

# Household Income Report

Markham District



November 2020

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## **Chapter 1: Introduction**

### **1.1 Background**

Markham district located on 6.721°S 146.267°E is one of the nine districts in Morobe province, Papua New Guinea. It has a landmass of 4,311 km<sup>2</sup>, a population of 62,495 people and an average household size of 4.7 (Population Census, 2011).

The district is made up of three local level governments namely Umi-Atzera, Leron-Wantoat and Onga-Waffa. Umi-Atzera LLG has 5193 households while Leron-Wantoat and Onga-Waffa has 2793 and 1478 households respectively. More than 55% of the total human population in Markham resides in the Umi-Atzera LLG while Leron-Wantoat LLG comprises the 27% of the total Markham population. Onga-Waffa LLG is least populated in the district.

Agriculture activity in Markham started well before 1925 with an establishment of an agriculture station in Sangan by the colonial government with introduction of cotton, peanut, sorghum, rice, sugarcane, corn, coffee and sisal forthwith. Lutheran missionaries concurrently introduced coffee, cocoa, citrus trees and cattle. In 1944, the most important foods were banana, sweet potato, coconut and other supplementary crops like breadfruit, pawpaw, watermelons, pineapple, tomato, cucumber and vegetables.

Peanut became an important food crop in 1947 when smallholder growers produced over 1000 tones peanut resulting in the establishment of Atzera Rural Progress Society which purchased peanut from the growers, processed it and sell domestically and internationally. There was also an increase in smallholder cattle production in mid 1970s with over 10,200 heads in Markham valley.

The main sources of cash in 1991 were the sale of betel nut, peanuts, fresh food and coconuts at roadside markets along the highway. Betelnut was, however, infected beyond economic threshold by insects' pests and diseases in 2005. In pursuit, peanut was produced in large scale as a source of income for the farmers. In late 2008, farmers' interest on cocoa was invigorated by the district's agriculture section in collaboration with PNG Cocoa Board resulting in mass cultivation of cocoa in the valley and higher altitude areas.

The current agriculture activities in Markham include large scale cocoa, coffee and tree farming at specific sites. Smallholder farmers are still producing and marketing garden produces and cash crops for an income to financially sustain their families.

## **1.2 Agriculture Crops**

Markham valley has attracted the attention of the state and other non-government organizations to invest and convert the valley into a focal agriculture site in Papua New Guinea.

Smallholder production and marketing of garden produces such as aibika, banana, cucumber and taro is a norm in the farming communities in Umi-Atzera, Onga-Waffa and Leron-Wantoat as a whole.

Watermelon is produced in Leron-Wantoat and Onga-Waffa for consumption as it cannot be transported via extensive rugged and poor road conditions to the markets. It is however, produced in specific sites in Umi-Atzera in large quantity for markets in Lae and even Port Moresby.

Coconut and mango are grown and sold by households in Umi-Atzera. Quite large areas in Onga produce and sell coconut and mango at the markets despite market access limitations while there is limited or no coconut or mango production in Waffa because of high altitude. Likewise, coconut and mango grow and yield well in lower Leron areas while upper Leron and Wantoat have limited or no coconut and mango produces.

Coffee is grown in higher altitude areas in Markham district such as Waffa area in Onga-Waffa LLG, Markham headwaters and Yarus in Umi-Atzera LLG and most parts of Leron and Wantoat. Cocoa and peanut additionally are produced in both lowland and highland in the entire Markham district.

Rice was introduced and cultivated in small-scale for consumption though Markham has potential for large-scale rice production as proven by Chingwam rice in Ragiampun.

Conclusively, 52% of farmers in Markham district who produced and sold the aforesaid crops refused to plant new crops while 48% agreed in principle to venture into producing vanilla and other garden foods such as sweet potato, cassava, spring onion, corn, pumpkin, avocado and vegetables like cabbage, lettuce, round onion, chilly and capsicum.

## **1.3 Objectives**

The primary objective of the survey is to appreciate and understand the income level of people involved in agriculture activities in Markham valley. The study also has a concurrent objective of identifying market access problems faced by farmers in Markham. Information derived from this survey would assist Grow PNG in engaging and building partnerships with agribusinesses, farmers, government agencies and other stakeholders to grow the sector in the Markham.

#### **1.4 Study Design, Data Collection and Analysis**

A baseline survey was executed at Umi-Atzera, Onga-Waffa and Leron-Wantoat LLGs in Markham district. Information was collected from farmers in various markets and households in the three LLGs.

The nature of the study was basically an open-ended investigation involving direct personal contacts between respondents and interviewers. It was carried out in selected markets and various villages. The main data collection methods were interviews, focus group discussions, ground observations, transect walks and questionnaire survey. User-friendly statistic software, SPSS was used to process and analyze the data.

#### **1.5 Interviewees**

During the course of the survey in Markham district, 52% of interviewees were males while 48% were females. Seventy-seven percent (77 %) of the respondents have age between 31 and 50 years while 21% of the interviewees have age between 18 and 30 years. Only 2% has age between 51 and 60 years.

#### **1.6 Report Layout**

The entire report comprises of three major components which include sections containing the market access information and household income and expenditure data for households in Umi-Atzera, Onga-Waffa and Leron-Wantoat Local level governments in Markham district. Chapter one gives a brief introduction on the study location, design and description while chapter two discusses the variables studied among households of Umi-Atzera LLG. Chapter three discusses variables studied among households of Onga-Waffa LLG and Chapter 4 discusses variables studied among households of Leron-Wantoat LLG. A conclusion section comprising of several recommendations forms the last part of this document.

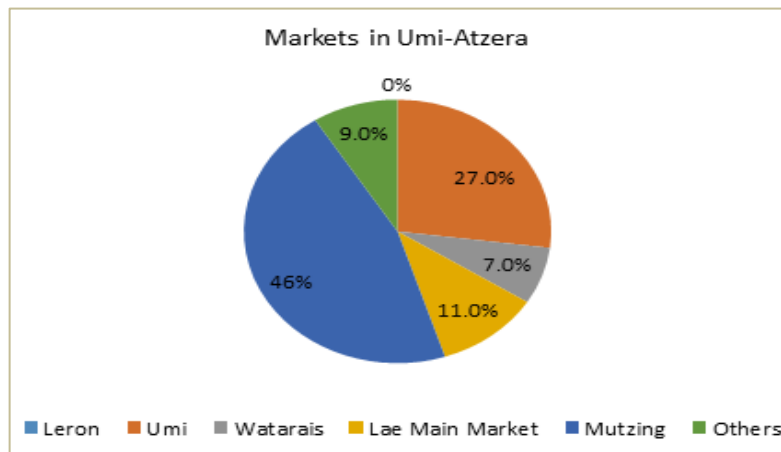
## Chapter 2: Umi-Atzera Local Level Government (LLG)

### 2.1 Markets

Marketing of agriculture produce plays an important role not only in stimulating production and consumption, but in accelerating the pace of economic development in the Umi-Atzera.

The survey has unearthed that 31 % of farmers in Umi-Atzera access markets daily while 51 % of the farmers enter markets to sell their produces weekly. Only 18 % of the farmers access markets monthly.

Figure 2.1 shows that 46 % of households in Atzera, especially, Zumangurun, Sangam, Gugurup and Gama, sell their produces at Mutzing market. Twenty-seven percent (27 %) of households in Umi-Atzera sell their produces at Umi market. Seven percent (7 %) of specific households in Marawasa and Waterise sell their produce at Waterise market. Most (9 %) households in the upper Amari area which include Wankun, Marasasa, Raginam, Papua and other small hamlets sell their produces in other markets at Ramu, Kainantu or Goroka.



*Figure 2.1 Markets accessed by farmers in Umi-Atzera.*

Coffee producers transport their coffee bags by feet and then have it freighted to Umi market to be freighted further to Lae or Kainantu markets for sales.

Cocoa growers in Umi- Atzera sell cocoa wet beans at farm gate markets provided by licensed cocoa wet beans buyers while dry bean cocoa is sold to markets provided locally by Outspan, Agmark and Elliven.

