



Livelihood
Profile

Maize Farmers in Timor, Nusa Tenggara Timur (NTT)

November 2016

Contents

1. Purpose of Study	3
2. Audience.....	3
3. Introduction and methodology.....	3
3.1. Intervention selection	4
3.2. Map and demographics	5
3.3. Sampling.....	6
3.4. Progress out of Poverty (PPI) Index	6
4. Livelihood assets	7
4.1. Human Assets	8
4.1.1. Household Size and Culture.....	8
4.1.2. Education.....	8
4.1.3. Health	9
4.2. Physical Assets.....	9
4.2.1. Shelter and Housing.....	9
4.2.2. Household Assets.....	10
4.3. Natural Assets	11
4.3.1. Access to Land	11
4.3.2. Access to Water	12
4.4. Social Assets	12
4.5. Financial Assets.....	14
5. Poverty and Vulnerability	15
5.1. Poverty Assessment	15
5.2. Vulnerability, Shocks and Food Security.....	17
6. Choices and Livelihood Strategies.....	19
6.1. Income Sources.....	19
6.2. Expenditure.....	20
7. Determinants and Mechanisms for Decision Making	21
7.1. Focus on Maize	21
8. Decision-Making: Mechanisms	22
8.1. Sources of Information.....	22
8.2. Decision-making roles within the Household	23
9. Conclusions	24

Livelihood Profile of Maize Farmers in Timor Nusa Tenggara Timur (NTT)

1. Purpose of Study

The purpose of this study is to build a socio-economic profile of PRISMA's target group for each subsector to understand farmers' livelihood position. It also aims to understand the context of their poverty and vulnerability to determine their behaviours and the drivers behind it. Because there was just one user of the non-local maize variety, this study will primarily assess the behaviour of G0 maize bulbs users and examine associated factors at play (if any) at deciding what variety to cultivate. Consequently, to understand PRISMA's target group, and how and why maize farmers in Timor make certain decisions, the main research questions of this study are:

- I. What is the socio-economic position of maize bulb farmers?
- II. How important is the maize bulb to farmers' livelihood?
- III. What strategies do maize farmers adopt to meet basic needs and improve living conditions?
- IV. Who and what influences decision making in the cultivation of maize.

This study used both qualitative research methods through focus group discussions (FGDs) and interviews, and a quantitative survey of 38 households. The UK Department for International Development (DFID) Sustainable Livelihood approach and the Progress out of Poverty Index (PPI) were also employed to guide the research methodology in finalising this report.

2. Audience

The target beneficiaries of this study are:

- I. PRISMA Intervention teams – to gain more insight into the behaviours of their target groups in order to design smarter interventions and/or make revisions as might be required. For example, adjusting targeting or intervention logic
- II. PRISMA steering review panel – to use the results of the study to guide the technical thinking of the PRISMA internal teams
- III. Department of Foreign Affairs and Trade (DFAT) – to provide a tangible picture of the target group PRISMA teams work with, the characteristics of communities at risk of poverty and what they may look like
- IV. Ministry of National Development Planning – to understand PRISMA's work in specific agricultural subsectors and gain an overall picture of its target group and behaviours

The results from this study may be used to compile other case studies and communication materials highlighting PRISMA's work. The study also aims to help the PRISMA team in better identifying and understanding their target groups for the current intervention and any future scaling up.

3. Introduction and methodology

The demand for maize in Indonesia is driven by a rapidly expanding poultry industry. According to the PRISMA Growth Strategy Document (GSD), animal feed has surpassed human consumption as the main use for maize in Indonesia. Moreover, both the animal feed and poultry industries are projected to continue experiencing further growth as population and incomes increase. Herein lies the market opportunity. Further analysis of the market reveals a number of problems that limit NTB farmers' ability to take advantage of this market opportunity especially limited access to good agricultural and handling practices, inappropriate financial products and poor post-harvest practises such as unaffordable drying and threshing services.

Farmers' production costs are high especially for those cultivating the hybrid maize variety, which requires more investment.

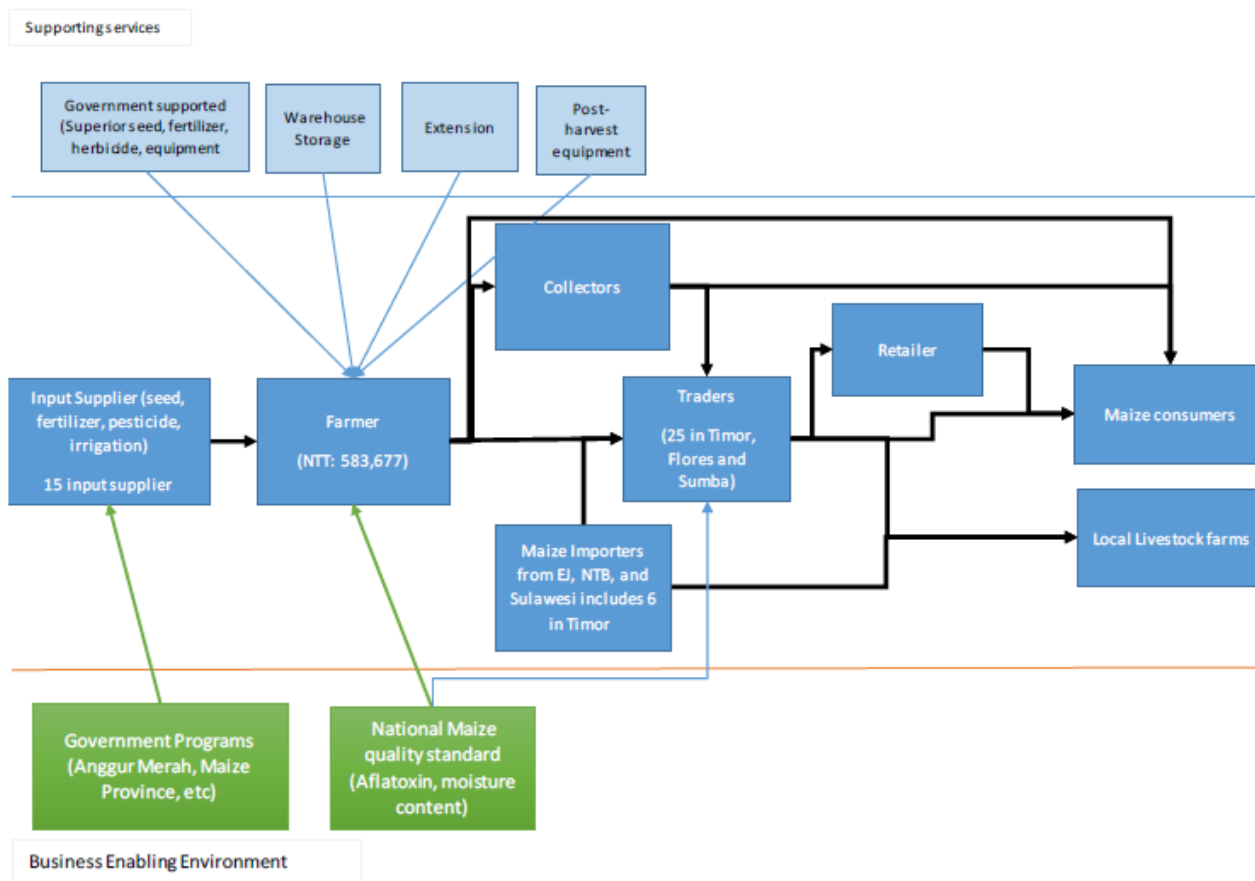
NTB's contribution to national maize production is relatively small. With an average yield of 5.75 tonnes/ha in 2013, NTB is has the third highest productivity in Indonesia and maize production is almost entirely focused on supplying the animal feed industry in other provinces. Indonesia imports on average 8% of its annual maize consumption needs, with imports mainly going towards the feed industry. In 2012, this was equivalent to 1.7 million tonnes of maize, making Indonesia the second largest importer of maize in Southeast Asia.

3.1. Intervention selection

Farmers cultivate the local variety mainly for home consumption. This intervention is not designed to improve the feed sector (which the hybrid variety fulfils), but to support a crop that fulfils household needs (consumption and feeding chickens, pigs and other animals) and is capable of improving the livelihood of farmers, at the same time. This variety should make farmers more self-sufficient. PRISMA is focussing on a variety of interventions in this region. They include the following:

1. Promoting the open pollinate maize variety (OPV): Whilst the hybrid maize variety promises high yield to farmers, its associated costs are prohibitive. Consequently, a more "affordable" option i.e. the OPV is available and promoted by PRSIMA. According to the PRISMA team, the local maize variety produces between 800kg and up to 1MT per hectare whilst the OPV has a potential yield of up to 6MT per hectare. Under this intervention, PRISMA will collaborate with four local seed producers namely Intan, Kokdale, Tiga Putri Mandiri and YMTM to cultivate these seeds. These companies have the expertise required for providing seeds as subsidies to development programmes. The approach to bringing farmers on-board will be via demonstratuon plots and any associated costs shared with PRISMA. PRISMA will also provide these companies with linkages to agro dealers (shops) willing and able to stock this seed variety. In additon, PRISMA will identify lead farmers who double up as maize champions, informing farmer groups about the OPV. The lead farmers are also able to sell this variety directly to farmers. All of this forms part of the contract between PRISMA and its partners. PRISMA also commits to comissioning an area mapping survey (market survey) to convince partners about the market opportunity for the new OBV. This will include highlighting which locations are open to trying the new variety and how much farmers are prepared to pay.
2. Promoting improved drying and storage of maize: Currently, farmers in this region dry their maize (on the cob) from smoke emanating from cooking in the kitchen and subsequently dry them in the roof of their houses. This results in 30-50% loss in quality, according to the PRISMA team. Storage in the roof also results in attacks by pests, which reduces quality. To combat the drying issue, PRISMA proposes to introduce the "sun-drying" technology, using tarpaulins. Apparently, this will help achieve the right moisture content and result in maximum drying of maize kernels (not on the cob). PRISMA will facilitate collaborations with existing suppliers of tarpaulins, willing and able to make the knowledge of their product more accessible. To further deal with the storage issue, PRISMA proposes new technology, via Portable Silos (or Gerry cans with two open ends). Under this arrangement, PRISMA will collaborate with PT. Buana Ika Syahputra, a private plastic and container packaging company.
3. Financial services support to farmers: This will complement the drying and storage interventions. Because farmers' incomes are low and many unable to afford trying out these new technologies, PRISMA will identify potential micro financial services institutions willing and capable of proving short-term loans to farmers, who are their members. PRISMA will identify these micro finance institutions and link them to the private sector players that have the product. It will be the responsibility of both the finance institution and the private sector partner to promote and market the product. Ultimately, financial institutions will buy these products for re-sale to farmers, spreading payments between 6-12 months.

