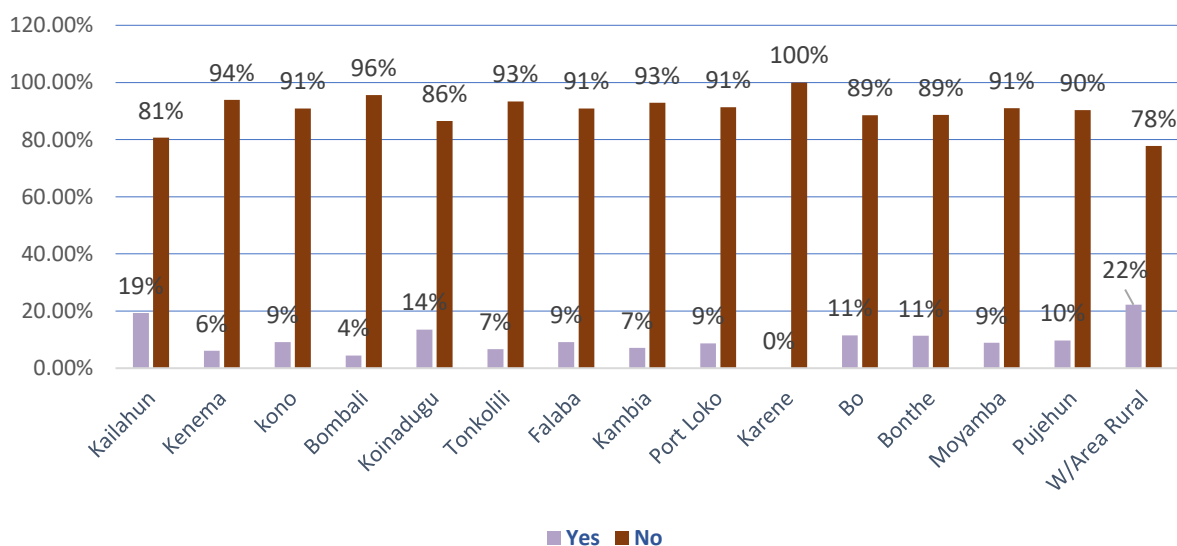


Figure 17: Household Head Received Additional Training

Household Livelihoods:

In this section we present results on the state of livelihoods within targeted households. These are presented in two levels. The first level looks at household assets that serve as proxies of wealth while the second level looks at livelihood sources that bring income/revenue into households.

Household Assets:

In this section we look at five main asset types, dwelling (houses), cooking materials, water sources, toilet facilities and access to electricity.

Dwelling Ownership: Regarding ownership of dwelling places, over 86% of houses were owned by men (mainly the heads of the households) across all beneficiary categories and age groups. Results also showed that 95.56% of these houses were permanent structures. Looking at ownership types, the assessment showed that majority of the homes were directly built by the household (69%). 29% were acquired through family rights while only two percent were rented. The assessment also

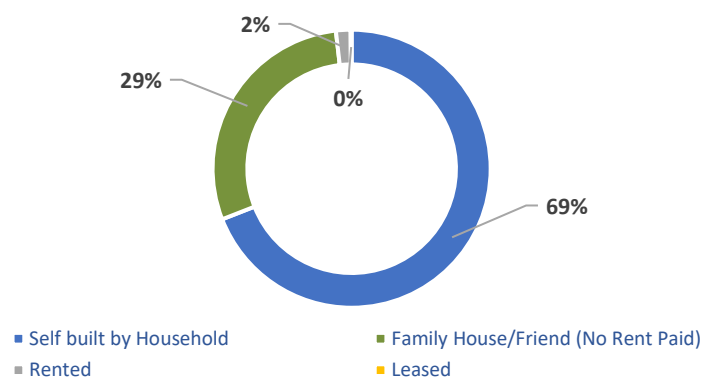


Figure 18: Household Dwelling Ownership

looked at household ownership across gender. Results showed that, amongst male headed households, 64% of dwellings were owned by women (wives) while for female headed households, female ownership stood at 45%. Overall, this suggests that more women owned these assets (dwellings) than men.

Physical Structure of Dwellings: In terms of the physical structures of the dwellings, results showed that 75.2% were made of mud and 21% made of cement bricks. Across age groups, equal shares were observed for all age groups. On average, between 68% to 78% of households had mud dwellings across all age groups while between 17% to 27% had dwellings built out of cement across all age groups.

Roofing of Dwelling: The survey also looked at roofing structures of household dwellings. Results showed that majority of households use corrugated iron (zinc/tin) on their homes across all beneficiary categories. See figure 18 below:

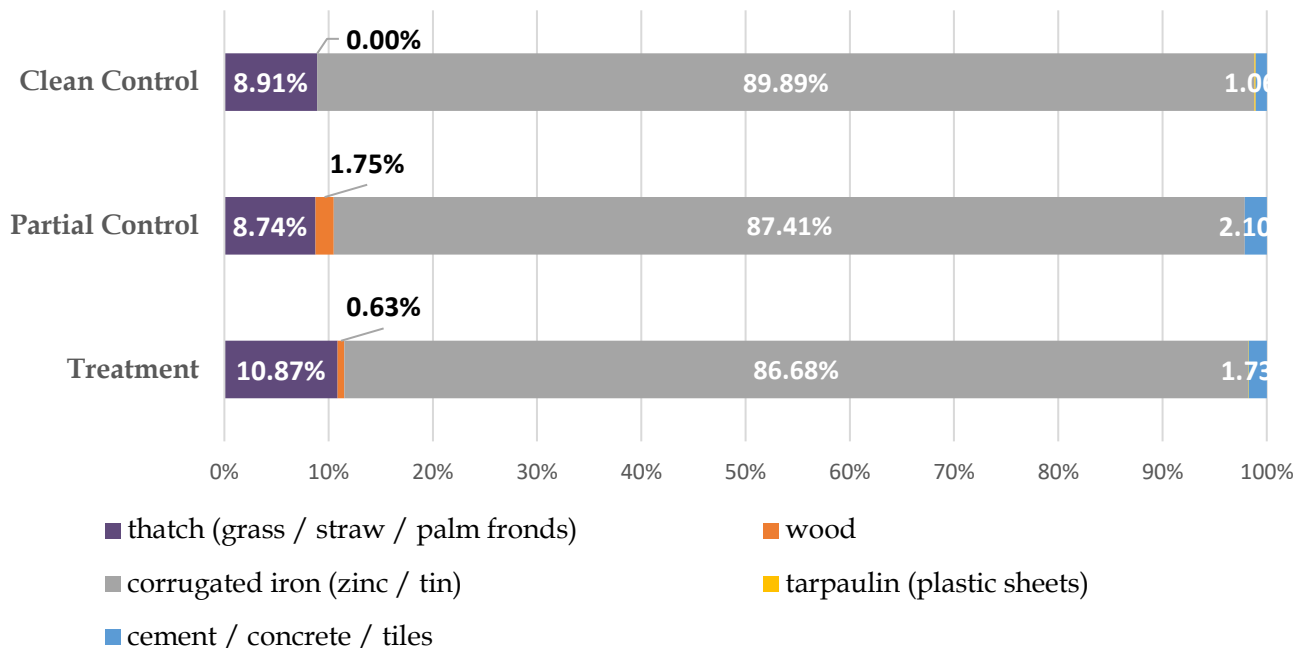


Figure 19: Types of Roofing in Household dwellings

Access to Energy: (Lighting and Cooking) : The assessment also looked at sources of energy at the household level for purposes of lighting and cooking :

Cooking : Results showed that, across all beneficiary categories, over 95% use firewood. Only 5% use charcoal. This suggests that the use of alternative energy sources like gas stoves and electricity cooking options are not common place in farming communities.

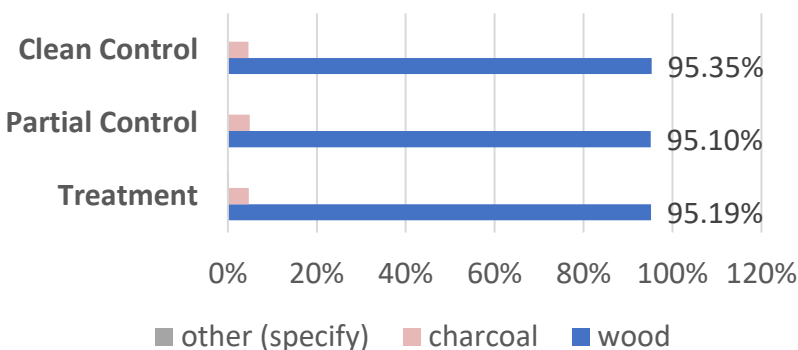


Figure 20: Energy Sources for Cooking

Lighting : For lighting purposes, results showed that more than half of households sampled across all beneficiary categories relied on 'Chinese Lamps' for their lighting needs. Between 32% to 37% relied on touch lights. These results suggest a departure from the use of kerosene lamps and candles for home lighting. It also confirms, that less than 4% of households repay on the government grid for home lighting needs.

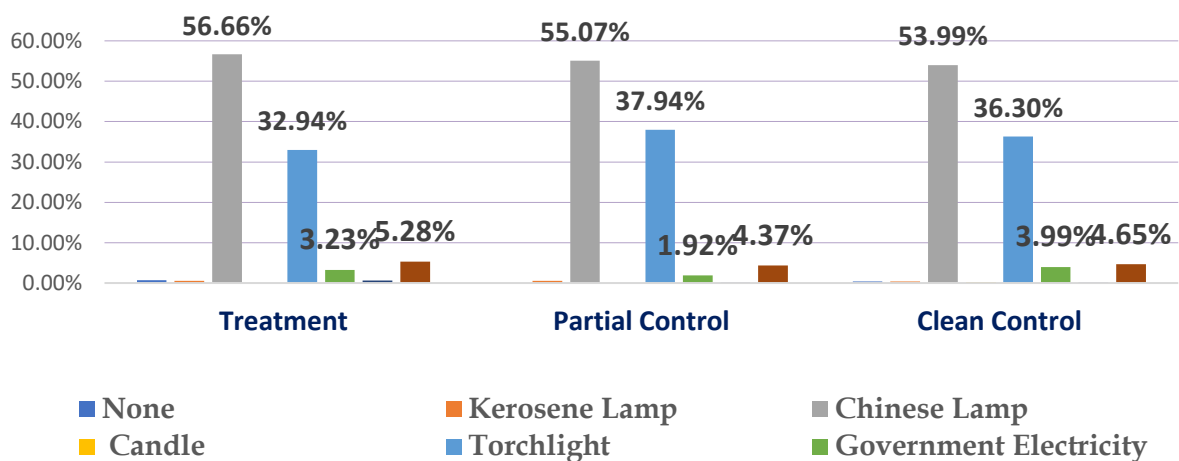


Figure 21: Sources of Energy for Lighting

Access to Water: In terms of access to water, results showed that the largest share (about 32%) of households across all beneficiary categories rely on mechanical hand pumps for drinking water. About 23% rely on streams and 22% on tap.

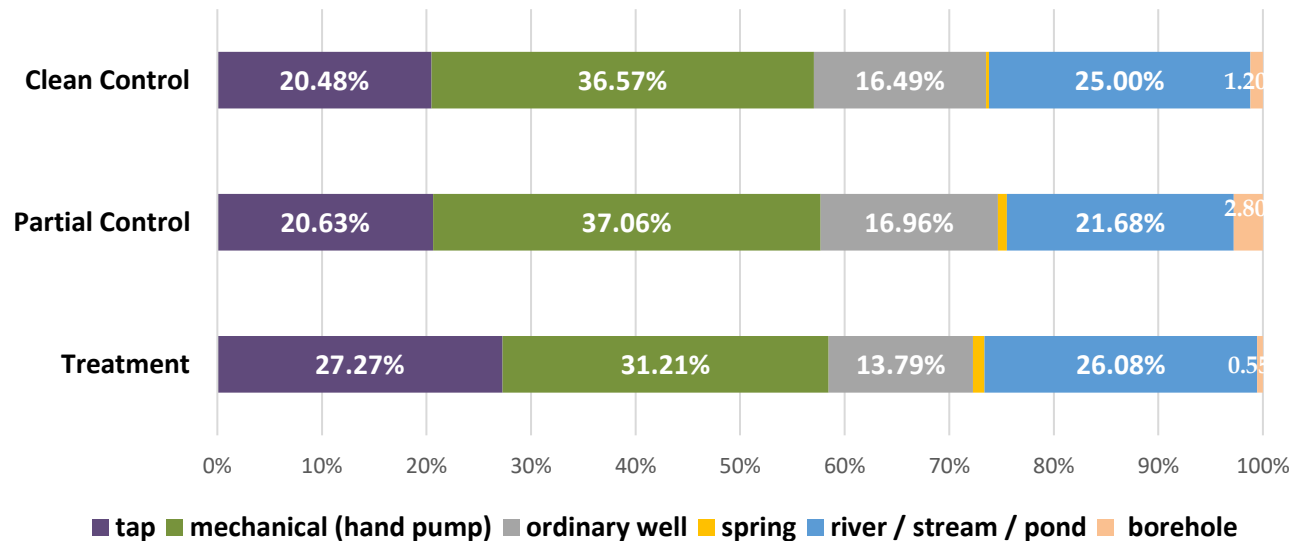


Figure 22: Main Sources of Drinking Water

Toilet Facility: The assessment also looked at access to toilet facilities. Results showed that majority (between 77% and 82%) of households across all beneficiary categories use pit toilets, while about 15% still use open defecation in bushes and waterways.

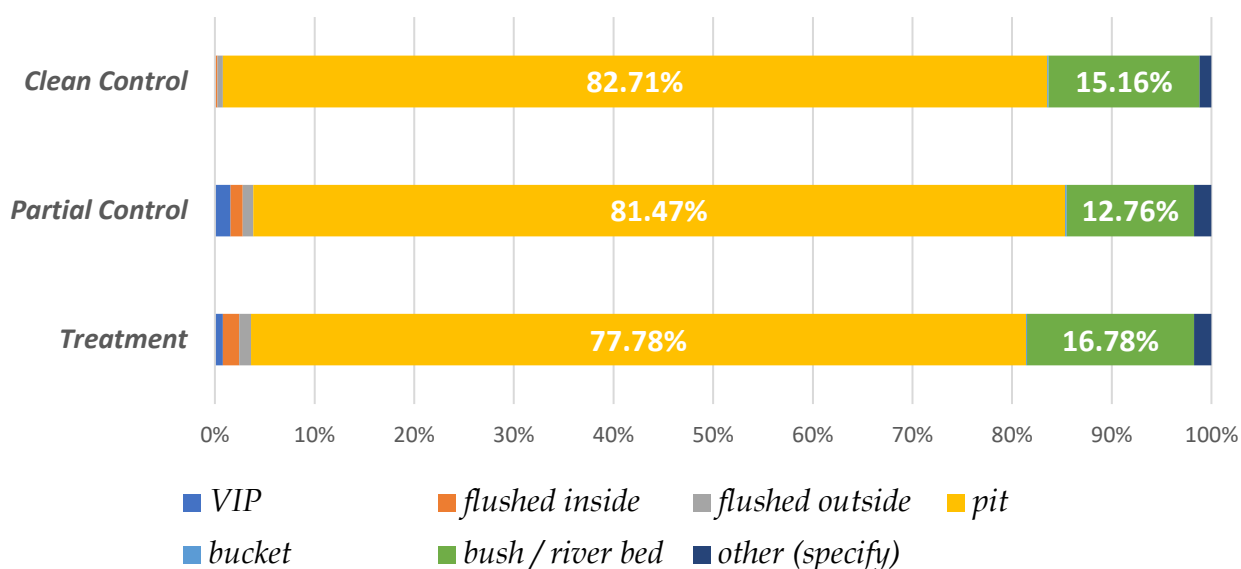


Figure 23: Access to Toilet Facilities

Production:

Main Source of Livelihood:

Results showed that the primary source of livelihood for majority of households is Farming. On average, 81% of all targeted households rely on farming for their livelihood. Across district, the percentage of households that rely on farming varied significantly. As shown in figure 24 below, all districts had above 55% of respondent demand on farming. However, farmers in Bombali recorded the largest share while those in

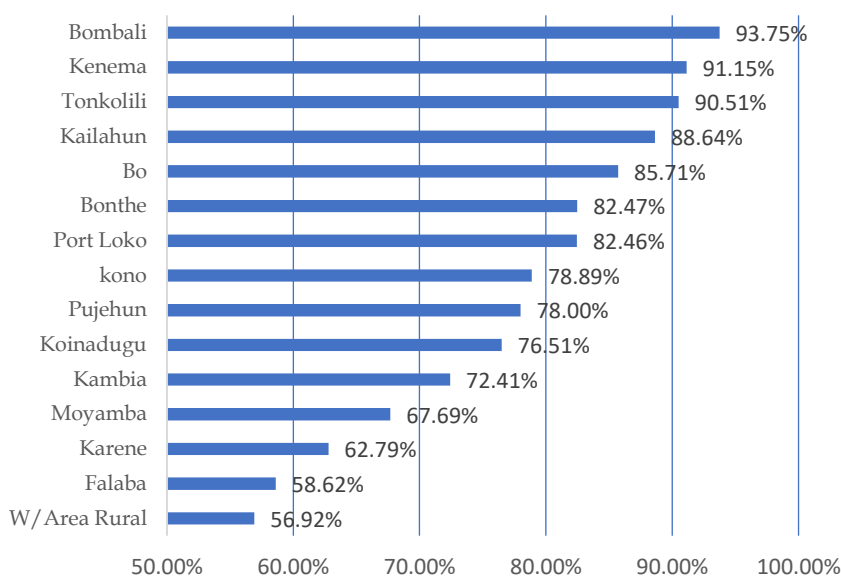


Figure 24: Share of households that have farming as their primary source of livelihood

western area rural recorded the least.

In terms of average number of plots each household farming, results showed that on average, every household had about 3 plots. Variations across age groups and gender of household heads was marginal. Across districts, Bo district had the largest share (15), while Western Area urban had none. Across beneficiary categories, variations were also marginal.

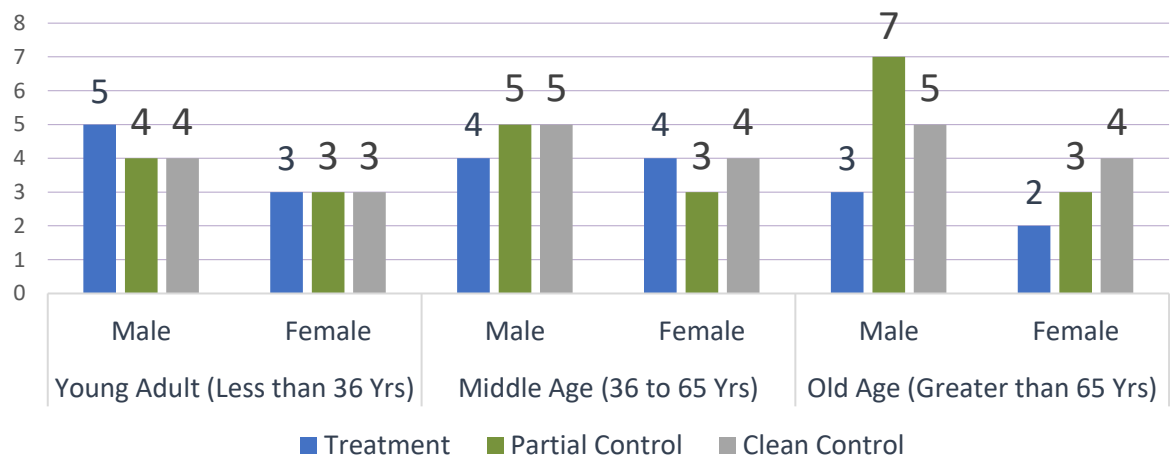


Figure 25:Average Number of Plots Per Household

In terms of ecology predominantly used, results showed that majority of farmers grow crops in the uplands (50.37%). 43.83% use Inland Valley Swamps while the others (under 5%) use Bolilands, mangrove swamps or riverine. These results confirm that majority of farmers engage in rice farming that is predominantly grown in Inland Valley Swamps (IVS), Mangrove swamps, Bolilands and Riverine Ecologies. For the uplands, the share of rice cultivation has been dwindling over the years. Across gender, more female headed households are involved in upland farming than male headed households. However, overall, even across gender, the share of households involved in upland farming is higher, followed by IVS.

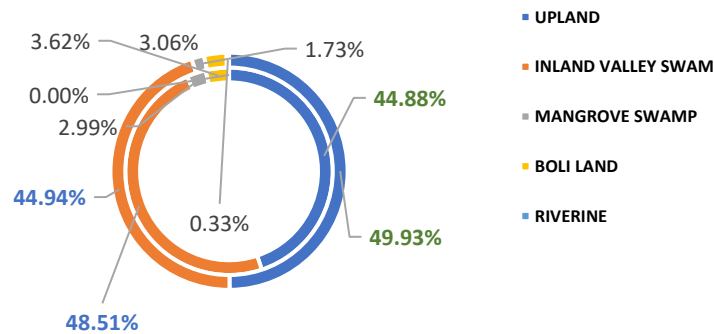


Figure 26: Most predominant ecology cultivated by gender of Household Head

Average Area Under Cultivation:

Rice:

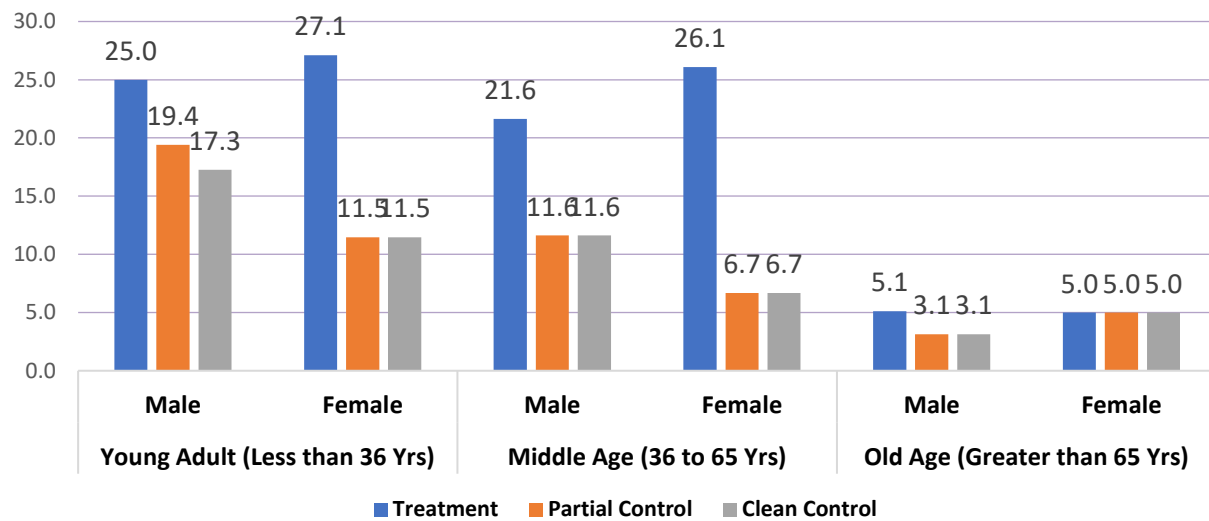


Figure 27: Average Area Under Rice Cultivations (Acres)

For rice, results showed that on average area cultivated for communities that will be eventual beneficiaries of the AVDP project had higher average farm sizes (between 21 to 26 acres per household for young adults and middle-aged household heads). For non-beneficiaries, average rice area cultivated range from 7 acres to 19 acres. Across age groups, farms owned by household heads that are young adults had more area under cultivation.

Cassava:

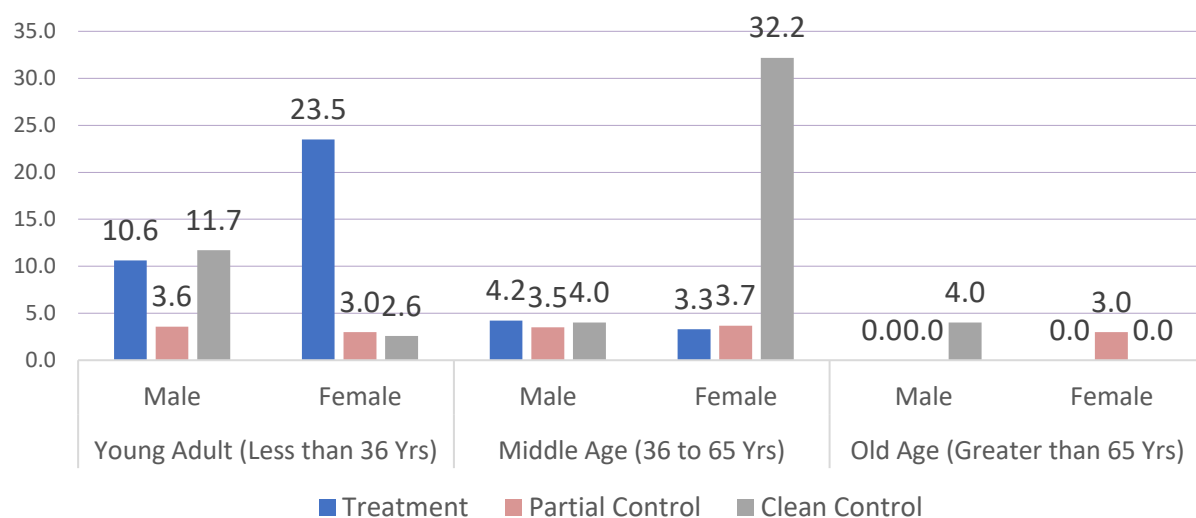


Figure 28: Average Area Under Cassava Cultivations (Acres)

For cassava, a significant variation existed between areas cultivated by young adults and middle aged. For households that will be beneficiaries of the AVDP project, areas cultivated range from 10 acres (male) to 23 acres (female) for young adults. For middle aged, except for an observed outlier of 32 acres for some clean control communities, average size of cassava fields ranges between 3 to 4 acres.