Large producers of watermelon, cucumber, taro, mango, aibika, peanut, vegetables and other agriculture produce in Umi-Atzera, in search of better marketing price and structure, freight their produces to Lae main market (11 %) for sales. Several villages located on the border of

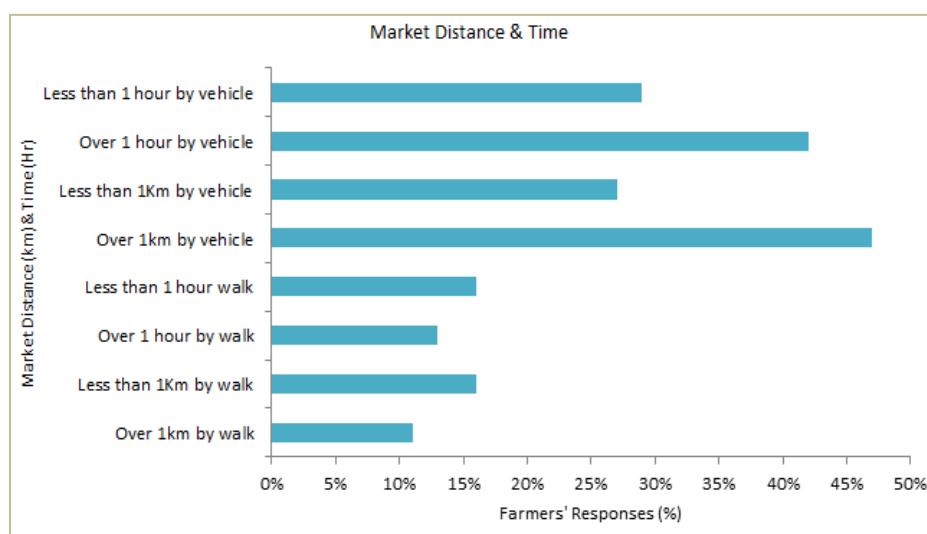
Markham and Huon districts also transport their produces from their villages to the main highlands highway to be freighted to Lae market for sale regularly.



*Figure 2.2 Women from Inchi selling their garden produces at Umi market.*

## 2.2 Market Distance & Time

Market access is directly related to distance and time taken by the farmers to move their produce to the markets.



*Figure 2.3 Distance and time taken by farmers to travel to the markets.*

Figure 2.3 depicts that 42% of households in Umi-Atzera travelled over one kilometer by vehicle per hour to access markets while others (27-29%) travelled for less than a kilometer per hour by vehicle to the markets. Farmers who travelled for more than a kilometer by vehicle per hour



to Mutzing and Umi markets include households at Itsir, Zumangurun, Bagabuang, Mangiang, Wafi, Mamaringan, Bampingyafan, Uffim, Yanuf, Bio, Saria, Yawa, Intzi, Langkuam and Samurang. These also include farmers who travel to Lae main markets and other markets in Ramu, Kainantu and Goroka.

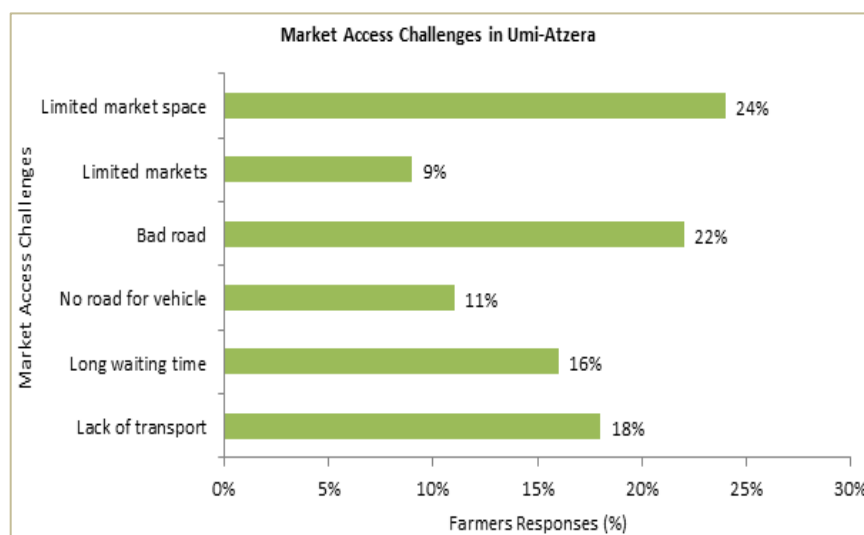
Farmers (16 %) that travelled less than a kilometer per hour to the markets by walk include those households at Mutzing, Sampubangin, Dabu, Warus, Chakarak, Marafau, Waterise and Marawasa. In contrary, farmers who travelled over one kilometer by walk per hour to the markets include those household from Riarra, Guarug, Gainarun, Guzuap, Sauf, Zumim and Ngaruburamp.

Specific households in Yarus and Riarra have no or poor roads thus have to freight their produces by feet to the roadside for more than a kilometer per hour before having it transported further by vehicle or feet again for more than a kilometer per hour to the nearby markets.

## 2.3 Market Access Challenges

To move the agriculture produces from the farms to the market is a recurring challenge that is usually faced by the farmers in Umi-Atzera.

Figure 2.4 indicated that one of the biggest problem faced by the farmers to sell their produces is limited market space (24 %). The location of the old Mutzing market is risky as it is situated very close to the busy highlands highway. There are no proper market facilities in the market. Spacing for the vendors is an alarming problem with the uprising of Asian supermarkets forcing the mothers to sell their garden produces on the road shoulders.



*Figure 2.4 Challenges to access markets in Umi-Atzera*

Recently, a new Mutzing market was constructed as solution thus all marketers at the old market were encouraged to use the new market facilities.

Market shelters and space for Umi market, likewise, is a concern. Numerous farmers are always forced to sell their produces outside in the scorching sun because of limited space in the market shelters. Waterise market comparably has a risky location and no proper market shelters and space for farmers to sell their produces. Space at the Lae market to cater for the Markham farmers to sell their produces also is limited and without a proper shelter though farmers are being charged very excessive market fees.

Due to limited number of markets, some (9 %) farmers along the highlands highway construct their own roadside market to sell their produce.

Moreover, 22 % of the respondents reported that bad road condition have been a recurring constraint to market access in Umi-Atzera though irregular government's investment was made into improving condition of the graveled road throughout the district. In view of that, most PMV truck operators refused to access these aforesaid areas to freight their produces to the markets resulting in long waiting time as reported by 16 % of the respondents and thus loss of produce and income.



*Figure 2.5 A female farmer from Wankung village waiting for vehicles for two days to freight her produces to the markets.*

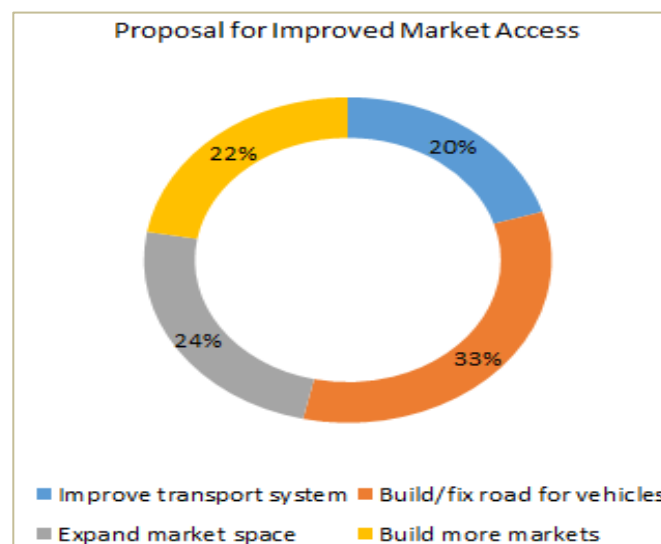
The areas experiencing the aforesaid market constraints include roads in Zumangurun, Waffi, Itsir, Mamaringan, Bampingyafan, Sauruan, Inchi, Riarra, Wankun, Marasasa and Raginam.

Specific areas in Umi-Atzera have no road for vehicles to access and have the agriculture produces freighted to the markets (11 %). These include villages in Yarus, several parts of

Markham headwaters and interior parts of Riarra and Itsir villages. The farmers in those areas freight their produces by feet to the main access road for further transportation to the markets.

In light of the market access constraints, 33 % of the respondents propose that road networks in Umi-Atzera should regularly be upgraded and roads should be constructed into specific areas such as Yarus that have no road but higher agriculture potential (See Figure 2.6).