Figure 2: Maize NTB Intervention Sector Map



3.2. Map and demographics

Apart from the cost of seeds, the hybrid variety requires more investment such as fertilizers and pesticides, which are expensive. The Timur district (and Island) was selected for this survey because they have the largest number of maize farmers, as well as largest number of farmers using the local variety.

There are several sub districts in Timur where farmers use the local variety. The sample villages were randomly chosen because of the different levels of accessibility as well as the availability of different ethnic groups. There was also a high probability of identifying farmers that use the local variety. It is therefore not surprising that just one household from the total sample size reports using a non- local variety

The chosen villages of Nusa and Tesi Ayofanu are marked Red and Blue. Konbaki (marked Green) village on the other hand, is on the southern coast, It is remote and surrounded by hills; making it somewhat difficult to access.

Figure 3: Map of Timor region (highlighting sample villages)

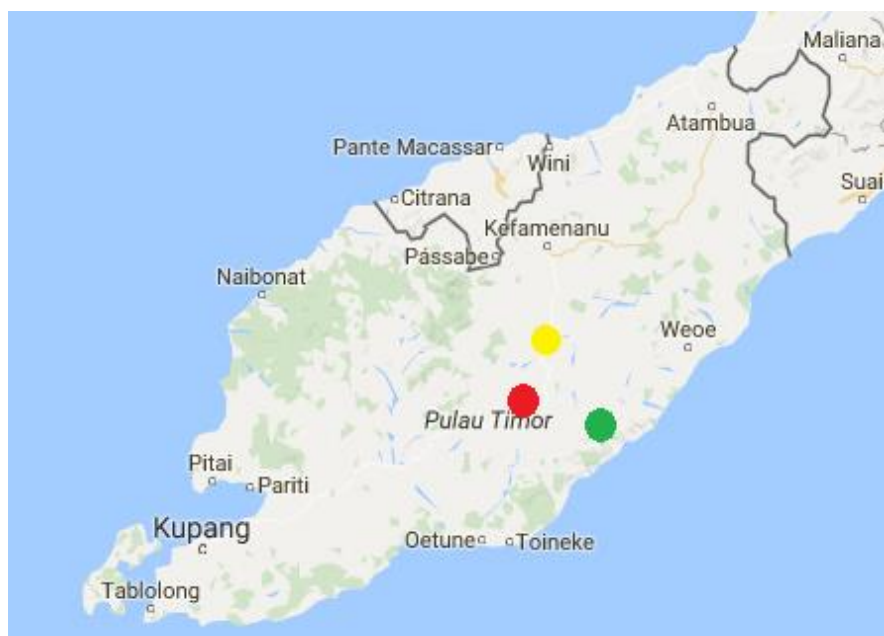


Table 2. Overview of all three villages sampled

VILLAGE OVERVIEW	Nusa	Tesi Ayofanu	Konbaki
Sub-district	Torjun	Karang Penang	Sokobanah
Sub-district Population (2010 Census)	13'350	3'611	8'157
No of Maize farmer households	582	1'360	575
No of female headed households	80	No Data	No Data
Average household size	4-5	4-5	
Distance to Central District (Soe)			
Distance to Central Sub-District (needs to be confirmed)			

3.3. Sampling

For the purpose of this study, the total sample size evaluated is 50 households across all three villages. Of these 98% use the local maize variety or 49 households' (users), whilst just 2% or 1 households (non-users) use a different variety. All respondents are therefore maize farmers and the results of this survey will from the perspective of farmers that use the local variety only. The data collection exercise, was conducted and concluded in September 2015.

This study aims to give a “general impression” of how and why people behave in certain ways. It is possible that the average results do not paint a perfect picture of the region or sector and this taken into account when reading this report. This study is data-led and the results combined with qualitative interviews from key respondents such as religious leaders, village heads, farmer group heads and focus groups to arrive at reasonable conclusions.

3.4. Progress out of Poverty (PPI) Index

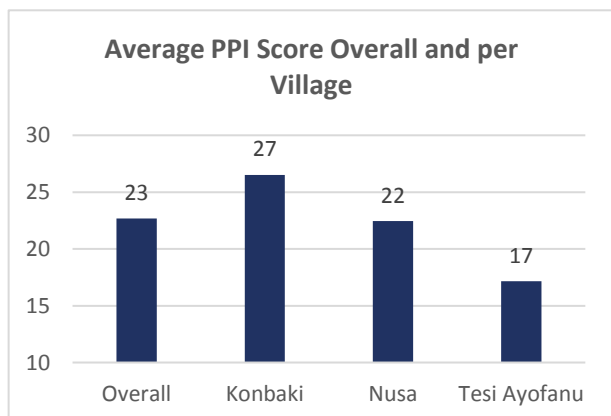
PRISMA's goals are tied to improving the incomes of poor rural households, and the programme uses the Progress out of Poverty Index (PPI) that helps distinguish different poverty levels and vulnerability amongst different household groups. The PPI questionnaire is a set of 10 easy-to-answer questions answered by household members so the programme can make a quick determination of poverty levels.

The resulting questionnaire produces a PPI score, which is converted to give a percentile or likelihood that a household falls below a set of poverty lines. For the purpose of this study, four quadrants were developed to compare PPI scores. This includes the poorest (<p25), poor (p25-p49), middle income (p50-p75) and better-off groups (>p75). Each quadrant contains roughly the same number of households in order to compare differences across PPI groups.

Table 3 displays the likelihood of each quadrant falling below the 150% Indonesian national poverty line (USD 2) and the USD 2.50 2005-poverty line.

Table 3. PPI Scores and likelihood of households below the poverty line

Quadrant PPI Score	Likelihood below Indonesian 150% (USD 2) poverty line	Likelihood below USD 2.50 poverty line
Poorest <p25	76.2% and higher	95.2% and higher
Poor p25-p49	17.4% to 65.5%	54.7% to 91.5%
Middle p50-p75	0.9% to 9.9%	6.9% to 40.1%
Better Off >p75	0.4% and less	3.7% and less



At the village level, the average PPI score for the sample size overall falls just over the poorest range at p23 meaning that on average, maize farmers in central Timor are 76.2% likely to fall below the 150% national poverty line and 95.2% likely to fall under the USD2.50 poverty line. This result is the same for Nusa village.

Konbaki and Tesi Ayofanu both have the highest and lowest PPI scores at p27 and p17 respectively. Konbaki is 65.5% likely to fall below the 150% national poverty line and 91.5% likely to fall under the USD 2.50 poverty line while Tesi Ayuofanu is 81.8% and

96.5% likely to fall below the 150% national and USD 2.50 poverty lines respectively.

4. Livelihood assets¹

This chapter aims at giving a broad picture of the socio-economic position of the target households in Timor, based on DFID’s Sustainable Livelihood approach, which incorporates five asset categories. Assessing these assets forms the basis for understanding and evaluating constraints and opportunities that affect the livelihood strategies and subsequent decision making of the target households. The approach also helps conceptualize ways households allocate and use resources to make a living given their specific socio-economic and natural environment. These five different asset types are analysed and explained below.

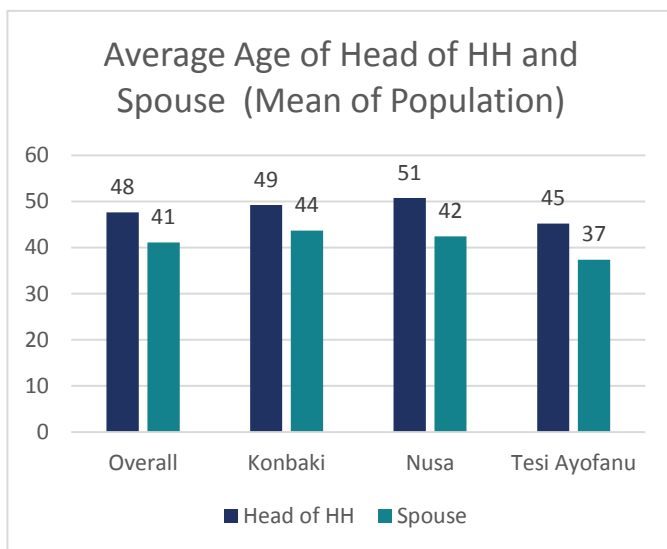
¹ The Livelihood Approach is based on the belief that people require a range of assets to achieve positive livelihood outcomes. The assets, which people need, can be categorised into human, natural, physical, financial and social capital. (Livelihood Strategies; Tomson)

4.1. Human Assets

At the household level, the human assets refer to the quantity and quality of labour available and this varies according to household size, education and skill levels, culture, leadership potential and health. It is therefore necessary, though not on its own sufficient, for the achievement of positive livelihood outcomes.

4.1.1. Household Size and Culture

In general, all three villages report an average household size of four members and an average number of two children. Tesu Ayofanu has the most number of children per household in comparison to the other villages.



The average age of the household head is 48 years, whilst the average age of a spouse is 41 years. Tesu Ayofanu has the lowest average age for both heads of households and spouses when compared to Konbaki and Nusa. Men head nearly all households in the sample with only 10% reported female heads of household. Moreover, this result is the same with regards marriage status of household members.

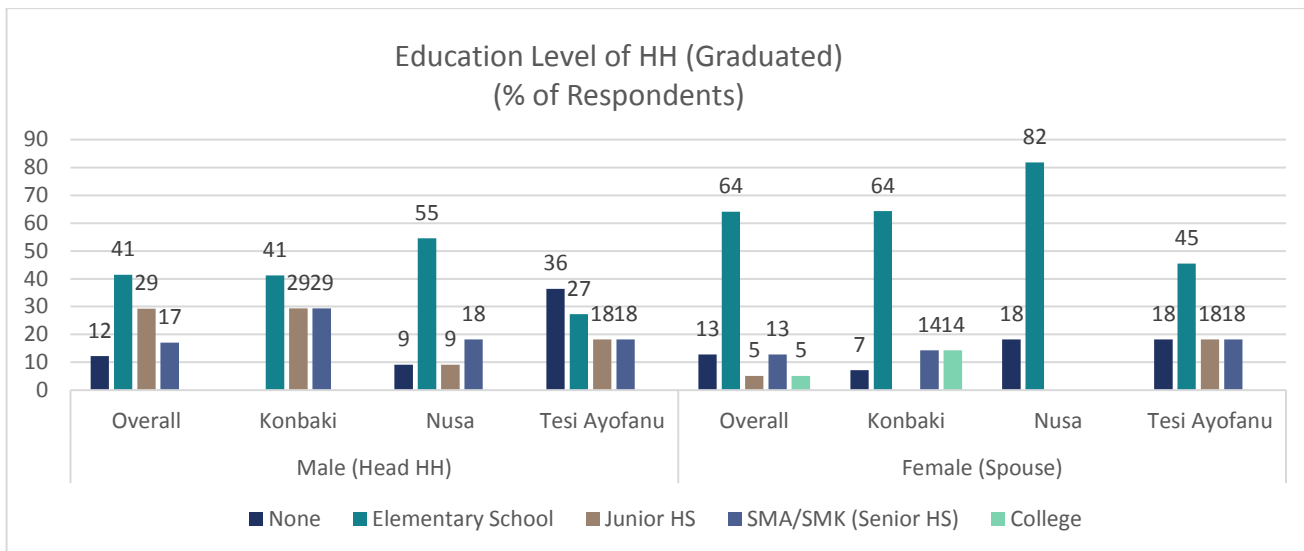
One household per village records some type of emigration over the last 12 months, which is 6% of the total sample size. These emigrants are all male, and the main reasons for emigrating are to look for work (60%) or for education (40%).