Vegetables

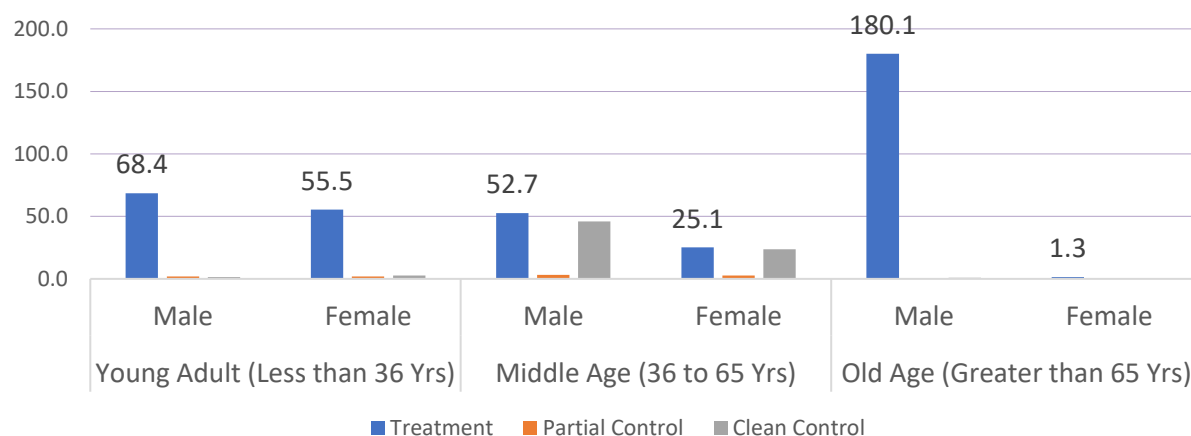


Figure 29: Average Area Under Vegetables Cultivations (Acres)

For vegetables, average farm sizes were generally larger; particularly for households that will eventually be benefitting from the AVDP project. For Young adults, sizes ranged from 55 acres to 68 acres. For Middle Aged, sizes ranged from 25 acres to 53 acres. One outlier was observed for the Old Aged. About 180 acres of vegetables was reported being cultivated by households that will benefit from the project and fall in the old age group.

Cocoa:

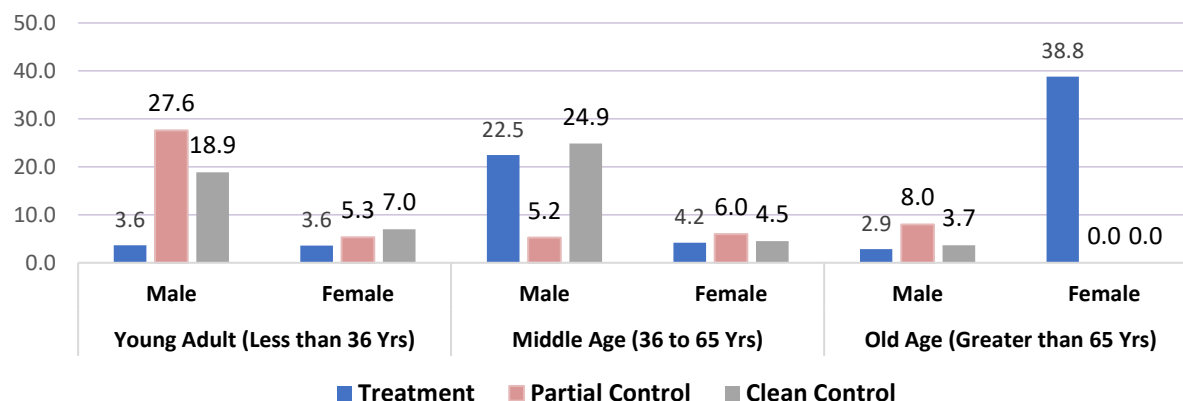


Figure 30: Average Area Under Cocoa Cultivations (Acres)

For Cocoa, area under cultivation for young adults was very low for households that will eventually be benefiting from the project (about 4 ha). For the middle aged, average farm sizes were about 22.5 ha. Apart of an outlier for the old, results showed that average farm sizes were larger for male headed households than female head households across the young and middle aged.

For oil palm, average farm sizes were higher for the clean control (that is households that are not expected to benefit from the AVDP project) than those expected to benefit.

Oil Palm

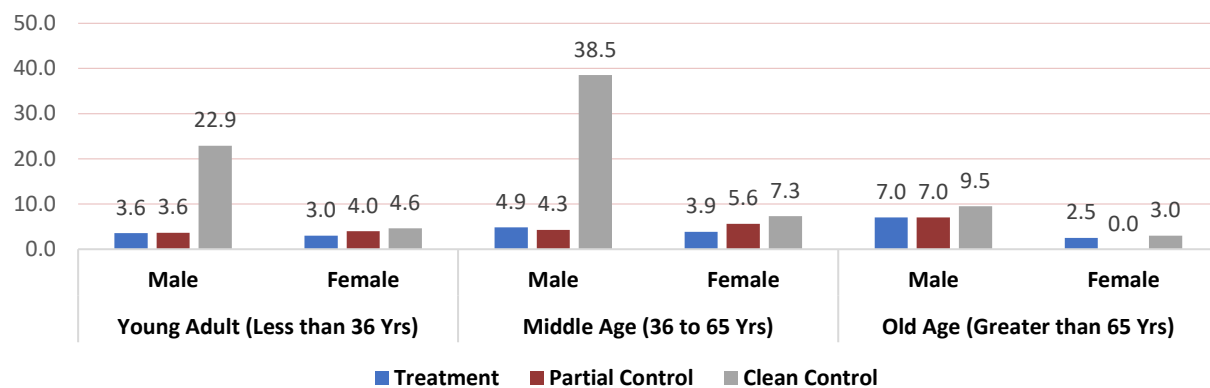


Figure 31: Average Area Under Oil Palm Cultivations (Acres)

Across district, average farm sizes were highest in Kono for Rice, Pujehun for Cassava, Kono for Vegetables, Bombali for Oil Palm and Kono for Cocoa.

Average Farm Sizes for Value Chain Crops (Acres)

District	Rice	Cassava	Vegetables	Oil Palm	Cocoa
Kailahun	3.4	2.0	1.3	3.7	1.9
Kenema	3.2	2.1	0	5.2	4.2
Kono	6.7	0	7.7	5.7	5.2
Bombali	2.6	3.9	0	6.2	0
Koinadugu	1.6	0	1.8	1.8	0
Tonkolili	3.1	0	0	4.4	3.1
Falaba	3.1	0	0.0	0	0.0
Kambia	4.8	0	2.3	0	0
Port Loko	2.6	2.0	1.6	3.4	0
Karene	3.3	0	0	4.5	0
Bo	4.5	4.5	1.0	4.3	4.9
Bonthe	3.4	3.7	1.5	5.8	0
Moyamba	2.7	2.0	0.8	2.2	4.2
Pujehun	3.2	5.0	0	4.8	3.5
W/ Area Rural	2.9	4.1	2.0	3.7	
Average >>	3.4	2.0	1.3	3.7	1.9

Major Crops Produced:

In this section, we present results of major crops produced. Results showed over 54% of households are involved in growing Rice as their primary crop. 11% of households are involved in Cocoa Production, 12% in Oil Palm, 9% in Vegetables and 8% in Cassava production.

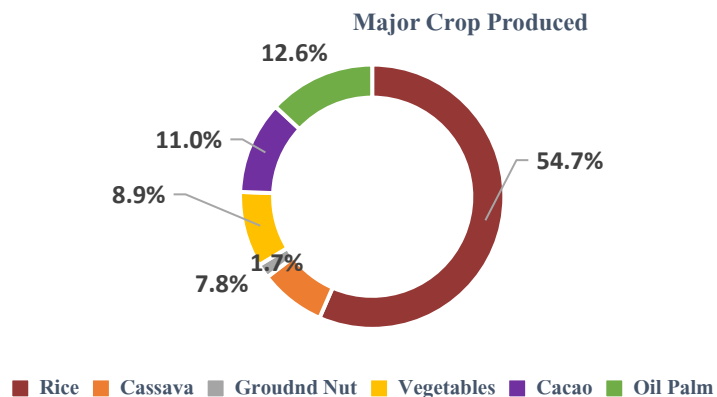


Figure 32: Major Crops Produced

Use of Improved Seeds:

In this section, we present results on the share of households that used improved seeds in their farming activities. Results showed that about 58% of respondents use improved seeds. Variations across age groups were marginal. Across beneficiary types, a similar share use improved seeds. Similarly, variations across beneficiary categories was marginal.

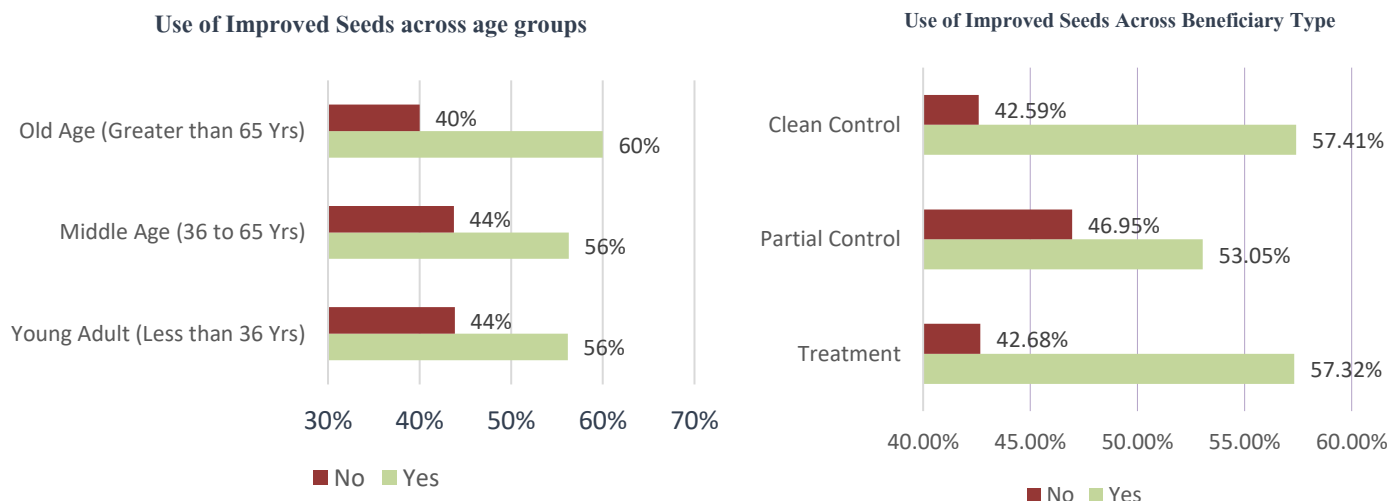


Figure 33: Use of Improved Seeds Across Age Group and Beneficiary Type

In terms of farmers' perception of improved seeds received, results showed that majority (between 61% to 68%) of respondents expressed being very satisfied with the seeds received. About 30% were somewhat satisfied and 6% not satisfied.

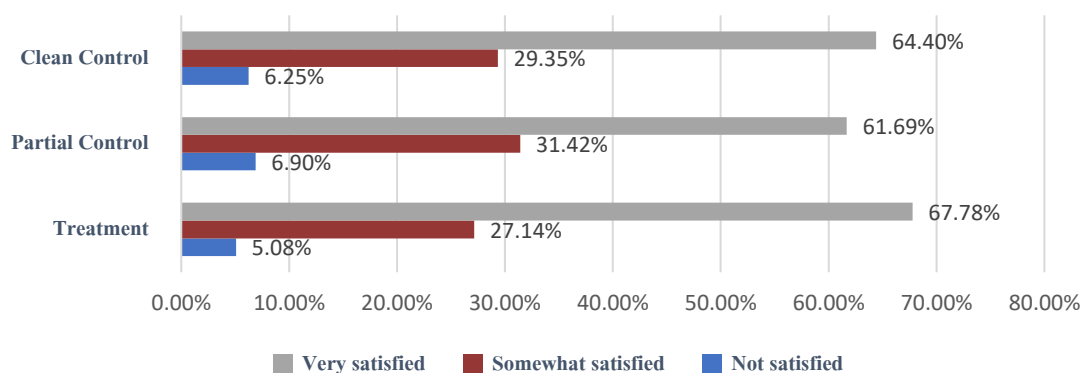


Figure 34: Farmers Perception on Improved Seeds

Fertilizer Usage

In terms of fertilizer usage, results showed that less than 15% of households use fertilizer on their farmer fields. This was the case for both inorganic and organic fertilizer. See figure 34 below:

Fertilizer usage was also analysed across gender. Results showed that over 67% of households that use fertilizer are female headed households. This further emphasizes that fertilizer is predominantly used for vegetable production.

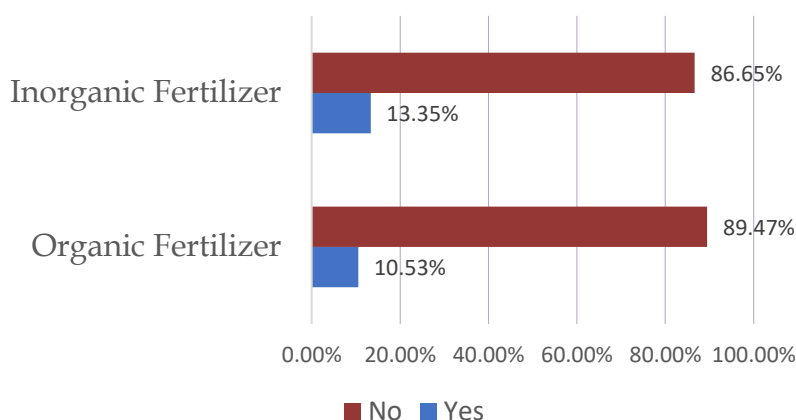


Figure 35: Fertilizer Usage

Adoption of New Technologies:

Regarding adoption of new technologies/techniques in their farming activities, results showed that technology adoption rates are dismally low across all beneficiary categories. Less than 15% of respondents confirmed that they adopted new technologies for farming in the last cropping cycle. Of the share that adopted technologies, 55% were from female-headed households.

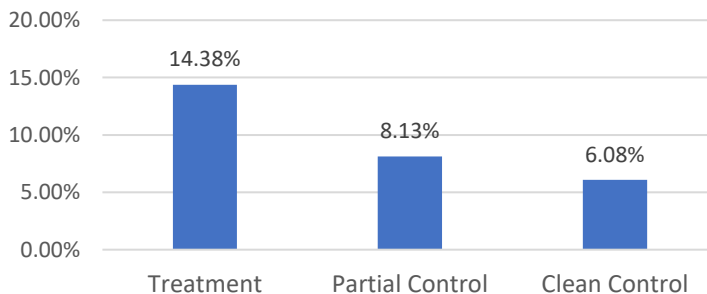


Figure 36: Adoption of Improved Techniques

Irrigation:

Regarding irrigation, the analysis looked at the share of households that had their fields irrigated to cultivate crops in the dry season. Results showed that less than 20% of all households targeted had their fields irrigated. This suggests that majority of households grow their food/crops mainly in the rainy season (for seasonal/annual crops). The analysis also looked at those that had some irrigation system, what the timing of the system was and the volume of water

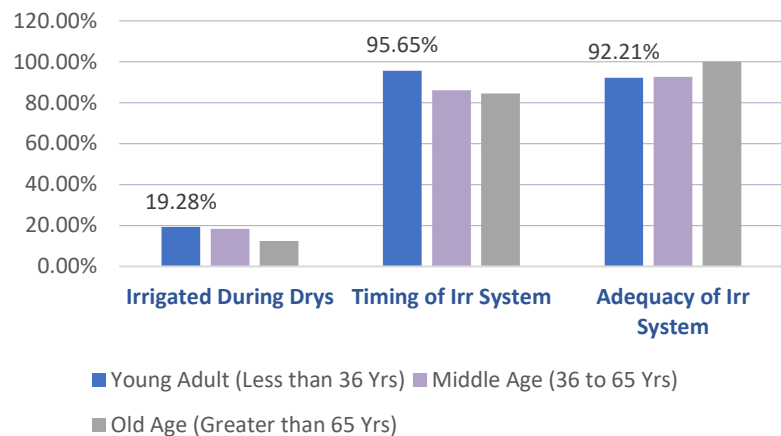


Figure 37: Irrigation System: Season, Time and Adequacy

they received from the system. We also looked at the type of crops that had irrigation systems. Results showed that majority of farmers that confirmed having irrigation infrastructure on their farms were involved in vegetable farming. Of these, majority (over 85% across all age groups and beneficiary types) confirmed they were pleased with the timing of the system and volume of water made available for their farming activities. In terms of alternative irrigation sources that provide water for farming in the dry periods, results showed that 43% of households relied on rivers/streams, 32% on wells and 15% on boreholes (that is for those who irrigate).

Ownership of farmland:

Land is a major asset in farming communities. This assessment also looked at household ownership of land parcels by age group and gender. Results showed that, majority of land used for farming is owned by the male members of these households (between 68% to 73% across all age groups). This also confirmed that male headed households own more farmland than female headed households. The results showed that only about 15% of lands used for agriculture are owned by the wives (between 15% and 18% across all age groups). Figures 38 and 37 present results on land ownership across age group and gender. For gender, results showed that over 79% of land used by households with female headed households were owned by husbands.

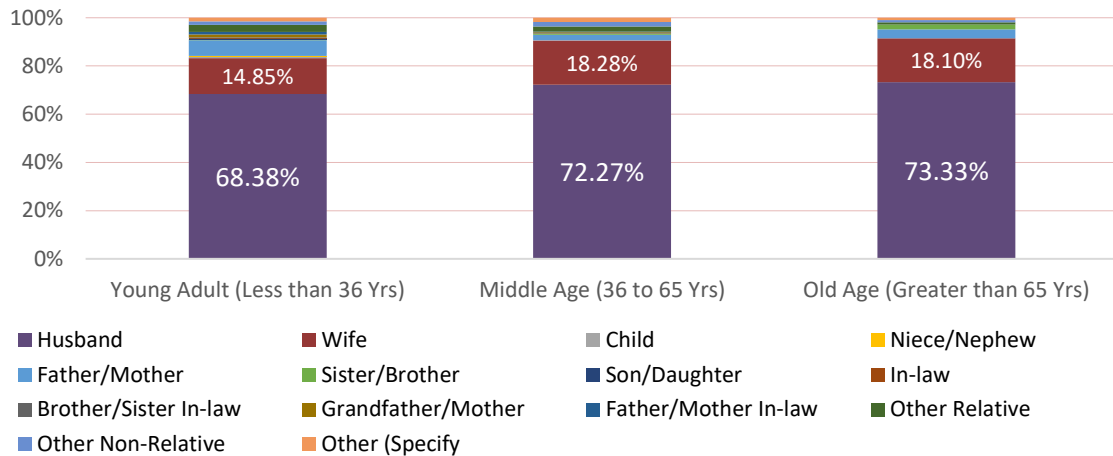


Figure 38: Ownership of Farm Plot by Age Group

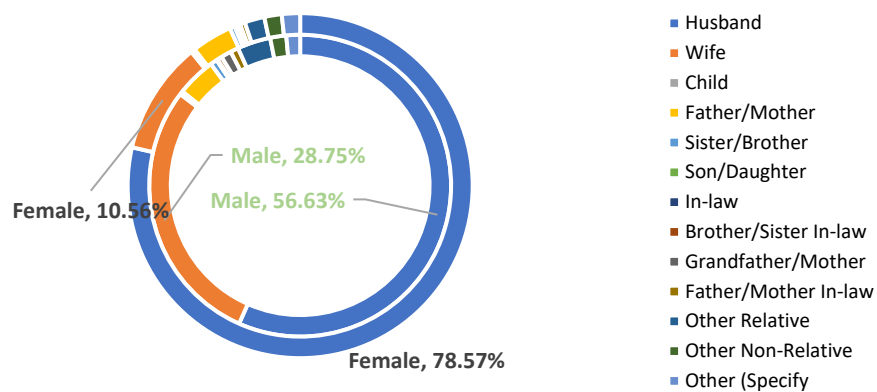


Figure 39: Ownership of Farm Plot by Gender

Who Mainly Participates in Crop cultivation

In terms of household members that participate in the farming activities, results showed that about 72% of households have all members of the household participating in the farming activities. About 12% confirmed that only the Husband farms the land and 6% have only the women cultivation the land. Variations across age group and gender were insignificant.

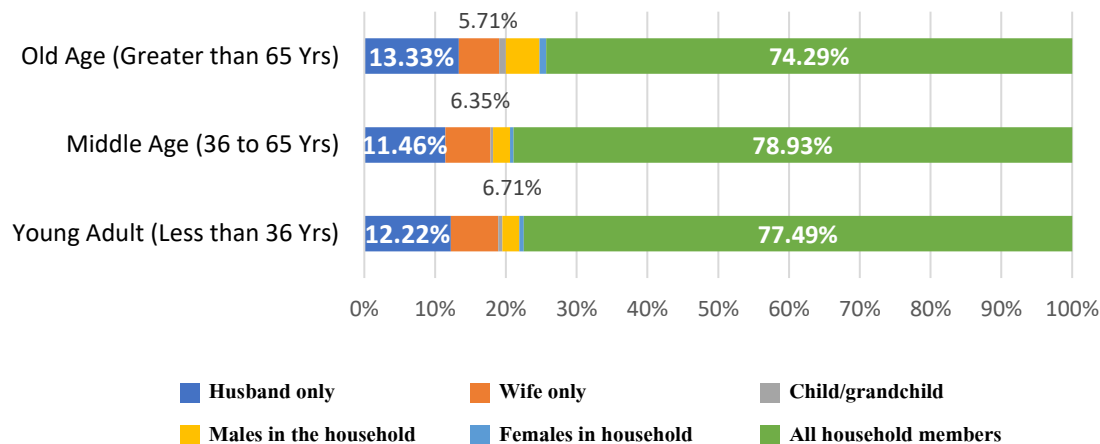


Figure 40: Who in the Household Mainly Participates in Farming The Land

During crops production, the assessment also looked at who in the household makes decisions on inputs and the type of crop to cultivate. Results showed that about 70% of households have the husband significantly involved in making these decisions. About 35% have the husband solely making the decisions while another 35% have the husband and the wife jointly making these decisions. This further emphasizes the patriarchal nature of farming communities in Sierra Leone. There were no significant variations across gender and age group.

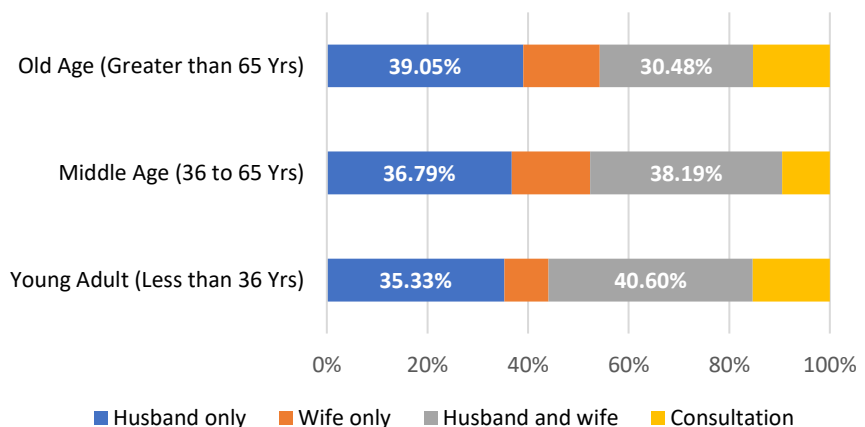


Figure 41: Decision Making on Crops and Inputs

Regarding who in the household participates in the harvest, results were identical with those that had to deal with household members that participated in working on the land. That is, majority of households confirmed that all members of the household participate in harvesting the crop.

Regarding who in the household decides on what to do with the harvest, results were also identical to those obtained for household member that decides on which crop to plant and the nature of inputs that will be used on the farm.

This section articulates the decision-making structures within households. Generally, the husband makes decisions on resources related to investment during the planting season and related to the use of proceeds after harvest.

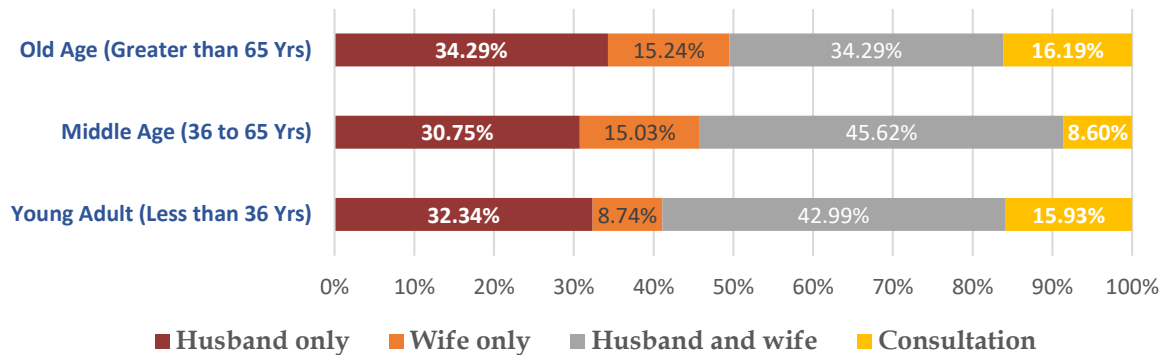


Figure 42: Who makes decisions on how to use earnings from crop

Production:

In this section, we present results on household production levels for key value chain crops across all districts. We present results in all three beneficiary categories.