Having better road networks improves transport system otherwise 20% of the respondents adduced that government and stakeholders should look into assisting the small and medium enterprises to venture into trucking business to minimize the transportation problem faced by the farmers. It was also unearthed that 24 % of the respondents advised for expansion of market to create more market space and also to construct new markets on specific sites along the highlands highway to create more opportunities for the farmers to sell their produce competitively.



*Figure 2.6 Farmers' proposals for improved market access.*

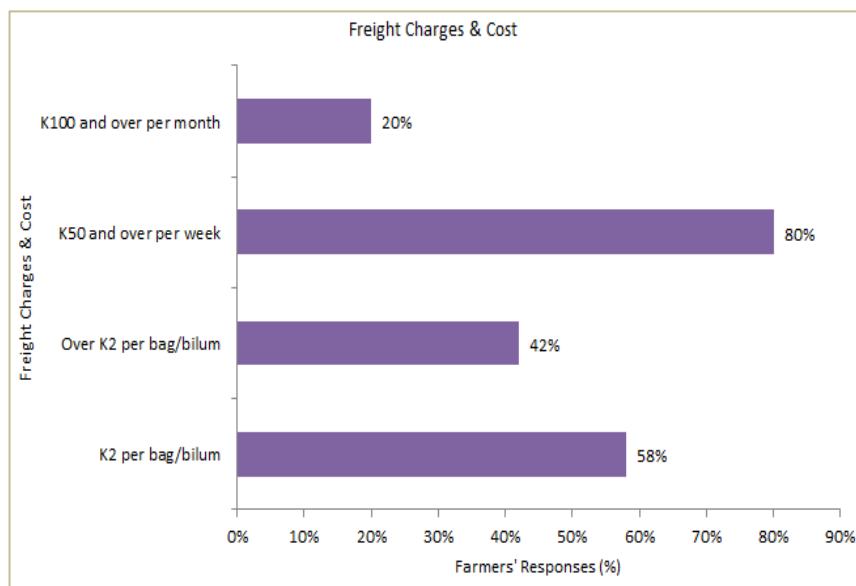
## **2.4 Freight Charge and Cost**

The freight charges per farmer depend on the quantity of produces harvested and packed for market and transport fee rate. The total freight cost per farmer depends on the frequency the farmers' access the markets in a day, week or month.

The study disclosed that 58 % of the respondents pay K2.00 per bag to transport produces to and from the Mutzing and Umi markets per day while 42 % pay more than K2.00 per bag until all produces are sold out.

This has resulted in 80 % of the farmers spending over K50.00 per week for transportation cost inclusive of market fees.

The survey also unearthed that those farmers (20 %) accessing markets monthly spend more than K100.00 for freight charges.

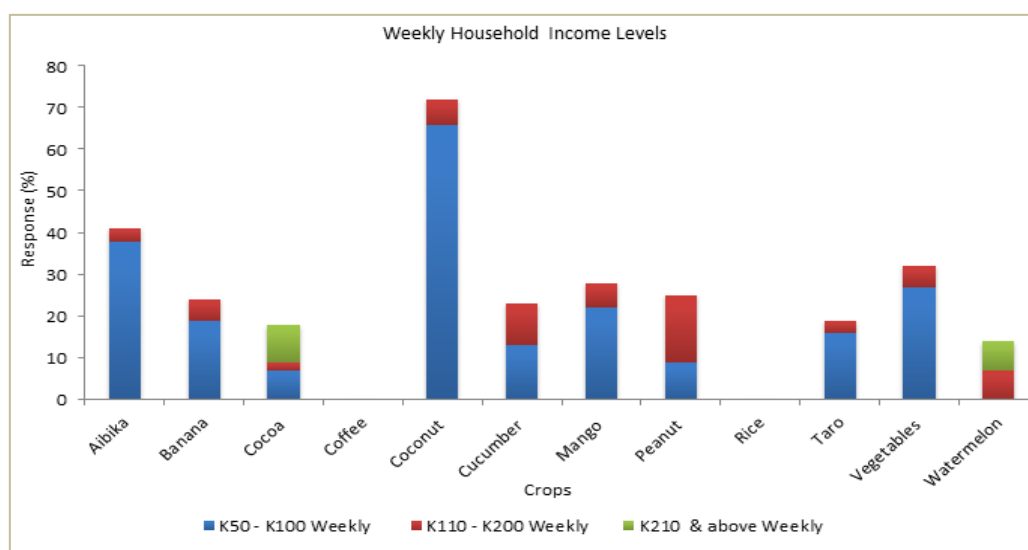


*Figure 2.7 Freight charges and costs met by farmers in Umi-Atzera.*

## 2.5 Household Income

### 2.5.1 Weekly Household Income

The chart below shows the level of income received by the farmers in Umi-Atzera weekly in return for selling their produces at Mutzing, Umi, Lae and other markets.



*Figure 2.8 Weekly household Income for farmers in Umi-Atzera*

Extrapolation can be made that many households in Markham have earned an income between K50.00 and K100.00 weekly for selling aibika, banana, coconut, cucumber, mango, peanut,

taro and vegetables. The highest number of farmers earns an income between K50.00 and K100.00 weekly for selling coconut.

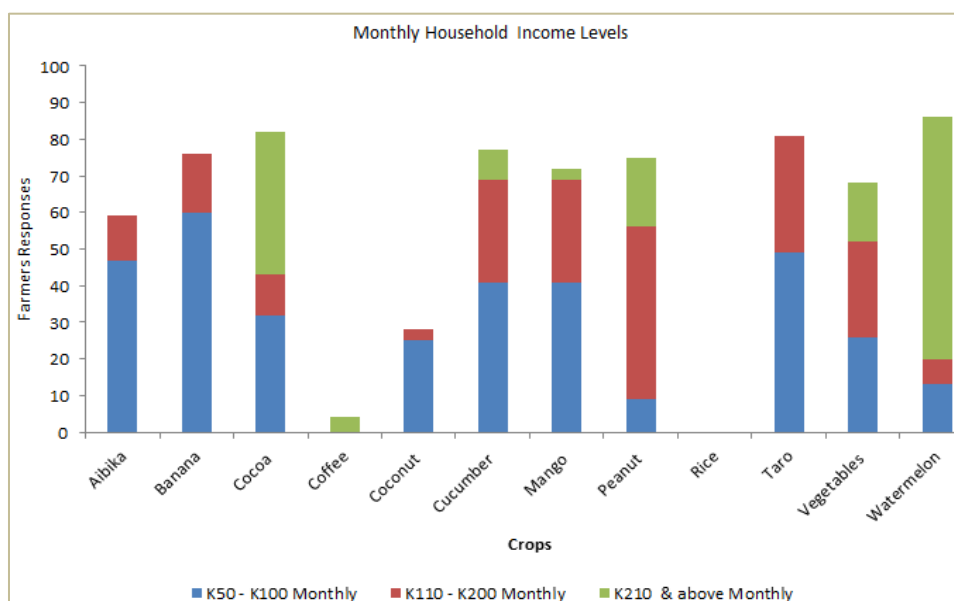
Comparably, a good number of farmers have earned a much higher income (K110.00-K200.00) weekly for sales of peanut, cucumber, watermelon, coconut, mango and aibika.

It was also indicated that 9 % of the respondents earn more than K210.00 weekly for selling wet bean cocoa at farm gate and dry cocoa bean at Agmark, Outspan and Elliven. Sales of watermelon have also fetched more than K210.00 weekly for specific large growers selling at Lae main market.

All in one, rice and coffee has generated no income for the farmers in Umi-Atzera on a weekly basis; however, farmers have sourced income from the other aforesaid crops.

## 2.5.2 Monthly Household Income

The chart below shows the monthly household income for the farmers in Umi-Atzera for selling aibika, banana, cucumber, peanut, taro, watermelon, vegetables and other cash crops such as cocoa, mango, coffee and coconut.



*Figure 2.9 Monthly household income levels for farmers in Umi-Atzera.*

Adjudication from the survey shows that nearly 60 % of the farmers earn an income from K50.00 and above monthly from selling cocoa, cucumber, mango, vegetables and watermelon. Watermelon, cocoa and peanut have shown to be the crops securing more than K210.00 for a good number of smallholder producers on a monthly basis.