Based on information from the qualitative study and PRISMA team, some household survey respondents may have misunderstood the definition of emigration. Some farmers may regard emigration as a move out of the country rather than within district. Nearly all members of the household are protestant, speak Timor language and identify with the Timor ethnic group.

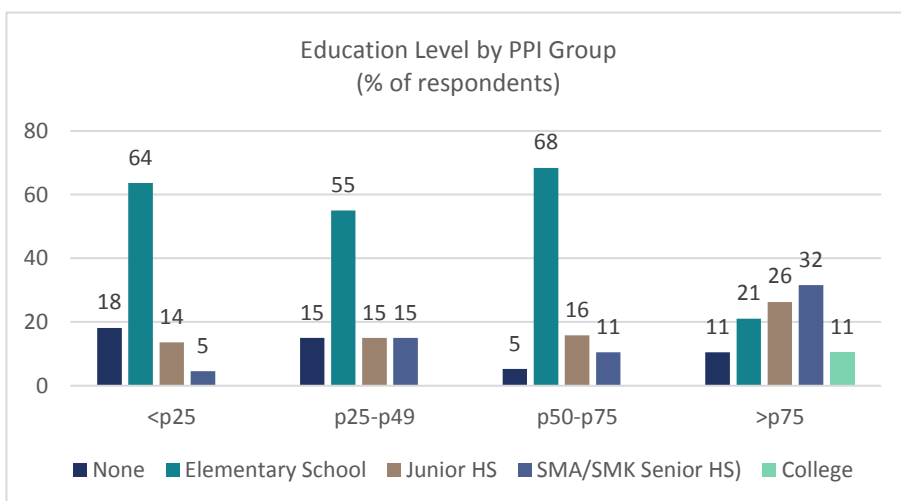
4.1.2. Education

From the total sample size, 80% are literate in Bahasa. The remainder, not literate in Bahasa, are mostly either less than 16 years old (specifically less than 5 years old) or over 60 years old. However, nearly all heads of household are literate in Bahasa.

From the sample date, the most common reasons for not going to school are that people either decide to work or are unable to afford it. In addition, education expenditure is significant across all PPI groups. Nevertheless, according to qualitative data, the importance of education has increased over the past few years and considered a priority for families, after meeting basic needs. Children are reportedly enrolled in school and likely to graduate from junior secondary school. Apparently, only few families are able to send their children to higher institutions or even universities. According to the village head in Konbaki, 40 children dropped out of elementary school in 2014 because their parents could not afford the associated costs including food, books and transportation. All sample villages have elementary and junior secondary schools, while only in Desa Nusa is there a vocational senior secondary school.



Examining education levels by PPI group, the poorest and middle-income groups are less educated, (completing mostly elementary school) whilst the better-off group have a better-fragmented ratio in the number of people that have attended all types of institutions. This might imply a correlation between education levels and extent of poverty. Further analysis on expenditure patterns discussed in more detail in section 6.2.



4.1.3. Health

Workdays lost due to health were an indicator used to determine how health might affect farmers' incomes, in the study. The result shows that the middle-income and better off PPI groups have more workdays lost in comparison to the other groups, in the last 12 months. This might be because they can afford to take the time off which comes with being within a higher economic bracket. Expenditure on health is consistent (and not significant) across PPI groups. Unlike other regions which have been evaluated and report a different outcome (such as Trenggalek and Sumenep), it appears health-related concerns is not a grim issue in Timor.

4.2. Physical Assets

Physical assets comprise of infrastructure and goods required to meet basic needs and productivity, which includes assets such as affordable transport, adequate water supply, clean affordable energy, access to information and secure shelter and buildings.

4.2.1. Shelter and Housing

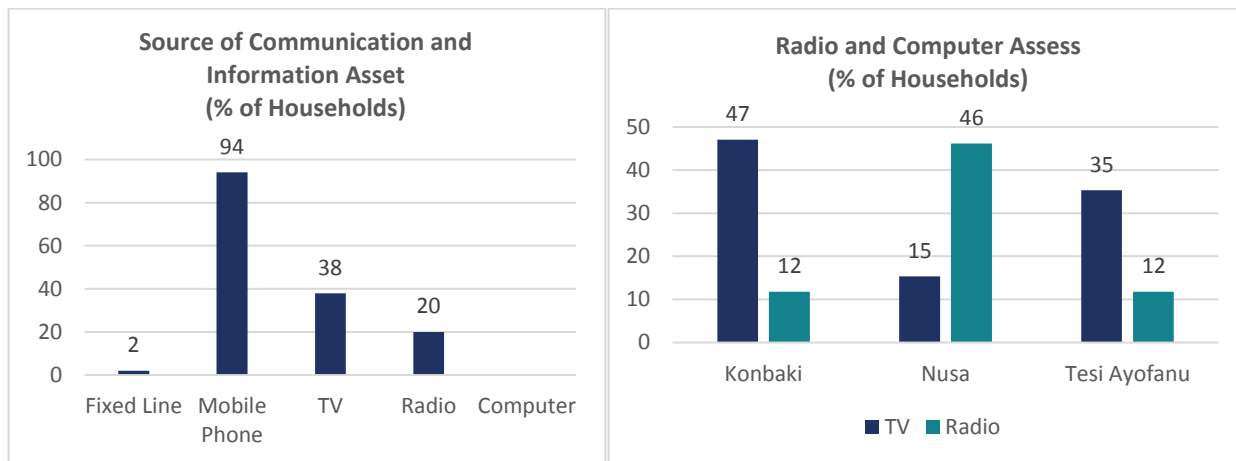
98% of the farmers in the study own their houses with just 18% having written ownership contracts. At a village level, no respondents in Konbaki have a written contract whilst Tesi Ayofanu and Nusa report 41% and 33% respectively. The very few that have a second home are within the poorest and middle income PPI groups.

The main source of drinking water is public wells for around 50% of respondents and rivers, lakes and ponds for 20% of households. These households use the same water source during other seasons.

Further analysis on housing infrastructure and differences among villages and poverty levels, are dealt with in section 5.1 to evaluate poverty.

4.2.2. Household Assets

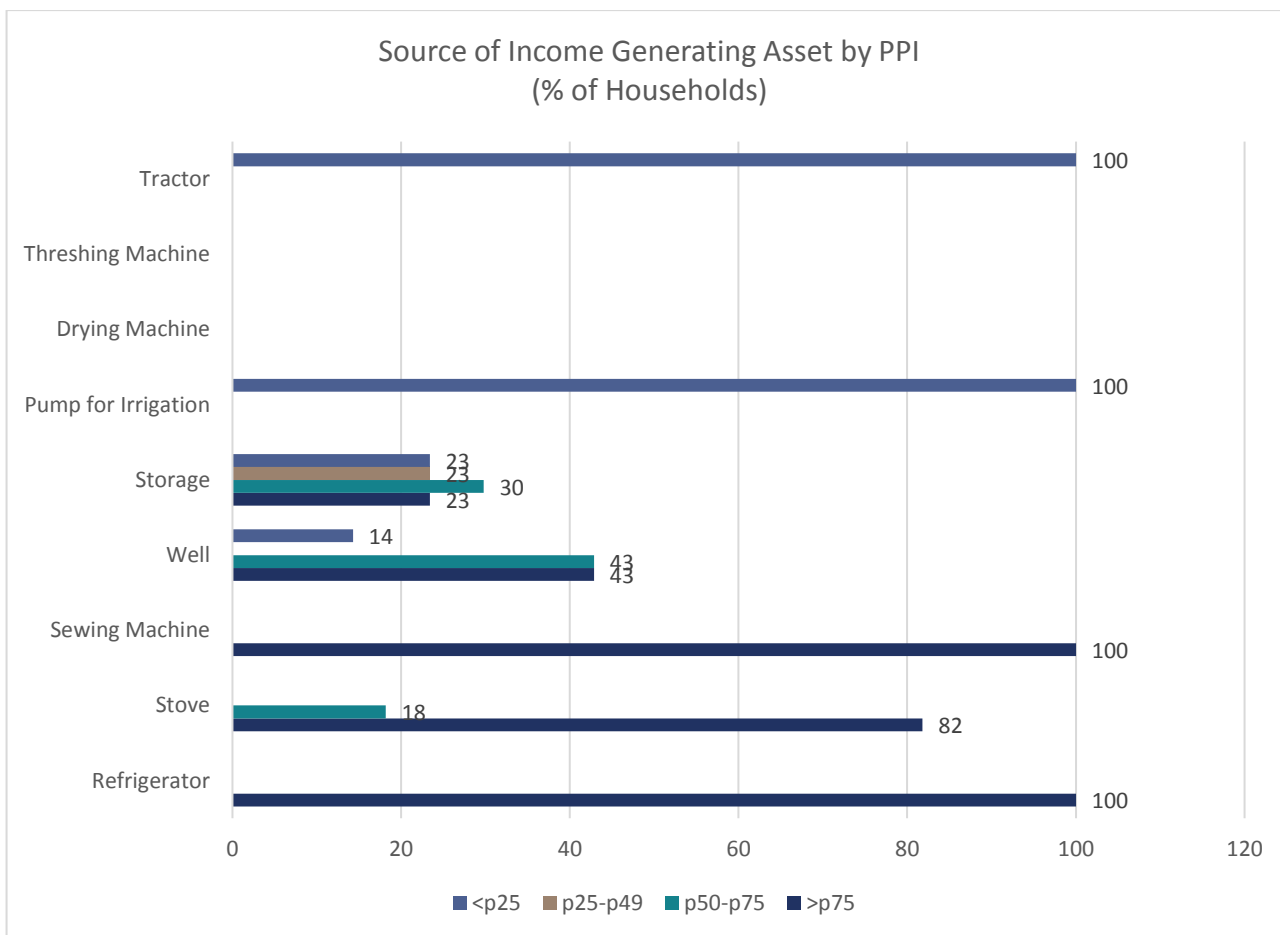
The primary source of communication is mobile phones and television. Those with televisions are mostly from Konbaki and Nusa - where radio usage is also highest. The PRISMA team could employ the most available assets as a primary means of communication with their target beneficiaries in the region.