Table 5: Average Levels of Production per Household (Kg) (Treatment)

District	Treatment					
	Rice	Cassava	Groundnut	Vegetables	Cocoa	Oil Palm
Kailahun	98	0	0	0	114	0
Kenema	583	264	0	0	231	37
kono	460	0	0	200	25	0
Bombali	273	870	500	0	0	0
Koinadugu	56	0	0	301	0	0
Tonkolili	255	0	0	0	38	0
Falaba	512	0	225	0	0	0
Kambia	171	0	138	50	0	0
Port Loko	547	0	125	975	0	0
Karene	594	0	0	0	0	0
Bo	257	0	0	0	50	0
Bonthe		135	103	0	0	120
Moyamba	243	0	330	25	0	150
Pujehun	232	0	30	0	0	100
W/Area Rural	500	0	200	378	0	0
W/Area Urban	0	0	0	0	0	0

Table 6: Average Levels of Production per Household (Kg) (Partial Control)

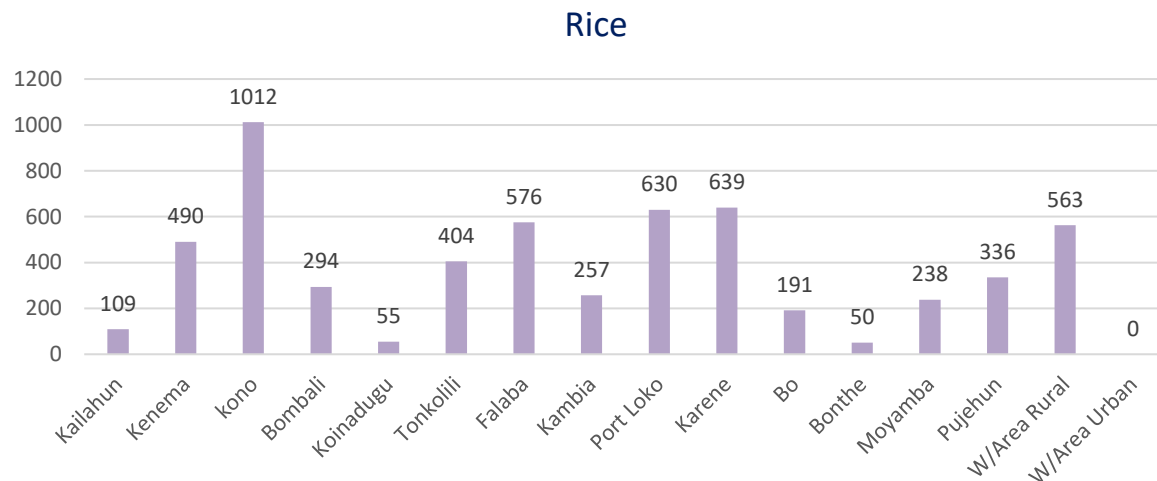
District	Partial Control					
	Rice	Cassava	Groundnut	Vegetables	Cocoa	Oil Palm
Kailahun	32	0	0	0	0	0
Kenema	464	0	200	200	221	45
kono	2,100	0	0	0	0	0
Bombali	268	0	0	0	0	0
Koinadugu	57	0	0	150	0	0
Tonkolili	392	0	0	0	0	0
Falaba	517	0	108	108	0	0
Kambia	600	0	0	0	0	0
Port Loko	473	2,200	50	2,200	0	0
Karene	558	0	0	0	0	0
Bo	183	0	0	0	50	25
Bonthe	0	180	0	0	0	240
Moyamba	223	0	0	50	0	0
Pujehun	413	0	0	0	0	0
W/Area Rural	575	0	250	885	0	0
W/Area Urban	0	0	0	0	0	0

Table 7: Average Levels of Production per Household (Kg) (Clean Control)

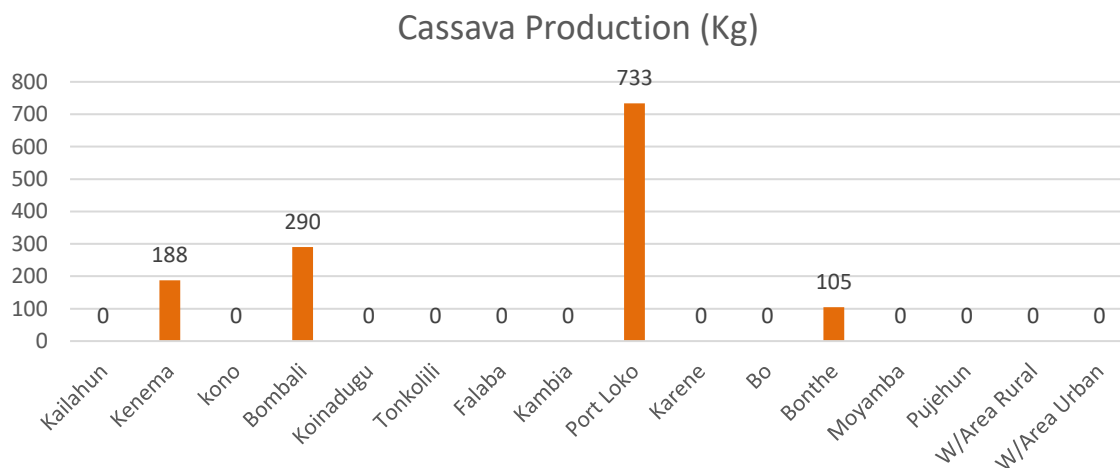
District	Clean Control					
	Rice	Cassava	Groundnut	Vegetables	Cocoa	Oil Palm
Kailahun	196	0	0	50	61	82
Kenema	422	300	0	0	287	50
kono	475	0	0	0	0	0
Bombali	341	0	0	0	0	0
Koinadugu	51	0	50	371	0	0
Tonkolili	567	0	0	50	0	0
Falaba	698	0	0	0	0	0
Kambia	0	0	0	0	0	0
Port Loko	871	0	0	2320	0	0
Karene	764	0	0	0	0	0
Bo	133	0	0	0	88	60
Bonthe	100	0	0	0	0	0
Moyamba	247	0	75	75	0	0
Pujehun	363	0	0	0	100	0
W/Area Rural	613	0	275	742	0	0
W/Area Urban	0	0	0	0	0	0

In this section, we present results on average levels of production for respective value chains across all beneficiary categories.

For rice, results showed that total production levels per household were highest in Kono at 1,012 kgs (ie: 20 50kg bags of rice paddy) and lowest in Bonthe at 50kg (ie: 1 50kg bag of rice paddy). National average levels of production per household was reported to be 365 kg (ie: 7 50kg bags of rice paddy).

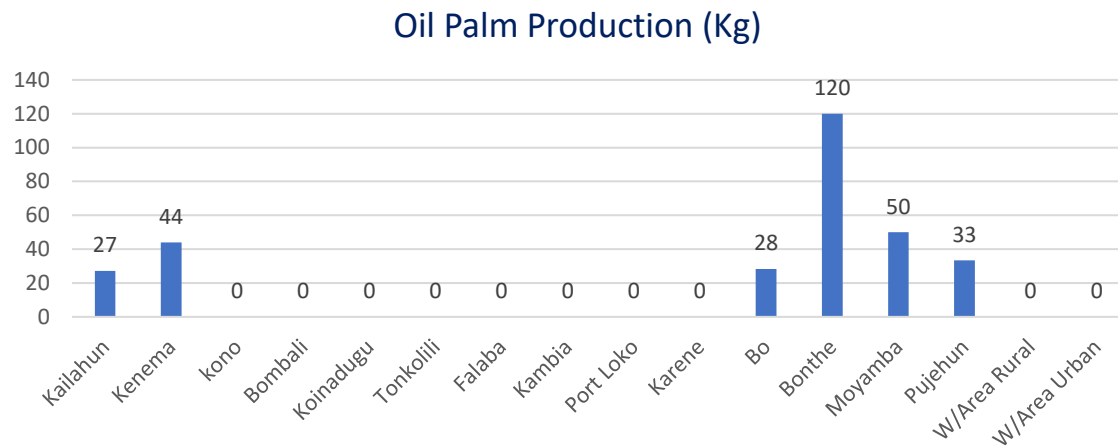


Results showed that cassava is produced mainly in Kenema, Bombali, Port Loko and

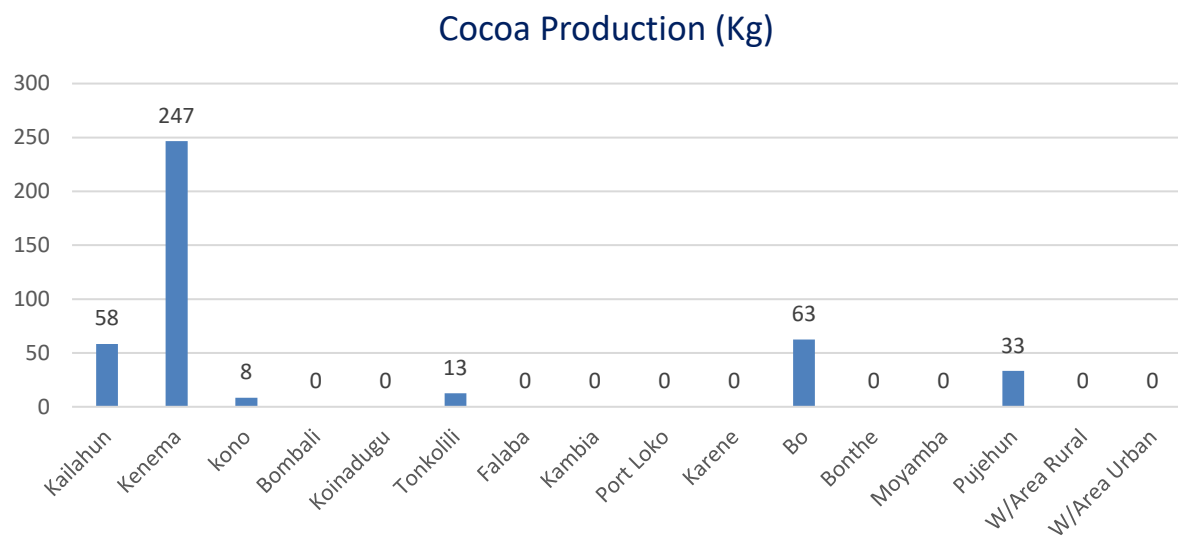


Bonthe. Production levels were highest in Port Loko and lowest in Bonthe.

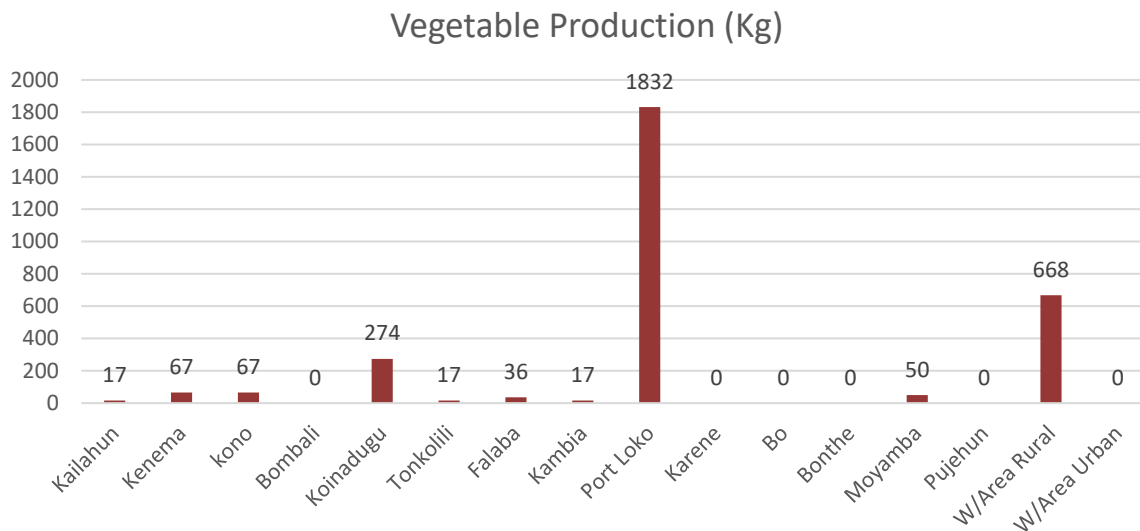
For Oil Palm, production levels were recorded in Bo, Bonthe, Moyamba, Pujehun, Kenema and Kailahun; with Bonthe leading in terms of production levels and Kenema having the lowest.



For Cocoa, six districts had households involving in producing the crop (Kailahun, Knema, Kono, Tonkolili, Bo and Pujehun). Production levels were highest in Kenema



and lowest in Kono.



For vegetables, there are three main producing districts identified. These include Western Rural, Port Loko and Koinadugu. The survey considered an overly broad range of vegetables. Port Loko recorded the largest levels of production amongst all other producing districts. See figure xx above.

Levels of Production across gender:

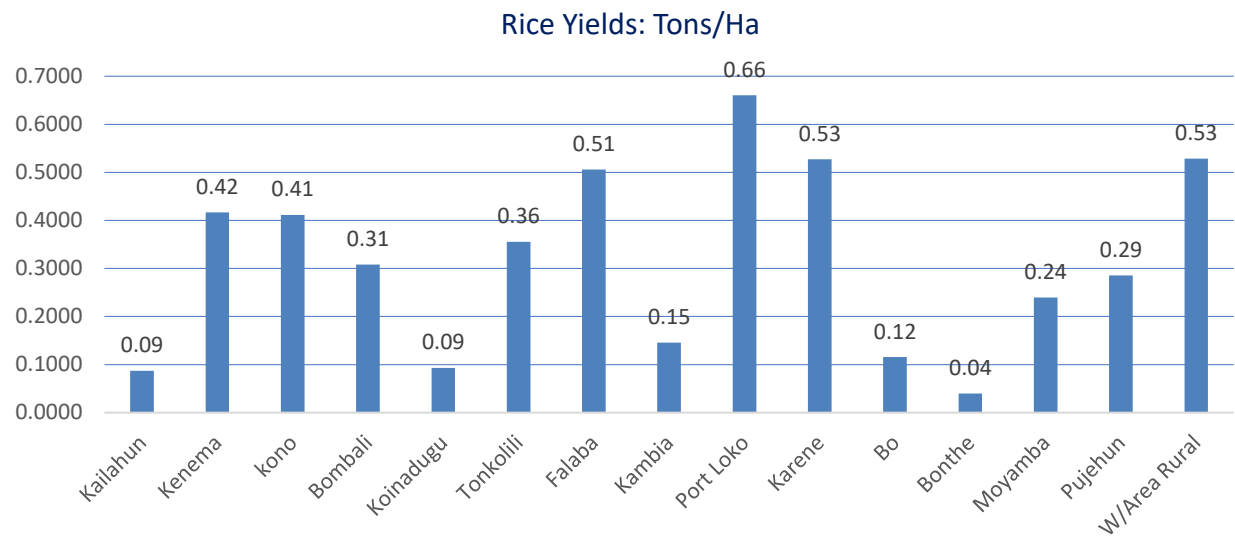
Crop	Treatment		Partial Control		Clean Control	
	Male	Female	Male	Female	Male	Female
Rice	395.6	353.7	455.6	400.6	493.1	367.1
Cassava	610.0	351.4	1190.0	0.0	0.0	300.0
Groundnut	229.1	149.4	125.0	179.0	162.5	100.0
Vegetables	303.3	1156.9	1841.7	751.7	3149.5	493.8
Cocoa	125.2	185.5	200.0	200.0	166.3	316.7
Oil Palm	66.0	150.0	88.8	0.0	51.4	240.0

We also present results on average household production across gender. Results showed that production levels varied significantly by gender for respective crops. For Rice, male headed households had higher levels of production than female headed households. For Vegetables, results varied by beneficiary category. Within treatment groups, production levels of female headed households were higher than male headed households. The reverse was true for both control groups.

Yields:

In this section, we present results on yields. Given challenges with missing data, we only present results for rice yields. These measures are clearly not a representation of national yield levels. This is because yields vary by ecology and the data collected was collected without specific

disaggregation to ecology. These results should be supplemented by national yield plot estimates based on crop cuttings for the various technologies.



Post-Harvest Losses:

Results showed that average 67% of respondents confirmed suffering post-harvest losses in the last season that are related to rotting, pest/insect/rodent infestation or theft. Across all age groups and beneficiary categories, over 55% confirmed suffering from these losses in the last season.

Across gender, 61% of household heads reporting severe post-harvest losses were female. Given the correlation that existed between gender and crops type, these results may imply that post-harvest losses are slightly skewed towards vegetable production.

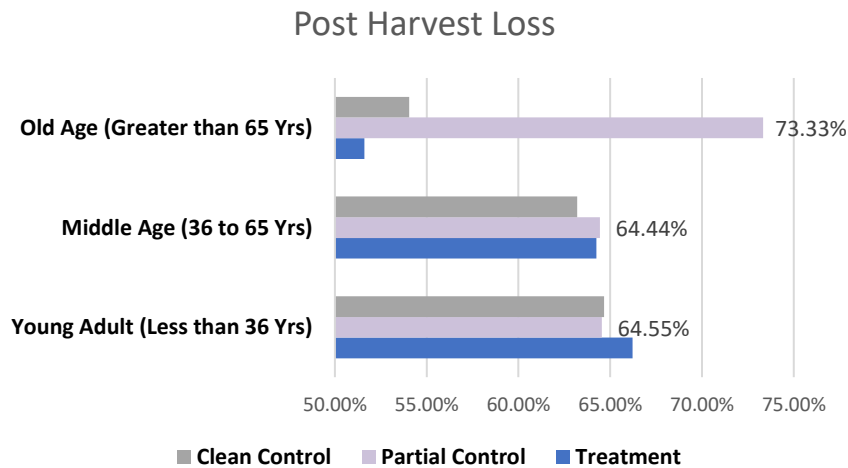


Figure 43: Level of Post-Harvest Losses

The assessment also looked at the percentage of crop lost in the last season for targeted households. This was looked at across districts, age groups and crop type. Across districts, results showed that post-harvest losses were greatest in Pujehun and Kambia

districts. The lowest levels were recorded in Kono, Bombali (including Karene), Kailahun and Western Area. See map below.

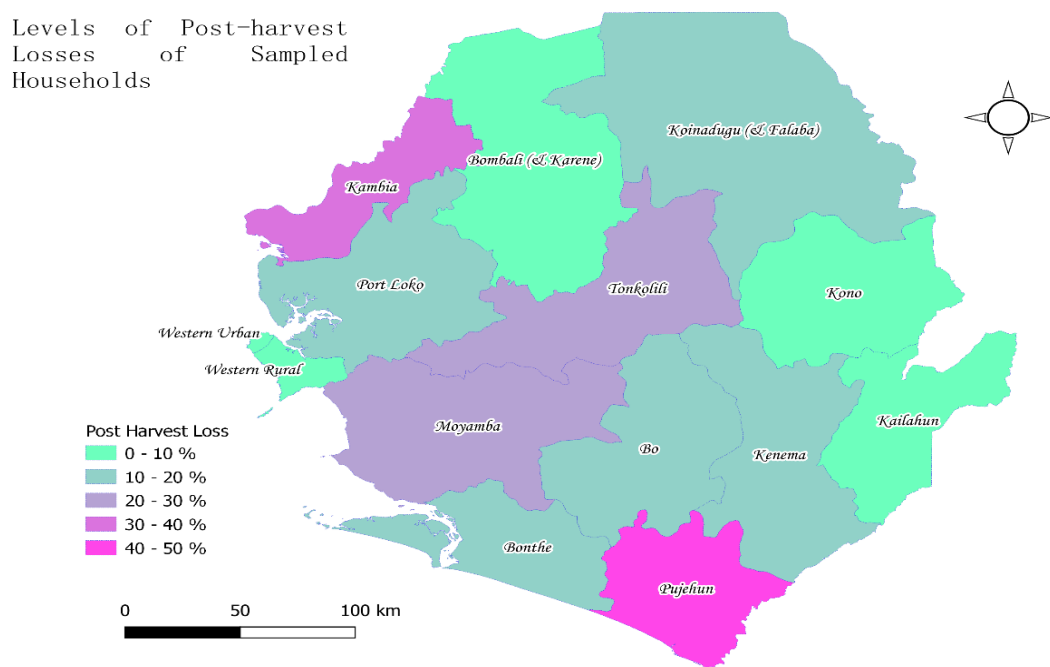


Figure 44: Levels of Post-Harvest Losses per District

Across crop types, the highest levels of post-harvest losses were recorded for Coffee, Maize and Rice. Amongst AVDPs value chain crops, Rice represented the crop with the highest levels of post-harvest losses. About 19% of rice produced goes towards wastes across beneficiary categories, gender of household heads and age groups. For this same stats, maximum loss of 52% was recorded on Pujehun district. This suggests that more than half of the rice produced in Pujehun is lost on causes related to rotting, pest/insect/rodent infestation or theft.

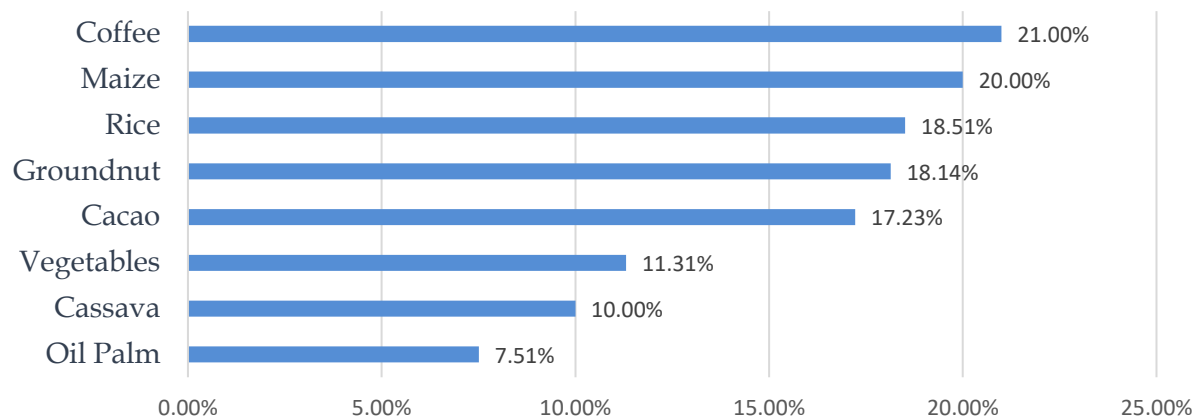


Figure 45:Post-Harvest Losses by Crop Type

Marketable Surpluses (Processing, Storage and Marketing):

This section presents results on the state of households accessing markets. We present results showing households with marketable surpluses, households that add value to their crops and the share of households that sell in the market.

Results showed that, across all age groups and beneficiary categories, about 48% of households sell part of their produce to the markets. Of these, 35% sell to established marketing outlets (periodic and daily markets) while the larger share sells through other local means. The alternative marketing outlets include community in-kind, through collectors, through processors, etc.

Regarding value addition, about 20% of households confirmed processing their produce before selling. This represents a significantly small level of value addition ongoing in these targeted communities.

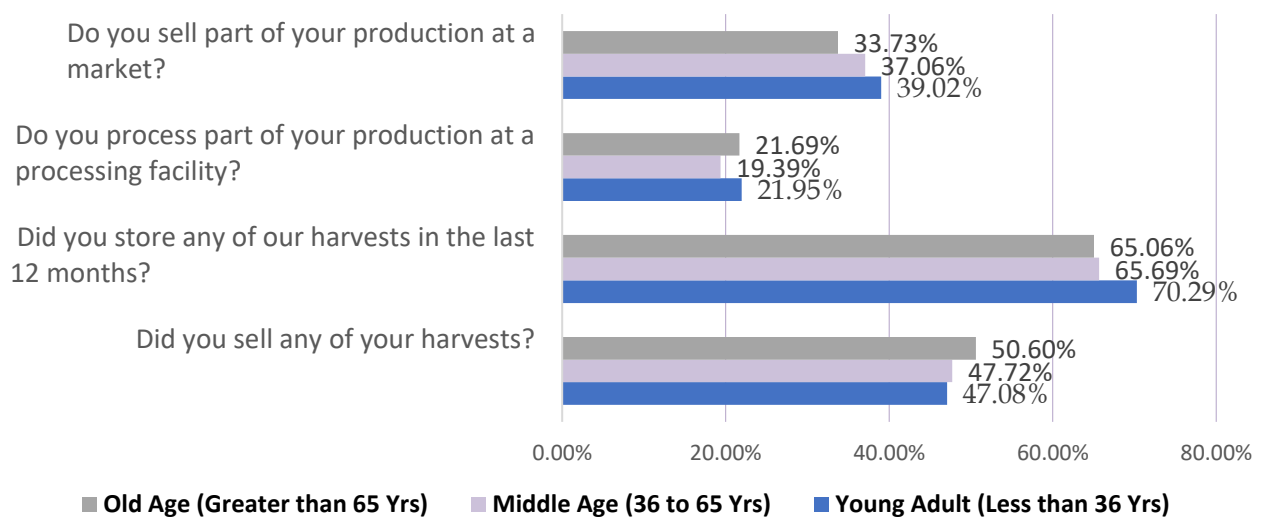


Figure 46: Processing, Storage and Marketing Consent

Storage has historically been a challenge in rural communities. This affects post-harvest losses and prices of commodities once they reach the market. Results shows that over 65% of households store their produce after harvesting and/or processing. This further re-emphasizes the demand for storage facilities in farming communities. Results showed negligible variations across gender of household heads and age groups for these variables.

Regarding type of market outlets, the assessment showed that about 45% of respondents relied on daily/permanent markets. About 35% relied on periodic markets. See figure 47 below. The type of storage employed is correlated to the type and mode of marketing of produce. Farmers that

typically sell at farmgate do not require storage as they sell directly after harvest. Those that visit periodic markets need to harvest and store their goods for few days before heading for the market. For daily markets, more storage is required. Also, for fear of perishability, some farmers are forced to sell their produce at a reduced rate once they have reached the markets. As storage costs increase, farmers are forced to auction their commodities. The assessment also looked at the predominant method of storage for un-processed commodities. Results showed that majority of household farmers store their produce in bags and in houses.

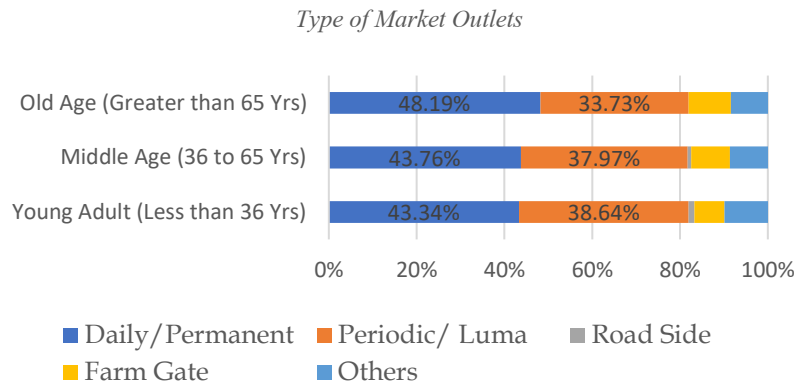


Figure 47: Type of Market Outlet

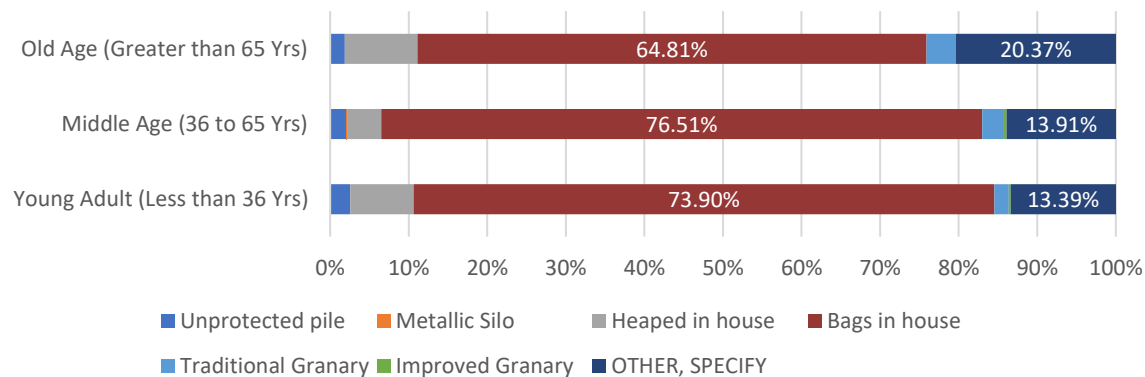


Figure 48: Method of Storage of Un-Processed Commodities

The assessment also looked at distances to markets for all households. Results showed that majority of farmers do not travel far to source marketing outlets. Less than 1% travel beyond ten miles to sell their produce. This 1% is predominantly young adults. Between 6% and 10% travel between 6 to 10 miles.