Rice was grown is small-scale for neither consumption only nor commercialization.

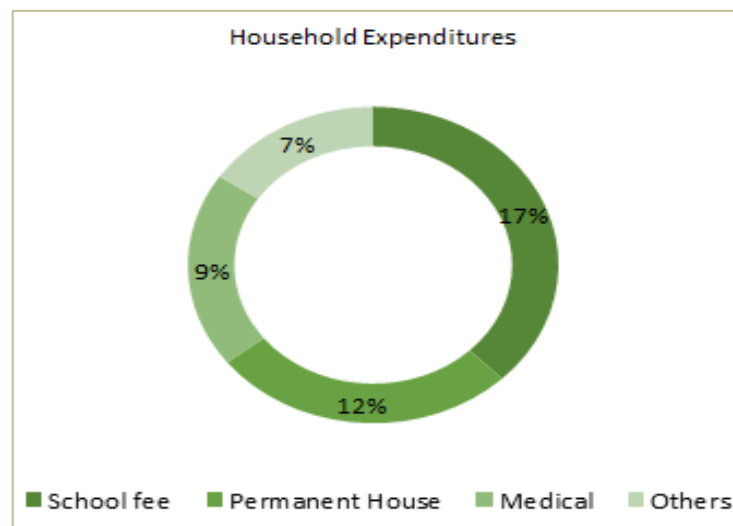
A few coffee farmers from Markham headwaters also earn an income more than K210.00 monthly for selling coffee parchment.

Generally, the study ascertains that a remarkable number of farmers earn an income between K50.00 to K200.00 monthly from selling aibika, banana, coconut and taro without exceeding the aforesaid income range.

## 2.6 Household Expenditure and Size

Figure 2.10 shows the responses of households on the expenses they make after earning an income from selling agriculture produces and cash crops.

Most of the farmers (17 %) use the fund earned to pay for school fees, construct permanent houses (12 %), pay medical bills (9 %) and for other uses (7 %) such as meeting cost of customary obligations.



*Figure 2.10 Household expenditure for the farmers in Umi-Atzera.*

It was also unearthed from the survey that 44 % of the farmers support five dependents respectively in their household with the earnings they make while 36 % use the income to fend for more than five dependents in their households. Only a few (20 %) use the income to support less than five dependents in their households.

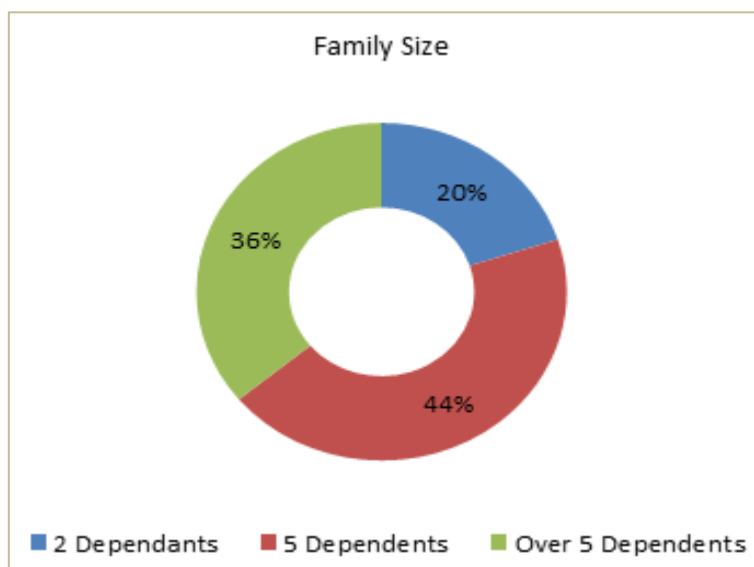


Figure 2.11 Family size of farmers where income earned is used to cater for them.

## Chapter 3: Onga-Waffa Local Level Government

### 3.1 Markets

Having access to markets enables the farming communities to sell their produces for an income. The survey has delineated that 36 % of farmers in Onga-Waffa access markets weekly and while 46 % access markets monthly. Limited number of farmers (18 %) access markets daily.

Figure 3.1 shows that 71 % of these farmers regularly sell their produces at Mutzing market while 14 % transport their agriculture produces to Lae main market to sell occasionally.

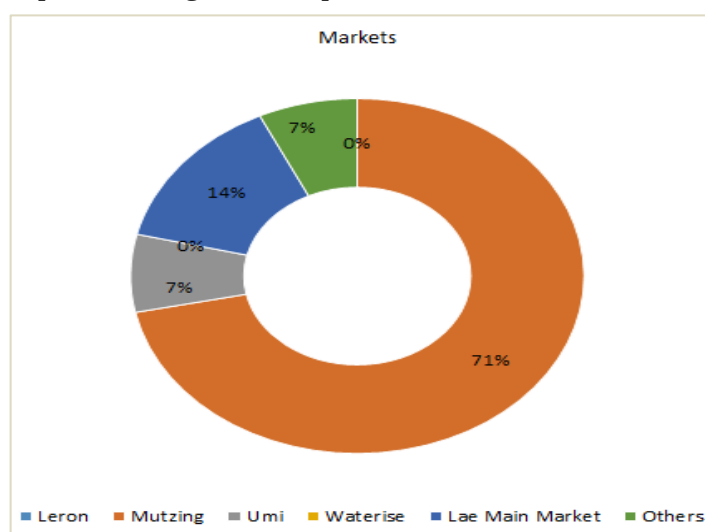


Figure 3.1 Markets accessed by farmers from Onga-Waffa.

Markets for cocoa dry beans are provided by Outspan, Agmark and Elliven. Cocoa wet beans are usually sold to the local buyers at doorstep. Coffee growers in the higher altitude areas in

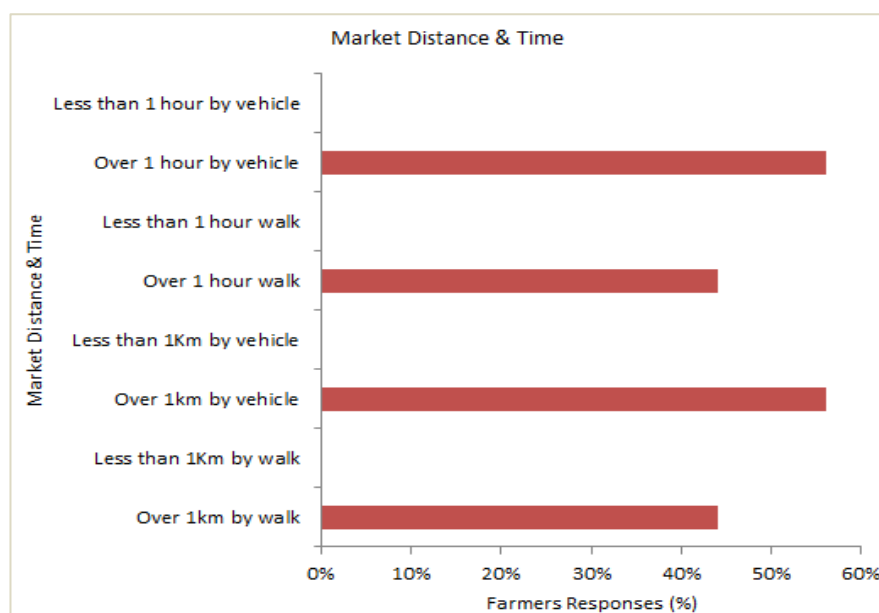
Waffa sell coffee cherries to local buyers while coffee parchment is usually transported to Mutzing to be freighted to Lae or Kainantu for sale.

Several farmers (7 %) especially in the villages in the Waffa area, sharing land boundary with Eastern Highlands province, because of no road access connected to the main Onga-Waffa road, sell their coffee, peanuts and other agriculture produces at markets accessed at Oburawanenara district in the Eastern Highlands province.

### 3.2 Market Distance and Time

Market distance and time are dynamic indicators of market access. From the survey, it was unearthed that 56 % of the of the farmers starting from Ngarowain have to transport their produces by feet to the main road, and travelled over one hour by vehicle for more than a kilometer to the Markham riverside near Intoap village forthwith.