Very few household own or have access to bicycles (2%) and motorcycles (20%) as a means of transportation.

As for income generating assets, at a PPI level, the most lacking with the poorest groups are refrigerators, stoves, sewing, drying and threshing machines. Assets most available to the poorest groups are pumps for irrigation and tractors. The PRISMA team challenged this result because it appears distorted. For example, even though the better-off farmers have influenced the overall high result for tractor ownership, the survey question asked if respondents either purchased or had access to specific assets in order to determine level of poverty. This makes the result rather difficult to understand because many farmers in Indonesia with access to tractors received them from the government as part of a subsidy. Naturally, they have access to one but that does not translate to being well off.

The PRISMA team may therefore wish consider designing interventions that capitalise on assets that are readily available or accessible to the poorest households rather than those that are not.



4.3. Natural Assets

Natural assets are natural resource stocks including public goods (e.g. the atmosphere) or divisible assets used directly for production (e.g. trees and land). Natural assets are very important to those who derive all or part of their livelihoods from resource-based activities such as farming, fishing, forests and mineral extraction. Natural assets tend to influence other assets important to livelihood. For example, farmers’ production directly depends on the quality of soil, and when soil is polluted, both farmers’ health and crop quality suffer as a result.

4.3.1. Access to Land

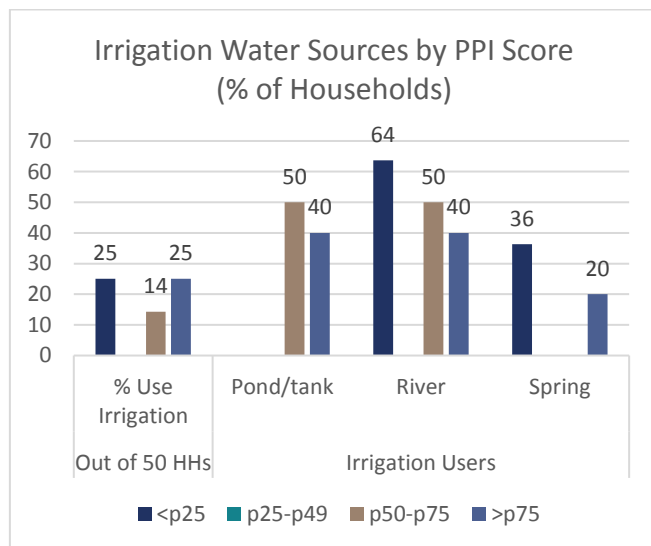
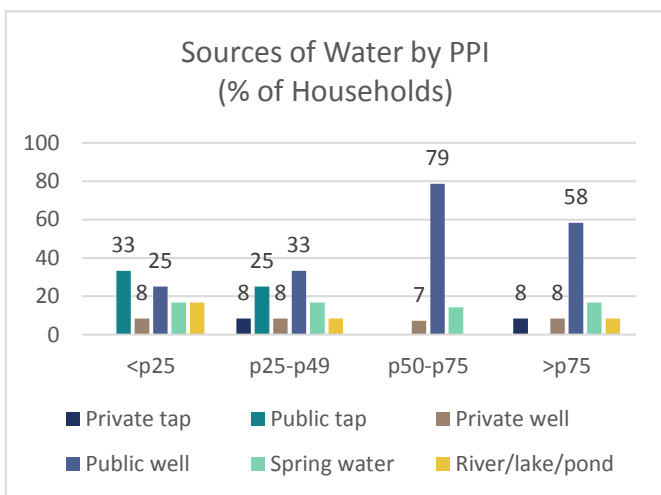
The average size of land ownership from the sample is 0.86ha. Of this land, 0.35ha or 40% is classified as unused, mostly in Konbaki and Nusa. Across PPI groups, the highest average land use is amongst the poor and poorest groups. According to qualitative data, the average land size in all three villages is 0.5 to 1 ha. Typically, the farmers own the land they cultivate which is handed down from the parents to the children following the local Adat practices. Most of the time, it is given to the eldest son or shared amongst all sons but the family can equally decide to hand some land to the daughters in the family.

78% of farmers in the sample are outright landowners, 6% partly own their land and 2% rent from others for agriculture cultivation. Renting land for agriculture is only practised in the wetland where paddy is cultivated. A common practice for renting is the “bagi hasil” system - an agreement to share the harvest between landowner and renter. Ownership certificates do not appear crucial to this community as 66% of farmers are without any. 20% have government certificates whilst 10% have some type of oral agreement. These certificate holders are typically the male heads of household at 54%. According to qualitative data, most farmers have some kind of ownership certificate, which is usually a letter from the village head or traditional leader. However, this is not officially recognised.

These results from land ownership may be useful to the SAFIRA team involved in financial services where land ownership and certificates form the basis of collateral when developing access to finance interventions to poor farmers.

4.3.2. Access to Water

According to qualitative data, access to water is better in Nusa than in any of the other villages. During the dry season, water is most difficult to access in Tesi Ayufani because of its distance to the main water source. In Kombaki, the situation is equally difficult but for a different reason. Here the community experiences a longer dry season altogether. Private Wells is the dominant source of irrigation in the region and across most PPI groups. However, the middle-income and better off farmers utilise rivers and ponds too.

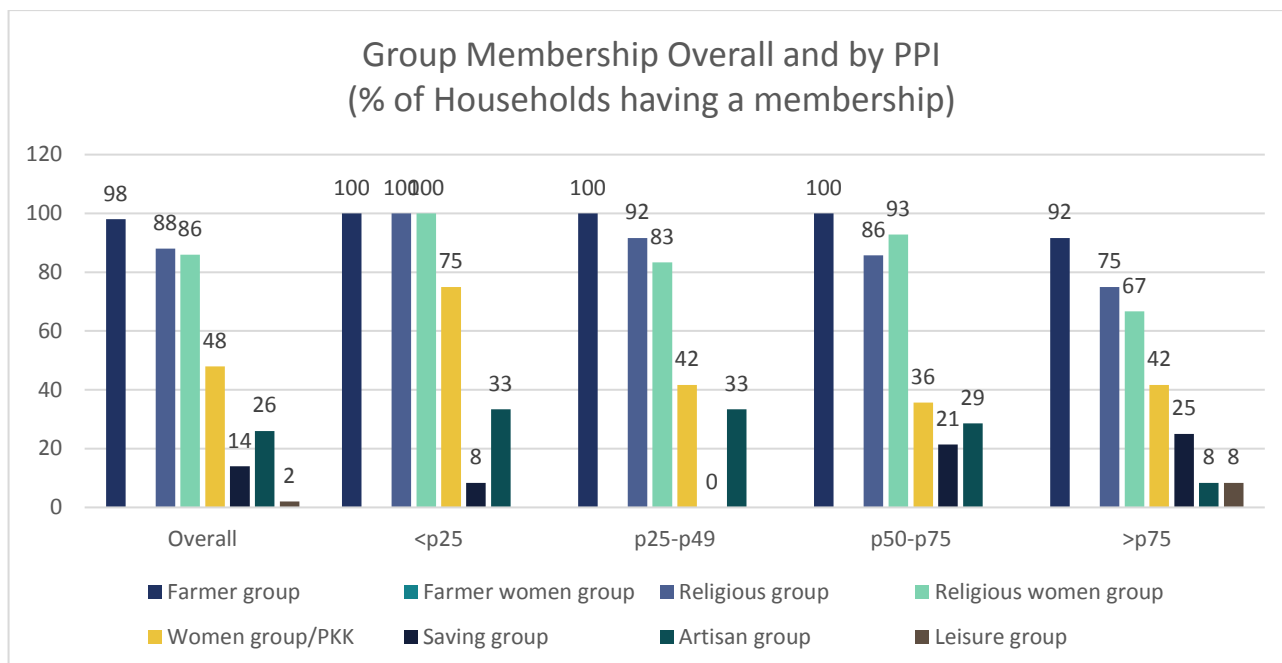


4.4. Social Assets

Social assets are resources upon which people draw in pursuit of their livelihood objectives. These are developed through networks, communities, shared interests, group memberships and relationships, which facilitate innovation, development of knowledge and sharing of that knowledge. The number of group memberships is an indicator for social assets in the Sustainable Livelihood Approach.

Within all sample villages, social safety nets and mutual support amongst community members are important and well established, according to qualitative data. In Kombaki for example, it is common practise for farmers that run out of food stock to ‘borrow’ from neighbours in exchange for a share of their upcoming harvest.

The importance of the farmer group was further emphasized by lead farmers and village heads. In Nusa, the head of farmer group and head of sub-village stated that the establishment and improvement of farmer groups reinforced the development of the village and the increase in income of farmers. Whilst farmer groups are more active in Nusa and Tesi Ayufani, in contrast, they do not obtain government subsidies in Kombaki. It is not entirely clear whether this is because of the structure in the management of the farmer groups or because of a lack of interest by the farmers. Despite this, all respondents agreed on the benefits of working together as a group and the associated motivation this brings.



According to qualitative data, Gotong royong ²(community work) practice is common in all villages for land preparation, sowing, harvesting, infrastructure cleaning and repairing (roads and irrigation channels). This practice benefits the poor who are unable to hire labour. There is also a saving/borrowing system within the farmers group. It allows members access loans for agricultural inputs and house repairs with little or no interest. Non-members wishing to gain access are required to pay higher interest rates of up to 5%. This system is built around a common ethos: “if one farmer doesn’t help to prepare the land of his neighbour, he won’t get any help from others for his own land”.

From the quantitative data, farmer groups are significant within the community with most households belonging to one. This is similarly true for female religious groups and religious groups in general. Irrespective of PPI groups, farmers across communities tend to join farmers groups first. Those in the middle-income and better-off PPI groups report joining the “savings group” ahead of those in the poorest and poor PPI groups. The average annual fee for membership to a farmers group is IDR137, 142 and IDR105, 428 for the female religious group. For the savings group, this average fee is IDR88, 000.

The main benefit stated for joining the farmers group is information on agriculture, agricultural input purchase and production. As for the savers group, access to credit and savings is the primary motivation for joining. This implies that any stakeholder wishing to have an entry point into influencing farmers’ behaviours and activities in the region should take farmers groups seriously. Of the 17% who opted not to join a farmers group, the main reasons behind their decision were not being invited or do not see the need.

According to qualitative data, the most important figures in the villages are the village head (40%), traditional leader (30%) and the head of the farmer group (18%). With regards support the community receives from government-sponsored programs, Raskin (rice subsidy) is the largest and this result is across all PPI groups. In addition, other support programs (governmental and non-governmental) mentioned in the qualitative interviews are in table 4.