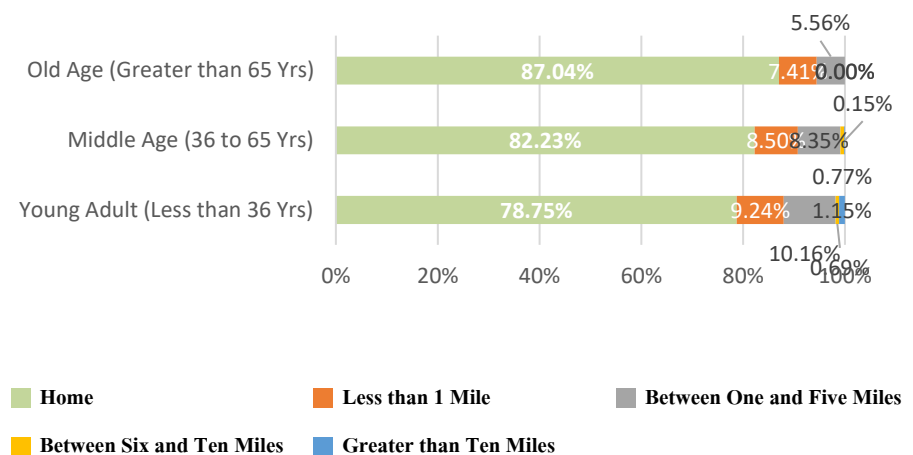


Figure 49: Distance to Markets

less than 1 mile while the majority (between 79% to 87%) do not travel at all. This implies that majority of farmers sell in the daily market in their communities, periodic market (assuming in the same villages) and on the roads. This suggests that because of the challenges associated with reaching out to other markets, farmers do not reach out to other marketing frontiers to sell their produce.

Processing:

The assessment also looked at the level of processing that is being conducted amongst farming households. Results showed that majority of households that processed their produce used merchandised processing (About 62%). 33% used manual and less than 5% used both. In this context, merchandised

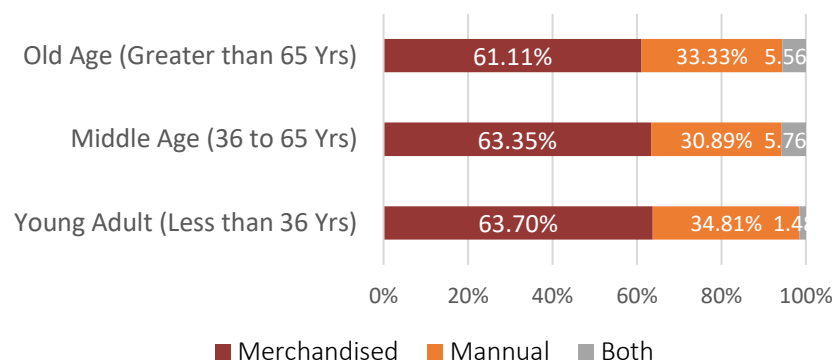


Figure 50: Level of Processing by Age Group of Household Head

processing refers to the use of machines to add value to their produce.

For households that sold their produce after processing, results showed that these produces were sold to three main outlets; wholesalers, retailers and consumers. About

42% sold to consumers, 25% to 32% sold to retailers and 26% to 31% wholesalers. Variations across age groups and gender were observed to be marginal.

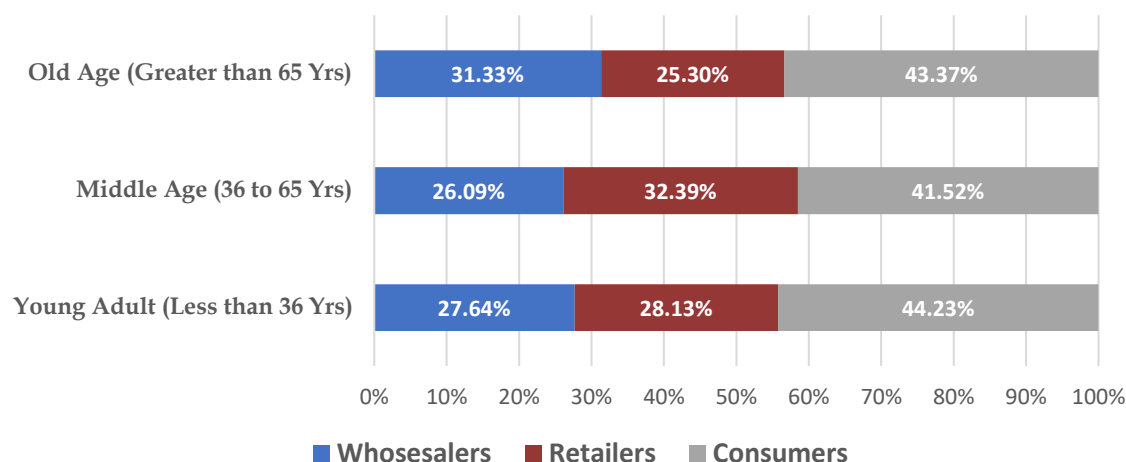


Figure 51: Marketing Outlets (Actors) of Processed Goods

For those households that added value to their produce and sold to the three value chain actors described above, about 95% of them sold in daily markets or periodic markets. For periodic markets, share stood at about 43% while for those selling in daily markets, share stood at about 52%. That is, for processed commodities, little or no roadside or farmgate marketing outlets are used. Majority are sold through the common outlets (periodic markets or daily markets).

In the following section, we present results on quantities of harvest and marketable surpluses for the key value chain crops of the AVDP project. In figures 52, we present results for mainly Rice with regards to 1) quantity of harvested crop that was sold, 2) total value of sales (average per household); 3) Distance to closest market and 4) Quantity harvested that was stored.

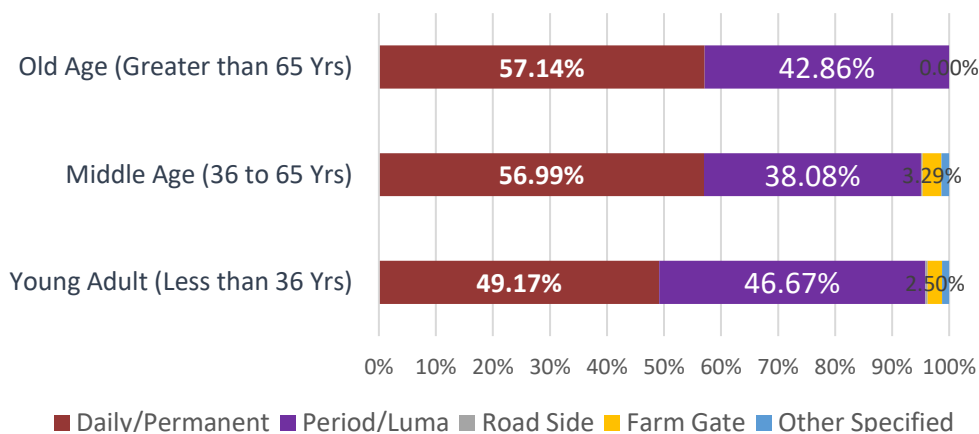


Figure 52: Marketing Outlets for Processed Commodities (Locations)

Volume of Harvest Sold:

In this section, we present the quantity of harvest crop that was sold through the different marketing outlets. Figure 53 below shows the quantity of harvested rice that was made available to the market across districts. Table 5 shows the same for major crops across the different districts. As shown for rice, majority of marketable surpluses are recorded in Port Loko, Bo and Koinadugu. No surpluses were recorded in Moyamba and Bonthe.

These results confirm that Sierra Leone is indeed a net rice importing country as the share of marketable surpluses are significantly low. For the most part, the largest share of rice produced is consumed locally in the producing communities. Limited share is marketed to the open market.

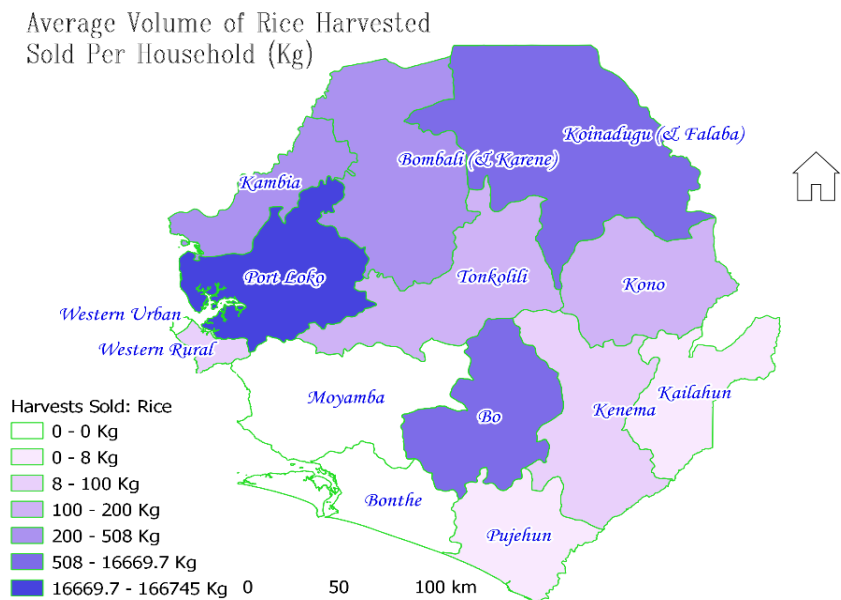


Figure 53: Average Volume of Rice Harvested that is Sold (Kg)

For other crops, results showed that marketable surpluses for Cassava were greatest in Tonkolili and Kambia. For Groundnut, marketable surpluses were highest in Kambia and Karene. For Vegetables, marketable surpluses were highest in Koinadugu and Western Area Rural. For Cocoa, marketable surpluses were reported only in Kailahun while for Oil Palm, surpluses were in Kenema, Kambia and Bo.

Table 8: Quantity of Marketable Surpluses

Quantity of Marketable Surpluses (Kg)						
District	Rice	Cassava	Groundnut	Vegetables	Cocoa	Oil Palm
Kailahun	4.8	0	0	0	100073.3	2.7
Kenema	75.2	6.4	1	0	22.4	165.3
Kono	200.0	0	0	0	25.0	0.0
Bombali	500.0	0	0	0	0.0	2.0
Koinadugu	743.7	4.5	10	7311.021	0.0	4.0
Tonkolili	137.5	200	0	0	10.0	1.0
Falaba	0.0	0	0	75	0.0	0.0
Kambia	474.8	250	250	0	0.0	283.3
Port Loko	166,745.3	50	0	150.6458	0.0	0.0
Karene	8.0	0	200	0	0.0	0.0
Bo	16,669.7	0	0	0	0.0	85.0
Bonthe	0.0	20	0	0	0.0	0.0
Moyamba	0.0	0	0	0	0.0	0.0
Pujehun	8.0	0	0	0	0.0	0.0
W/ Area Rural	100.0	73.33333	0	3110.333	0.0	0.0
W/ Area Urban	0.0	0	0	0	0.0	0.0

Total Value of Sales:

In this section, we present results on average value of sales for respective crops. This shows the average revenue accrued for respective crops at the household level. Figure 54 present results for rice across districts while table 6 present results for all major value chain crops for the AVDP project. As shown, the largest revenue from the sale of rice are gained along the eastern borders to the north and south. To the north, more rice revenue were gained in Koinadugu and Falaba while to the southeast, revenue were greatest in Kenema and Kailahun.

These results do not adequately depict rice production and marketing potentials in the country. Earlier studies suggest that the sale of rice is largest in Kambia and Port Loko district given the high levels of production and the Guinea market potentials. Results may speak to an un-spoken off phenomenon of rice smuggling to Guinea and Liberia through unofficial marketing channels. Additional information will be required to better understand trade flows of rice in the country.

For other crops, as shown in table 6, Cassava revenue was shown to be highest in Kenema, Kambia and Bonthe. For Cocoa, revenues were highest in Kenema, Kono and Kailahun. For Oil Palm, the more money is made at the household level in Bo, Kenema and Kambia.

Average Sales From Rice Per Household (Le)

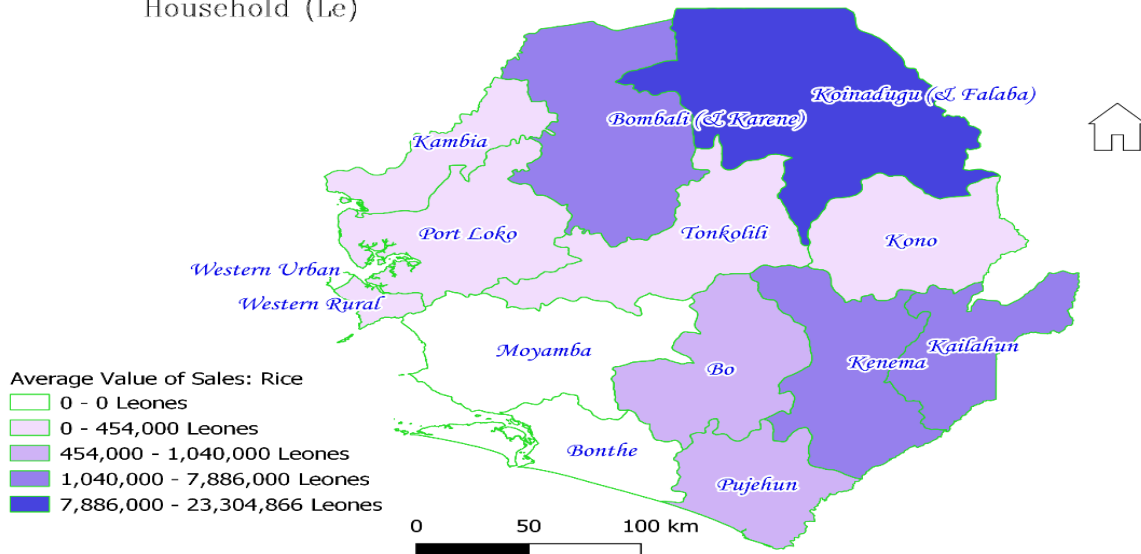


Figure 54: Average Revenue from Sale of Rice Per Household

Table 9: Average Value of Sales from Marketable Surpluses

Total Value of Sales (Average Revenue): Leones						
District	Rice	Cassava	Groundnut	Vegetables	Cocoa	Oil Palm
Kailahun	7886000.0	0	0	0	366,741.7	139000.0
Kenema	1789000.0	5,084,000	60000	0	867,718.8	3,162,651.4
kono	205000.0	0	0	0	350,000.0	0.0
Bombali	350000.0	0	0	0	0.0	180,000.0
Koinadugu	23304866.7	380,000	2000000	2221583	0.0	600,000.0
Tonkolili	253506.7	450,000	0	0	200,000.0	90,000.0
Falaba	0.0	0	0	250000	0.0	0.0
Kambia	454000.0	1,500,000	600000	0	0.0	833,333.3
Port Loko	418666.7	100,000	0	1427292	0.0	0.0
Karene	1200000.0	0	400000	0	0.0	0.0
Bo	800000.0	0	0	0	0.0	10,500,000.0
Bonthe	0.0	1,400,000	0	0	0.0	0.0
Moyamba	0.0	0	0	0	0.0	0.0
Pujehun	1040000.0	0	0	0	0.0	0.0
W/Area Rural	400000.0	560000	0	809000	0.0	0.0
W/Area Urban	0.0	0	0	0	0.0	0.0

Distance to Closest Market:

In this section, we present results that show distances of farms to closest marketing outlet for targeted households. Results showed that, for rice, farm to market distances were highest in Bo (23 miles), Falaba (15 miles) and Karene.

Table 7 below present average distances to closest market for AVDP value chain crops. As shown, the largest distances were recorded for vegetables produced in Western Area Rural. While this statistics is

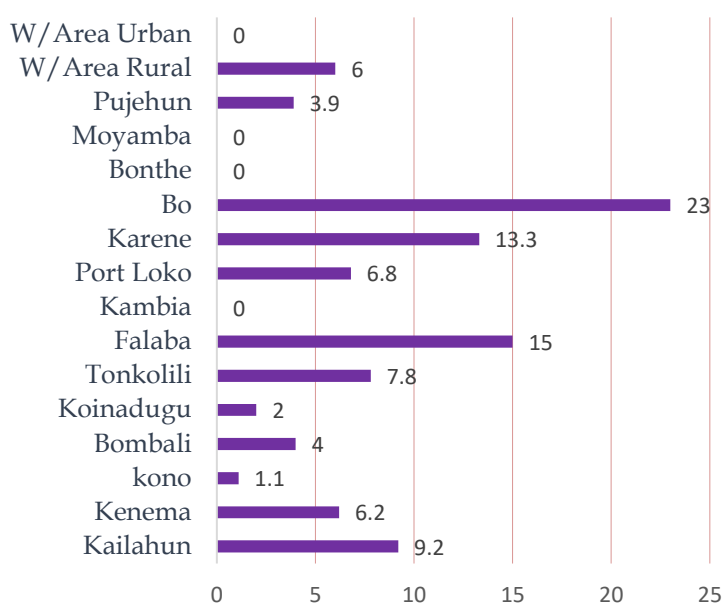


Figure 55: Distance to Markets (Miles)

expected to represent distances experienced by the producing community, distances for vegetables recorded may represent those for the marketing outlets; as a significant share of vegetables sold in the western area come from Koinadugu.

Table 10: Distance to Markets for Respective Crops

What is the distance to the closest market for sale of your agricultural produce?						
Districts	Rice	Cassava	Groundnut	Vegetables	Cocoa	Oil Palm
Kailahun	9.2	3	0	0	11.6	13.2
Kenema	6.2	8.842105	4	0	5.5	5.2
kono	1.1	0	0	0	0.0	0.0
Bombali	4.0	0	0	0	0.0	0.5
Koinadugu	2.0	0.5	3	1.5	0.0	3.0
Tonkolili	7.8	5	0	0	10.0	2.0
Falaba	15.0	0	6.8	0	0.0	0.0
Kambia	0.0	1	0	2.5	0.0	4.2
Port Loko	6.8	6	8.8	1.9	0.0	0.0
Karene	13.3	0	7	0	0.0	0.0
Bo	23.0	0	0	0	22.5	16.0
Bonthe	0.0	7.6	0	0	0.0	0.0
Moyamba	0.0	0	5	4	0.0	0.0
Pujehun	3.9	4.333333	0	0	0.0	8.5
W/ Area Rural	6.0	2.8	0	68.13333	0.0	0.0
W/ Area Urban	0.0	0	0	0	0.0	0.0

Quantity of Harvests Stored:

Regarding quantities of harvests that are stored, results showed that for rice, volumes stored are largest in Port Loko and Kambia. Storage volumes are shown to be zero in Bonthe, Moyamba, Bo and Kenema.

For respective crop types, Cassava had storage volumes largest in Kambia, Port Loko and Pujehun. See table 8 for additional results of storage volumes.

Average Quantity of Rice Harvest Stored (Kg)

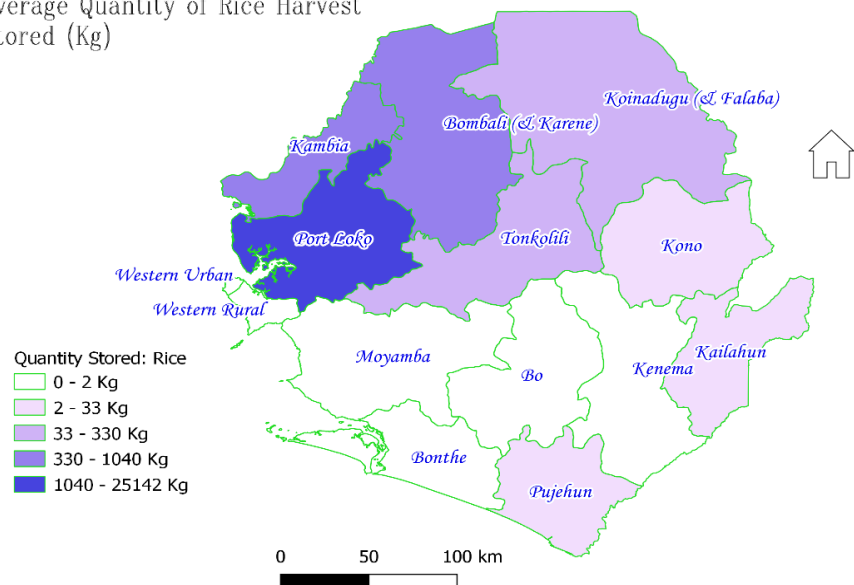


Figure 56: Average Quantity of Rice Harvest Stored (Kg)

Table 11: Quantity of Crop Harvested Stored (Kg)

Quantity of Crop Harvested that was Stored (Kg)						
District	Rice	Cassava	Groundnut	Vegetables	Cocoa	Oil Palm
Kailahun	6.2	2	0	0	5.5	4.8
Kenema	2.0	46.52941	3	6.5	213.0	111.8
kono	32.8	2.75	0	0	6.7	4.0
Bombali	126.1	0	0	0	0.0	4.0
Koinadugu	2.6	0	0	0	0.0	0.0
Tonkolili	329.7	250	87.5	0	15.0	1.0
Falaba	235.0	0	1105	436.1111	0.0	150.0
Kambia	1040.0	450	75	125	0.0	195.8
Port Loko	25142.9	337.5	291.6667	195.2212	0.0	0.0
Karene	825.0	0	200	0	0.0	0.0
Bo	2.0	0	0	0	500.0	0.0
Bonthe	0.0	22.6	0	0	0.0	0.0
Moyamba	0.0	0	4	0	0.0	0.0
Pujehun	8.6	500	0	0	0.0	6.0
W/Area Rural	0.0	301.5	0	131.5	0.0	0.0
W/Area Urban	0.0	0	0	0	0.0	0.0

Livestock/Fishery:

In this section, we present results from households involved in livestock rearing and fisheries industries.

Livestock:

For livestock, we present results for the following: 1) Type of Livestock Owned, 2) Type of Land Used for Livestock Grazing (Ownership); 3) Adoption of New Livestock Rearing Practices; 4) Main Source of Water for Livestock; 5) Decision Making of livestock raising, marketing and revenue.

Livestock Ownership:

Results showed that, amongst households that will benefit from the project, 48% of households with household heads considered old aged had livestock. Amongst the same age group, 31% of those in the partial control group had livestock and 37% of those in the clean control had livestock. For the Middle aged in the group that will benefit from the project, 47% had livestock. 39% of those in the same age group but were in the partial control group had livestock and 43% of those in clean control were middle aged. For household heads that were young adults, 42% owned livestock in the treatment group, 52% in the partial control group and 46% in the clean control.

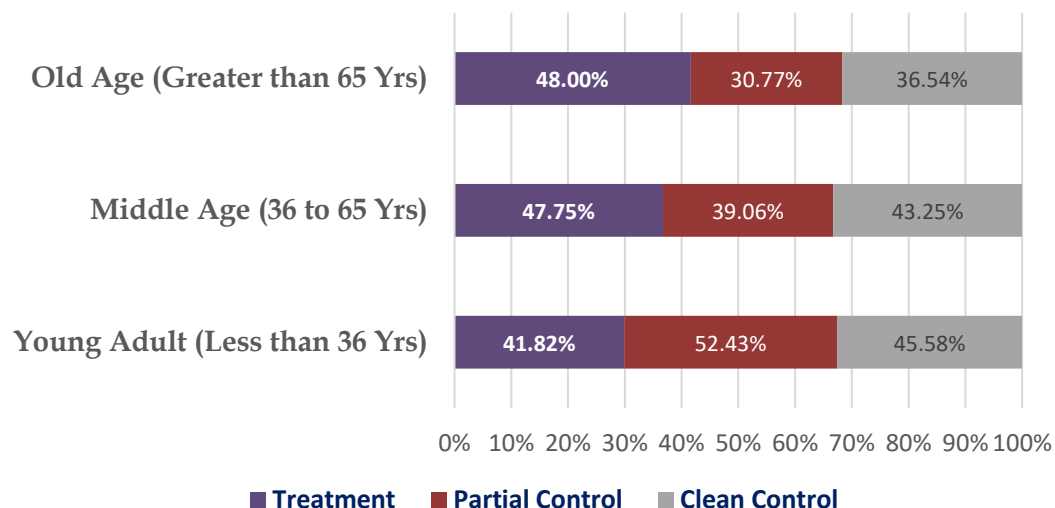


Figure 57: Livestock Ownership by Age Group

Female-headed households were involved in livestock rearing five percentage points more than their male counterparts for the treatment and partial control groups. However, for the clean control group, male-headed and female-headed households had equal ownership of livestock.