In pursuit of the aforesaid, they carry their agriculture produces, cross the Markham river to the other side and either moves it by feet or vehicle to the Mutzing market for sales. To sell at Lae main market, transport is again arranged from Mutzing to freight their produces to Lae.



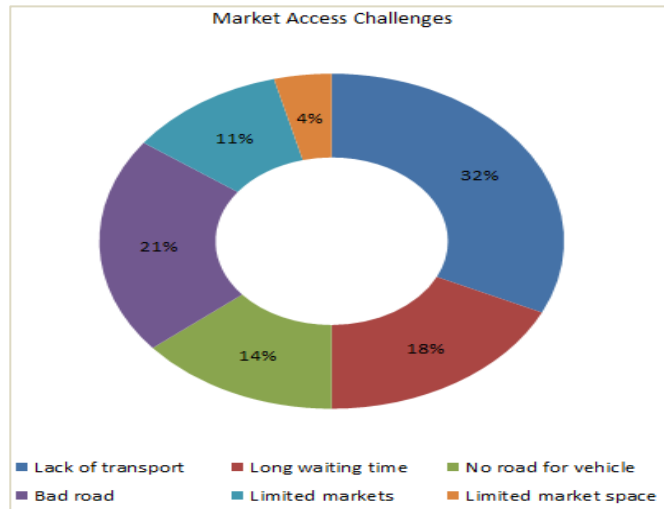
*Figure 3.2 Distance and time taken by farmers in Onga-Waffa to reach markets.*

The study also ascertains that 44 % of farmers, especially from Puguap to Intoap, Singas, Antir, Wampul, Onga and Awan villages carry their agriculture produces, walk over one hour for more than one kilometer from their villages to Markham river, cross it and continue to Mutzing market to sell their produces.



### 3.3 Market Access Challenges

Limited number of vehicles (32 %) to transport people and their agriculture produces from their villages to the markets is a major problem faced by the farmers in Onga-Waffa.



*Figure 3.3. Challenges faced by farmers to access markets.*

This consequently extends the waiting time (18 %) for pickup of marketable produces which sometimes leads to rapid perishability of the produces.

Vehicles do not regularly access several farming communities from Ngarowain to Puguap, Onga, Antir and Awan because of very poor road conditions and high vehicle downtime due to tear and wear encountered due to bad roads (21 %).



*Figure 3.4. Kurak Transport waiting for passengers at Markham riverside.*

Several (14 %) farming communities in the Waffa area have no road access to the main Onga/Waffa road, hindering transportation of marketable produces to the markets.



*Figure 3.5. A farmer carrying her produces and crossing the Markham river to reach Mutzing market.*

Others specific areas like Singas and Wampul completely have no road for vehicle to have their produces transported to the markets.

A considerable number of farmers (11 %) also expressed concern on limited markets they access to sell their produces. The spacing at the Mutzing market is inadequate thus forcing mothers to sell their produces on the road shoulders. Market fee has also had an impact on the monetary return after sales at Mutzing and other markets.

In light of the aforesaid, Markham river stands to be the challenge that is really having an impact on transportation of agriculture produces to the markets. This river has no wet crossings and bridges for vehicles to transport produces across to the markets thus numerous produces, personal items and lives destined for markets in Mutzing and Lae have been lost.

In response to the aforesaid market access constraints, majority of the respondents (44 %) want the improvement in the transport system while 42 % proposed for current roads to be upgraded and new roads constructed to areas not connected by road. A good number of respondents (10 %) contended for a market facility to be constructed for farmers in Onga-Waffa to access and sell their produces while 4 % request for Mutzing market extension.

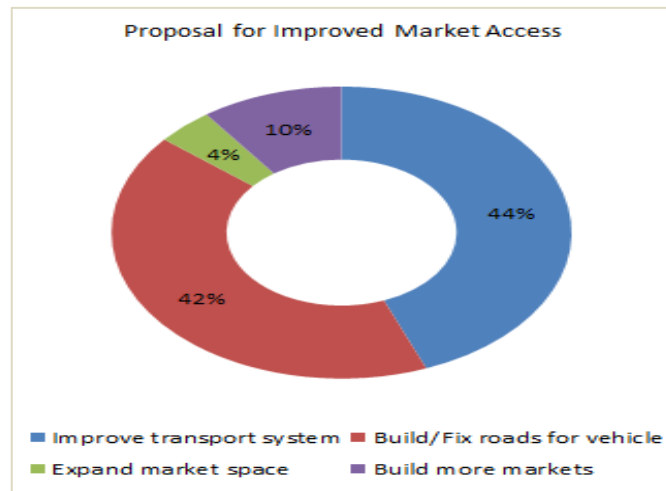


Figure 3.6 Proposal for improved market access.

### 3.4 Freight Charge and Cost

Figure 3.7 indicates that 68 % of farmers in Onga-Waffa spend over two kina per bag while 32 % of the farmers spend exactly two kina to freight their produces to the markets.

This has resulted in 46 % of the households spending over K50.00 per week for the freight charges. In a month, 54% of farmers spend more than K100.00 to freight their produces from their villages to Markham riverside and further to markets in Mutzing or Lae.

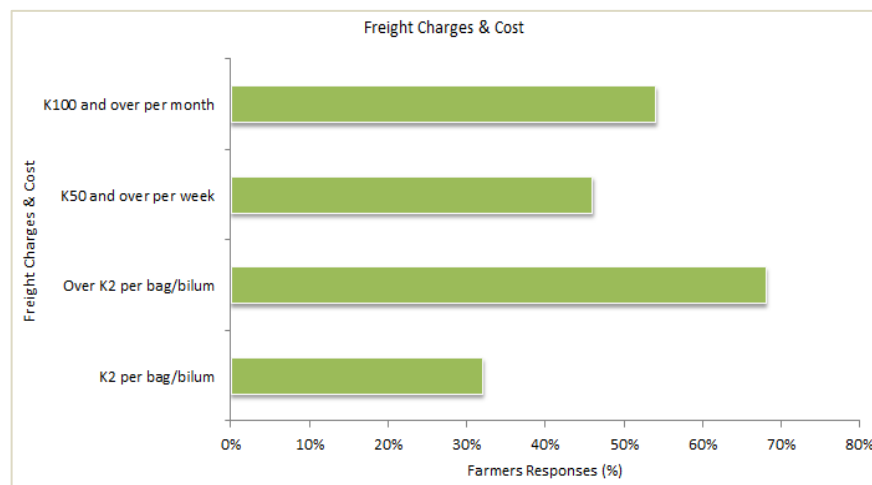


Figure 3.7. Freight charges usually met my farmers to transport produces to the markets.

### 3.5 Household Income

#### 3.5.1 Weekly Household Income

The chart below shows the weekly household income for farmers in Onga-Waffa. The aforesaid market access constraints have limited households to access markets regularly to sell their produces thus having a very bad impact on their weekly income.

Figure 3.8 shows that nearly 15 % of the farmers sell their wet bean cocoa at farm gate price daily thus earn an income between K50.00 and K100.00 weekly. This has enabled the farmers to sell at home and thus avoid all the market access problems.

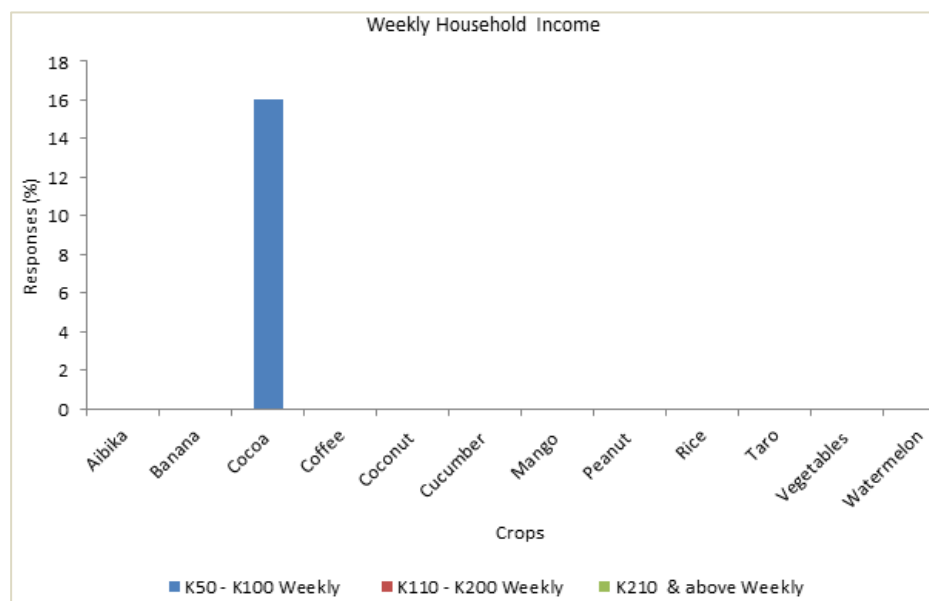


Figure 3.8 Weekly household income levels for farmers in Onga-Waffa.