² Gotong royong is a special form of community work, which is very common all over Indonesia. It works informally and is based on social control mechanisms. The primer purpose is to provide public services such as building village infrastructure (roads or irrigation channels) and keeping the village clean. In some villages, gotong royong is also practiced in agriculture e.g. for planting and harvesting.

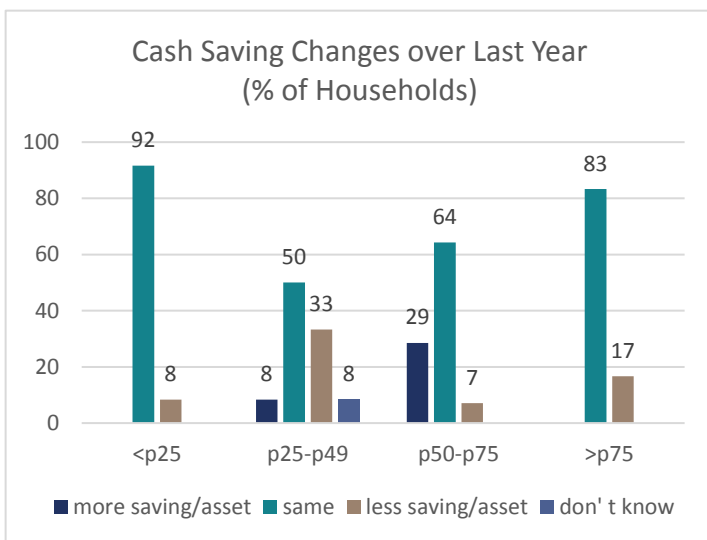
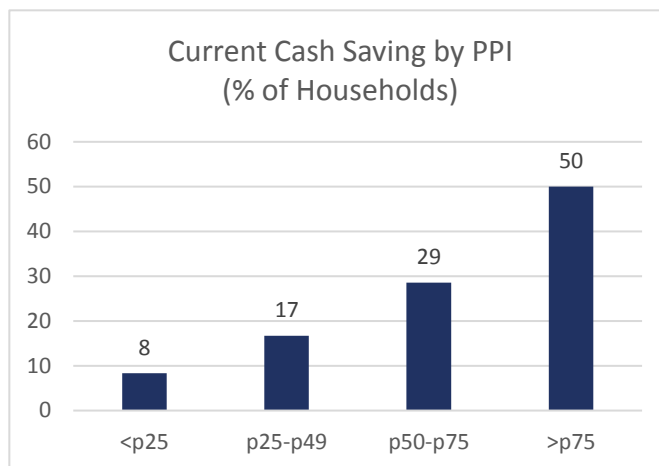
Table 4: Government support programs

Nusa	Tesi Ayufani	Konbaki
PNPB: government program for disaster mitigation and food security providing water (provide of water pipe) and food	PKH: government program for the poor, that provides scholarships for children to go to school	Women group in vegetable farming formed by Hellen Keller International. However, this group is no longer active since the program has ended in 2010
	Anggur Merah: government program that provides funds for productive activities targeted at the poorest of the poor	

4.5. Financial Assets

Financial assets refer to the availability of cash, near cash or its equivalent, which enables people adopt different livelihood strategies. There are two main sources of financial assets – first, available stocks; such as savings - which usually do not have liabilities attached to them or entail reliance on others, and second, regular inflow of money (i.e. excluding earned income) - usually pensions or transfers from the state and remittances with the key being regularity of the inflow.

Overall and from the quantitative data, 74% of

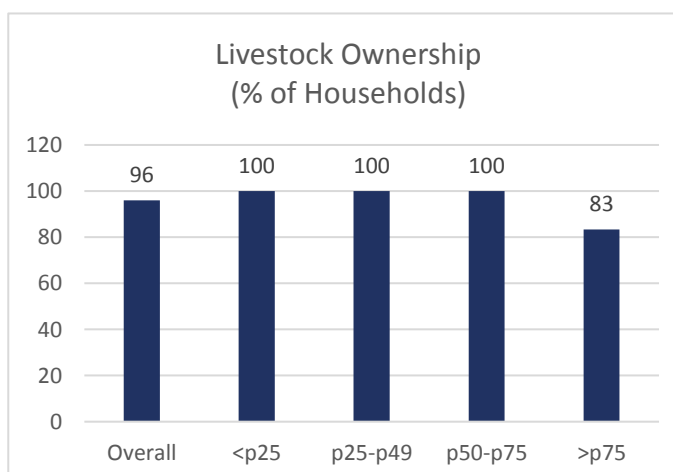


households have access to cash savings and a larger proportion comes from the poor and poorest PPI groups. Of the 26% with little or no access, the bulk consists of those on the higher PPI scale. At the village level, Konbaki records bigger cash savings than the other two villages. 6% of households have a bank account (or can access one) with these being in the middle-income or better-off PPI group.

When asked to what extent cash savings have changed over the past 12 months, the results show that in general, farmers' position has remained mostly the same

across all PPI groups.

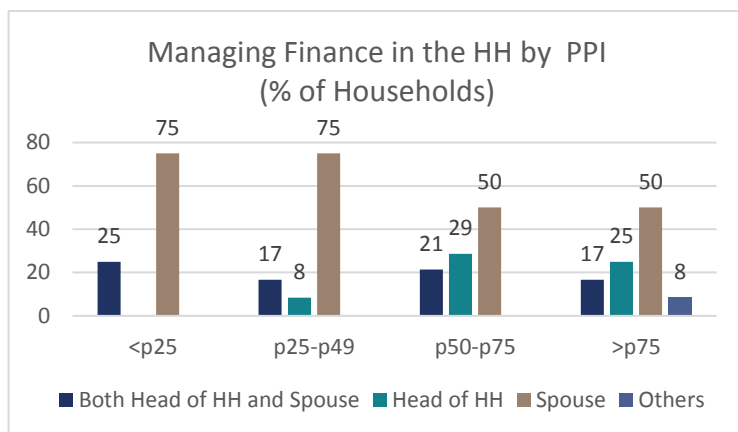
Livestock is another form of savings within this community where proceeds from its sale are used to finance minor expenditures. According to qualitative data, livestock is cultivated to finance expenses such as education and wedding ceremonies. In Nusa, chicken is bred for consumption, during the dry season. Whilst in Konbaki and Tesi Ayufani, cattle ownership is more prevalent. Besides chicken, most households own up to two pigs. Some



households own cows, more often in Nusa than in Tesi Ayufani.

96% of households in the well-off PPI group own livestock - chicken, pigs and cows. Those in the middle-income PPI group on the other hand own goats. Males are predominantly the breeders of cows and chickens but for pigs, females are dominant at 54%. This might be an important point to note for the PRISMA pigs intervention team.

Another important form of savings for poor farmers who do not own livestock is harvested crops, usually from maize and rice, which are stored and sold whenever there is a need for cash.



Generally, the spouse or female is responsible for managing household finances and this result is consistent across PPI groups and villages.

5. Poverty and Vulnerability

The vulnerability context is that part of the livelihood framework outside people’s control. In the short to medium term, not much can be done to alter it. In essence, trends, shocks and seasonality affect people’s livelihoods, which could have significant effects on households, especially the poor. Shocks could be natural, economic, crop or human and seasonality may include changes in prices, production or even employment opportunities. Trends on the other hand are more predictable and not always negative. For example, new technologies may be beneficial to poor people. Shocks can destroy assets and even force people to dispose of other assets as a coping strategy. This section will discuss the vulnerability context of households in Timor and their coping strategies, especially for the poorest households.

5.1. Poverty Assessment

In addition to assessing the likelihood of poverty per household, qualitative data on poverty perception asked village heads to describe their view of a poor, middle-income and better-off household per village and the assets associated with each socio-economic position. This perception is in table. Each village reveals differing perceptions of poor, middle-income, and better off.

Table 5: Perception of poverty by village heads:

Type	Nusa	Tesi Ayofanu	Konbaki
Poor household:	<ul style="list-style-type: none"> Mainly disabled and some old women headed households 	<ul style="list-style-type: none"> Traditional mud house Income 100'000* per month Children go to school but only finish SMA Nutrition: Rice, maize, banana and cassava Land size: 0,7 ha (check notes) Livestock: chicken a few, 1 pig and maybe a goat * Not verified information: it is hard to estimate the monthly income because its highly fluctuant, 100'000 IDR per month seems to be extremely low 	<ul style="list-style-type: none"> The house is not good (traditional house with the reed roof or bamboo house with reed roof) Income per month around 100'000 IDR* No health insurance (BPJS kesehatan) 3 The size of the field is about 4 are per household Schooling: children drop out of school, bad education level Lack of food They are often sick and cannot work properly
Middle income:	<ul style="list-style-type: none"> All farmers (except disabled and elderly widows) 	<ul style="list-style-type: none"> Same as above Only differences: the house is built with wood or bamboo, the children finish education level SMU check with RISA 	<ul style="list-style-type: none"> House made from wood with reed roof Enough cloths Children go to school Some have health insurance (BPJS kesehatan) Income per month 200'000-500'000 IDR Size of field: 0.5-1ha
Better-off:	<ul style="list-style-type: none"> Farmers who have an enterprise. Asset of a rich farmer household: Motorcycle or car Jewellery Land (how much land?) Good and modern house 	<ul style="list-style-type: none"> 1ha of land or more Livestock: cow?? 	<ul style="list-style-type: none"> House made from the brick or wood and with the tin roof Income above 1 Million/month Education at least SMA Have health insurance (BPJS kesehatan) They all plant the same crops, no difference in cropping but the poor have less than the rich.
Percentage:	Percentage: Poor-10% Middle income-70% & Well-off-20%	The head of village says in the local standards the percentage is as follows: 30% poor, 20% middle and 50% well off. But if you compare with the city, 60% would go into the poor classification.	Percentage: 50% poor (260 households)

Qualitative data on living standards asked key informants to describe changes within each village over the past 10 years with regards housing, income & employment, the environment and agriculture. The comparison of perceptions is shown in table 6. Looking at these changes, there is no clear picture of development amongst the sample villages.