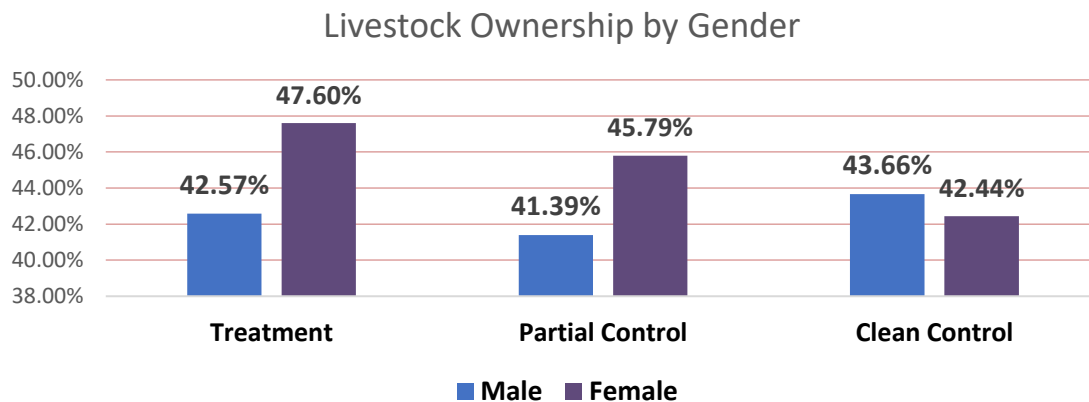


Figure 58: Livestock Ownership by Gender

Across livestock type, results across districts are presented in table 9 below. As shown, for Cattle, ownership was highest in Falaba and Karene. For Sheep, ownership was largest in Falaba, Kambia and Bombali. For Goat, ownership was highest in Bonthe, Kailahun, Falaba, Bombali and Kambia. For Pig, overall ownership was very low across all districts (less than 10%). Ownership was greatest for chicken across all districts but Falaba. The lowest apart from Falaba was 50%. Duck ownership was also low, overall. See table 9 below:

Table 12: Type of Livestock Owned

District	Cattle	Sheep	Goat	Pig	Chicken	Duck
Kailahun	0.00%	21.35%	51.12%	3.37%	61.80%	6.74%
Kenema	4.32%	19.42%	25.90%	0.00%	72.66%	8.63%
kono	13.33%	8.33%	35.00%	1.67%	60.00%	5.00%
Bombali	0.00%	30.16%	47.62%	0.00%	74.60%	14.29%
Koinadugu	7.37%	16.84%	36.84%	0.00%	70.53%	1.05%
Tonkolili	0.00%	15.22%	38.04%	0.00%	79.35%	7.61%
Falaba	51.52%	39.39%	51.52%	0.00%	3.03%	0.00%
Kambia	0.00%	30.33%	50.82%	1.64%	77.87%	14.75%
Port Loko	0.82%	16.67%	0.00%	0.00%	50.00%	0.00%
Karene	33.33%	5.41%	21.62%	4.50%	91.89%	7.21%
Bo	2.70%	8.33%	33.33%	0.00%	87.04%	1.85%
Bonthe	0.00%	11.63%	60.47%	6.98%	55.81%	2.33%
Moyamba	0.00%	22.22%	13.89%	0.00%	72.22%	8.33%
Pujehun	0.00%	17.50%	20.00%	7.50%	92.50%	7.50%
W/ Area Rural	0.00%	18.21%	37.83%	1.78%	72.47%	7.02%

Source of Land Used for Grazing Livestock:

The assessment also looked at access to grazing land for raising livestock. This was done for the most common livestock in Sierra Leone: Cattle, Sheep, Goat, Chicken, Duck and Goat.

As shown in figure 59, majority of land used for raising livestock was either acquired free (that is, community land) or inherited. Less than 16% of land used for livestock was purchased. These results speak to the free-range rearing system commonly used in rural communities for raising livestock. Land purchases were highest for Goat and Sheep rearing.

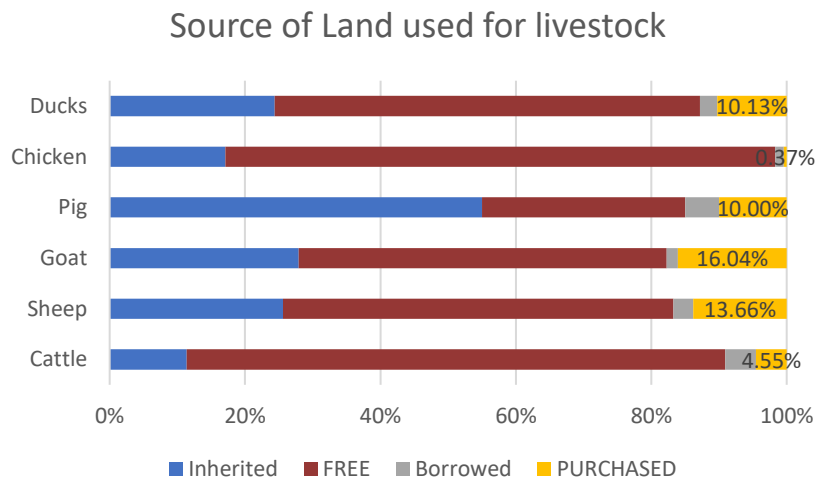


Figure 59: Sources of Land Used for Livestock

Similar to crop production, the assessment also looked at the rate of technology adoption for livestock raising. Results shows that new methods were adopted mainly for cattle. For Port Loko and Bo, 100% of households that were involved in cattle rearing confirmed adopting new methods. For Kainadugu, 57% confirmed likewise.

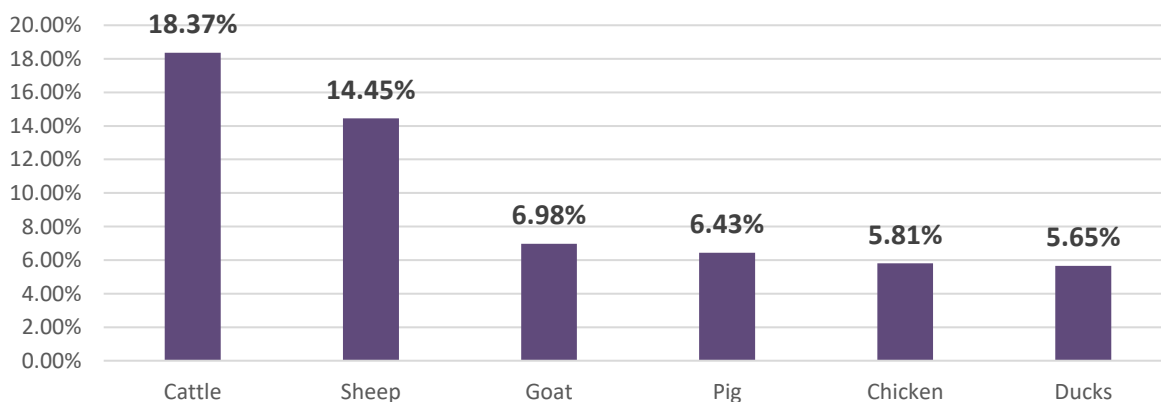


Figure 60: Livestock Technology Adoption

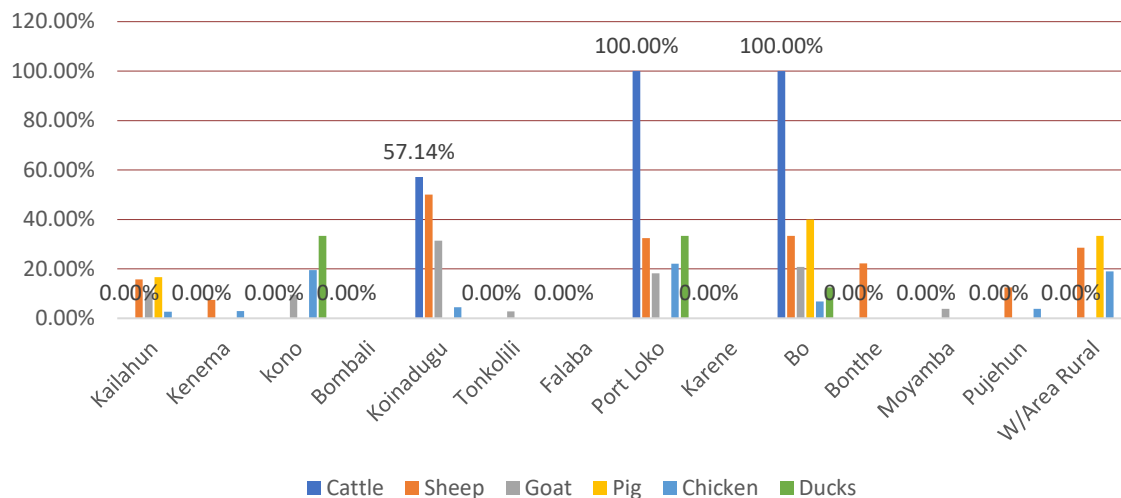


Figure 61: Livestock Technology Adoption by Type and District

Averaging overall, only 6% of duck raising had new methods adopted while for cattle, 18% of households adopted new methods.

Main Source of Water for Livestock

In this section we present results showing the main source of water for respective livestock during the dry season. We assuming that during the raining season, rain is the main source of water for livestock. We therefore explore how households cope with water access during the dry season. Results showed that majority of households rely for either rivers/streams or water wells for their livestock. Depending on the type of livestock, these two water options vary. For cattle, about 63% of households involved in raising cattle rely on rivers and streams during the dries. Only 22% rely on Wells. For Pigs, 45% rely on wells and 20% on rivers and streams. See figure 62 below:

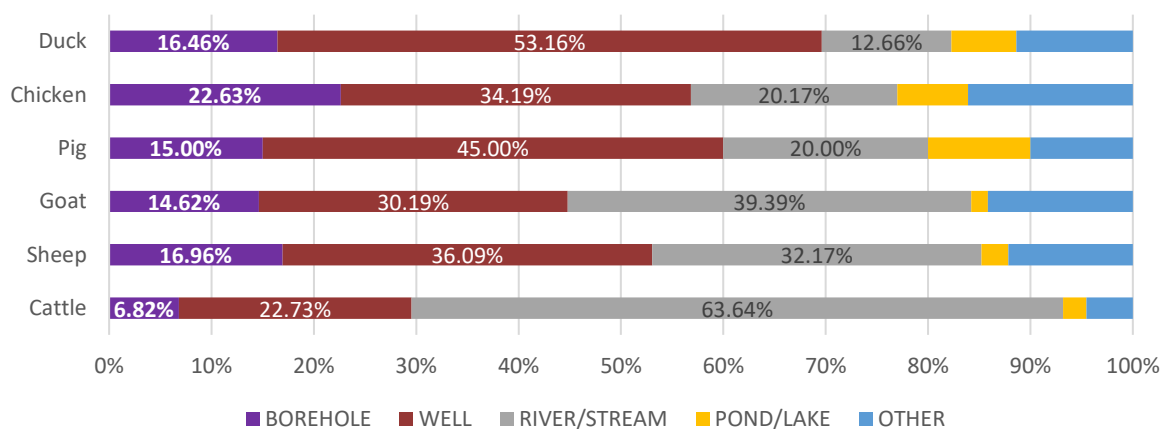


Figure 62: Main Sources of Water for Livestock

Livestock Ownership:

In this section, we present results on livestock ownership within a typical household. Results showed that livestock ownership vary significantly by gender. For Cattle, Pigs, Sheep and Goat, majority of households confirm that the husbands mainly own these. On the other hand, chicken and ducks are predominantly owned by the wives.

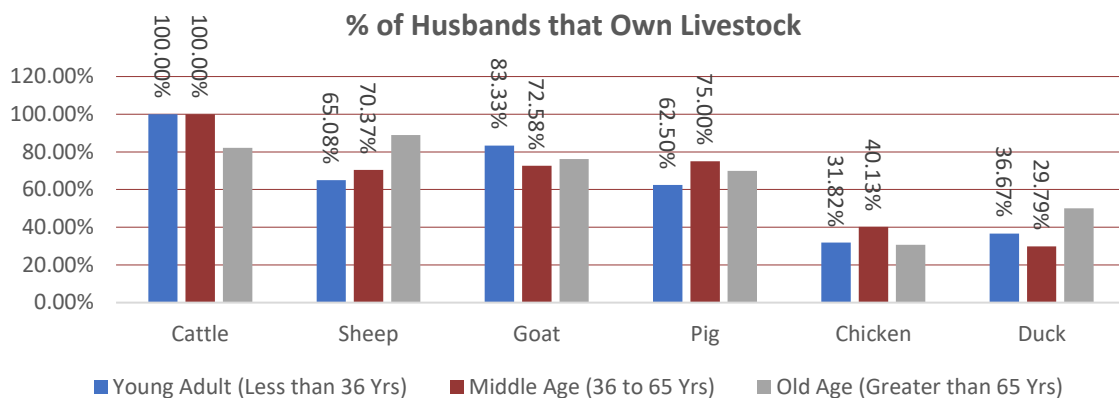


Figure 63: Livestock Ownership

At the household level, results also showed different levels of household participation in taking care of the livestock based on the type of livestock. For Cattle, majority of respondents involved in rearing cattle confirmed that the husband and men in the household predominantly take care of cattle. For chicken and duck, the reverse is true; the wives mainly take care of them. See figure 64 below:

In terms of the total value of livestock, we present results of average household sales (revenue) and average household purchases (costs) for respective livestock. These results are presented by district in table 10 below:

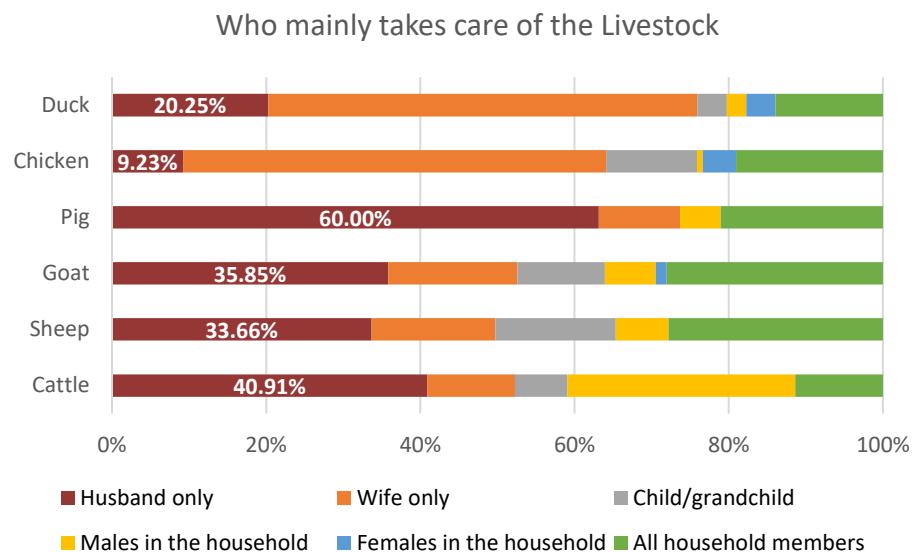


Figure 64: Household Member that Takes Care of Livestock

Table 13: Revenue and Cost from sale and purchase of Livestock

District	Cattle	Sheep		Goat		Pig		Chicken		Duck	
	Sold	Bought	Sold	Bought	Sold	Bought	Sold	Bought	Sold	Bought	Sold
Kailahun	0	867,500	299,000	467,292	716,833	450,000	350,000	53,572	43,530	119,333	47,513
Kenema	425,000	717,515	982,500	690,030	636,667	0	0	29,750	36,802	0	0
kono	150,000	533,333	525,000	480,000	425,000	0	300,000	50,375	20,667	0	0
Bombali	0	220,000	300,000	175,013	225,042	0	0	25,000	22,375	0	0
Koinadugu	35,000,000	0	8,769,125	341,667	1,075,075	0	0	27,450	59,167	0	0
Tonkolili	0	0	0	227,500	300,190	0	0	18,333	27,100	0	45,000
Falaba	1,400,000	720,000	475,000	250,000	180,000	0	0	0	0	0	0
Kambia	0	0	0	0	0	0	0	0	0	0	0
Port Loko	0	525,000	400,000	833,542	294,519	900,000	0	29,578	44,221	44,375	163,333
Karene	0	0	0	0	0	0	0	0	17,500	0	0
Bo	0	0	0	516,667	350,000	50,000	580,000	80,667	52,889	80,000	0
Bonthe	0	0	625,000	254,167	875,000	0	0	76,250	44,250	0	0
Moyamba	0	0	450,000	275,000	218,750	150,000	350,000	26,667	29,063	0	0
Pujehun	0	233,450	200,000	75,225	400	0	0	29,669	26,667	70,000	0
W/Area Rural	0	356,250	1	297,222	242,501	250,000	600,000	17,084	2,502	40	0
W/Area Urban	0	0	0	0	0	0	0	0	0	0	0

In terms of decision making at the household level related to rearing, sales and use of proceeds, the following results were obtained from the assessment:

Generally, on matters related to raising the livestock, results showed variations based on the type of livestock. For Pigs, Goats, Sheep and Cattle, the husbands predominantly

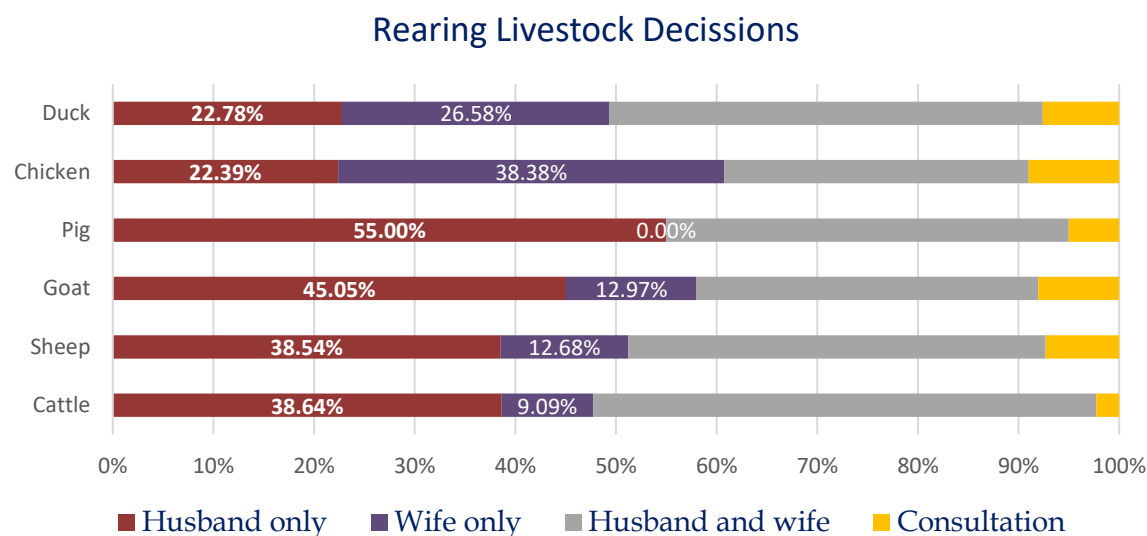


Figure 65: Household Decissions on Rearing Livestock

make decisions. However, on chicken and ducks, the wives make decisions on rearing. Similar results were observed for decisions around sales and the use of proceeds for livestock. See figures 65, 66 and 67 below:

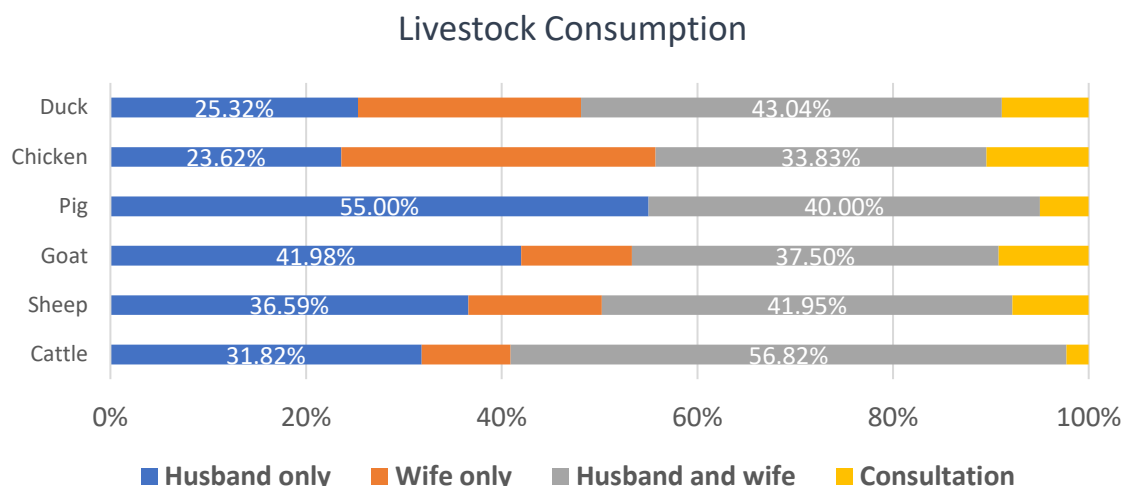


Figure 66: Household Decisions on Consumption of Livestock

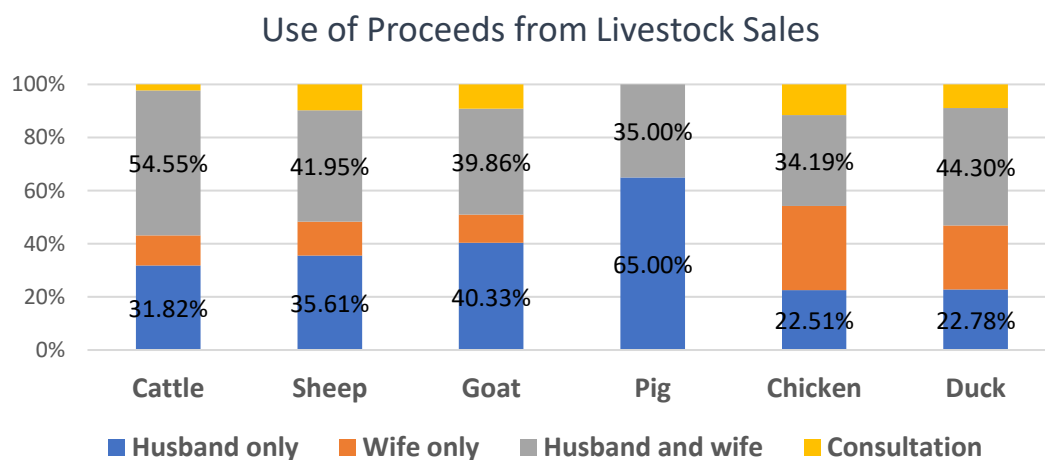


Figure 67: Household decision on how to use proceeds from sale of livestock.

Fisheries:

In this section, we present results on fisheries in targeted households, 1) Species of fish caught during fishing; 2) distance between home and water body, 3) availability of fishing permits; 4) type of fishing gear used; 5) use of innovative fishing techniques; 6) quantity of fish species caught and sold; 7) Value of sales; 8) quantity of fish species consumed; 9) decision making about fishing production; consumption and use of earning from sale of fish.

A. Species of Fish Caught

Results showed that only 6% of households were involved in fish farming. Of these, the largest shares focused on Catchfish and Bonga. The rest farmed other fish in small amounts; some being, Tinni, Kante, Kini, Lady Fish, etc. Across gender, results showed that majority of households that were involved in fish farming were women. Regarding the common waterbodies used for fishing, the assessment confirmed that, amongst households involved in fish farming with young adult household heads, the majority (68%) rely on rivers. For middle aged and the old, rivers were also the main sources for fishing at 81% and 50% respectively.

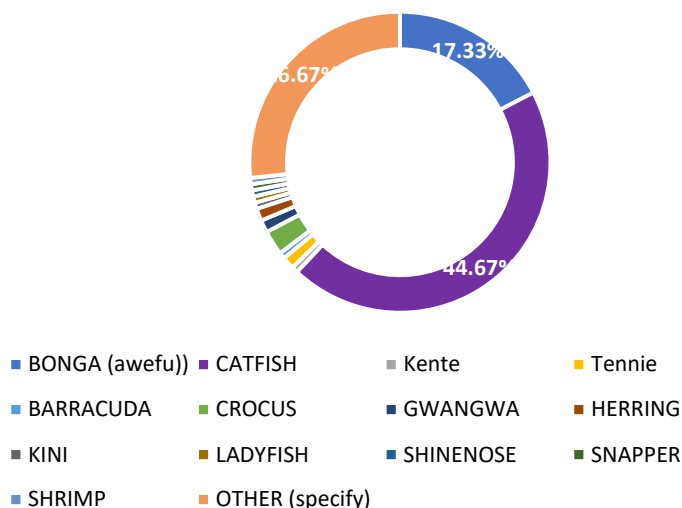


Figure 68: Types of Fish Farmed

Water Bodies for Fishing

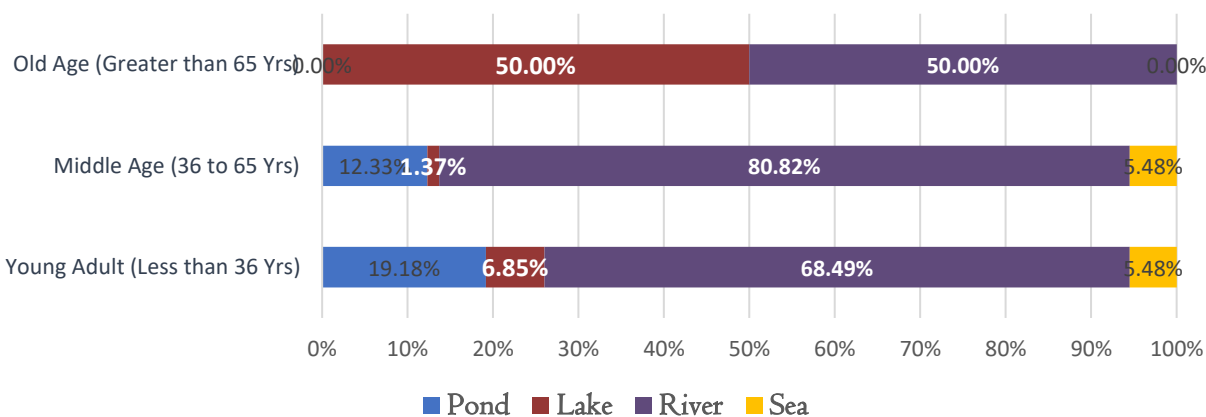


Figure 69: Water Bodies for Fishing

Regarding the distance between home and water body, results showed that majority of households involved in fish farming travelled, average distance was 4 miles. Across districts, the largest distances were recorded in Kambia and the shortest in Pujhun.