### 3.5.2 Monthly Household Income

The graph below shows the monthly income of households in Onga-Waffa sourced from selling their agriculture produces. Farmers' income depends on the quality and quantity of garden and cash crops produced, frequency farmers' access markets and price.

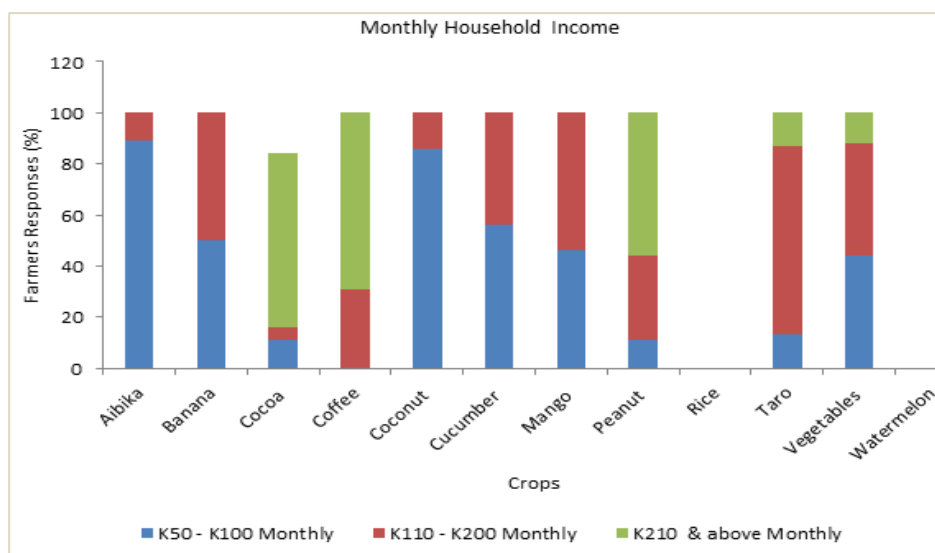


Figure 3.9 Monthly household income levels for farmers in Onga-Waffa.

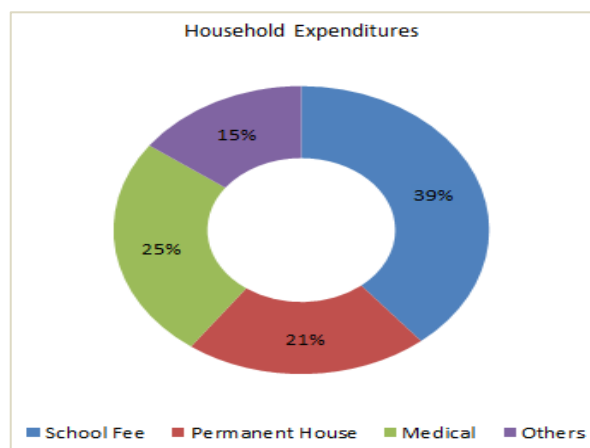
Extrapolations can be made that sales of crops such as aibika, banana, coconut cucumber and mango fetches an income between K50.00 and K200.00 monthly for the households. Marketing of cocoa, peanut, taro and vegetables has also earned an income from K50.00 and above monthly for a good number of farmers. Coffee farmers, likewise, also earn an income from K110.00 and above monthly for selling their coffee parchment.

There was no commercial production of rice though few farmers have cultivated it on a small scale for consumption. Watermelon additionally was planted for consumption as it cannot be transported to the markets because of its perishability and very harsh road conditions.

### 3.6. Household Expenditure and Size

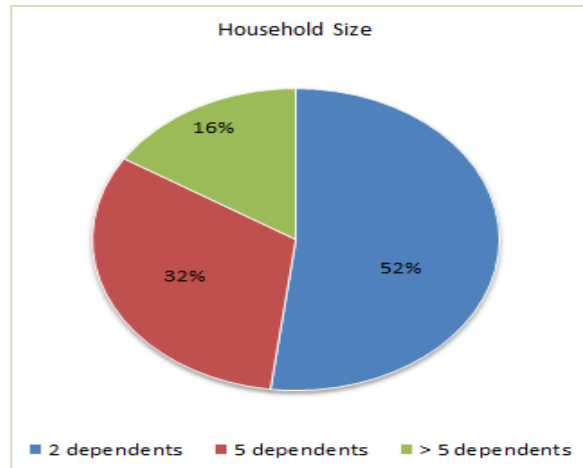
Figure 3.10 shows the avenues where farmers spend their income sourced from selling agriculture produces.

Majority of the farmers (39 %) produce and sell marketable produces to pay for their children's school fee. With the ongoing public campaign to improve villagers' health and lifestyle, farmers are also using their income to construct permanent houses and seek medical service outside of the district. Income earned from selling agriculture produces is also used to buy store food and accessories, and other customary obligations such as bride price.



*Figure 3.10 Household expenditures for farmers in Onga-Waffa.*

The study also unearthed that 52% of the respondents use their income to cater for their households comprising of five dependents, while 32 % of the farmers use their income to provide for more than five dependents per household. Minority of the farmers (16 %) use their income to support two dependents in a household as denoted on the chart below.



*Figure 3.11 Household sizes of the respondents in Onga-Waffa*

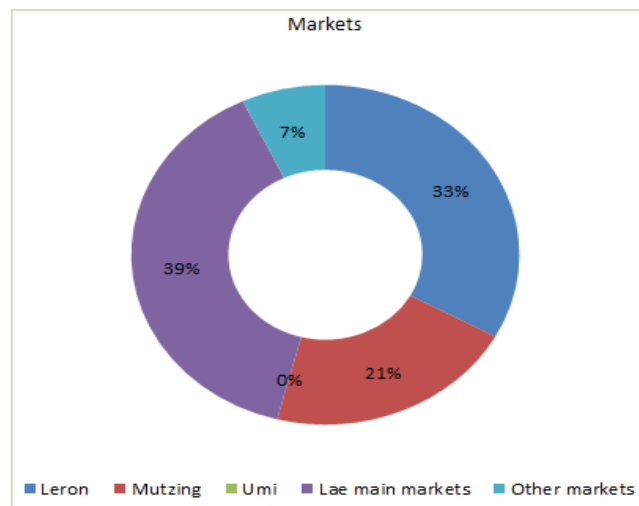
## **Chapter 4: Leron-Wantoat Local Level Government**

### **4.1 Markets**

The study has unearthed that majority of farmers in Leron-Wantoat access markets monthly (54 %) while 36 % access markets weekly. Only a small portion of farmers (10 %) access markets daily.

Figure 4.1 show the markets usually accessed by farmers in Leron and Wantoat to sell their garden produce and cash crops.

Majority (39 %) of the households' freight their produces to Lae main market for sales while the other farmers sell their agriculture produces at Leron (33 %) and Mutzing (21 %) markets.