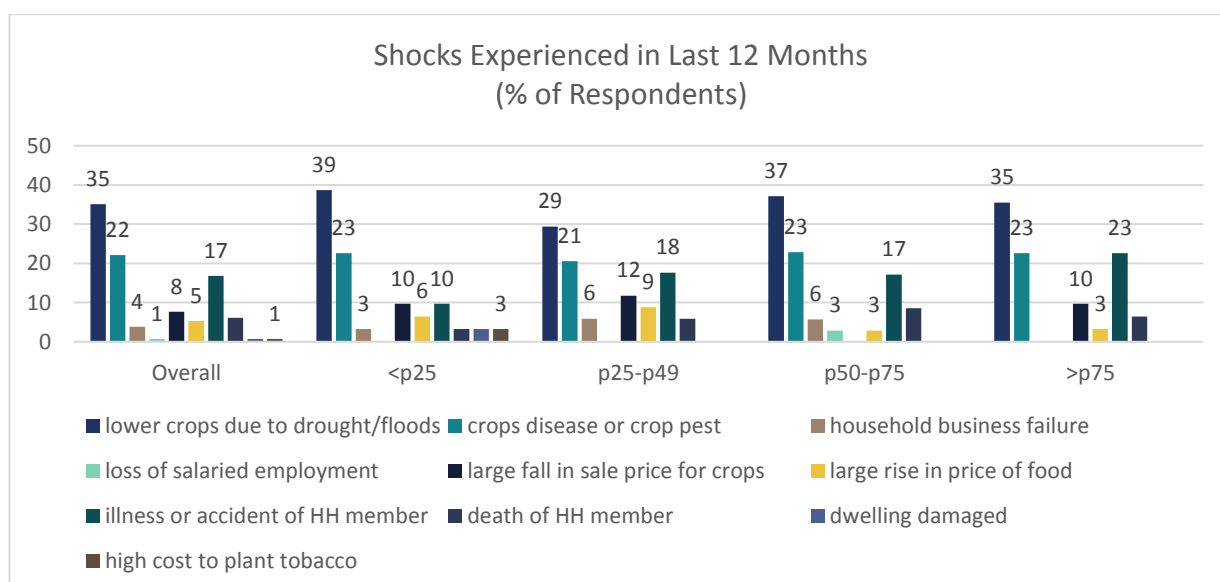
³ Social Security Health Institution) is a State-Owned Enterprises were specially commissioned by the government to administer health care benefits for all Indonesian. The minimum monthly rate for each person is IDR 25,000.

Table 6: Perception of living standards by key informants:

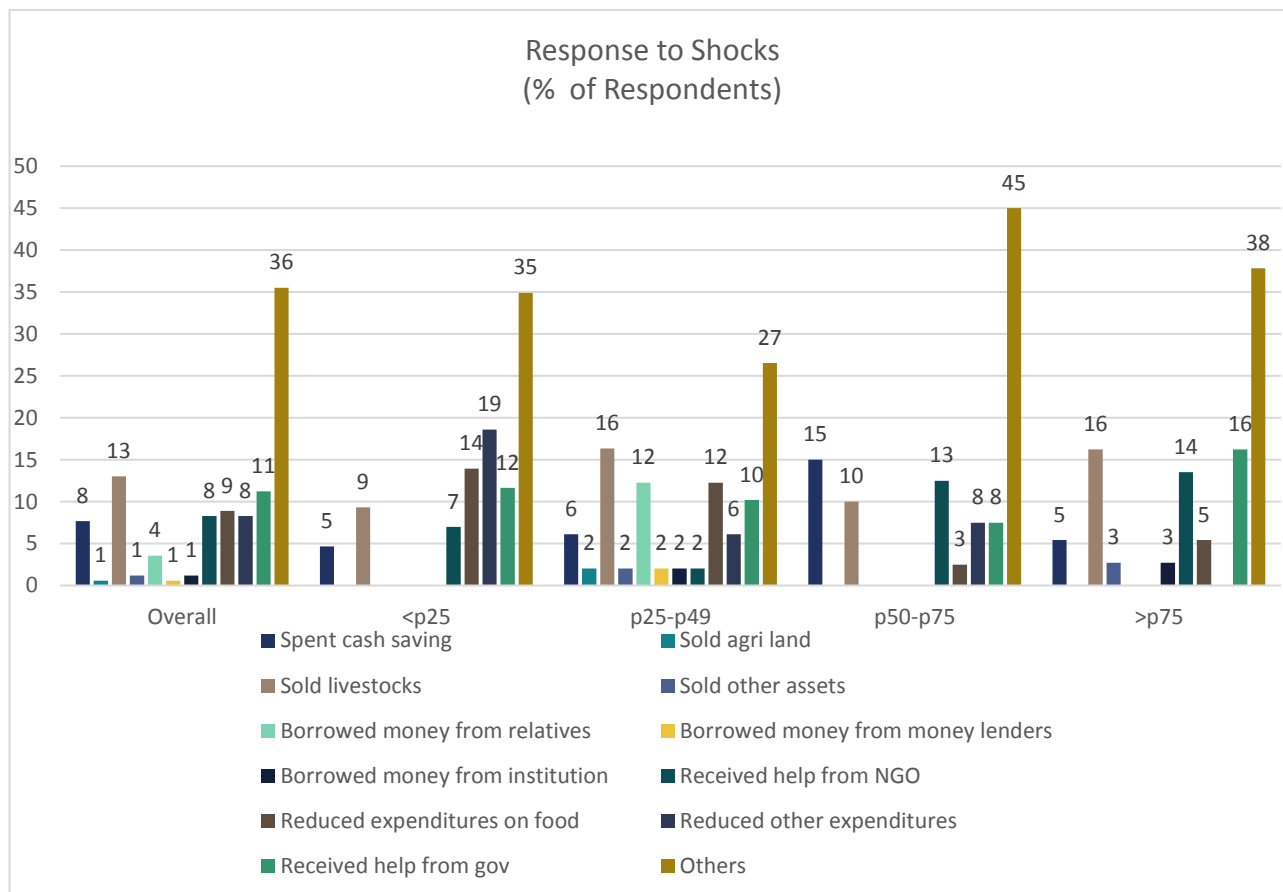
Living Standards	Nusa	Tesi Ayufani	Konbaki
Education	<ul style="list-style-type: none"> Today all children are enrolled in primary school; 	<ul style="list-style-type: none"> Since 2012, all children are enrolled in primary school. When a family is unable to afford it, they rely on a governmental program (Program Keluarga Harapan) offering scholarships 	
Housing	<ul style="list-style-type: none"> With additional income many people renovate their house 	<ul style="list-style-type: none"> More families have modern houses and the government PAMSIMAS program provided water for households 	
	<ul style="list-style-type: none"> Toilet facilities: there has been major improvement with the last few years and today all households are equipped with a toilet with septic tank 	<ul style="list-style-type: none"> Electricity was first brought to the village in 2011. Today 40% of households have access 	
Income and Employment	<ul style="list-style-type: none"> Income increase due to higher agricultural productivity and higher yields 	<ul style="list-style-type: none"> Better yields because of better agricultural practice, higher quantity of crops for sale 	
Agriculture	<ul style="list-style-type: none"> Improved seen since first farmer group was established in 1994. Today most people join farmer groups for increased productivity 	<ul style="list-style-type: none"> Previously, farmers planted in any direction. But now, the cultivate in straight lines and the heads farmer groups receive GAP training by the government 	
	<ul style="list-style-type: none"> Shifting consumption habits from maize to rice and families eating more vegetables 	<ul style="list-style-type: none"> More varied nutrition in households by eating more rice, vegetables and fish 	
	<ul style="list-style-type: none"> Until recently, farmers left their cattle to walk around their land and didn't feed them. Now they are housed in a pen which has the advantage of providing manure to farmers 		
	<ul style="list-style-type: none"> Today families boil their water before drinking because of increased awareness of health issues 		

5.2. Vulnerability, Shocks and Food Security

In assessing the nutritional habits of households within the three villages, households typically eat a maximum of three types of high nutrition food per week. Household members within the higher PPI scale have better nutrition habits in comparison to those on the poorest scales. At the village level, Tesi Ayofani is nutritionally the most vulnerable and Nusa is highest in nutrition source variety.



The months households consume less than enough food are November, December and January whilst they consume more than enough in April and June. With regards maize, most households consume less starting in December and culminating in February, with a peak in January. However, these households consume more maize from production from April to July. In order to deal with not having enough food, the most common reactions from households in order of frequency are to sell livestock or other assets, rely on food aid from the government, switch from rice to another food option and finally eat less food.



In general, the survey respondents report their most difficult months for livelihood shocks to be November and December, and this is consistent across all PPI groups. These shocks are mainly lower crops due to flood or drought, crop disease or pest and illness or accident in the family. The top reasons for this difficulty is the lack of cash, difficulty accessing water and non-availability of food. To cope with these shocks, households apply the same strategy to not having enough food, stated above.

These results are validated from the qualitative data, which confirm that poor access to water during the dry season is the biggest challenge farmers’ face for their livelihood. The past two years have been particularly dry and during that time, Nusa village received support from the government program for food security (PNPB) and access to drinking water via a pipe and a water tank, was provided. The situation improved, with increase in harvest and many households report having storage facilities for their maize. These households also have cattle and vegetables, which they sell during any crisis. However, in times of severe drought, farmers still rely on external support.

In Tesi Ayufani, the outcome is different as access to water is more challenging and because farmers have no cattle as a buffer, they are more vulnerable to shocks.

6. Choices and Livelihood Strategies⁴

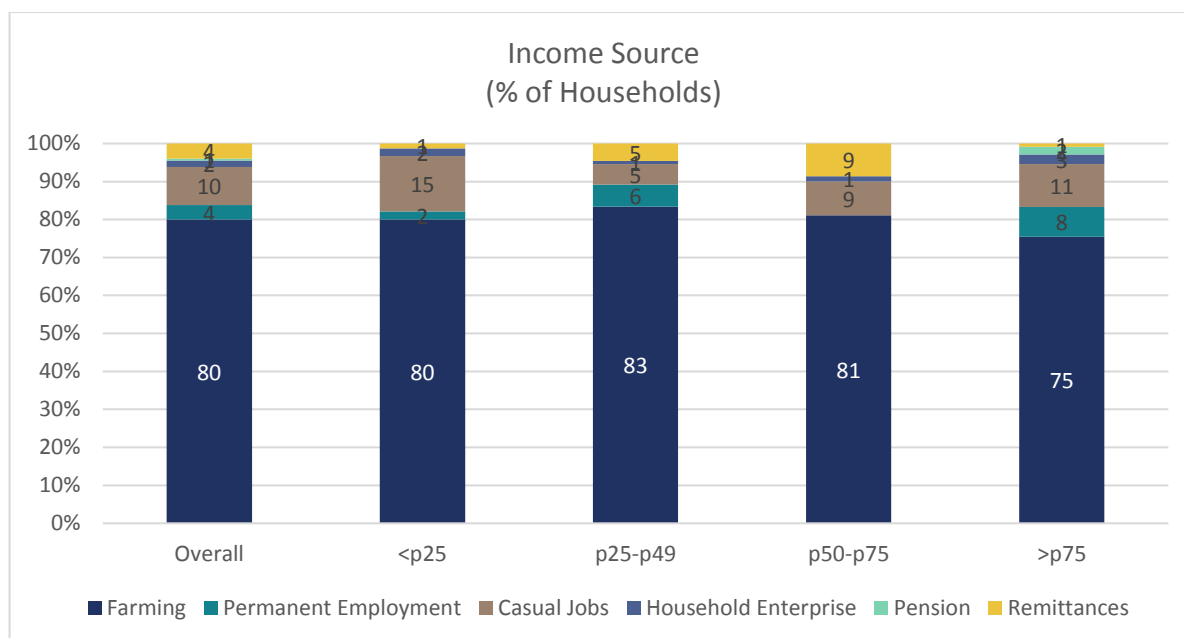
Further to understanding the assets farmers have access to and the vulnerability context, this section aims at discuss how farmers use and combine their assets to make a living. The drivers behind farmer behaviour given the asset available to them may be to:

- meet basic needs
- protect assets i.e. minimize exposure to risk or increase coping capacity
- increase assets/income
- increase consumption.