The assessment also looked at households with fish permits. Results showed that only 21% of fishing households had permits. This was observed to be predominant in fishing communities in the western area. This suggests that households that do not rely on the sea for fishing (in-land fish farming) do not necessarily carry fishing permits. In terms of fishing gears used in the last season, 63% confirmed using Ginnlets, 52% use Trap nets/fykes and 35% use hand lines. Only 3% confirmed using Seines and Electrofishing equipment. See figure 70 below:

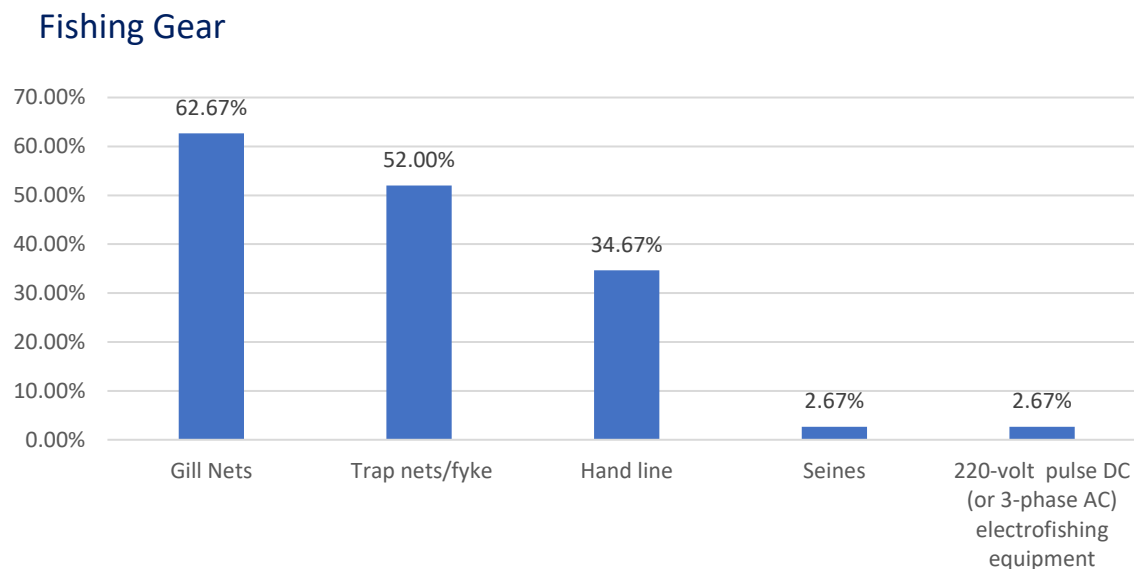


Figure 70: Major Fish Gears Used

Regarding adoption of improved fishing gears or techniques, results showed that adoption levels are significantly low. On average 6% of fishing households adopted new gears to enhance their fishing activities and 3% adopted new and improved fishing techniques. Variations across gender and age group were insignificant in the adoption of improved technologies.

In the following section, we look at household dynamics in the production, marketing and utilization of fish. We look at who in the household predominantly participates in fishing activities, their decision making in production and utilization of proceeds.

Results showed that over 53% of fishing households have only the wives involved in the fishing operations. Only 26% has men only involved in the enterprise. Regarding decision making for what to produce, 41% of fishing households have the wives only making such decisions. However, when compared to results on decision making under crop production, decision of how proceeds from the fishing enterprise are to be used are made predominantly by wives. 45% have wives only, 28% have both husband and wives making decisions and 22% have husbands only. These results confirm that, for the most

part, fish production done by husbands have the resources controlled by the husbands only.

Consultations only happen with funds received from fish enterprises of women. Results also suggest that the fisheries enterprise is crucial in empowering wives in rural farming communities.

Given the limited share of respondents involved in fish farming, statistics received on quantities raised and revenues gained were not representative. These can be seen in the annex data.

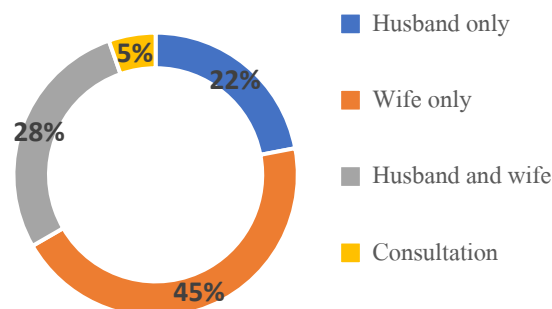


Figure 71: Decision on How Proceeds from fishing enterprise are used.

Involvement in Micro Enterprise and Other Sources of Employment:

In this section, we present results that show alternative sources of income in targeted households. These sources target mainly off farm micro enterprises and formal/informal means of employment.

Regarding SMEs, results showed that a limited share of households had micro enterprises. About 6% of households confirmed having an SME that provides off-farm income that supplements other ag-related sources for their households. Of these, gender representation was observed to be even. Regarding the type of enterprise, about 38% had SMEs that dealt with trade in agricultural products while 30% dealt in trade in non-agricultural products. 16% were involved in enterprises for agro-processing (both crops and livestock).

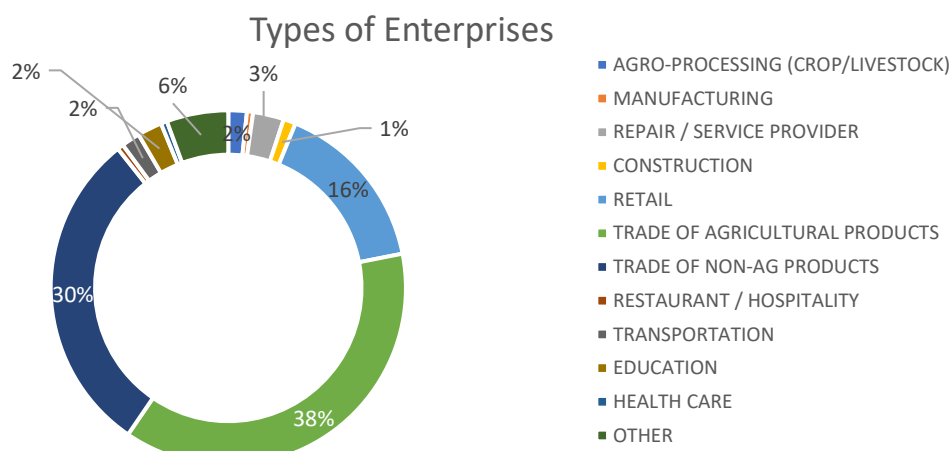


Figure 72: Type of SME

Regarding management of resources from SME activities, results showed that over 59% of decisions were made by wives. This further suggests that the provision of SME as alternative off farm activities helps in strengthening decision making at the household level for wives.

The assessment also looked at complimentary income in the form of paid labour. Results showed that only 4% of households had opportunities for complementary income through paid labour. For this limited share, the majority were school teachers and administrators for agriculture/forestry and fishery workers. About 43% were employees of the National Government.

The assessment also looked at daily wages by district, gender and age group. Results showed that wages were highest in Karene, Bo, Bonthe and Kailahun. See table 11 below. Note that, as observed, there were some challenges with the data as it pertains to recording wages in days, weeks or months.

Table 14: Daily Wages by District and Age Group

District	Young Adult (Less than 36 Yrs)		Middle Age (36 to 65 Yrs)		Old Age (Greater than 65 Yrs)	
	Male	Female	Male	Female	Male	Female
Kailahun	30,000	700,000	1,250,013	25,000		
Kenema	10,000	10,667	10,017	25,000	2,000	
kono		100,000				
Bombali		30,000	16,693		50,000	
Koinadugu	40,000	7,000	35,000	1,073,333		
Tonkolili	40,000		30	60,000	366,667	
Falaba	45,000	50,000	50,000	55,000		
Kambia	110,000	15,000	16,000	10,000		
Port Loko	28,571	75,000	35,000	36,798		
Karene	46,000					
Bo		1,500,000	55,000	1,400,000		
Bonthe	50,000	431,667	510,000	271,250		
Moyamba		-	133,333	690,000		
Pujehun	8,678	30,000	30,000	22,500		
W/Area Rural	37,000	34,500	35,019	37,000		

Food Security and Nutrition:

In this section, we present results on Food Security, looking at Dietary Diversity and the Food Insecurity Experience Scale. (FIES). One of the Impact measures of the AVDP project is to decrease the prevalence of food insecurity in selected communities of the project. In this section, we present results obtained from the analysis carried out. Typically, there are several proxies of food security. However, given the nutritional and dietary considerations presented in the results framework, we used the Food Consumption Score (FCS) for this analysis.

Food Security:

From the analysis, Food Consumption Scores ranged from 31.9% to 66.7% amongst households that are targeted to benefit from the project and from 35.9% to 69.7% in for households in the communities where AVDP's project are not expected to be implemented. As shown in figure 73 below, the highest scores were recorded in Karene (for both planned treatment communities and those communities that are not expected to benefit from the intervention).

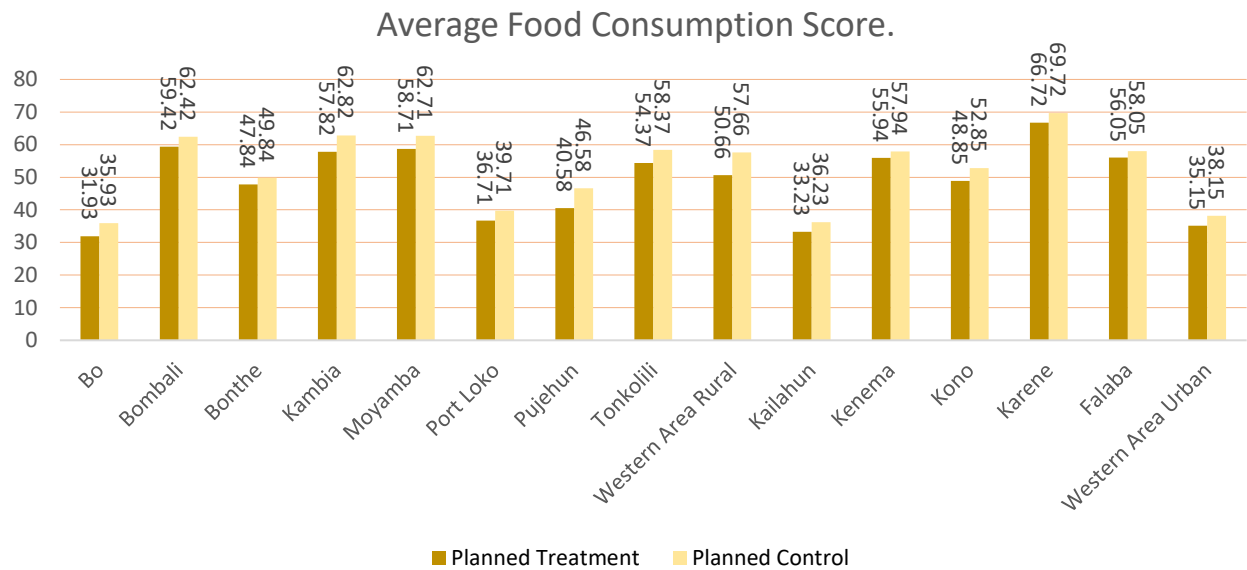


Figure 73: Average Food Consumption Scores

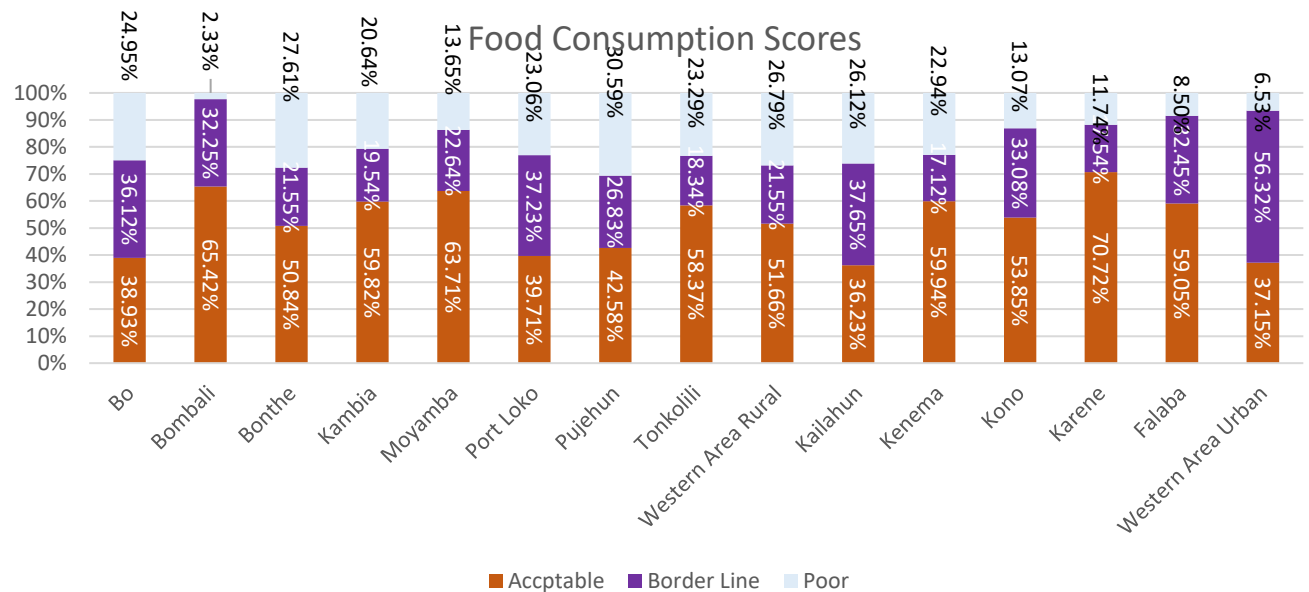


Figure 74: Food Consumption Score:

Food Consumption Score: Overall Effect

Figure 75 shows FCS based on the standard levels: Acceptable, Borderline and Poor across all sampled communities. As shown, only Western Area Urban, Kailahun, Port Loko and Bo had less than 38% of households having acceptable levels of food security. This suggests that over 50% of the households in the other districts had acceptable levels of food security. Overall food insecurity, which includes all households within border line and poor levels are below 47% at the national level. That is, at the national level, food insecurity stands at 47%. Across districts, levels of food insecurity were highest in Port Loko, Bo and Kailahun. Karene and Moyamba represented the most food secure districts in the country. See figure 75 below.

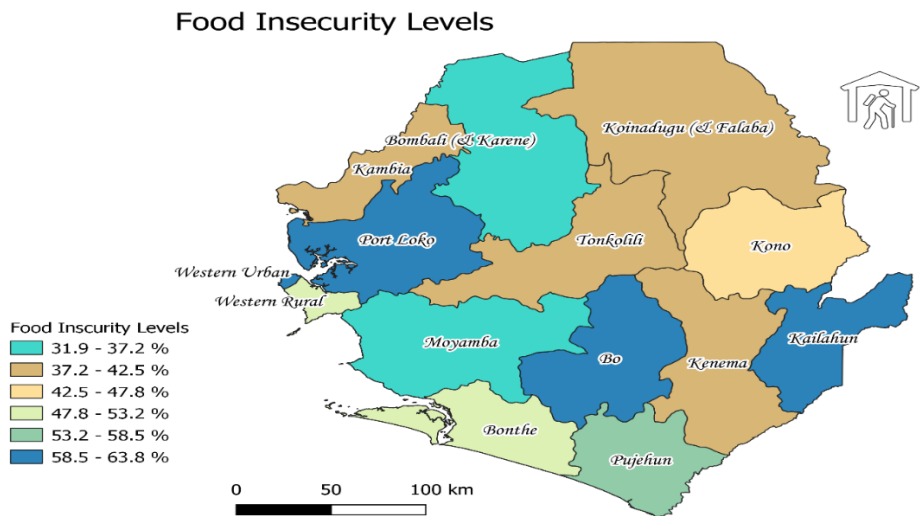


Figure 75: Food Insecurity Levels by District

The assessment also looked at Food Insecurity Levels across age groups and across gender. Focus was placed on the share of households that are food insecure overall (47%). Results showed that, overall, all, levels of food insecurity were slightly higher in male

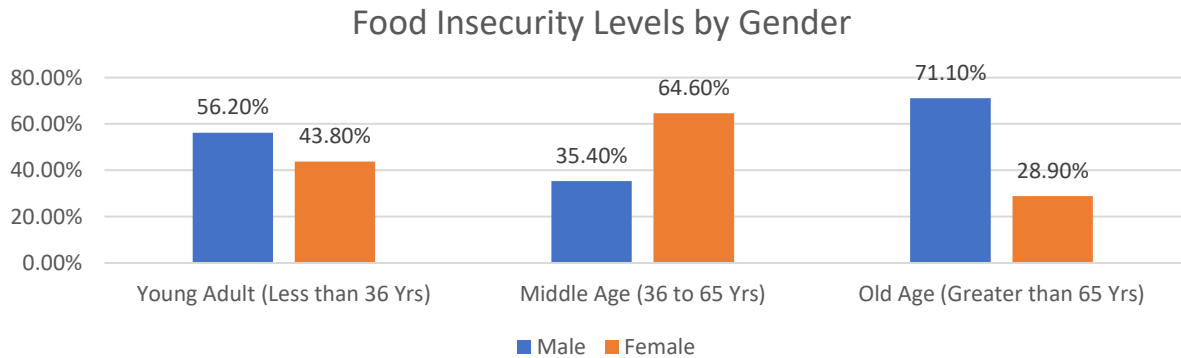


Figure 76: Food Insecurity Levels by Gender.

headed households than female headed households. Male headed households average 54% and female headed households averaged 46%. Across age group, food insecurity levels were higher for men than were young adults (56%) and old (71%). For the middle aged, female headed households recorded higher levels of food insecurity (64%). See figure 76 above.

Hungry Season:

Another proxy of improved levels of food security for the AVDP project is a reduction in the length of the hungry season. In this section, we present results on the state of the hungry season at baseline. Results showed that about 66% of households confirmed that their hungry season lasts for four months and 58% confirm that it lasts for about five months. Across districts, Tonkolili represented the most insecure district with regards to the period of persistent hunger while Western Urban district represented the most secured district.

Share of Households with Hungry Season Greater than Four Months.

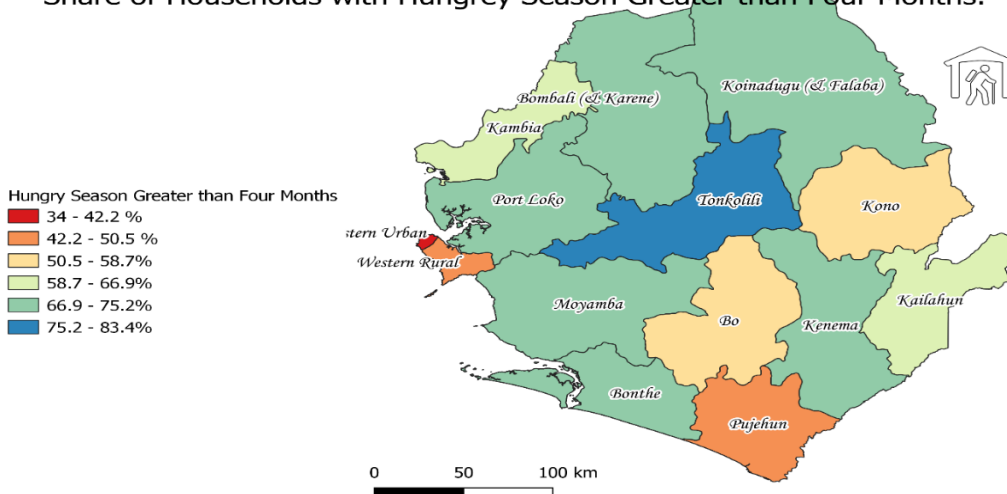


Figure 77: Share of Households with Hungry Season Greater than Four Months

The assessment also looked at the share of households that participated in activities designed to improve nutrition. Results showed that a limited share participated in such activities. About 16.5% of households participated. Across age groups, variations were marginal: Young adults at 18%, Middle aged 16% and Old Aged 18%. However significant variations were observed across gender, more female headed households participated. In terms of who in the household participated in these activities, results showed overwhelmingly that for the most part (75.6%), only the wives participated in these nutrition activities. See figure 78.

The assessment also looked at decision making at the household level on all matters related to nutrition. Results showed that purchases of what to eat in the households are done mainly by the wives (83%). However, decisions on what to buy are made jointly with the husband. That is, even though the wives make the purchases, the purchases are made based on preferences of the husband in consultation with the wives.

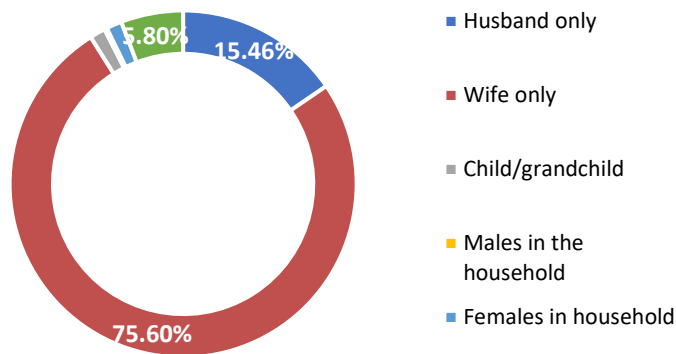


Figure 78: Decision Making around Nutrition

To better understand the hungry cycle, the assessment looked at the months in the year in which food shortages are greatest. Results show that food shortages are greatest in the months of July and August and lowest in December and May. See figure 79 below. These results follow the typical planting and harvesting seasons for rice in Sierra Leone.

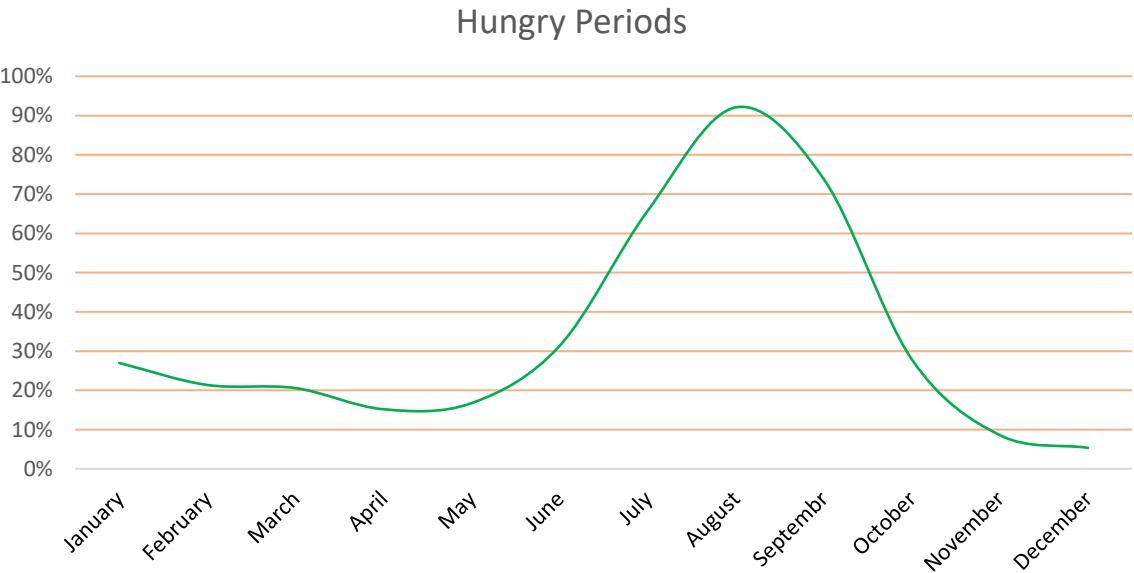


Figure 79: Hungry Period

Worthy to highlight is the fact that the current baseline measure of the number of hungry months is five months (June, July, August, September, and October). At least 30% of respondents confirmed food shortages in these months. This therefore suggests that the

indicator that speaks to period of the hungry season should be revised from four months to five months. Also, a target of 2 months is not realistic. Revising it to three months is more realistic. Furthermore, the indicator should also include the share of respondents.

Across gender and age groups, marginal variations were observed.

Another proxy of Food Security is the Food Insecurity Experience Scale (FIES). The analysis followed the known methodology for computing FIES using the eight dimensions. The FIES indicator consists of eight questions regarding people's access to adequate food, and can be easily integrated into various types of population surveys. The key dimensions include: 1) Worried about food, 2) Healthy and Nutritious Food, 3) Ate few kinds of food, 4) Skipping meals, 5) ate less than you thought you should, 6) household ran out of food, 7) hungry but did not eat and 8) went without eating for a day.

In this section, we present key results obtained for these indicators. Results are summarized in table ss below showing the share of households that responded yes to the eight dimensions. As shown, for the first dimension (households worried about not having enough food) over 70% of respondents across all districts confirmed being vulnerable to this indicator. For this second dimension (Eating Healthy and Nutritious Food), apart from Western Area, over 73% of households expressed vulnerability. For the third dimension (limited kinds of food eaten), over 60% proved vulnerable. See table below for the full share of respondents that expressed vulnerability across districts.

District	Dimensions							
	D1	D2	D3	D4	D5	D6	D7	D8
Kailahun	99%	99%	99%	98%	99%	99%	99%	45%
Kenema	75%	76%	75%	73%	73%	72%	75%	34%
Kono	87%	92%	80%	80%	80%	39%	74%	47%
Bombali	97%	98%	95%	83%	96%	91%	35%	3%
Koinadugu	96%	93%	94%	86%	98%	88%	91%	44%
Tonkolili	98%	97%	97%	76%	97%	91%	32%	4%
Falaba	99%	100%	100%	99%	99%	43%	62%	42%
Kambia	92%	95%	91%	87%	90%	85%	92%	26%
Port Loko	100%	100%	100%	98%	100%	98%	98%	18%
Karene	73%	73%	59%	70%	71%	60%	67%	57%
Bo	100%	100%	100%	100%	100%	99%	96%	9%
Bonthe	100%	99%	100%	100%	100%	100%	100%	32%
Moyamba	99%	96%	99%	99%	99%	98%	99%	97%
Pujehun	100%	100%	98%	98%	99%	97%	99%	95%
Western Area Rural	71%	43%	88%	90%	90%	21%	81%	14%

Financial Services:

In this section, we present results from the assessment on financial services available in the targeted communities. We present statistics on access to financial services, type of financial services, including use of loans, savings status, financial literacy, and satisfaction with the financial services provided.

Results showed that access to informal and formal financial services continue to be a problem for smallholder farmers. For informal services, about 25% of farmers confirmed having access to these informal services in their communities. Common informal financing channels cited include friends, family members, community solidarity initiatives. Of the respondents that confirmed to have access to these informal sources, about 45% confirmed having received loans for their agricultural activities and micro enterprise activities from these sources. Results across age groups were identical.