*Figure 4.1 Markets accessed by farmers in Leron -Wantoat.*

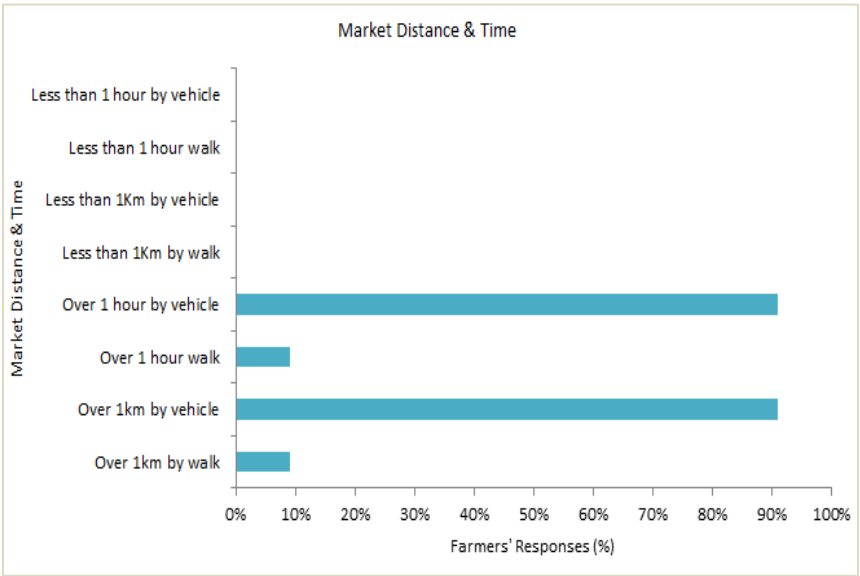
Coffee farmers sell their parchment coffee at markets in Lae and Kainantu. Highland cocoa farmers sell cocoa wet beans at farm gate while dry cocoa beans are usually freighted by Outspan from various areas in Leron to its depot for purchase.

**4.2 Market Distance & Time**

Areas in Leron and Wantoat are geographically mountainous thus making access to markets a bit more difficult. Figure 4.2 shows the distance and time taken to freight agriculture produces from Wantoat and Leron to various markets.

The distance to the markets from the villages in Wantoat is more than one kilometer per hour by vehicle. Households in Leron also either walk or travelled by vehicle for more than a kilometer per hour to the markets. Farmers residing along the Leron river usually freight their produces via the Leron river on large inflated tyre tubes as this mode of transport is fast, however, risky.

Specific farmers in Ngariawang and Sukurum (10 %) walk over one kilometer per hour to Leron market to sell their produces as indicated on the chart below.



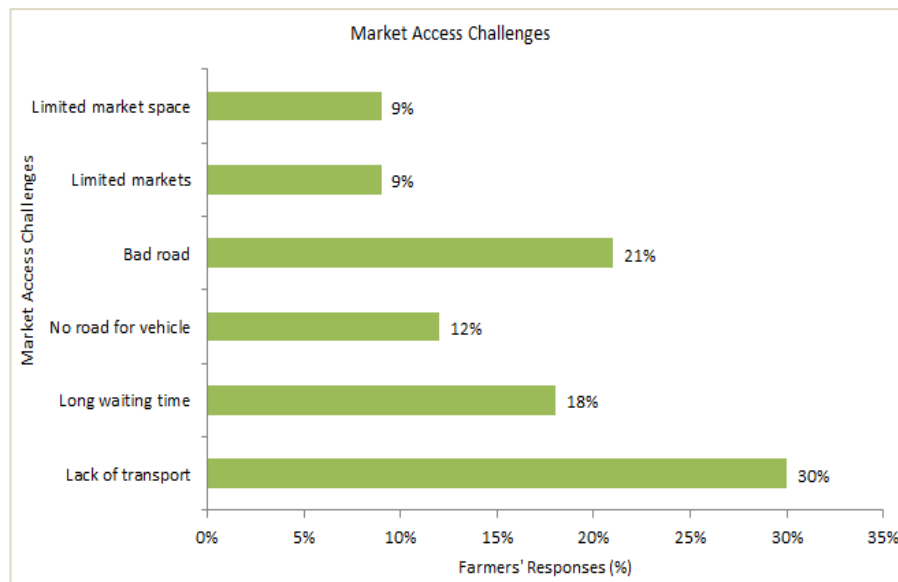
*Figure 4.2 Time and distance taken to reach markets by farmers in Leron-Wantoat.*

**4.3 Market Access Challenges**

The chart below shows the responses of the households in Leron-Wantoat on market access challenges they encountered to sell their produces at the markets.



The survey has indicated that lack of transport (30 %) is a recurring problem encountered by farmers resulting in long waiting time because of poor road conditions.



*Figure 4.3 Market access challenges faced by farmers in Leron-Wantoat.*

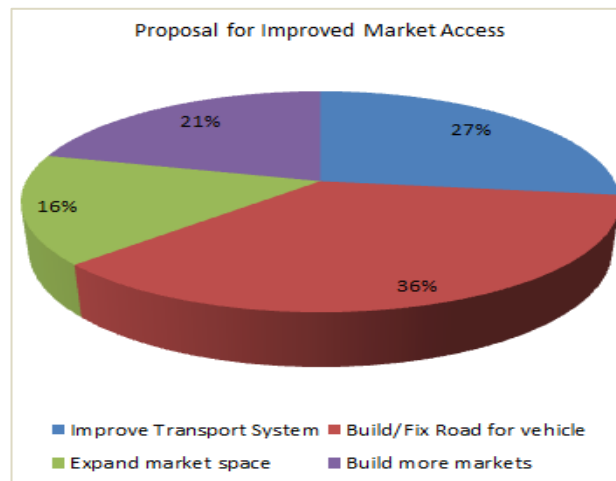
It was also divulged that 9 % of the farmers encountered spacing problem at Leron market, forcing them to sell their produces at roadside markets, Mutzing and Lae markets. Peanut sellers specifically have erected makeshift shelters using umbrella to sell at roadsides from Leron bridge to the hilltop before the cattle ranch. Marketing at roadside without proper shade is risky.



*Figure 4.4 Sales of peanut taking place on roadsides at Leron.*



The infield research also conceded that 36 % (refer to figure 4.5) of respondents propose for roads in Leron and Wantoat to be upgraded and new roads should be constructed into areas without road access. Proposal for improvement of transport system was also made by the farmers (27 %) in Leron and Wantoat because of the limited number of vehicles servicing them through the mountainous and rugged road have provided services to the people there. Several farmers (21 %) want a new market while the others recommended for expansion of the current Leron market.



*Figure 4.5 Proposals for improved market access by farmers in Leron-Wantoat.*

#### 4.4 Freight Charge and Cost

The survey has shown that 88 % of farmers in Leron-Wantoat spend over K2.00 per bag to freight their produces to the markets while 12 % spend exactly K2.00. As a result, 58% of the farmers spend more than K50.00 per week while 42 % spent over K100.00 per month for freight cost.



*Figure 4.6. An overloaded vehicle with coffee bags and passengers travelling to Lae*

High freight charges and costs, bad road condition, limited transport and long waiting time has forced farmers in several villages in Leron to transport their produces via Leron river using tubes to Leron bridge for sale or further transportation to Lae markets . This mode of transport is risky as unsubstantiated lives and properties have been lost while using it.

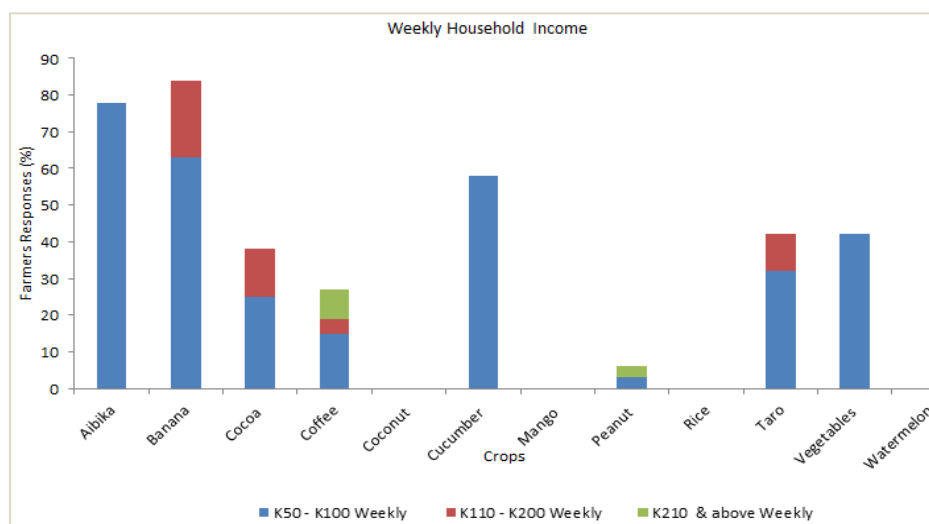


*Figure 4.7. Transportation of produces along the Leron river using tyre tubes.*

## 4.5 Household Income & Expenditures

### 4.5.1 Weekly Household Income

Figure 4.8 shows the income level of farmers in Leron-Wantoat sourced from selling the said agriculture produces.