These priorities can be discussed broadly under income sources and expenditures with an emphasis on evaluating the behaviours of both users and non-users of G0 maize bulbs. Do they behave differently? If so, what might the reasons be?

6.1. Income Sources

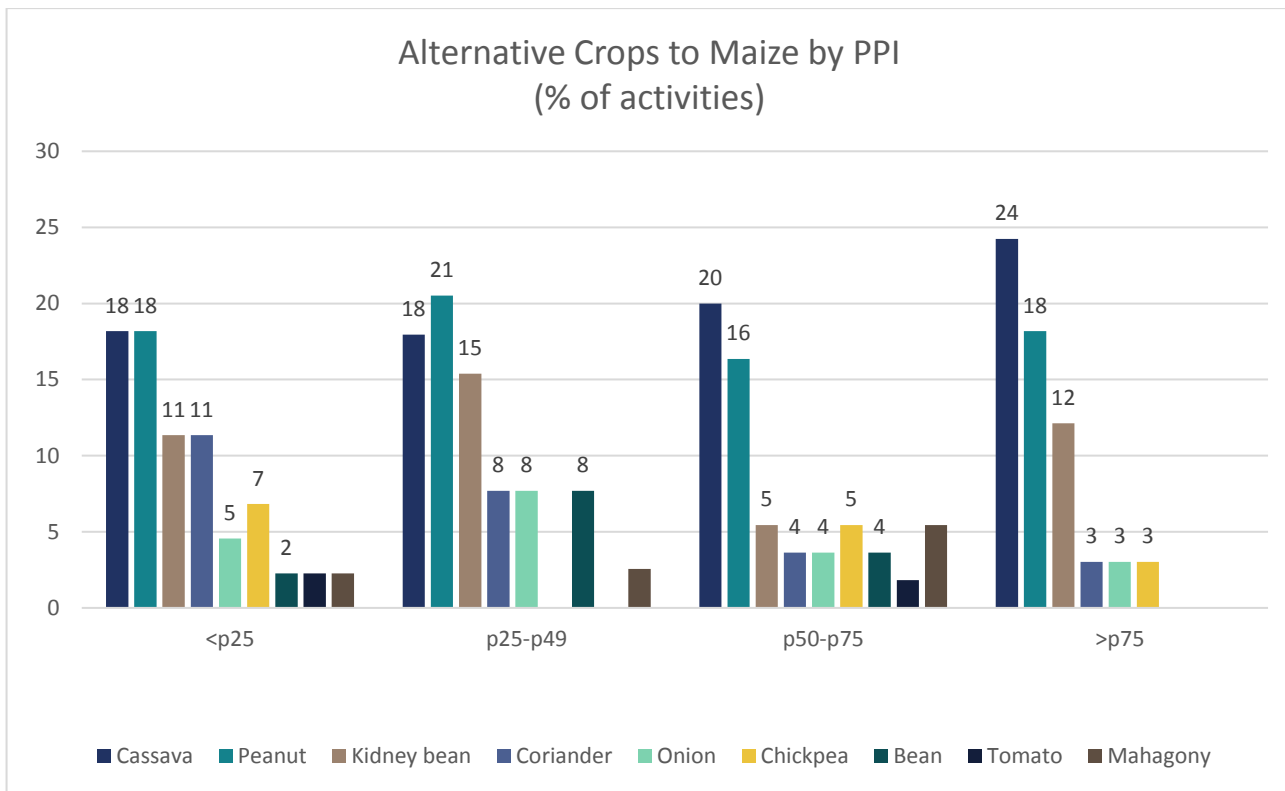
Farming is the dominant income generating activity within this community as can be seen from the income sources graph below. Besides farming, other income generating activities mentioned in the qualitative data include scarf, sarong, basket and hats weaving which women normally undertake completely. Men are more inclined to be wood and stone carpenters' as well as drivers.



A small part of these farmers have additional non-agricultural income sources and diversification in a common strategy used to mitigate the risk of harvest failure. Farmers plant several crops at the same time such as maize, cassava, banana and some vegetables and the head of village in Konbaki said, “During the rainy season, farmers plant everything they can”.

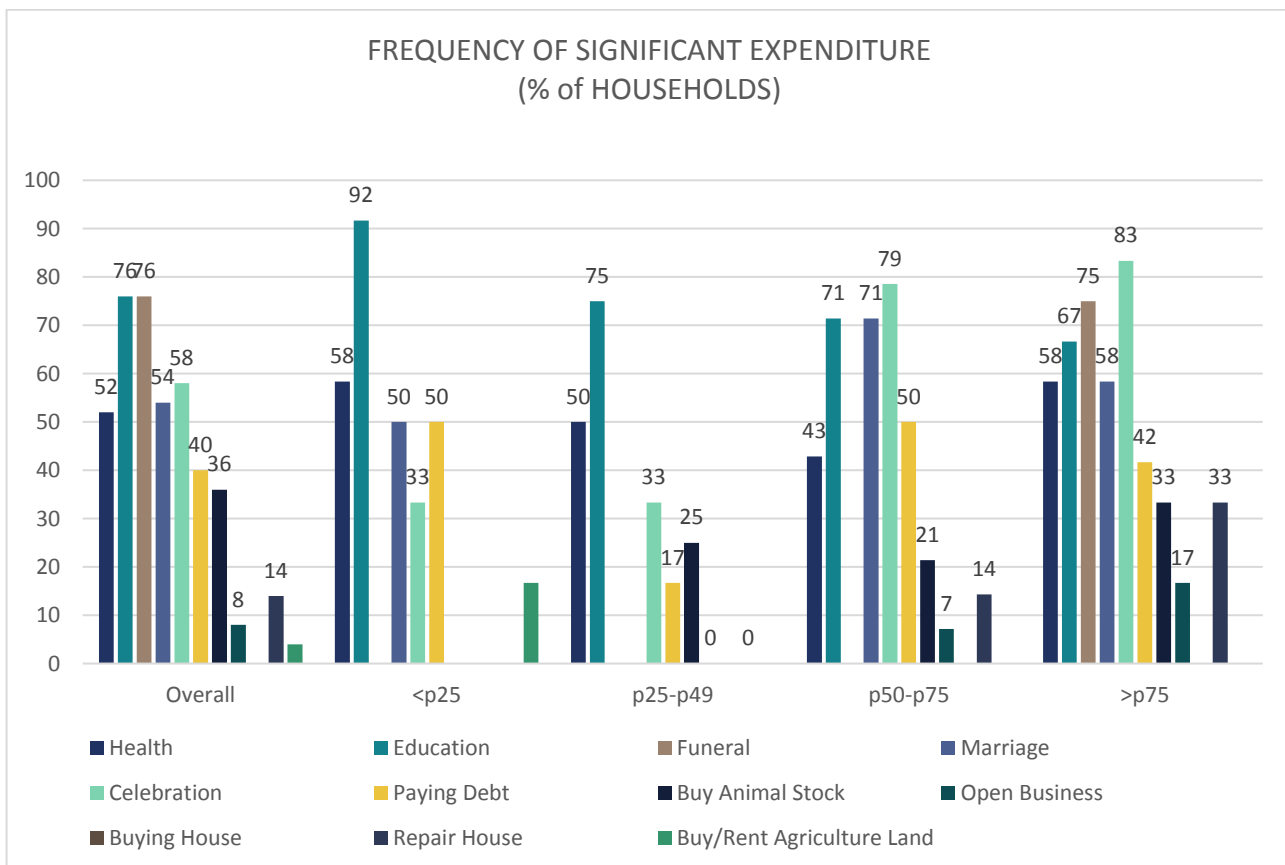
The dominant alternative crops to Maize in this region are Cassava, Peanut and Kidney Beans. Naturally, these provide additional income to farmers.

⁴ The term livelihood strategy is used to describe the range and combination of activities and choices that people make in order to achieve their livelihood goals (Livelihood Strategies, Thomason Kalinda and Augustine Langyintuo, 2014)



6.2. Expenditure

The most significant expenditure recorded in the survey and in order of importance are education, funerals, celebrations and marriage celebrations (with the latter coming from the better-off PPI quadrant/farmers). Poorer households also have more significant expenditure than those better off.



According to qualitative data, education is the biggest expenditure for the poorest and poor households. In Tesi Ayufani, school fees for each child is in the region of 40'000IDR per month and this excludes costs associated with books and shoes. Cost associated with celebrations is significant also, as farmers purchase 1-2kg of rice per week to complement their nutritional habits. Farmers in this village hardly buy seeds for cultivation but rather retain seeds from their harvest. They do however spend money on other inputs such as fertilisers, herbicides and pesticides. In order to afford these inputs, they rely on the return from selling their harvest or livestock.

In Konbaki village, the main expenditures reported include fuel - to power electricity generators, household consumption on food, and education. Sometimes farmers borrow from neighbours, use some of their savings or sell livestock used to finance these expenditures.