The assessment also looked at means of saving through these informal channels. Results confirmed that saving levels are exceptionally low through these channels. Less than 10% confirmed having savings.

The assessment also looked at the availability of formal financial institutions like community banks and commercial banks. About 10% of respondents confirmed having access to community banks in their communities across all age groups. These results suggest that the community bank penetration in the vicinity of the communities the AVDP project will be implemented is low. Regarding access to loans over the last one year, only about 9% confirmed having benefitted from loans from the community banks. The assessment also looked at communities benefitting from financial literacy training. Results showed that 17% to 25% of respondents confirmed having benefitted from financial literacy training from the Community Banks.

For the Commercial Banks, results showed that less than 5% of households confirmed that they had access to Commercial Banks in their communities. Less than 1% have received any loan from the few available Commercial Banks in their communities. Regarding Financial Service Associations (FSAs), encouraging results were observed. On average, about 20% of respondents confirmed having access to FSAs in their communities. For those that have access to these FSAs, over 31% confirmed having benefitted from loans over the last twelve months. These results confirm that FSAs have a higher rate of penetration in rural communities than is the case of Community Banks much less so for Commercial Banks. See figure 80 below.

Access to Finance: Core Elements

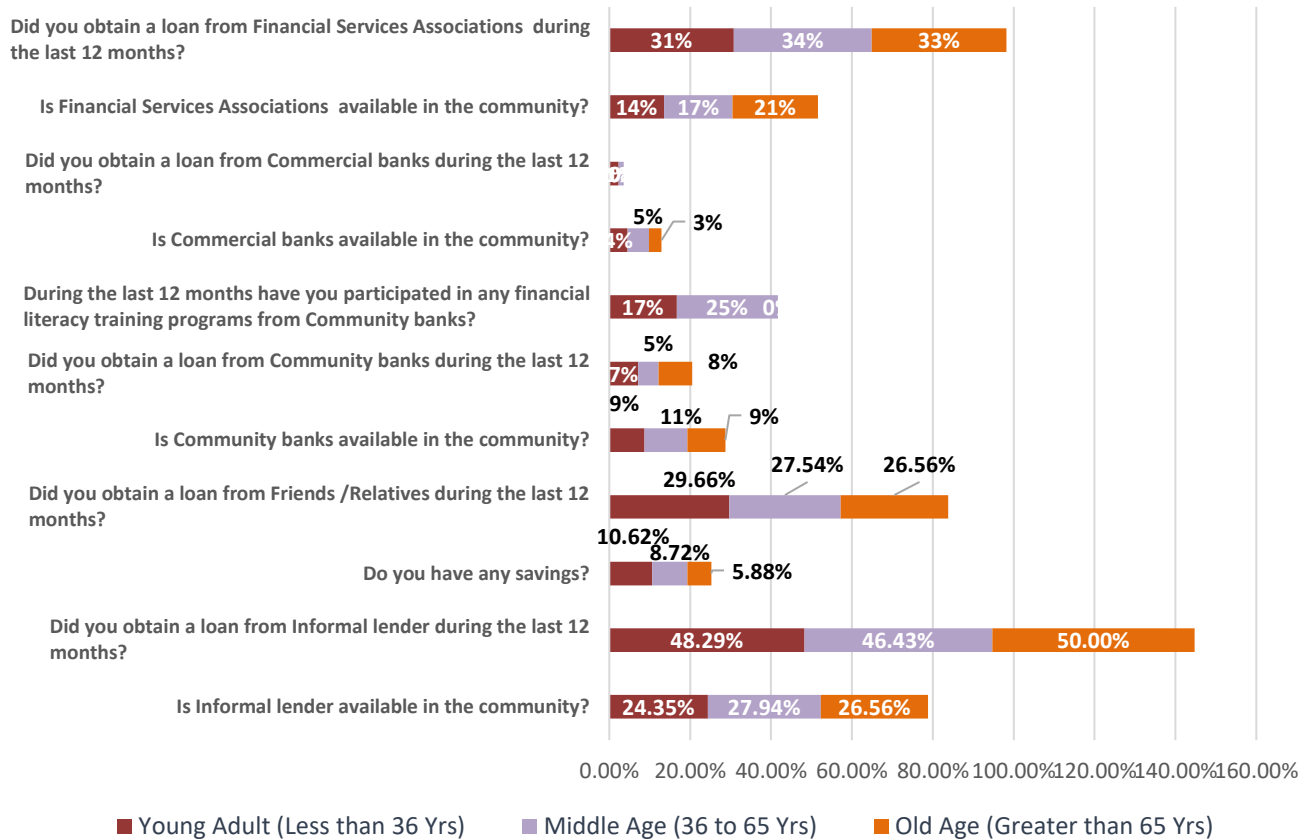


Figure 80: Access to Finance, Core Elements

Uses of Loans: For households that received loans, the main uses were reported to be daily food consumption (41%), School fees (25.8%) and petty trading (10%). This suggests that the main reasons why households sort out loans in these communities was to cover their immediate needs other than for investment purposes.

Uses of Loans

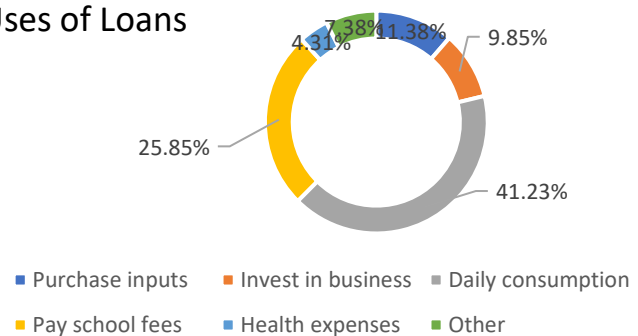


Figure 81: Loan Usage

For the few households that had some form of savings, the assessment also looked at the predominant outlets in which these households saved funds. About 30% saved funds through informal lenders; 30% did through groups based micro finance schemes; 27% through friends/relatives, 10% through formal lending institutions like banks and 3% through FSAs. This suggests that despite the increased access to FSAs farmers have than Commercial Banks/Community Banks, more farmers prefer holding savings accounts through formal lending institutions.

In terms of decision making around taking loans, what to use funds from loans on and repayment of loans, the husbands were overwhelming shown to be on the driving seat. Over 54% of households confirmed that the husbands decided on these.

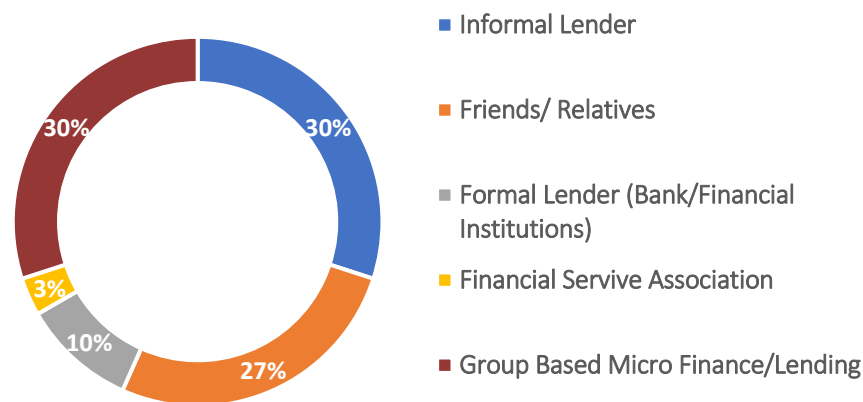


Figure 82: Outlets where households hold savings.

Asset Ownership:

Generally, asset ownership gives an indication of the economic status of households in the long term. It represents a measure of wealth in rural communities. In this section, we present the state of asset ownership in farming communities using an Asset Index. Assets considered are categorized into two types: 1) Non-Agricultural Assets and 2) Agricultural/Farming related assets. Assets considered for Non-Agricultural purposes include Mobile phones, Radio, Television sets, clocks, motorbikes, Cars, Boats and all household items typically not used on farm. Assets for agricultural purposes include Machines (tractors, power tillers, milling machines, etc.), tools (hoes, cutlasses, rakes etc), infrastructure like stores etc. We present two types of results. One represents the share of households that confirmed owning a set of assets and the asset index per district.

Non-Agricultural Assets:

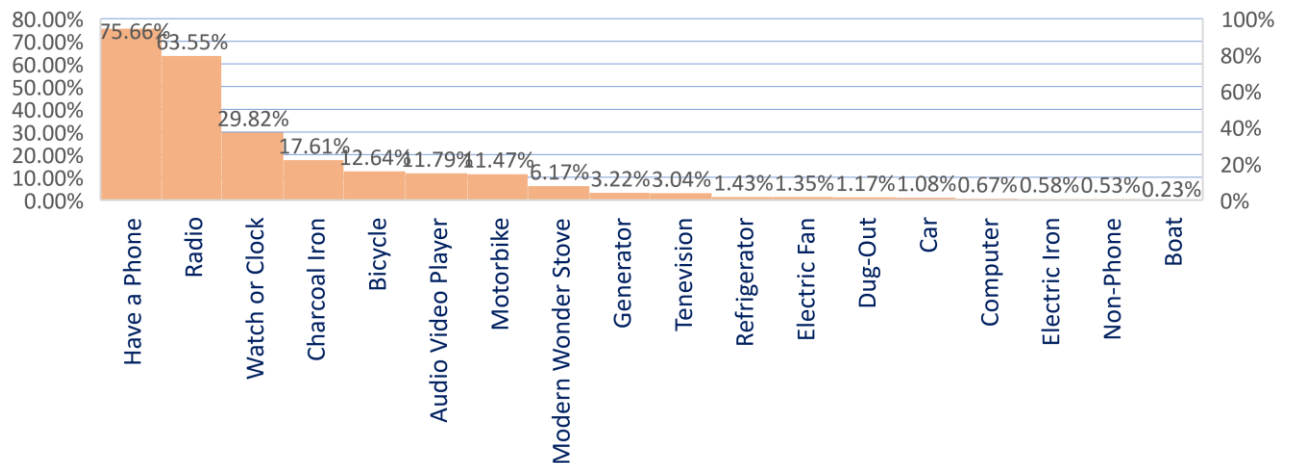
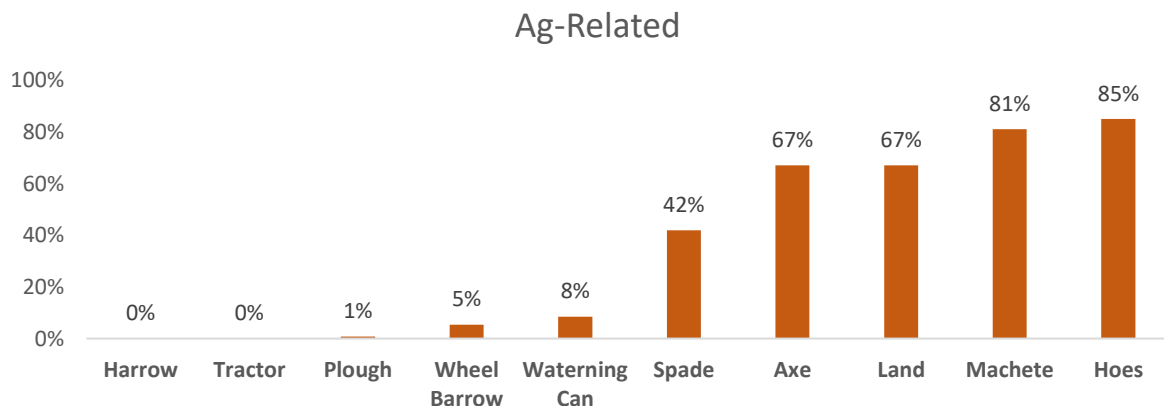


Figure 83: Non-Agricultural Assets

Figure 83 above shows the share of respondents confirming owning non-agriculture related assets. The largest share confirmed having access to mobile phones (76%), Radios (64%) and Watches (30%).

Agriculture Related Assets

Figure 84 shows agricultural related assets owned by households. Results show that more than half of all households own an Axe, a piece of land, a machete or a hoe.



Asset Index:

Asset index was computed using Principal Component Analysis (PCA) as described in the methodology section. Results are presented in table 13 below. The asset index ranges from zero to one with units having scores closer to one considered wealthier than those with scores closer to zero. Results showed that targeted households have more non-farm related assets than farm related assets as an average asset index of 0.41 was recorded for agriculture related assets and 0.51 recorded for non-agriculture related assets. Overall, baseline measure of asset ownership stands at 0.46. For farm related assets households had more rudimentary farm implements than improved forms of mechanization like tractors.

Table 15: Asset Index

Figure 84: Agricultural Assets

Assets:	Asset Index	% Households
Agriculture Related Assets		
Hoes	0.711	85.00%
Machete	0.509	81.00%
Land	0.3343	67.00%
Axe	0.243	67.00%
Spade	0.232	42.00%
Non-Agricultural Assets		
Mobile Phone	0.845	75.66%
Radio	0.612	63.36%
Watch or Clock	0.302	29.82%
Charcoal Iron	0.293	17.61%

Table 16: Asset Ownership

	Table	Chair	Upholstered chair, sofa	Coffee table	Cupboard, drawers	Bed	Fan	Lantern	Clock	Sewing Machine
Young Adult	76.48%	68.57%	2.39%	4.58%	13.42%	93.76%	10.61%	25.60%	4.79%	0.52%
Middle Age	79.17%	72.32%	4.06%	9.78%	16.63%	94.15%	1.04%	27.48%	5.99%	1.06%
Old Age	75.78%	77.34%	3.91%	8.59%	11.72%	91.41%	2.33%	25.78%	8.59%	0.78%
	Iron (for clothes)	Refrigerator	Charcoal Stove	Paraffin Stove	Electric/gas stove	Radio	Tape/CD/audio player	Television / VCR / DVD player	Satellite Dish	Solar
Young Adult	10.93%	0.83%	7.39%	0.00%	0.31%	46.20%	16.75%	3.95%	0.21%	4.27%
Middle Age	15.30%	1.33%	10.31%	0.07%	0.20%	52.30%	12.51%	5.85%	0.47%	4.19%
Old Age	17.19%	3.13%	12.50%	0.78%	0.00%	53.13%	4.69%	3.13%	0.78%	3.13%
	Generator	Smart Phone	Mobile Phones	Computer Equipment and Accessories	Jewelry / Watches	Bicycle	Motor Cycle/Scooter	Boat	Hand Hoe	Slasher
Young Adult	3.54%	9.68%	68.57%	0.94%	19.35%	3.95%	0.83%	1.14%	94.38%	18.83%
Middle Age	2.66%	8.52%	68.53%	0.27%	21.36%	3.93%	1.20%	0.86%	93.48%	15.83%
Old Age	2.34%	6.25%	53.13%	0.00%	22.66%	1.56%	0.78%	0.00%	92.19%	8.59%
	Axe	Saw	Sprayer	PANGA KNIFE / MACHETE?	Sickle	Treddie Pump	WATERING CAN?	ownHilaire/daba?	HAND CART/WHEELBARROW?	OX CART?
Young Adult	66.08%	1.66%	0.83%	84.70%	22.79%	0.00%	12.59%	18.21%	2.91%	0.00%
Middle Age	73.65%	1.46%	1.46%	82.37%	22.16%	0.27%	12.18%	14.30%	2.40%	0.13%
Old Age	70.31%	2.34%	0.78%	86.72%	17.19%	0.00%	11.72%	14.06%	0.00%	0.00%

Climate Resilience: Trainings and Technology Adoption

In this section we present results that speak to the level of environmental resilience that exists amongst farming communities. These results are presented with emphasis on the following: 1) Training on management of climate related risks; 2) Trainings in Environmentally Sustainable Practices and 3) Adoption of new practices learnt on management of climate related risks and environmentally sustainable practices.

Trainings: Management of Climate Related Risks/Environmentally Sustainable Practices.

In this section we present results on households that have received some training related to climate related risk management and the use of environmentally sustainable practices in their farming activities. As shown in figure 85 below, households in Kailahun, Kenema, Port Loko and Western Area Rural had more households that have received training related to climate risks and environmentally sustainable practices. Overall, only 6.61% had received trainings on climate related risk management while 8.44% had received trainings in environmentally sustainable practices.

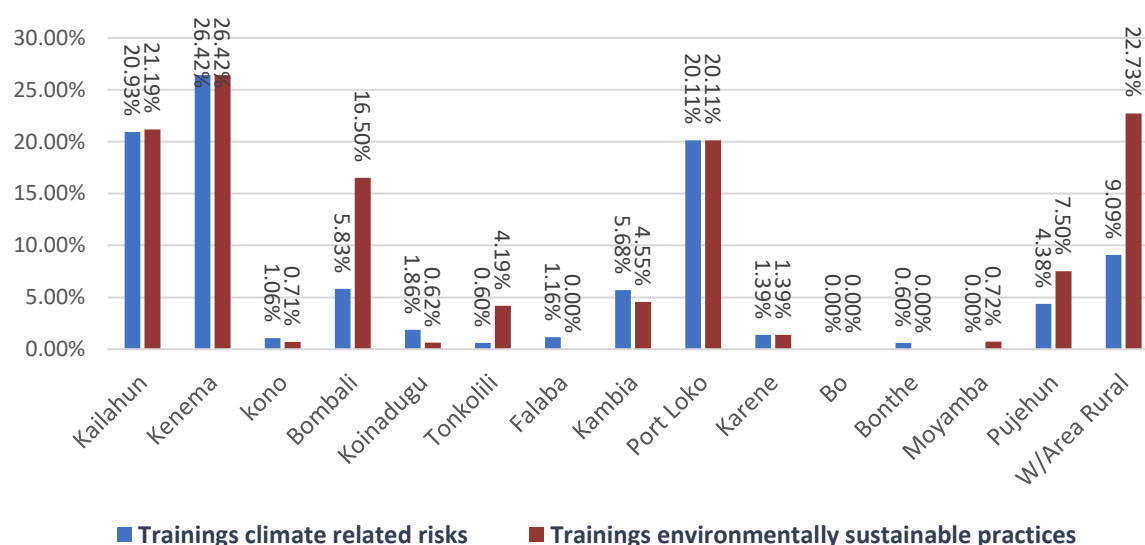


Figure 85: Trainings: Climate Related Risks/Environmentally Sustainable Practices by District

Across age groups, results showed that more households had received trainings related to environmentally sustaining practices than on climate related risks across all three age groups. The overall, the old and aged had received more trainings (14% and 16%), followed by the middle aged (10% to 11%) and Young Adults (9% to 10%). See figure 86 below.

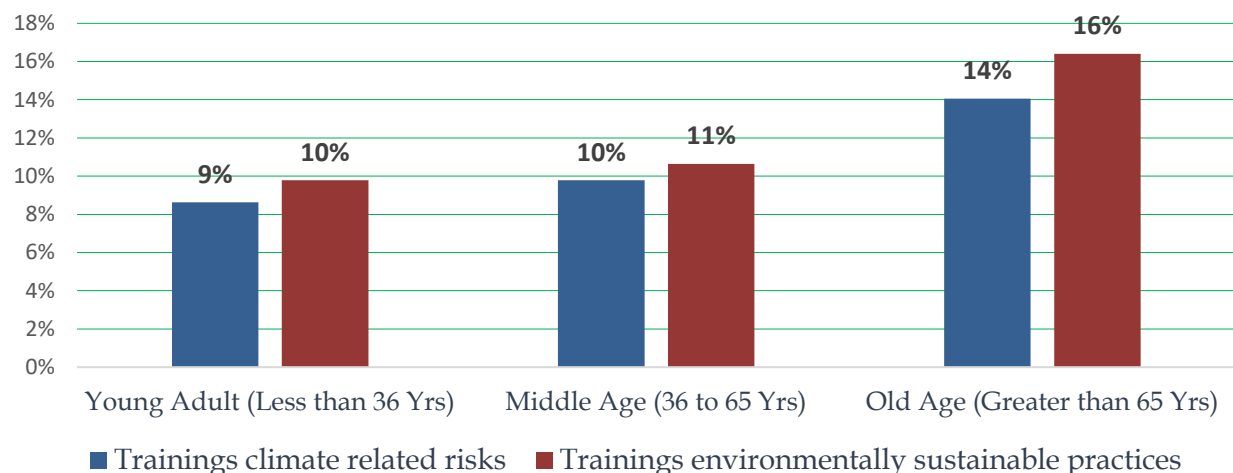


Figure 86: Trainings: Climate Related Risks/Environmentally Sustainable Practices by Age Group

Adoption of New Practices on management of climate related risks and environmentally sustainable practices

In this section, we present results on adoption rates of household members that have received trainings in both the management of climate related risks and environmentally sustainable practices. Results showed that, of those that have received these trainings adoption rates were higher overall, for households that received trainings in the management of climate related risks, adoption rate stood at 58%. For those that fell into the other category, adoption rate still at 68%. See figure 87 below:

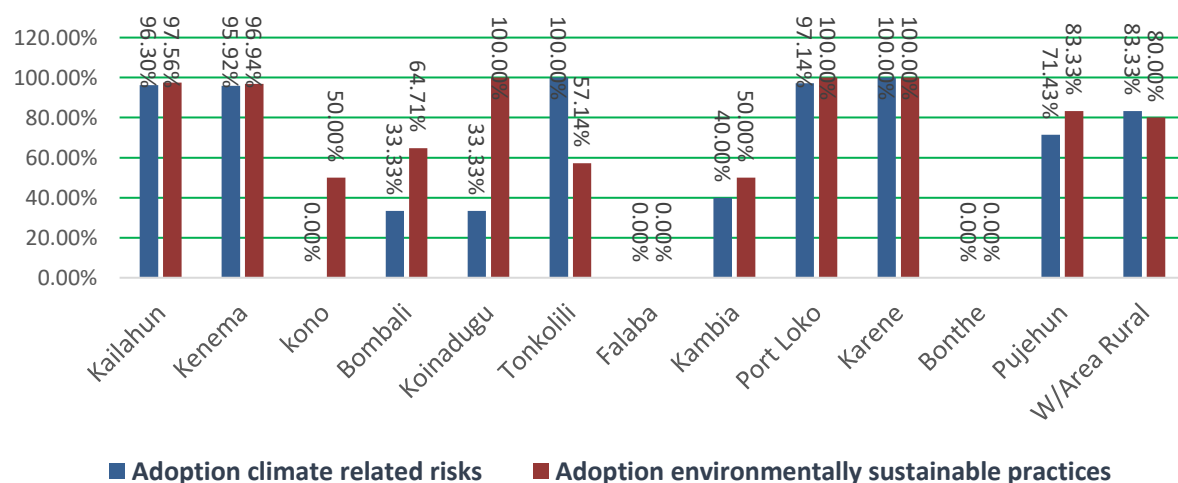


Figure 87: Adoption Rates of Climate Related Risks Management and Environmentally Sustainable Practices

Across age groups, adoption rates were higher for the old aged (95%), followed by middle aged (93%) and lastly the young (86%). See figure 88 below:

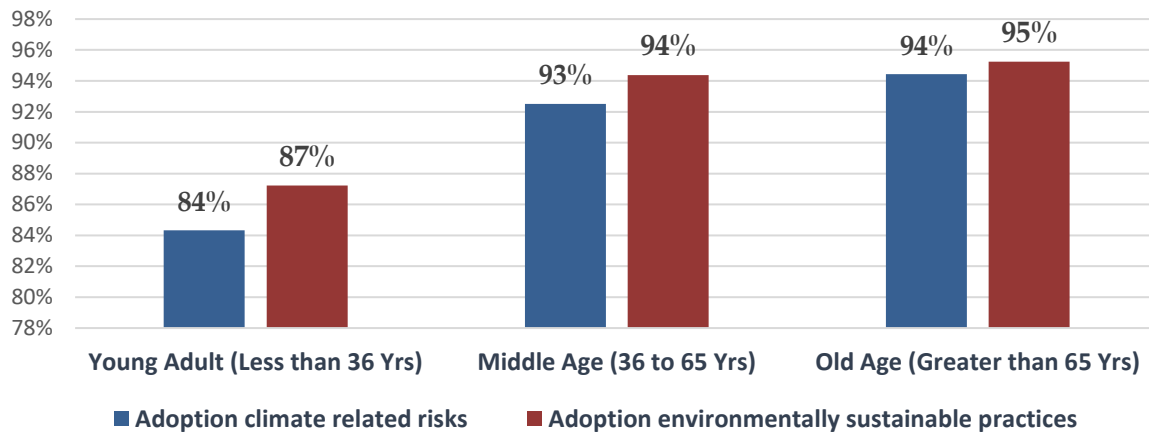


Figure 88: Adoption Rates Across Age Groups

Mastery of Trainings: Climate Related Risk Management and Environmentally Sustainable Practices.