*Figure 4.8 Weekly household income levels for farmers in Leron-Wantoat.*

Extrapolations can be made that a good number of farmers have earned an income between K50.00 and K100.00 weekly for selling aibika, cucumber and vegetables. Several farmers have also earned an income between K50.00 and K200.00 weekly for selling banana, taro, cocoa and even coffee.

Few farmers have earned an income from K50.00 and over for selling peanut. Sale of coffee parchment was a steady source of income from K50.00 and over for numerous farmers in Wantoat. Coconut and mango are grown in higher altitude, however, recorded no or limited yield. Watermelon was grown for consumption as it cannot be freighted to the markets because of its perishability and harsh road conditions.

#### 4.5.2 Monthly Household Income

Majority of farmers in Leron-Wantoat access markets monthly to sell their produces thus earn an income as shown in Figure 4.9.

Income level for farmers selling aibika and cucumber falls between K50.00 and K100.00 monthly. Few farmers at Ngariawang village which is situated on lowland at Leron sell mango for an income between K50.00 and K200.00 monthly. Sales of garden produces such as peanut, taro, vegetables and cash crops like coffee and cocoa have earned an income from K50.00 to K210.00 and above monthly for the farmers.

Coffee farmers specifically have earn an income level more than K210.00 while peanut sellers has shown to be a remarkable crop and major source of income for the farmers in Leron and Wantoat.

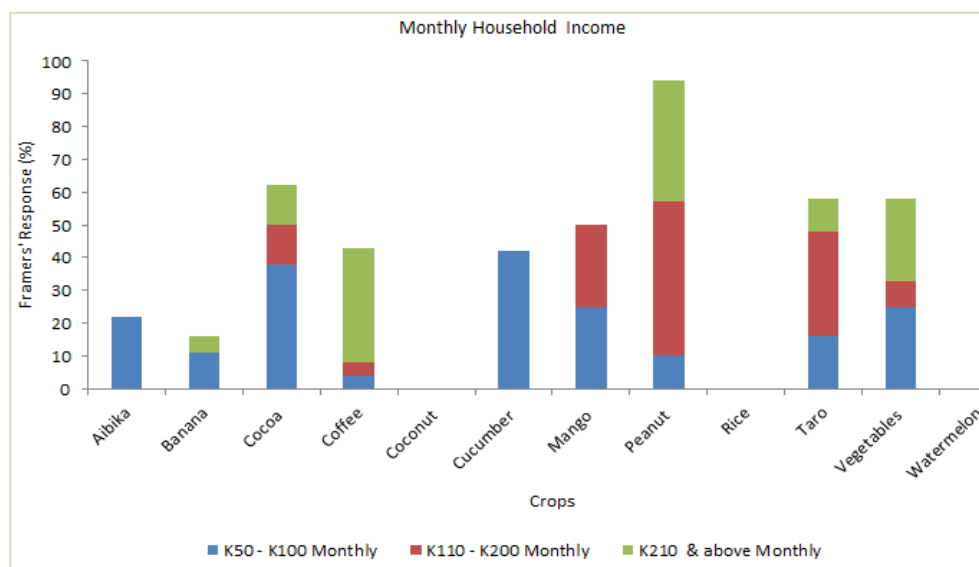
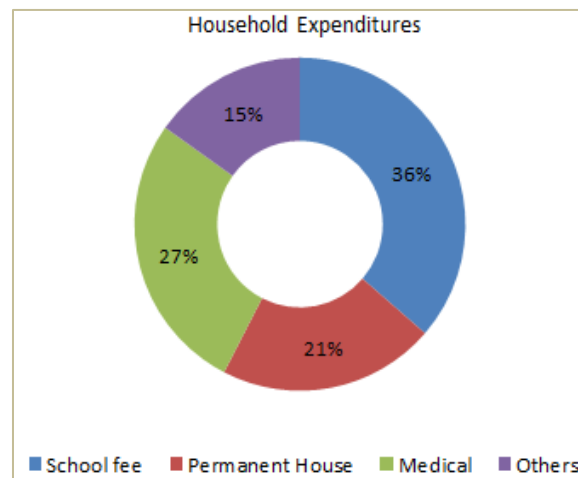


Figure 4.9. Monthly household income for farmers in Leron-Wantoat.

#### 4.6 House Expenditure and Size

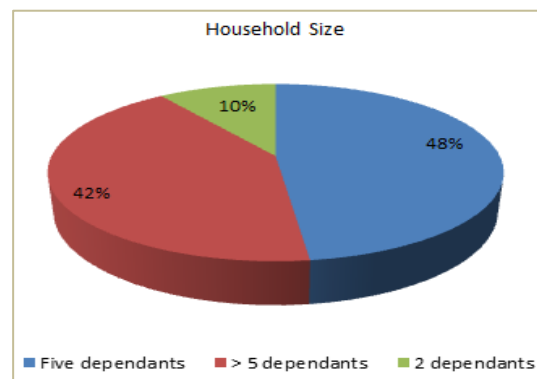
The graph below shows the different areas households in Leron and Wantoat are spending the income they earn from selling garden produces and cash crops.

Majority of the respondents (36 %) use the income they make to pay for their children's fee in elementary, primary, secondary and tertiary institutions. The farmers also use the income they earn for medical expenses (27 %), building materials (21 %) and other personal uses (15%).



*Figure 4.10 Household expenditures for farmers in Leron-Wantoat.*

The study also shows that 48 % of the farmers use the income they earn to cater for five dependents while 42 % of the farmers use the income to feed more than five dependents in their households. Only few (10 %) of the farmers spend their income to provide for two dependents per household as shown in the graph below. Generally, income earned from garden produces and cash crops in farming communities in Leron and Wantoat has made a positive impact in the households as observed.



*Figure 4.11 Household size of farmers in Leron-Wantoat*

## **Chapter 5: Conclusion and Recommendation**

The survey has generally divulged specific market access problems that are faced by households in Markham. The aforesaid problems have really affected the level of income earned by the farmers on a daily, weekly or monthly basis. Therefore following recommendations were stated below for relevant stakeholders to see and partner with GROWPNG to address it.

### **5. 1 Improve Transport System**

- i. Farmers in Markham district, especially the ones in Onga-Waffa and Leron-Wantoat proposed for an improved transport system.
- ii. Alternatives were given for the government to assist small-medium enterprises to venture into trucking business which can boost the transport system in those specific areas in Markham where transport is a problem.
- iii. It was also proposed that the Markham Mp through the district administration should introduce freight subsidy for farmers especially in Onga, Waffa, Leron and Wantoat. This will aid the vehicle owners to reduce freight charges and thus costs for the farmers for an enhanced household income.

### **5.2 Roads Construction and Upgrade**

- i. Roads should be constructed to areas not connected by road such as Yarus, specific villages in Onga, Waffa, Leron, Wantoat, Umi and Atzera.
- ii. Regular road repair and maintenance should be executed in all roads in the district to enable progressive flow of business.
- iii. Road construction and maintenance should be done by qualified and registered engineers and road construction firms.
- iv. A wet crossing should be created for vehicles in Onga-Waffa to cross the Markham river to Mutzing.

### **5.3 Markets**

- i. Umi market should be extended with construction of additional market sheds.
- ii. Waterise market should be relocated to a new site as the current site is risky.
- iii. A new market should be constructed for the farmers in Ragizaria, Banabin, Wankun, Marasasa and Raginam villages.
- iv. Relevant authorities in Markham district should ensure the old Mutzing market is closed and marketers moved to the new look Mutzing market.
- v. A new market site should be identified along the highlands highway and market facilities should be constructed for farmers in Onga-Waffa to sell their produces.

- vi. Leron market should be improved with new marketing facilities. Parking area for vehicles should be extended to enable vehicles to maneuver to enable smooth flow of traffic in and out of the market.
- vii. Shelter should be erected at Lae main market to cater for the Markham farmers currently selling their produces under the scorching sun and rain.
- viii. Coffee and cocoa factories should be established in Markham for coffee and cocoa downstream processing.
- ix. Markham peanut butter factory should be re-established for provide steady market for the smallholder peanut growers.