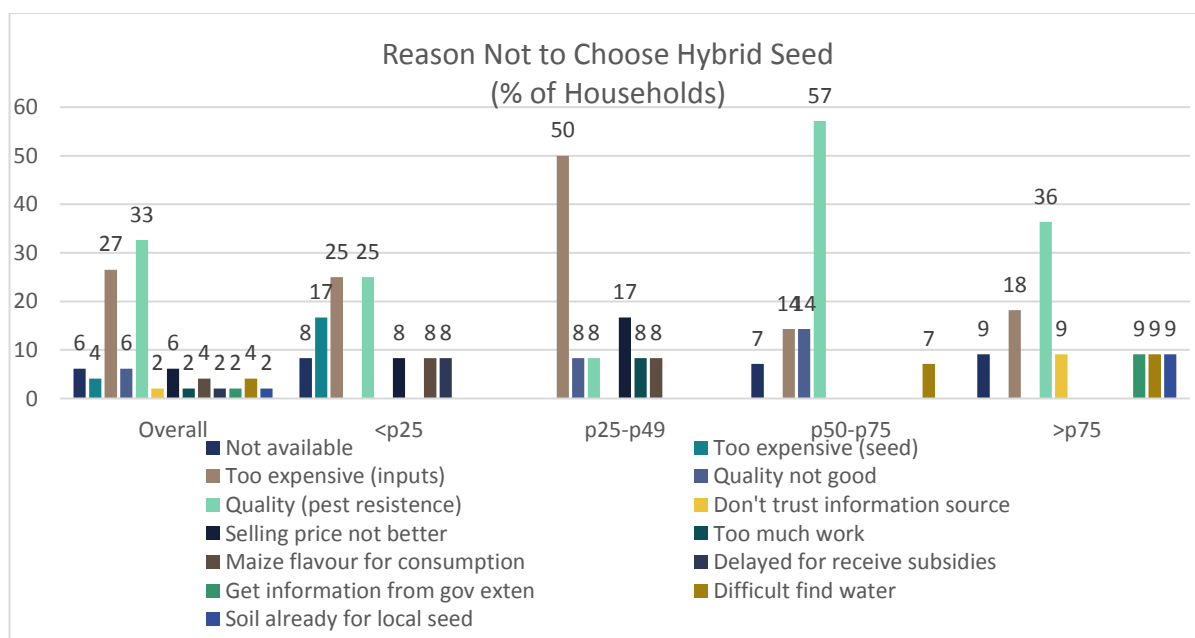
In Nusa village, the main expenditures reported are education and building or renovating the home. Farmers also spend money for food, especially rice and vegetables, specifically cabbage. When there are subsidies from the government, farmers plant the hybrid maize variety called Bisma. The timing of expenditure and income is an important factor. For example, the women in Nusa require money for education during the months of July and August, when vegetables are yet to be harvested or sold. During such a time, they are inclined to either borrow from the farmers group or sell livestock, if they have any.

7. Determinants and Mechanisms for Decision Making

This section aims to understand the rationale and mechanisms for decision-making in relation to the livelihood assets, strategies and priorities already discussed – with a focus on maize-related decisions. If livelihood decisions are based on assets available and the perceived costs and benefits required, this section proposes to identify assets required for planting maize bulbs, reasons for planting maize bulbs and discuss farmers' perception of cost, benefit and risk.

7.1. Focus on Maize

The sample size revealed all but one household cultivates the traditional variety of maize; consequently, it is impossible to compare how decisions might differ between the two groups of farmers. The main reasons these household cultivate maize is hereditary. However, the better off farmers on the PPI scale cultivate maize as a staple and the main reasons for not cultivating the hybrid variety is in the graph below.



The quantitative data results show it takes around 15 years to cultivate maize. 70% of households have always cultivated maize and those on the lower end of the PPI scale started cultivating earlier than those on the higher scale. The results further reveal around 70% of harvested maize, is consumed, 14% sold and 10% retained for seeds. This means domestic consumption is the key driver for maize cultivation. Consequently, nearly none of the households' has considered stopping maize cultivation. If that decision was ever made, it would be by the male head of household.

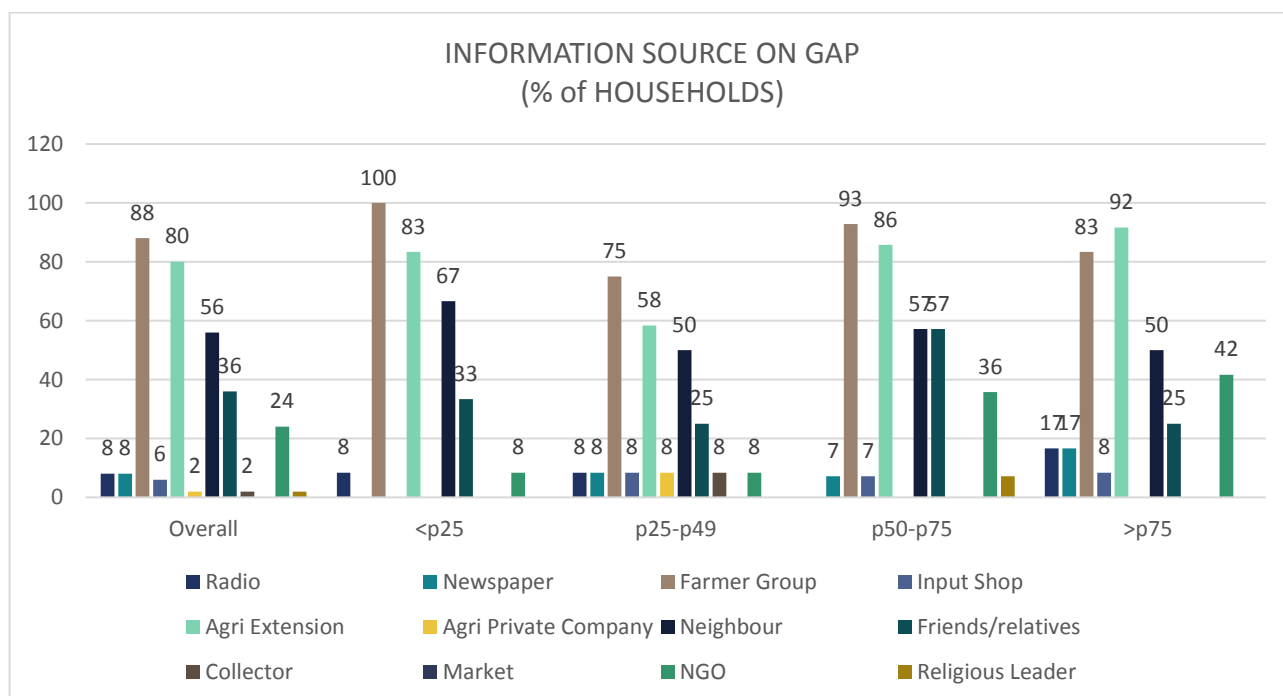
8. Decision-Making: Mechanisms

To better understand how decisions about maize are made the study focuses on three questions:

- What sources do farmers rely on in order to get information required for making decisions?
- Who in the household is involved in decision-making?
- Who outside of the household is involved in or influences the decision?

8.1. Sources of Information

According to qualitative data, the main sources of information on good agricultural practices are farmer groups first, extension workers, second and neighbours, third. This is consistent across PPI groups as can be seen from the graph below. When respondents were asked which sources of information they trusted the most and considered most important, farmers groups came out tops, followed by input shops and extension workers.



According to qualitative data, the main parties involved in decisions about agriculture are extension workers, head of farmer groups, traditional leaders, and neighbours. The role and importance of the extension worker in providing farmers with information and training depends on their personal involvement within the community. For example, in Nusa, farmers said extension workers periodically helped with building better pens for livestock. According to one farmer, the newer extension workers never show up and are hard to contact.

In addition, the head of farmer group is a link between the Ministry of Agriculture and farmers' by providing access to and dissemination of information. The role of the traditional leaders in this community is manifold. They are wise and knowledgeable in diverse fields and consequently it is common for farmers to ask them for advice. In Tesi Ayufani for example, the traditional leaders are directly involved in

everyday agricultural practice such as ensuring farmers adequately prepare their land and apply fertilizer at the right time. They are involved with ensuring farmers security; ensuring cattle do not destroy their neighbours' fields. These traditional leaders hold ceremonies related to agriculture. This might be to pray for early rain, good harvest, the prevention of natural disasters such as storms or just to open a new farm.

Information on good agricultural practise is spread in the village by the head of farmer group to members first and then to non-members. Farmers also actively look for information about market prices and opportunities by talking to other farmers and traders. This is especially poignant in Tesi Ayufani, where access to information about market prices is a big challenge. They say improved access will increase their bargaining position.

8.2. Decision-making roles within the Household

In all sample villages, both males and females engage in farming activities. The extent of female participation varies from village to village. In Konbaki for example, the traditional culture is patriarchal and women, until recently, were solely in charge of domestic activities.

Furthermore, women are primarily responsible for selling agricultural commodities and managing the household budget. They alone decide on how to cover household expenses such as food and child education. However, they consult their husbands on significant expenditures.

Table 7: Gender specific activities related to Maize

ACTIVITY	F	M	DESCRIPTION
Decision on crop and seed variety to be planted	X	X	Decisions about crops and varieties are made by men and women and together.
Land Preparation			
• Ploughing	-	X	Land preparation is 100% a male task.
Planting			
• Make planting hole	-	X	Both men and women are involved in planting. Usually men dig up the planting hole and women put in the seeds.
• Plant the seed	X	-	
Maintenance			
• Irrigation	-	X	Both men and women are involved in the maintenance of the field but have different responsibilities.
• Watering	X	-	
• Apply fertilizer	X	-	Irrigation is usually the responsibility of men, but women sometimes help water plants. Applying chemical fertilizer is a female task but applying manure is done by men and women.
• Apply manure	X	X	
• Pest control (spraying)	-	X	Men are in charge of spraying pesticides. (Most women actually know how to spray pesticides because they attended a training from the extension worker, but due to the weight of the spray tank, men do it instead).
• Piling the land (mounding)	-	X	
• Clean the weed	X	-	Mounding is a men's task and clearing the weed is a women's task.
Harvesting			
• Picking corn	X	X	Both men and women are engaged in harvesting.
• Collect the corn	X	X	
• Take the corn to house	-	X	
Post-harvest			
• Drying	X	-	Drying the corn is a done by women. Taking of the corn husk, despite being a time consuming activity, is done by women, usually around 10am, when they come back from the fields.
• Peeling (taking of the husk)	X	-	
Marketing			
• Decide where to sell (price survey)	X	X	Corn is sold to retailers (kios). Usually women decide where to sell the corn because they know which kios offers the best price. Women are the price negotiators and the selling process is undertaken by them. They deliver the corn in becak (1-2 sacks) but if the quantity is large, the men take over the delivery.
• Bargaining price	X	-	
• Selling	X	-	
Financial Management	X	-	Women typically save the HH income and make decisions on household expenditures for consumption.

9. Conclusions

In summary, the following conclusions can be drawn from this study:

This region might be considered relatively poor especially when one considers that very few households have access to bicycles or motorcycles – something quite common in Indonesia

Education is considered a priority for all households (especially the poor and very poor), and further constitutes a big ticket item in household outgoings

Farmer groups are trusted, respected and significant within this community. It means any stakeholder wishing to have an entry point into influencing farmers' behaviours and activities in the region should also take them seriously.

Females dominate the pigs sector in this community, which could be of interest to the PRISMA pigs' intervention team.

Extension workers do not only provide information on GAP. Aside from being well regarded, they are fully incorporated into the day-to-day activities of this community.