The assessment also looked at households that benefitted from the trainings and have mastered teachings of climate related risk management and/or environmentally sustainable practices. Results showed that, of households that benefitted from the trainings, 46.94% had mastered teachings and practices of climate related risk management while 43.04% fell into the other category. See figure 89 below:

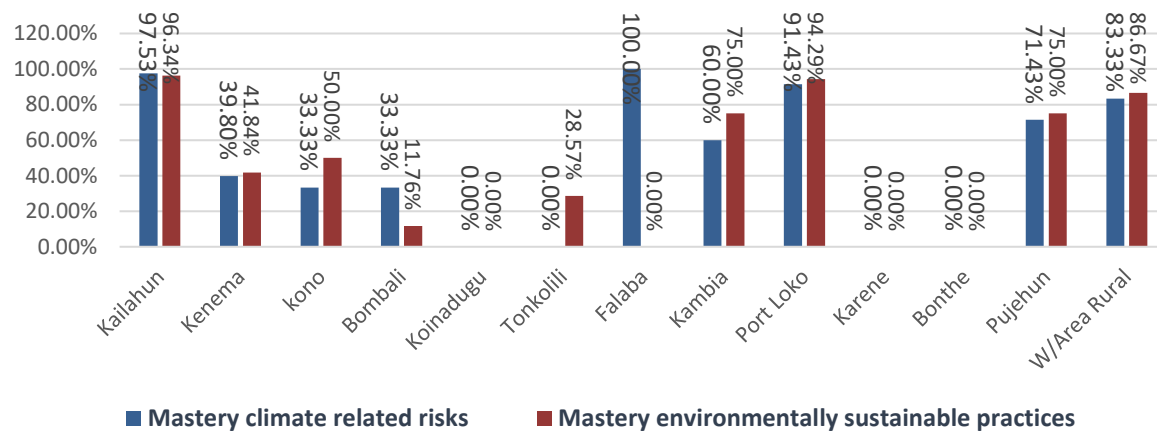


Figure 89: Mastery of Teachings from Climate Related Risk Management and Environmentally Sustainable Practices

See figure 90 for disaggregation across age groups:

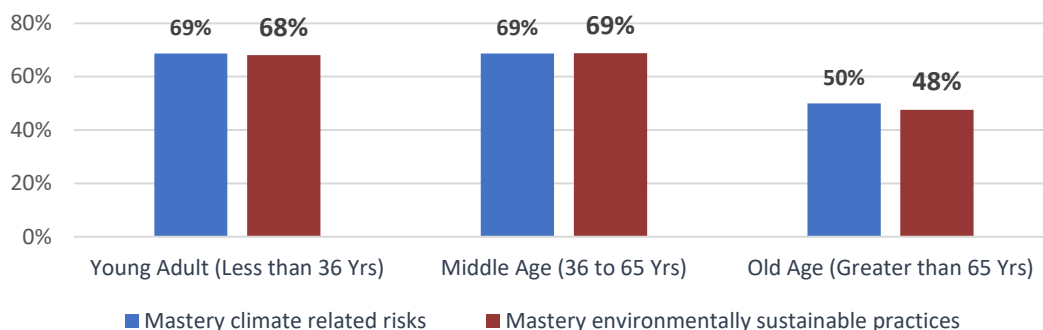


Figure 90: Mastery of Teachings on Climate Related Risk Management and Environmentally Sustainable Practices Across Age Groups

Women Empowerment in Agriculture:

In this section we present results that show the level of women empowerment related to agriculture. This can also be seen as the level of women vulnerability in participation in agriculture compared with their male counterparts. Results are presented around the following: 1) Time spent in sleeping and resting; eating and drinking; personal care, etc; 2) Group Membership and Influence:

Time Allocation: time allocation is presented across 16 different dimensions. These dimensions represent time women pray, exercise, undertake their hobbies, travel, take care of kids, carryout domestic work, cook, weave/sew, farm, trade, go to school, go shopping, personal care, to go work etc. Figure 91 present time allocations for different activities that speak the wellbeing of women. Below are few highlights:

- Most religious activities are held in the morning (81) %
- 66% of respondents expressed that they never have time for hobbies and recreation. This was also the case for exercise.
- In terms of travel, 41% of respondents expressed that they prefer traveling in the morning while 42% confirmed that they seldom travel.
- 69% expressed that they never have time for school while 85% stated that they do not have time for paid employment.

See figure 91 below for the complete response on women's empowerment.

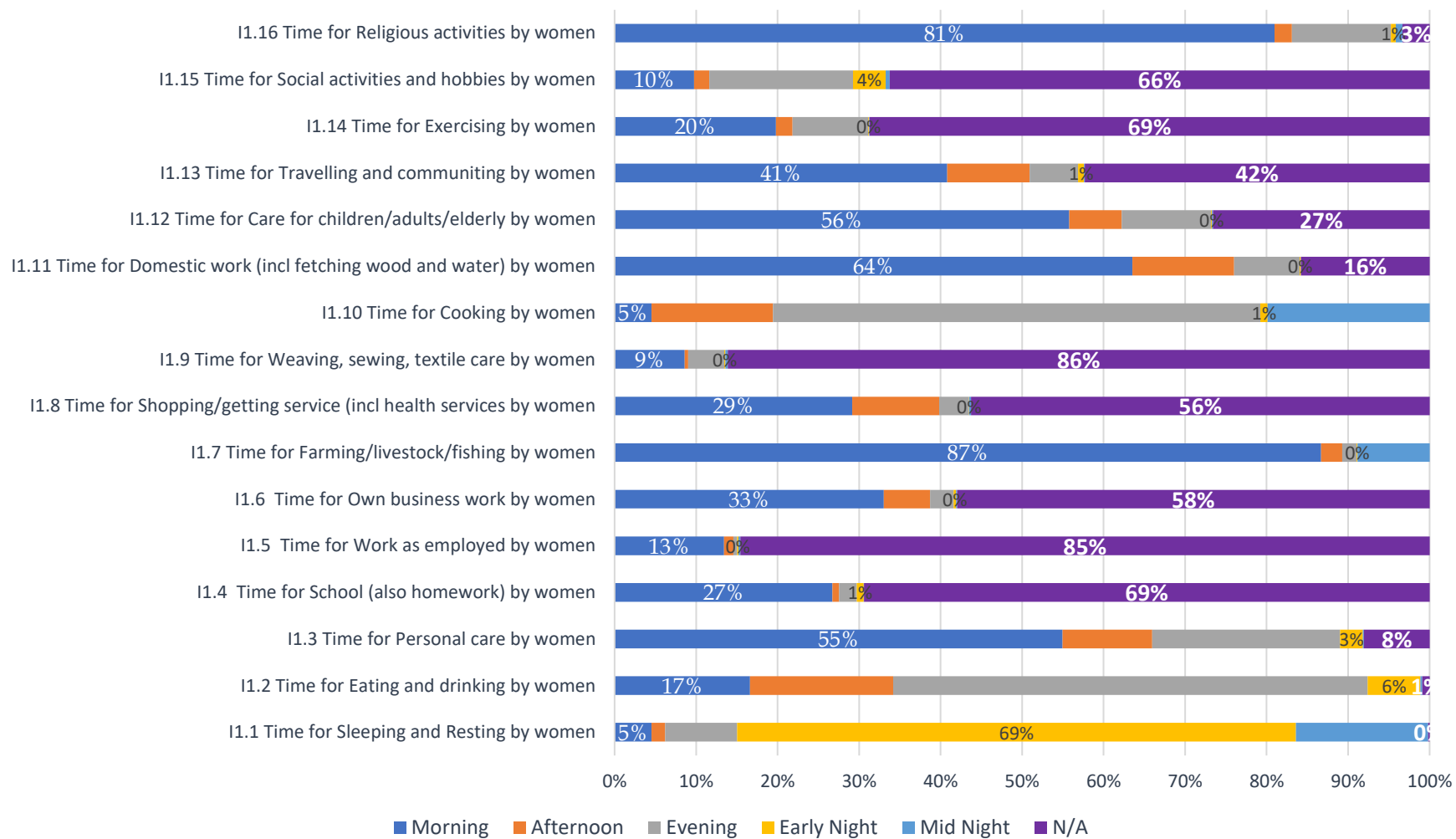


Figure 91: Women's Time Allocations

Regarding membership of farmer organizations, about 31% of households had at least one member belonging to a producer organization/cooperative/water users organization/community group. Across districts, the largest share of membership was recorded for Pujehun, Moyamba and Bonthe.

In all of these three, household membership was greater than 50%. Looking at results across type of group, 75% were related to crop production, 17% financial service groups and 8% others.

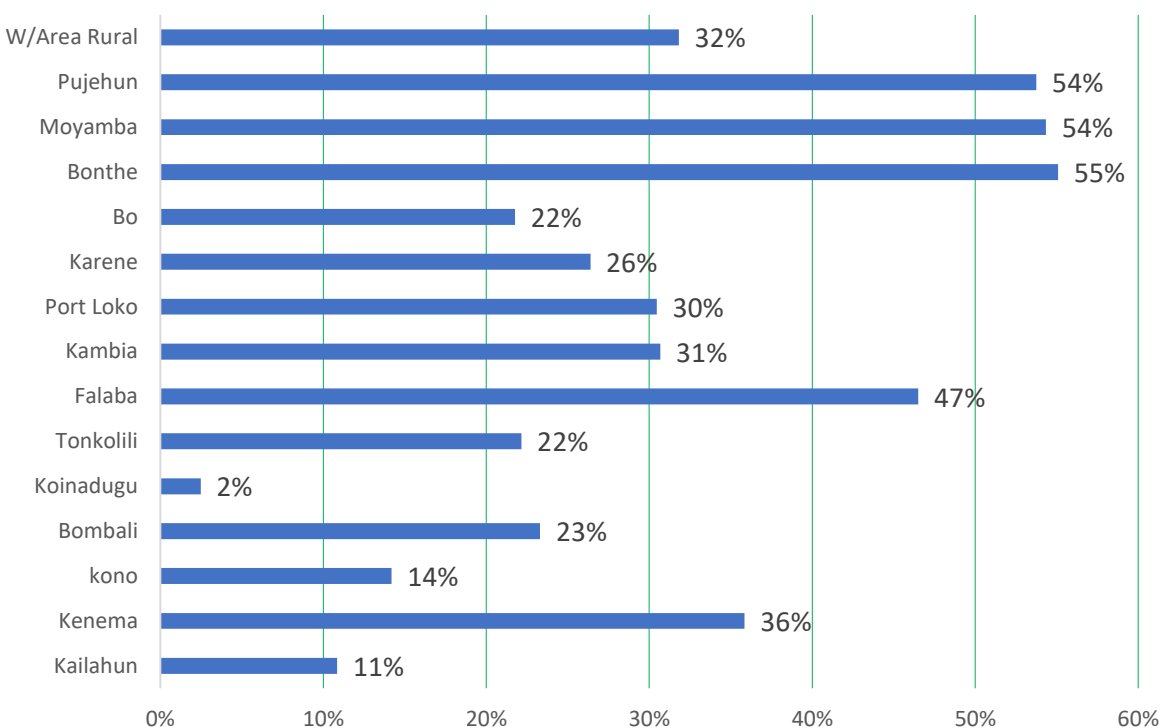


Figure 92: Households being part of farmer organizations

The assessment looked at who in the households belong to these farmer groups. Results show that 53% of respondents that were part of these groups were the husbands. 33% were the wives whilst 8% had all adult household members. In terms of influencing potentials at the household level, 39% expressed having this ability and space in their community. 30% to expressed having some extend and 6% had to capabilities.

Producer Organizations: Additional Indicators

In this section, we present results on the state of farming households being part of producer organizations. Producer organizations in this context refer to ABCs, FBCs, CBOs and Youth groups. Results are presented based on the following themes: 1) Share of households that are part of producer organizations, 2) Producer Organization membership and sales from harvests and 3) Composition of rural producer organizations.

Results for this section are partly obtained from the household survey while some was obtained from the Key Informant Interviews (KIIs) on producer organizations and from stakeholders.

Households that are part of producer organizations.

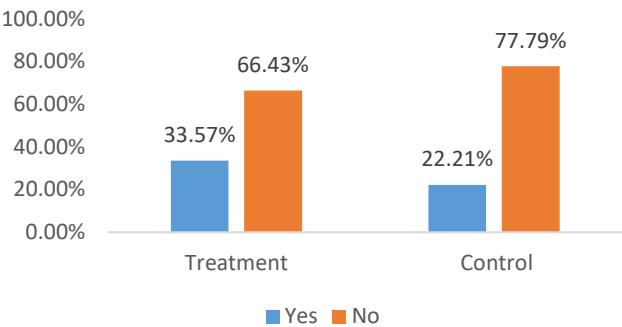


Figure 94: Households that are part of Producer Organizations.

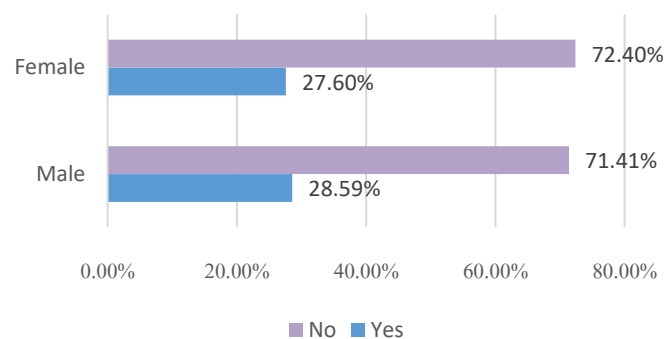


Figure 93: Households Part of PO by Gender

Value of Sales:

In this section, we compare average value of sales from households that were members of producer groups to those that were not. These results are also presented across districts. As shown in figure 95 below, overall, households that were members of producer organizations had lesser values of sales from their harvests than those that were not part of farmer organizations. On average, households that were part of producer organizations made about Le: 1,104,638 while those that were not part of producer organizations made about: 2,141,677. Cross districts, only three districts had households that were members of producer groups gaining more from sales than those that were not members. These were Port Loko, Bonthe and Moyamba. In terms of disparities, disparities were greatest in Kono, Koinadugu and Port Loko.

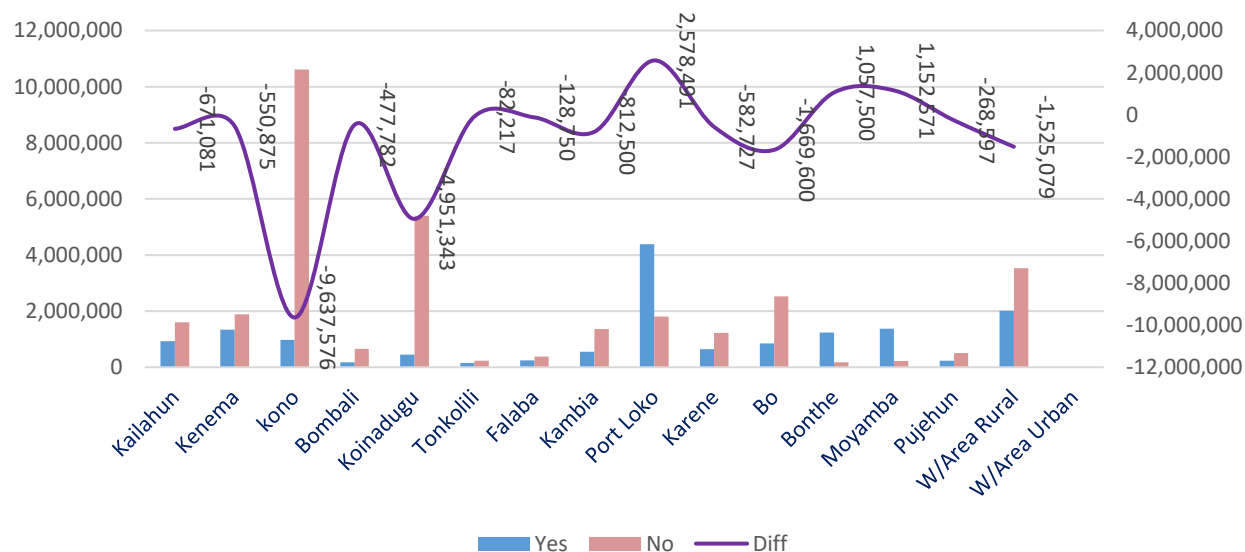


Figure 95: Value of Sales from Households that are part of PO

Across gender, we also looked at average sales across districts for both households that were and were not part of farmer organizations.

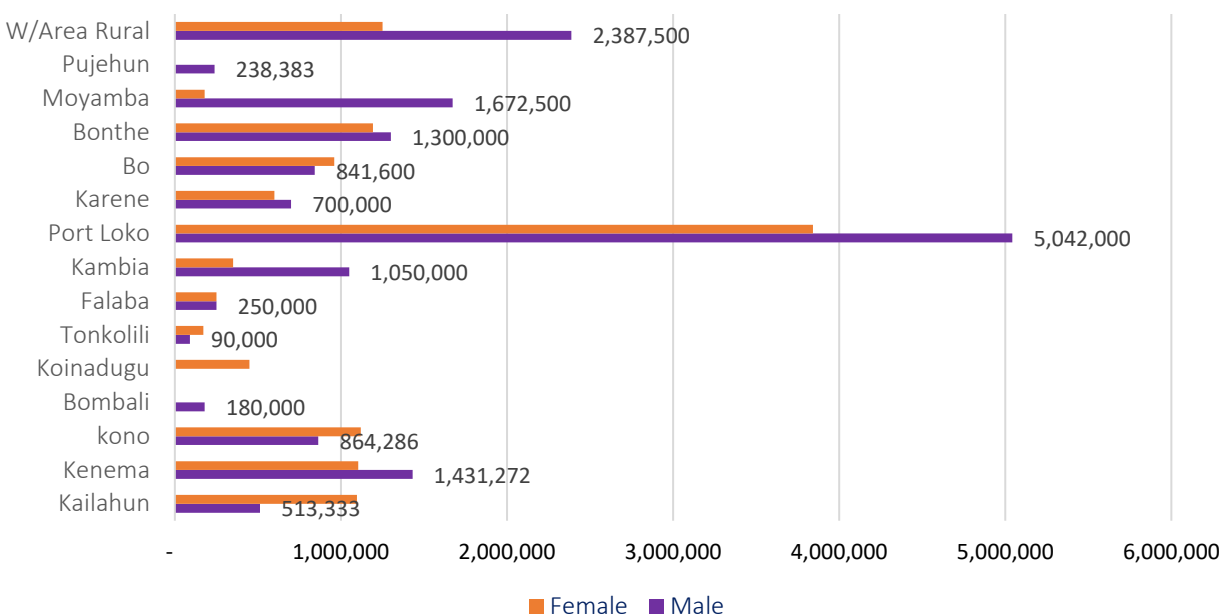


Figure 96: Average Sales for Households with Members that are part of PO by District.

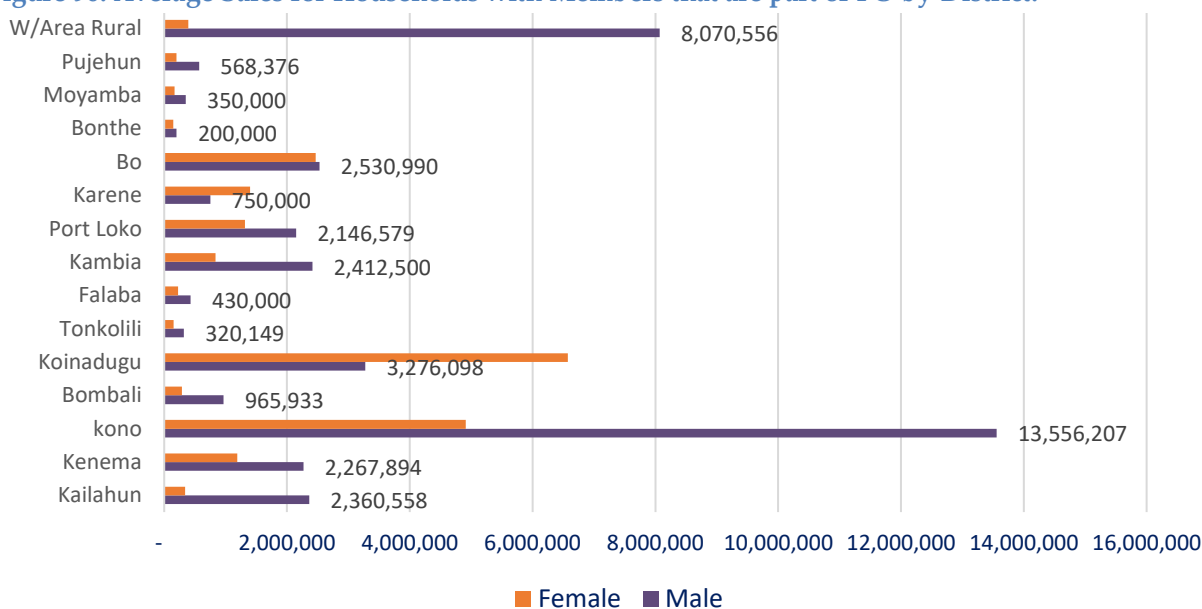


Figure 97: Average Sales for Households with Members that are not part of POs by District.

The assessment also looked at the quantity of rice that was harvested and sold for households that were and were not part of producer organizations. Results also confirmed that households that were not part of producer organizations did far better than those that were part of producer organizations.

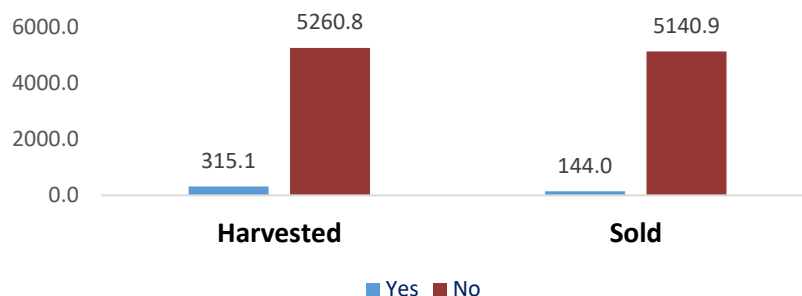


Figure 98: Average quantity rice harvested / sold for Households that are part of POs/not part of POs.

Across Districts:

Across districts, production levels were higher in households where not members of producer organizations than those that were members. Few districts that recorded slightly higher production levels of households that were part of producer organizations included Karene and Falaba.

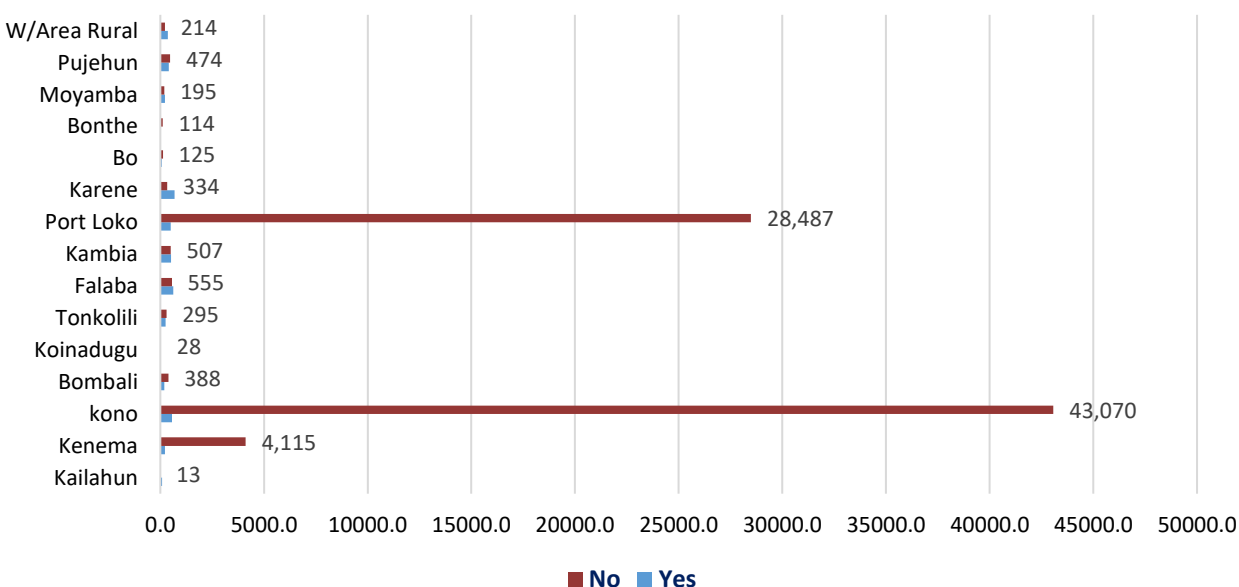


Figure 99: Rice Production Levels Across Districts.

The assessment also undertook focus groups discussion and KIIs that targeted specific producer organizations. Some highlights of results obtained from these FGDs and KIIs that are related to the results framework include: Total Size of Producer Organizations, Gender and Women in Leadership.

Results showed that average size of producer organizations vary significantly depending on the type of producer organization. For ABCs, the average size represents about four farmer-based organizations with comprises of about 35 farmers per FBO. This suggests that the average ABC has a membership of about 140 members. Results showed that this number varies between 100 and 300 members.

Producer organization sizes also depend on the value chain of interest (crop) and the objective of forming the group. For instance, ABCs that focus on tree crops like cocoa, oil palm, coffee, cashew, have lesser group sizes than those that focus on rice. Also, youth groups and women's groups exist with compositions tailored towards the objective (youth and gender). For youth groups, majority of members are young and between ages 25 to 35. For women's groups, majority of the members are women. These traits also show how women are represented in leadership positions in their organizations. For women's groups, women play key leadership roles throughout the organizations. However, for the normal mixed producer organisations, leadership positions are mainly held by men.

Conclusions and Recommendations:

The AVDP Project seeks to improve livelihoods, food security and climate resilience of 43,000 rural farming households in Sierra Leone. This baseline assessment presents data that address the key performance outcome and impact indicators for the project. This data helps in setting benchmarks for the project and guiding project implementation. From the analysis presented above, data collected addresses all the key performance indicators presented in the RF and additional contextual data that can support project implementation, even at the output level. The evaluation team suggests three key recommendations for the project team:

- One of the key strengths of this study is the raw data that has been collected. This data is critical for data collection at midterm and end-line. We strongly recommend that the M&E unit safely keeps this data.
- Given the broad nature of the dataset collected, there are additional thematic studies that can be undertaken with this data. These thematic studies will support the implementation of the project. It is strongly recommended that additional thematic studies are conducted using the same dataset and possible complementary qualitative data collection. This higher-level analysis will also address additional requests from IFAD.

Response to the Results Framework:

Hierarchy	Indicator	Baseline	Comments
Outreach	Estimated corresponding total number of household members	0	
	Corresponding number of households reached	0	
	Persons receiving services promoted or supported by the project	0	
Goal	Targeted households that experience a reduction in length of hungry season from 4 to 2 months	0 (baseline at 5 months – 58%) Baseline at 4 months – 66%)	
	Proportion of target population below the minimum level of dietary energy consumption by gender and vulnerable groups.	(0) 47% Male: 54% Female:46% Youth:53%	
	Households reporting increased assets (asset ownership index)	(0) 46%	
Development Objective	Rural producers' organizations reporting an increase in sales	0	
	Number of rural producers reporting an increase in income	0	
Outcome 1	Households reporting an increase in production	0	
	Households reporting adoption of new/improved inputs, technologies or practices	14.38%	
	Households reporting adoption of environmentally sustainable and climate-resilient technologies and practices	0%	
	Women reporting minimum dietary diversity (MDDW)	54%	
	households with improved nutrition Knowledge Attitudes and Practices (KAP)	0%	
Outcome 2	Percentage of persons / households reporting improved physical access to markets, processing, and storage facilities.	Processing:20% Storage: 65% Functional Markets: 48%	

	Percentage increase in the number of individuals demonstrating an improvement in empowerment.	0%	
	Percentage increase in the number of households reporting they can influence decision-making of local authorities and project supported service providers	0%	
	Rural producers' organizations engaged in formal partnerships/agreements or contracts with public or private entities	67%	
	Jobs created through road construction and rehabilitation (temporary employment)	0	